

# NAPA'S TRANSPORTATION FUTURE

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A Strategic Transportation Plan for



Horizon Year 2035

April 2009

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THE NAPA COUNTY TRANSPORTATION AND PLANNING AGENCY

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# *Napa's Transportation Future*

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## I. ORIENTATION TO THE FUTURE

From the vantage point of early 2009, as this report is being drafted, our community our nation and the world are in the midst of large scale changes.

At a global scale, tumultuous energy markets, a volatile international economy, and the challenge to address global climate change will exert a powerful influence on local transportation and development choices. There is growing pressure to significantly lower energy use and reduce our overall driving, while continuing to protect our environment. In the past year, the State of California and the Bay Area region have begun fundamental changes to the ways in which we will plan for the future, looking to account for the tight interdependence of transportation, land use, housing, demographic change and job growth. Napa's Transportation Future looks at these big picture changes and offers a strategic perspective on the options we have to respond to them.

Here in Napa, the natural beauty of our community, protected by visionary and popular land stewardship policies, combined with the premier quality of our vineyards and wineries, and our proximity to one of the world's leading cosmopolitan centers, has created a highly desirable destination to live, work and visit. A pioneering flood control project has inaugurated an energetic renaissance in the City of Napa, our main urban center. These are some of the factors that make housing comparatively expensive in Napa which influences many of our local workers to live outside the County. Napa's Transportation Future examines these local factors, taking into account local goals and principles, and offers a set of possible strategies and approaches to the future.

The transportation system of our community is our vital circulatory system and it touches EVERY area of our lives. We depend on our network of streets and roads, our bus systems, bike and pedestrian walkways, our trucks and cars (and even some trains and boats) to move us and our goods efficiently.

### Vision

**For Napa County in 2035 we envision an attractive, flexible, fully integrated transportation system, with a broad range of options and modes, enabling individuals and goods to move throughout the county in an efficient manner.**

### Goals

- Reduce/restrain growth of automobile vehicle miles traveled (VMT)
- Spread the travel load from peak times to non-peak times
- Improve the quality and safety of our street and road infrastructure
- Shift travel from Single-Occupancy Vehicles to other modes
- Reduce overall energy use and greenhouse gas (ghg) emissions

## Principles

- Transportation and Land use: The relationship between transportation and land use is a key focus of this document. Preserving the agricultural character of our community is understood to be the primary land use objective in Napa.
- Cooperation: Napa's Transportation Future must be decided cooperatively by the whole Napa community.
- Core Values: The "Napa County League of Governments (NCLOG) Principles" adopted by leadership from all six of Napa's jurisdictions is a key guiding document for Napa's Transportation Future.

## Challenges

- Automobile culture – Perhaps the most difficult challenge is that we have, to a large degree, built our contemporary culture around the freedom and independent mobility provided by the car. Napa shares the car culture of more rural and suburban areas and has much less in common with urban centers with abundant mass transit.
- Bisected communities – In American Canyon, St. Helena and Calistoga, historical development patterns have resulted in communities bisected by major State-administered roads.
- Congestion – Completely non-congested flow at all times is unachievable for any transportation system that has a fixed infrastructure and a demand level that fluctuates and reaches full capacity at any time.
- Costs –Building the public consensus on public spending is challenging in the best of times and the strategies proposed in this document will also face this challenge.
- Eroding power of transportation finance – A principal source for funding transportation has been gasoline taxes that have been unchanged since 1994 and since then, inflation has eroded their value by 29 percent.
- Fuel costs. Over the long term, petroleum prices are very likely to rise higher than core inflation rates.
- Greenhouse gas (GHG) generation –transportation accounts for over 50% of Napa County's GHG load. This will become an important factor as we enter an era of aggressive regulation of GHG emissions.
- Growth –population and job growth, even at Napa's historically low levels will, over time, press against the basic "carrying capacity" of our infrastructure.
- High housing costs –Even in a downturn, housing prices in Napa County, combined with lower wage job growth, will continue to make it very challenging to provide local housing for a growing segment of our local workforce.
- Maintenance costs street and road – Construction industry costs are rising much faster than the core inflation rate.
- Public transit economics – Because economies of scale are critical for capital intensive transit systems, Napa County's small size and low density population make mass transit options difficult to implement and costly to finance.
- Regional growth pressure – Even if we could build our perfect local transportation system, the level of people and goods that want to move *through* our community will continue to grow significantly and may in fact overshadow any local efforts.

## II. CURRENT TRANSPORTATION SYSTEM

### Geographic and Demographic Patterns

The transportation system in Napa County has evolved to follow the County's basic geographic configuration, with a central valley bounded by isolating hillsides. In the southern part of the county the terrain opens up with easier connections to communities in neighboring counties. (The eastern portion of the county is sparsely populated.) In the central Napa Valley transportation movement runs dominantly north-south along the string of four cities that sit in the valley floor. Thus, in a transportation sense, the central/northern portion of Napa County operates as an "island," and this island nature influences the patterns of congestion and imposes significant constraints on transportation system design. In the southern end of the county, where the fifth city is located, the more open connections to the east and west makes cross-county travel easier and more prevalent.

A second dominant overall travel characteristic is that Napa County, with only 130,000 people and very moderate projected growth, is surrounded on three sides by much larger and more rapidly growing population and employment centers. Particularly in the southern part of the county there is growing east-west traffic, including employees commuting between Napa and neighboring counties and employees passing through Napa between Solano and Sonoma Counties. Even in the northernmost portion of the county, we see significant growth of pass-through traffic from Lake County to Sonoma County. Thus a significant issue for Napa's transportation future will be the evolution of employment travel through the southern part of the county.

**Table 2-1**  
**Commuting Travel Pattern for Residents in Napa and Adjacent Counties in 2007**

Home	Job Location										
	Solano County	Sonoma County	Lake County	City of Napa	Airport-South Napa	American Canyon	Eastern Highlands	Yountville-Rutherford	St. Helena	Calistoga Area	Other Counties
Solano County	92,128	1,765	58	1,506	2,834	1,338	193	157	58	14	80,000
Sonoma County	1,063	181,562	4,532	1,077	762	181	130	295	294	332	45,922
Lake County	40	1,865	32,146	27	14	3	107	22	53	91	3,517
City of Napa	1,937	1,244	15	21,407	7,288	909	549	1,552	323	60	6,297
Airport-South Napa Area	31	6	0	51	91	26	3	3	1	0	57
American Canyon	1,646	82	1	385	1,276	766	34	31	9	2	1,769
Eastern Highlands	460	302	99	1,231	660	142	1,944	208	434	88	2,654
Yountville-Rutherford	133	227	7	771	253	50	67	725	284	36	867
St. Helena	65	324	28	208	87	18	185	394	2,280	316	569
Calistoga Area	36	1,031	103	91	44	10	74	129	624	1827	592
Other Counties	14,106	7,669	790	1,005	1,389	583	442	180	104	52	

Source: Solano-Napa Phase 2 Model  
DKS Associates, 2008

An example of this relationship is shown by looking at the estimated percentage of workers that enter Napa County from other surrounding counties today. As shown in **Table 2-1**, more than 6,000 of the workers come into the Napa County from Solano County. The table also shows the estimated proportions of workers traveling through Napa County from Solano, Lake and Sonoma Counties.

Most of trips that occur on the system are currently made mostly with single-occupant drivers as shown in **Table 2-2**. One of the most interesting facts is that Napa County has a relatively high proportion of persons who work at home. Another interesting finding is that almost 38 percent of Napa County residents have a commute of 15 minutes or less.

**Table 2-2**  
Demographic and Commuter Transportation Pattern Comparison between the U.S., the State of California, Napa County and Two of Its Neighbor Counties

	United States	California State	Napa County	Solano County	Sonoma County
Total Population	281,421,906	33,871,648	124,279	394,542	458,614
Percent of Workers Working at Home (%)	3.26	3.83	5.08	3.12	5.44
Percent of Workers Taking Public Transportation to Work in Total Not-Work-At-Home Workers (%)	4.89	5.27	1.47	2.76	2.59
Percent of Workers Riding Bicycle to Work in Total Not-Work-At-Home Workers (%)	0.39	0.86	0.88	0.47	0.82
Percent of Workers Carpooled to Work in Total Workers Driving Personal Vehicles to Work (%)	13.87	16.84	16.96	19.50	14.40
Percent of Workers Working Outside County of Resident (%)	23.08	16.53	22.34	42.57	17.69
Percentage of Workers with Travel Time to Work Less Than 15 Minutes (%)	28.44	24.34	37.73	26.68	30.45
Percentage of Workers with Travel Time to Work More Than 1 Hour (%)	7.72	9.75	8.81	16.03	11.02

Source: Census 2000 Summary File 3 (SF3), Census Bureau  
DKS Associates, 2007

Another important statistic is the vehicles miles traveled per household. This important indicator reflects the degree to which driving distances have increased in Napa County. **Table 2-3** illustrates the dramatic increase since 1990.

**Table 2-3**  
Vehicle Miles of Travel – Past Trends

Attribute	1990	2000	2007
Vehicle Miles Traveled	1,474,700	2,298,600	2,805,900
Households	41,312	45,402	48,162
Vehicle Miles Traveled Per Household	35.7	50.6	58.3

Source: MTC travel forecasts, based on Projections '98 (1990), and Projections 2003 (2000 and 2007).

In Napa County, most people and jobs are located in an area in the southern portion of the county – generally from northern areas of the City of Napa to the American Canyon/Vallejo city limits. Over 68 percent of the total number of single-family households and over 71 percent of the total number of multi-family households is located in this area. The same pattern is noted with the generalized location of jobs and the percentage total county jobs in this area is estimated at 71 percent.

## Existing Transportation System

The existing transportation system contains roadways, rail lines, bicycle paths and lanes, airport facilities, and sidewalks. Each of these facilities contains unique characteristics that help to define the travel needs within Napa County.

### ROADS

The transportation system in Napa County is comprised mostly of roadways. Although there is a small portion of the Interstate 80 freeway that is technically in Napa County near American Canyon and a short segment of State Route 29 as a freeway between Trancas Street and the Carneros Highway intersection, the predominant roadway facilities are designed as arterial or expressway roadways.

Some key roadways within Napa County include:

- |                                    |                       |                      |
|------------------------------------|-----------------------|----------------------|
| State Route 29                     | State Route 12        | State Route 128      |
| State Route 121                    | Imola Avenue (SR 221) | American Canyon Road |
| Silverado Trail                    | Lincoln Avenue        | Jefferson Street     |
| First Street-Second Street Couplet | Trancas Street        |                      |

### **AUTOMOBILE TRAFFIC**

As expected, most vehicles on the roadways in Napa County are automobiles. The Department of Motor Vehicles reports that 138,211 vehicles were registered in Napa County in 2007. This is an increase from the 104,300 vehicles registered in 2000. The number of vehicles per household has grown from 2.3 vehicles per household in 2000 to 2.6 vehicles per household in 2007. Not all vehicles in Napa County contain only one person. According to the most recent data on work trips (US Census, 2000), the percent of persons in higher-occupancy vehicles is shown as 17 percent. This is noteworthy in that there are few park-and-ride lots in Napa County.

Parking in Napa County is generally free and provided on site. In some downtown areas, parking is not provided on-site, but is available nearby free of charge. In Downtown Napa, St. Helena, Calistoga and Yountville, persons must park on the street or in off-site parking lots. These areas sometimes have time restrictions for parking, but none are metered. Metered parking encourages turnover, and frees up parking spaces for potential customers.

### **BUSES AND MASS TRANSIT**

There are both public transit systems and private bus operators in Napa County. Both of these systems are important in serving the needs of residents and visitors.

#### **Public Transit Service**

All public transit systems are managed by the Napa County Transportation and Planning Agency (NCTPA). NCTPA provides administrative oversight and the transit vehicles. For operations NCTPA manages two separate contracts, currently with Veolia Transportation Inc. One is for the fixed-route operations (VINE) and the other is for the paratransit and community shuttle operations. The transit system consists of the Valley Intercity Neighborhood Express (VINE) and VINE Go (paratransit), as well a group of community shuttles: Calistoga HandyVan, the Yountville Shuttle, the St. Helena Vine Shuttle, and American Canyon Transit. NCTPA also operates the Downtown Napa Trolley. Thus NCTPA provides comprehensive transit service to residents throughout the Napa Valley. The Napa transit system accounts for over 800,000 transit trips a year, counting all of the services.

**VINE Fixed-Route.** The VINE, is designed to provide intra-community service within the City of Napa as well as regional service. City routes operate on weekdays from around 6:30 am to 7:00 pm on 60-minute frequencies. Inter-community service runs every hour on weekdays from around 5 am to 9 pm, every two hours on Saturday and every 1-3 hours on Sunday.

**Calistoga HandyVan.** The Calistoga HandyVan is an on-demand transit service for the general public within the City of Calistoga. No advanced reservations are required.

**Yountville Shuttles.** The free Yountville Shuttle provides local fixed-route service in the Town of Yountville. The service operates on a 30-minute frequency from 9 am to 4 pm on Tuesday through Sunday, with no service on Monday.

**St. Helena VINE.** The St. Helena VINE provides local service in the City of St. Helena and to Deer Park at St. Helena Hospital. Connections to VINE at St. Helena City Hall (northbound side) and Main at Pope Streets (southbound side) in downtown St. Helena, and to Lake Transit at St. Helena Hospital.

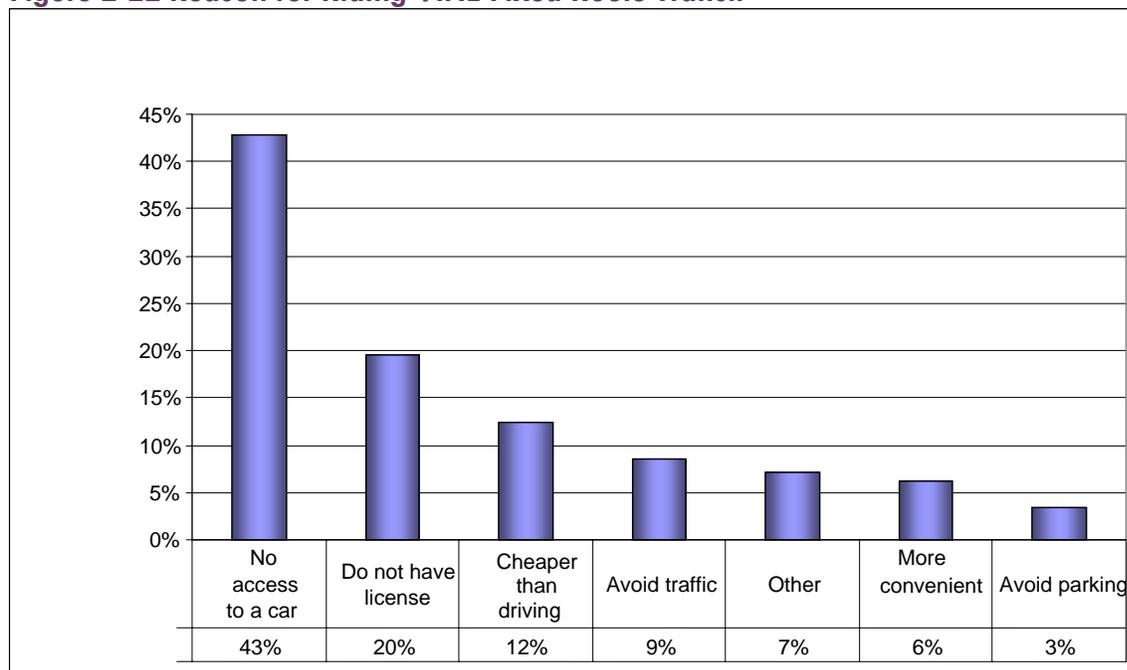
**American Canyon Transit Shuttle (The Duck).** American Canyon Transit (ACT) Shuttle provides service within the City of American Canyon, and begins and ends at the Safeway at State Highway 29 and American Canyon Road.

**VINE Go.** The VINE Go is a door-to-door, paratransit service that serves Napa Valley from Calistoga to American Canyon and portions of the City of Vallejo, for ADA individuals and seniors who live in south Napa County, and general public residents that live in the North Valley cities of Yountville, St. Helena and Calistoga, and unincorporated areas within Napa Valley.

### Bus Transit User Profile

**Figure 2-22** illustrates why people ride the VINE Fixed route transit. Over 62 percent of the VINE riders either do not own or have access to a car, or do not have a license. In addition, higher gasoline price contributes to the other 12 percent of the riders. Other reasons include to avoid traffic, more convenient than driving and to avoid parking, etc. Thus, while Napa has one of the lowest transit ridership rates in the Bay Area, we have one of the HIGHEST rates of “transit dependent” riders – our riders do not have other transportation alternatives. If the Napa economy continues to add lower wage jobs at the current rate then we can expect that transit ridership will grow.

**Figure 2-22 Reason for Riding VINE Fixed Route Transit**



### Private Shuttles and Buses

In addition to the public transit system, private tour shuttles and buses are also available for visitors who are often going to locations not conveniently served by the public transit system.

### **TRUCKS**

As a county with a sizeable agricultural economy, the movement of supplies, farm equipment, and agricultural products (particularly grapes and wines) is all important. Trucks are also often found on roadways for other purposes, transporting products within Napa County as well as to neighboring counties. As an example, the wine industry must use trucks to bring in wine barrels and bottles, transport grapes and various grape fermentations to other areas for blending and processing, and to then take the finished products to distribution points around the world.

### **BICYCLING**

Bicycling is an increasingly popular activity in Napa County. The 2000 Census reported only that 0.8% percent using bicycles for commuting, although bicycling is also popular for students, non-work trip making, and visitor and resident recreation. Napa County has several off-street trails and paths, as well as on street bicycle lanes and routes. A recently concluded (2009) feasibility study has evaluated the construction of a Class I "Greenway" running the length of Napa County from Calistoga to the Vallejo Ferry.

### **WALKING – PEDESTRIAN INFRASTRUCTURE**

One commonly overlooked transportation mode is walking. Subdivisions that were built in the 1960s and 1970s were often built without sidewalks reflecting a presumption that all travel would be by car. Sidewalks, crosswalks and paths create links between homes and activity centers, among different activity centers, and to and from transit stops. The design standards of sidewalks, paths and crosswalks have been a topic of increasing interest in the past few years. The Safe Routes to Schools and Safe Routes to Transit programs promote good designs that enable better visibility and security for users. The requirements of the Americans with Disabilities Act also have promoted improved design so that wheelchairs and other mobility-limited persons can use pedestrian facilities.

### **RAIL**

There are currently railroad tracks located generally alongside SR 29 between St. Helena and the Solano County line at American Canyon. There is another spur line that runs between the north side of American Canyon (also known as "Napa Junction") eastward to the Solano County line near Cordelia. This corridor is generally only one-track with limited bypass opportunities for trains. Thus, train operations are somewhat challenging to provide. The Napa Valley Wine Train operates as the sole service on these tracks. Some freight service also operates on these tracks. There is another track line which extends from south of Sonoma at the Sonoma County line to this track south of the Airport Industrial Park.

### **WATER TRANSPORTATION**

The Napa River, which flows 55 miles from Mt. St. Helena to San Pablo Bay, is dredged part way, and can accommodate barges up to 100 feet wide, which provides the opportunity for industrial transportation, particularly for the American Canyon area. Boats can motor up the Napa River as far as the First Street Bridge in the City of Napa, although speeds are restricted above Curtting's Wharf. The City of Vallejo operates the **Baylink** passenger ferry service to the Embarcadero, in San Francisco from Downtown Vallejo seven days a week. This service has recently been transferred to the Water Emergency Transportation Authority, an agency created by the State. Ferry rider surveys show that 22 percent of the users of this ferry are from Napa County.

### **AIR TRANSPORTATION**

Currently, there is no commercial air traffic allowed into Napa County, and no major airports are in adjacent counties. Napa County Airport is located on the periphery of the very complex San Francisco Bay Area Class B airspace environment. Although there is no commercial service at the Napa County Airport, a large number of private planes are hangared there and charter services are available.

## Travel Demand

### JOURNEY TO WORK

When compared to other areas in California and the US, the average Napa County resident commuter enjoys a relatively satisfactory work trips. However, a significant factor in commute patterns is the variability in housing costs. Because many visitor industry, agricultural and retail jobs pay relatively low wages, the persons who fill these jobs often must come from other counties. (The strategy presented on page 4-35 contains a more extensive discussion on the travel implications of the local jobs/housing balance.)

There are many issues related to meeting the transportation needs of workers in Napa County including:

Agricultural workers. These workers often need to move from site to site throughout the day, and they often travel long distances to reach Napa Valley. There have been efforts to consider how to serve the transportation needs of these workers through van programs so that they can have coordinated mobility while performing their jobs.

Employer-based commuter programs. Many local employers provide coordination to reduce parking needs on-site and to provide workers with better transportation to and from work. These are supplemented through the Solano Napa Commuter Information (SNCI) service, which provides ridesharing and transit information and assistance working with employers. NCTPA hosted a Napa Major Employers Commute Summit 2008 to better inform these employers of the concepts and benefits associated with Transportation Demand Management programs.

### SCHOOL, AFTER SCHOOL AND CHILD CARE TRANSPORTATION NEEDS

Napa County currently has about 20,000 children enrolled in public and private schools. The largest school sites are high schools which report substantial activity during the times when schools begin and end. School starting times are similar to those for morning commuter traffic, combining to make some corridors even more congested. This is especially true for students who live in American Canyon but attend high school in Napa. The construction and opening of a new high school in American Canyon in 2010 should help to reduce traffic volumes on SR 29 once the facility is opened.

State Law requires school districts which operate more than one elementary, middle or high school to establish a policy of intra-district open enrollment. As parents are able to choose schools further from their homes, they are often required to either chauffeur their children or to have them ride a bus. If the parents drive the students, this then can contribute to creating more auto pollution and energy use, as well as create localized congestion around the schools. In Napa's elementary schools, parents identify safety as one of the primary reasons they drive their children school although studies clearly show that children would be much safer walking or riding bicycles.

Another school-trip challenge is the provision of after school care options. A related issue is that parents need to coordinate student schedules with their own work schedules.

There are two major colleges in Napa County. Napa Valley College's main campus, located in the southwest portion of the City of Napa, has no housing on-site, so all students must commute to school. The orientation of the schedules and types of students result in the college adding many trips during peak hours.

### **SHOPPING TRIPS**

Shopping trips represent about 20 percent of all trips during the day. These trips are often made evenly throughout the day, but many key shopping trips are made in the afternoon peak hour. The locations of retail activity in Napa County tend to be focused in downtowns or in shopping centers. There is some strip retail in some cities in other areas. Historically, the most active downtowns in Napa are in the City of Napa, the City of St. Helena and the City of Calistoga. These districts feature on-street parking and municipal parking areas.

### **VISITORS**

The visitor travel market is very important for the economics for Napa County. Attracted by the wine industry, unique scenery and hot springs (Calistoga area), the visitor industry has expanded to include hotels, spas, restaurants and specialty retail activity that attract tourists. A major visitor profile study indicated a total visitor level of 4.7 million "person trips" (1 person for 1 day) per year. The study showed that although wineries were the predominant type of destination that visitors chose, downtown areas were destinations of 30 to 40 percent of all visitors sampled. This suggests that the downtown areas require careful planning to not only serve local residents, but to carefully accommodate visitors as well. Another key finding was that the flow of visitors and relative spending by visitors fluctuates substantially during the year. The tourist activity is highest during the spring months, and lowest in the winter.

### **GOODS MOVEMENT**

A driver may be frustrated by the additional slow traffic created by trucks in Napa County. However, these trucks are essential for the movement of goods and for the economic health of the county. Goods take many forms – supplying local retail and restaurants, importing and exporting essential products for the agricultural and wine production industry, and other essential trucking activity such as construction materials and equipment. Napa County also experiences some through-movement for goods that are being transported to Sonoma or Lake Counties. There are millions of tons of commodities that flow in and out of Napa County. Of the various commodities, the greatest shares are associated with the wine industry.

## **Funding and Programming**

The implementation of transportation improvements is significantly driven by the amount of funding available and the categories of funding available. There are many public funding sources that are the backbone of transportation projects and programs. The public funding sources come from Federal, State and local sources. The details of transportation funding sources, accounts, programs, and financing are extremely complex. Chapter 2 describes the major processes by which the funds are currently provided and spent.

The ability to mobilize funding for transportation projects requires years of advance planning. This includes detailed project studies, environmental clearances, detailed design studies, right-of-way acquisition and utility planning before construction can begin. Other transportation programs are required to maintain and operate the roadway and transit systems at adequate levels. Many projects receive earmarked funding as a special award or a dedicated funding source. This environment means that most projects must be named as part of a formal planning program. Chapter 2 describes in more detail some of the various specific transportation programming channels.

### III. PROJECTIONS FOR 2035

Looking carefully at how Napa County will grow and change in coming decades provides critical context for the various strategies and policy concepts in this document. Within this chapter, the detailed projections of the future are presented to provide a clearer understanding of how the past can guide the future. It is important to note that, as of the drafting of this report, the State of California and the San Francisco Bay Area are involved in new ventures to modify the modeling of and planning for future growth in the region. Within the next few years, we expect to see new methods and requirements that will integrate transportation, land use and housing projections. In general, we expect that these new approaches will reinforce current trends to focus regional growth in the central urban core and further reduce growth projections in Napa County.

According to the Association of Bay Area Governments (ABAG), Napa County is forecast to add more than 9,000 households by 2035, As Table 3-1 shows, this growth is projected at 18 percent over this 27 year period, or an annual growth rate of .66 percent. This is a moderate pace not much different than the Bay Area as a whole (24 percent). The growth in households is similar to that in Sonoma County, but Solano County is projected to grow much faster.

**Table 3-1**  
**Change in Households by County 2008 to 2035**

Geography	2008	2035	Growth 2008 to 2035	
			Growth	% Growth
Napa County	50,590	59,650	9,060	18%
Solano County	148,256	196,220	47,964	32%
Sonoma County	188,316	219,980	31,664	17%
Bay Area	2,651,180	3,292,530	641,350	24%

Source: ABAG, Projections 2007

More significantly, the number of jobs in Napa County is forecast to grow by 34 percent, as shown in Table 3-2. This growth again is significantly higher and represents an increasing imbalance between the number of resident workers and jobs. However, ABAG projects a general imbalance across the entire Bay Area, and anticipates that some of this imbalance is to be absorbed by an increase of retirees in the work force. It is noteworthy to see that Sonoma and Solano Counties are projected to have an even higher discrepancy between job and household growth. Sonoma County will also increasingly be an “employment” county, drawing workers from other, neighboring counties.

**Table 3-2**  
**Change in Employment by County 2008 to 2035**

Geography	2008	2035	Growth 2008 to 2035	
			Growth	% Growth
Napa County	73,492	98,570	25,078	34%
Solano County	157,042	227,870	70,828	45%
Sonoma County	230,384	344,290	113,906	49%
Bay Area	3,596,208	5,247,780	1,651,572	46%

Source: ABAG, Projections 2007

The projected growth in Napa County is not anticipated to be even throughout the county. Some portions of the county will grow at a much faster pace than others will. The increase in single-family households by subarea is primarily anticipated in the Cities of Napa and American Canyon. These areas are forecast to be the locations of over 5,630 of the 7,426 new single family households, as shown in Table 3-4.

**Table 3-4**  
**Change in Single Family Households by Subarea in Napa County 2007 to 2035**

Jurisdiction Boundary	2007	2035	Growth 2007 to 2035		
			Growth	% Growth	% of Total
City of Napa Area	24,722	29,196	4,474	18%	60%
Airport-South Napa Area	150	175	25	17%	0%
American Canyon Area	3,259	4,415	1,156	35%	16%
Eastern Napa Highlands Area	5,111	5,784	673	13%	9%
Yountville-Rutherford Area	2,585	2,854	269	10%	3%
St. Helena Area	2,687	3,036	349	13%	5%
Calistoga Area	2,533	3,014	481	19%	6%
<b>Napa County Total</b>	<b>41,047</b>	<b>48,473</b>	<b>7,426</b>	<b>18%</b>	<b>60%</b>

Source: Solano-Napa Model 2007 adjusted for Projections 2007; DKS Associates, 2008

Like housing, the growth in jobs in Napa County is expected to occur mostly in the southern part of the county. The jobs growth is most pronounced in the Airport Industrial Park area, with over half of the new County job growth expected here. Job growth is also expected in American Canyon. Job growth in other areas is expected to be moderate, but significant.

With these various land use changes and transportation projects, commuting patterns of workers are expected to change in Napa County. These changes are noteworthy in that the patterns for residents and employees are forecast to differ.

## IV. PROPOSED STRATEGIES

Given the interacting goals, principles challenges and trends outlined so far, there is clearly no single, big project solution to Napa's future transportation needs. To guide the Napa County Transportation and Planning Agency in this task, Napa's Transportation Future proposes a portfolio of strategies in two broad categories:

1. SUPPLY STRATEGIES that address the traditional challenges of supplying basic transportation infrastructure to the community.
2. DEMAND STRATEGIES that take a complementary approach and attempt to reduce need for transportation services. In particular, these are strategies to reduce the demand for single occupancy vehicle travel. In this model, it is just as important to pursue policies that will restrain or reduce travel service demand as it is to build and maintain our streets roads and transit systems.

For each of the strategies summarized below, Chapter 4 outlines the specific purpose, the strategic goals addressed, benefits and costs for each.

**SUPPLY STRATEGIES** that address the traditional challenges of supplying basic transportation infrastructure to the community. These include

- **Streets and Roads I: Maintain Critical Street and Road Infrastructure**

Street and road maintenance is increasingly a concern in Napa County. Under normal conditions, road pavement has a life span of 20 years, requiring regular maintenance. The Bay Area is one of the first regions in the country to implement a pavement management system that is used by nearly all of its localities. Currently (2008), Napa's streets and roads rate at the bottom of the Bay Area. Four out of six jurisdictions are rated by MTC as "at risk" and a significant percentage of the roadway system is in need of rehabilitation. If "at risk" roadways are not rehabilitated, they will begin a precipitous decline that will require much more expensive repair work. In addition, proper striping, street cleaning, street light replacement and traffic signal maintenance are all ongoing expenses which local governments must bear. Without adequate resources, this investment will fall into disrepair.

- **Streets and Roads II: Invest in Strategic Road System Expansion in South County**

Unlike much of Napa County north of the City of Napa, the southern part of the county has been experiencing significant development, and this is projected to continue. In addition, this stretch of roadway is increasingly being used as a pass-through corridor both for Napa's workers who live in Solano County and for traffic between Solano and Sonoma Counties. In fact, while Napa's growth is projected to remain modest, the two counties that border Napa on the East, West and South are expected to show large increases in population and employment. Napa will be caught in the middle of this growth. The south county area is within commuting distance of major employment centers in the rest of the Bay Area and a higher percentage of South County residents work out of the county. In addition, this part of the county lies between employment centers and attractively priced housing in Solano County causing significant commute hour traffic both into Napa and through Napa into Sonoma and Marin Counties. The area is also the main location in Napa County with expected future residential and nonresidential development.

- **Streets and Roads III: Convert High Frequency Intersections to Roundabout Configuration**

A modern roundabout is a circular intersection with design features that promote safe and efficient traffic flow. Roundabouts can reduce delay at intersections (as compared with all-way stops or signals) and can be cheaper to implement than installing traffic signals. Extremely popular in Europe (France has mandated conversion of its entire road system), roundabouts can also provide major benefits in terms of emissions reductions and safety. Considering the advantages of this type of facility, more roundabouts could be encouraged to be built in Napa County, especially at those locations with high crash records, large traffic delays, complex geometry, frequent left-turn movements, and relatively balanced traffic flows.

- **Streets and Roads IV: Build Bike Paths and Sidewalks**

This Strategy provides essential support for the objective of substantially increasing the level of bike and pedestrian activity by building an expanded system of bike paths and sidewalks. It is recognized that adequate infrastructure must be in place to encourage people to walk and bike more. In conjunction with this construction, public leaders are encouraged to personally and actively promote these activities.

- **Streets and Roads V: Create Satellite Park-and-Ride Sites**

Place lots at the edge of cities that will allow drivers to leave their cars and use public transportation to move around the cities.

- **Streets and Roads VI: Promote Bypass-road and transit strategies to address pass-through traffic**

Particularly at the Southern and Northern ends of Napa County, there is growing traffic load associated with cars attempting to pass through Napa. In large part, there are no major connector roads in Napa either moving North/South or East/West. As regional growth continues, whatever the internal growth may be in Napa, there will be continually increased pressure from the surrounding communities. Specifically, job growth in Sonoma County is drawing workers from areas with lower cost housing in Solano County affecting the local roads in south Napa County, particularly the linked segments of Highways 12 and 29 and 121. A similar situation exists in the northern part of Napa, where lower cost housing in Lake County is matching employment growth in Sonoma County, putting pressure on the northern portion of Highway 29 as it links to Petrified Forest Road to Santa Rosa.

- **Public Transit I: Increase Transit (Bus) Service**

The current public transit system in Napa County is accessible for most people who do not want to drive. However, the current “headway” (time between buses) for most transit routes is about 60 minutes, which reduces the attractiveness of the service. Transit ridership could be increased by reducing the headway for most transit routes including express and local services from 60 minutes to 30 minutes. Additional strategies for increasing transit ridership include specific marketing, advanced information systems, better bus stops, better customer service, providing additional destinations (e.g. BART). Our current transit ridership is heavily made up of lower income, transit-dependent riders. Increasing the reliability and usefulness of the system for these riders will require a very different set of investments than would be required to attract tourists who are looking for an upscale “Napa Style” travel experience. A survey of 90+ businesses in the hospitality industry done for this report by the Napa Valley Conference and Visitors Bureau clearly indicated that visitors would not be attracted to the kind of workaday system much of Napa county needs. NCTPA should also explore providing special focused service matching concentrations of employment and workforce residence, both in Napa County and in neighboring counties (primarily Solano County)

- **Public Transit II: Actively Explore Creating a Passenger Rail System**

This strategy envisions scheduled passenger train service from the Vallejo Ferry Terminal to a site in the City of Napa with trains running throughout the day. An initial step might be connection between the City of Napa and the concentrated job centers in the southern part of the county (between the cities of Napa and American Canyon). These systems would include coordinated bus service to extend transit travel further north as well as local shuttles to connect stations to job and home sites. A fundamental element to the design and marketing of such a train would be its connection with core community values of protecting the quality and integrity of Napa's core agricultural activities. An important quality of rail is its potential to provide non-auto connectivity with a full-spectrum regional and national travel network of trains, allowing people to come to Napa from anywhere and find connection to all essential access points without a car. Examples of such systems that provide connections at all transportation scales are available in many places of the world, including Europe.

- **Public Transit III: Explore Development of a Bus Rapid Transit System**

During the last decade, bus rapid transit (BRT) has revolutionized regional transportation planning in much of the developing and developed world. Operationally, BRT applications can include buses running on exclusive rights-of-way with dedicated stations and pre-boarding fare payments, or buses operating in mixed traffic lanes on city arterials. BRT's often can transport as many passengers as most conventional light rail systems at a fraction of the cost. Thus, while Rail may prove to be a viable solution for Napa, BRT should also continue to be investigated, especially in the southern part of the County.

- **Public Transit IV: Promote Energy Efficient and Environmentally Benign Transit Systems**

Reduction of Greenhouse Gas (GHG) emissions has become a major state, national, even global priority. In Napa County the large majority of our GHG emissions come from the transportation sector. To reduce this GHG level, an initial assessment has recently (2009) been developed for each jurisdiction as well as the community as a whole. This assessment will be the basis for a series of action plans to reduce emissions to specific targets. Of course, a major approach (detailed in the "Demand Strategies" section of this report) is to reduce overall vehicle miles traveled. Other strategies can include encouraging use of lower emission or no emission vehicles. Low emission technologies apply to cars, trucks and buses, as well as motorcycles, boats and trains.

- **Information Systems: Real-time Bus tracking, Traffic Light Synchronization, "Dial 511" transportation information**

People tend to choose travel modes based upon past experiences and behaviors. If better information about mode choice options were made available at strategic locations, people may choose to not make certain trips or to change modes rather than drive.

- **Other Infrastructure Supply: Maintain Options for Water Transportation, Promote Freight Rail in South County, Support a Full Integration of Air Transportation Connections**

Freight Rail: The Napa Valley has many industries that import and export goods. For example, the wine industry imports supplies to manufacture wine (such as glass bottles) and then exports the final goods. The concentration of industrial and warehousing facilities in the South County industrial and business parks, where freight lines are already available offers opportunities to expand these services.

Air: Air taxi service, corporate jet and fractional ownership jet traffic is increasing. Strategic growth in airport operations should be carefully coordinated with the development of connecting transportation services including roads and public transportation.

Water: Baylink ferry rider surveys show that 22 percent of the users of this ferry are from Napa County. Consideration of extending the ferry route up the Napa River would provide another ferry option for Napa County residents perhaps with smaller boat service directly to a location in southern Napa County. This would require an entirely new water transit system.

**DEMAND STRATEGIES** that take a complementary approach and attempt to reduce need for transportation services. In particular, these are strategies to reduce the demand for single occupancy vehicle travel. In this model, it is just as important to pursue policies that will restrain or reduce travel service demand as it is to build and maintain our streets roads and transit systems.

- **Compact Land Use Development I: Promote Workforce Housing Production Near Jobs**

Addressing the scarcity of workforce housing throughout Napa County is one of *the* keystone strategies for transportation, and for overall sustainability in the community. With land values driven up by our exceptional quality of life, essential community workers, including teachers, public safety officers and even middle management staff in businesses throughout the county are increasingly forced to find homes outside the county – not to mention our lower wage workforce in critical wine, agriculture, hospitality and retail business sectors (the fastest growing employment sectors in Napa County!)

- **Compact Land Use Development II: Promote Urban Design and Infrastructure Development policies to encourage Bike and Pedestrian activity**

Town centers in Napa County are clearly defined and are popular for both residents and tourists. This strategy supports development of convenient and safe paths within town for pedestrians and bicyclists as a way to reduce traffic and parking activity in town centers. Key ingredients include sidewalks, crosswalks, bicycle paths and lanes, and bicycle parking. Also important is careful placement of transit shelters and stops which can become important gateways for traveling between town centers in the County.

- **Compact Land Use Development III: Promote Safe Non-Auto Routes to School, and After-School Programs**

Safer routes for students who go to school or day care by walking or bicycling should be developed. Improvements could include wider sidewalks, better crosswalks, and improved lighting. Such safeguards would be focused in areas close to schools. For the students who take buses, the same improvements could be made between the school bus stop and the students' home. This might reduce the auto trips around the school during school peak periods.

- **Compact Land Use Development IV: Promote Well-Located Health and Social Service Delivery to Minimize Travel**

Medical and social service agencies in Napa County are often centralized at a single location, often in the City of Napa. For example hundreds of people from American Canyon journey to Napa each week for medical services. Providing locally-accessible services can help to reduce the need for auto travel by residents across the county, especially those who frequently have transportation challenges. St. Helena Hospital is also a major provider of health and medical services and people travel from throughout the

County to take advantage of those service. As in the south, expansion of locally provided services could reduce transportation challenges.

- **Compact Land Use Development V: Institute comprehensive growth management guidelines that cover all jurisdictions**

No comprehensive approach to transportation planning in Napa County is possible without a clear understanding of the many forces that are driving growth in the County. Fortunately, Napa County is small enough and contained enough so that coming to such an understanding is more attainable than it might be in larger, more complex communities. Nonetheless, to develop such a clear picture will require a concerted cooperative effort by all Napa's jurisdictions, economic sectors and interest groups.

- **Partnerships I: Work with the Wine and Hospitality Industries to Create and Promote Car-Free Tourism Services**

Information for tourists who wish to minimize driving while in Napa can be encouraged and more widely provided. This can include how to take public transit, the ferry, how to make efficient air connections, the availability of shuttles and tours, and how to get around Napa destinations by biking and walking. This includes information for both pre-trip planning and for use once visitors have arrived here. Supportive local signage can also be significantly expanded to make the system more comprehensive and useful.

- **Partnerships II: Address the Special Transportation Needs of a Growing Senior Population**

The senior population of Napa County is expected to grow from 21,000 residents today to 37,000 by 2030 – and increase from 15 – 25 percent of the total population! While many of the seniors will be active, they are a key target population. As residents age, they will increasingly need to have their individual transportation system needs met. This includes the provision of paratransit services to reach medical and other destinations, and improved accessibility to get to locations in and around their communities.

- **Partnerships III: Work with Employers to Encourage Alternatives for Commuting and Mid-Day Work Trips**

People drive to work alone either because there may not be a convenient alternative, such as a carpool or a bus route or because they must make midday work trips. To attract more commuters to use other modes, the entire “system” of travel has to be convenient to the users. For traveling to work, commuters would benefit from express buses during morning and afternoon peak hours. Additionally, much more can be done to provide effective incentives, both to individuals and companies, to use alternative modes.

- **Partnerships IV: Parking Pricing Strategies**

This Strategy addresses ways of charging users directly for parking facilities and services, and the impacts this has on vehicle travel. Parking pricing provides revenue and cost recovery, encourages more efficient use of parking facilities, reduces parking facility costs and land requirements, reduces vehicle traffic and encourages use of alternative modes. Parking strategies can be extremely varied and range from the simple to highly complex. There has been extensive research on the many ways to implement parking pricing strategies.

## V. EVALUATION OF PROPOSED STRATEGIES – SEVEN SCENARIOS

The benefits of the above Strategies are evaluated in seven scenarios (including a baseline scenario), each of which contains a different “package” of individual strategies. Because many of the strategies are complementary, the evaluation process also accounts for possible synergistic benefits (and also takes care to not double-count the benefits of two different strategies.) For example, increasing park-and-ride lot locations and exploring a rapid bus system are two strategies that have complementary advantages. However, it is also important to not assume that ridership growth resulting from a rapid bus system is not above and beyond that created from park-and-ride lot availability.

Each scenario contains a package of improvements. The benefits of each of the change scenarios are compared to the baseline.

It is important to keep in mind that the travel model forecasts are not the sole measure of benefit from these Strategies to a community. Many of the strategies are expected to create a myriad of benefits for the community. One example is how an active “Safe Routes to Schools” program encourages non-auto school transportation. In January 2007, a UC Berkeley Study (*Safe Routes to School: Safety & Mobility Analysis*) found increases of 20 to 200 percent in students walking or biking to school, compared to pre- Safe Routes conditions. Typical changes included sidewalk and connectivity improvements, crosswalk treatments, bicycle treatments and other related design improvements.

1. **Scenario One: Baseline Trends.** This scenario demonstrates what is anticipated to happen if a strategy is not adopted, and trends continue as projected.
2. **Scenario Two: Adopt Strategies without land use changes.** This scenario demonstrates what would happen if the strategic plan is implemented without land use pattern changes.  
**Input Assumptions.** All of the “supply” strategies, or transportation network improvements, are incorporated in this scenario. Transit services were also increased. To represent better pedestrian connectivity within urban areas, achieved by construction of new bike/pedestrian facilities) the average walk/bicycle speed was increased from 5 to 10 miles per hour. In the model, this results in local bike/pedestrian trips being more attractive and thus more frequent.  
**Findings.** At peak hours, this group of strategies taken in combination results in reductions to both vehicle miles of travel and vehicle hours of travel. However, the low-density development pattern in Napa County, especially for commercial and service activity centers, results in single occupant auto driving remaining dominant. Still, the overall effect of the strategies is estimated to achieve some of the target reduction goal.
3. **Scenario Three: Adopt Strategies with land use changes.** This scenario demonstrates what would happen if the full package of strategies is implemented with housing shifted to be closer to jobs.  
**Input Assumptions** The specific scenario was developed by relocating future housing increases into already urbanized areas. For example, homes projected to be built outside of St. Helena and Calistoga (relatively small numbers) were assumed to be built *in* those towns instead. The impact is greatest in the transferring of units from locations outside of the City of Napa to the Napa Pipe property and to areas next to the town centers of Napa and American Canyon.

**Findings** This scenario builds upon Scenario Two so many of the estimated benefits presented in that section are repeated with this scenario. Unlike the scenario two, this scenario does not show a further reduction in vehicle miles of travel or vehicle hours of travel. The benefit is most significantly absent during the PM peak hour. The reason for this is somewhat related to the locational choices in Napa County. For this scenario, shifting housing growth to areas that are closer to employment growth areas generates a basic dilemma: because these same areas are the most congested, they are also sited for employment rather than community facilities and other activities. During the PM peak hour, these people must travel to other areas to get to retail stores and other community attractions. **Thus, adding residents in high employment districts without enabling more retail and community services is forecast to actually increase vehicle miles of travel and vehicle hours of travel during the PM peak hour.**

4. **Scenario Four: Slower Growth – Shift Job Growth to Solano County.** This scenario demonstrates what is anticipated to happen with no employment growth beyond that already underway in Napa County, with the same increment of Napa's projected employment growth transferred to Solano County.

**Input Assumptions.** Employment growth already underway within Napa County is assumed to be half of the projected employment growth by 2035. Growth also continues as projected in other counties. This assumption uses the same roadway network as the baseline trends scenario detailed in Chapter 3.

**Findings.** In this scenario, several of the key measures of effectiveness are found to proceed positively when compared to the baseline year. The overall findings are that the peak hour vehicle miles of travel and vehicle hours travel by Napa residents between Napa County and other counties would increase, and would fall for the rest of the trips with at least one end within Napa County. Also, there would be a slight increase in the average distance (vehicle miles per trip and vehicle hours per trip) at peak hours. These findings are not surprising, with the employment growth in Napa County transferred to be in Solano County.

5. **Scenario Five: Auto Operating Costs Increase.** This scenario demonstrates what would happen if automobile operating costs increase significantly to the point where behavioral changes occur. This has been tested on the base of Scenario 3 – Strategy Adoption *with* land use changes.

**Input Assumptions.** This scenario is tested as if the "strategic plan *with* land use changes" (scenario 3) is implemented. Research from the Congressional Budget Office suggests that each 20 percent increase in gasoline costs results in 0.4 percent less vehicles driving on the roads in California. Assuming that the price of fuel grows by 200 percent in real dollars, the estimated vehicle reductions is expected to be 4 percent.

**Findings.** The increase in auto operating costs results in minor and insignificant variations at peak hour. The primary reason is that the basic assumptions of trip making are not shown to be sensitive at peak hours. However, the model does not take into account the possibility of generalized reduced trip making throughout the day, as well as the resulting "trip chaining" that would occur because people would be more likely to link their trips, or achieve more personal benefit (such as buy more groceries) when they do drive. Comparison of this alternative to the baseline suggests that an increase in gasoline price would result in a lowering of both vehicle miles of travel and vehicle hours of travel. More significant results are the potential for a profound increase in transit use, bicycling and walking with a much greater gasoline cost.

6. **Scenario Six: Adjust jobs/housing Projections for Solano and Sonoma Counties.** This scenario looks at potential mitigation of congestion that is projected as a result of future increase in commute traffic between Solano and Sonoma counties

**Input Assumptions.** This scenario demonstrates what is anticipated to happen if Solano and Sonoma Counties were to work towards a more balanced jobs/housing scenario in each county. The scenario added 15,000 households to Sonoma County and subtracted 10,000 jobs, with the opposite done for Solano County. This assumption uses the same roadway network as the future baseline trends scenario detailed in Chapter 3.

**Findings.** In this scenario, several of the key measures are not significantly different compared to the baseline scenario. Peak hour vehicle miles of travel and vehicle hours travel by Napa residents between Napa County and other counties would not vary overall. There are some projected slight increases in VHT in the AM peak hour, and slight decreases in the VMT in the PM peak hour. This can be understood in that new working commuters expected to drive from Solano County to Sonoma County are not directly shown in the summary tables; only trip ends that have one portion in Napa County are shown.

7. **Scenario Seven: “What It Would Take” to achieve our strategic goal.** This scenario demonstrates one way to imagine the scope of changes that might be required to reach our goals by aggressively pursuing the full range of strategies.

**Input Assumptions.** This scenario demonstrates what could happen if the alternative modes recommendations in the strategy are pursued aggressively, and if an additional parking charge is levied for commuting in the county to further add disincentives to driving. In this scenario, all county-wide bus routes are assumed to operate every 10 minutes. The bicycle attractiveness is increased to what is reflected in Davis, California today. The pedestrian accessibility is increased by 5 times what it is considered today. The parking costs are assumed to be \$1.50 per hour for workers. This assumption uses remaining assumptions as Scenario Three.

**Findings.** In this scenario, several of the key measures of effectiveness are found to proceed positively when compared to the baseline scenario. The overall findings are that the peak hour vehicle miles of travel and vehicle hours travel by Napa residents between Napa County and other counties would increase, and would fall about 4 to 6 percent for both the AM and PM time periods, for the rest of the trips with at least one end within Napa County. Also, there would be a slight increase in the average distance (vehicle miles per trip and vehicle hours per trip) at peak hours. The number of peak vehicle trips rises, resulting in higher VMT and VHT per vehicle trip. This occurs because the bulk of these strategies are designed to shift persons from driving for intra-community trips, so that the remaining vehicle trips on the system are those that are traveling to other communities and counties, effectively raising the VMT and VHT per vehicle trips. The bulk of the advantages from this Scenario is shown for trips within Napa County, as these would be these intra-community trips. The estimated combined mode share between transit, bicycle and walk would rise from 7 percent (in the baseline scenario) to 27 percent. The aggregate effect would be dampened somewhat by persons traveling to and from other counties, as the mode share would grow from less than 1 to almost 2 percent.

## ADDITIONAL OVERALL FINDINGS – THE SIGNIFICANCE OF PASS-THROUGH TRAVEL

There are several relevant analyses which provide some indication of limitations of implementing strategies only within Napa County. As Napa County contains only a small part of the Bay Area population and employment and because this number is significantly lower than the population and employment in Solano and Sonoma Counties, the resulting effect of strategic changes on congestion is somewhat limited due to the essentially fixed percentage of trips within Napa County compared to through trips. When the Solano-Napa travel demand model is run to assess the proportion of through trips, it shows that many of the vehicles that travel on State Route 12, as well as those traveling on SR 29 from Lake County, are making through trips – estimated at between 40 to 60 percent of all vehicles on these roads. The through trip percentage is lower on State Route 29 in southern Napa County, as this road primarily serves persons who are traveling into and out of Napa County. The importance of this is that strategies that deal with movements on SR 12 and on SR 29 from Lake County should be considered more regional in nature.

## HOW THIS REPORT WAS MADE

This Study is made possible by a Caltrans “Community-based Planning” grant. This program focuses on community involvement and in this case specifically on the relationship between transportation and land use. With the support of this grant Napa’s Transportation Future” has been developed using an energetic community-based strategy. Over the course of this planning project, staff has held more than 100 meetings with governmental, public interest and advocacy groups. In addition to these special purpose meetings there were two series of general, open public meetings, in the fall of 2007 and the spring of 2008, each of which had three meetings for a total of six. Also in the fall of 2007 Napa’s Transportation Future hosted a Speakers Series with six outside experts to bring national transportation experts to the community – see appendix for full description of the speakers and the topics they covered. A “Major Employers Summit on Employee Commuting” was also held in February 2008. Finally, in the spring of 2008 a special expert panel public forum on transportation strategies was held in downtown Napa. The project had a web site active for the duration of the project linked to the NCTPA home page.

Several additional special surveys and studies were conducted in coordination with or simultaneous to the development of this document:

- Napa Valley Conference and Visitors Bureau – transportation survey
- Napa Valley Vintners– transportation survey
- Napa County Greenway Feasibility Study
- Napa Valley Unified School District Demographic Study Update
- Napa Valley Coalition of Nonprofit Agencies/Healthy Aging Population Initiative (**HAPI**) – senior survey

The process has been guided by two active oversight/advisory groups:

A **Steering Committee** made up of representatives from the staff of each city/town/county, mostly from the public works and planning departments. They have met approximately monthly. In addition there has been a **Citizens Advisory Committee** (CAC) made up 14 members of the public representing a wide range of interest groups. The CAC met nine times, approximately every other month for two years in 2007 and 2008. Additional groups have also been regularly included in consultation. The names of members of these key committees are listed on the inside cover of this report. Key staff from NCTPA and our consultant team can also be found listed on the inside cover of this report.

## COMMUNITY OUTREACH

The following list includes groups that received presentations and other opportunities for the general public to comment on Napa's Transportation Future:

1. Napa Leadership Luncheon
2. Napa Valley Economic Development Corporation
3. American Canyon Open Space Committee
4. North Bay Association of Realtors
5. KVON Radio Show
6. Hispanic Network Meeting
7. Napa County Farm Bureau Land Use Committee
8. Napa City Council
9. Transportation Speakers Program - Dr. Richard Jackson
10. NVEDC Health and Wellness Meeting
11. NCTPA Bicycle Advisory Committee
12. Napa Valley Wine Train – Management
13. Napa Group Sierra Club Political Committee
14. Napa Chamber of Commerce – Board of Directors
15. Transportation Speakers Program – Reid Ewing
16. Adult Day Services of Napa Valley – Senior Summit
17. Friends of the Napa River
18. Calistoga City Council
19. NCTPA Paratransit Coordinating Council
20. Boys and Girls Club of Napa Valley
21. Napa Sustainable Winegrowers Group
22. Calistoga Family Center
23. Workforce Investment Board
24. COPIA management
25. Napa Coalition of Non-Profit Agencies
26. Transportation Speakers Series – James Corless, MTC
27. di Rosa Preserve
28. Napa Valley Community Housing
29. Democrats of Napa Valley Club
30. NCTPA Bicycle Advisory Committee
31. Transportation Speakers Series– Kim Baenisch – Marin County Bike Coalition
32. Farmworker Housing Committee
33. KVON – “Everybody’s Business”
34. Community Resources for Children
35. St. Helena Star Editorial Board
36. Napa County Park and Open Space District
37. Arts Council of Napa Valley
38. Yountville Chamber of Commerce Board
39. Board of Supervisors
40. St. Helena City Council
41. St. Helena Chamber Government Relations Committee
42. Community Action of Napa Valley
43. Business Information Network
44. Hess Collection Winery
45. Winegrowers of Napa County
46. Coalition of Non-Profit Agencies - Second meeting
47. Transportation Speakers Series - Mike Jones
48. KVON Radio Show
49. Silverado Creek Residents (NVCH)
50. Napa Valley Vintners – Community and Industry Issues Committee
51. Transportation Speakers Program – Rick Williams
52. Napa Chamber ITT Committee
53. Napa County Clean Air Coalition
54. Napa County Office of Education
55. Weekly Calistoga Editorial Board
56. American Canyon Eagle Editorial Board
57. American Canyon City Council
58. NCTPA Paratransit Coordinating Committee
59. American Canyon Family Resource Center
60. Yountville Sun Editorial Board
61. Greater Napa Kiwanis – September
62. American Canyon Public Meeting
63. California Appraisers – Napa Chapter
64. Napa Valley Unified School District
65. Yountville Town Council
66. Airport Land Use Commission
67. Napa Public Meeting
68. Calistoga Chamber of Commerce
69. Napa County Airport Manager
70. Veterans Home – Allied Council Exec Cttee
71. St. Helena Public Meeting
72. Veterans Home – Full Allied Council Meeting
73. Napa County Airport Advisory Commission
74. Second Wednesday Group
75. Child Care Planning Council
76. Napa Downtown Association
77. Rohlffs Manor
78. Major Employer Summit on employee commuting
79. Public meeting on Regional Transportation Plan

- 80. American Canyon Public Meeting – Round 2
  - 81. Napa Public Meeting – Round 2
  - 82. Calistoga Public Meeting – Round 2
  - 83. Napa Chamber ITT Committee
  - 84. Napa Group Sierra Club Executive Committee
  - 85. Napa Solano Greenbelt Alliance
  - 86. NCTPA Paratransit Coordinating Committee
  - 88. Napa County Fire Chiefs Association
  - 89. MTC – RTP Public Meeting
  - 90. Public Forum on draft Transportation Plan - live on Ch. 28
  - 91. Farm Bureau Board
  - 92. Napa Chamber ITT Committee
- + 25 additional individual and 6 institutional comments

## ABOUT NCTPA

The Napa County Transportation and Planning Agency is a “Joint Powers Agency” (JPA) made up of the City of Calistoga, the City of St. Helena, the Town of Yountville, the City of Napa, the City of American Canyon and Napa County. The NCTPA Board of Directors is made up of the Mayor of each City/Town, the Chairman of the Napa County Board of Supervisors plus one additional member from each jurisdiction, including the County representative to the Metropolitan Transportation Commission. NCTPA acts as the transportation program and funding administrator for all member jurisdictions. NCTPA is also the operator of the countywide transit system, “The VINE”, the paratransit system “Vine-GO” and community shuttles/trolley in each of the Cities/Town. NCTPA also convenes as a monthly “Issues Forum” established to provide the county’s elected leadership with an opportunity to discuss significant strategic development issues, including land use, environment, economic development, arts and culture.

## CHAPTER 1: ORIENTATION TO THE FUTURE – VISION, GOALS, PRINCIPLES and CHALLENGES

From the vantage point of early 2009, as this report is being drafted, our community our nation and the world are in the midst of large scale changes.

At a global scale, tumultuous energy markets, a volatile international economy, and the challenge to address global climate change will exert a powerful influence on local transportation and development choices. There is growing pressure to significantly lower energy use and reduce our overall driving, while continuing to protect our environment. In the past year, the State of California and the Bay Area region have begun fundamental changes to the ways in which we will plan for the future, looking to account for the tight interdependence of transportation, land use, housing, demographic change and job growth. [Napa's Transportation Future](#) looks at these big picture changes and offers a strategic perspective on the options we have to respond to them.

Here in Napa, the natural beauty of our community, protected by visionary and popular land stewardship policies, combined with the premier quality of our vineyards and wineries, and our proximity to one of the world's leading cosmopolitan centers, has created a highly desirable destination to live, work and visit. A pioneering flood control project has inaugurated an energetic renaissance in the City of Napa, our main urban center. These are some of the factors that make housing comparatively expensive in Napa which influences many of our local workers to live outside the County. [Napa's Transportation Future](#) examines these local factors, taking into account local goals and principles, and offers a set of possible strategies and approaches to the future.

The trends sketched above have brought steady job growth to Napa County, which, while a sign of prosperity, has been outpacing our modest population growth. The most energetic job growth has been, and will continue to be, at the lower end of the wage scale servicing the agriculture, hospitality and retail business sectors<sup>i</sup>. Over the next ten years, more than 60 percent of the fastest growing job sectors will pay below \$14.50/hr, a minimum "living wage" for two adults and two young children.<sup>ii</sup> This trend, combined with Napa's relatively high housing costs, will increase pressure on workers to live at a distance from their jobs. This in turn will tend to increase traffic congestion and greenhouse gas emissions

As a community, we are growing older and more diverse. Over the next 30 years, our senior (over 65) population will grow from 15 percent to 25 percent<sup>iii</sup> and our Hispanic population will grow to constitute the largest ethnic/cultural sector of our community.<sup>iv</sup> These changes will require alterations in how we run our transit operations by making services more accessible and by communicating even more clearly with Spanish speaking passengers. To top it all off, at current rates of change, the total miles we will drive is projected to increase at nearly DOUBLE the rate of our population increase and the hours of delay to increase at TEN TIMES the population growth rate.<sup>v</sup> All of these forces will continue to bend and mold the future for Napa and all of these trends will influence Napa's Transportation Future. These trends are explored in more detail in Chapter 3.

Transportation accounts for over half of Napa County's greenhouse gas (GHG) emissions<sup>vi</sup> and will therefore be a principal target for the significant GHG reductions that will be required by the California Global Warming Solutions Act of 2006, also known as AB32, its companion bill SB 375, and future regulations.

## Vision

The transportation system of our community is our vital circulatory system and it touches EVERY area of our lives. We depend on our network of streets and roads, our bus systems, bike and pedestrian walkways, our trucks and cars (and even some trains and boats) to move us and our goods efficiently.

**For Napa County in 2035 we envision an attractive, flexible, fully integrated transportation system, with a broad range of options and modes, enabling individuals and goods to move throughout the county in an efficient manner.**

## Goals and associated objectives

### **By 2035, NCTPA strives to:**

- **Goal: Reduce/restrain growth of automobile vehicle miles traveled (VMT)**  
*Objective: 0 percent net growth in aggregate VMT*
- **Goal: Spread the load from peak times to non-peak times**  
*Objective: Shift 10 percent of journey-to-work travel from peak to non-peak times*
- **Goal: Improve the quality and safety of our street and road infrastructure**  
*Objective: Achieve and maintain a countywide Pavement Condition Index of 70*  
*Objective: 0 percent growth in traffic accidents*
- **Goal: Shift travel from Single-Occupancy Vehicles to other modes**  
*Objective: Increase the percent of county trips made by transit to 5 percent*  
*Objective: Increase the percent of county trips made by bicycle to 10 percent*  
*Objective: increase the percent of county trips made by walking to 10 percent*
- **Goal: Reduce overall energy use and greenhouse gas (GHG) emissions**  
*Objective: Reduce GHG emissions from all transportation modes in Napa County to 40 percent below 1990 levels*

Vehicle Miles Travelled: It is important to clarify the *specific* set of “vehicle miles” traveled in Napa County. There are basically four different sources of travel, each with their own characteristics:

1. Travel wholly within Napa County. This includes travel to and from work by people who live and work in the County. It also includes all of the additional in-county non-work trips
2. Travel coming to Napa. The majority of these trips are work-related (approximately 13,000 workers a day coming into Napa – see Chapter 2 for details) but also includes visitors arriving (over 90 percent of visitors arrive by private or rented car<sup>vii</sup>).
3. Travel leaving Napa. The majority of these trips is work-related (approximately 20,000 Napa residents leaving the county for work each day – see Chapter 2 for details) but also includes Napa residents leaving the County for shopping and personal trips.
4. Through traffic. As growth continues in neighboring counties, especially Solano to the east and Sonoma to the west, through trips will become a much more significant issue for Napa.

## Principles

- Transportation and Land use: The relationship between transportation and land use is a key focus of this document. It is clearly recognized that all land use authority remains with the six formal Napa governmental jurisdictions, all of whom make up the membership of the Napa County Transportation and Planning Agency. Any discussions of land use policy in this document are advisory only and offered to stimulate consideration and discussion among NCTPA members. Preserving the agricultural character of our community is understood to be the primary land use objective in Napa.
- Cooperation: Napa’s Transportation Future must be decided cooperatively by the whole Napa community. It is important to assemble diverse perspectives and to use diverse problem solving methods to seek an optimal solution to complex problems like this. This document is the product of two years of extensive community participation.
- Core Values: The “Napa County League of Governments (NCLOG) Principles” adopted by leadership from all six of Napa’s jurisdictions is a key guiding document for Napa’s Transportation Future. The Principles were adopted by the NCLOG “Community Development Strategy Task Force” in 2004 and re-affirmed by the NCTPA Issues Forum in 2008. The full text of the NCLOG Principles is included in the appendix. Some of the most relevant highlights include:
  - **The agricultural character and resources of the County are preserved.**
  - **Collaborative decision-making is the norm. Shared funding and revenue solutions are encouraged**
  - **Consider the impacts of proposed policies, projects and programs on each local jurisdiction, the County, and the region as a whole.**
  - **Encourage mixed use [housing and commercial] and walkable communities around transit nodes.**
  - **Encourage increased housing densities around transit nodes and neighborhood centers.**
  - **Provide sufficient housing to accommodate local jobs and promote a jobs-housing balance while protecting agricultural lands**
  - **Encourage development of health and cultural and recreational attractions and activities to distribute visitor activity throughout the year.**
  - **Link transportation improvements to support local and countywide land use decisions.**
  - **Expand utilization of alternative transportation modes.**

## Challenges

Here are the critical transportation challenges we will face over the next 30 years:

- **Automobile culture.** Perhaps the most difficult challenge is that we have, to a large degree, built our contemporary culture around the freedom and independent mobility provided by the car. Although a majority of our population lives in the City of Napa, we share much of the car culture of more rural and suburban areas and have much less in common with urban centers with abundant mass transit. Our shopping centers, and even local groceries and service businesses are strongly oriented to cars. The vast majority of people in Napa drive to work and most of our children are driven to school in private cars. In Napa, according to the DMV and the California Dept. of Finance, there were 2.6 vehicles per housing unit in 2007<sup>viii</sup> and according to the 2000 Census we drove around 25 miles a day each (for every man, woman and child over 15) <sup>ix</sup>. This is double the mileage per person of more densely populated places like San Francisco. Napa currently has the lowest transit ridership of any county in the region (although we do have one of the highest rates of walking to work!). At the same time, of those who DO already ride transit in Napa County, we have the highest rate in the Bay Area of people who don't have other ways to get around (either because they don't own cars or are too young) – our existing riders depend on the transit system for basic transportation.
- **Bisected communities.** In three of our Cities – American Canyon, St. Helena and Calistoga, historical development patterns have resulted in communities bisected by major State-administered roads. This severely limits the internal connectivity of these communities and limits options for supporting these central thoroughfares as community-friendly main streets. In all of these cases, although each is a unique case, changing the major road so that it bypasses the city would be a challenging undertaking.
- **Congestion.** Completely non-congested flow at all times is unachievable for any transportation system that has a fixed infrastructure and a demand level that fluctuates and does reach full capacity at times. Providing enough capacity to meet demand for every moment would require an extremely uneconomical over-building of infrastructure. We expect congestion in much of social life and adjust to it, often by shifting usage to uncongested times or facilities. Focusing only on relieving congestion, can, in fact result in further spirals of congestion via the well documented phenomena whereby new road capacity creates further demand and thus only short term congestion relief. <sup>x</sup>
- **Costs.** All of the strategies outlined in this report will come with some costs associated with them. Building the public consensus on public spending is challenging in the best of times and the strategies proposed in this document will also face this challenge.
- **Eroding power of transportation finance.** One of the principal sources for funding transportation has been the gasoline tax of 18 cents a gallon federal tax and 18 cents a gallon state tax. The current state tax rate has been in place since 1994. Since then, inflation has eroded the value of per gallon tax revenues by 29 percent. Also, between 1991 and 2006, travel on California's roads increased by about 35 percent. As a result, the revenue generated per vehicle-mile traveled declined by more than 20 percent.<sup>xi</sup>

- **Fuel costs.** Over the longer time frame of this study, petroleum prices are very likely to rise higher than core inflation rates. Although some analysts are extremely concerned about the capacity of global oil supplies to meet rising global demand, even OPEC's official estimates (discussing the benchmark of "peak oil" at which total global oil production begins to decline) state

*"while some of the more pessimistic oil specialists are declaring that peak oil has already been passed, or at best is here now, others believe it is not going to arrive before 2010. Some optimists give the world a little more breathing space — that is to say up to 2020, and perhaps even up to 2030. However, all in all, most would appear to agree that peak oil output is not very far away for all of us. It could take place sometime within the next decade or so."*<sup>xii</sup>

- **Greenhouse Gas (GHG) generation.** Reliable estimates peg transportation's contribution to the Bay Area GHG load at over 50 percent<sup>xiii</sup>. In Napa, recent studies show that transportation accounts for an even higher percentage of Napa County's GHG load<sup>xiv</sup>. This will become an important factor as the State enters an era of aggressive regulation of GHG emissions. AB32 has mandated a decrease in GHG emission statewide to 1990 levels by 2020 with initial regulations coming into effect at the end of 2009. This will require a reduction of over 30 percent of GHG emission in Napa compared to a "business as usual" scenario. SB 375 will mandate the setting of regional GHG reduction targets and the integration of transportation, land use and housing policies to meet those targets.
- **Growth.** Steady growth of our resident population and parallel growth of employment, even at Napa's historically low levels will, over time, press against the basic "carrying capacity" of our natural and human-built infrastructure, such as water supply and road systems. There is no clear agreement about what that carrying capacity might be, or how to allocate our resources among numerous possible uses.
- **High housing costs.** Even with the cycle of deflation that began in 2008, housing prices in Napa County, combined with lower wage job growth, will continue to make it very challenging to provide local housing for a growing segment of our local workforce. This, combined with lower housing costs in neighboring Solano and Lake counties will, in turn, encourage our workers to live at a distance and travel further to work.
- **Maintenance costs for streets and roads.** Construction industry costs are rising much faster than the core inflation rate, with costs of basic road "ingredients" (concrete, steel, asphalt, etc) nearly tripling since the late 1980's<sup>xv</sup> driven by several factors including global competition for natural resources and construction supplies.
- **Public transit economics.** Napa County's small size and low density population make mass transit options difficult to implement and costly to finance. The economies of scale are critical in the development and operation of capital intensive transit systems, which is why they are most prevalent in large cities. This is why the Bay Area, as a regional policy, is encouraging as much future growth as possible to occur in the already urbanized areas of the region. Even under the best conditions, public transit requires additional financing beyond transit fares, using other federal and state sources, including gasoline taxes. Absent large population concentrations, even higher levels of funding from other sources will be required.

- **Regional growth pressure.** Even if we in Napa County could imagine, plan and build our perfect transportation system, we are still integrally connected to the rest of our region, and the level of people and goods that want to move *through* our community continues to grow. Especially given our lack of any major thoroughfare that transects Napa County, either east-west or north-south, traffic that wants to move between Solano and Sonoma Counties in the south or between Lake and Sonoma Counties in the north ends up on roads that are already filled with local-serving traffic. In fact the scenario modeling contained in Chapter 5 of this document suggests that even aggressive implementation of the full suite of strategies proposed in this report may still be overshadowed by growth in traffic through Napa County.

## Strategies

Given this mass of complex interacting trends, challenges and desired outcomes, and given the limits on the power of local policies to effect changes, there is clearly no single, big project solution to Napa's future transportation needs. In order to adequately address our needs, we will have to imagine fundamental changes on many fronts simultaneously. We will have to make use of the full creative energy of our people and organize ourselves to engage the issue from every angle. To guide the Napa County Transportation and Planning Agency in this task, Napa's Transportation Future proposes a portfolio of strategies, elaborated in detail in Chapter 4.

## NOTES

- <sup>i</sup> California State Employment Development Department - "Projections of Employment by Industry and Occupation 2004-2014" <http://www.labormarketinfo.edd.ca.gov/?PAGEID=145> - click on Napa County "highlights" which shows that the vast majority of new jobs will require only 30 days of "on the job training" or click on "Fastest Growing Occupations 2004-2014" for a detailed view of growth projections for specific jobs.
- <sup>ii</sup> Living Wage Coalition of Sonoma County - A discussion of how a "living wage" has been calculated for North Bay can be found at [http://www.livingwagesonoma.org/calculating\\_a\\_living\\_wage.htm](http://www.livingwagesonoma.org/calculating_a_living_wage.htm). To see the calculations for Napa see: [http://www.livingwagesonoma.org/calculating\\_living\\_wage.xls](http://www.livingwagesonoma.org/calculating_living_wage.xls)
- <sup>iii</sup> Association of Bay Area Governments - ABAG Projections 2007 – see appendix \_\_\_\_\_
- <sup>iv</sup> California Department of Finance "Population Projections by Race / Ethnicity, Gender and Age for California and Its Counties 2000–2050" <http://www.dof.ca.gov/HTML/DEMOGRAP/ReportsPapers/Projections/P3/P3.php> - click on Napa
- <sup>v</sup> Metropolitan Transportation Commission "Travel Forecasts for the San Francisco Bay Area 1990-2030" [http://www.mtc.ca.gov/maps\\_and\\_data/datamart/forecast/Travel\\_Forecasts\\_Data\\_Summary\\_Jan2005.pdf](http://www.mtc.ca.gov/maps_and_data/datamart/forecast/Travel_Forecasts_Data_Summary_Jan2005.pdf) pg 41-42
- <sup>vi</sup> "Draft Greenhouse Gas Emissions Inventory For Napa County" – NCTPA January 2009
- <sup>vii</sup> Napa Valley Visitor Profiles – Technical report - March 2006 Napa Valley Conference and Visitors Bureau , pg 53 <http://destinationstrategy.com/VPS%20Technical%20Report.pdf>
- <sup>viii</sup> California Dept of Motor Vehicles: [http://www.dmv.ca.gov/about/profile/est\\_fees\\_pd\\_by\\_county.pdf](http://www.dmv.ca.gov/about/profile/est_fees_pd_by_county.pdf)
- <sup>ix</sup> US Bureau of Census "Census of Population and Housing, 2000 [California]: Summary File 3" Table H46 AGGREGATE NUMBER OF VEHICLES AVAILABLE BY TENURE ref: <http://countingcalifornia.cdlib.org/news.html>
- <sup>x</sup> [http://en.wikipedia.org/wiki/Induced\\_demand](http://en.wikipedia.org/wiki/Induced_demand) - this Wikipedia entry also discusses some of the ways to mitigate induced demand, including development zoning, which is practiced to some good extent in Napa County.
- <sup>xi</sup> California Legislative Analyst's Office "Addressing the State's Highway Maintenance and Rehabilitation Needs", August 2007 [http://lao.ca.gov/handouts/transportation/2007/Highway\\_Maintenance\\_Needs\\_082107.pdf](http://lao.ca.gov/handouts/transportation/2007/Highway_Maintenance_Needs_082107.pdf) page 5
- <sup>xii</sup> Organization of Petroleum Exporting Countries "OPEC Bulletin 11-12/06" [http://www.opec.org/library/OPEC%20Bulletin/2006/pdf/OB11\\_122006.pdf](http://www.opec.org/library/OPEC%20Bulletin/2006/pdf/OB11_122006.pdf) pg 61
- <sup>xiii</sup> Bay Area Air Quality Management District "Source Inventory of Bay Area Greenhouse Gas Emissions" November, 2006 [http://www.baaqmd.gov/pln/ghg\\_emission\\_inventory.pdf](http://www.baaqmd.gov/pln/ghg_emission_inventory.pdf) pg 6
- <sup>xiv</sup> "Draft Greenhouse Gas Emissions Inventory For Napa County" – NCTPA January 2009
- <sup>xv</sup> Washington State Department of Transportation – "Construction Cost Indices" <http://www.wsdot.wa.gov/biz/construction/CostIndex/CostIndexPdf/CostIndexGraph.pdf>

## CHAPTER 2: CURRENT TRANSPORTATION SYSTEM

Napa's Transportation Future must begin with the transportation system we have today. While the most obvious and dominant mode of travel in Napa is automobiles and paved roads, there are also important contributions to the transportation system made by trucks, buses, bicyclists and pedestrians. This chapter describes these key features in the transportation system.

### Overall Travel Characteristics

The transportation system in Napa County has evolved to follow the County's basic geographic configuration, with a central valley bounded by isolating hillsides. The eastern portion of the county is relatively isolated and sparsely populated although recreational developments associated with Lake Berryessa may affect that in the future. In the southern part of the county the terrain opens up with easier connections to communities in neighboring counties.

The concentration of transportation movement in the central Napa Valley runs dominantly north-south along the string of four cities that sit in the valley floor. Thus, in a transportation sense, the central/northern portion of Napa County operates as an "island," and this island nature influences the patterns of congestion and imposes significant constraints on transportation system design. In the southern end of the county, where the fifth city is located, the more open connections to the east and west makes cross-county travel easier and more prevalent.

A second dominant overall travel characteristic is that Napa County (with only 130,000 people and only very moderate growth projected into the future) is surrounded on three sides by much larger and more rapidly growing population and employment centers. Particularly in the southern part of the county there is growing east-west traffic, including employees commuting between Napa and neighboring counties and employees passing through Napa between Solano and Sonoma Counties. Even in the northernmost portion of the county, we see significant growth of pass-through traffic from Lake County to Sonoma County. Thus a significant issue for Napa's transportation future will be the evolution of employment travel through the southern part of the county.

### **SUMMARY OF WORK TRIP PATTERNS**

An example of this relationship is shown by looking at the estimated percentage of workers that enter Napa County from other surrounding counties today. As shown in **Table 2-1**, more than 6,000 workers come into Napa County from Solano County each day. The table also shows the estimated proportions of workers traveling through Napa County from Solano, Lake and Sonoma Counties.

The volumes of flow also indicate the importance of Napa County as a conduit for commuting between other counties. For example, an estimated 1,865 persons commute between Lake County and Sonoma County each day.

# Napa's Transportation Future

## Chapter 2: Current Transportation System

Further, sections of Napa County have different relationships to internal and surrounding county trip patterns. **Figures 2-1** through **2-14** illustrate these variations. For example, **Figure 2-5** shows that almost half of American Canyon residents are likely to be employed in the urban areas to the South, whereas three quarters of Calistoga residents are likely to be working at jobs locally or in Sonoma County.

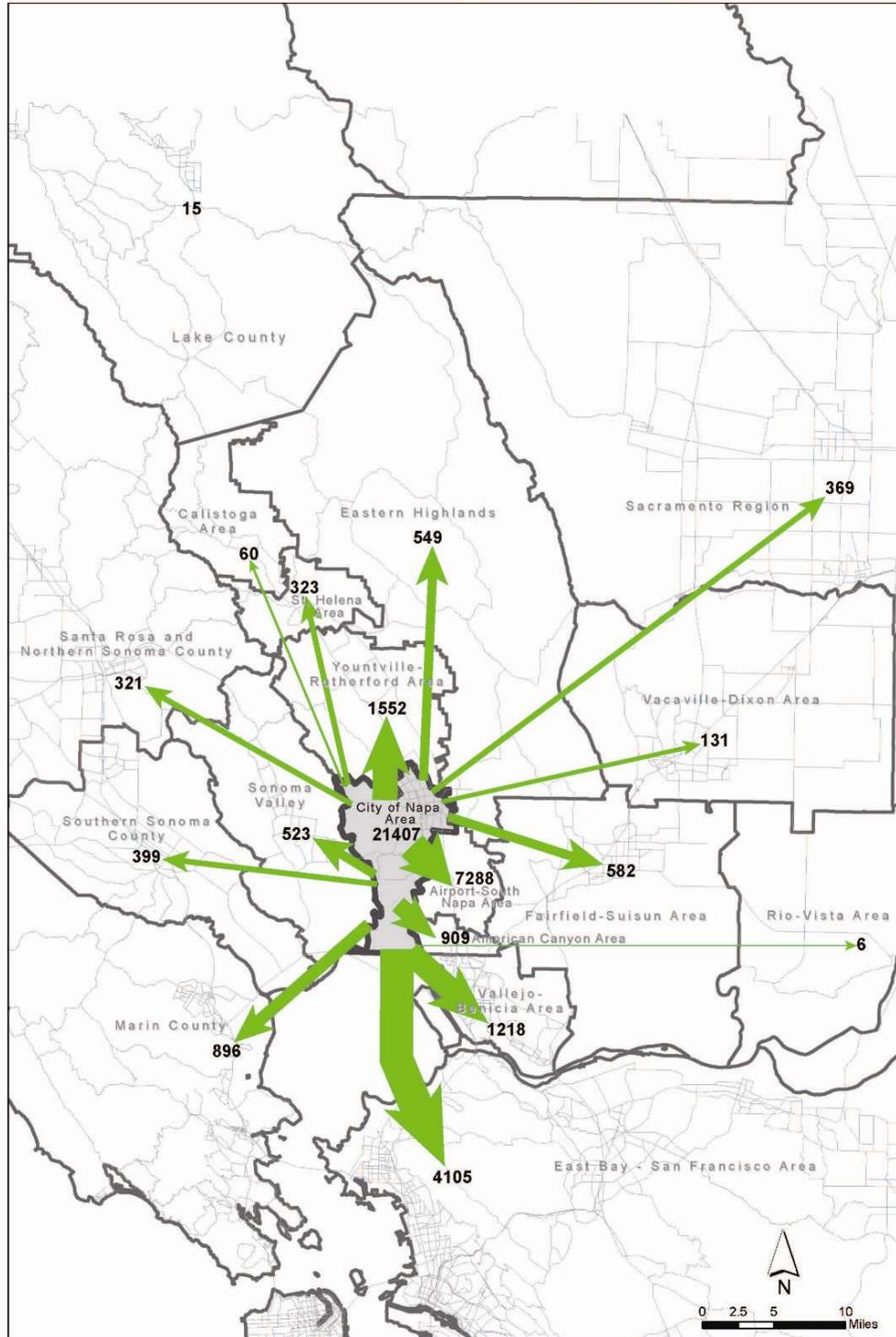
**Table 2-1**  
**Commuting Travel Pattern for Residents in Napa and Adjacent Counties in 2007**

Home	Job Location										
	Solano County	Sonoma County	Lake County	City of Napa	Airport-South Napa	American Canyon	Eastern Highlands	Yountville-Rutherford	St. Helena	Calistoga Area	Other Counties
Solano County	92,128	1,765	58	1,506	2,834	1,338	193	157	58	14	80,000
Sonoma County	1,063	181,562	4,532	1,077	762	181	130	295	294	332	45,922
Lake County	40	1,865	32,146	27	14	3	107	22	53	91	3,517
City of Napa	1,937	1,244	15	21,407	7,288	909	549	1,552	323	60	6,297
Airport-South Napa Area	31	6	0	51	91	26	3	3	1	0	57
American Canyon	1,646	82	1	385	1,276	766	34	31	9	2	1,769
Eastern Highlands	460	302	99	1,231	660	142	1,944	208	434	88	2,654
Yountville-Rutherford	133	227	7	771	253	50	67	725	284	36	867
St. Helena	65	324	28	208	87	18	185	394	2,280	316	569
Calistoga Area	36	1,031	103	91	44	10	74	129	624	1827	592
Other Counties	14,106	7,669	790	1,005	1,389	583	442	180	104	52	

Source: Solano-Napa Phase 2 Model  
DKS Associates, 2008

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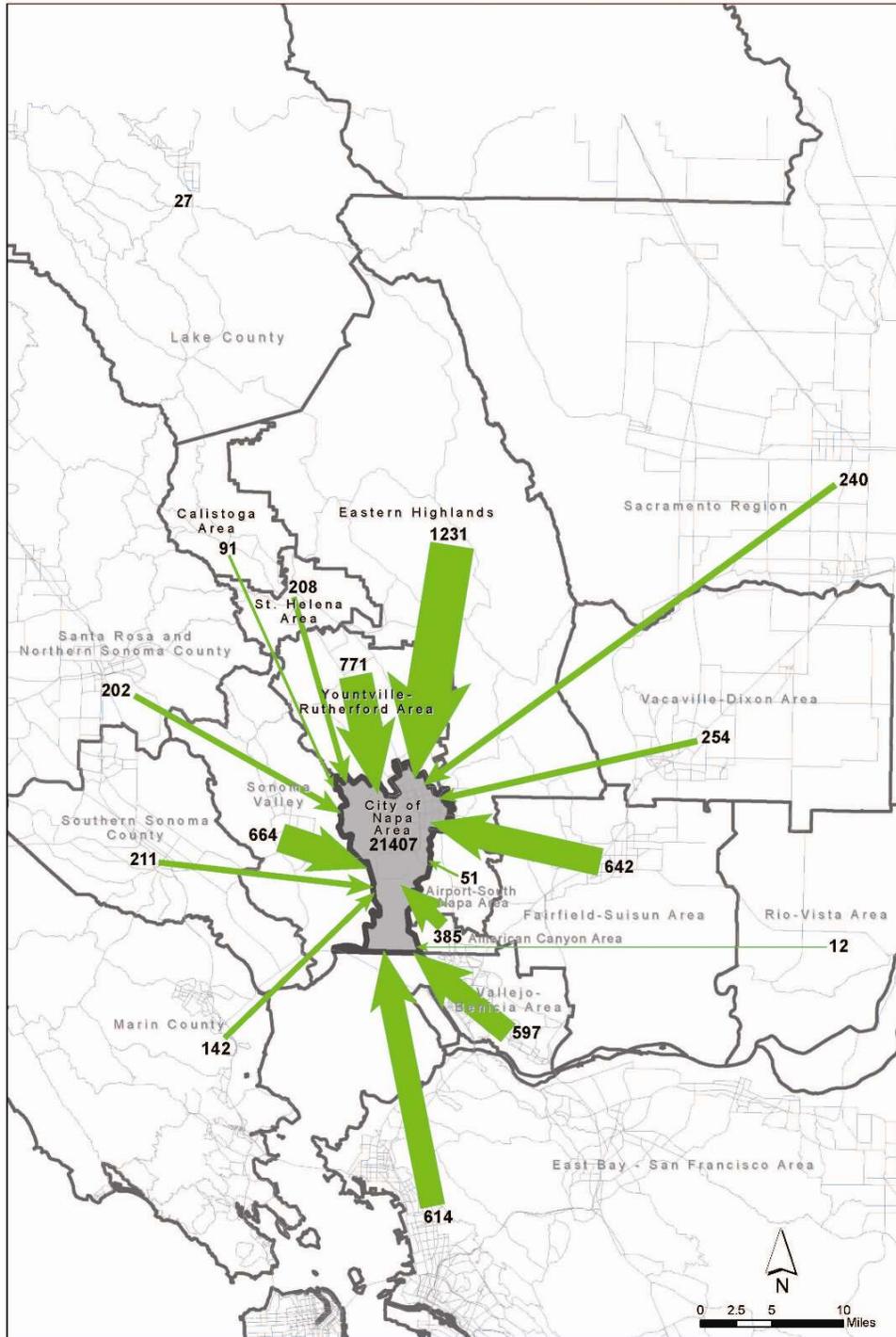
**Figure 2-1 2007 Commuter Travel Pattern – City of Napa Residents**



DKS Associates, May 2008

Source: Napa/Solano Travel Demand Model

**Figure 2-2 2007 Commuter Travel Pattern – City of Napa Workers**



DKS Associates, May 2008

Source: Napa/Solano Travel Demand Model

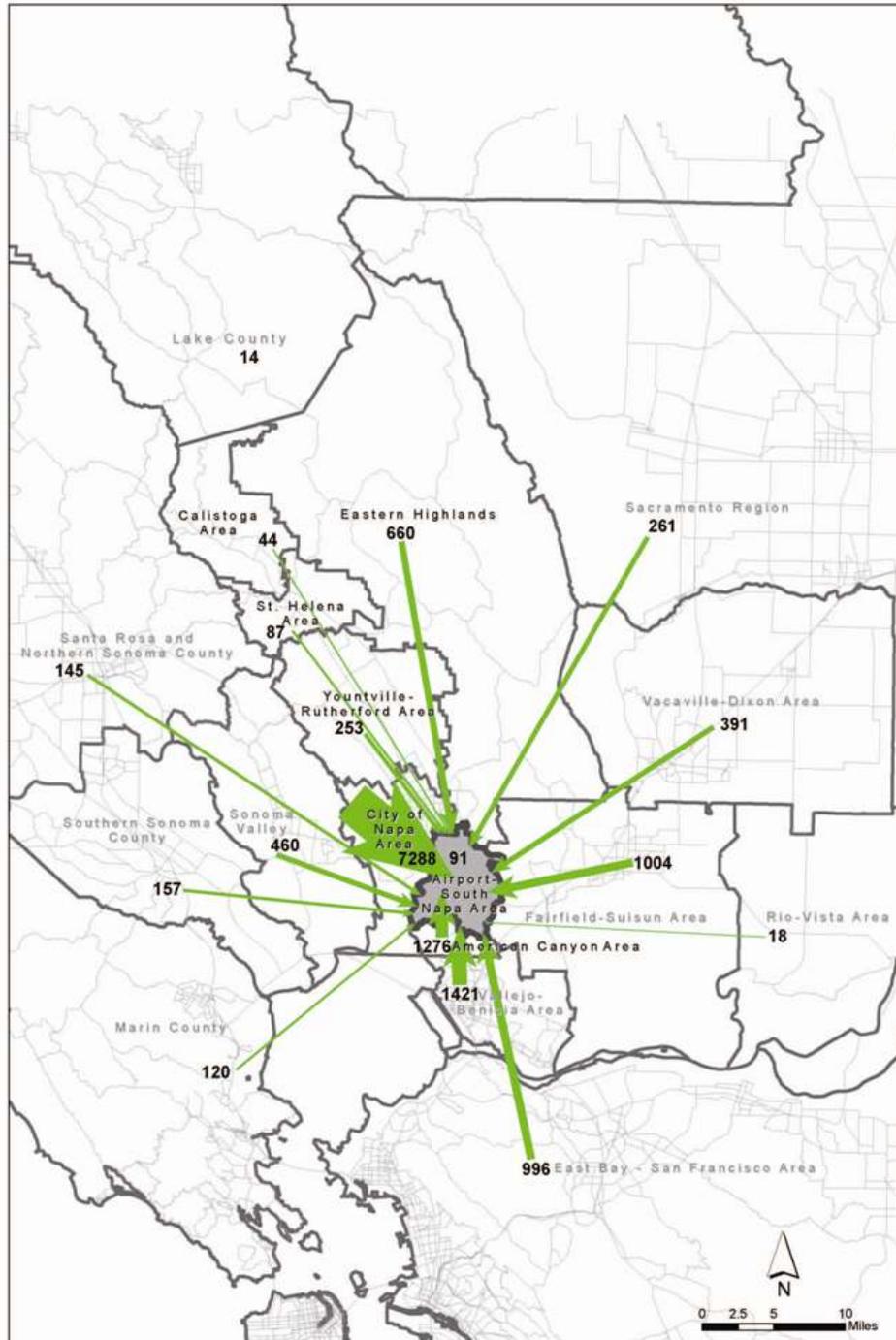
Figure 2-3 2007 Commuter Travel Pattern – Airport-South Napa Area Residents



DKS Associates, May 2008

Source: Napa/Solano Travel Demand Model

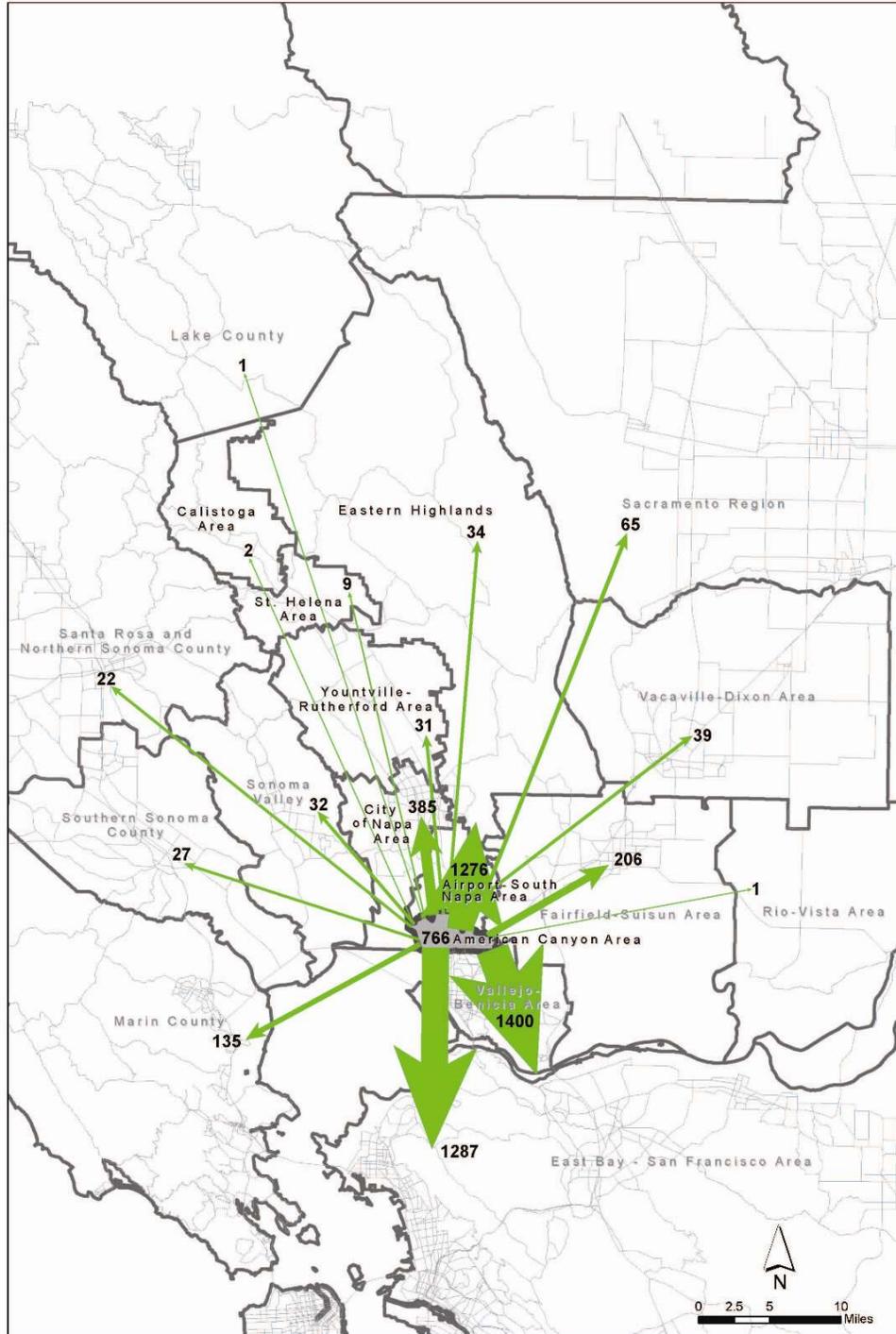
**Figure 2-4 2007 Commuter Travel Pattern – Airport-South Napa Area Workers**



DKS Associates, May 2008

Source: Napa/Solano Travel Demand Model

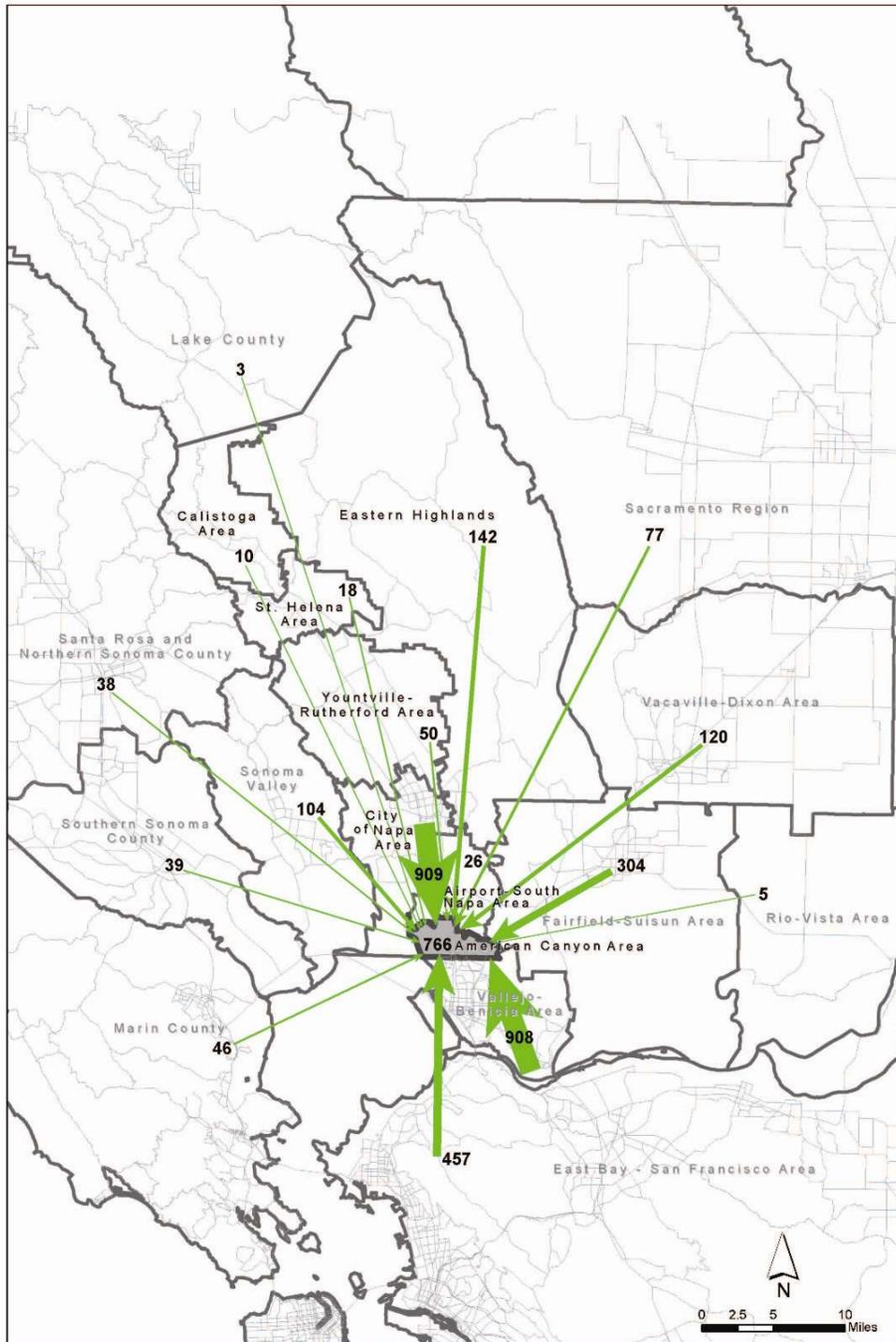
**Figure 2-5 2007 Commuter Travel Pattern – American Canyon Residents**



DKS Associates, May 2008

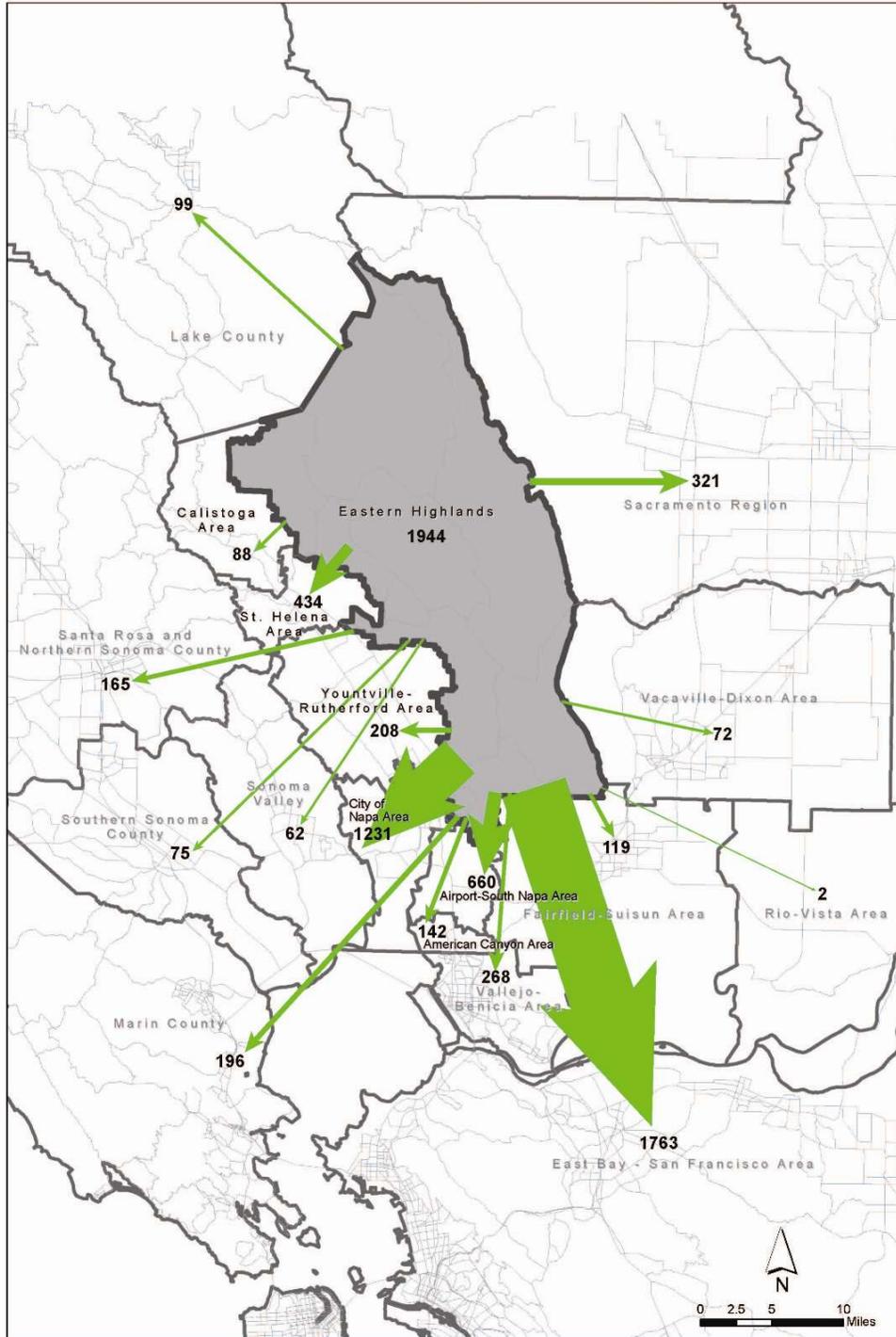
Source: Napa/Solano Travel Demand Model

**Figure 2-6 2007 Commuter Travel Pattern – American Canyon Workers**



DKS Associates, May 2008  
 Source: Napa/Solano Travel Demand Model

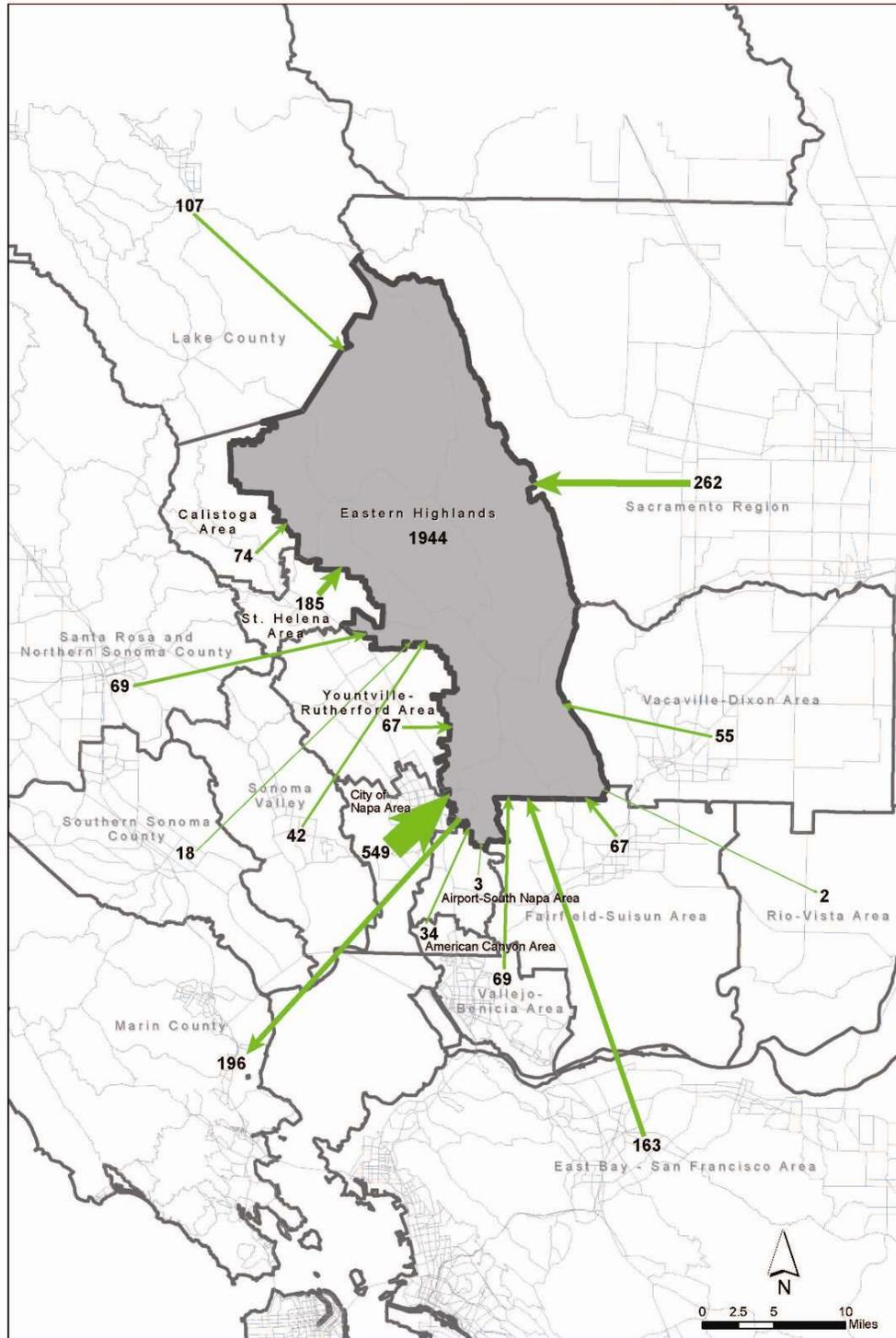
**Figure 2-7 2007 Commuter Travel Pattern – Eastern Napa Highlands Area Residents**



DKS Associates, May 2008

Source: Napa/Solano Travel Demand Model

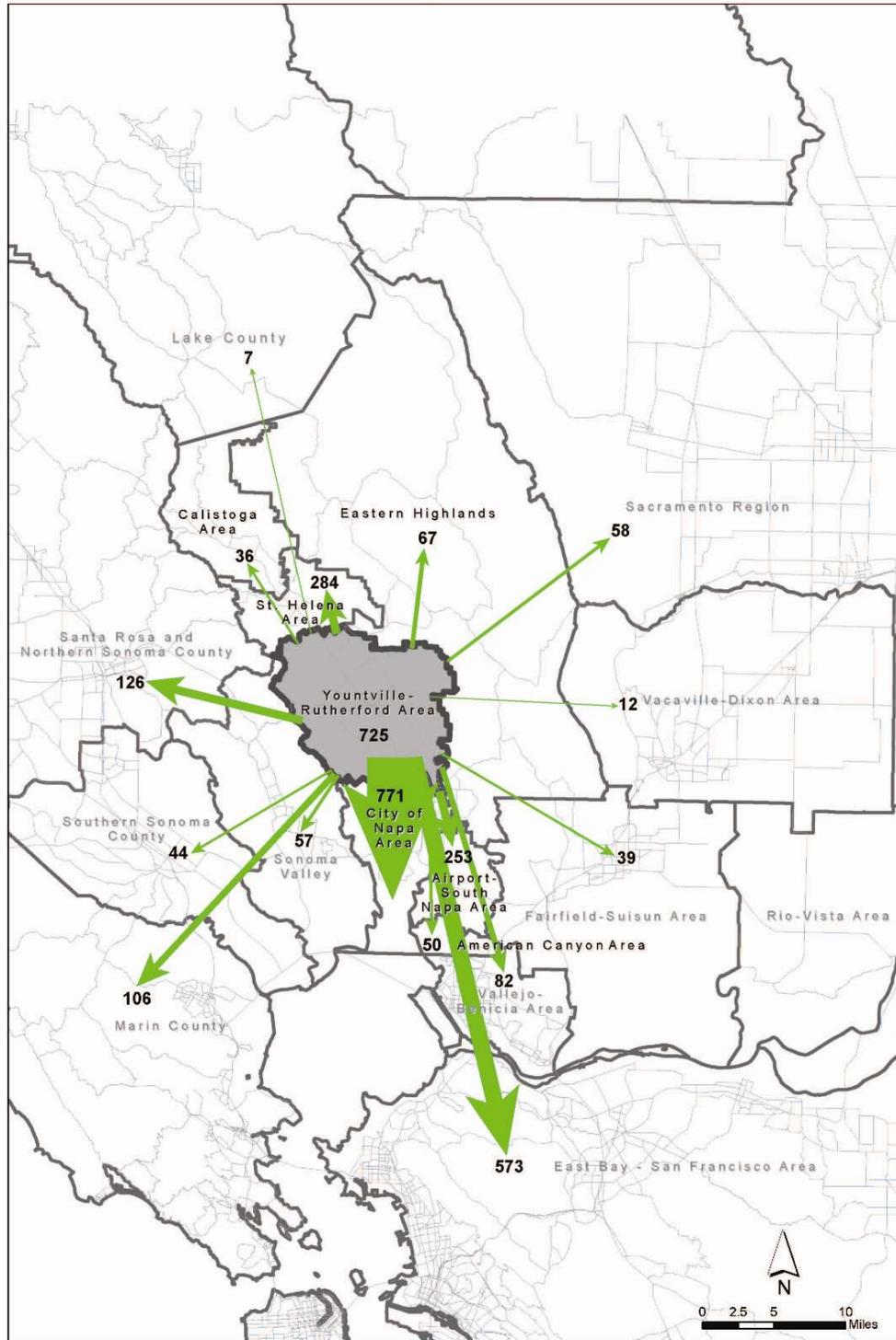
**Figure 2-8 2007 Commuter Travel Pattern – Eastern Napa Highlands Area Workers**



DKS Associates, May 2008

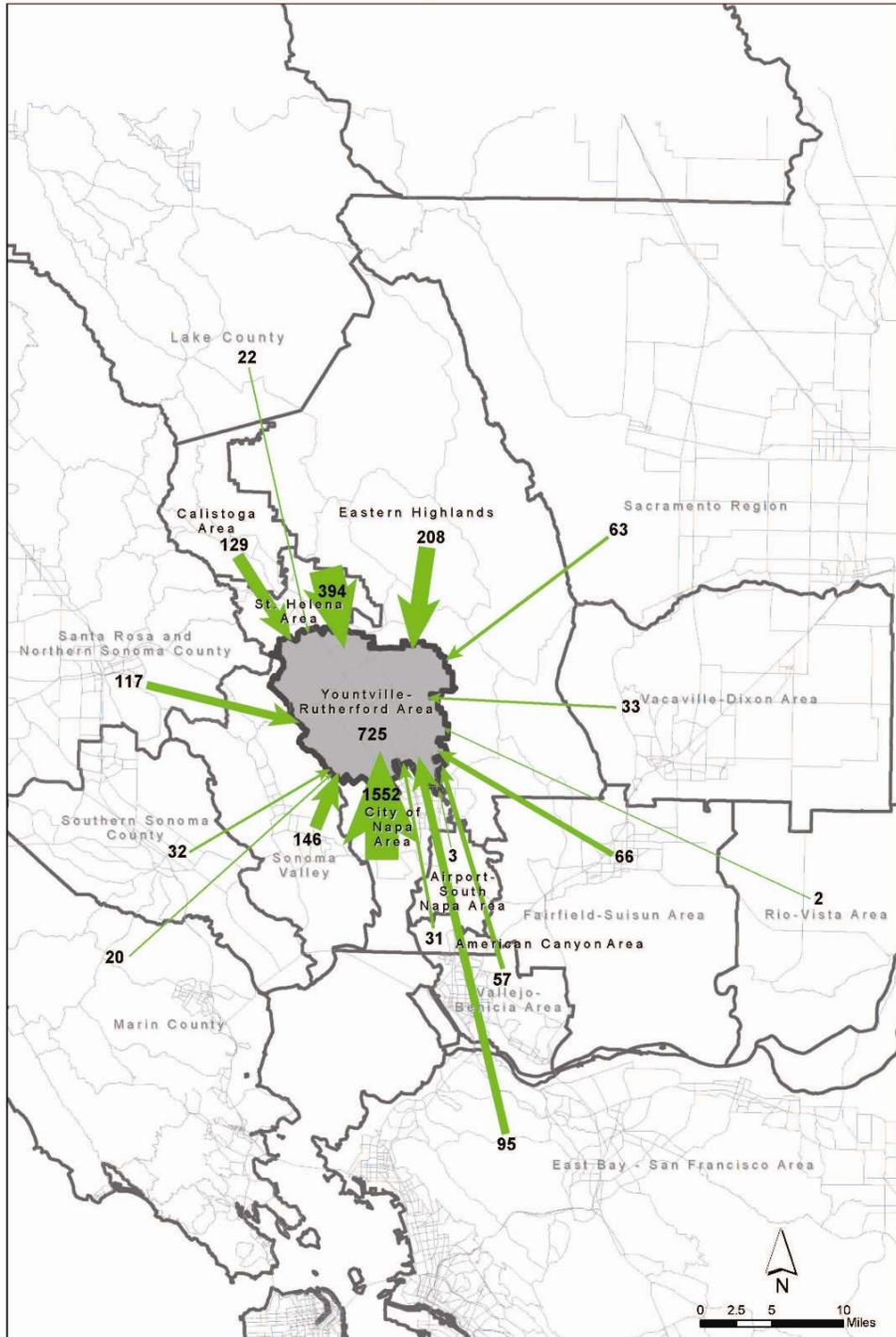
Source: Napa/Solano Travel Demand Model

**Figure 2-9 2007 Commuter Travel Pattern – Yountville-Rutherford Residents**



DKS Associates, May 2008  
 Source: Napa/Solano Travel Demand Model

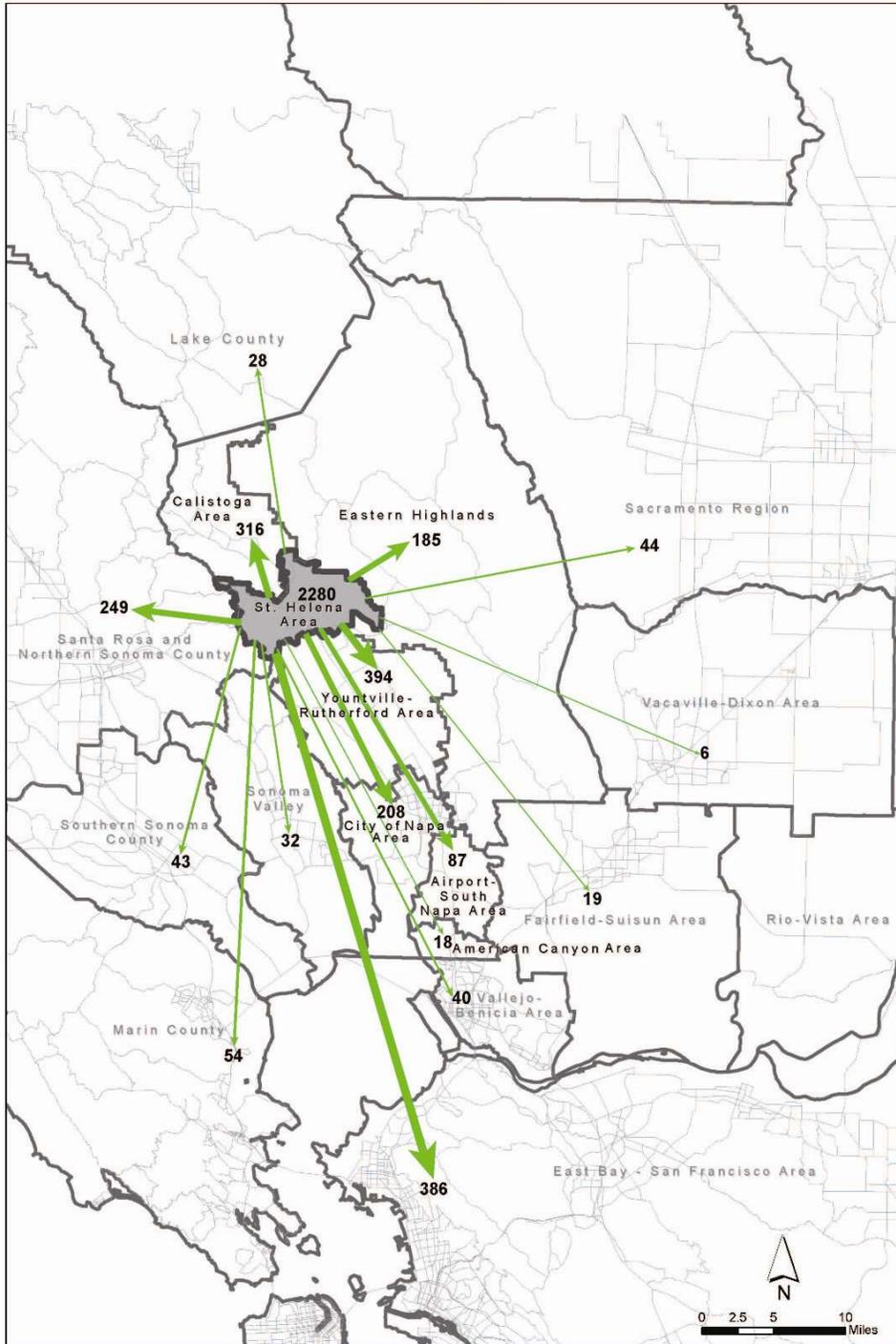
**Figure 2-10 2007 Commuter Travel Pattern – Yountville-Rutherford Workers**



DKS Associates, May 2008

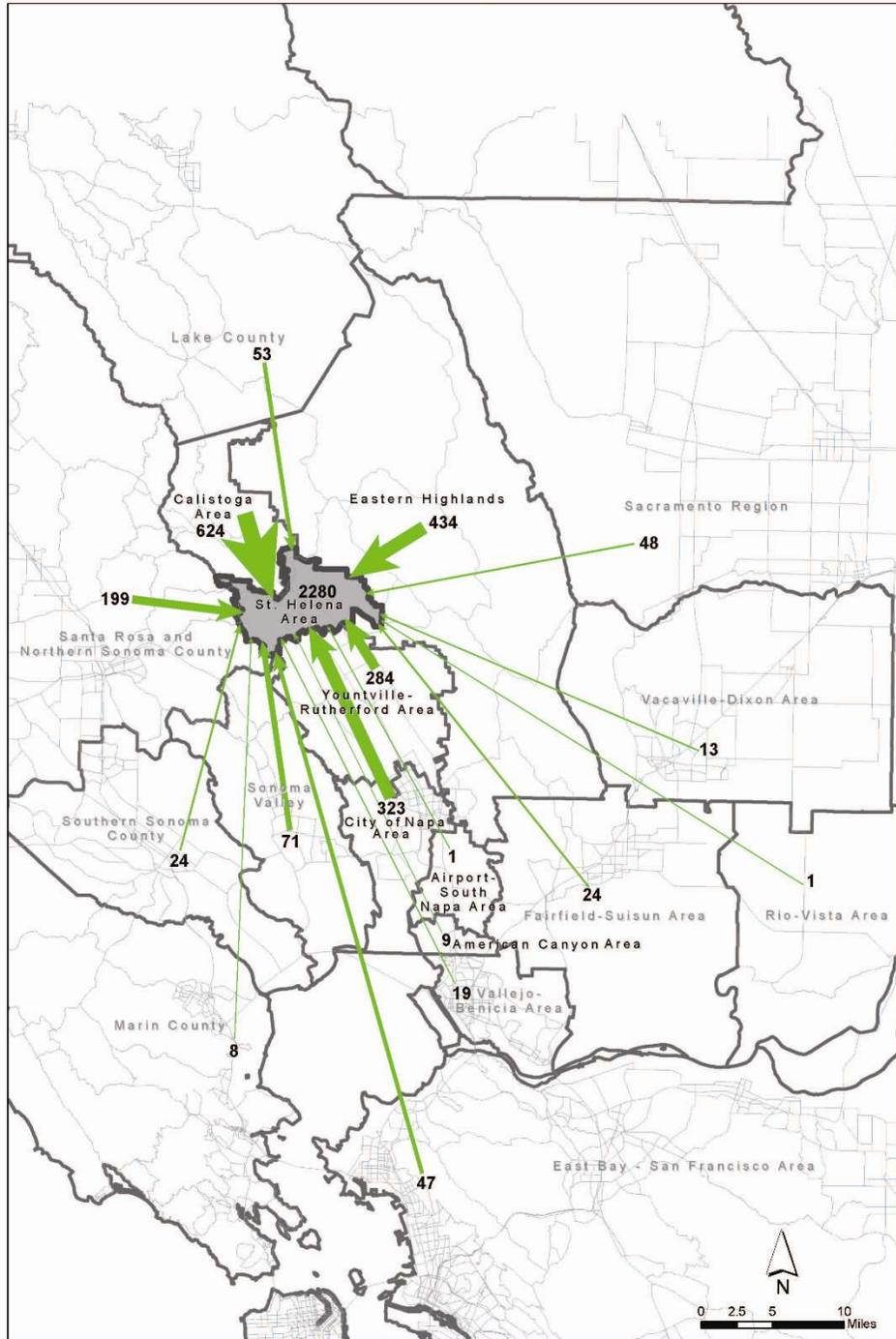
Source: Napa/Solano Travel Demand Model

**Figure 2-11 2007 Commuter Travel Pattern – St. Helena Area Residents**



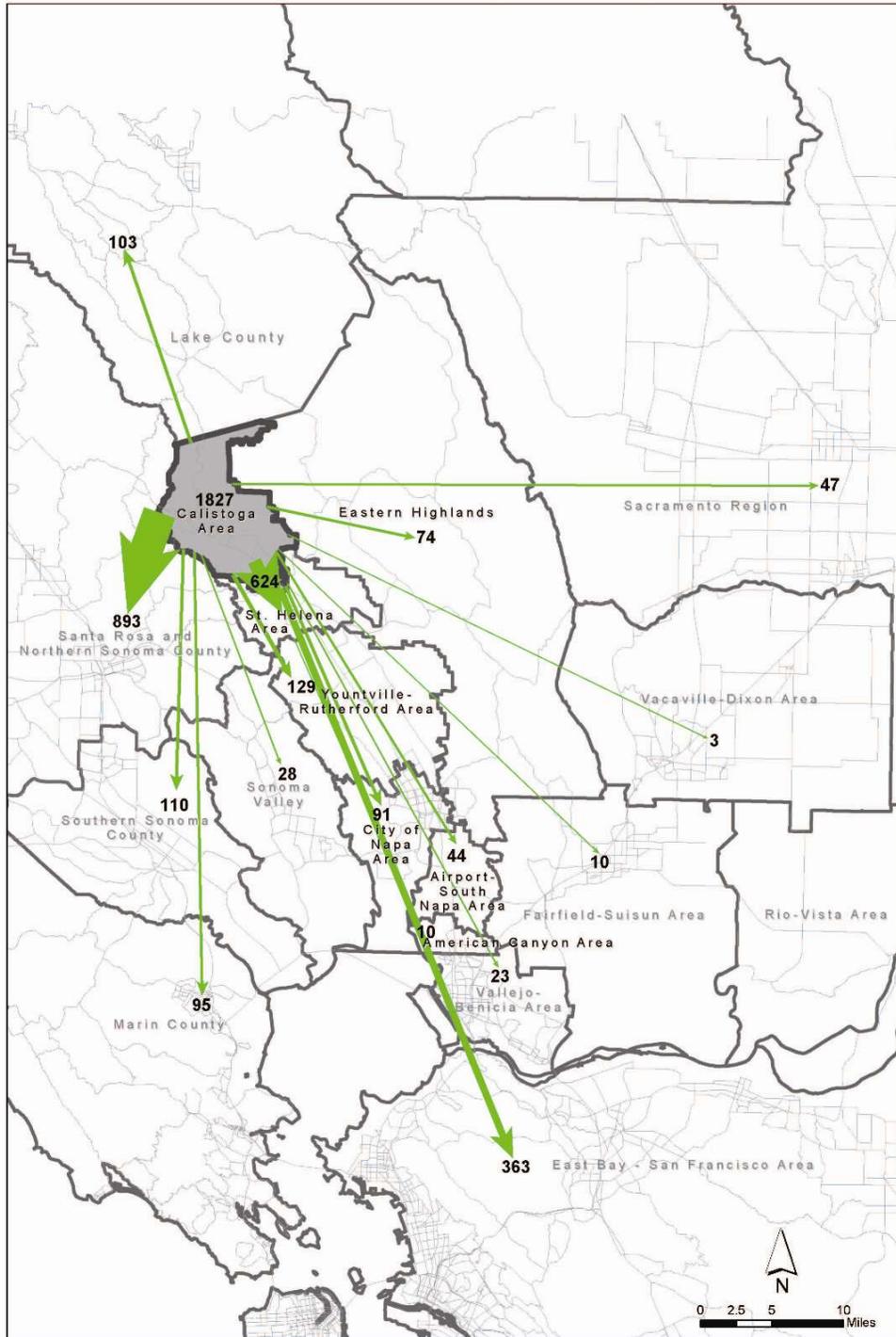
DKS Associates, May 2008  
Source: Napa/Solano Travel Demand Model

**Figure 2-12 2007 Commuter Travel Pattern – St. Helena Area Workers**



*DKS Associates, May 2008*  
 Source: Napa/Solano Travel Demand Model

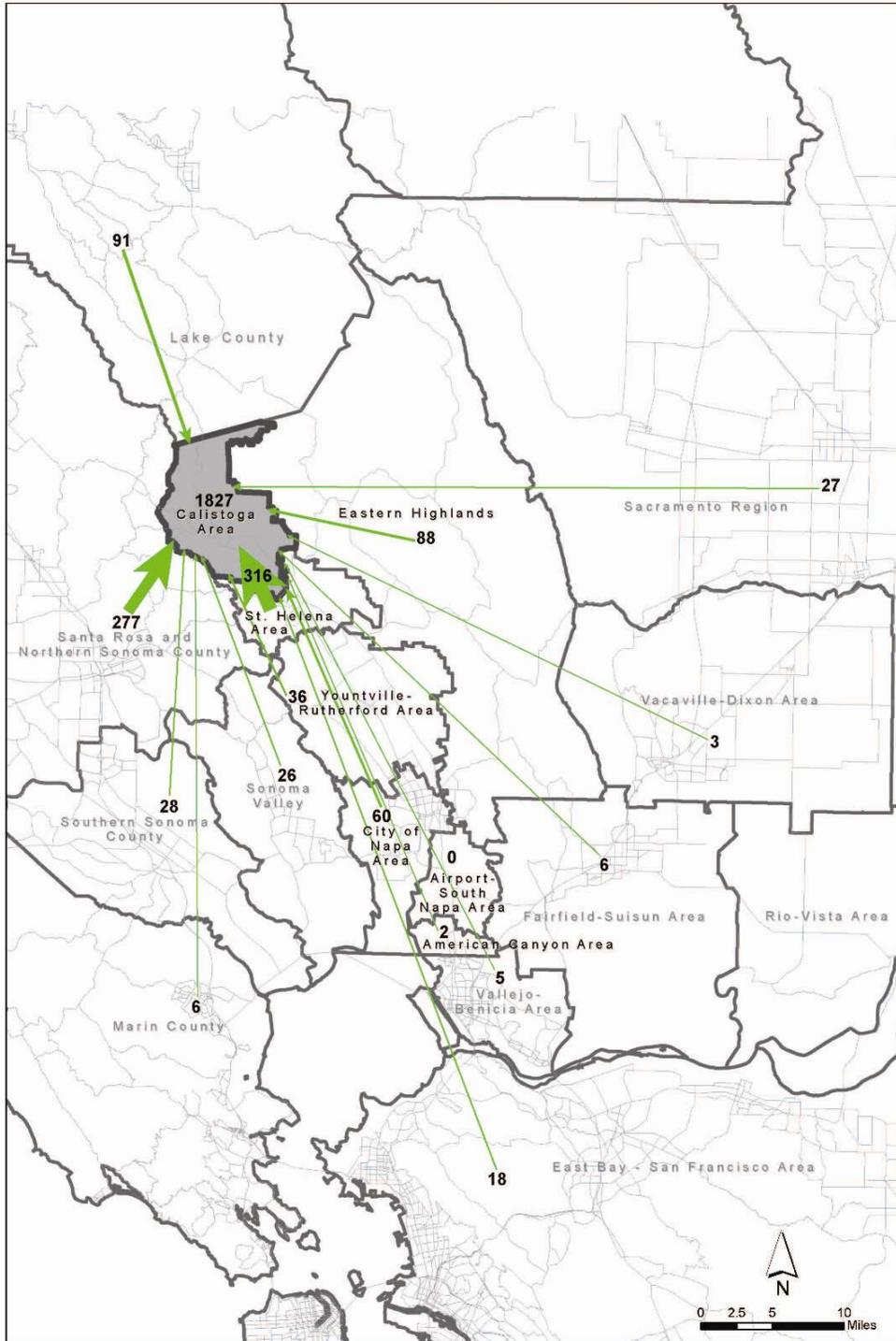
**Figure 2-13 2007 Commuter Travel Pattern – Calistoga Area Residents**



DKS Associates, May 2008

Source: Napa/Solano Travel Demand Model

**Figure 2-14 2007 Commuter Travel Pattern – Calistoga Area Workers**



DKS Associates, May 2008

Source: Napa/Solano Travel Demand Model

Most of trips that occur on the system are currently made with single-occupant drivers. **Table 2-2** shows these mode selections for work trips reported in the 2000 Census. One of the most interesting facts is that Napa County has a relatively high proportion of persons who work at home, reported as five percent in 2000 and expected to be significantly higher in 2010 based on findings from other commuter survey efforts for the Bay Area.

Another interesting finding is that almost 38 percent of Napa County residents have a commute of 15 minutes or less. This demonstrates how many Napa residents are able to work near their homes. Note that these figures do not completely describe the total commute picture in Napa, since as we have seen in the previous section, many jobs in Napa are filled by workers who live in other counties.

**Table 2-2**  
**Demographic and Commuter Transportation Pattern Comparison between the U.S., the State of California, Napa County and Two of Its Neighbor Counties**

	United States	California State	Napa County	Solano County	Sonoma County
Total Population	281,421,906	33,871,648	124,279	394,542	458,614
Percent of Workers Working at Home (%)	3.26	3.83	5.08	3.12	5.44
Percent of Workers Taking Public Transportation to Work in Total Not-Work-At-Home Workers (%)	4.89	5.27	1.47	2.76	2.59
Percent of Workers Riding Bicycle to Work in Total Not-Work-At-Home Workers (%)	0.39	0.86	0.88	0.47	0.82
Percent of Workers Carpooled to Work in Total Workers Driving Personal Vehicles to Work (%)	13.87	16.84	16.96	19.50	14.40
Percent of Workers Working Outside County of Resident (%)	23.08	16.53	22.34	42.57	17.69
Percentage of Workers with Travel Time to Work Less Than 15 Minutes (%)	28.44	24.34	37.73	26.68	30.45
Percentage of Workers with Travel Time to Work More Than 1 Hour (%)	7.72	9.75	8.81	16.03	11.02

Source: Census 2000 Summary File 3 (SF3), Census Bureau  
 DKS Associates, 2007

Note that the patterns shown on these maps are only those of work trips and do not include the large number of shopping trips, school related trips, tourist trips and truck/goods movement trips that also operate on the system and also are predominately single occupancy auto trips.

Another important statistic is the vehicles miles traveled per household. This important indicator reflects the degree to which driving distances have increased in Napa County. **Table 2-3** illustrates the dramatic increase since 1990. This increase was documented in the MTC Regional Transportation Plan adopted in 2004.

**Table 2-3**  
 Vehicle Miles of Travel – Past Trends

Attribute	1990	2000	2007
Vehicle Miles Traveled	1,474,700	2,298,600	2,805,900
Households	41,312	45,402	48,162
Vehicle Miles Traveled Per Household	35.7	50.6	58.3

Source: MTC travel forecasts, based on Projections '98 (1990), and Projections 2003 (2000 and 2007).

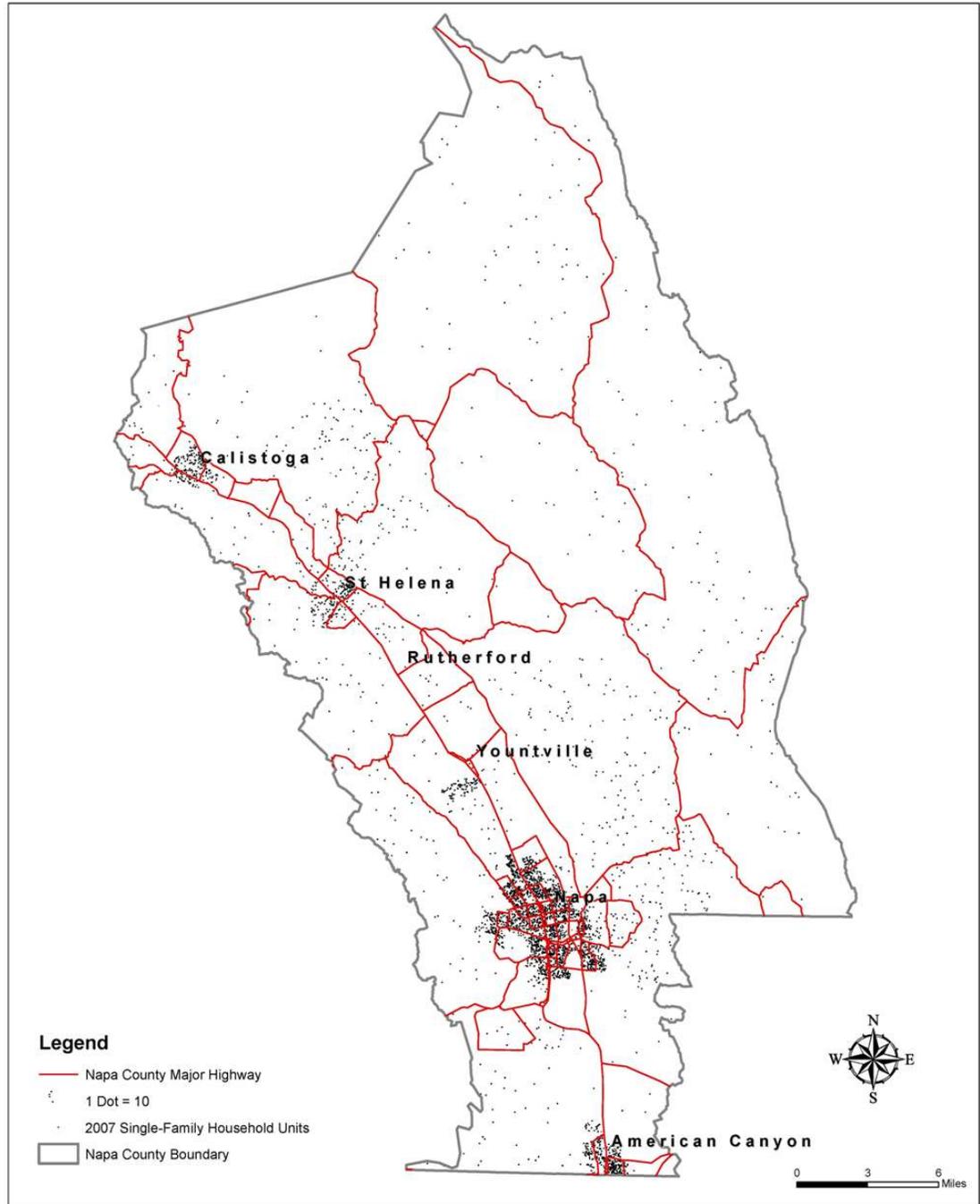
## Current Geographic and Demographic Patterns

In Napa County, most people and jobs are located in an area in the southern portion of the county – generally from northern areas of the City of Napa to the American Canyon/Vallejo city limits. **Figure 2-15** and **Figure 2-16** shows the estimated Single-Family and Multi-Family households units by Travel Analysis Zone (TAZ) in Napa County. Over 68 percent of the total number of single-family households and over 71 percent of the total number of multi-family households is located in this area.

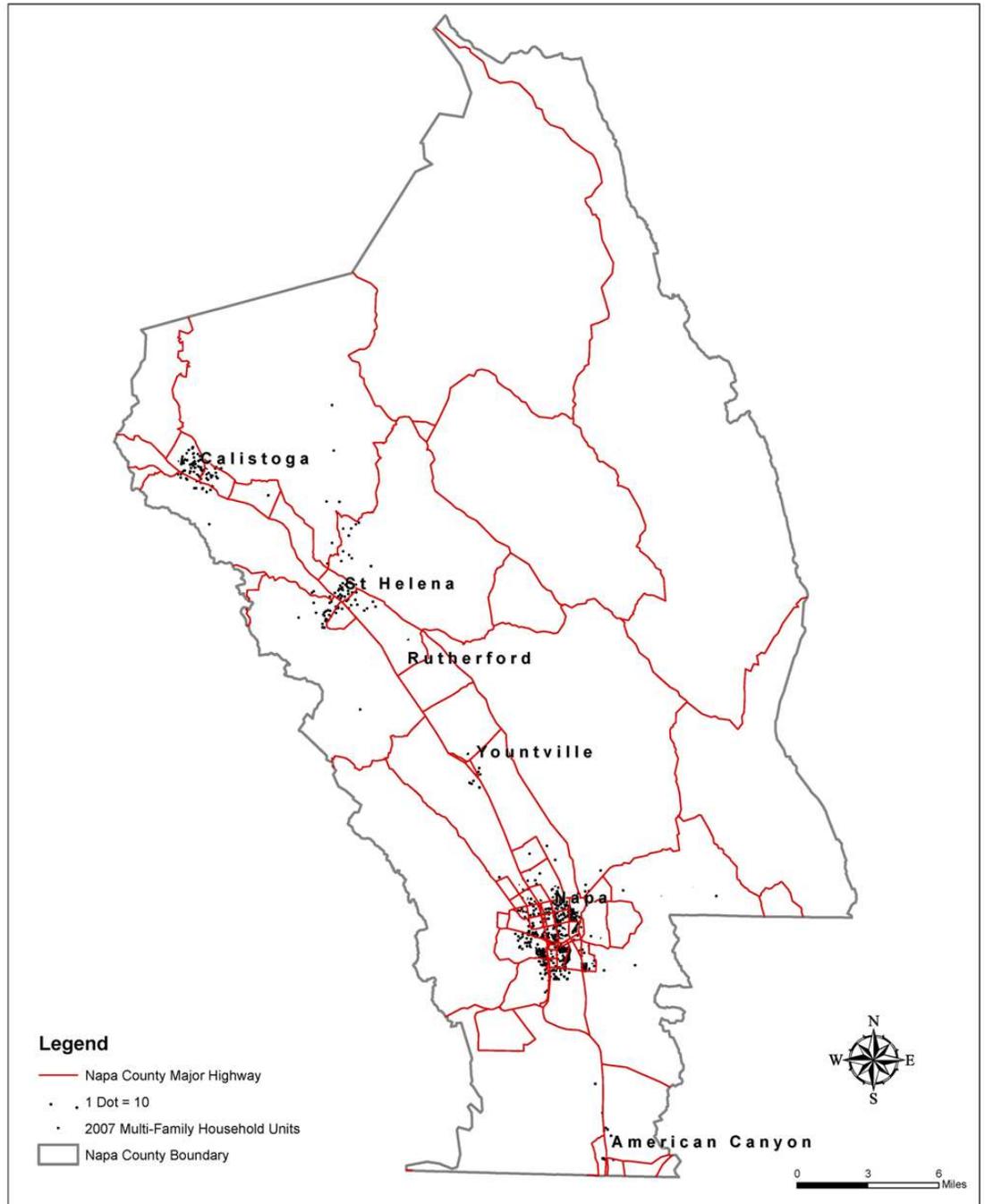
A **Traffic Analysis Zone** is a special purpose unit of geography established for transportation planning models, in this case the Solano-Napa Phase 2 Traffic Model. The spatial extent of zones varies, ranging from very large areas in rural sections to as small as a few city blocks in downtown districts. There is no technical reason why zones cannot be as small as single buildings, however additional zones add to the computational burden. This model has 1372 zones that spread across the entire Bay Area, Sacramento Region, San Joaquin County and Lake County; 218 of these zones are within Napa County. (A more detailed explanation of the travel model is provided in Chapter 3.)

The same pattern is noted with the generalized location of jobs in Napa County. Again, most jobs are in this same area. The percentage total county jobs in this area are estimated at 71 percent. This is illustrated in **Figure 2-17**.

**Figure 2-15**  
**2007**  
**Distribution**  
**of Single-**  
**Family**  
**Households**  
**Units in**  
**Napa**  
**County**

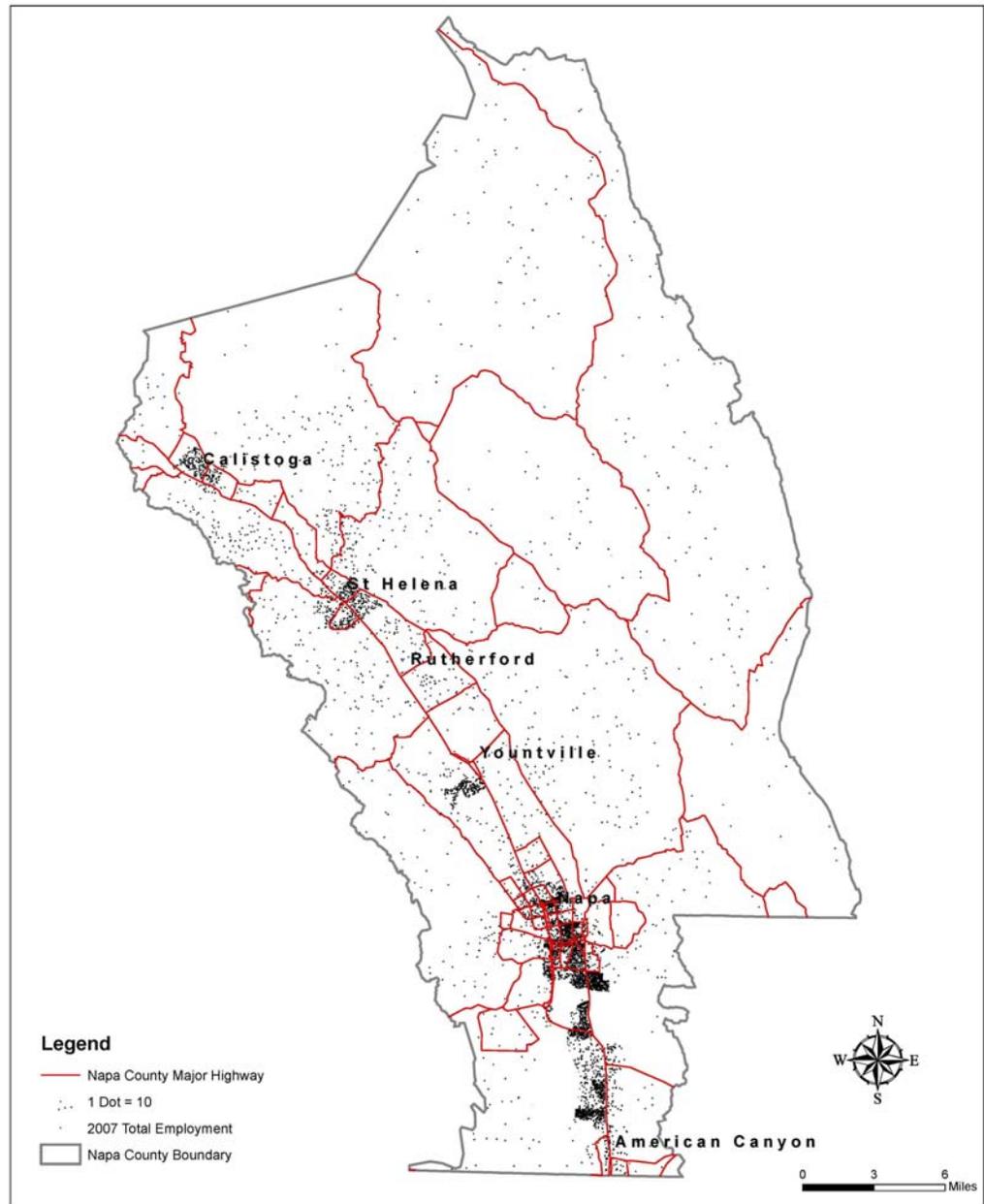


**Figure 2-16**  
**2007**  
**Distribution of**  
**Multi-Family**  
**Households in**  
**Napa County**



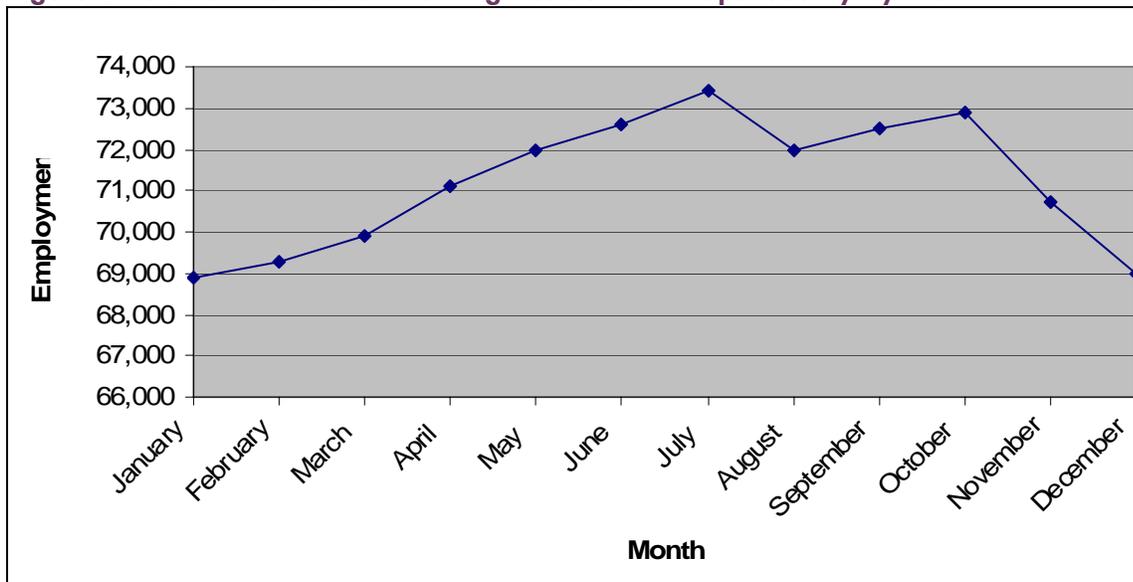
DKS Associates, June 2008

**Figure 2-17 2007 Distribution of Jobs in Napa County**



As an agricultural county, there is also considerable fluctuation of the total number of jobs in Napa County. The Economic Development Department records on this demonstrate how these totals vary during the year. The results for calendar year 2007 are shown in **Figure 2-18**. The employment levels are lowest in winter months, and highest during the summer and fall.

**Figure 2-18 2007 Number of Working Residents in Napa County by Month**



Source: California Employment Development Department

## Existing Transportation System

The existing transportation system contains roadways, rail lines, bicycle paths and lanes, airport facilities, and sidewalks. Each of these facilities contains unique characteristics that help to define the travel needs within Napa County.

### ROADS

The transportation system in Napa County is comprised mostly of roadways. These roadways are used by autos, trucks, buses and bicycles. Urban portions of these roadways also contain sidewalks for pedestrians. The major roads are diagrammed in **Figure 2-19**.

Although there is a small portion of the Interstate 80 freeway that is technically in Napa County near American Canyon (though there is no access to it from Napa) and a short segment of State Route 29 functions as a freeway between Trancas Avenue and the Carneros Highway (SR 121/12/29) intersection, the predominant roadway facilities are designed as arterial or expressway roadways.

Some key roadways within Napa County include:

State Route 29 (SR 29) – SR 29 runs in the south-north direction in Napa County, and extends from the City of Vallejo in Solano County in the south to Lake County in the north. It passes through the five cities of Napa County: American Canyon, City of Napa, Yountville, St. Helena, and Calistoga. SR 29 operates as an “expressway” between the Carneros Highway intersection and the Solano County line today. An expressway contains limited driveway access, and is mainly controlled with a series of intersections with traffic lights. The

same design is used north of Trancas Street in Napa to Yountville, where SR 29 becomes one lane of travel in each direction. From that point, SR 29 becomes a rural two-lane highway with occasional turn lanes northward from this point, with more urban treatments within St. Helena and Calistoga. It is a major regional access route in the south from/to Solano County and in the north from/to Lake County.

State Route (SR 12) – SR 12 is mainly a two-lane facility which runs in the east-west direction in Napa County. It operates in two sections. The eastern section (Jamieson Canyon Road) connects SR 29 with the Cordelia area of Solano County as a two-lane roadway that widens at signalized intersections; this facility has been recently granted funding to be widened for be a four-lane expressway facility. The western segment (Carneros Highway) extends from SR 29 to the Sonoma County line south of City of Sonoma. This section again contains limited driveway access although it operates as one-lane in each direction, with turn lanes at key intersections. The segment in between these two is considered SR 29, although it is also signed as SR 12.

State Route 128 (SR 128) – SR 128 is a rural two-lane roadway that operates in Napa County in two segments. The eastern segment operates from SR 29 in Rutherford to the Solano County line (near I-505). The western segment operates from Calistoga northwest to the Sonoma County line near Geyserville.

State Route 121 (SR 121) – SR 121 starts from the intersection with SR 128 in the north. It generally runs as a two-lane rural arterial southward until it reaches City of Napa. At this point, it becomes a major artery (mostly with expressway design and limited access), and continues southward until it terminates at SR 29. The four-lane section in the City of Napa is also known as Soscol Avenue, which continues as a four-lane urban arterial through the City of Napa even though the State Route designation ends at Silverado Trail.

Imola Avenue (SR 221) – Imola Avenue operates as a four-lane urban artery on the south side of the City of Napa. It runs between SR 29 and SR 121 (Soscol Avenue). This roadway features a new bridge over the Napa River, completed in 2006, replacing an older two-lane bridge with a new four-lane bridge.

American Canyon Road – American Canyon Road runs in the east-west direction in American Canyon area. It is a two-lane rural highway between the interchange with I-80 on the east and the intersection with Flodden Road/Newell Drive, and becomes a four-lane urban arterial west of this point.

Silverado Trail – Silverado Trail runs in the north-south direction, generally parallel with SR 29 on the east side of Napa Valley. It extends from Soscol Avenue in the City of Napa in the south, to its terminus at the intersection with SR 29 in Calistoga. Silverado Trail is a two-lane urban arterial within Calistoga and south of Trancas Street/SR 121 in Napa. For the rest of its sections in Napa County, it is a two-lane rural highway.

Lincoln Avenue – Lincoln Avenue runs east-west through the City of Napa, connecting the city north of Downtown. Most traffic on Lincoln Avenue is carried between SR 29 and Silverado Trail (SR 121).

Jefferson Street -- Jefferson Street runs north-south through the City of Napa, connecting areas west of Downtown. It parallels SR 29, carrying primarily local intra-city traffic.

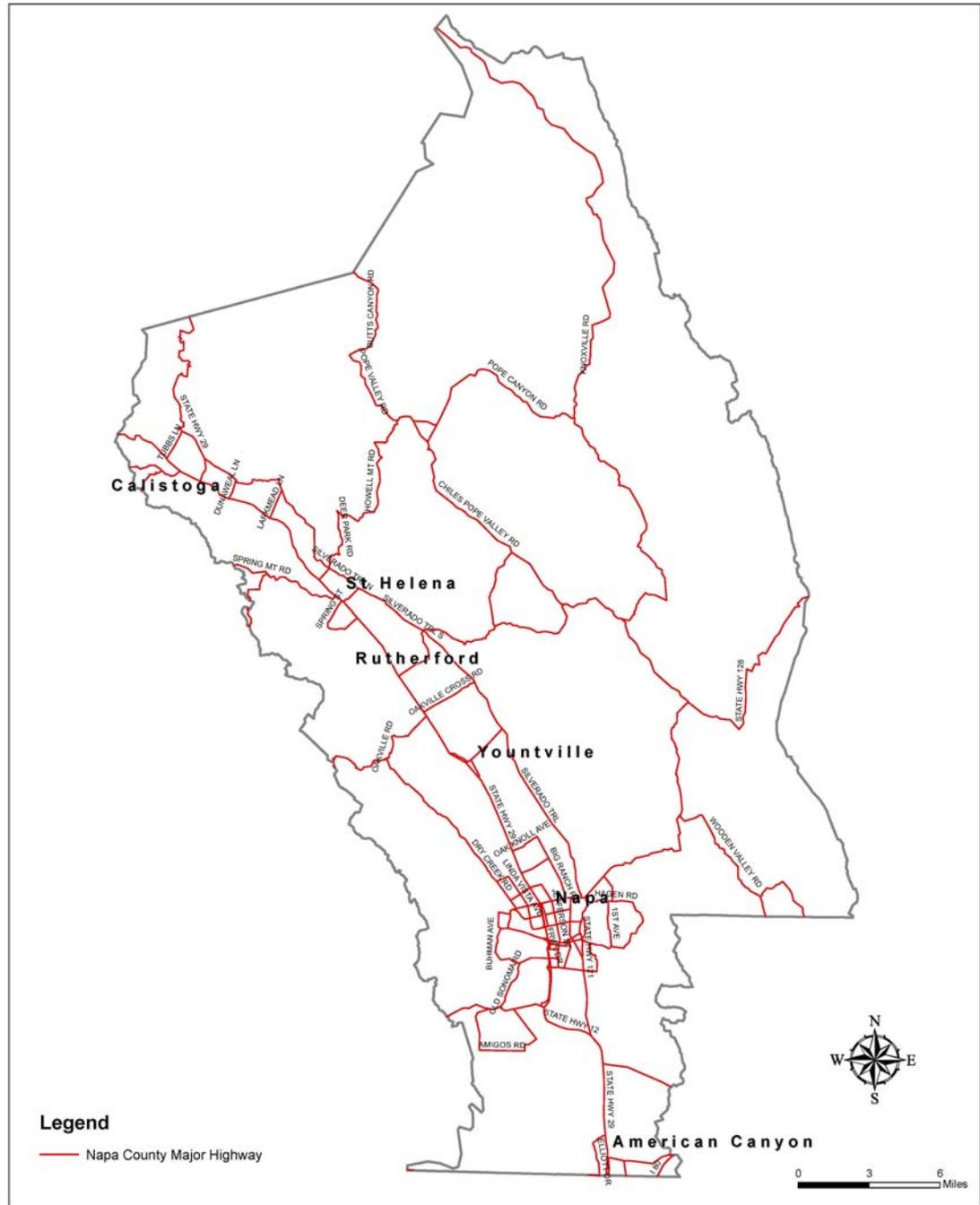
First Street-Second Street Couplet -- These two streets are the major parts of the east-west street system through the center of the City of Napa. They operate as one-way couplets between California Boulevard and Main Street, with First Street carrying two-way traffic on either side of the couplet segments.

Trancas Street – This major east-west roadway serves the northern side of the City of Napa, with significant commercial activity operating on it. Trancas Street carries most traffic between SR 29 and Silverado Trail (SR 121). West of this heavily-traveled segment, Trancas Street becomes Redwood Road.

# Napa's Transportation Future

## Chapter 2: Current Transportation System

**Figure 2-19**  
**Major**  
**Roadways**  
**in Napa**  
**County**



Most of the County's high volume, high speed roadways are arterials which range from: 1) multilane urban thoroughfares with signalized intersections, 2) multi-lane rural expressways with signalized and unsignalized intersections, and 3) single-lane rural roads with generally unsignalized intersections. The following roadways are classified as urban or rural arterials.

- Petrified Forest Road
- Spring Mountain Road
- Wooden Valley Road (Solano County)
- Chiles Pope Valley Road
- Flosden Road
- Soscol Avenue
- Silverado Trail – (within Calistoga)

**Collector Roads** – Collector roads serve as principle traffic arteries within commercial and residential areas. Collector streets have more frequent access from abutting parcels. Access to collector streets is also provided from local streets that directly serve residential developments and commercial centers. In rural areas of the County there are many roadways that do not serve regional traffic and serve more as collectors, providing access between rural destinations and the regional roadway network.

**Local Streets** -- Local streets provide direct access to residential, commercial, industrial developments, or any other abutting land use. Local traffic uses these streets to reach collectors and arterials providing access to the regional network.

### **AUTOMOBILE TRAFFIC**

As expected, most vehicles on the roadways in Napa County are automobiles. The Department of Motor Vehicles reports that 138,211 vehicles were registered in Napa County in 2007. This is an increase from the 104,300 vehicles registered in 2000. The number of vehicles per household has grown from 2.30 vehicles per household in 2000 to 2.6 vehicles per household in 2007.

Not all vehicles in Napa County contain only one person. According to the most recent data on work trips (US Census, 2000), the percent of persons in higher-occupancy vehicles is shown as 17 percent. This is noteworthy in that there are few park-and-ride lots in Napa County.

Parking in Napa County is generally free and provided on site. In some downtown areas, parking is not provided on-site, but is available nearby free of charge. In Downtown Napa, St. Helena, Calistoga and Yountville, persons must park on the street or in off-site parking lots. These areas sometimes have time restrictions for parking, but none are metered.

### **BUSES AND MASS TRANSIT**

There are both public transit systems and private bus operators in Napa County. Both of these are important in serving the needs of residents and visitors.

#### **Public Transit Service**

All public transit systems are managed by the Napa County Transportation and Planning Agency (NCTPA) providing comprehensive transit service to residents throughout the Napa Valley. NCTPA provides administrative oversight and the transit vehicles. For operations, NCTPA manages two separate contracts, currently (2009) with Veolia Transportation Inc. One is for the fixed-route operations (VINE) and the other is for the paratransit and community shuttle operations. Figure 2-20 diagrams the route structure countywide, while Figure 2-21 diagrams the routes within the city of Napa.

The transit system consists of the Valley Intercity Neighborhood Express (VINE) and VINE Go (paratransit), as well a group of community shuttles: Calistoga HandyVan, the Yountville Shuttle, the St. Helena Vine Shuttle, and American Canyon Transit. NCTPA also operates the Downtown Napa Trolley. The Napa transit system accounts for over 800,000 transit trips a year, counting all of the services.

NCTPA's fleet consists of 50 agency-owned vehicles. Of these, twenty are assigned to the VINE, eighteen to VINE Go, and nine to other services (excluding American Canyon Transit) and three Downtown Trolleys. The City of American Canyon owns vehicles used in the American Canyon Transit service.

**VINE Fixed-Route.** The VINE, is designed to provide intra-community service within the City of Napa on local routes numbered between 1 through 6, and regional service on Routes 10 and 11. Routes 1 through 6 operate on weekdays from around 6:30 am to 7:00 pm on 60-minute frequencies. Route 10, which provides inter-community service, operates on weekdays from 5:20 am to 9:25 pm on 60-minute frequencies, Saturday from 6:30 am to 8:40 pm on 90- to 120-minute frequencies, and Sunday from 8:30 am to 7:00 pm on 60- to 180-minute frequencies. Route 11, an inter-county route, operates three round trips on Monday, Tuesday, Wednesday, and Saturday.

With the exception of Route 11, all routes radiate from the Pearl Street Transfer Center located at 1151 Pearl Street in the City of Napa. Routes are interlined to reduce the necessity of a transfer.

Fares are based upon the distance traveled, calculated by zone, with up to four zones needed to complete a trip. In 2008 the total fare varied from \$1.25 to \$2.75.

**Napa Downtown Trolley.** This free trolley in downtown Napa provides service for patrons to access various shopping, dining, and local attractions in the City of Napa like Napa Premium Outlets, Napa Town Center, Napa Valley Expo, Historic Napa Mill, and the Wine Train. The Downtown Trolley operates one route on Sunday through Wednesday on 45-minute frequencies from 11 am to 6:30 pm (8 pm on Sundays). On Thursday through Saturday the trolley operates two routes from 11 am to 10 pm (until 8 pm on Thursdays) on 30-minute frequencies.

**Calistoga HandyVan.** The Calistoga HandyVan is an on-demand transit service for the general public within the City of Calistoga. No advanced reservations are required. The van is wheelchair accessible and can accommodate up to seven riders and two wheelchairs. The HandyVan connects with the VINE Transit service. Transfers are located at bus stops on the bridge at Lincoln Street and also Brannon Street. A pickup can also be scheduled by phone and the van will arrive within 15-20 minutes. The van operates 8:15 am to 12 pm and 1 pm to 5 pm, Monday through Friday, and 9 am to 1 pm on Saturday. There is no service on Sunday. The fare in 2008 is \$2.50 one-way cash fare.

**Yountville Shuttles.** The free Yountville Shuttle provides local fixed-route service in the Town of Yountville. The service operates on a 30-minute frequency from 9 am to 4 pm on Tuesday through Sunday, with no service on Monday. During the summer a special 'Summer Schedule' operates an express run between Town Hall and the Veterans Home Pool midday. Connections to VINE can be made at Veterans Home and on Washington Street in downtown Yountville. The same bus will also go off the route to provide door-to-door service through the community, with a one-way cash fare in 2008 of \$1.00 for a regular adult and a reservation call at least 30 minutes in advance.

**St. Helena VINE.** The St. Helena VINE provides local service in the City of St. Helena and to Deer Park at St. Helena Hospital. Connections to VINE at St. Helena City Hall (northbound side) and Main at Pope Streets (southbound side) in downtown St. Helena, and to Lake Transit at St. Helena Hospital. The bus operates from 7:45 am to 5 pm on a 40-60 minute frequency in the morning and afternoon. There is no bus service around noon. In 2008 the one-way cash fare is \$0.50 for a regular adult. The same bus will also go off the route to provide door-to-door service through the community, with a one-way cash fare of \$1.00 for a regular adult.

**American Canyon Transit Shuttle (The Duck).** American Canyon Transit (ACT) Shuttle provides service within the City of American Canyon, and begins and ends at the Safeway at State Highway 29 and American Canyon Road. Service operates on a 90-minute frequency between 7:30 am and 5:55 pm, Monday through Friday. No service is provided on Saturday, Sunday or holidays. In 2008 the fare is \$1.00 for regular adults. The same bus will also go off the route to provide door-to-door service for seniors and disabled individuals only. A reservation call at least 30-minutes in advance is required.

**VINE Go.** The VINE Go is a door-to-door, paratransit service that serves Napa Valley from Calistoga to American Canyon and portions of the City of Vallejo, for ADA individuals and seniors who live in south Napa County, and general public residents that live in the North Valley cities of Yountville, St. Helena and Calistoga, and unincorporated areas within Napa Valley. The service is required to be offered for any resident who lives within  $\frac{3}{4}$  of a mile of a Vine transit route. The VINE Go Paratransit Service provides service during weekdays from 5:20 am to 9:30 pm, on Saturday from 6:00 am to 8:30 pm, and Sunday from 8:00 am to 7:00 pm. Reservations and changes to existing trips may be scheduled Monday to Friday from 8:00 am to 6:00 pm, and from 8:00 am to 5:00 pm on weekends. In 2008 the fare charged is based upon the distance traveled which varies from \$2.00 up to \$4.50.

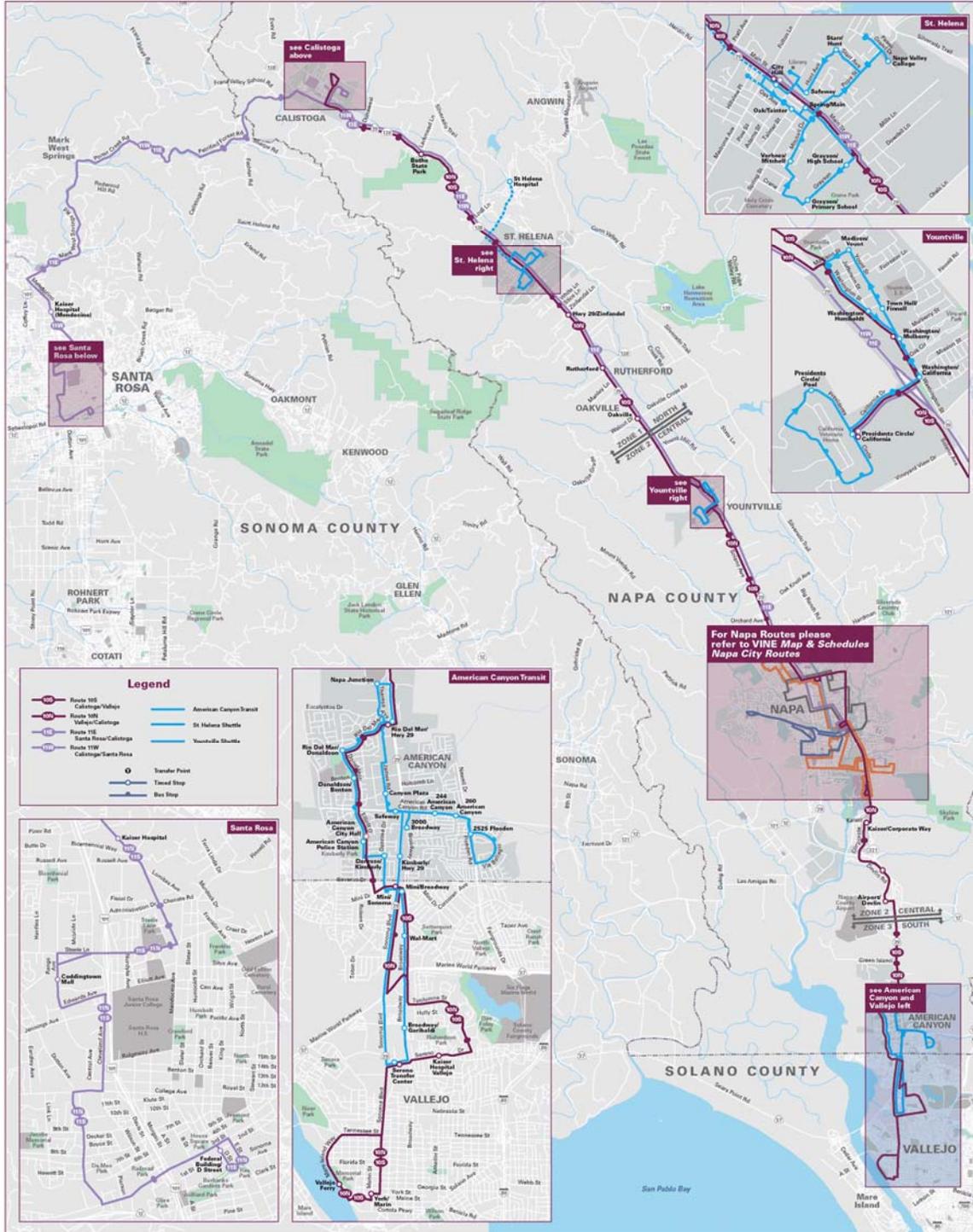
**Taxi Scrip Program.** The NCTPA also funds a taxi scrip program for persons over the age of 65 and/or those with disabilities. The taxi scrip program allows patrons to access local area taxi service at a reduced cost. Trips can be taken anywhere from Napa to Yountville and to/from St. Helena Hospital in Deer Park. The scrip program allows trips for medical appointments to Kaiser Hospital in Vallejo. Service is available 24 hours a day/7 days a week. Taxis are the only form of public transportation available when other buses do not operate.

**AMTRAK Connections.** Although AMTRAK does not provide passenger rail service within the Napa County, it does offer fixed-route connector buses between two locations in the Napa County and the nearest Amtrak station in Martinez. Passengers boarding AMTRAK at Martinez 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.

# Napa's Transportation Future

## Chapter 2: Current Transportation System

Figure 2-20 Napa VINE Transit Routes -- Countywide

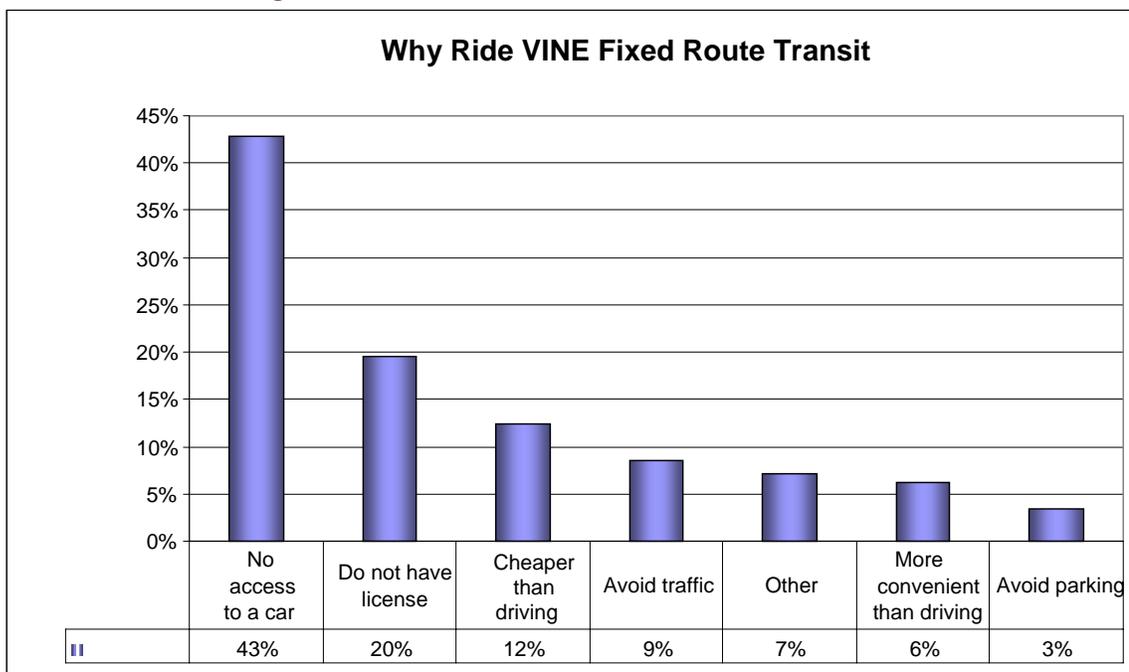




### Bus Transit User Profile

**Figure 2-22** illustrates why people ride the VINE Fixed route transit. Over 62 percent of the VINE riders either do not own or have access to a car, or do not have a license. In addition, higher gasoline price contributes to the other 12 percent of the riders. Other reasons include to avoid traffic, more convenient than driving and to avoid parking, etc. Thus, while Napa has one of the lowest transit ridership rates in the Bay Area, we have one of the HIGHEST rates of “transit dependent” riders – our riders do not have other transportation alternatives. If the Napa economy continues to add lower wage jobs at the current rate then we can expect that transit ridership will grow.

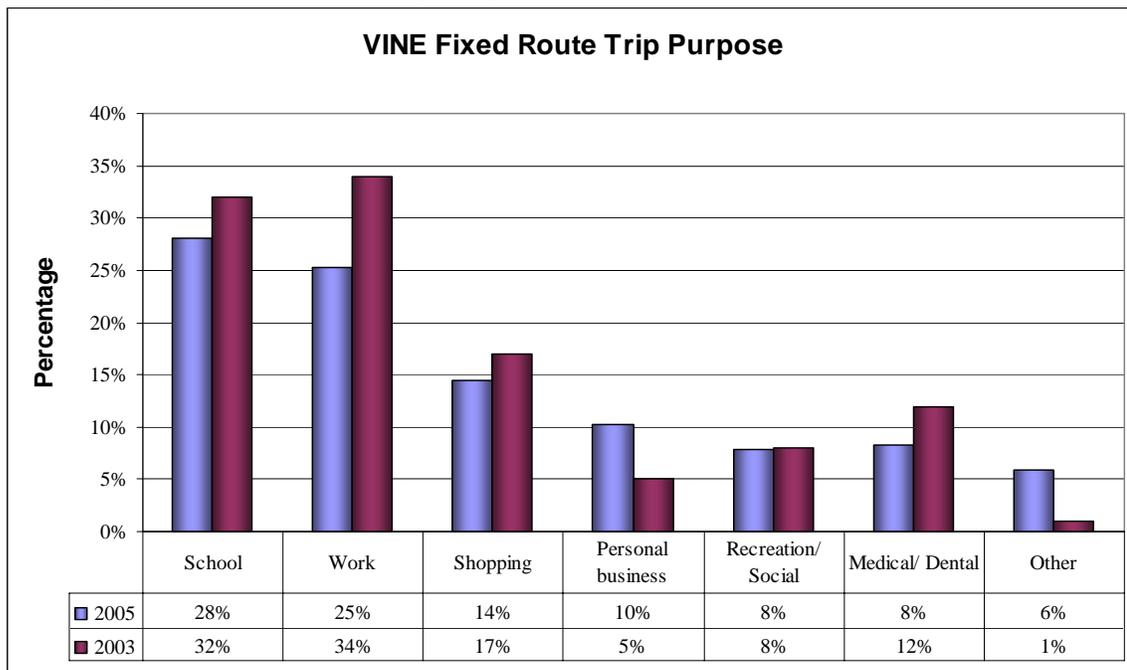
**Figure 2-22 Reason for Riding VINE Fixed Route Transit**



Source: 2005 Short Range Transit Plan

**Figure 2-23** illustrates the main trip purposes of VINE bus trips in 2003 and 2005. The primary groups who take VINE frequently during the week, **students and commuters**, increased from 53 percent to 66 percent between 2003 and 2005. The percentages of the riders who take VINE for shopping or going to Medical/Dental appointments increased by 3 percent and 4 percent from 2003 to 2005, respectively. The rest of the trip purposes, e.g. personal business, recreation/social, etc, were relatively less in 2005 compared to 2003.

**Figure 2-23 Napa VINE Fixed Route Trip Purpose**



Source: 2005 Short Range Transit Plan

The 2008 Short Range Transit Plan provides a comprehensive look at ridership trends for all types of transit service within Napa County. The results show that bus services have not shown a significant increase in ridership in the past few years, and the overall transit rider numbers are lower than they were in 2002, as shown in **Table 2-4**. The reasons for this decline in ridership are not clear and NCTPA is conducting additional studies to further understand this phenomenon.

**Table 2-4**  
**Ridership Trends of Napa County Bus Systems**

Transit Service	Year	Annual Boardings	Annual Trend
VINE/Downtown Trolley	2002/03	941,473	
VINE/Downtown Trolley	2003/04	756,801	-19.6%
VINE/Downtown Trolley	2004/05	730,778	-3.4%
VINE/Downtown Trolley	2005/06	777,388	6.4%
VINE/Downtown Trolley	2006/07	791,238	1.8%
American Canyon Transit	2002/03	10,418	
American Canyon Transit	2003/04	10,786	3.5%
American Canyon Transit	2004/05	10,083	-6.5%
American Canyon Transit	2005/06	10,058	-0.2%
American Canyon Transit	2006/07	9,337	-7.2%
St. Helena VINE Shuttle	2002/03	8,574	
St. Helena VINE Shuttle	2003/04	5,912	-31.0%
St. Helena VINE Shuttle	2004/05	6,024	1.9%
St. Helena VINE Shuttle	2005/06	7,180	19.2%
St. Helena VINE Shuttle	2006/07	7,164	-0.2%
Yountville Shuttle	2002/03	10,927	
Yountville Shuttle	2003/04	7,228	-33.9%
Yountville Shuttle	2004/05	8,529	18.0%
Yountville Shuttle	2005/06	9,013	5.7%
Yountville Shuttle	2006/07	8,760	-2.8%
Calistoga HandyVan	2002/03	9,053	
Calistoga HandyVan	2003/04	7,686	-15.1%
Calistoga HandyVan	2004/05	6,422	-26.4%
Calistoga HandyVan	2005/06	6,318	-1.6%
Calistoga HandyVan	2006/07	5,999	-5.0%
VINE Go (Paratransit)	2002/03	35,704	
VINE Go (Paratransit)	2003/04	31,701	-11.2%
VINE Go (Paratransit)	2004/05	32,018	1.0%
VINE Go (Paratransit)	2005/06	33,454	4.5%
VINE Go (Paratransit)	2006/07	33,773	1.0%

Source: 2008 Short Range Transit Plan

### Transit System Funding and Cost

Most transit systems rely heavily on public financial assistance to make the operations viable. This issue is obvious from **Table 2-5**, which summarizes the annual operating costs and available farebox revenue for each of the various local bus services. It shows that only 15 percent of operation costs for VINE Fixed route and 7 percent for VINE Go in 2005 came from farebox receipts. The other local shuttle systems achieve about a 10 percent farebox recovery, primarily because of local government contributions to the system.

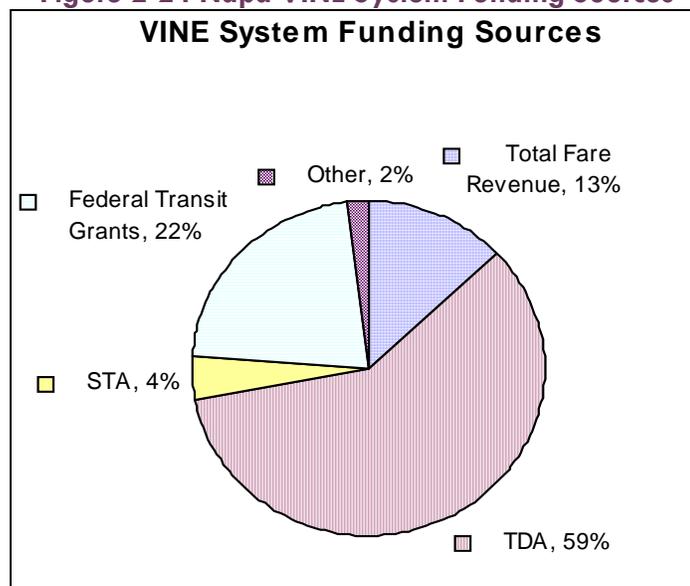
The role of other sources of funds are highlighted in Figure 2-24, which illustrates funding sources for the VINE system. Transportation Development Act (TDA) accounts for 59 percent, and the Federal Transit Grants contribute a 22 percent of the total funding. The rest of the funding came from State Transit Assistance (STA) and other sources.

**Table 2-5**  
**Percentage of Transit Operating Costs Recovered Through Farebox Revenue**

Transit Service	Operating Costs	Farebox Revenue	Farebox Ratio
VINE/Downtown Trolley	\$4,338,718	\$657,384	15.2%
American Canyon Transit	\$167,937	\$18,023 (city paid \$10,735)	10.7%
St. Helena VINE Shuttle	\$151,341	\$14,461 (city paid \$12,641)	9.6%
Yountville Shuttle	\$135,515	\$14,636 (city paid \$13,794)	10.8%
Calistoga HandyVan	\$150,331	\$15,595 (city paid \$10,953)	10.4%
VINE Go (Paratransit)	\$1,117,431	\$75,608	6.8%

Source: 2008 Short Range Transit Plan

**Figure 2-24 Napa VINE System Funding Sources**



Source: 2008 Short Range Transit Plan

**Private Shuttles and Buses**

In addition to the public transit system, private tour shuttles and buses are also available for visitors who are often going to locations not conveniently served by the public transit system.

**Beau Wine Tours.** Beau Wine Tours offers several selections, including Napa Valley, Sonoma Valley, Northern Sonoma Valley, and a collector's wine tour. Different types of regular to luxury vehicles can be selected. In addition, a more economical daily shuttle tour is also offered.

**California Wine Tours.** California Wine Tour offers several private tour packages throughout Sonoma Valley and Napa Valley. The services are offered in a large fleet of luxury vehicles.

**Evans Transportation.** Evans transportation offers several private tours, including wine tours in Napa Valley, Sonoma Valley, or Northern Sonoma. In addition, Champagne Cellar Tours, Wine Education Tours and

Historical Tours are also provided. Different types of vehicles from regular to luxury. Evans also offers shuttle service to San Francisco and Oakland airports several times a day.

**My Napa Valley Limousine.** My Napa Valley Limousine provides 6 or 10 passenger stretch limousine for their Unlimited stop wine tour in Napa Valley, Sonoma Valley or Livermore Valley with 6-8 hours of quality service.

**Napa Limo.** Napa Limo provides services to help the visitors arrange a customized itinerary to suit their needs.

**Napa Winery Shuttle.** Napa Winery Shuttle offers a door-to-door pick up and drop off service throughout the Napa Valley with a flexible schedule by reservation. Limited service is also offered to a large list of hotels in the area without reservation. One-day and two-day tours are also offered with a selection of winery tasting stops.

**Platypus Tours.** As an affiliate of Beau Wine Tours, Platypus Tours is mainly focused on the daily wine tours in Napa Valley with an intimate limousine bus. Pick-up and drop-off is provided at any hotel or inn in the City of Napa or Yountville, or at the Napa Town Center.

**Pure Luxury Limo.** Napa Valley Wine Tour, Sonoma Valley Wine Tour, Alexander Valley Wine Tour and Russian River/Dry Creek Valleys Wine Tour are offered. Creating personalized tours from a list of suggested wineries list is also offered.

**Royal Coach Limo.** The oldest and largest limousine service in the Napa Valley, Royal Coach Limo offers regular limos and limo buses for wine touring or private charters in and around the Napa Valley.

Shuttles from lodging/resorts. A number of hotels in Napa County provide their own shuttle services. These include:

- Hilton Garden Inn
- Napa River Inn
- Meritage Hotel

These shuttle services provide guests with an option of not driving to restaurants or other local destinations.

## **TRUCKS**

As a county with a sizeable agricultural economy, the movement of supplies, farm equipment, and agricultural products (particularly grapes and wines) is all important. As an example, the wine industry must use trucks to bring in wine barrels and bottles, transport grapes and various grape fermentations to other areas for blending and processing, and to then take the finished products to distribution points around the world. Trucks are also often found on roadways for other purposes besides agriculture, transporting products within Napa County as well as to neighboring counties.

The roadway system in Napa County is not generally conducive to the movements of heavier trucks. Apart from a very few higher speed road sections in Napa, most major roads are controlled with traffic signals and stop signs. Because of this, trucks often have long acceleration and deceleration distances at each of these stopping points. The result is that trucks tend to slow down overall roadway corridor speeds.

An indication of the significance of trucks is found in the percent of trucks found on Napa roads. On Route 29, surveys show about 7 percent of the traffic (approximately 4,200 trucks per day) at the highest volume segment – between SR 12 and Soscol Avenue. This percentage is also found in Rutherford, which has about 1,900 trucks a day surveyed on State Route 29. Surveys even show that 5 percent of all vehicles are trucks at the lower-volume segment of State Route 29 north of Calistoga – about 230 trucks per day. These surveys also

show that about half of these trucks have four or more axles on them, demonstrating a high proportion of trucks with semi-trailers.

The Airport Industrial Area is associated with considerable truck activity due to the many warehousing and processing facilities there, the majority of which serve the wine industry. Many of these facilities are located here specifically to take strategic advantage of the truck connectivity made possible by relatively close access to Interstate 80 six miles to the east via Jameson Canyon Road (State Route 12), and access to US 101 via State Route 37 a few miles to the south. Locating these production facilities in the southern part of the county relieves the northern parts of the county of this industrial activity and associated truck traffic.

### **BICYCLING**

Bicycling is an increasingly popular activity in Napa County. The 2000 Census reported that nearly 1% percent of residents used bicycles for commuting, although bicycling is also popular for students, non-work trip making, and visitor and resident recreation.

Bicycle facilities are classified as follows:

- *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.

Napa County has several off-street trails and paths, as well as on street bicycle lanes and routes. The Napa County Bicycle Map, as shown in **Figure 2-27**, indicates many facilities throughout the County. **Figure 2-28** provides details within the cities and town. Some key facilities include:

- Class I Bike path in the City of Napa that parallels the Wine Train tracks across town from Redwood Blvd to Main Street.
- Class I Bike path in the City of Napa along west bank of the Napa River from Lincoln to Trancas Street.
- Class I Bike path in the City of Napa along the east bank of the Napa River at the southern end of the city.
- Class I bike path in Calistoga from Dunaweal Lane into town.
- Oat Hill Mine trail – a popular mountain bike trail north of Calistoga.
- Silverado Trail and valley cross roads, especially Oakville and Yountville Cross Roads – popular bike touring routes, generally class II.
- Carneros region – flat touring routes in the southern part of the County, generally class III, with low traffic.

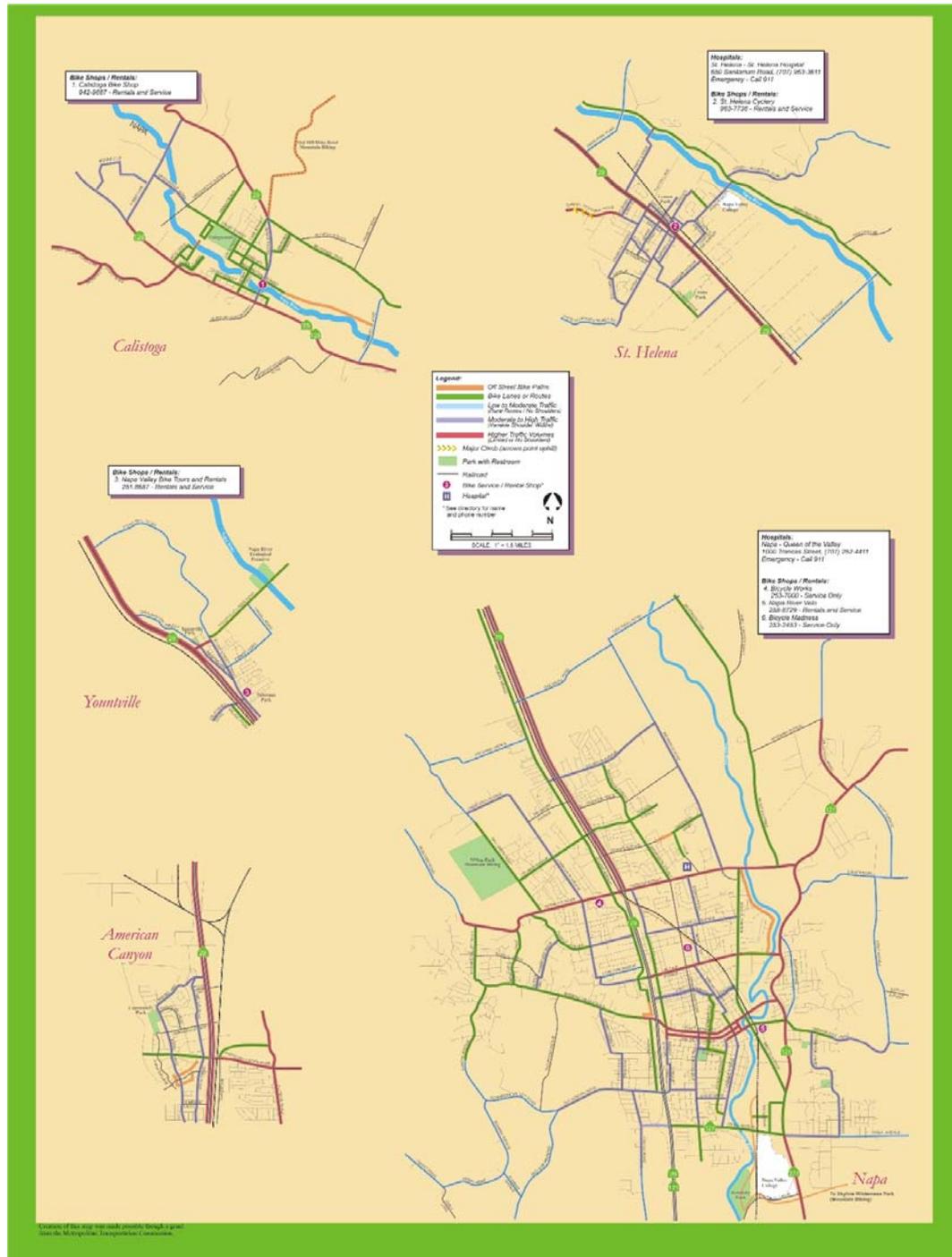
A recently concluded (2009) feasibility study has evaluated the construction of a Class I “Greenway” running the length of Napa County from Calistoga to the Vallejo Ferry.



# Napa's Transportation Future

## Chapter 2: Current Transportation System

**Figure 2-28**  
**Napa Bicycle**  
**Network –**  
**Details in**  
**Cities**



### **WALKING – PEDESTRIAN INFRASTRUCTURE**

One commonly overlooked transportation mode is walking. Subdivisions that were built in the 1960s and 1970s were often built without sidewalks reflecting a presumption that all travel would be by car. Sidewalks, crosswalks and paths create links between homes and activity centers, among different activity centers, and to and from transit stops.

The County's pedestrian network consists of sidewalks, multi-use trails, crosswalks and pedestrian-actuated signals at major intersections within developed areas. Sidewalks are usually provided in developed commercial and residential areas and are rarely provided in the low-density rural areas of the County. Class I bicycle trails are usually designed as multi-use trails that can be shared with pedestrians. Pedestrian activity is often an uncounted mode, although over 4 percent of Napa County residents actually walk to work (NCTPA 2005).

The design standards of sidewalks, paths and crosswalks have been a topic of increasing interest in the past few years. The Safe Routes to Schools and Safe Routes to Transit programs promote good designs that enable better visibility and security for users. The requirements of the Americans with Disabilities Act also have promoted improved design so that wheelchairs and other mobility-limited persons can use pedestrian facilities.

Sidewalks are generally found extensively through the city cores of Napa, St. Helena, Calistoga, and Yountville. A sidewalk system is emerging in newer sections of American Canyon

### **RAIL**

There are currently railroad tracks located generally alongside SR 29 between St. Helena and the Solano County line at American Canyon. There is another spur line that runs between the north side of American Canyon (also known as "Napa Junction") eastward to the Solano County line near Cordelia. These tracks are owned by California Northern Railroad (part of Rail America) south of the City of Napa, and owned by the Napa County Wine Train from southern portion of the City of Napa to St. Helena. This corridor is generally only one-track with limited bypass opportunities for trains. Thus, train operations are somewhat challenging to provide.

The Napa Valley Wine Train operates as the sole "passenger service" on these tracks. This train service was conceived as a visitor activity in 1984. The company that operates the train purchased 21 miles of track and 125 acres of right-of-way land for \$2.25 million in April 1987 from Southern Pacific, which had owned the line since 1885, when it purchased the Napa Valley Railroad, which had been founded in 1864. The recreational line includes 36 miles of track which runs from Roctram (south of the city of Napa) to north of the Krug Winery in St. Helena. Passengers on the Wine Train roll by 26 different wineries on their trip, which typically lasts about three hours, then return back to the downtown Napa station from which they departed.

Some freight service also operates on these tracks. Freight rates and requirements are specified through California Northern Railroad.

There is another track line which extends from south of Sonoma at the Sonoma County line to this track south of the Airport Industrial Park. This track is owned by the Sonoma-Marin Area Rail Transit District, as part of the transfer made from the Northwestern Pacific Railroad by the legislature in 2002.

### **WATER TRANSPORTATION**

The two major waterways in Napa County are Lake Berryessa, a man-made reservoir which serves as a domestic water supply reservoir, and the Napa River, which flows 55 miles from Mt. St. Helena to San Pablo Bay. The lake is used for recreational purposes, and the river functions as a recreational waterway. The river is dredged part way up from San Pablo Bay and can accommodate barges up to 100 feet wide, which provides the opportunity for industrial transportation on the river, particularly for the American Canyon area. Boats can motor up the Napa River as far as the First Street Bridge in the City of Napa, although speeds are restricted above Curtting's Wharf.

**Vallejo Ferry.** The City of Vallejo operates the Baylink passenger ferry service to the Embarcadero, in San Francisco from Downtown Vallejo seven days a week. This service has recently been transferred to the Water Emergency Transportation Authority, an agency created by the State. Ferry rider surveys show that 22 percent of the users of this ferry are from Napa County.

The Napa River environment is sensitive, and boat speeds are restricted. There is a "No Wake" area maximum speed of 5 miles per hour on a portion of the river north of Cutting's Wharf. Currently, the No Wake restriction essentially restricts water use of the Napa River to minor recreational boating by private boats.

### **AIR TRANSPORTATION**

There is no commercial air traffic currently permitted in Napa County, and there are no major airports in adjacent counties. Persons wishing to connect to a major commercial airport -- San Francisco International Airport or Oakland International Airport -- are able to park vehicles in Napa at a commercial lot, and be driven to the airport. Private services are also available to provide direct transportation between hotels and commercial airports (with reservations). However, there is not an integrated service that is easily available to the public without making reservations beforehand.

Ten general aviation airports are located within a 25-nautical mile radius of Napa County Airport. Of these, seven are public-use facilities: Buchanan Field, Gness Field, Nut Tree, Petaluma, Angwin-Parrett Field, Sonoma Skypark, and Sonoma Valley; two are private-use facilities: San Rafael, Travis Aero Club; and one is a military airfield (Travis Air Force Base). Public access to the private facilities requires prior permission of the operator.

#### **Napa County Airport**

Napa County Airport is located on the periphery of the very complex San Francisco Bay Area Class B airspace environment. The airspace in the vicinity of the Airport, as well as the operations of air traffic using the Airport, are significantly influenced by the complex interaction of aircraft operating to and from the Bay Area's numerous other general aviation and military airports.

The Napa County Airport is served by a Federal Aviation Administration Air Traffic Control Tower, which provides air traffic control on a 13-hour per day basis from 7:00 A.M. to 8:00 P.M. Napa County Airport is currently pursuing installation of a glide slope antenna to permit creation of a precision approach.

As a general aviation facility, the airport provides a base of operations for local pilots, a point of air access to Napa and the communities surrounding the airport and a center for flight training (including a major training

center for Japan Airlines). The California Highway Patrol operates search and rescue, and emergency medical service operations for the nine Bay Area Counties from the Napa County Airport.

The Airport is financially supported through revenue earned at the Airport along with Federal and State grants for capital improvements. There is no County general fund support. It is estimated that aircraft at Napa Valley Airport provide \$1.8 million annually in property taxes. Nearly 75 percent of the tax dollars collected is allocated to Napa Valley schools.

Although there is no commercial service at the Napa County Airport, a large number of private planes are hangared there and charter services are available.

**Table 2-6 Activity at Napa County Airport**

Napa County Airport <sup>1</sup>	2001
<b>Locally Based AIRCRAFT</b>	
Single-Engine	183
Twin-Engine	19
Turboprop	13
Jets	7
Helicopters	2
Total Aircraft	224
<i>Storage Demand</i>	
Apron	87
Hangar Space	137
<b>TRANSIENT AIRCRAFT</b>	
Peak Parking Demand	27
<b>ANNUAL AIRCRAFT OPERATIONS (take offs/landings)</b>	
Single-Engine Piston	86,040
Twin-Engine Piston	15,640
Twin-Engine Turboprop	13,140
Small Jet (e.g., Citation)	5,630
Medium Jet (e.g., Falcon 900)	1,250
Large Jet (e.g., Gulfstream)	1,880
Helicopters	2,500
Total	126,080

### Angwin-Parrett Field Airport

Virgil O. Parrett Field is located in the unincorporated community of Angwin and is owned by Pacific Union College. Although the airport is privately owned, it is open to the public. Charter services have been expanding steadily as larger airports become more congested and security-conscious.

<sup>1</sup> Napa County Airport Master Plan, March 2007

### GREENHOUSE GAS EMISSIONS FROM TRANSPORTATION

In January 2009 a baseline greenhouse gas (GHG) emission inventory for all six Napa County jurisdictions was produced by NCTPA in partnership with the Bay Area Air Quality Management District and the ICLEI Cities for Climate Protection program. A principal purpose of the inventory was to establish a base year for analysis and forecasting. The inventory provides estimates of GHG emissions from transportation, energy and waste related activities at the community-wide scale. The inventory results are shown in **Tables 2-7 and 2-8** below. The study shows that the total annual GHG emissions for Napa County are 1,167,235 metric tons with the major source of emissions coming from the transportation sector.

**Table 2-7 Napa Countywide Greenhouse Gas Emission Inventory – by sector**

<i>Emissions by Sector</i>	<b>Napa Countywide Estimates</b>	
	<i>CO2 emissions (metric tons)</i>	<i>Percent of total</i>
Residential	196,350	16.8%
Commercial/ Industrial	226,661	19.4%
On-Road Vehicles	636,724	54.5%
Off-Road Garden	3,616	0.3%
Off-Road Industrial/Commercial Vehicles	49,675	4.3%
Solid Waste	54,209	4.6%
<b>TOTAL</b>	<b>1,167,235</b>	<b>100%</b>

**Table 2-8 Napa Countywide Greenhouse Gas Emission Inventory – by Jurisdiction**

<i>Emissions by Jurisdiction</i>	<b>Napa Countywide Estimates</b>	
	<i>CO2 emissions (metric tons)</i>	<i>Percent of total</i>
Unincorporated County	519,169	45%
City of Napa	454,776	39%
American Canyon	91,445	8%
St. Helena	45,283	4%
Calistoga	28,295	2%
Yountville	28,267	2%
<b>TOTAL</b>	<b>1,167,235</b>	<b>100%</b>

These findings illustrate that transportation will be a principal target area in Napa for GHG reduction. Further, it is clear from this data that the main targets for reduction will be found in the unincorporated areas of the County and in the City of Napa (both of which also had relatively high percentages of internal GHG emissions from transportation – 50% for the City of Napa and 68% for the unincorporated areas of Napa County)

## Travel Demand

The current demands placed on the transportation system can be examined through a variety of methods. These include surveys of households and travel data.

### **JOURNEY TO WORK**

#### **Commute Patterns**

An understanding of travel demand often begins by understanding how people make work trips. Work trips often represent the highest proportion of trip purposes on the system at peak hours. In addition, work trips are longer than non-work trips on average. Thus, a description of the quality of the work trip provides important insight to Napa County travel issues.

Based on the commuter transportation pattern data from 2000 Census, as shown in **Table 2-2**, when compared to other areas, the average Napa County resident commuter enjoys a relatively satisfactory work trip.

A significant factor in commute patterns is the variability in housing costs. Because many visitor industry, agricultural and retail jobs pay relatively low wages, the persons who fill these jobs often must come from other counties. (The discussion of "demand strategies" in Chapter 4 contains a more extensive investigation of the travel implications of the local jobs/housing balance.)

#### **Major Employers**

Within Napa County, there are a number of locations which have high concentrations of employment. These locations are important to identify as they represent where many of the workers that use transportation are seeking to go. Key major employers include hospitals and medical facilities, wineries, resorts and schools. **Table 2-9** shows the number of employees at various major employers throughout Napa County. In addition to these single employer sites, other major concentrations of employees (with multiple smaller employers) can be found at retail centers (including the major commercial streets in Napa, St. Helena and Calistoga) and at the Airport Industrial Area business and industrial parks. All of these job sites have potential for improved commute-time travel efficiency via carpooling, van pooling and other work-site related Transportation Demand Management programs. The strategy presented on page 4-48 expands on this potential.

# Napa's Transportation Future

## Chapter 2: Current Transportation System

**Table 2-9**  
**Major Employers**

<b>Firm</b>	<b>Number of Employees</b>
Napa State Hospital	1778
Cultured Stone	1500
Napa County	1300
Queen of the Valley Hospital	1200
Napa Valley Unified School District	1000
California Veterans Home	1000
Cultured Stone	700
St. Helena Hospital	635
Trinchero Family Estates	538
Beringer Blass Wine Estates	491
Silverado Resort	455
Diageo Chateau and Estate Wine Co.	425
City of Napa	412
Golden State Vintners	301
Pacific Union College	300
Napa Valley College	266
Solage Resort	255
Robert Mondavi Winery	230
Wal-Mart #2925	220
Auberge du Soleil	225
Carneros Inn, The	200
Calistoga Ranch	200
Napa Valley Marriott Hotel and Spa	175
The Doctors' Company	170
Kaiser Permanente	160
Santen Incorporated	160
State Compensation Insurance Fund	156
Home Depot	150
Meadowood Resort	150
Meritage Inn	150
The Meadows of Napa Valley	150
Target	150
Aldea, Inc.	150
Vallerga's Market	150
Napa Valley Wine Train, Inc.	140
SBC California	137
Embassy Suites	120
Rings Restaurant in Embassy Suites	120
Beaulieu Vineyard	110
Napa Valley Register/Publishing	110
Vintage Bank	108
Community Action Napa Valley	105
Pokka USA, Inc.	105
Charles Krug Winery	100
McDonald's of Napa Valley	100
Walsh Vineyards Management, Inc.	100

### Issues Related to Work Trips

There are many issues related to meeting the needs of workers in Napa County. Among some of the issues and current efforts to address them are:

Agricultural workers. These workers often need to move from site to site throughout the day, and they often travel long distances to reach Napa Valley. There have been efforts to consider how to serve the transportation needs of these workers through van programs so that they can have coordinated mobility while performing their jobs.

Employer-based commuter programs. Many local employers provide coordination to reduce parking needs on-site and to provide workers with better transportation to and from work. Examples include V. Sattui Winery and Dey, LLC. These are supplemented through the Solano Napa Commuter Information service (SNCI), which provides ridesharing and transit information and assistance working with employers. SNCI visits workplaces throughout Napa County to discuss commute alternatives such as carpooling, vanpooling, transit, and bicycling and the benefits that these commute options provide. SNCI also attends benefits fairs and other company events to provide employees with tailored commute options. SNCI also works with employers to start and promote their own vanpool programs. SNCI offers incentives for bicycling to work and vanpooling and helps employers set up their own low-cost and low-maintenance incentives to encourage employees to use commute alternatives.

The “Emergency Ride Home” program is available to all employers in Napa County. Registered employees that use a commute alternative, such as a vanpool or carpool, are able to get a free ride home in the case of an emergency. The program provides a free emergency ride home if an employee:

- has used alternative transportation to get to work: carpool, vanpool, train, ferry, bus, walk or bicycle (motorcycles are not considered an alternative mode); and
- the employee or an immediate family member suffers an illness or severe crisis that requires their immediate attention; or
- After the start of their shift or workday, the employer requests that the employee work unscheduled overtime (supervisor authorization is required); or
- the employee’s ridesharing vehicle breaks down or the driver has to unexpectedly stay late or leave early.

The NCTPA hosted a Napa Major Employers Commute Summit 2008 to better inform these employers of the concepts and benefits associated with Transportation Demand Management (TDM) programs.

## SCHOOL AND AFTER SCHOOL/ CHILD CARE TRANSPORTATION NEEDS

### School Locations

Napa County currently has about 20,000 children enrolled in public and private schools. The largest school sites are high schools. There are six high schools in Napa County, with most students currently attending one of two – Vintage High School or Napa High School in Napa. These schools report substantial activity during the times when schools begin and end. School starting times are similar to those for morning commuter traffic, combining to make some corridors even more congested. This is especially true for students who live in American Canyon but attend high school in Napa. The construction and opening of a new high school in American Canyon in 2010 should help to reduce traffic volumes on SR 29 once the facility is opened. **Table 2-10** shows recent high school enrollment.

**Table 2-10**  
**Public High School Enrollment in Napa County**

School	Grade Level	05-06 Enrollment
Vintage High School	9-12	2423
Napa High School	9-12	2309
St. Helena High School	9-12	504
New Technology High School	11-12	369
Calistoga Junior/Senior High School	7-12	360
Valley Oak High School	9-12	214
Napa Valley Alternative School	6-12	150

Middle Schools are also significant generators of trips. The travel needs of middle school students are different from those in high school, in that many high schools students drive themselves to work before or after school.

**Table 2-11** summarizes middle-school enrollment in Napa County.

**Table 2-11**  
**Public Middle School Enrollment in Napa County**

School	Grade Level	05-06 Enrollment
River Middle School	6-8	260
Silverado Middle School	6-8	873
Robert Louis Stevenson Intermediate School	6-8	313
American Canyon Middle School	6-8	798
Harvest Middle School	6-8	909
Redwood Middle School	6-8	1148

Source: California Dept of Education, 2005/06 Enrollment

There are 29 public elementary schools across Napa County. These schools contain about 9,400 pupils.

### School Choice

State Law requires school districts which operate more than one elementary, middle or high school to establish a policy of intra-district open enrollment. Napa Valley Unified School District has an open enrollment period each year to allow students to choose a school other than their neighborhood school. There are specified periods when the application must be submitted, and applications are available at their designated neighborhood school, or at the school where the child currently attends. Most enrollment choices are made when the child begins attending the initial year at a school, although some transfers can be requested. Siblings of currently enrolled students receive priority placement.

The school choice issue can create an abundance of additional short-distance trips around schools at the beginning and end of the school day. As parents are able to choose schools further from their homes, they are often required to either chauffeur their children or to have them ride a bus. This adds additional travel time to both the parent's and child's day. If the parents drive the students, this then can contribute to creating more auto pollution and energy use, as well as create localized congestion around the schools.

### After School Options

Another school-trip challenge is the provision of after school care options. A related issue is that parents need to coordinate student schedules with their own work schedules.

### School Buses

The Napa Valley Unified School District currently operates 50 buses that carry students to school free of charge. There are two programs, one for general home-to-school transportation and one for special needs vehicles. There are 26 general buses in use, and 24 special needs buses. Most of the home-to-school buses are compressed natural gas, including a hybrid compressed natural gas/electric bus (unique in California), which has been good at keeping fuel costs and emissions low. The buses do two trips per day, one during the morning and one for the afternoon.

Each general home-to-school route is required to carry at least 12 students. For students who live too far to make a service viable, the District reimburses parents in lieu of transportation. The school served by a bus is specific to a given area. Students who use the service must live a designated distance from the school. Many students also use the Vine bus service, as noted above as an alternative to this service.

The average number of pupils transported per day was 1,657 general home-to-school daily and 189 for special needs in 2006/07. The reported annual mileage for the bus fleet was 339,000.

### Private Schools

There are also several private schools that operate within Napa County. Generally, these represent only 15 percent of all students in the county (3,200 in 2005). The relatively low number of students does indicate that few schools are able to implement specific school bus services for their pupils. As a result, at most of these schools students are transported by parents – either alone or in carpools. **Table 2-12** lists private school enrollment in Napa County for schools that have persons who attend high school at those schools. In addition, there are 1,600 private elementary school students in another 14 schools.

**Table 2-12**  
**Private School Enrollment in Napa County**

School	Grade Level	05-06 Enrollment
Harvest Christian Academy	1-12	171
Faith Learning Center	K-12	15
New Horizons Academy	8-12	6
Napa Christian Campus	K-12	220
Kolbe Academy	K-12	343
Calvary Baptist Christian Academy	K-12	116
Justin-Siena High School	9-12	619
Hopewell Baptist Christian Academy	K-12	51
Trinity Grammar and Prep	K-12	120
Pacific Union College Preparatory	9-12	74

### Safe Routes to Schools Program

There is a national program called the “Safe Routes to Schools” (SRTS). This program's goal is to improve student travel safety and increase the popularity of students walking and bicycling to school. Napa County is part of the Napa County Office of Education's Safe Schools Healthy Students Initiative and is operated within SafeKids, a coalition of health professionals, educators, law enforcement personnel, business owners, and community members focused on reducing the number of unintentional childhood injuries. SafeKids also operates a Wheeled Safety Campaign that includes bike and skateboard events, education, and advocacy.

The targets for Safe Routes to Schools program in Napa County is to increase walking trips from 22 percent to 27 percent of total school trips, bicycling from 5 percent to 11 percent of student trips, and carpooling from 7 percent to 20 percent. If these targets can be attained, single-family car ("chauffeur") trips would be expected to decrease from 60 percent to 45 percent.

In Napa's elementary schools, an average of 30 percent of students identify safety as one of the primary reasons they do not walk or bicycle to school. In addition, families at higher income levels were particularly likely to "chauffeur" children to and from school citing safety and enforcement concerns as the single largest reason that they drove their children to and from school each day.

An average of 29 children are injured in school transport accidents each year in Napa; the vast majority of them are injured, not in bicycle or in pedestrian accidents, but in automobile accidents. In addition, roughly 40 percent of each year's total collisions occurred during school transportation hours; again, the vast majority involved cars. In other words, although Napa County's parents drive their children to school because they are worried about safety, their children would be safer walking or riding bicycles.

The Safe Routes to Schools program also includes coordination with local law enforcement to identify safety hazards and address them, teaching parents about the relative safety of walking or bicycling versus driving to school, and educating them about the safety and health benefits of walking and bicycling.

### Colleges

There are two major colleges in Napa County. Enrollment in Napa Valley College is 7,400 (2005). The college's main campus is located in the southwest portion of the City of Napa with a smaller campus in St. Helena. The school has no housing on-site, so all students must commute to school. The school has a considerable number of part-time students. The orientation of the schedules and types of students result in the college adding many trips during peak hours.

Pacific Union College is the other major college located in Napa County. Located in Angwin, the private college has an estimated enrollment of 1,500 (2005 enrollment). Most students (83 percent in 2005) live in college housing. Because most students live on campus, the number of trips at peak hours to and from this college tends to be limited mostly to faculty and staff trips.

### SHOPPING TRIPS

Shopping trips represent about 20 percent of all trips during the day. These trips are often made evenly throughout the day, but many key shopping trips are made in the afternoon peak hour.

The locations of retail activity in Napa County tend to be focused in downtowns or in shopping centers. There is also some strip retail in the Cities of Napa and American Canyon.

Historically, the most active downtowns in Napa are in the City of Napa, the City of St. Helena and the City of Calistoga. These districts feature on-street parking and municipal parking areas.

In addition, there are several shopping centers throughout the county. The largest centers are American Canyon's Canyon Plaza, Canyon Corners and American Canyon Town Center; Napa's Jefferson Square, Northwood Center, Bel Aire Plaza, South Napa Marketplace, Napa Premium Outlets and Silverado Plaza; and St. Helena's Premium Outlets. There is also a free-standing Walmart at Soscol and Lincoln Avenues in Napa.

**VISITORS**

The visitor travel market is very important for the economics for Napa County. Originally attracted by the wine industry, unique scenery and hot springs (Calistoga area), the visitor industry has expanded to include hotels, spas, restaurants and specialty retail activity that attract tourists.

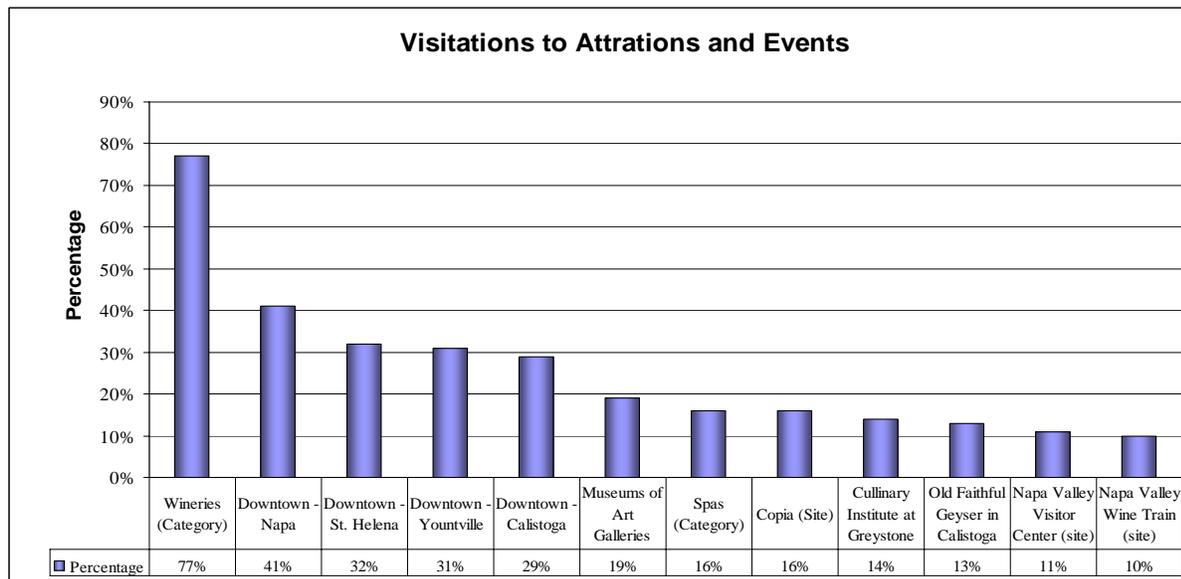
**Visitor Profile Study**

To assist with future countywide efforts in relation to the visitor serving industry, a visitor profile study was conducted in 2006. More than a thousand questionnaires were distributed to an equal number of respondents by:

- Length of stay
- Day Trippers – car
- Day Trippers – bus
- Overnighters – prime time
- Overnighters – shoulder time/off season

The results of this survey indicated a total visitor level of 4.7 million “person trips” (1 person for 1 day) per year. The survey also provided a sample of the typical Napa Valley visitor. These results provided some insight for consideration in transportation planning. As shown in **Figure 2-29**, it was found that although wineries were the predominant type of destination that visitors chose, downtown areas were destinations of 30 to 40 percent of all visitors sampled. This suggests that the downtown areas require careful planning to not only serve local residents, but to carefully accommodate visitors as well.

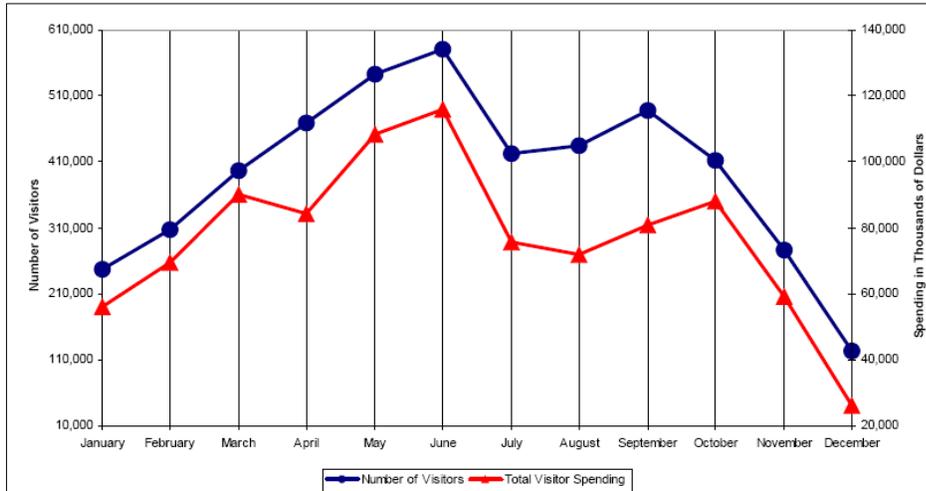
**Figure 2-29**  
**Destinations of Visitors**



Source: Napa County Visitor Profile Study, March 2006

Another key finding was that the flow of visitors and relative spending by visitors fluctuates substantially during the year. The tourist activity is highest during the spring months, and lowest in the winter. **Figure 2-30** demonstrates the findings by month.

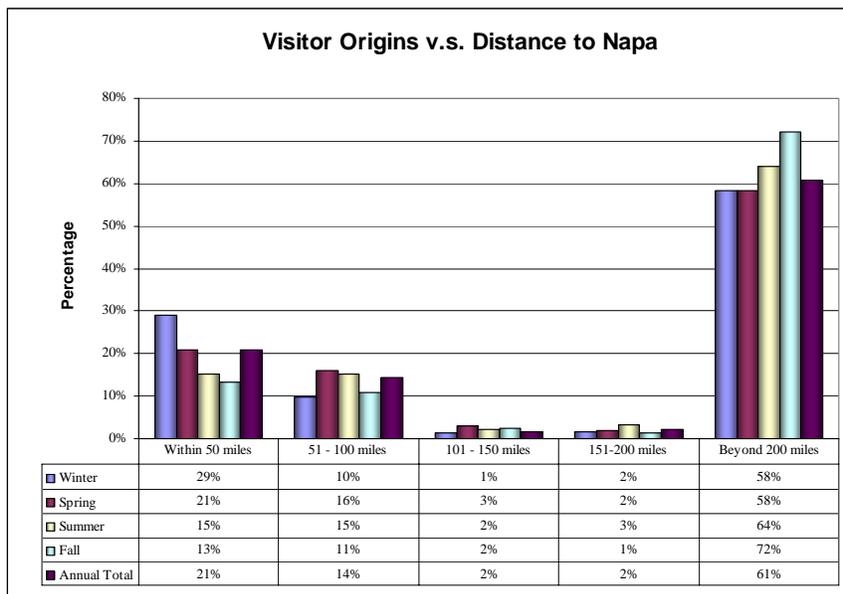
**Figure 2-30**  
**Visitor Activity by Month**



Source: Napa County Visitor Profile Study, March 2006

Another finding was that the distance that visitors travel varies significantly. As shown in **Figure 2-31**, about one-third (35 percent) of the visitors live less than 100 miles away. These visitors are more likely to either make day trips or stay overnight for one or two nights. The survey showed that 61 percent traveled beyond 200 miles; these visitors either stayed elsewhere and traveled for the day, or they took a longer vacation in Napa County.

**Figure 2-31**  
**Visitor Distance from Home**



### Traffic Impact of Visitors

It is difficult to precisely measure the effect of visitor travel on Napa County roadways. Although at peak periods (a weekend in June for example) there may be as many as 20,000 visitors a day in the County this number drops to less than 4,000 on a weekday in December. In addition, some of these visitors do arrive and travel by bus, and those who do arrive by car are mostly in groups, averaging 2.5 people. If we assume that visitors are twice as numerous on weekends as compared to mid week, with Monday and Friday half way between, and that visitor groups in cars make an average of 3 trips per day, we can sketch a profile that estimates the visitor-related traffic as follows:

**Table 2-13 Visitor Traffic by Month**

Visitor Traffic Impact												
	January	February	March	April	May	June	July	August	September	October	November	December
Monthly Visitors	245,000	310,000	395,000	465,000	540,000	570,000	425,000	440,000	480,000	420,000	280,000	140,000
Visitors per Day	8,055	10,192	12,986	15,288	17,753	18,740	13,973	14,466	15,781	13,808	9,205	4,603
Visitors in Cars	7,813	9,886	12,597	14,829	17,221	18,178	13,553	14,032	15,307	13,394	8,929	4,465
No of Cars	3,125	3,954	5,039	5,932	6,888	7,271	5,421	5,613	6,123	5,358	3,572	1,786
Trips/Day	9,376	11,863	15,116	17,795	20,665	21,813	16,264	16,838	18,369	16,073	10,715	5,358
Trips Estimated per Day Weighted for Weekend Activity												
Monday	9,845	12,456	15,872	18,685	21,698	22,904	17,077	17,680	19,287	16,876	11,251	5,625
Tuesday	6,563	8,304	10,581	12,456	14,465	15,269	11,385	11,787	12,858	11,251	7,501	3,750
Wednesday	6,563	8,304	10,581	12,456	14,465	15,269	11,385	11,787	12,858	11,251	7,501	3,750
Thursday	6,563	8,304	10,581	12,456	14,465	15,269	11,385	11,787	12,858	11,251	7,501	3,750
Friday	9,845	12,456	15,872	18,685	21,698	22,904	17,077	17,680	19,287	16,876	11,251	5,625
Saturday	13,126	16,609	21,162	24,913	28,931	30,538	22,770	23,573	25,716	22,502	15,001	7,501
Sunday	13,126	16,609	21,162	24,913	28,931	30,538	22,770	23,573	25,716	22,502	15,001	7,501

This does NOT account for geographic distribution. The highlighted areas indicate the times of greatest impact. This analysis may be useful in planning visitor-specific traffic reduction strategies.

To put these figures in perspective, the overall daily trips in Napa County are approximately 360,000 trips a day countywide. So even at the highest level of activity, tourism accounts for less than 9% of the overall traffic in Napa County. In off-peak periods, the impact is proportionately less.

### *Other Transportation-Related Visitor Issues*

**Part-Time Residents.** One increasing challenge is the market that has developed for part-time residents. This has occurred because Napa County is considered a very desirable place to live. These types of people represent an emerging group who have purchased a second home in Napa County. This tends to increase housing prices, decrease the housing supply available to permanent residents, and force local workers to find housing at a distance

As an example, there have been reports of the purchase price of very modest homes escalating into ranges beyond one million dollars in St. Helena, where informal estimates by local officials place part time home ownership above 25%. The median price in St. Helena was \$1.1M in 2006, and even an 1100 square foot home was median priced at almost \$700,000, well beyond the reach of most of the local workforce. Even in 2008, in the midst of the major housing price correction the median home price in St. Helena was still \$995,000.

**Navigating Local Roads.** Visitors are not familiar with the major streets and destinations within Napa County, so they must rely on information systems to direct them. This is advantageous in that visitors can be more easily guided towards and away from particular streets or destinations, but is a disadvantage in that the absence of easy guidance systems will lead to visitor confusion. An example is the experience of visitors finding parking around downtowns, where lack of signs may result in double-parking, neighborhood parking intrusion, and associated localized traffic operations.

### **GOODS MOVEMENT**

A driver may be frustrated by the additional slow traffic created by trucks in Napa County. However, these trucks are essential for the movement of goods and for the economic health of the county. Goods take many forms – supplying local retail and restaurants, importing and exporting essential products for the agricultural and wine production industry, and other essential trucking activity such as construction materials and equipment. Napa County also experiences some through-movement for goods that are being transported to Sonoma or Lake Counties. There are millions of tons of commodities that flow in and out of Napa County. Of the various commodities, the greatest shares are associated with the wine industry.

There are different types of goods movement that occur within Napa County. They can generally be sorted into these categories:

**Goods for Residents and Workers.** Although Napa County has a significant agricultural presence with \$541 million of agricultural products produced, almost all is associated with the wine industry. Thus, Napa County must import food as well as other products used by residents and workers. Most of these may enter the Bay Area in a variety of modes, but eventually, almost all of these will reach Napa County in trucks. For example, items shipped in on ocean-going vessels are often in containers, and these containers are put on trucks at a nearby port when their final destination is Napa County. Other goods include those to be received by retail stores and other businesses that operate in Napa County.

**Goods for Wine Production.** The wine industry must transport grapes in various stages of processing from field to winery production facilities. The production of wine requires a complex series of steps, such as harvesting, fermenting, blending and bottling. Most of the points where the industry operates are in separated locations. In addition, supplies such as bottles and barrels must be provided for the production process. Finally, specialized farm harvesting equipment, processing equipment and other unique equipment must be transported into and around Napa County during the various stages of production, especially harvesting. All of these associated items are generally transported by truck.

**Goods for Export.** The wine industry's final product – as well as final products for other items produced in Napa County – is often shipped across the United States and the world for use. In order to reach distribution facilities or ports, these goods must first be shipped out of Napa County. While some use of rail is possible for this in the southern part of the county, the majority of exported goods are transported by truck.

Some potential use of rail as an alternative mode for shipping goods has been considered. For this to be viable, the rail services must be convenient for shippers to use. This would require that rail sidings and loading facilities be provided adjacent to production facilities. While there are opportunities to enable rail goods movement in Napa County, these are generally restricted to sites where freight train accessibility is adjacent to them. Thus, trucks will likely remain the predominant form of goods movement in Napa County.

## FUNDING AND PROGRAMMING FOR TRANSPORTATION PROJECTS AND PROGRAMS

The implementation of transportation improvements is significantly driven by the amount of funding available and the categories of funding available. The details of transportation funding sources, accounts, programs, and financing is extremely complex. The following section describes the major processes by which the funds are currently provided and spent.

### Public Funding Sources

There are many public funding sources, Federal, State and local, that are the backbone of transportation projects and programs. These are summarized below. Note that local transportation assets (roads and streets) are not owned by the Federal Government, and generally are owned and maintained by either the State of California or a local government.

#### **FEDERAL FUNDS**

The primary source of transportation improvements is the Federal Highway Trust Fund. This fund is fed through a tax on gasoline, currently set at 18.4 cents per gallon. In addition, diesel fuel is taxed at 24.4 cents per gallon. It is important to note that the tax is based on a fee per gallon, not on a percent of the cost of gasoline, and that this does NOT rise when gas prices rise. 85% of the highway trust fund is apportioned by the Federal Highway Administration (FHWA) among the states as matching funds for projects. The other 15 percent goes to the Federal Transit Administration, which allocates the funds to regional agencies and local transit providers.

Another Federal transportation tax is assessed on tires, and there are other various taxes and user fees on trucks, trailers, and heavy commercial vehicles. Additional Federal Funds are appropriated to specific programs by Congress from general fund revenues.

Transit also receives a small urban transit subsidy through a variety of Federal appropriation programs (FTA Code Sections 5307, 5309, 5311). This funding is projected to be \$1.7 million during the 2007/08 fiscal year.

#### **STATE FUNDS**

The California Department of Transportation (Caltrans) is the owner and operator of the primary roadway system in California, also known as the State Highway System. These are 14,000 miles of Interstates and State Routes, many of them freeways, which carry over half of the miles traveled in California. Caltrans is the primary agency responsible for planning, designing, building, operating and maintaining this system.

State transportation funds are generated by a variety of sources. The largest source is the State Fuel Tax, which is collected at 18 cents per gallon on gasoline and diesel fuel. This generates about \$3.5 billion a year for state projects (about 50 percent of all state funding), of which 65 percent is allocated to Caltrans (State Highway Account), and 35 percent to cities and counties. This fund may be used for roadway planning, construction, maintenance, and operations. It may also be used for transit planning and construction (but not transit maintenance or operation).

The state also collects weight fees on trucks and other commercial vehicles, which provide about \$1 billion each year, or about 14% of State funding. This fee is intended to represent compensation for the additional wear and tear of the roadways that these heavier vehicles create.

The state also collects sales tax at 7.25 percent, and portions of this are also earmarked for transportation. The Transportation Development Act (TDA) passed in 1971 earmarked ¼ percent of sales tax for transit that is returned to a local transportation fund in each county. This act also extended state sales tax to gasoline.

In 2002, Proposition 42 was passed, which earmarks 5 percent of the sales tax paid on gasoline for transportation (\$1.3 billion statewide).

In 2006, Proposition 1B was passed, which provided \$19.9 billion in bonds statewide to fund projects that relieve congestion, facilitate goods movement, improve air quality and enhance the safety and security of the transportation system. These funds are distributed by the California Transportation Commission. Proposition 1B enabled \$74 million to go to the State Route 12 Jamieson Canyon Road widening.

### **LOCAL/REGIONAL FUNDS**

Many of the funds that are spent on transportation locally are provided as money returned from the various state revenue sources.

As noted above, a portion of the state sales tax on gasoline is returned to cities and counties. Napa County is forecast to receive \$43 million from dedicated funds between 2008 and 2017, according to the MTC. This is primarily used for local street and road maintenance, and is disbursed directly to the cities and County.

The State also provides direct funding for transit through the Transportation Development Act (TDA). There are now three separate categories:

- TDA Articles 4 & 8 (1/4 cent of the State sales tax), provides annual funding for local transit. This amount is projected to be \$5,869,796 in 2008/09. This is disbursed by MTC, who establishes conditions on how these funds are awarded.
- TDA 4.5 provides supplemental annual funding for complementary paratransit service. Napa is projected to receive \$308,937 in fiscal year 2008/09. This is also disbursed by MTC.
- TDA Article 3 funds bicycle and pedestrian projects. Allowable funding is currently assigned as \$126,097 to Napa for the 2008/09 fiscal year. This again is disbursed by MTC and the allocation is granted on a project-by-project basis.

Napa County also receives State Transit Assistance (STA) funding on a population based and revenue based formula on an annual basis. In fiscal year 2008/09, this amount is projected to be \$697,555.

Through air quality initiatives, there is a special Transportation Fund for Clean Air (TFCA). The Transportation Fund for Clean Air (TFCA) is a grant program funded by a \$4 surcharge on motor vehicles registered in the

Bay Area. Some funds are distributed regionally through competitive grants. Other funds are distributed locally through a County Program Manager Fund. TFCAs grants to Napa totaled \$299,000 in 2006/07. These are disbursed by Bay Area Air Quality Management District and NCTPA.

Regional Measure 2, passed in 1994, increased bridge tolls by \$1.00. This money is earmarked into various categories for projects related to the toll bridge corridors, such as ferry service, express bus service, and related highway improvements.

The funding of transit operations is partially offset through the collection of rider fares. This is projected to provide \$957,000 Napa this fiscal year, yet it only represents 11 percent of the entire budget for transit. This money generally is assigned to transit operations, although it may also be used for capital projects.

Local jurisdictions may assess developer fees as a mitigation to the cumulative impacts of needed roadway improvements required to adequately maintain traffic flow. This revenue is tightly controlled through development fee programs and established nexus requirements. In addition, local jurisdictions can negotiate mitigation to transportation impacts of specific development as conditions of approval.

Local counties may also adopt an additional general sales tax of up to 1 percent for transportation programs. This requires a two-thirds voter approval. Most are generally assigned a time period of 20 to 30 years. While 19 counties have adopted a local sales tax for transportation, attempts to have one approved for Napa County have been unsuccessful thus far.

As a historical side note, there is a stone market, dated 1911, on Browns Valley road in Napa that memorializes a self-assessment tax by residents in that neighborhood to "macadamize" (pave) the street. This is the first recorded local transportation levy in California.

## Programs

The ability to mobilize funding for transportation projects requires years of advance planning. This includes detailed project studies, environmental clearances, detailed design studies, right-of-way acquisition and utility planning before construction can begin. Other transportation programs are required to maintain and operate the roadway and transit systems at adequate levels. Many projects receive earmarked funding as a special award or a dedicated funding source. This process means that most projects must be named as part of a formal planning program.

### **FEDERAL PROGRAMS**

Federal programs are created by Congressional legislation. Most of these programs are administered through state departments of transportation (Caltrans) and metropolitan transportation planning organizations (MTC). Key programs are:

**Surface Transportation Program (STP).** This is the primary program for funding, with five different funding categories.

**Congestion Mitigation & Air Quality Improvement Program (CMAQ).** This program is for specific projects that provide congestion relief or air quality improvement. This program is also administered by MTC.

**Federal Transit Act (FTA).** This program, estimated to provide \$1.4M to Napa per year, contains six different program categories. The program is administered at various levels by MTC, Caltrans, Congress, or California Transportation Commission.

**Highway Bridge Replacement and Rehabilitation (HBRR).** This program is distributed for bridge improvements as needed, based on bridge ratings and improvement costs. The program funds are disbursed by Caltrans.

**Hazard Elimination Safety (HES)** program. This program is earmarked for safety projects based on accident history and related factors. The program funds are also disbursed by Caltrans

Other eligible programs exist that can be sources of funding for transportation projects and programs including:

- Transportation Enhancement Activities (TEA) -- bicycle, pedestrian, public art or historic projects in transit
- Transit Enhancements -- disabled access programs, historic preservation, bus shelters, landscaping, and bicycle/pedestrian facilities
- Access to Jobs Program
- Transportation for Livable Communities Program
- Clean Fuel Bus Program
- Interstate Discretionary Program
- Grade Crossing Program
- Ferry Boat Program
- Other Pilot and Demonstration Projects

### **STATE AND REGIONAL PROGRAM ADMINISTRATION**

The State of California administers key transportation programs through the California Transportation Commission. The CTC has created a process that results in a five-year program published as the **State Transportation Improvement Program (STIP)**. A full STIP is adopted every two years, with amendments made during interim periods. The program is intended to account for all Federal and State transportation project dollars in California.

The STIP is a multi-year capital improvement program of transportation projects on and off the State Highway System, funded with revenues from the State Highway Account and other funding sources. The STIP is composed of two sub-elements: the **Regional Transportation Improvement Program (RTIP)** (75 percent) and the **Interregional Transportation Improvement Program (ITIP)** (25 percent).

The process for updating the STIP is based upon programs submitted by all regional transportation planning agencies. The agency for Napa County and the rest of the bay Area is MTC, who develops regional project priorities for the RTIP for the nine counties of the Bay Area. The biennial RTIP is then submitted to the California Transportation Commission for inclusion in the STIP. The California Department of Transportation (Caltrans) is responsible for developing the ITIP.

For State and Federal planning purposes, Napa County is officially directed as part of the Bay Area, and the Bay Area's federally-designated metropolitan planning organization (MPO) and associated state regional transportation planning agency (RTPA). This agency is the Metropolitan Transportation Commission (MTC).

One of the requirements to maintain the Bay Area as a recipient of federal transportation dollars is to maintain a current 30-year plan, known as the **Regional Transportation Plan**, or RTP. This plan, to be revised every three years, is intended to set forth a 30-year vision of projects and programs. The plan is required to identify projects that are reasonably funded over the plan time horizon, and to set priorities for importance of these projects. Specific funding of major projects is required to consistent with the RTP.

The RTP is implemented through the **Regional Transportation Improvement Program (RTIP)**. As noted above, this program is used by the CTC to fund state transportation programs. The program is fully adopted every two years, and amended as necessary. It is based on the estimate of resources available by the CTC, RTP priorities, matching funds allocated from other sources, and the stage of project development. NCTPA provides input for the program, along with other County agencies. The RTIP is required by FHWA, and accounts for all Federal and State transportation project dollars to be spent in the region.

The **Interregional Transportation Improvement Program (ITIP)** is designed to fund intercity rail, inter-regional road projects "of statewide significance". Funding from this portion of the STIP does not have to be recommended through the RTP.

Two additional programs are administered fully by the state. These are:

**State Transit Assistance (STA)**. This program for supplemental funding for transit and paratransit operations provides \$730,000 to Napa this year.

**State Highway Operation and Protection Program (SHOPP)**. This program is used to provide additional funding to small yet time-important projects on the state highway system.

Other smaller programs provide funding in specialized situations. These include:

**Environmental Enhancement and Mitigation Program** for landscaping and environmental projects, as administered by the CTC.

**Petroleum Violation Escrow Account**, which was created as a settlement from major oil companies and price gouging, to fund projects for energy conservation

**Railroad Grade Separation Program** to construct grade separations according to needs assessed by Caltrans and the California Public Utilities Commission

**Bicycle Transportation Account**, which is provided through Caltrans to fund bicycle paths and lanes, lockers, planning, safety, and education

## CHAPTER 3: PROJECTIONS FOR 2035

Looking carefully at how Napa County will grow and change in coming decades provides critical context for the various strategies and policy concepts in this document. Within this chapter, the detailed projections of the future are presented to provide a clearer understanding of how the past can guide the future. It is important to note that, as of the drafting of this report, the State of California and the San Francisco Bay Area are involved in new ventures to modify the modeling of and planning for future growth in the region. Within the next few years, we expect to see new methods and requirements that will integrate transportation, land use and housing projections. In general, we expect that these new approaches will reinforce current trends to focus regional growth in the central urban core and further reduce growth projections in Napa County.

### Current Forecasts

Forecasts are developed in accordance with a number of historically validated methods based upon two key components.

- Trends forecast future travel characteristics based on studies of peoples' propensity to travel certain distances for certain purposes. This propensity is not projected to change in the aggregate. The one thing that is projected to change are land uses and transportation projects, but these involve investments rather than changes in behavior.
- Formal government plans such as "General Plans". These documents establish formal limitations and guidelines for future growth

### **RELATIONSHIP TO NEIGHBORS AND LARGER SOCIO-ECONOMIC AND DEMOGRAPHIC TRENDS**

Napa County is forecast to add more than 9,000 households by 2035, according to the Association of Bay Area Governments (ABAG). As **Table 3-1** shows, this growth is projected at 18 percent over this 27 year period, or an annual growth rate of .66 percent. This is a moderate pace not much different than the Bay Area as a whole (24 percent). The growth in households is similar to that in Sonoma County, but Solano County is projected to grow much faster.

**Table 3-1**  
**Change in Households by County 2008 to 2035**

Geography	2008	2035	Growth 2008 to 2035	
			Growth	% Growth
Napa County	50,590	59,650	9,060	18%
Solano County	148,256	196,220	47,964	32%
Sonoma County	188,316	219,980	31,664	17%
Bay Area	2,651,180	3,292,530	641,350	24%

Source: ABAG, *Projections 2007*

More significantly, the number of jobs in Napa County is forecast to grow by 34 percent, as shown in **Table 3-2**. This growth again is significantly higher and represents an increasing imbalance between the number of resident workers and jobs. However, the Association of Bay Area Governments projects a general imbalance across the entire Bay Area, and anticipates that some of this imbalance is to be absorbed by an increase of retirees in the work force. As mentioned in Chapter 1, most energetic job growth has been, and will continue to be, at the lower end of the wage scale servicing the agriculture, hospitality and retail business sectors. Over the next ten years, more than 60% of the fastest growing job sectors will pay below \$14.50/hr, a minimum “living wage” for two adults and two young children. This trend, combined with Napa’s relatively high housing costs, will increase pressure on workers to live at a distance from their jobs. It is noteworthy to see that Sonoma and Solano Counties are projected to have an even higher discrepancy between job and household growth. Sonoma County will also increasingly be an “employment” county, drawing workers from other, neighboring counties.

**Table 3-2**  
**Change in Employment by County 2008 to 2035**

Geography	2008	2035	Growth 2008 to 2035	
			Growth	% Growth
Napa County	73,492	98,570	25,078	34%
Solano County	157,042	227,870	70,828	45%
Sonoma County	230,384	344,290	113,906	49%
Bay Area	3,596,208	5,247,780	1,651,572	46%

Source: ABAG, *Projections 2007*

Growth in Napa County is not forecast to be uniform across age groups, but will be much stronger in the over 65 group, with a 77 percent increase anticipated! A summary of anticipated changes by age group are shown in **Table 3-3**. The traditional workforce age group (17-64) will actually shrink slightly, while there will be some increase in the number of children. Seniors will grow from 15 percent of today’s population not over 25 percent by 2035. This will be a factor that causes many changes in how our community operates, including in transportation. It will result in an increased demand for paratransit services and more accessible communities, for example.

**Table 3-3**  
**Change in Demographics by County 2007 to 2030**

Population Group by Age	2007		2035		Growth 2007 to 2035	
	Population	% of Total	Population	% of Total	Growth	% Growth
<b>Napa County</b>						
Youth (Under 17.5)	30,370	22%	33,100	21%	2,730	9%
Working Age (17.5 to 64)	84,430	62%	83,300	54%	-1,130	-1%
Retirement Age (65 and over)	22,260	16%	39,300	25%	17,040	77%
<b>Total</b>	<b>137,060</b>	<b>100%</b>	<b>155,700</b>	<b>100%</b>	<b>18,640</b>	<b>14%</b>
<b>Solano County</b>						
Youth (Under 17.5)	107,080	24%	119,450	20%	12,370	12%
Working Age (17.5 to 64)	275,240	62%	334,450	57%	59,210	22%
Retirement Age (65 and over)	59,440	13%	131,900	23%	72,460	122%
<b>Total</b>	<b>441,760</b>	<b>100%</b>	<b>585,800</b>	<b>100%</b>	<b>144,040</b>	<b>33%</b>
<b>Sonoma County</b>						
Youth (Under 17.5)	107,220	22%	112,850	20%	5,630	5%
Working Age (17.5 to 64)	316,700	64%	299,050	53%	-17,650	-6%
Retirement Age (65 and over)	73,060	15%	157,000	28%	83,940	115%
<b>Total</b>	<b>496,980</b>	<b>100%</b>	<b>568,900</b>	<b>100%</b>	<b>71,920</b>	<b>14%</b>
<b>Bay Area</b>						
Youth (Under 17.5)	1,692,420	23%	1,783,700	20%	91,280	5%
Working Age (17.5 to 64)	4,707,640	65%	5,003,100	55%	295,460	6%
Retirement Age (65 and over)	885,880	12%	2,244,700	25%	1,358,820	153%
<b>Total</b>	<b>7,285,940</b>	<b>100%</b>	<b>9,031,500</b>	<b>100%</b>	<b>1,745,560</b>	<b>24%</b>

Source: ABAG, Projections 2007

## **GROWTH AND CHANGE IN NAPA COUNTY**

The projected growth in Napa County is not anticipated to be even throughout the county. Some portions of the county will grow at a much faster pace than others will. Several tables and figures are prepared to illustrate this change. These tables and figures utilize data provided for Napa County baseline land use data received for use in the Solano-Napa Phase 2 model.

The increase in single-family households by subarea are primarily anticipated in the Cities of Napa and American Canyon. These areas are forecast to be the locations of over 5,630 of the 7,426 new single family households, as shown in **Table 3-4**.

**Table 3-4**  
**Change in Single Family Households by Subarea in Napa County 2007 to 2035**

Jurisdiction Boundary	2007	2035	Growth 2007 to 2035		
			Growth	% Growth	% of Total
City of Napa Area	24,722	29,196	4,474	18%	60%
Airport-South Napa Area	150	175	25	17%	0%
American Canyon Area	3,259	4,415	1,156	35%	16%
Eastern Napa Highlands Area	5,111	5,784	673	13%	9%
Yountville-Rutherford Area	2,585	2,854	269	10%	3%
St. Helena Area	2,687	3,036	349	13%	5%
Calistoga Area	2,533	3,014	481	19%	6%
<b>Napa County Total</b>	<b>41,047</b>	<b>48,473</b>	<b>7,426</b>	<b>18%</b>	<b>60%</b>

Source: Solano-Napa Model 2007 adjusted for Projections 2007; DKS Associates, 2008

The change in multi-family households is forecast to demonstrate a similar pattern. As shown in **Table 3-5**, the City of Napa is expected to be the primary recipient of multi-family housing in the future, with over 2,400 of the almost 3,000 multi-family households expected there. In spite of this. Some additional multi-family housing growth is expected in the others areas across Napa County as well.

**Table 3-5**  
**Change in Multi-Family Household by Subarea in Napa County 2007 to 2030**

Jurisdiction Boundary	2007	2035	Growth 2007 to 2035		
			Growth	% Growth	% of Total
City of Napa Area	5,701	8,014	2,313	39%	78%
Airport-South Napa Area	21	22	1	5%	0%
American Canyon Area	89	266	177	196%	6%
Eastern Napa Highlands Area	505	536	31	5%	1%
Yountville-Rutherford Area	276	434	158	55%	5%
St. Helena Area	765	924	159	19%	5%
Calistoga Area	828	980	152	17%	5%
<b>Napa County Total</b>	<b>8,185</b>	<b>11,177</b>	<b>2,992</b>	<b>35%</b>	<b>78%</b>

Source: Solano-Napa Model 2007 adjusted for Projections 2007; DKS Associates, 2008

Like housing, the growth in jobs in Napa County is expected to occur mostly in the southern part of the county. **Table 3-6** shows that the jobs growth is most pronounced in the Airport Industrial Park area, with over half of the new County job growth expected here. Job growth is also expected in Napa and American Canyon. Job growth in other areas is expected to be moderate, but significant.

**Table 3-6**  
**Change in Employment by Subarea in Napa County 2007 to 2035**

Jurisdiction Boundary	2007	2035	Growth 2007 to 2035		
			Growth	% Growth	% of Total
City of Napa Area	28,362	33,144	4,782	17%	24%
Airport-South Napa Area	18,857	29,322	10,465	55%	53%
American Canyon Area	4,401	6,291	1,890	43%	10%
Eastern Napa Highlands Area	4,637	5,019	382	8%	2%
Yountville-Rutherford Area	5,492	6,235	743	14%	4%
St. Helena Area	6,444	7,116	672	10%	3%
Calistoga Area	4,261	5,023	762	18%	4%
<b>Napa County Total</b>	<b>72,454</b>	<b>92,150</b>	<b>19,696</b>	<b>27%</b>	<b>24%</b>

Source: Solano-Napa Model 2007 adjusted for Projections 2007; DKS Associates, 2008

Notes: The Solano-Napa Model employment projections control totals are different than the control totals for Projections 2007. The Metropolitan Transportation Commission allows for the control totals of both Napa and Solano County to be combined for consistency purposes, based upon a joint request made by the NCTPA and the Solano Transportation Authority. The actual estimate of employment in Napa County in Projections 2007 is 98,570. The difference in jobs of 6,420 is anticipated to be absorbed by employment growth in Solano County jurisdictions.

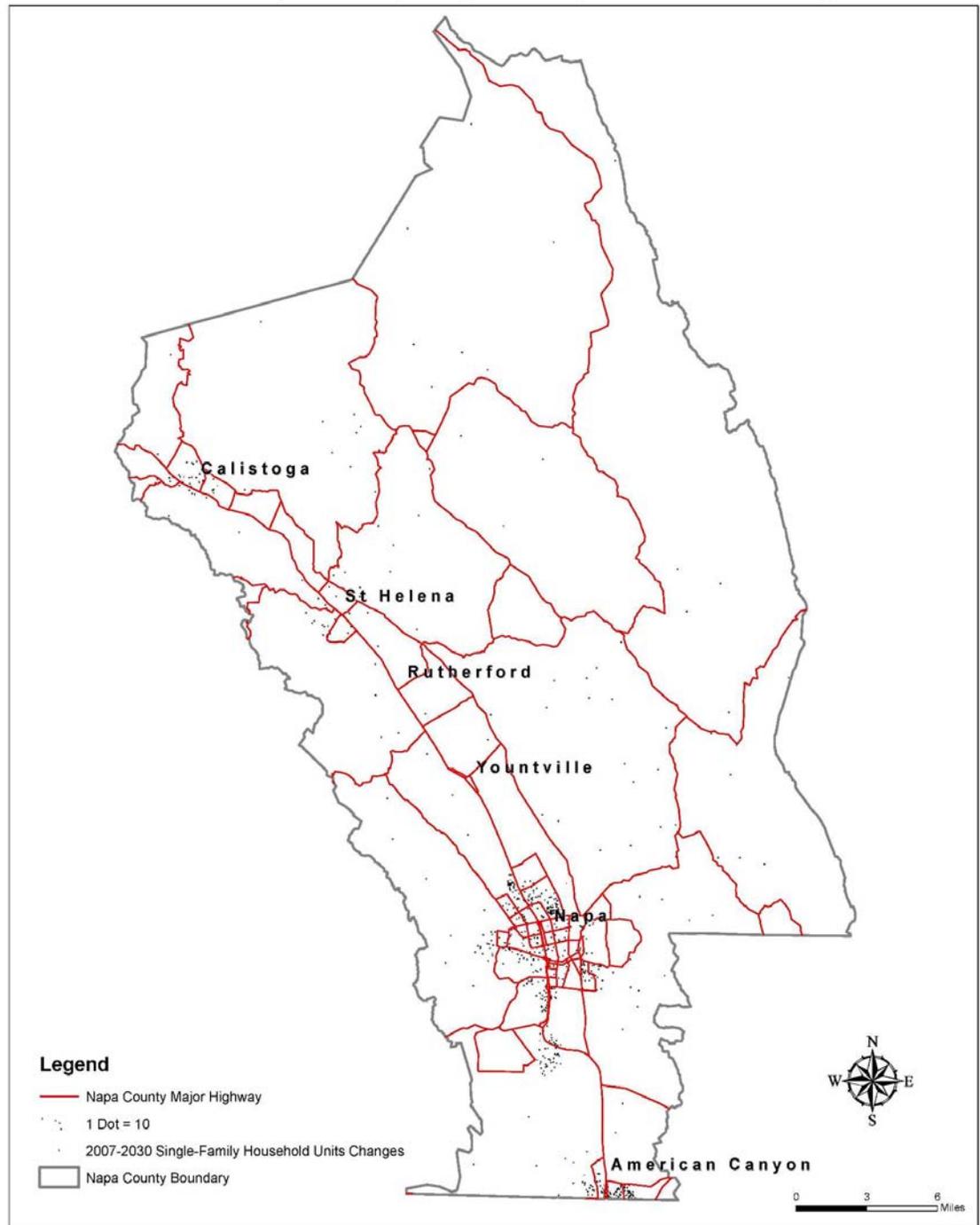
While **Tables 3-4 to 3-6** show the growth by subarea, they do not tell the entire picture of where growth is expected to occur. To do this, DKS utilized the base land use data provided from the Solano-Napa model to assign the growth patterns by smaller areas, called traffic analysis zones (TAZs). These figures – **Figure 3-1 through 3-3** – show the same data by individual TAZs. The changes are provided in a more visually clear format – the use of dots to represent the location of either 10 households or 10 jobs.

**Figure 3-1** illustrates where the new single-family households are forecast to be created. (Note that these are “households” and not “housing units” so that some variation, including decreases as shown in pink on the maps, occurs as a result of vacancy assumptions.) Generally, single-family growth is expected on the fringes of Napa County communities.

**Figure 3-2** illustrates the same information for multi-family households. These are generally expected to occur in specific project sites in Napa and American Canyon. The growth is generally expected closer to the commercial centers.

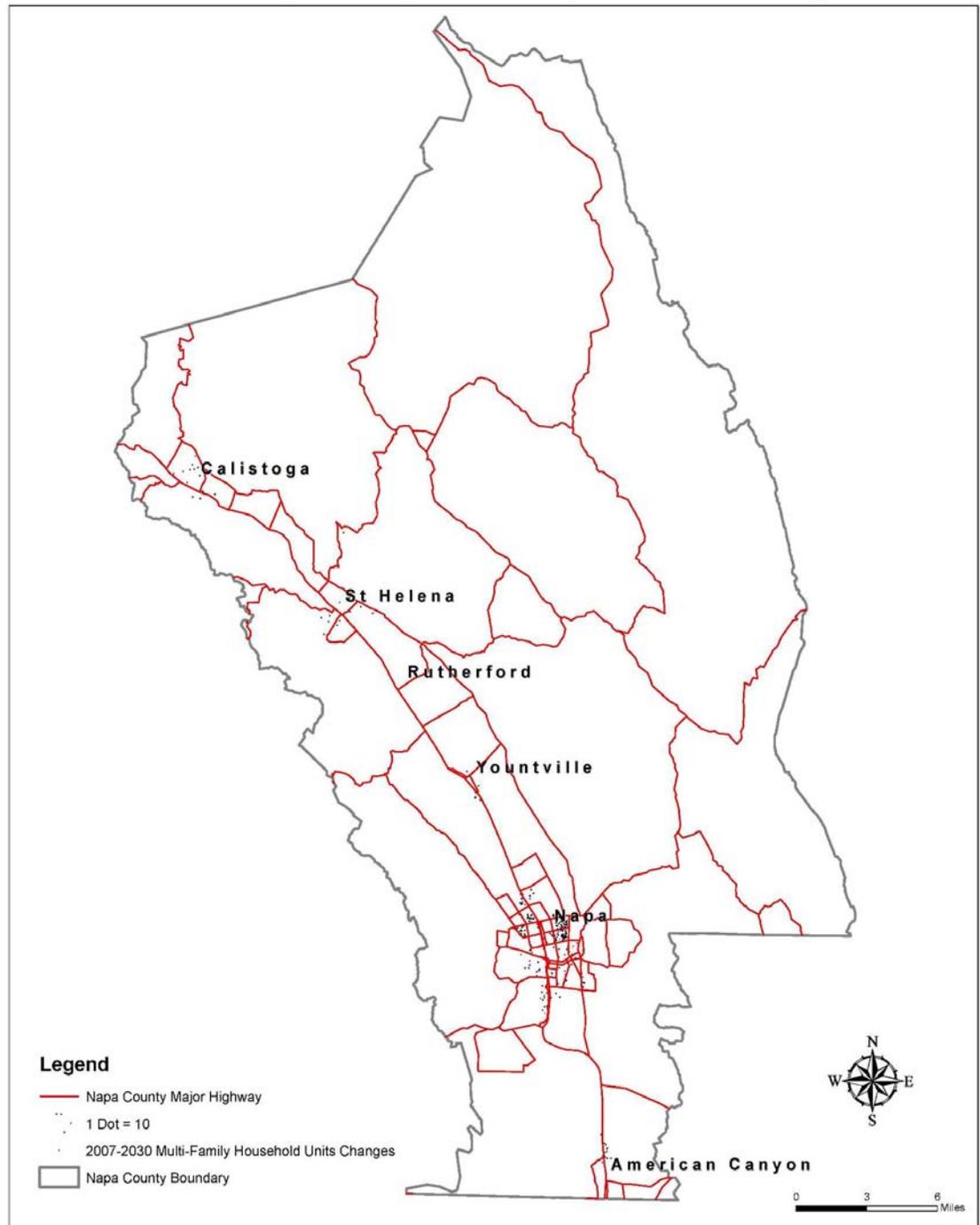
**Figure 3-3** illustrates where the job growth is currently forecast in Napa County. These maps clearly show the prominence of new jobs in the Napa Airport area and the several business/industrial parks in that area.

**Figure 3-1  
Change in  
Single  
Family  
Households  
by TAZ  
2007 to  
2030**



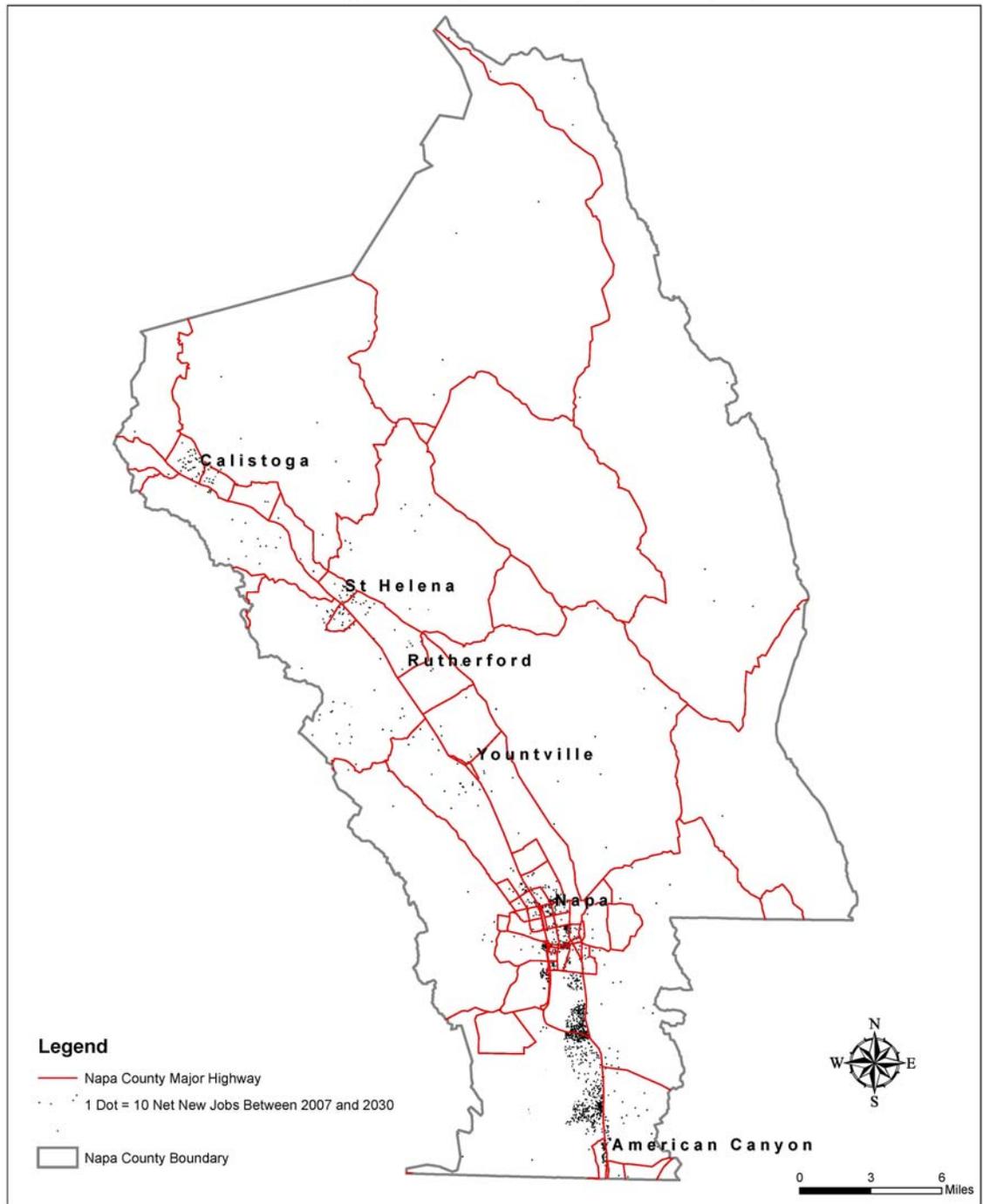
DKS Associates, June 2008

**Figure 3-2  
Change in  
Multi-  
Family  
Households  
by TAZ  
2007 to  
2030**



DKS Associates, June 2008

**Figure 3-3  
Change in  
Jobs by  
TAZ 2007  
to 2030**



DKS Associates, August 2008

### ***SUMMARY OF PROPOSED DEVELOPMENT PROJECTS***

The demographic data shown here is always subject to the influence of new general plan amendments and new project proposals. These key assumptions already appear to be incorporated in the data:

- American Canyon Town Center project
- Airport Industrial Park build-out

These forecasts do not include proposals for new developments, such as the Napa Pipe property. This new potential development is currently in the project assessment phase at the Napa Pipe site on the southeast side of the City of Napa. This project concept includes a mix of land uses, including up to 3,200 dwelling units.

### ***SUMMARY OF PLANNED TRANSPORTATION PROJECTS***

A number of regional transportation projects are anticipated to be completed in the future. These are shown in **Table 3-7** include the almost-fully-funded Jamieson Canyon Road project, improvements to SR 29 in South County, and parallel arterial roadways in American Canyon.

**Table 3-7  
Significant Transportation Projects**

<b>Project</b>	<b>Description</b>
SR 12/29/221 (Soscol Avenue) Intersection Improvements	Construct 2 lane southbound flyover from southbound SR 221 to southbound SR 12/29. The existing intersection remains in place.
SR 12/29/Airport Blvd interchange	Upgrade SR 12/29 to a freeway. The project would create a new over-crossing and diamond interchange, with new intersections for SR 29 northbound and southbound ramps at Airport Blvd/Jameson Canyon Rd.
Flosden Rd Extension to Napa Junction Rd	Extend Flosden Rd north from current end to Napa Junction Rd. The extension will consist of 2 lanes in each direction with turn pockets.
Flosden Rd Extension to Green Island Rd/SR 29	Extend Flosden Rd north from Napa Junction Rd to Green Island Rd. The extension will consist of 2 lanes in each direction with turn pockets, and grade separation with ramps at SR 29
First Street SR 29-Overcrossing Improvements	Widen First Street over crossing on SR 29 from 2 lanes to 4 lanes in the City of Napa.
SR 12 Widening	Widen SR 12 (Jameson Canyon) from I-80 in Solano County to SR 29 in Napa County from 2 lanes to 4 lanes (Napa County portion of project) (fully-funded)
SR 29 Channelization - Meeks Lane to Sulphur Creek	Add continuous left turn lane
Devlin Rd Extension to Airport Blvd	Extend Devlin Rd from Soscol Ferry Rd to Airport Blvd. The extension will consist of 2 lanes in each direction with turn pockets.
Devlin Rd Extension to Tower Rd	Extend Devlin Rd south from Airpark Rd to South Kelly Rd. The extension will consist of 1 lanes in each direction with a central turn lane.
Devlin Rd Extension to Green Island Rd	Extend Devlin Rd south from South Kelly Rd to Green Island Rd. Then extension will consist of 1 lane in each direction with turn pockets.
Commerce Blvd Extension to Eucalyptus Dr	Extend Commerce Blvd south from Hanna Dr to Eucalyptus Dr. The extension will consist of 2 lanes.
Gasser Dr Extension to Oil Company Road at Silverado Trail	Extend Gasser Dr north from Kansas St to Oil Company Road. The extension will be a two lane arterial.
Solano Ave Extension to First Street	Extend Solano Ave south from F St to First St. The extension will consist of 4 lanes.
Trower Rd Extension to Big Ranch Rd	Extend Tower Rd east from Martin St to Big Ranch Road. The extension will be a two lane arterial.
Villa Ln Extension to Sierra Ave	Extend Villa Lane north to Sierra Ave. The extension will be a two lane arterial.

### **SUMMARY OF NEW SCHOOLS AND PUBLIC PROJECTS**

A new high school is in design in American Canyon at the northeast corner of American Canyon Road and Newell Drive. This will reduce demands placed on SR 29 that occur because students must attend public high school in the City of Napa.

## CHANGES IN COMMUTING PATTERNS

With these various land use changes and transportation projects, commuting patterns of workers are expected to change in Napa County. These changes are noteworthy in that the patterns for residents and employees are forecast to differ.

In **Table 3-8**, the forecasted change in work trip commuting from key counties are shown. This table shows the county of residence on the left, and the work site on the right. The data presented are home-based work trips, which are trips that have one end that is linked to a household, and one end linked to the work site.

The data suggests that most jobs in the future will be filled by local residents. The table illustrates that although Napa County residents are projected to be the home of many of the new jobs (over 17,000 daily trips), there will also be a significant increase in commuters to and from Solano and Sonoma Counties. For example, there is a projected 77 percent increase of daily work trips (5,941 total daily home-based work trips) that are expected to come from Solano County beyond the percentage today. Also, Lake, Solano and Sonoma Counties will increasingly be sending workers to each other – through Napa County.

**Table 3-8**  
**Change of Commuting Travel Patterns in Napa County and Adjacent Counties 2007-2035 in Home-Based Work Trips**

Residence County/ Work County	Solano County	Sonoma County	Lake County	Napa County
<b>Numerical Change</b>				
Solano County	71,456	1,561	15	<b>5,941</b>
Sonoma County	2,386	118,958	707	<b>3,129</b>
Lake County	74	1,310	6,650	<b>119</b>
<b>Napa County</b>	<b>2,536</b>	<b>1,957</b>	<b>-28</b>	<b>17,363</b>
<b>Percentage Change</b>				
Solano County	47%	75%	23%	<b>77%</b>
Sonoma County	74%	39%	24%	<b>56%</b>
Lake County	70%	17%	13%	<b>28%</b>
<b>Napa County</b>	<b>28%</b>	<b>37%</b>	<b>-6%</b>	<b>23%</b>

Source: Solano-Napa Phase 2 Model  
DKS Associates, 2008

## ABOUT THE NAPA-SOLANO PHASE 2 TRAVEL DEMAND MODEL

In 2002, NCTPA agreed to participate with Solano Transportation Authority to create a single two-county travel model. This model was designed to simulate traffic forecasts in these two counties by taking into account overall travel demand in the Bay Area, the Sacramento Region, San Joaquin County and Lake County. The travel model was developed through the guidance of a special technical committee. NCTPA contributed to the

development of Phase 1 of this model, which was released in 2005 and has been used as a source for a variety of studies. In 2008 the model was upgraded to Phase 2 to provide better analysis for walking, bicycle, HOV and transit mode forecasts.

Because a travel model contains a wide variety of specific assumptions about future land use, network improvements and travel behavior, the model is being monitored and occasionally updated by NCTPA staff based upon a periodic review of the input assumptions.

The Model is able to generate information by changing a number of specific variables including:

- changing traffic volumes and speeds
- adding better local connectivity of bike and pedestrian paths
- adding new park-and-ride locations
- testing representative bypass strategies
- increasing transit frequency
- adding new transit routes
- relocating housing to be near jobs
- reducing peak hour trips
- adding parking costs

The current version of the model encompasses the MTC region (nine Bay Area Counties), the SACOG region (six Sacramento area counties), Lake County, and San Joaquin County areas. It has 1372 Traffic Analysis Zones (TAZs) with 218 of those for the Napa communities (about 1 TAZ per 700 residents). The model has a daily trip distribution and mode choice logic, and an AM peak and a PM peak traffic volume forecast. It is based on the CUBE software platform which is commonly used for traffic modeling in Northern California.

Modeling in the Bay Area operates under a double check: not only must MTC approve it for consistency by their modeling staff, but Caltrans needs the MTC consistency in order to accept forecasts for projects on state highways. The NCTPA/MTC planning agreement calls for traffic projection models used by the NCTPA to conform to the regional modeling guidelines which include conformance to within 1% of the ABAG Projections for Napa and Solano Counties combined.

With the passage of SB375 in 2008, California's Regional Transportation Agencies, including MTC, have been instructed to develop a new generation of integrated transportation and land use models that will have to be calibrated to new performance measures and other statistics. Regional travel model improvements are an ongoing effort, and new techniques developed at the regional level will eventually affect updated analysis done for future iterations of this report.

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## CHAPTER 4: POTENTIAL STRATEGIES- WORKING FROM BOTH SIDES OF THE DEMAND/SUPPLY EQUATION

Given the critical need to restrain and reduce overall VMT, Napa's Transportation Future looks at our Strategic Options in two sets of complementary strategies:

1. **SUPPLY STRATEGIES** that address the traditional challenges of supplying basic transportation infrastructure to the community. These include
  - **Streets and Roads I: Maintain Critical Street and Road Infrastructure**
  - **Streets and Roads II: Invest in Strategic Road System Expansion in South County**
  - **Streets and Roads III: Convert High Frequency Intersections to Roundabout Configuration**
  - **Streets and Roads IV: Build Bike Paths and Sidewalks**
  - **Streets and Roads VI: Create Satellite Park and Ride Sites**
  - **Streets and Roads VI: Promote Bypass-road and transit strategies to address pass-through traffic**
  - **Public Transit I: Increase Transit (Bus) Service**
  - **Public Transit II: Actively Explore Creating a Passenger Rail System**
  - **Public Transit III: Investigate Bus Rapid Transit Systems for Napa County**
  - **Public Transit IV: Promote Energy Efficient and Environmentally Benign Transit Systems**
  - **Information Systems: Real-time Bus tracking, Traffic Light Synchronization, "Dial 511" transportation information**
  - **Other Infrastructure Supply: Maintain Options for Water Transportation, Promote Freight Rail in South County, Support a Full Integration of Air Transportation Connections**

2. **DEMAND STRATEGIES** that take a complementary approach and attempt to reduce need for transportation services. In particular, these are strategies to reduce the demand for single occupancy vehicle travel. In this model, it is just as important to pursue policies that will restrain or reduce travel service demand as it is to build and maintain our streets roads and transit systems.

- **Compact Land Use Development I: Promote Workforce Housing Production Near Jobs**
- **Compact Land Use Development II: Promote Urban Design and Infrastructure Development policies to encourage bike and pedestrian activity**
- **Compact Land Use Development III: Promote Safe Non-Auto Routes to School, and After School Programs**
- **Compact Land Use Development IV: Promote Well-Located Health and Social Service Delivery to Minimize Travel**
- **Compact Land Use Development V: Institute comprehensive growth management guidelines that covers all jurisdictions**
- **Partnerships I: Work with the Wine and Hospitality Industries to Create and Promote Car-Free Tourism Services**
- **Partnerships II: Address the Special Transportation Needs of a Growing Senior Population**
- **Partnerships III: Work with employers to Encourage Alternatives for Commuting and Mid-Day Work Trips**
- **Partnerships IV: Parking Pricing Strategies**

## Guide to Cost Estimates

All of the cost estimates in Napa's Transportation Future are presented as a rough guide only. Each of the strategies will, in its implementation, be required to negotiate significant design complexities and trade offs. We have aimed to illustrate the rough "order of magnitude" of these costs as a guide to relative costs among varying strategies.

### Construction (Capital) (One-time):

\$	\$10,000 - \$100,000
\$\$	\$100,000 - \$1,000,000
\$\$\$	\$1,000,000 - \$10,000,000
\$\$\$\$	\$10,000,000 - \$100,000,000
\$\$\$\$\$	> \$100,000,000

### Operating/Maintenance (Annual):

	< \$10,000
	\$10,000 - \$100,000
	\$100,000 - \$1,000,000
	> \$1,000,000

### SUPPLY STRATEGIES

#### Streets and Roads I: Maintain Critical Street and Road Infrastructure



**Purpose:** *To ensure that roadways are adequately maintained so that they are safe to drive at anticipated operating speeds.*

#### Addresses Goals:

Reduce/Restrain VMT	Spread Travel from Peak to Non-Peak Times	Safety and Quality of Streets and Roads	Shift from Single Occupancy Auto to other modes	Reduce Energy and GHG Emissions
		X		

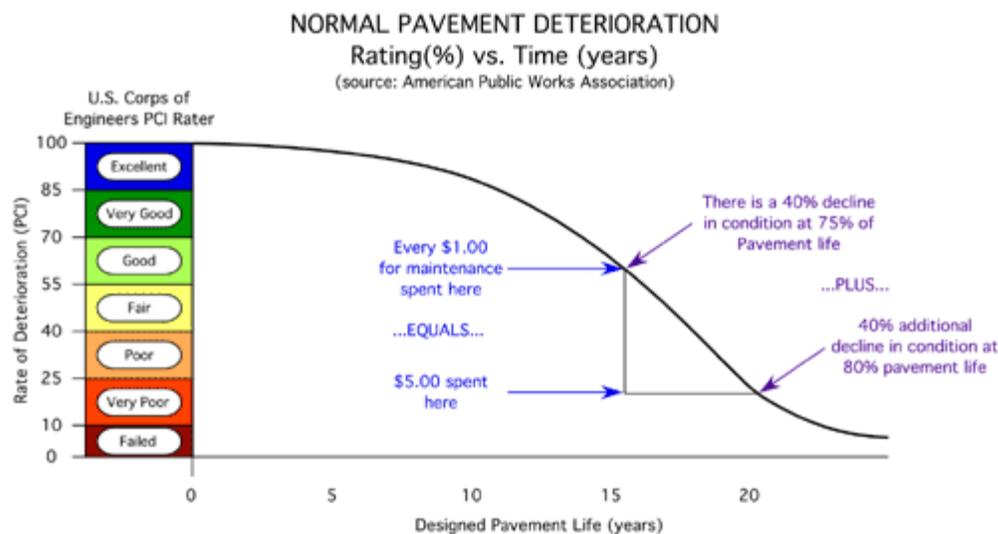
#### Description

Street and road maintenance is increasingly a concern in Napa County. Under normal conditions, road pavement has a life span of 20 years, requiring regular maintenance. The Bay Area is one of the first regions in the country to implement a pavement management system that is used by nearly all of its localities. Currently (2009), Napa's streets and roads rate at the bottom of the Bay Area. Four out of six jurisdictions are rated by MTC as "at risk" and a significant percentage of the roadway system is in need of rehabilitation<sup>1</sup>. If "at risk" roadways are not rehabilitated, they will begin a precipitous decline that will require much more expensive repair work. In addition, proper striping, street cleaning, street light replacement and traffic signal maintenance are all ongoing expenses which local governments must bear. Without adequate resources, this investment will fall into disrepair.

<sup>1</sup> Pavement Conditions of Bay Area Jurisdictions 2005, - Metropolitan Transportation Commission: [http://www.mtc.ca.gov/news/press\\_releases/pavement/PCI\\_2006.pdf](http://www.mtc.ca.gov/news/press_releases/pavement/PCI_2006.pdf)

### Challenges

The major challenge in street and road maintenance is funding. Many times, funding for these projects is not considered important when public budgets are tight. As a result, repairs can be deferred, potentially compounding the maintenance problem. Because major repairs cost five to 10 times more than routine maintenance, these streets are at an especially critical stage. As of this writing (2008) four of the six Napa county jurisdictions have "Pavement Condition Indexes" that place them at risk of requiring high cost rehabilitation. At current rates of revenue generation and spending, the projected funding *shortfall* in funding for basic street and road maintenance in Napa County over the next 25 years is over \$450 million!<sup>2</sup>



### Public Costs

**Operating/Maintenance (Annual):**  + +

\$200,000 to do a minimum of maintenance on a mile of roadway (2 inches of asphalt on an existing road on a 36 foot cross section of pavement -- 2 lanes at 12 feet each, with 2 shoulders at 6 feet each) . Over the next 25 years, the Metropolitan Transportation Commission estimates that the costs of basic road maintenance in Napa County as a whole will be \$866 Million!

- Complete replacement of a local road of the same dimensions is about \$2,000,000 not including any additional right-of-way requirement.

<sup>2</sup> Memorandum March 7, 2008 from MTC Deputy Director of Operations, "Preliminary Transportation2035 Needs and Shortfalls Assessment for Streets and Roads and Transit  
[http://apps.mtc.ca.gov/meeting\\_packet\\_documents/agenda\\_1022/2c\\_Transit\\_Road\\_Needs\\_and\\_Shortfalls.pdf](http://apps.mtc.ca.gov/meeting_packet_documents/agenda_1022/2c_Transit_Road_Needs_and_Shortfalls.pdf)

### **Benefits**

**All Napa County residents and workers** benefit from good street and road maintenance. The quality of the roads affects not only drivers, but passengers in vehicles, bus riders and bicyclists. It also can have a negative effect on the safety of all travelers. If pavement quality deteriorates then individual drivers may see increased vehicle repair costs, as poorer quality roads increase the likelihood that vehicles could be damaged.

**SUPPLY STRATEGIES**

**Streets and Roads II: Invest in Strategic Road System Expansion in South Napa County**



**Purpose:** *To avoid the potential gridlock that could occur as American Canyon and Airport Industrial Area realize their land use potential and as demand increases for traffic to pass through South Napa County*

**Addresses Goals:**

Reduce/Restrain VMT	Spread Travel from Peak to Non-Peak Times	Safety and Quality of Streets and Roads	Shift from Single Occupancy Auto to other modes	Reduce Energy and GHG Emissions
		X		X

**Description**

Unlike much of Napa County north of the City of Napa, the southern part of the county has been experiencing significant development, and this is projected to continue. In addition, this stretch of roadway is increasingly being used as a pass-through corridor both for Napa's workers who live in Solano County and for traffic between Solano and Sonoma Counties. In fact, while Napa's growth is projected to remain modest, the two counties that border Napa on the East, West and South are expected to show large increases in population and employment. Napa will be caught in the middle of this growth. The South County area is within commuting distance of major employment centers in the rest of the Bay Area and a higher percentage of South County residents work out of the county. In addition, this part of the county lies between employment centers and attractively priced housing in Solano County causing significant commute hour traffic both into Napa and through Napa into Sonoma and Marin Counties. The area is also the main location in Napa County with expected future residential and nonresidential development.

The City of American Canyon has identified a set of improvements to alleviate current and anticipated congestion<sup>3</sup>. Key improvements under consideration include:

- Widening of State Route 29 to three lanes in each direction with associated intersection improvements, including realignment of Eucalyptus Drive and Theresa Avenue and pedestrian/bicycle overpasses
- Widening of Green Island Road from Commerce Blvd to SR 29
- Extension of Newell Drive north to Green Island Road with associated intersections, including high capacity intersection at SR 29
- Extension of Devlin Road south to Green Island Road
- Extension of Commerce Blvd to function as a major commercial collector in the northwest quadrant of the City
- Extension and realignment of South Napa Junction Road to intersect Newell Drive and serve as primary access to and from the proposed American Canyon Town Center
- Synchronization of signals and Traffic Management Center to optimize flow through the City
- Multi-modal transit center along SR 29

Additional South County projects that address this strategy include:

- Widening of Jamieson Canyon Road to two lanes in each directions for safety and to promote congestion relief. This is particularly important for the critical industrial center of the County. Locating activities such as bottling, processing, warehousing and shipping in this portion of the county is one of the factors that allow us to have an energetic wine industry while maintaining the bucolic nature of Napa's vinyarded landscape. The industrial and business parks also serve other important economic sectors of the Napa economy, such as the construction sector.
- Associated interchanges at the intersection of SR12 and SR 29 and at the intersection of SR 29 and SR 121

## Challenges

**Roadway Costs:** The construction or widening roadways is an expensive effort. Development mitigation fees can cover a portion of the forecasted congestion, but the developments cannot pay for resolving existing congestion problems that already existed in the area. These must be paid either through grants from Federal, State or regional sources, or from locally-generated tax revenue.

**Environmental Effects:** Some projects may have environmental challenges within their alignments. Proper studies and mitigation programs would likely be required to mitigate these problems if possible.

## Public Costs

**Construction (Capital) (One-time):** \$\$\$\$ +

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<sup>3</sup> American Canyon Citywide Circulation Study, September 2008 p 41-47

### **Benefits**

- **Drivers and Passengers** will experience improved inter-city, intra-city and through traffic flow.
- **South County Resident and Employees** benefit from having reduced congestion in their section of the County.
- **Other Napa County Residents and Workers** benefit when they have to travel through this area on State Route 29.
- **Tourists** that drive would benefit from easier entry into and out of Napa County.

**SUPPLY STRATEGIES**

**Streets and Roads III: Convert High Frequency Intersections to Roundabout Configuration**



**Purpose:** *To help reduce delay at intersections, save energy, decrease carbon emissions and increase safety.*

**Addresses Goals**

Reduce/Restrain VMT	Spread Travel from Peak to Non-Peak Times	Safety and Quality of Streets and Roads	Shift from Single Occupancy Auto to other modes	Reduce Energy and GHG Emissions
		X		X

**Description**

A modern roundabout is a circular intersection with design features that promote safe and efficient traffic flow. Roundabouts can reduce delay at intersections (as compared with all-way stops or signals) and can be cheaper to implement than installing traffic signals. Extremely popular in Europe (France has mandated conversion of its entire road system), roundabouts can also provide major benefits in terms of emissions reductions and safety.

In Napa County, a roundabout at the intersection of Rutherford Cross Road and State Route 29 is in development. Others are being studied in the St. Helena area and in the Calistoga area at Silverado Trail/Lincoln Avenue intersection and at the Petrified forest Road/Hwy 128 intersection.

Considering the advantages of this type of facility, more roundabouts could be encouraged to be built in Napa County, especially at those locations with high crash record, large traffic delays, complex geometry, frequent left-turn movements, and relatively balanced traffic flows.

### Challenges

Roundabouts are not yet popular in the United States. Most drivers are not familiar with its “yield-to-the roundabout traffic” rule. These drivers would include commuters who might get confused at the beginning but easily get used to it shortly.

Locations to build roundabout need to be carefully examined, and “right of way” must be available. For example, the intersections with topographic or site constraints that limit the ability to provide appropriate road alignment. Those with highly unbalanced traffic flows may not be appropriate for roundabouts.

### Public Costs

**Construction (Capital) (One-time):** \$\$\$

\$1.8 to 2.1 million (Rutherford Roundabout)

**Operating/Maintenance (Annual):**



Less than other roadways

### Benefits

- **Safety** A study by the Insurance Institute for Highway Safety indicates roundabouts reduce crashes by 75 percent at intersections where stop signs or signals were previously used for traffic control.
- **Traffic flow/reduced congestion** - Studies<sup>4</sup> have measured traffic flow at intersections before and after conversion to roundabouts. In each case, installing a roundabout led to a 20 percent reduction in delays. The proportion of vehicles that had to stop – just long enough for a gap in traffic – was also reduced.
- **Pollution and Greenhouse gas reduction** - Research showed that the roundabout reduced emissions, delay times, and fuel consumption at the intersection.<sup>5</sup>

<sup>4</sup> <http://www.ksu.edu/roundabouts/>

<sup>5</sup> [https://www.nysdot.gov/portal/page/portal/main/roundabouts/files/Emissions\\_Reduction.pdf](https://www.nysdot.gov/portal/page/portal/main/roundabouts/files/Emissions_Reduction.pdf)

### SUPPLY STRATEGIES

#### Streets and Roads IV: Build Bike Paths and Sidewalks



**Purpose:** *To facilitate a fundamental change in Napa county relative to bicycling and walking, especially in the cities, resulting in significant expansion of these activities*

#### Addresses Goals:

Reduce/Restrain VMT	Spread Travel from Peak to Non-Peak Times	Safety and Quality of Streets and Roads	Shift from Single Occupancy Auto to other modes	Reduce Energy and GHG Emissions
X			X	X

#### Description

This Strategy provides essential support for the objective of substantially increasing the level of bike and pedestrian activity by building an expanded system of bike paths and sidewalks. It is recognized that adequate infrastructure must be in place to encourage people to walk and bike more. In conjunction with this construction, public leaders are encouraged to personally and actively promote these activities. Specific activities should include:

1. **Build a Class I Bike Path from Calistoga to American Canyon with connection to the BayLink ferry terminal in Vallejo**
2. **Promote development of formal, detailed bike plans for all jurisdictions in Napa**  
Currently exist for Napa County and Calistoga
3. **Support recommendations in bike plans in all jurisdictions**
4. **Increase in-town bike connectivity in all jurisdictions**
5. **Increase inter-town bike connectivity**
6. **Support marketing/Education programs**

### 7. Pedestrian strategies

Promote sidewalk construction

Partner with health/wellness advocates to promote walking to work and school

### Challenges

Homeowners along the route of a proposed bike path may be concerned that the path will bring in more crime, neighborhood traffic, loss of privacy and reduced property values.

Drivers may be concerned that restriping for bicycle lanes could increase travel times or decrease driving speeds.

The provision of facilities does not guarantee their use. Promotion of the use, maintenance of the facilities, and education of how to use the facilities safely would need to be an on-going activity.

Since some bike paths may follow rivers, greenbelts, utility easements or scenic corridors, they might adversely impact the area through they pass, and such impacts would have to be mitigated.

### Public Costs

**Construction (Capital) (One-time): \$ - \$\$\$**

\$200,000 per sidewalk mile

\$600,000 - \$1,000,000 per bicycle path mile

**Operating/Maintenance (Annual):**



slight increases to roadway maintenance budgets

### Benefits

- **Improved intra-city travel**
- **Students** will take the advantages of the improved sidewalks and bicycle routes to go to school.
- **Bicyclists** will use bike paths and lanes, and enjoy their use.
- **Commuters** may use the improved bike paths and sidewalks
- **Drivers** may not have as many conflicts with bicycles on major streets.
- **Local Trip-Makers** may use the improved bike path and sidewalks to run errands in their community or in an adjacent community.
- **Tourists** will be encouraged to use the improved bike path and sidewalks as an additional recreational opportunity in the county
- In addition to the same environmental benefits of all traffic reduction, this will also improve general level of health, and especially address the growing issue of youth obesity.

**SUPPLY STRATEGIES**

**Streets and Roads VI: Create Satellite Park and Ride Sites**



**Purpose:** *To reduce traffic inside cities, maximize transit use,*

**Addresses Goals:**

Reduce/Restrain VMT	Spread Travel from Peak to Non-Peak Times	Safety and Quality of Streets and Roads	Shift from Single Occupancy Auto to other modes	Reduce Energy and GHG Emissions
X		X	X	X

**Description**

Place lots at the edge of cities that will allow drivers to leave their cars and use public transportation or assemble in car pools. Also possible to provide bicycle parking, enabling cyclists to connect with transit and car pools

**Benefits**

- Reduce highway traffic congestion
- Reduce worksite parking demand.
- Shopping centers adjacent to Park & Ride facilities tend to benefit from additional shopping by the commuters who park there.
- If bicycle parking is also provided the effectiveness of Park & Ride lots can be increased

**Public Costs**

**Construction (Capital) (One-time):** \$\$

**Operating/Maintenance (Annual):** 

## SUPPLY STRATEGIES

### Streets and Roads VII: Promote Bypass-road and transit strategies to address pass-through traffic



**Purpose:** *To relieve congestion on local roads caused by external factors*

**Addresses Goals:**

Reduce/Restrain VMT	Spread Travel from Peak to Non-Peak Times	Safety and Quality of Streets and Roads	Shift from Single Occupancy Auto to other modes	Reduce Energy and GHG Emissions
X		X	X	X

### Description

Particularly at the Southern and Northern ends of Napa County, there is growing traffic load associated with cars attempting to pass through Napa. In large part, there are no major connector roads in Napa either moving North/South or East/West. As regional growth continues, whatever the internal growth may be in Napa, there will be continually increased pressure from the surrounding communities. Specifically, job growth in Sonoma County is drawing workers from areas with lower cost housing in Solano County affecting the local roads in south Napa County, particularly the linked segments of Highways 12 and 29 and 121. A similar situation exists in the northern part of Napa, where lower cost housing in Lake County is matching employment growth in Sonoma County, putting pressure on the northern portion of Highway 29 as it links to Petrified Forest Road to Santa Rosa.

This strategy would combine construction of additional road capacity in the south and north (Street and Road Strategy II) and possibly some additional capacity in Calistoga. This may be combined with a strategy to work with Sonoma County to provide more workforce housing closer to its growing job base. A similar benefit would result if Lake and Solano Counties, which now export workers (traveling through Napa) could increase local employment for their residents. This strategy is related to the demand strategies outlined later in this section, especially "Promote development of workforce housing near jobs." If job centers in Sonoma county, for example,

provided adequate housing for their growing workforce, this would reduce pressure for their workforce to live in Solano or Lake counties and add to the cross traffic through Napa County.

Additional integration of bus systems among Solano/Napa/Sonoma and Lake/Napa/Sonoma Counties would also contribute to this strategy.

In addition to these strategies to reduce traffic passing through Napa County between Solano and Sonoma Counties, this strategy also addresses the local situation in American Canyon, St. Helena and Calistoga where SR 29 bisects the city and adds pass-through congestion to the local main street. Road strategies to bypass these town centers would require solutions beyond the usual range of consideration, including changing the designation of SR 29 to routes that bypass the town centers.

### Challenges

There are significant challenges to implementing this strategy, especially in the northern parts of the county. Building town bypass routes would be costly and right of way acquisition (especially for a St. Helena bypass) would likely be extremely expensive.

### Public Costs

Construction (Capital) (One-time): \$\$\$\$\$ +

Operating/Maintenance (Annual): 

### Benefits

- **Reduce congestion** on roads currently used by pass-through traffic
- A principal benefit of this strategy would be to **recapture the town centers** for local community use, characterize by reduced traffic altogether. Travelers attempting go move through currently congested town centers would also benefit from more easeful bypassing of these towns.

**SUPPLY STRATEGIES**

**Public Transit I: Increase Transit (Bus) Service**



**Purpose:** *To encourage more people to use the transit system instead of driving, as a result reducing the traffic as well as reduce carbon emissions and improving the environment.*

**Addresses Goals:**

Reduce/Restrain VMT	Spread Travel from Peak to Non-Peak Times	Safety and Quality of Streets and Roads	Shift from Single Occupancy Auto to other modes	Reduce Energy and GHG Emissions
X			X	X

**Description**

**Reduce Headways:** The current public transit system in Napa County is accessible for most people who do not want to drive. However, the current “headway” (time between buses) for most transit routes is about 60 minutes, which reduces the attractiveness of the service. Transit ridership could be increased by reducing the headway for most transit routes including express and local services from 60 minutes to 30 minutes.

**Marketing:** Additional strategies for increasing transit ridership include specific marketing, advanced information systems, better bus stops, better customer service, providing additional destinations (e.g. BART).

**Attract tourists:** Our current transit ridership is heavily made up of lower income, transit-dependent riders. Increasing the reliability and usefulness of the system for these riders will require a very different set of investments than would be required to attract tourists who are looking for an upscale “Napa Style” travel experience. A survey of 90+ businesses in the hospitality industry done for this report by the Napa Valley Conference and Visitors Bureau clearly indicated that visitors would not be attracted to the kind of workaday system much of Napa County needs.

**Express Buses:** Special focused service matching concentrations of employment (such as major employers, industrial/business parks and commercial centers) and workforce residence, both in Napa County and in neighboring counties (primarily Solano County).

**Rural Public Transit:** Given the rural nature of much of Napa County (approximately 18% of Napa's population lives in the unincorporated portions of the County), and given the general aging of the total population and given that a 68% percent of the greenhouse gas emissions in the unincorporated county are due to transportation (a much higher percentage than the rest of the county), consideration should be given to exploring the expansion of transit services to the more rural areas of the County, including possible destination shuttles to the Lake Berryessa area in the eastern County.

### Challenges

Operational costs will be the main challenge for this strategy, since increasing the current transit headway from around 60 minutes to 30 minutes almost doubles the cost of providing transit service. Because the transit subsidy sources are fixed, the subsidy needed to pay for the buses and the drivers would need to be met through local sources. Fares might need to be increased, which will restrict some people who do not want to pay higher fares; or other new taxes would be needed. In the current fleet of 24 VINE buses, nine are more than 20 years old. The standard life cycle for these buses is approximately 15 years (although the life of useful service can be and has been extended via major overhauls). Thus, the current replacement cycle will require regular purchase of new buses over the course of this study period. To double the frequency of bus service on VINE routes would require the purchase of an *additional* 15 buses.

Not all services and stops need 30-minute headways. In order to make the transit system more effectively used, new schedule and routes would need to be carefully designed.

Any new transit services to the more rural areas of the county would have particularly high operational costs, due to lower ridership and longer distances.

### Public Costs

**Construction (Capital) (One-time):** \$\$ - \$\$\$\$

\$500,000 per/bus replacement X 20 new buses = \$10 Million

**Operating/Maintenance (Annual):**  - 

### Benefits

- **Commuters** will be the primary users of transit system when the headway is much shorter, which makes it easier to go to work on-time using transit.
- **Students** will use buses more frequently if they can use them to reach schools, and after-school destinations (such as home, recreational sites or part-time work places).
- **Tourists** will use the increased transit resources either for intercity or intra-city trips.
- **Shoppers** could use the advantages of the more frequent transit resources if they don't wait, and they can easily carry merchandize on/off the bus.

### SUPPLY STRATEGIES

**Public Transit II:** Actively explore creating a passenger rail system from Vallejo to the City of Napa and a hub for connections east to Fairfield



**Purpose:** To provide a major alternative to auto travel in Napa, especially in the higher volume corridors in the southern part of the County.

**Addresses Goals:**

Reduce/Restrain VMT	Spread Travel from Peak to Non-Peak Times	Safety and Quality of Streets and Roads	Shift from Single Occupancy Auto to other modes	Reduce Energy and GHG Emissions
X		X	X	X

#### Description

This strategy envisions scheduled passenger train service from the Vallejo Ferry Terminal to a site in the City of Napa with trains running throughout the day. An initial step might be connection between the City of Napa and the concentrated job centers in the southern part of the county (between the cities of Napa and American Canyon). These systems would include coordinated bus service to extend transit travel further north as well as local shuttles to connect stations to job and home sites. A fundamental element to the design and marketing of such a train would be its connection with core community values of protecting the quality and integrity of Napa's agricultural activities. An important quality of rail is its potential to provide non-auto connectivity with a full-spectrum regional and national travel network of trains, allowing people to come to Napa from anywhere and find connection to all essential access points without a car. Examples of such systems that provide connections at all transportation scales are available in many places of the world, including Europe.

Currently, existing rail tracks are used for both limited freight service and for the operation of the Napa Valley Wine Train. In 2003 a study<sup>6</sup> sponsored by the NCTPA examined rail service requirements and options and looked at three possible rail transit operations -- from St. Helena to the Vallejo Ferry Terminal, St. Helena to

<sup>6</sup> Napa/Solano Passenger/Freight Rail Study by R.L. Banks & Associates July 2003

Fairfield/Suisun City Amtrak Station, and Vallejo Ferry Terminal to Fairfield/Suisun City Amtrak Station. The study examined the feasibility of different rail technologies, and recommended consideration of a Diesel Mobile Unit (DMU) that would be compatible with freight trains that may continue to operate on the same tracks. One of the critical design features incorporated into these design options was that existing freight use would have to be accommodated. In the six years since that study was done there has been significant reduction in freight use with the closing of the Napa Pipe steel fabrication facilities. However, there remains important future potential for freight rail in the southern part of the county.

A more recent study<sup>7</sup> focuses on a single passenger-only line from the Vallejo Ferry terminal to a site at the northern end of the city of Napa. This study is proposed as the starting point for a more in-depth planning effort to bring such a system online. It is recognized that such a system must provide service to key destinations (employment centers, visitor destination hubs), reasonable user cost, easy access and a financial model that is sustainable.

Future expansion of the system would include connection to the Fairfield-Suisun area, direct connection to the Capital Corridor national rail system and potential continuation north of the City of Napa..

A key dimension of such a rail system would be to promote future destination development (residential, jobsite and visitor destination hubs) along such a corridor.

It is suggested that public-private finance models be investigated, including potential “financial improvement district” tax increment financing.

It is recognized that this would be a major development project for the Napa community and that significant planning work would need to be done. An important first step would be to establish a standing committee to pursue a viable passenger rail system for Napa. Such a committee should include participation by the fullest set of stakeholders and partners and include representatives of the Napa Valley Wine Train as well as from other regional rail system operators (including Sonoma-Marin Area Rapid Transit –SMART). Such a committee should also include consideration of Bus-Rail, Bus rapid Transit (BRT) and other potential hybrid systems as discussed in the next Strategy.

## Challenges

**Cost:** The most significant challenge to a rail system is the costs associated with building and maintaining the system. In calculating the costs and benefits of such a rail system it will be important to compare it with a full-picture accounting of the costs of auto use, including such externalities as greenhouse gas production and congestion-related productivity losses.

**Environmental Issues:** The upgrading of rail service would require the construction of new rail tracks such as bypass tracks (as the current line is single-tracked) and extensions in some locations. Some residents may also have concerns about noise or vibration from tracks.

**Rail Access:** Implementing rail service requires negotiating for the right to operate on the track.

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<sup>7</sup> A Modern, Comprehensive Public Transit Network: The Key to Sustainable Mobility for the Napa Valley by Michael Setty, May 2008

### Public Costs

**Construction (Capital) (One-time):** \$ - \$\$\$\$

Modest costs for initial steps. \$140 M for full system from Napa to Vallejo (commuter service only)



**Operating/Maintenance (Annual):**

\$7 M from St. Helena to Vallejo (commuter service only); Subsidy of \$ 6 M anticipated (\$1 M in passenger revenue forecasted)

### Benefits

- Development of a local rail system would continue to reinforce key quality of life dimensions and would build on the renaissance currently underway in the City of Napa by forestalling a potential future gridlock and building yet another marquee element of our community infrastructure.
- **Commuters and other local travelers** would benefit from having an additional transit option.
- **Visitors** would benefit from having an additional transit option that could serve as an additional attraction for visitors.

**SUPPLY STRATEGIES**

**Public Transit III: Actively explore development of a Bus Rapid Transit System**



**Purpose:** *A possible alternative to the development of a rail system with similar benefits of providing an alternative to auto travel in Napa, especially in the southern part of the County.*

**Addresses Goals:**

Reduce/Restrain VMT	Spread Travel from Peak to Non-Peak Times	Safety and Quality of Streets and Roads	Shift from Single Occupancy Auto to other modes	Reduce Energy and GHG Emissions
X		X	X	X

**Description**

During the last decade, bus rapid transit (BRT) has revolutionized regional transportation planning in much of the developing and developed world. BRT encompasses a variety of applications designed to improve the level of service of bus-based mass transportation to deliver comfortable, cost-effective mobility emulating rail transit. It relies on coordinated improvements in technology, infrastructure, and equipment to achieve quality service. Operationally, BRT applications can include buses running on exclusive rights-of-way with dedicated stations and pre-boarding fare payments, or buses operating in mixed traffic lanes on city arterials. No additional roads would be built along Hwy 29 North of the City of Napa for this purpose.

The success of BRT in many parts of the world is due in part to the cost-effectiveness and relative flexibility of the investments required. BRT's often can transport as many passengers as most conventional light rail systems at a fraction of the cost. Thus, while Rail may prove to be a viable solution for Napa, BRT should also continue to be investigated. The committee suggest in the previous Strategy should include this topic in their consideration and recommend the most cost-efficient system.

### Challenges

- Identification of dedicated travel lanes
- Operational costs

### Public Costs

Construction (Capital) (One-time): \$\$ - \$\$\$\$

Operating/Maintenance (Annual):  - 

### Benefits

If viable, Bus Rapid Transit may provide many of the same benefits as a rail system, with greater flexibility and lower cost.

**SUPPLY STRATEGIES**

**Public Transit III: Promote Energy Efficient and Non-Polluting Transportation Systems**



**Purpose:** *To save energy and reduce the carbon emissions from public transportation and private vehicles.*

**Addresses Goals:**

Reduce/Restrain VMT	Spread Travel from Peak to Non-Peak Times	Safety and Quality of Streets and Roads	Shift from Single Occupancy Auto to other modes	Reduce Energy and GHG Emissions
				<b>X</b>

**Description**

Reduction of Greenhouse Gas (GHG) emissions has become a major state, national, even global priority. In Napa County majority of our GHG emissions come from the transportation sector. To reduce this GHG level will require three kinds of actions: reduce the miles traveled, increase fuel efficiency and use cleaner fuels. The reduction of overall vehicle miles traveled is addressed in the “Demand Strategies” section of this report. This strategy focuses on the second two of these actions. Elements of this strategy include encouraging use of lower emission/no emission cars, trucks and buses (and potentially, trains). This strategy can be approached in two parts:

- a) Reducing emissions from our public transportation fleet as well as from public agency vehicle fleets
- b) Encouraging the adoption of low emission vehicles in the private sector, including both more fuel efficient vehicles *and* lower emission fuels. One way to do this could be to promote the establishment of electric vehicle support infrastructure throughout Napa County.

### Challenges

Providing financial incentives to make technology improvements (such as incentives to encourage purchase of lower emission or zero emission vehicles or switching to higher mileage models) will require a system for both promoting and monitoring a system. Some additional measures such as electric vehicle recharging stations may also need to be encouraged. Setting priorities among competing approaches to develop such an improved energy efficient and environmentally benign system will not be easy.

### Public Costs

**Construction (Capital) (One-time): 0 - \$**

Cost of a recharging station is estimated at \$10,000 per space but would be lower if space is already provided. Cost recovery would be built into recharging fees.

**Operating/Maintenance (Annual): 0 - **

Incentives will need to be notable to encourage electric vehicle use. On-going measurement of behavioral changes will require routine monitoring, particularly if on-going subsidies are granted (such as a rebate check for not driving).

### Benefits

- **Napa residents** will benefit by contributing to lowering the individual and collective carbon footprints.
- **Tourists** will also benefit by lowering their individual carbon footprints when they visit the Napa Valley.

**SUPPLY STRATEGIES**

**Information Systems:** Real-time Bus tracking, Traffic Light Synchronization, “Dial 511” transportation information



**Purpose:** To provide for information systems to all transportation users to facilitate mode choices and travel time information.

**Addresses Goals:**

Reduce/Restrain VMT	Spread Travel from Peak to Non-Peak Times	Safety and Quality of Streets and Roads	Shift from Single Occupancy Auto to other modes	Reduce Energy and GHG Emissions
X	X		X	X

**Description**

People tend to choose travel modes based upon past experiences and behaviors. If better information about mode choice options were made available at strategic locations, people may choose to not make certain trips or to change modes rather than drive.

Examples of such information systems include:

- **Roadway Congestion.** Signs and web sites which report how long it is expected to reach specific destinations.
- **Transit Arrivals.** Signs and web sites which report how long the wait will be before the next vehicle arrives.
- **Parking Availability.** Signs and web sites which direct people to available parking. Information can be transmitted in a number of ways. Information can be provided using signs or using cell phone technology combined with text-based or small imaged-based web applications.

Some systems, such as 511 are developed in the Bay Area but are not extensively used yet in Napa

### Challenges

Design, implementation and monitoring of these systems would require additional staff. The systems would also require coordination with local jurisdictions, transit operators, and Caltrans, and may result in the need to shift responsibilities between these agencies.

### Public Costs

#### Construction (Capital) (One-time): \$ - \$\$

Changeable message sign system

Transit arrival system

Parking guidance system for both on-street and off-street parking

#### Operating/Maintenance (Annual):



Changeable message sign system

Transit arrival system

Parking guidance system for both on-street and off-street parking

### Benefits

- **Residents** would benefit from having more informed choices about travel. They would also have a quality of life improvement through knowing about their arrival times at their destinations.
- **Visitors** would benefit from having more informed choices about travel and destinations. They would have an improved experience through knowing what to expect when they visit Napa County.

### SUPPLY STRATEGIES

**Other Infrastructure Supply:** Maintain Options for Water Transportation, Promote Freight Rail in South County, Support a Full Integration of Air Transportation Connections



**Purpose:** To promote use of freight rail to serve Napa County industries; To make the most of the General Aviation links in Napa by providing airport users good connectivity to the rest of Napa County; To encourage use of water transportation to reach destinations in southern Napa County.

**Addresses Goals:**

Reduce/Restrain VMT	Spread Travel from Peak to Non-Peak Times	Safety and Quality of Streets and Roads	Shift from Single Occupancy Auto to other modes	Reduce Energy and GHG Emissions
X	X	X	X	X

#### Description

##### Freight Rail

Freight rail is useful for high volume, high weigh, long distance shipping. Some Napa enterprises, especially in the wine and construction industries may be able to take advantage of the freight rail facilities that exist today, especially in the southern part of the county. This has the potential to remove some heavy truck activity from Napa's roadways.

Because most rail freight is transmitted through containers, providing opportunities to aggregate shipments may provide incentives for smaller shippers to take advantage of rail.

The concentration of industrial and warehousing facilities in the South County industrial and business parks, where freight lines are already available offers opportunities to expand these services.

##### Air Transportation

Air taxi service, corporate jet and fractional ownership jet traffic is increasing. Anchor or cornerstone long-term tenants at Napa Valley Airport such as Bridgeford Flying Services (55 years at Napa Airport), Golden Gate Air Operations Unit of the California Highway Patrol (10 years) and JAL Flight Training Facility (30 years) are joined by Apex Aviation and 6 jet aircraft storage hangars.

Strategic growth in airport operations should be carefully coordinated with the development of connecting transportation services including roads and public transportation.

The 60-acre Angwin Airport is the only airport in northern Napa County. A recently concluded study is currently underway (March 2009) that will include a detailed inventory of the airport's facilities, descriptions and estimates of what needs to be done to bring it into compliance with federal standards, a forecast of the airport's future uses, preliminary environmental review and recommendations on the best way for the county to manage the airport.

### **Water Transportation**

Currently, the Baylink ferry operates between San Francisco and Downtown Vallejo. Ferry rider surveys show that 22 percent of the users of this ferry are from Napa County. Consideration of extending the ferry route up the Napa River would provide another ferry option for Napa County residents.

Because the Baylink ferry boats are larger, there may also be an interest in implementing smaller boat service directly to a location in southern Napa County. This would require an entirely new water transit system.

As the Napa River environment is sensitive, and boat speeds are restricted – there is a “No Wake” area with a maximum speed of 5 miles per hour on a portion of the river north of Cutting's Wharf – careful consideration of the possible disruption of water transportation will need to be given. The size of boats and speeds of boats may result in water transportation being used for tourism and events more than as an alternative to highway congestion.

## **Challenges**

### **Freight Rail**

Local development requirements usually anticipate that most shipments will arrive and leave by truck, so that individual industries may have to demonstrate how they can use rail, and then demonstrate that they are using rail instead of trucks.

It may become necessary to provide special financial incentives to create “rail shipping stations”. These services may also not remove a large number of trucks from the system, as trucks would still be required to get goods to a shipping location.

### **Water Transportation**

While Bay Area ferry service is subsidized by Regional Measure 2 toll bridge funds, many Bay Area communities are eager to initiate ferry service. The additional cost of providing water transportation could require additional dredging on the river near a proposed terminal, which may be a negative environmental impact.

The capital costs of a new terminal would need to be funded in some form.

### Public Costs

**Construction (Capital) (One-time): 0 (Private Investment) \$\$\$**

Ferry terminal at \$20 to \$30 million

Ferry boat at \$6 million to \$10 million



**Operating/Maintenance (Annual):**

\$1.5 million per ferry (does not include terminal upkeep)

### Benefits

- **Roadway Users** in Napa County would see some reduction in the number of heavy trucks on the highway system.
- **Industries** that import and export from other parts of the country may benefit from lower shipping costs, depending on the distance, time sensitivity and quantity of the goods being shipped.
- **Tourists** would benefit from having a more coordinated ground transportation system with major commercial airports available, and strategic linkages to private airports.
- **Local residents** would also benefit from having a more coordinated ground transportation system available.
- **Commuters and visitors to and from San Francisco** would be the most likely beneficiaries of the system. As the Water Transportation Authority planning continues, potential linkages to other Bay Area locations are possible.

## DEMAND STRATEGIES

### **The Transportation – Climate Protection connection and the link to “Compact Land Use Development”<sup>8</sup>**

A key theme of the Napa's Transportation Future strategy is that today transportation is responsible for over 50% of Napa's overall Greenhouse Gas (GHG) load. Recent analysis in Napa shows that transportation accounts for 55% of GHG emissions countywide. As mentioned in Chapter 1, the State of California has entered a new era of aggressive regulation of GHG emissions that will require extensive reductions of our overall GHG emission compared to a “business as usual” scenario.

An exhaustive review of existing research on the relationship among urban development, travel, and the CO<sub>2</sub> emitted by motor vehicles has concluded that the transportation sector cannot meet its proportional segment of this reduction target through vehicle technology (better gas mileage) and fuel technology (cleaner fuels) alone, which have been the main policy focus to date. Research demonstrates that to meet the GHG reduction targets, we will have to find a way to sharply reduce the growth in total vehicle miles traveled (VMT), reversing basic development patterns and trends that go back decades.

**Research makes clear that without new policies and new development practices, improvements in vehicles and fuel technologies are likely to be offset by continuing, robust growth in VMT. In Napa, under current trends, our VMT is projected to grow at double our population growth rate.**

This growth in driving has been due in large part to our overall urban development pattern. For 60 years, we have built homes ever farther from workplaces, located schools far from the neighborhoods they serve, and isolated other destinations such as shopping and recreation far from work and home. From World War II until very recently, nearly all new development has been planned and built on the assumption that people will use cars every time they travel. Population growth has been responsible for only a quarter of the increase in vehicle miles driven over the last couple of decades.

#### **How Compact Development Helps Reduce the Need to Drive**

Better and more disciplined community planning and more compact development help people live within walking or bicycling distance of some of the destinations they need to get to every day—work, shops, schools, and parks, as well as transit stops. If they choose to use a car, trips are short. Rather than building single-use subdivisions or office parks, we can plan mixed-use developments that put housing within reach of these other destinations. The street network can be designed to interconnect, rather than in patterns that end in cul-de-sacs and funnel traffic onto high volume arterial roads. Individual streets can be designed to be “complete,” with safe and convenient places to walk, bicycle, and wait for the bus. In places like the City of Napa, where most new building will be “infill,” fitting new pieces into an already existing puzzle, increasing residential densities and providing for local serving commercial services can accomplish the same goals. Finally, by building more homes as condominiums, townhouses, or detached houses on smaller lots, and by building offices, stores and other destinations “up” rather than “out,” communities can **shorten distances between destinations. This makes neighborhood stores more economically viable, allows more frequent and convenient transit service, and helps shorten car trips.**

#### **How We Know That Compact Development Will Make a Difference: The Evidence**

<sup>8</sup> Much of this section is derived from “Growing Cooler: The Evidence on Urban Development and Climate Change” – by Reid Ewing, et al. published by the Urban Land Institute in March 2008

The link between urban development patterns and individual or household travel has become the most heavily researched subject in urban planning, with more than 100 rigorous empirical studies completed. These studies show that residents of compact, mixed-use, transit-served communities drive less than their counterparts in sprawling communities. Even accounting for income and other socioeconomic differences (such as the tendency of higher-income households to make more and longer trips than lower-income families) residents drove about 25 percent less in the more compact regions. In addition to regional growth scenarios and large survey studies, “project level” studies that looked at individual development projects, found that infill locations generate about 36 percent less driving and emissions than the comparable outlying sites

The summary evidence shows that compact development can reduce the need to drive between 20 and 40 percent. So, as a rule of thumb, it is realistic to assume a 30 percent cut in VMT with compact development. This does not include additional reductions from complementary measures, such as:

- higher fuel prices and carbon taxes: Research from the Congressional Budget Office suggests that each 20 percent increase in gasoline costs results in 0.4 percent less vehicles driving on the roads in California.
- peak-period road tolls, also known as “congestion pricing”: According to the National Academy of Sciences “it appears that peak-period fees averaging \$2.00 to \$3.00 per daily round trip would reduce total travel during the peak period by roughly 10 to 15 percent.”<sup>9</sup> Generally such strategies are applicable where there is adequate multi-lane road miles, which is not the case in most of Napa County.
- pay-as-you drive insurance: Pay-as-you-drive (PAYD) auto insurance, which involves replacing existing lump-sum premiums with premiums that vary in proportion to miles driven, do not raise driving costs for the average motorist. Recent studies show that PAYD induces reduced driving, congestion and accidents. PAYD insurance also reduces the number of uninsured drivers by lowering premiums for low-mileage vehicles. By converting some of the fixed costs of vehicle ownership into costs that vary with mileage, the policy reduces the distance that vehicles are driven and fuel demand. And unlike under higher fuel taxes, driving costs (fixed plus variable) for the average motorist do not increase; hence political opposition to this policy should be more muted.<sup>10</sup>
- paid parking: in many cases the most effective strategy for reducing VMT, this is discussed in more detail in “Partnerships IV – Parking Pricing Strategies” page 4-56. This is an area of complex trade offs and which is most effective in higher density urban areas. Thus the rural nature of most of Napa county will most likely limit the applicability of this approach to the city centers.

It also does not include the energy saved in buildings with compact development, the CO<sub>2</sub>-absorbing capacity of forests and agriculture preserved by compact development or the fact that land use changes provide a permanent climate benefit that would compound over time.

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<sup>9</sup> Curbing Gridlock: Peak-Period Fees to Relieve Traffic Congestion – National Research Council Special Report 242 (1994), Executive Summary [http://books.nap.edu/openbook.php?record\\_id=9212&page=R1](http://books.nap.edu/openbook.php?record_id=9212&page=R1)

<sup>10</sup> **Is Pay-As-You-Drive Insurance a Better Way to Reduce Gasoline than Gasoline Taxes?** By Ian W.H. Parry , Resources for the Future 2005 <http://www.rff.org/documents/RFF-DP-05-15.pdf>

**DEMAND STRATEGIES**

**Compact Land Use Development I: Promote Workforce Housing Production Near Jobs**



**Purpose:** *To encourage policies that facilitate the development of greater housing supply and more housing options for our present and future workforce.*

**Addresses Goals:**

Reduce/Restrain VMT	Spread Travel from Peak to Non-Peak Times	Safety and Quality of Streets and Roads	Shift from Single Occupancy Auto to other modes	Reduce Energy and GHG Emissions
<b>X</b>	<b>X</b>		<b>X</b>	<b>X</b>

**Description**

Addressing the scarcity of workforce housing throughout Napa County is one of *the* keystone strategies for transportation, and for overall sustainability in the community. With land values driven up by our exceptional quality of life, essential community workers, including teachers, public safety officers and even middle management staff in businesses throughout the county are increasingly forced to find homes outside the county – not to mention our lower wage workforce in critical wine, agriculture, hospitality and retail business sectors (the fastest growing employment sectors in Napa County!)

Compelling thousands of workers to live at a distance is much more than a negative *community* issue – making it more difficult for core community members to participate in civic affairs – it is a critical *transportation* issue – adding thousands of vehicles to our roadways every day. Thus, one of the most important strategies for improving our circulation would be to support all policies that reduce the amount of single occupancy vehicle (SOV) travel that Napa workers require to get to their jobs. In addition to providing non-SOV ways for people to get to work (see transit strategies earlier in this chapter) the principal strategy to address this goal is to build housing that is close to jobs and affordable to workers.

Building affordable workforce housing is not easy. The issue has been a high priority throughout the Bay Area for more than a decade without making a significant change in the situation and it continues to command the attention of policy makers and business leaders in the region and the State. Numerous strategies have been proposed. These include rezoning for higher densities, inclusionary zoning rules, creative land reuses (such as housing over city owned parking garage), expedited planning processes, targeted reform of CEQA (California Environmental Quality Act) review requirements, so-called anti-snob ordinances (which expedite affordable housing development in areas with low affordability), and the leveraging of financial resources, particularly from foundations and philanthropic institutions. What may finally change the stalemate to date is the increasingly clear linkage of density, affordability, transportation, and greenhouse gas reduction.

### Taking Napa's historic "Compact Urban Development" pattern to the next level

In Napa County, thanks to the pioneering land use regime that established our "Agricultural Preserve" and subsequent reinforcing zoning and development regulations (such as "Measure J" which requires a public vote to convert agriculturally zoned land to any other use), our historic housing development pattern has been highly concentrated in our five cities, and mostly in the City of Napa (which contains 60% of our total county population). However, as jobs have continued to be created in the non-urban areas of the County, particularly lower wage jobs in agriculture, wine production, and hospitality, the need for local housing affordable to these workers is becoming even more critical in Napa. Even moderate wage jobs, such as those in construction, health care and education often do not pay enough to afford the existing housing. The final element of this picture is the particularly high cost of housing in Napa, due in part to Napa's appeal in the regional (and even national) market for vacation and second homes<sup>11</sup>, which removes housing from the market for local workers, and also due to constrained supply of housing designed particularly to appeal to local workers.

To address this shortage will require significant new construction to increase housing supply, and such construction will most likely require higher densities than have been the case historically. Fortunately, Napa's challenge to produce well-designed, moderate density housing is shared with an entire nation that is energetically seeking solutions to reduce auto-dependent commuting. Although an extensive discussion of housing policy and design is beyond the scope of this report, it should be noted that over the past decade innovations in housing and community design have already demonstrated that solutions exist that can be compatible with Napa's needs.

A corollary to the development of workforce housing is the development of complete, walkable neighborhoods and communities. In such a development pattern, not only can workers get to their jobs without cars but local services such as grocery stores, cleaners and financial services are within walking distance. Not only can this reduce overall auto travel, but it can also shift travel from the pm peak hours, when much personal shopping now tends to occur.

### About the "Jobs/Housing Balance"

In most discussions of the transportation linkages between home and workplace, the concept of "jobs housing balance" is prominent – basically pointing out that it is important to make this twice daily travel as easy as possible, as short as possible AND especially to discourage long, single occupant automobile commutes. The benefits of pursuing these goals are environmental (less driving = less pollution), economic (less congestion = a more efficient economy) and social (less time commuting = more time with family and community). Thus the overarching goal is to achieve a "balance" whereby people's jobs are within a short, preferably non-auto-dependent, commute from their homes. Of course this is complicated by the prevalence of two-worker households (if the jobs are in different areas), and especially where transporting children to daycare and/or school and afterschool programs is a factor.

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<sup>11</sup> some informal estimates of second home ownership are as high as 30% in the higher priced communities in Napa

As described above, one principal way to achieve this balance is to build housing that is affordable to workers close to their jobs. This will depend to a large extent on local jurisdictions identifying specific sites where “workforce housing” close to job centers will be promoted. Such promotion can include a range of strategies including specific zoning, streamlined permitting, and development of public consensus on the desirability of such development.

A second, often complementary way to approach the problem is to provide transit links between concentrations of housing and worksites, regardless of where the job and the home are – via bus or rail lines. Such a model depends on relatively high concentrations of homes and worksites, between which transit can efficiently carry people. Such supportive strategies are outlined earlier in this chapter.

A third, also possibly complementary set of approaches looks directly at the creation of jobs – for example policies that might restrain the growth of low-wage jobs in the county altogether. One difficulty with this approach is the powerful imperative for our Cities and County to increase the level of employment and business as a key source of general revenues, especially in an era of declining federal and state support for local civic programs. A related potential strategy would be to encourage the siting of new jobs close to existing housing, such as in the existing town centers.

A comprehensive outline of the economic development/workforce development strategies that might be considered is beyond the scope of this report but it should be noted that to solve our transportation challenges a comprehensive approach to community development and growth is necessary.

### Challenges

Financing of workforce housing projects is very challenging although much work is being done on the issue throughout the State and the Bay Area.

New housing of any kind also has associated service demands (schools, utilities, etc.) There are also generally political challenges to providing new kinds of housing developments in existing neighborhoods.

### Public Costs

**Construction (Capital) (One-time):** \$ - \$\$\$



**Operating/Maintenance (Annual):**

Affordable housing programs require a modest amount of administration. However, the actual costs of promoting “below market rate” housing can be considerable and require creative partnerships and financing vehicles.

### Benefits

- **Reduce INTER-city auto trips**
- **Workforce members** that are key to the functioning of the Napa County community and economy (such as public safety officers, teachers, medical personnel, office workers, agricultural workers and hospitality industry employees) live closer to their jobs
- **Employers** will be able to attract staff from a more local area, supporting better employee retention.

**DEMAND STRATEGIES**

**Compact Land Use Development II: Promote Urban Design and Infrastructure**  
Development policies to encourage pedestrian and bike activity in Town Centers



**Purpose:** *To promote circulation in Town Centers via walking and bicycling as a way to reduce driving between destinations.*

**Addresses Goals:**

Reduce/Restrain VMT	Spread Travel from Peak to Non-Peak Times	Safety and Quality of Streets and Roads	Shift from Single Occupancy Auto to other modes	Reduce Energy and GHG Emissions
X	X			X

**Description**

Town centers in Napa County are clearly defined and are popular for both residents and tourists. This strategy supports development of convenient and safe paths within town for pedestrians and bicyclists as a way to reduce traffic and parking activity in town centers. Key ingredients include sidewalks, crosswalks, bicycle paths and lanes, and bicycle parking. Also important is careful placement of transit shelters and stops which can become important gateways for traveling between town centers in the County.

Site design and layout issues are critically important in this strategy. The placement of complementary attractions near each other is a useful way to encourage people to walk or bicycle when running several errands. Physical elements such as doors, street lighting and furniture, are also key to encourage pedestrian and bicycle activities

Because pedestrians and cyclists are attracted to a high concentration of businesses, incentives to support businesses in town centers would be helpful. Such incentives might include a relaxation of parking minimums in town center areas, coordination of sidewalk and other physical improvements, and perhaps development of peripheral parking areas (in exchange for forgoing parking requirements on a parcel-by-parcel basis).

In addition to the general transportation and city design benefits of walkable and bike-able town centers, there are considerable health benefits associated with a more physically active population. Public health departments are discovering the importance for overall community health of these kinds of transportation policies and can be natural partners in the development of new programs.

Each of our cities has its own unique profile and set of challenges to increasing its walkability and bike friendliness.

Calistoga is challenged by having its main street, Lincoln Avenue, also be a two-lane State Highway, SR 29 (see also Streets and Roads Strategy VII on page 4-16). One of the results of this is that trucks which are required to use State Highways must drive right through the center of town, although much of the truck traffic in town comes to serve local businesses. State highway status also limits the range of urban design options for sidewalks on the city's main street (for example sidewalk cafes are not permitted). With a goal of reducing "pass through" traffic, especially by trucks, as well as creating more of a pedestrian and bicycle friendly environment in town, a long range vision would be to re-route the State Highway around the town, although there are significant obstacles that will stand in the way of accomplishing that goal. In addition, especially given Calistoga's relatively compact size, there are a range of local urban design element practices, including adding sidewalks and bike lane connections through town, that would increase pedestrian and bicycle activity and reduce the need for car trips.

St. Helena has a similar issue to Calistoga, with two-lane SR29 also coming right through the middle of town as its main street, with similar effects of truck traffic and limitations on streetscape design options (see also Streets and Roads Strategy Vision page 4-16) . In St. Helena the options for alternative highway routing are even more limited than in Calistoga and it is difficult to envision a viable alternative that would bypass the town. Also, St. Helena's main street bears additional burdens from travelers passing through town.

Yountville is one of Napa County's most walkable places benefiting from a compact design, off to the side of the highway, and small size.

The City of Napa also has great potential to become a very walking- and cycling-friendly town. The City's strong neighborhood-centered development pattern, with a central downtown and well-defined shopping areas provide a good base for strengthening a pattern short-distance trip generators. By continuing to promote neighborhood-centered local-serving commercial services and continuing to build sidewalk and bike lane infrastructure, Napa has the potential to even further reduce auto dependence of residents for many daily trips.

American Canyon shares with St. Helena and Calistoga the challenge of having SR 29 run through the middle of the city (see also Streets and Roads Strategy VII on page 4-16). However American Canyon has considerably more pass-through traffic on its stretch of SR 29, which is already a four-lane road and likely to expand in the not too distant future, to six lanes. By continuing to promote neighborhood-centered local-serving commercial services and continuing to build sidewalk and bike lane infrastructure, including potentially pedestrian bridges spanning SR29 (although these may be very costly) American Canyon has the potential to even further reduce auto dependence of residents for many daily trips.

## Challenges

**Type and Level of Incentives:** Establishing a fair balance of incentives for encouraging town centers, while not being unfair to businesses in other areas will require careful policy direction. The appropriate balance of financial participation is particularly required.

**Parking Policies:** Parking policies in town centers are also a challenge – many types of businesses do not feel that their customers should have to walk at all. Each town center strategy will need to be developed with sensitivity to local business needs as well as community character. This strategy will depend on a change in expectation about local shopping environment.

### Public Costs

**Construction (Capital) (One-time):** **\$\$-\$\$\$**

Key elements: New sidewalk (1 mile) = \$200,000

New parking spaces (100 spaces) = \$500,000 + property purchase

### Benefits

- **Intra-city trip reduction**
- **Some intercity trip reduction (via transit links)**
- **Shoppers and errand-runners** will be the primary beneficiaries of walking and bicycling facilities. These include both residents and visitors.
- **Town center businesses** will benefit from having more foot traffic in front of their stores and services.
- **Drivers in the town center areas** will be less disrupted by traffic entering and exiting the street, or by delays from people parking their vehicles
- **Bicycle Tourists** will be attracted to visit town centers and transact business there.
- **Health Benefits**

**DEMAND STRATEGIES**

**Compact Land Use Development III: Promote Safe Non-Auto Routes to School, and After School Programs**



**Purpose:** *To build safer routes for students to walk or bike or take buses to school and after school programs.*

**Addresses Goals:**

Reduce/Restrain VMT	Spread Travel from Peak to Non-Peak Times	Safety and Quality of Streets and Roads	Shift from Single Occupancy Auto to other modes	Reduce Energy and GHG Emissions
X	X		X	X

**Description**

Safer routes for students who go to school or day care by walking or bicycling should be developed. Improvements could include wider sidewalks, better crosswalks, and improved lighting. Such safeguards would be focused in areas close to schools. For the students who take buses, the same improvements could be made between the school bus stop and the students' home. This might reduce the auto trips around the school during school peak periods. Finally one of the biggest improvements that could be made would be for students to uniformly attend the schools that are closest to their homes.

The Napa Safe Routes to School (SRtS) program is administered through Napa County Office of Education and operated in active collaboration with schools and the community. SRtS

- increases walking/biking awareness among students, parents and the community.

- establishes a coordinated, school-based program of education and encouragement.
- identifies gaps, target audiences, and the most pressing community issues by conducting focus groups and extensive surveys to evaluative demographics and issues surrounding transportation to and from school. Thus the SRtS program will be a critical source of strategic intelligence to countywide transportation into the future.
- develops maps.
- develops child and parent educational and motivational materials.
- conducts social marketing campaigns to promote biking and walking to school.
- recruits and trains volunteers from the community to provide the SRtS curriculum.
- holds special events including Walk and Roll to School Days and Ride 'n' Seek.

The goals of the SRtS program are to increase walking trips from 22% to 27% of total school trips, bicycling from 5% to 11% of school trips, and carpooling from 7% to 20%. Single-family car ("chauffeur") trips are expected to decrease from 60% to 45%.

Another element of school related transportation has to do with mid-day travel by high school students during lunch breaks. For "open campus" schools, the availability of local services (Napa HS is close to services, Vintage HS and American Canyon HS are not) influences whether students drive to lunch spots, causing additional traffic congestion.

### Challenges

In the areas close to the schools and day care, it is more effective to design for a safer route. The funding of these improvements as well as the acceptability of them in the community could be a challenge. In areas far from the school or day care sites, it would be more expensive to create a new route and to maintain that route, particularly if the distance is too far to be attractive for student use. Addressing open enrollment school choice has significant challenges.

### Public Costs

**Construction (Capital) (One-time):** \$ - \$\$\$

\$200,000 per sidewalk mile

\$600,000 - \$1,000,000 per bicycle path mile

**Operating/Maintenance (Annual):**



slight increases to roadway maintenance budgets:

### Benefits

- **INTRACITY COMMUTE REDUCTION**
- **Students** will be the primary users when they use safe non-auto routes from school, day care, or the closest bus stop to their home. Benefits to students include better health
- **Walkers and joggers** would also benefit when they use these routes.
- **Bicyclists** would take safer routes that are designed to accommodate them safely.

**DEMAND STRATEGIES**

**Compact Land Use Development IV: Promote Well-Located Health and Social Service Delivery to Minimize Travel**



**Purpose:** *To promote more community-based health and social service activities to minimize travel needs.*

**Addresses Goals:**

Reduce/Restrain VMT	Spread Travel from Peak to Non-Peak Times	Safety and Quality of Streets and Roads	Shift from Single Occupancy Auto to other modes	Reduce Energy and GHG Emissions
<b>X</b>	<b>X</b>		<b>X</b>	<b>X</b>

**Description**

Medical and social service agencies in Napa County are often centralized at a single location, often in the City of Napa. For example hundreds of people from American Canyon journey to Napa each week for medical services. Providing locally-accessible services can help to reduce the need for auto travel by residents across the county, especially those who frequently have transportation challenges. St. Helena Hospital is also a major provider of health and medical services and people travel from throughout the County to take advantage of those service. As in the south, expansion of locally provided services could reduce transportation challenges.

There are various possible approaches that could provide additional incentives for decentralized service delivery. Examples include reduced rents or rent subsidies for service center offices, land use policies that facilitate new office creation for areas that need them, and related development strategies.

### Challenges

**Countering marketplace forces:** The medical community and social service delivery system generally operates to maximize efficiency of staff. Centralization is often a natural consequence of this. Changing this would require careful monitoring and management of the system.

### Public Costs

**Construction (Capital) (One-time):** Unknown (depends on system monitoring and incentives)

**Operating/Maintenance (Annual):** Unknown (depends on system monitoring and incentives)

### Benefits

- **Improved intercity connectivity** (via trip reduction)
- **Local residents** would benefit from having more convenient local services.

**DEMAND STRATEGIES**

**Compact Land Use Development V: Institute comprehensive growth management guidelines that cover all jurisdictions**



**Purpose:** *To provide an overall framework that describes the nature, amount and location of new job growth and housing development with associated implications for transportation infrastructure needs.*

**Addresses Goals:**

Reduce/Restrain VMT	Spread Travel from Peak to Non-Peak Times	Safety and Quality of Streets and Roads	Shift from Single Occupancy Auto to other modes	Reduce Energy and GHG Emissions
X	X	X	X	X

**Description:**

Understanding Growth

No comprehensive approach to transportation planning in Napa County is possible without a clear understanding of the many forces that are driving growth in the County. Fortunately, Napa County is small enough and contained enough so that coming to such an understanding is more attainable than it might be in larger, more complex communities. Nonetheless, to develop such a clear picture will require a concerted cooperative effort by all Napa's jurisdictions, economic sectors and interest groups.

In June 2008, the Napa County Transportation and Planning Agency (NCTPA) hosted the full-day Napa Communities Growth Summit. Participants representing the County and five cities discussed the future of Napa in light of the Napa County League of Governments (NCLOG) Principles for Creating a Healthy, Vital and Sustainable Napa County, and considered Napa's trends, challenges and opportunities.

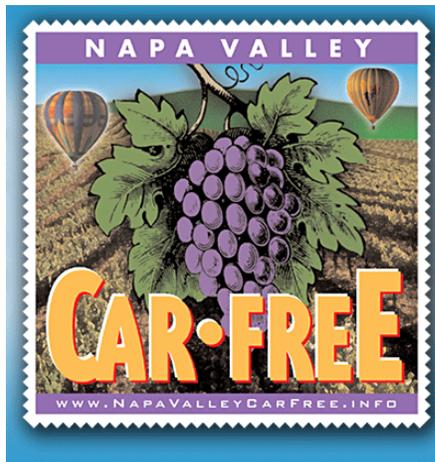
This first meeting was intended to convene the group and highlight issues, opportunities, and potential solutions. Additional meetings were targeted to identify how some of these issues and opportunities can be addressed by the Napa communities as a whole. More than 135 participants attended the day-long session, including local elected officials, planning directors, agency staff, representatives from local non-profit organizations, and members of the general public.

The following issues were identified by individual participants:

- Growth Management Program- Develop and maintain a growth management program that is informed by the growth rate and the carrying capacity of the community. The carrying capacity should include water and transportation infrastructure, among others.
- Neighborhood Preservation - Protect existing neighborhood quality and preserve distinct neighborhoods. Ensure that infill projects are compatible with existing land uses and neighborhood character.
- Open Space - Ensure that open space establishment and preservation is included in the NCLOG Principles.
- Water Resources - Raise awareness of personal water use to stimulate conservation. Address water issues in larger context, including impacts on fish population and vineyard growth.
- Transportation - Integrate transportation planning by identifying needs, opportunities, and interconnections. Relate population numbers to transportation decisions and planning. Work with employers to address transportation impacts.
- Collaboration among Agencies - Ensure the participation of NCTPA in the second part of this process.
- Climate Change Action - Take action to reduce the impact of and contribution to climate change in the County. Use current drought and other issues as catalyst for action.
- Balance Interests of Communities - Address competing interests of communities (i.e. growth, jobs) to provide for all members.
- Diversity - Encourage participation of all of the County's diverse populations in the Napa Growth Summits.

**DEMAND STRATEGIES**

**Partnerships I: Work with the Wine and Hospitality Industries to Create and Promote Car-Free Tourism Services**



**Purpose:** *To provide car-free travel options and information to visitors to the Napa Valley and to encourage private sector programs to provide car-free travel for visitors*

**Addresses Goals:**

Reduce/Restrain VMT	Spread Travel from Peak to Non-Peak Times	Safety and Quality of Streets and Roads	Shift from Single Occupancy Auto to other modes	Reduce Energy and GHG Emissions
<b>X</b>	<b>X</b>		<b>X</b>	<b>X</b>

**Description**

Information for tourists who wish to minimize driving while in Napa can be encouraged and more widely provided, especially online via such sites as <http://www.napavalleycarfree.info> . Local information centers such as the Visitor Information Centers in American Canyon and the Napa Town Center can promote the car-free way to experience the Valley. This information can include how to take public transit, the ferry, how to make efficient air connections, the availability of shuttles and tours, and how to get around Napa destinations by biking and walking. Other important information can be provided for both pre-trip planning and for use once visitors have arrived here. Supportive local signage can also be significantly expanded to make the system more comprehensive and useful.

For example, visitors from San Francisco hotels can now begin their car-free journey at the San Francisco Ferry Building via the Baylink Ferry. Upon arrival in Vallejo, private Napa shuttle companies can pick up the travelers and take them to selected Napa Valley wineries, with a possible stop in downtown Napa for a visit to one of its many wine-tasting rooms.

Considerable cooperation with the hospitality industry, most likely through the Napa Valley Destination Council, would extend and expand these kinds of programs. Other potential partnerships are with the American Viticultural Area (AVA) groups, which represented clusters of wineries in the County as well as with consortia of private companies. Private shuttles among clustered wineries may be able to provide service to both workers and tourists. Economic development partnerships can be explored to encourage new businesses that would serve this need.

Any such projects would need to be carefully coordinated with industry representatives to make sure that they are in synch with the individual marketing programs of Napa's numerous visitor destinations.

### Challenges

Signage will be a challenge for the car-free system. Information is already provided on-line, but not widely distributed. More information at key tourist arrival points (such as airports, BART stations or ferry terminals) would be very useful.

This is an area where there must be extensive partnership with the private sector.

### Public Costs

**Construction (Capital) (One-time):** 0 – \$\$ (private sector investment)

**Operating/Maintenance (Annual):** 0-  cost to public

### Benefits

- **Tourists** will be the primary users of this system, and have a better guided and less stressful visit.
- **Local residents** would benefit from having fewer drivers on the road on the weekends and other high-tourist visitation periods.

**DEMAND STRATEGIES**

**Partnerships II: Address the Special Transportation Needs of a Growing Senior Population**



**Purpose:** *To meet the transportation needs of seniors, as well as paratransit and Americans with Disabilities Act (ADA) riders.*

**Addresses Goals:**

Reduce/Restrain VMT	Spread Travel from Peak to Non-Peak Times	Safety and Quality of Streets and Roads	Shift from Single Occupancy Auto to other modes	Reduce Energy and GHG Emissions
<b>X</b>	<b>X</b>		<b>X</b>	<b>X</b>

**Description**

The senior population of Napa County is expected to grow from 21,000 residents today to 37,000 by 2030 – and increase from 15 to 25 percent of the total population. While many of the seniors will be active, they are a key target population for public transit services. As residents age, they will increasingly need to have their individual transportation system needs met by public transportation. This includes the provision of paratransit services to reach medical and other destinations, and improved accessibility to get to locations in and around their communities.

Transportation programs designed for seniors would include:

- Additional transit service and paratransit service delivery
- ADA accessibility improvements, such as sidewalk aprons and signage
- Additional on-demand services for seniors that may not be ADA eligible
- Exploration of “door-through-door” services that assist customers who may be challenged to even get to curbside.
- Expansion of the “volunteer driver voucher” system that reimburses privately arranged drivers to provide more hands on care

- Establishment of a senior shuttle to provide a deviated fixed-route service connecting major senior housing locations to major shopping centers in Napa. Passengers could call in advance to arrange for a pick-up “off the route” or wait at a designated pick-up point on the route.

The percentage of our population over the age of 65 will rise from its current level of 15% to over 25% by the year 2030. Increasing numbers of seniors are also likely to be in the lower income brackets, which will add this population to those in need of affordable, centrally located housing (see strategy discussion on workforce housing earlier in this chapter). Currently 65% of seniors drive themselves, including nearly half of those over 85. This situation can be dangerous. Currently, only 20% of our senior population reports that they are familiar with how to get around using public transportation. Other barriers to senior use of the transit system also exist. Thus as we move forward, we will have to make additional efforts to make the transit system senior-friendly.

Some of the strategies that will be useful in this regard include the promotion of decentralized and distributed health and social service delivery to minimize travel requirements. (see also Compact Land Use Development Strategy IV on page 4-44). It will also be useful to expand the current volunteer driver voucher system that allows seniors to select and reimburse their own driver. Other services that will need to be expanded include the on-demand (Vine-Go) service that is an important lifeline for isolated and frail seniors. Also, as the senior population grows, it will be important to continually adapt the transit routes to accommodate their needs.

### Challenges

Specific design challenges can occur when implementing more accessible street improvements.

Because of the high expense of serving geographically dispersed areas, serving persons in need who are located away from cities becomes a greater challenge. It requires more resources to reach them and to connect them to key services and other destinations. In more challenging situations, it becomes difficult for paratransit providers to make and keep pickup appointments.

Long distance trips are also a challenge, as these trips can be difficult to schedule and expensive to provide. Careful application of paratransit service policies would be required so that the overall quality of service is not diminished through trying to meet the needs of certain unique and difficult trips.

### Public Costs

**Construction (Capital) (One-time):** \$

Paratransit vehicle cost of \$60,000



**Operating/Maintenance (Annual):**

estimated at \$80 per service hour

### Benefits

- **Senior Population** will be a primary beneficiary of the improved paratransit and ADA system.
- **People with Disabilities** will also be a primary beneficiary of the improved paratransit and ADA system.

**DEMAND STRATEGIES**

**Partnerships III: Work with employers to Encourage Alternatives for Commuting and Mid-Day Work Trips**



**Purpose:** *To encourage workers to use alternative transportation modes by providing good connectivity for both traveling to work and making midday trips while at work.*

**Addresses Goals:**

Reduce/Restrain VMT	Spread Travel from Peak to Non-Peak Times	Safety and Quality of Streets and Roads	Shift from Single Occupancy Auto to other modes	Reduce Energy and GHG Emissions
<b>X</b>	<b>X</b>		<b>X</b>	<b>X</b>

**Description**

People drive to work alone for two key reasons. The first is that there may not be a convenient alternative, such as a carpool or a bus route. However, the second reason is often that they must make midday trips and need their car to do that. To attract more commuters to use other modes, the entire system of travel has to be convenient to the users. For traveling to work, commuters would benefit from express buses during morning and afternoon peak hours. Additionally, much more can be done to provide effective incentives, both to individuals and companies to use alternative modes.

Midday auto trips can be reduced by having good pedestrian connectivity to other destinations, such as banks, public offices, restaurants and stores. For work sites that are not near these, the availability of alternative transportation – taxicab scrips, car-sharing programs or a company car or bicycle program – could be available for workers, enabling them to make midday trips without using their own vehicles.

### **Important ways to reduce work-hour auto trips:**

#### **1. Emphasizing the role of major employers – work sites with 100+ employees**

Special focus should be made on large employers and concentrated worksites (such as downtown business centers and shopping centers) especially those whose workers are lower wage earners and thus more likely to commute from out of county.

#### **2. Telecommuting**

With the continued expansion of broadband access and the development of high-powered real-time communications, file sharing, teleconferencing/videoconferencing, smart phones and shared workspace software, telecommuting will continue to offer growing possibilities to reduce travel. As an example, in 2007 the US General Services Administration announced an aggressive commitment goal to increase agency tele-work participation with 50 percent of eligible agency employees to tele-work one or more days per week by 2010 and recent (2008) studies report that over 25% of US workers telecommute to some degree.

#### **3. Alternative work schedules/ shift load to off peak hours**

Alternative Work Schedules can include:

- *Flextime*: employees allowed some flexibility in their daily work schedules.
- *Compressed Workweek*: employees work fewer but longer days, such as four 10-hour days each week (4/40), or 9-hour days with one day off every two weeks (9/80).
- *Staggered Shifts*: shifts are staggered to reduce the number of employees arriving and leaving a worksite at one time.<sup>12</sup>

#### **4. Ridesharing (Car Pooling/Van Pooling)**

*Carpooling* uses participants' own automobiles. *Vanpooling* usually uses rented vans (often supplied by employers, non-profit organizations or government agencies). Most vanpools are self-supporting – operating costs are divided among members. Vanpooling is particularly suitable for longer commutes (10 miles or more each way). Ridesharing has minimal incremental costs because it makes use of vehicle seats that would otherwise be unoccupied. It tends to have lower costs per vehicle-mile than public transit because it does not require a paid driver and avoids empty backhauls. However, Ridesharing is generally only suitable for trips with predictable schedules such as commuting or attending special events.<sup>13</sup>

#### **5. “Guaranteed Ride Home” program**

This program provides an occasional subsidized ride to commuters who use alternative modes, for example, if a bus rider must return home in an emergency, or a car pooler must stay at work later than expected. This addresses a common objection to the use of alternative modes. GRH programs may use taxis, company vehicles or rental cars.

#### **6. Providing mid-day work – trip alternatives**

Car share/Bike share programs. Providing alternative ways for employees to get around town during the work day is an important component to convincing people to leave their cars at home. Shared use cars or bicycles can be either employer provided or more broadly based (such as the San Francisco Zip Car business, which rents cars by the hour ([www.zipcar.com](http://www.zipcar.com))).

#### **7. Commuter Choice Tax Benefit programs**

The Commuter Choice Tax Benefit program allows employers to offer employees a variety of financial incentives for using alternative commute modes including transit, vanpooling and bicycling. Benefits can be offered as a subsidy, as a pre-tax set-aside, or as a combination of the two. Benefits can be as high as \$460 a month using multiple modes. More information is available at [http://rideshare.511.org/rideshare\\_rewards/](http://rideshare.511.org/rideshare_rewards/)

<sup>12</sup> From TDM Encyclopedia <http://www.vtppi.org/tdm/tdm15.htm>

<sup>13</sup> From TDM Encyclopedia <http://www.vtppi.org/tdm/tdm34.htm>

### Challenges

Providing a system would require completion of several different parts. It requires program management, capital investments, and potentially operating subsidies. It is less costly to offer such incentives when the employment densities are higher and multiple midday destinations are within walking distances.

### Benefits

- **Commuters** would benefit from having more choices for both trips to and from work, as well as midday errands.
- **Employers** would benefit from higher employee satisfaction and more reliable employee transportation, making a significant contribution to community transportation and climate protection goals.

## DEMAND STRATEGIES

### Partnerships IV: Parking Pricing Strategies<sup>14</sup>



**Purpose:** *To encourage workers to use alternative transportation modes by charging for parking at worksites.*

#### Addresses Goals:

Reduce/Restrain VMT	Spread Travel from Peak to Non-Peak Times	Safety and Quality of Streets and Roads	Shift from Single Occupancy Auto to other modes	Reduce Energy and GHG Emissions
X			X	X

#### Description

This Strategy addresses ways of charging users directly for parking facilities and services, and the impacts this has on vehicle travel. Parking pricing provides revenue and cost recovery, encourages more efficient use of parking facilities, reduces parking facility costs and land requirements, reduces vehicle traffic and encourages use of alternative modes. Parking strategies can be extremely varied and range from the simple to highly complex. There has been extensive research on the many ways to implement parking pricing strategies. Here are some examples:

- Charge motorists directly for using parking facilities. If parking must be subsidized, offer comparable benefits for use of other travel modes.
- Charge higher rates and use shorter pricing periods at more convenient parking spaces (such as on-street spaces, and parking near building entrances) to increase turnover and favor higher-priority uses.

<sup>14</sup> Much of the material in this section is derived from the Victoria Transport Policy Institute published materials at <http://www.vtpi.org/tdm/tdm26.htm> . See this site for a much more expanded and detailed discussion of this complex issue.

- Use variable rates that are higher for peak locations and times. Apply *performance-based parking prices*, which means that prices are set so that about 15% of parking spaces are unoccupied during peak periods.
- Avoid discounts for long-term parking leases (i.e., cheap monthly rates).
- Set parking prices to equal or exceed transit fares. For example, set daily rates at least equal to two single transit fares, and monthly rates at least equal to a monthly transit pass.
- Unbundle parking, so people who rent or purchase building space can choose how much parking is included.
- Avoid excessive parking supply. There are a wide range of Parking Management techniques that can be used to encourage more efficient use of existing parking facilities and address any spillover problems that result from pricing.
- Encourage businesses to price, cash out and unbundle parking by providing rewards to those that do, legislating it, or by imposing special property taxes on unpriced parking.
- Unbundle parking from housing, so apartment and condominium residents pay only for the parking spaces they need.

### Challenges

A parking pricing strategy would have to be coupled with a strategy that provides viable alternative transportation, such as expanded public transit. Parking Pricing represents a significant change from current practices. Most vehicle parking is provided free or significantly subsidized. Of the 95% of U.S. employees who commute by automobile, only 5% pay full parking costs and 9% pay a subsidized rate, and parking is unpriced at more than 98% of non-commute trip destinations.

Parking restrictions and pricing can reduce business activity in an area and shift travel to more suburban locations, although these impacts depend on specific conditions, including how prices are structured, and the quality of travel and location alternatives – the details of a program are significant in determining impact. When parking revenues are used to improve business district street conditions or to fund transportation alternatives they can increase business activity in a downtown.

Parking Pricing is most common in major commercial and recreational centers, and large cities. It is particularly appropriate where:

- Land values and parking facility costs are high.
- Parking supply is insufficient to meet demand.
- Traffic congestion or vehicle pollution are significant problems.
- Clustered land use, infill development and reduced pavement area is desirable.
- Administrative and enforcement resources exist.

Thus for Napa, investigation of parking pricing strategies may be applicable only in city and town centers and particularly must be linked to provision of alternative transportation options. For example, if a major employer begins to charge for parking in a company parking lot, then parallel support for vanpooling and associated programs, such as “guaranteed ride home” and “company provided work day car or bike” would need to be included.

### Public Costs

Pricing costs including costs for equipment (signs, parking meters, ticket printers, access gates), attendants, land (such as sidewalk space used by parking meters) and administration. These incremental costs range from less than \$50 annually per vehicle for a pass system with minimal enforcement, to more than \$500 per space for attendants or an automated control system

**Construction (Capital) (One-time):** \$

**Operating/Maintenance (Annual):**



### Benefits

Parking Pricing can have significant transportation impacts. Even modest parking fees can affect vehicle travel patterns, especially when matched with transit and rideshare subsidies

## **CHAPTER 5: EVALUATION OF PROPOSED STRATEGIES – USING SEVEN DIFFERENT SCENARIOS TO ILLUSTRATE POTENTIAL BENEFITS**

### **Evaluating the Strategies**

The benefits are evaluated in seven Scenarios (including a baseline scenario), each of which contains a different “package” of individual strategies. Because many of the strategies are complementary, the evaluation process also accounts for possible synergistic benefits (and also takes care to not double-count the benefits of two different strategies.) For example, increasing park-and-ride lot locations and exploring a rapid bus system are two strategies that have complementary advantages. However, it is also important to not assume that ridership growth resulting from a rapid bus system is not above and beyond that created from park-and-ride lot availability.

It is important to be clear that the scenarios we are using to test the effect of the Strategies in this document are not recommendations, but are tools to visualize how the strategies may effect Napa's transportation future. As part of the work done to develop this document, we have established a methodology that will allow for additional scenarios to be run in the future, based on the Phase Two Napa/Solano Travel Demand Model, our forecasting model.

The Napa/Solano Travel Demand Model is able to generate information by changing a number of specific variables:

- changing traffic volumes and speeds
- adding better local connectivity of bike and pedestrian paths
- adding new park-and-ride locations
- testing representative bypass strategies
- increasing transit frequency
- adding new transit routes
- relocating housing to be near jobs
- reducing peak hour trips

In addition to information generated by the model, other factors included in the scenario evaluation include:

- Dollars per mile made available for road maintenance
- Generic comparison of roundabouts to signalized intersection performance
- Information from prior studies
- Results from changing transit vehicles to low emission types
- Before/after case studies of real-time transit information
- Before/after case studies of signal coordination

- Before/after case studies of safe routes to school
- Estimate of number of trucks taken off roads due to freight rail (noting possible offset for diesel locomotives)
- Before/after case studies of information systems implementation
- Estimate of trips reductions that occur from specific facilities, such as social service and medical and freight facilities
- Estimate of results of car-free tourism

A more complete description of the model is presented in Chapter 3 (page 3.11-12)

**Table 5-1** summarizes the anticipated benefits from each of the 21 proposed strategies.

**Table 5-1 Strategies and Their Effects on Objectives – Systemwide Benefits Summary**

		OBJECTIVES								
Category/Sub-Category	Strategy	0% net growth in aggregate VMT	Shift 10% of journey-to-work travel from peak to non-peak times	Achieve and maintain a countywide Pavement Condition Index of 70	0% growth in traffic accidents	Increase the % of county trips made by transit to 5%	Increase the % of county trips made by bicycle to 10%	Increase the % of county trips made by walking to 10%	Reduce GHG emissions from all transportation modes in Napa County to 40% below 1990 levels	
<b>Supply Strategies</b>										
Streets and Roads	Maintain Critical Street and Road Infrastructure			Direct investment in improved pavement condition	Reduce accidents related to bad conditions					
Streets and Roads	Invest in Strategic Road System Expansion in South County	Create direct routing		Improved overall pavement index						
Streets and Roads	Convert Strategic Intersections to Roundabout Configuration				Significant safety benefits due to intersection design		Lower speeds + improved safety encourage bicycling		Significant emission reductions due to reduced idling	
Streets and Roads	Build Bike Paths and Sidewalks	Discourage driving alone			Reduce bike/ped accidents	Encourage transit stop connectivity	Encourage bicycle use	Encourage pedestrian use	Reduce auto VMT	
Streets and Roads	Create Satellite Park-and-Ride Sites	Discourage driving alone				Encourage transit riders			Reduce auto VMT	
Streets and Roads	Promote Bypass-road and transit strategies to address pass-through traffic				Improve safety in ped districts				Reduce idling	
Public Transit	Increase Transit (Bus) Service	Discourage driving alone				Encourage transit riders			Reduce auto VMT	
Public Transit	Actively Explore Creating a Passenger Rail System	Discourage driving alone				Encourage transit riders			Reduce auto VMT	
Public Transit	Explore Development of a Bus Rapid Transit System	Discourage driving alone				Encourage transit riders			Reduce auto VMT	
Public Transit	Promote Energy Efficient and Environmentally Benign Transit Systems	Discourage driving alone				Encourage transit riders			Reduce emissions directly	
Information Systems	Real-time Bus tracking	Discourage driving alone				Encourage transit riders			Reduce emissions	
Information Systems	Dial 511 <sup>®</sup> transportation information	Discourage driving alone	Shift drive times			Encourage transit riders			Reduce auto VMT	
Information Systems	Traffic Signal System Coordination								Reduce idling	

# Napa's Transportation Future

## Chapter 5: Evaluation of Proposed Strategies



**Table 5-1 (continued) Strategies and Their Effects on Objectives – Systemwide Benefits Summary**

Category/Sub-Category	Strategy	0% net growth in aggregate VMT	Shift 10% of journey-to-work travel from peak to non-peak times	Achieve and maintain a countywide Pavement Condition Index of 70	0% growth in traffic accidents	Increase the % of county trips made by transit to 5%	Increase the % of county trips made by bicycle to 10%	Increase the % of county trips made by walking to 10%	Reduce GHG emissions from all transportation modes in Napa County to 40% below 1990 levels
Other Infrastructure Supply	Maintain Options for Water Transportation	Discourage Driving alone				Encourage transit riders			
Other Infrastructure Supply	Promote Freight Rail in South County	Discourage truck traffic							
Other Infrastructure Supply	Support a Full Integration of Air Transportation Connections	Discourage driving alone				Encourage transit riders			
<b>Demand Strategies</b>									
Compact Land Use Development	Promote Workforce Housing Production Near Jobs	Reduce driving distances					Encourage bicycle use	Encourage pedestrian use	Reduce auto VMT
Compact Land Use Development	Promote Urban Design and Infrastructure Development policies to encourage bike and pedestrian activity	Reduce driving distances			Reduce accident potential		Encourage bicycle use	Encourage pedestrian use	Reduce auto VMT
Compact Land Use Development	Promote Safe Non-Auto Routes to School, and After School Programs	Discourage driving			Reduce accident potential	Increase bus ridership	Encourage bicycle use	Encourage pedestrian use	Reduce auto VMT
Compact Land Use Development	Promote Well-Located Health and Social Service Delivery to Minimize Travel	Reduce driving distances							Reduce auto VMT
Compact Land Use Development	Institute comprehensive growth management guidelines that covers all jurisdictions	Discourage driving alone				Encourage transit use	Encourage bicycle use	Encourage pedestrian use	Reduce auto VMT
Partnerships	Work with the Wine and Hospitality Industries to Create and Promote Car-Free Tourism Services	Discourage driving alone	Shift drive times			Encourage transit stop connectivity	Promote bicycle touring		Reduce auto VMT
Partnerships	Address the Special Transportation Needs of a Growing Senior Population	Discourage Driving alone				Encourage transit use			
Partnerships	Work with employers to Encourage Alternatives for Commuting and Mid-Day Work Trips	Discourage driving alone	Shift times			Encourage transit use	Promote use of "company bicycles" for in-town trips		Reduce auto VMT
Partnerships	Parking Strategies	Discourage driving	Shift times		Reduce overall driving	Encourage transit use	Promote use of "company bicycles" for in-town trips	Encourage pedestrian use	Reduce auto VMT

Although the primary *transportation system* benefit anticipated from each strategy is noted in Table 5-1, it is important to recognize that there may be additional mobility benefits from the strategies. For example, providing additional bus service or additional bicycle lanes or more flexible work schedules can greatly expand travel options, providing multiple ways for individuals and companies to find the most efficient way to get around.

### **TECHNIQUES FOR EVALUATION**

The evaluation technique for each strategy is presented in Table 5-2. This table indicates the measuring technique used.

There are several additional questions which will affect the outcome of any particular strategy or scenario

- How much of the transportation system will be affected because of growth in other counties?
- What will happen if we make a decision to change allowed land use growth patterns, or change only transportation conditions?
- What will happen if increased operating costs results in behavioral changes?
- What will happen if new technologies emerge to reduce automobile fuel consumption and emissions?

### **Travel Forecasting Model Capabilities And Limitations**

There are several area-wide measures examined in this report, primarily vehicle miles of travel (VMT), vehicle hours of travel (VHT), average speeds (VMT/VHT), total trips, and average distance and time per trip (VMT/trip and VHT/trip). These measures are needed to show the relationships between trip making, trip length and congestion.

The travel demand can estimate the vehicle miles of travel reduction and mode shares (% of trips by auto, transit, bicycle, walking). It cannot estimate the effect on congestion, mode share, VMT or VHT of changing pavement conditions or accident rates. Trip starting times are also a fixed attribute in the model. Finally, although the ability to reduce greenhouse gas emissions can be indirectly analyzed by the model, significant benefits will most likely include technological and other trip-making changes which the travel model does not directly consider.

We expect that there will be significant changes and advances in the art of traffic and land use modeling during the projected period of this study. In particular, recent legislation mandates the improvement of such models to enable better planning for the Statewide reduction in greenhouse gas emissions.

# Napa's Transportation Future

## Chapter 5: Evaluation of Proposed Strategies

**Table 5-2**  
**Strategy Analysis Techniques**

Category/Sub-Category	Strategy	Technique
<b>Supply Strategies</b>		
Streets and Roads	Maintain Critical Street and Road Infrastructure	Cost per mile made available for road maintenance
Streets and Roads	Invest in Strategic Road System Expansion in South County	Travel forecasting model: Traffic volumes and speeds
Streets and Roads	Convert Strategic Intersections to Roundabout Configuration	Generic comparison of roundabout to signalized intersection performance
Streets and Roads	Build Bike Paths and Sidewalks	Travel forecasting model: Add better local connectivity
Streets and Roads	Create Satellite Park-and-Ride Sites	Travel forecasting model: Add new park-and-ride
Streets and Roads	Promote Bypass-road and transit strategies to address pass-through traffic	Travel forecasting model: Test representative bypass strategies
Public Transit	Increase Transit (Bus) Service	Travel forecasting model: Increase transit frequency
Public Transit	Actively Explore Creating a Passenger Rail System	Refer to prior studies
Public Transit	Explore Development of a Bus Rapid Transit System	Travel forecasting model: New route
Public Transit	Promote Energy Efficient and Environmentally Benign Transit Systems	Savings from vehicle changes
Information Systems	Real-time Bus tracking	Before/after studies of bus information
Information Systems	Traffic Signal System Coordination	Before/after studies of signal coordination
Information Systems	"Dial 511" transportation information	Before/after studies
<b>Other Infrastructure Supply</b>		
Other Infrastructure Supply	Maintain Options for Water Transportation	
Other Infrastructure Supply	Promote Freight Rail in South County	Estimate of trucks off road (note possible offset for diesel locomotives)
Other Infrastructure Supply	Support a Full Integration of Air Transportation Connections	
<b>Demand Strategies</b>		
Compact Land Use Development	Promote Workforce Housing Production Near Jobs	Travel forecasting model: test relocation of housing to be near jobs
Compact Land Use Development	Promote Urban Design and Infrastructure Development policies to encourage bike and pedestrian activity	Travel forecasting model: test inclusion of better connectivity
Compact Land Use Development	Promote Safe Non-Auto Routes to School, and After School Programs	Before/after studies
Compact Land Use Development	Promote Well-Located Health and Social Service Delivery to Minimize Travel	Estimate of trips relocated from specific facilities
Compact Land Use Development	Institute comprehensive growth management guidelines that cover all jurisdictions	
Partnerships	Work with the Wine and Hospitality Industries to Create and Promote Car-Free Tourism Services	Estimate of results of car-free tourism
Partnerships	Address the Special Transportation Needs of a Growing Senior Population	Estimate of trips relocated from specific facilities
Partnerships	Work with employers to Encourage Alternatives for Commuting and Mid-Day Work Trips	Travel forecasting model: reduction of peak hour trips
Partnerships	Parking Pricing Strategies	Travel forecasting model: direct input of parking costs

## Scenarios to Be Analyzed

The analysis contains one baseline plus six additional scenarios that test the effects of our proposed strategies. Additional scenarios can now also be run using the methodology developed for this study.

1. **Scenario One: Baseline Trends.** This scenario demonstrates what is anticipated to happen if a strategy is not adopted, and trends continue as projected.
2. **Scenario Two: Adopt Strategies without land use changes.** This scenario demonstrates what would happen if the strategic plan is implemented without land use pattern changes.
3. **Scenario Three: Adopt Strategies with land use changes.** This scenario demonstrates what would happen if the strategic plan is implemented and housing is shifted to be closer to jobs.
4. **Scenario Four: Shift Napa's Job Growth to Solano County.** This scenario demonstrates what is anticipated to happen with no employment growth beyond that already underway in Napa County, with the same increment of employment growth transferred to Solano County.
5. **Scenario Five: Auto Operating Costs (Gasoline price) Increase.** This scenario demonstrates what would happen if automobile operating costs increase significantly to the point where behavioral changes occur. This has been tested on the base of Scenario 3 – Strategy Adoption with land use changes.
6. **Scenario Six: Adjust jobs/housing Projections for Solano and Sonoma Counties.** This scenario looks at potential mitigation of congestion that is projected as a result of future increase in commute traffic between Solano and Sonoma counties
7. **Scenario Seven: "What It Would Take" to achieve our strategic goal.** This scenario demonstrates one way to imagine the scope of changes that could be implemented to reach our goals by aggressively pursuing the full range of strategies.

It should be noted that the added benefits associated with alternative vehicle fuels can accompany any of these scenarios, and is an independent, technological outcome since it will not likely involve a significant behavioral shift.

## BENEFITS OF SPECIFIC SCENARIOS

Each Scenario contains a package of improvements. The benefits of each Scenario compared to the baseline ("findings") are detailed below. Also included are detailed input assumptions and relevant case studies of potential benefits.

### **Benefits to the Community from adopting these strategies are not all captured in this modeling**

It is important to keep in mind that the travel model forecasts are not the sole measure of benefit from these Strategies to a community. Many of the strategies are expected to create a myriad of benefits for the community.

One example is how an active Safe Routes to Schools (SR2S) program encourages non-auto school transportation. In a January 2007, UC Berkeley Study (*Safe Routes to School: Safety & Mobility Analysis*) found increases of 20 to 200 percent in students walking or biking to school, compared to pre- Safe Routes conditions. Results varied based on actual changes made as part of the SR2S program. Typical changes included sidewalk and connectivity improvements, crosswalk treatments, bicycle treatments and other related design improvements. At least three schools in Napa participated in the study -- El Centro Elementary, Phillips Elementary, and Silverado Middle.

(Sources: <http://repositories.cdlib.org/its/tsc/UCB-TSC-RR-2007-1> / and <http://www.tsc.berkeley.edu/newsletter/winter2006-07/safetoschool.html> )

Another example of community benefits include real time bus arrival (AVL) information. Transit agencies are increasingly implementing such programs nationwide. Technical assessments have been made for the Metro Transit system in Halifax, MARTA in Atlanta, and RTD in Denver. None reported any improvement in *ridership* due to AVL implementation, primarily because ridership variations due to economic conditions make normalizing statistics difficult. However, these agencies reported that other significant benefits should be considered, such as budget savings, reduced rider complaints, and easier vehicle maintenance. Specifically, some of the reported findings include:

- Use of AVL-Computer Aided Dispatch (CAD) improved on-time performance by 9-23 percent in large cities.
- Denver's Regional Transportation District (RTD) decreased schedule-related complaints by 26 percent.
- Successful vehicle location/real time arrival systems improved can reduce fleet size by 2 to 5 percent as bus scheduling problems and excessive layovers are more easily detectable. For example, Baltimore's Maryland Transit Administration (MTA) was able to reduce its fleet size to meet the same level of service, resulting in savings of \$2-\$3 million per year.
- Kansas City Area Transportation Authority (KCATA) saved \$1.6 million with its fleet reductions resulting from vehicle location/real time arrival implementation.

Finally, the systems can more easily provide location information, resulting in decreased emergency-response times when needed (an improved incident-response time by 50% reported), and street-supervision labor requirements (field supervisors and data checkers) were reduced and/or made more effective with the new technology.

(Sources: <http://portal.acm.org/citation.cfm?id=1353956.1354076&coll=GUIDE&dl=GUIDE>;  
<http://www.tc.gc.ca/programs/Environment/utsp/gotime.htm>; and  
<http://www.pcb.its.dot.gov/factsheets/avl/avlFix.pdf>)

A number of studies have shown that well-designed and appropriately-sited roundabouts can have a considerable operational benefits. A study by the Insurance Institute for Highway Safety indicates roundabouts reduce crashes by 75 percent at intersections where stop signs or signals were previously used for traffic control. The primary reason is that roundabouts reduce potential conflict points where two streets meet. (Source: <http://www.wsdot.wa.gov/Projects/roundabouts/benefits.htm>).

Signal system coordination also is shown to improve overall delay, improving travel speeds and decreasing greenhouse gas emissions from idling vehicles. A recent DKS before-and-after study in Sunnyvale, California of Adaptive Signals conversion from traditional "time of day" signals showed significant performance improvements after the installation of the adaptive system. Travel time decreased between 16 to 21 percent. The number of stops at red lights decreased between 37 to 54 percent. (Source: DKS Associates, 2006)

Improved park-and-ride lots will also reduce travel if those lots can encourage people to share rides or use transit at locations closer to their homes. This not only decreases the amount of distance that a person's vehicle drives, it also reduces downstream congestion by removing some of the vehicles from the transportation system. Unfortunately, the benefits of each lot are unique to the lot location and size, supporting transit service (if any), and general commute needs.

The Metropolitan Transportation Commission has reported that encouraging residents to live within a half-mile of transit and to encourage employers to locate within one-quarter mile of transit will draw more workers to transit. (Source: [http://www.mtc.ca.gov/planning/smart\\_growth/tod/TOD\\_Book.pdf](http://www.mtc.ca.gov/planning/smart_growth/tod/TOD_Book.pdf))

The promotion of more walking and bicycling has health benefits for those that do this, and this benefit occurs no matter what proportion of the trips are walking or bicycling.

The shifting of medical and social service locations to other areas in the County will generate some reduction of trips that are not demonstrated in the travel model. These trips often do not occur at peak hours, so they would not be reported in the model. Further, when these trips are provided by paratransit, shorter distances provide a more extensive benefit to taxpayers, as the trip fares represent only 4 percent of the total cost of the service. For example, the reduction of round-trip time for a dialysis machine patient from 90 minutes to 20 minutes results in a savings of \$80 per trip. This reduction, when compounded by 150 dialysis trips per year, would result in a taxpayer savings of \$12,000 per year per patient.

The travel model does not contain the impacts of car-free tourism strategies. These strategies can promote longer visits, greater spending within Napa County and less parking and congestion during peak tourist season times.

Technology advances in vehicles will likely create a more profound effect in reducing greenhouse gas emissions than behavioral changes will. For example, increasing fuel efficiency by 10 percent for an average vehicle will show much greater benefit for greenhouse gas reduction than imposition of measures to modify the average travel behavior by 10 percent by penalizing auto travel and making use of transit more convenient by providing a much greater level of transit service.

### **Scenario One: Future Baseline**

**Input Assumptions.** This scenario demonstrates what would happen if no changes are made beyond currently planned projects and if population and employment grow at projected rates. The scenario includes the addition of certain projects that are committed for funding, such as the widening of State Route 12 from the Solano County Line to State Route 37. **It is important to stress that this scenario assumes no programmatic changes in the way the people travel – only changes in highway projects and locations of new residential and non-residential development as currently foreseen by the travel model.**

**Findings.** This scenario suggests that there will be a significant rise in vehicle miles traveled and vehicle hours traveled by 2030 if no behavioral changes are assumed. As shown in **Table 5-3**, the average travel speeds of Napa County residents will decrease from 25 miles per hour to under 19 miles per hour. The result suggests that traffic will continue to be more congested.

This is further demonstrated when work trip mode shares are estimated for the future, as shown in **Table 5-4**. The actual number of persons who would walk, bicycle or use transit would not change. This is primarily because this scenario assumes a continuation of the current strategy of no increased transit service and no improved pedestrian or bicycle connectivity or change in culture. The results show that Napa County residents and workers would continue to drive in large proportions.

**Table 5-3 Vehicle Miles and Vehicle Hours of Travel Comparison – Existing (2008) to Baseline (Future) Scenario**

	AM Peak Hour					
	VMT	VHT	VMT/VHT	Vehicle Trips	VMT/ Vehicle Trip	VHT/Vehicle Trip
<b>Existing Condition Scenario (2008)</b>						
Trips Beginning in County	109,785	4,210	26.1	2,677	40.2	1.57
Trips Ending in County	62,003	3,135	19.8	2,069	30.0	1.51
Trips Beginning and Ending in County	130,391	4,760	27.4	31,323	4.1	0.15
<b>Total</b>	<b>302,178</b>	<b>12,104</b>	<b>25.0</b>	<b>36,070</b>	<b>8.4</b>	<b>0.34</b>
<b>Baseline Scenario</b>						
Trips Beginning in County	170,630	9,100	18.7	3,733	45.7	2.44
Trips Ending in County	69,079	4,747	14.6	2,383	29.0	1.99
Trips Beginning and Ending in County	170,661	7,950	21.5	38,745	4.4	0.21
<b>Total</b>	<b>410,370</b>	<b>21,797</b>	<b>18.8</b>	<b>44,861</b>	<b>9.1</b>	<b>0.49</b>
<b>Percent Difference</b>						
Trips Beginning in County	55%	116%	-28%	39%	11%	55%
Trips Ending in County	11%	51%	-26%	15%	-3%	32%
Trips Beginning and Ending in County	31%	67%	-22%	24%	6%	35%
<b>Total</b>	<b>36%</b>	<b>80%</b>	<b>-25%</b>	<b>24%</b>	<b>9%</b>	<b>45%</b>
	PM Peak Hour					
	VMT	VHT	VMT/VHT	Vehicle Trips	VMT/ Vehicle Trip	VHT/Vehicle Trip
<b>Existing Condition Scenario (2008)</b>						
Trips Beginning in County	61,619	3,615	17.0	2,348	26.1	1.54
Trips Ending in County	95,131	4,077	23.3	2,441	43.5	1.67
Trips Beginning and Ending in County	122,662	4,111	28.8	28,880	4.2	0.14
<b>Total</b>	<b>279,412</b>	<b>11,803</b>	<b>23.7</b>	<b>33,669</b>	<b>8.3</b>	<b>0.35</b>
<b>Baseline Scenario</b>						
Trips Beginning in County	77,393	5,154	15.0	2,970	26.5	1.74
Trips Ending in County	153,496	9,541	16.1	3,529	43.5	2.70
Trips Beginning and Ending in County	154,262	6,186	24.9	34,136	4.5	0.18
<b>Total</b>	<b>385,152</b>	<b>20,881</b>	<b>18.4</b>	<b>40,636</b>	<b>9.5</b>	<b>0.51</b>
<b>Percent Difference</b>						
Trips Beginning in County	26%	43%	-12%	26%	-1%	13%
Trips Ending in County	61%	134%	-31%	45%	12%	62%
Trips Beginning and Ending in County	26%	50%	-16%	18%	6%	27%
<b>Total</b>	<b>38%</b>	<b>77%</b>	<b>-22%</b>	<b>21%</b>	<b>14%</b>	<b>47%</b>

# Napa's Transportation Future

## Chapter 5: Evaluation of Proposed Strategies

**Table 5-4**  
**Mode Share Comparison – Existing to Baseline Scenarios**

Scenario	Internal Napa Trips		Trips Entering and Leaving Napa County	
	Trips by Mode	Percent of Total Trips	Trips by Mode	Percent of Total Trips
<b>Existing Condition (2008)</b>				
Persons in Single Occupant Vehicles	61,678	79.1%	46,632	87.8%
Persons in Vehicles of 2 people	6,304	8.1%	4,005	7.5%
Persons in Vehicles of 3 or more people	2,611	3.3%	1,888	3.6%
Persons in Transit, Walking or Bicycling	7,375	9.5%	607	1.1%
<b>Totals</b>	<b>77,967</b>		<b>53,132</b>	
<b>Baseline Scenario</b>				
Persons in Single Occupant Vehicles	67,797	71.5%	63,181	83.6%
Persons in Vehicles of 2 people	14,194	15.0%	8,164	10.8%
Persons in Vehicles of 3 or more people	5,632	5.9%	3,713	4.9%
Persons in Transit, Walking or Bicycling	7,162	7.6%	562	0.7%
<b>Totals</b>	<b>94,785</b>		<b>75,620</b>	
<b>Percent Growth</b>				
Persons in Single Occupant Vehicles	6,120	9.9%	16,549	35.5%
Persons in Vehicles of 2 people	7,890	125.2%	4,158	103.8%
Persons in Vehicles of 3 or more people	3,021	115.7%	1,825	96.7%
Persons in Transit, Walking or Bicycling	-212	-2.9%	-44	-7.3%
<b>Totals</b>	<b>16,818</b>		<b>22,488</b>	

### **Scenario Two: Adopt Strategies without land use changes.**

**Input Assumptions.** This scenario demonstrates what would happen if all twenty-one of the strategies are implemented *except* for land use pattern changes (Compact Land Use Development I, II and V).

All of the “supply” strategies, or transportation network improvements, are incorporated in this scenario. This includes additional roadways in South County/American Canyon, such as a link from Newell Drive to Green Island Road at State Route 29. In St. Helena, a bypass strategy was assumed using Deer Park Road, Silverado Trail, and Zinfandel Lane – as well as some local arterial connections for circulation. A Calistoga Bypass was also assumed using Dunaweal Lane, Silverado Trail and Tubbs Lane, and a new connecting road from Dunaweal Lane.

Transit services were also increased. The frequency of the transit services was increased 2X, and a new limited stop bus route was added, connecting Calistoga, St. Helena, Yountville, Napa (Trancas Street/SR 29, Downtown Napa and Imola Avenue/Soscol Avenue), Airport Industrial Park, American Canyon, and the Vallejo Ferry Terminal.

To represent better pedestrian connectivity within urban areas, achieved by construction of new bike/pedestrian facilities) the average walk/bicycle speed was increased from 5 to 10 miles per hour. In the model, this results in local bike/pedestrian trips being more attractive and thus more frequent.

**Findings.** At peak hours, this group of strategies taken in combination results in reductions to both vehicle miles of travel and vehicle hours of travel. However, the low-density development pattern in Napa County, especially for commercial and service activity centers, results in single occupant auto driving remaining dominant. Still, the overall effect of the strategies is estimated to achieve some of the target reduction goal. (The calculation of vehicle miles traveled, vehicle hours traveled and trips for this analysis is based upon the trip ends within Napa County. For trips that have one end in Napa County and one in another county, the values are divided in half for all measures to appropriately recognize that the non-Napa County portion of the trip is not part of the analysis; the calculation does not assume shorter trip lengths, but merely weights the strategies according to the trip ends in Napa County.) **Table 5-5** summarizes the results.

Because the analysis is a package of transportation improvements that affect driving, transit, pedestrian and bicycling, the aggregate effects of any individual improvement are not identifiable here. Further, the overall benefits to an individual community or neighborhood are not evident at the outset.

The forecast mode shares are also an important measurable objective projected by the travel model. The mode shares are determined through the forecasting process. The summary of person trips for the two scenarios is shown in **Table 5-6**. This shows only minor changes in mode shares as a result of the strategy adoption. This is largely because the strategy without land use allocation is merely addressing localized transportation needs and congestion points.

**Table 5-5**  
**Vehicle Miles and Vehicle Hours of Travel Comparison – Baseline to Scenario Two**

	AM Peak Hour					
	VMT	VHT	VMT/VHT	Trips	VMT/Trip	VHT/Trip
<b>Baseline Scenario</b>						
Trips Beginning in County	170,630	9,100	18.7	3,733	45.7	2.44
Trips Ending in County	69,079	4,747	14.6	2,383	29.0	1.99
Trips Beginning and Ending in County	170,661	7,950	21.5	38,745	4.4	0.21
<b>Total</b>	<b>410,370</b>	<b>21,797</b>	<b>18.8</b>	<b>44,861</b>	<b>9.1</b>	<b>0.49</b>
<b>Scenario Two</b>						
Trips Beginning in County	166,267	9,020	18.4	3,730	44.6	2.42
Trips Ending in County	68,798	4,712	14.6	2,379	28.9	1.98
Trips Beginning and Ending in County	171,747	7,811	22.0	38,674	4.4	0.20
<b>Total</b>	<b>406,812</b>	<b>21,543</b>	<b>18.9</b>	<b>44,783</b>	<b>9.1</b>	<b>0.48</b>
<b>Percent Difference</b>						
Trips Beginning in County	-3%	-1%	-2%	0%	-3%	-1%
Trips Ending in County	0%	-1%	0%	0%	0%	-1%
Trips Beginning and Ending in County	1%	-2%	2%	0%	1%	-2%
<b>Total</b>	<b>-1%</b>	<b>-1%</b>	<b>0%</b>	<b>0%</b>	<b>-1%</b>	<b>-1%</b>
	PM Peak Hour					
	VMT	VHT	VMT/VHT	Trips	VMT/Trip	VHT/Trip
<b>Baseline Scenario</b>						
Trips Beginning in County	77,393	5,154	15.0	2,970	26.1	1.74
Trips Ending in County	153,496	9,541	16.1	3,529	43.5	2.70
Trips Beginning and Ending in County	154,262	6,186	24.9	34,136	4.5	0.18
<b>Total</b>	<b>385,152</b>	<b>20,881</b>	<b>18.4</b>	<b>40,636</b>	<b>9.5</b>	<b>0.51</b>
<b>Scenario Two</b>						
Trips Beginning in County	77,189	5,063	15.2	2,972	26.0	1.70
Trips Ending in County	138,887	9,465	14.7	3,528	39.4	2.68
Trips Beginning and Ending in County	155,407	5,993	25.9	34,049	4.6	0.18
<b>Total</b>	<b>371,483</b>	<b>20,522</b>	<b>18.1</b>	<b>40,549</b>	<b>9.2</b>	<b>0.51</b>
<b>Percent Difference</b>						
Trips Beginning in County	0%	-2%	2%	0%	0%	-2%
Trips Ending in County	-10%	-1%	-9%	0%	-9%	-1%
Trips Beginning and Ending in County	1%	-3%	4%	0%	1%	-3%
<b>Total</b>	<b>-4%</b>	<b>-2%</b>	<b>2%</b>	<b>0%</b>	<b>-3%</b>	<b>-2%</b>

# Napa's Transportation Future

## Chapter 5: Evaluation of Proposed Strategies

**Table 5-6**  
**Mode Share Comparison – Baseline to Scenario Two (adopt strategies without land use changes)**

Scenario	Internal Napa Trips		Trips Entering and Leaving Napa County	
	Trips by Mode	Percent of Total Trips	Trips by Mode	Percent of Total Trips
<b>Baseline Scenario</b>				
Persons in Single Occupant Vehicles	67,797	71.5%	63,181	83.6%
Persons in Vehicles of 2 people	14,194	15.0%	8,164	10.8%
Persons in Vehicles of 3 or more people	5,632	5.9%	3,713	4.9%
Persons in Transit, Walking or Bicycling	7,162	7.6%	562	0.7%
<b>Totals</b>	<b>94,785</b>		<b>75,620</b>	
<b>Scenario Two</b>				
Persons in Single Occupant Vehicles	67,541	71.3%	63,129	83.4%
Persons in Vehicles of 2 people	14,097	14.9%	8,201	10.8%
Persons in Vehicles of 3 or more people	5,596	5.9%	3,721	4.9%
Persons in Transit, Walking or Bicycling	7,531	7.9%	609	0.8%
<b>Totals</b>	<b>94,764</b>		<b>75,660</b>	
<b>Difference</b>				
Persons in Single Occupant Vehicles	-256	-0.4%	-52	-0.1%
Persons in Vehicles of 2 people	-97	-0.7%	37	0.5%
Persons in Vehicles of 3 or more people	-36	-0.7%	8	0.2%
Persons in Transit, Walking or Bicycling	368	4.9%	47	7.7%
<b>Totals</b>	<b>-21</b>		<b>40</b>	

### Scenario Three: Adopt Strategies with land use changes

**Input Assumptions.** This scenario demonstrates what would happen if the strategic plan is implemented and housing is shifted to be closer to jobs. The specific scenario was developed by relocating future housing increases into already urbanized areas. For example, homes projected to be built outside of St. Helena and Calistoga (relatively small numbers) were assumed to be built in those towns instead. The impact is greatest in the transferring of units from locations outside of the City of Napa to the Napa Pipe property and to areas next to the town centers of Napa and American Canyon.

**Findings.** This scenario builds upon Scenario Two: “Adopt Strategies without land use changes”, so many of the estimated benefits presented in that section are repeated with this scenario.

Unlike the scenario two, this scenario does not show a further reduction in vehicle miles of travel or vehicle hours of travel, as shown in **Table 5-7**. (The calculation of vehicle miles traveled, vehicle hours traveled and trips for this analysis is based upon the trip ends within Napa County. For trips that have one end in Napa County and one in another county, the values are divided in half for all measures to appropriately recognize that the non-Napa County portion of the trip is not part of the analysis; the calculation does not assume shorter trip lengths, but merely weights the strategies according to the trip ends in Napa County.)

The benefit is most significantly absent during the PM peak hour. The reason for this is somewhat related to the locational choices in Napa County. For this scenario, shifting housing growth to areas that are closer to employment growth areas generates a basic dilemma: because these same areas are the most congested, they are also sited for employment rather than community facilities and other activities. During the PM peak hour, these people must travel to other areas to get to retail stores and other community attractions. **Thus, adding residents in high employment districts without enabling more retail and community services is forecast to actually increase vehicle miles of travel and vehicle hours of travel during the PM peak hour.**

**Table 5-8** illustrates more significant benefit in the mode shares when reallocating land uses. Some increase in the proportion of bicycling and walking is forecast to occur.

**Table 5-7**  
**Vehicle Miles and Vehicle Hours of Travel Comparison – Baseline to Scenario Three (Land Use changes)**

	AM Peak Hour					
	VMT	VHT	VMT/VHT	Trips	VMT/Trip	VHT/Trip
<b>Baseline Scenario</b>						
Trips Ends Only Beginning in County	170,630	9,100	18.7	3,733	45.7	2.44
Trips Ends Only Ending in County	69,079	4,747	14.6	2,383	29.0	1.99
Trips Beginning and Ending in County	170,661	7,950	21.5	38,745	4.4	0.21
<b>Total</b>	<b>410,370</b>	<b>21,797</b>	<b>18.8</b>	<b>44,861</b>	<b>9.1</b>	<b>0.49</b>
<b>Scenario Three</b>						
Trips Ends Only Beginning in County	178,925	9,924	18.0	4,005	44.7	2.48
Trips Ends Only Ending in County	65,563	4,553	14.4	2,263	29.0	2.01
Trips Beginning and Ending in County	169,000	7,734	21.9	38,442	4.4	0.20
<b>Total</b>	<b>413,488</b>	<b>22,211</b>	<b>18.6</b>	<b>44,711</b>	<b>9.2</b>	<b>0.50</b>
<b>Percent Difference</b>						
Trips Ends Only Beginning in County	5%	9%	-4%	7%	-2%	2%
Trips Ends Only Ending in County	-5%	-4%	-1%	-5%	0%	1%
Trips Beginning and Ending in County	-1%	-3%	2%	-1%	0%	-2%
<b>Total</b>	<b>1%</b>	<b>2%</b>	<b>-1%</b>	<b>0%</b>	<b>1%</b>	<b>2%</b>
	PM Peak Hour					
	VMT	VHT	VMT/VHT	Trips	VMT/Trip	VHT/Trip
<b>Baseline Scenario</b>						
Trips Ends Only Beginning in County	77,393	5,154	15.0	2,970	26.1	1.74
Trips Ends Only Ending in County	153,496	9,541	16.1	3,529	43.5	2.70
Trips Beginning and Ending in County	154,262	6,186	24.9	34,136	4.5	0.18
<b>Total</b>	<b>385,152</b>	<b>20,881</b>	<b>18.4</b>	<b>40,636</b>	<b>9.5</b>	<b>0.51</b>
<b>Scenario Three</b>						
Trips Ends Only Beginning in County	75,265	4,916	15.3	2,866	26.3	1.72
Trips Ends Only Ending in County	166,747	10,437	16.0	3,800	43.9	2.75
Trips Beginning and Ending in County	151,113	5,985	25.3	33,581	4.5	0.18
<b>Total</b>	<b>393,126</b>	<b>21,338</b>	<b>18.4</b>	<b>40,247</b>	<b>9.8</b>	<b>0.53</b>
<b>Percent Difference</b>						
Trips Ends Only Beginning in County	-3%	-5%	2%	-4%	1%	-1%
Trips Ends Only Ending in County	9%	9%	-1%	8%	1%	2%
Trips Beginning and Ending in County	-2%	-3%	1%	-2%	0%	-2%
<b>Total</b>	<b>2%</b>	<b>2%</b>	<b>0%</b>	<b>-1%</b>	<b>3%</b>	<b>3%</b>

# Napa's Transportation Future

## Chapter 5: Evaluation of Proposed Strategies

**Table 5-8**  
**Mode Share Comparison – Baseline to Strategy with Scenario three (Land Use Changes)**

Scenario	Internal Napa Trips		Trips Entering and Leaving Napa County	
	Trips by Mode	Percent of Total Trips	Trips by Mode	Percent of Total Trips
<b>Baseline Scenario</b>				
Persons in Single Occupant Vehicles	67,797	71.5%	63,181	83.6%
Persons in Vehicles of 2 people	14,194	15.0%	8,164	10.8%
Persons in Vehicles of 3 or more people	5,632	5.9%	3,713	4.9%
Persons in Transit, Walking or Bicycling	7,162	7.6%	562	0.7%
<b>Totals</b>	<b>94,785</b>		<b>75,620</b>	
<b>Scenario Three</b>				
Persons in Single Occupant Vehicles	68,648	71.5%	64,050	83.4%
Persons in Vehicles of 2 people	14,143	14.7%	8,303	10.8%
Persons in Vehicles of 3 or more people	5,662	5.9%	3,776	4.9%
Persons in Transit, Walking or Bicycling	7,604	7.9%	692	0.9%
<b>Totals</b>	<b>96,056</b>		<b>76,821</b>	
<b>Difference</b>				
Persons in Single Occupant Vehicles	850	1.2%	869	1.4%
Persons in Vehicles of 2 people	-51	-0.4%	140	1.7%
Persons in Vehicles of 3 or more people	30	0.5%	62	1.7%
Persons in Transit, Walking or Bicycling	442	5.8%	130	18.8%
<b>Totals</b>	<b>1,271</b>		<b>1,201</b>	

### Scenario Four: Slower Growth: Shift Job Growth to Solano County

**Input Assumptions.** This scenario demonstrates what is anticipated to happen if no employment growth beyond that which is already underway within Napa County (assumed to be half of the projected employment growth by 2035), with Napa's projected employment growth transferred to Solano County. Growth also continues as projected in other counties. This assumption uses the same roadway network as the baseline trends scenario detailed in Chapter 3.

**Findings.** In this scenario, several of the key measures of effectiveness are found to show improvement when compared to the baseline year. (The calculation of vehicle miles traveled, vehicle hours traveled and trips for this analysis is based upon the trip ends within Napa County. For trips that have one end in Napa County and one in another county, the values are divided in half for all measures to appropriately recognize that the non-Napa County portion of the trip is not part of the analysis; the calculation does not assume shorter trip lengths, but merely weights the strategies according to the trip ends in Napa County.)

The overall findings shown in **Table 5-9** are that the peak hour vehicle miles of travel and vehicle hours travel by Napa residents between Napa County and other counties would increase, and would fall for the rest of the trips with at least one end within Napa County. Also, there would be a slight increase in the average distance (vehicle miles per trip and vehicle hours per trip) at peak hours. These findings are not surprising, with the employment growth in Napa County transferred to be in Solano County.

**Table 5-10** illustrates more significant benefit in the mode shares with slower growth. As expected with less growth in Napa County, decreases would occur in each mode. In addition, with the growth transferred to Solano County, slight increases would occur for the trips entering and leaving Napa County in the both single occupant Vehicles and vehicles of 3 or more people.

The reduction of new employment will also restrict the ability to encourage "smarter" development patterns for non-residential development. The result may be lower demand on the transportation system at peak hours, and may also limit a ability to encourage a new development to occur at densities that may promote increased transit ridership.

**Table 5-9**  
**Vehicle Miles and Vehicle Hours of Travel Comparison – Baseline to Shift Napa Job Growth to Solano**

Scenario	AM Peak Hour					
	VMT	VHT	VMT/VHT	Trips	VMT/Trips	VHT/Trips
<b>Baseline Scenario</b>						
Trips Ends Only Beginning in County	170,630	9,100	18.7	3,733	45.7	2.44
Trips Ends Only Ending in County	69,079	4,747	14.6	2,383	29.0	1.99
Trips Beginning and Ending in County	170,661	7,950	21.5	38,745	4.4	0.21
<b>Total</b>	<b>410,370</b>	<b>21,797</b>	<b>18.8</b>	<b>44,861</b>	<b>9.1</b>	<b>0.49</b>
<b>Napa Job Growth Shift to Solano Scenario</b>						
Trips Ends Only Beginning in County	188,933	10,648	17.7	4,222	44.8	2.52
Trips Ends Only Ending in County	59,273	4,142	14.3	2,020	29.3	2.05
Trips Beginning and Ending in County	160,003	7,321	21.9	37,273	4.3	0.20
<b>Total</b>	<b>408,208</b>	<b>22,111</b>	<b>18.5</b>	<b>43,515</b>	<b>9.4</b>	<b>0.51</b>
<b>Percent Difference</b>						
Trips Ends Only Beginning in County	11%	17%	-5%	13%	-2%	3%
Trips Ends Only Ending in County	-14%	-13%	-2%	-15%	1%	3%
Trips Beginning and Ending in County	-6%	-8%	2%	-4%	-3%	-4%
<b>Total</b>	<b>-1%</b>	<b>1%</b>	<b>-2%</b>	<b>-3%</b>	<b>3%</b>	<b>5%</b>
Scenario	PM Peak Hour					
	VMT	VHT	VMT/VHT	Trips	VMT/Trips	VHT/Trips
<b>Baseline Scenario</b>						
Trips Ends Only Beginning in County	77,393	5,154	15.0	2,970.0	26.1	1.74
Trips Ends Only Ending in County	153,496	9,541	16.1	3,529.3	43.5	2.70
Trips Beginning and Ending in County	154,262	6,186	24.9	34136	4.5	0.18
<b>Total</b>	<b>385,152</b>	<b>20,881</b>	<b>18.4</b>	<b>40,636</b>	<b>9.5</b>	<b>0.51</b>
<b>Job Growth Shift to Solano Scenario</b>						
Trips Ends Only Beginning in County	70,458	4,539	15.5	2,600	27.1	1.75
Trips Ends Only Ending in County	181,423	11,344	16.0	4,007	45.3	2.83
Trips Beginning and Ending in County	141,537	5,513	25.7	31,778	4.5	0.17
<b>Total</b>	<b>393,418</b>	<b>21,397</b>	<b>18.4</b>	<b>38,385</b>	<b>10.2</b>	<b>0.56</b>
<b>Percent Difference</b>						
Trips Ends Only Beginning in County	-9%	-12%	3%	-12%	4%	1%
Trips Ends Only Ending in County	18%	19%	-1%	14%	4%	5%
Trips Beginning and Ending in County	-8%	-11%	3%	-7%	-1%	-4%
<b>Total</b>	<b>2%</b>	<b>2%</b>	<b>0%</b>	<b>-6%</b>	<b>8%</b>	<b>8%</b>

# Napa's Transportation Future

## Chapter 5: Evaluation of Proposed Strategies

**Table 5-10**  
**Mode Share Comparison – Baseline to Strategy with Shift Napa jobs to Solano Scenario**

Scenario	Internal Napa Trips		Trips Entering and Leaving Napa County	
	Trips by Mode	Percent of Total Trips	Trips by Mode	Percent of Total Trips
<b>Baseline Scenario</b>				
Persons in Single Occupant Vehicles	67,797	71.5%	63,181	83.6%
Persons in Vehicles of 2 people	14,194	15.0%	8,164	10.8%
Persons in Vehicles of 3 or more people	5,632	5.9%	3,713	4.9%
Persons in Transit, Walking or Bicycling	7,162	7.6%	562	0.7%
<b>Totals</b>	<b>94,785</b>		<b>75,620</b>	
<b>Napa Job Growth Shift to Solano Scenario</b>				
Persons in Single Occupant Vehicles	63,227	71.4%	64,200	83.8%
Persons in Vehicles of 2 people	13,218	14.9%	8,153	10.6%
Persons in Vehicles of 3 or more people	5,226	5.9%	3,736	4.9%
Persons in Transit, Walking or Bicycling	6,824	7.7%	552	0.7%
<b>Totals</b>	<b>88,496</b>		<b>76,641</b>	
<b>Difference</b>				
Persons in Single Occupant Vehicles	-4,570	-0.1%	1,019	0.2%
Persons in Vehicles of 2 people	-976	0.0%	-10	-1.0%
Persons in Vehicles of 3 or more people	-406	0.0%	23	2.2%
Persons in Transit, Walking or Bicycling	-338	0.2%	-10	-1.0%
<b>Totals</b>	<b>-6,290</b>		<b>1,020</b>	

### Scenario Five: Gasoline Cost Increase

**Input Assumptions.** This scenario demonstrates what would happen if automobile operating costs increase significantly to the point where behavioral changes occur. This would be tested as if the “strategic plan *with* land use changes” (scenario 3) is implemented. Research from the Congressional Budget Office suggests that each 20 percent increase in gasoline costs results in 0.4 percent less vehicles driving on the roads in California. Assuming that the price of fuel grows by 200 percent in real dollars, the estimated vehicle reduction is expected to be 4 percent.

**Findings.** The increase in auto operating costs results in minor and insignificant variations at peak hour. The primary reason is that the basic assumptions of trip making are not shown to be sensitive at peak hours. However, the model does not take into account the possibility of generalized reduced trip making throughout the day, as well as the resulting “trip chaining” that would occur because people would be more likely to link their trips, or achieve more personal benefit (such as buy more groceries) when they do drive.

(The calculation of vehicle miles traveled, vehicle hours traveled and trips for this analysis is based upon the trip ends within Napa County. For trips that have one end in Napa County and one in another county, the values are divided in half for all measures to appropriately recognize that the non-Napa County portion of the trip is not part of the analysis; the calculation does not assume shorter trip lengths, but merely weights the strategies according to the trip ends in Napa County.)

**Table 5-11** shows the comparison of this alternative to the baseline. This does indeed suggest that an increase in gasoline price would result in a lowering of both vehicle miles of travel and vehicle hours of travel.

More significant results are shown in **Table 5-12**. This table highlights the potential for profound increase in transit use, bicycling and walking with a much greater gasoline cost.

**Table 5-11**  
**Vehicle Miles and Vehicle Hours of Travel Comparison – Baseline to Gasoline Price Increase Scenario**

	AM Peak Hour					
	VMT	VHT	VMT/VHT	Trips	VMT/Trip	VHT/Trip
<b>Baseline Scenario</b>						
Trips Ends Only Beginning in County	170,630	9,100	18.7	3,733	45.7	2.44
Trips Ends Only Ending in County	69,079	4,747	14.6	2,383	29.0	1.99
Trips Beginning and Ending in County	170,661	7,950	21.5	38,745	4.4	0.21
<b>Total</b>	<b>410,370</b>	<b>21,797</b>	<b>18.8</b>	<b>44,861</b>	<b>9.1</b>	<b>0.49</b>
<b>Gasoline Price Increase Scenario</b>						
Trips Ends Only Beginning in County	170,204	8,979	19.0	3,911	43.5	2.30
Trips Ends Only Ending in County	65,031	4,072	16.0	2,260	28.8	1.80
Trips Beginning and Ending in County	167,508	7,481	22.4	38,211	4.4	0.20
<b>Total</b>	<b>402,743</b>	<b>20,531</b>	<b>19.6</b>	<b>44,382</b>	<b>9.1</b>	<b>0.46</b>
<b>Percent Difference</b>						
Trips Ends Only Beginning in County	0%	-1%	1%	5%	-5%	-6%
Trips Ends Only Ending in County	-6%	-14%	10%	-5%	-1%	-10%
Trips Beginning and Ending in County	-2%	-6%	4%	-1%	0%	-5%
<b>Total</b>	<b>-2%</b>	<b>-6%</b>	<b>4%</b>	<b>-1%</b>	<b>-1%</b>	<b>-5%</b>
	PM Peak Hour					
	VMT	VHT	VMT/VHT	Trips	VMT/Trip	VHT/Trip
<b>Baseline Scenario</b>						
Trips Ends Only Beginning in County	77,393	5,154	15.0	2,970	26.1	1.74
Trips Ends Only Ending in County	153,496	9,541	16.1	3,529	43.5	2.70
Trips Beginning and Ending in County	154,262	6,186	24.9	34,136	4.5	0.18
<b>Total</b>	<b>385,152</b>	<b>20,881</b>	<b>18.4</b>	<b>40,636</b>	<b>9.5</b>	<b>0.51</b>
<b>Gasoline Price Increase Scenario</b>						
Trips Ends Only Beginning in County	72,821	4,106	17.7	2,805	26.0	1.46
Trips Ends Only Ending in County	164,977	9,554	17.3	3,790	43.5	2.52
Trips Beginning and Ending in County	149,253	5,803	25.7	33,124	4.5	0.18
<b>Total</b>	<b>387,052</b>	<b>19,463</b>	<b>19.9</b>	<b>39,720</b>	<b>9.7</b>	<b>0.49</b>
<b>Percent Difference</b>						
Trips Ends Only Beginning in County	-6%	-20%	18%	-6%	0%	-16%
Trips Ends Only Ending in County	7%	0%	7%	7%	0%	7%
Trips Beginning and Ending in County	3%	-6%	3%	-3%	0%	-3%
<b>Total</b>	<b>0%</b>	<b>-7%</b>	<b>8%</b>	<b>-2%</b>	<b>3%</b>	<b>-5%</b>

**Table 5-12**  
**Mode Share Comparison – Baseline to Gasoline Price Increase Scenario**

Scenario	Internal Napa Trips		Trips Entering and Leaving Napa County	
	Trips by Mode	Percent of Total Trips	Trips by Mode	Percent of Total Trips
<b>Baseline Scenario</b>				
Persons in Single Occupant Vehicles	67,797	71.5%	63,181	83.6%
Persons in Vehicles of 2 people	14,194	15.0%	8,164	10.8%
Persons in Vehicles of 3 or more people	5,632	5.9%	3,713	4.9%
Persons in Transit, Walking or Bicycling	7,162	7.6%	562	0.7%
<b>Totals</b>	<b>94,785</b>		<b>75,620</b>	
<b>Gasoline Price Increase Scenario</b>				
Persons in Single Occupant Vehicles	65,615	68.3%	61,435	80.0%
Persons in Vehicles of 2 people	13,492	14.0%	7,958	10.4%
Persons in Vehicles of 3 or more people	5,402	5.6%	3,620	4.7%
Persons in Transit, Walking or Bicycling	11,547	12.0%	3,808	5.0%
<b>Totals</b>	<b>96,056</b>		<b>76,821</b>	
<b>Difference</b>				
Persons in Single Occupant Vehicles	-2,183	-3.2%	-1,746	-3.6%
Persons in Vehicles of 2 people	-702	-0.9%	-205	-0.4%
Persons in Vehicles of 3 or more people	-230	-0.3%	-93	-0.2%
Persons in Transit, Walking or Bicycling	4,385	4.5%	3,246	4.2%
<b>Totals</b>	<b>1,271</b>		<b>1,201</b>	

### Scenario Six: Adjust jobs/housing projections for Solano and Sonoma Counties

**Input Assumptions.** This scenario demonstrates what is anticipated to happen if Solano and Sonoma Counties were to work towards a more balanced jobs/housing scenario in each county. Currently, Sonoma County is projected to have 54,000 more new jobs than new working residents, while Solano County is expecting 50,000 more new working residents than new jobs, according to ABAG. Because these imbalances directly affect through traffic in Napa County, a scenario to test the impact of a better balance has been run. The scenario added 15,000 households to Sonoma County and subtracted 10,000 jobs, with the opposite done for Solano County to keep the region balanced. No changes were assumed for Napa County. This assumption uses the same roadway network as the future baseline trends scenario detailed in Chapter 3.

**Findings.** In this scenario, several of the key measures of effectiveness are found to not be profoundly different when compared to the baseline scenario. (The calculation of vehicle miles traveled, vehicle hours traveled and trips for this analysis is based upon the trip ends within Napa County. For trips that have one end in Napa County and one in another county, the values are divided in half for all measures to appropriately recognize that the non-Napa County portion of the trip is not part of the analysis; the calculation does not assume shorter trip lengths, but merely weights the strategies according to the trip ends in Napa County.)

The overall findings shown in **Table 5-13** are that the peak hour vehicle miles of travel and vehicle hours travel by Napa residents between Napa County and other counties would not vary overall. There are some projected slight increases in VHT in the AM peak hour, and slight decreases in the VMT in the PM peak hour. These findings are not surprising in that new working commuters expected to drive from Solano County to Sonoma County are not directly shown in the summary tables; only trip ends that have one portion in Napa County are shown.

**Table 5-14** illustrates a finding of little effect on mode shares in this scenario. No matter what county Napa County workers travel to work, the shares on transit, or walking/ bicycling/ carpooling are likely not to change.

**Table 5-13**  
**Vehicle Miles and Vehicle Hours of Travel Comparison – Baseline to Solano/Sonoma Job Balancing Scenario**

Scenario	AM Peak Hour			Vehicle Trips	VMT/ Vehicle Trip	VHT/ Vehicle Trip
	VMT	VHT	VMT/VHT			
<b>Baseline Scenario</b>						
Trips Ends Only Beginning in County	170,630	9,100	18.7	3,733	45.7	2.44
Trips Ends Only Ending in County	69,079	4,747	14.6	2,383	29.0	1.99
Trips Beginning and Ending in County	170,661	7,950	21.5	38,745	4.4	0.21
<b>Total</b>	<b>410,370</b>	<b>21,797</b>	<b>18.8</b>	<b>44,861</b>	<b>9.1</b>	<b>0.49</b>
<b>Jobs/Housing Balancing between Sonoma and Solano Counties Scenario</b>						
Trips Ends Only Beginning in County	168,795	9,165	18.4	3,756	44.9	2.44
Trips Ends Only Ending in County	70,656	4,869	14.5	2,423	29.2	2.01
Trips Beginning and Ending in County	170,499	8,213	20.8	38,598	4.4	0.21
<b>Total</b>	<b>409,949</b>	<b>22,248</b>	<b>18.4</b>	<b>44,777</b>	<b>9.2</b>	<b>0.50</b>
<b>Percent Difference</b>						
Trips Ends Only Beginning in County	-1%	1%	-2%	1%	-2%	0%
Trips Ends Only Ending in County	2%	3%	0%	2%	1%	1%
Trips Beginning and Ending in County	0%	3%	-3%	0%	0%	4%
<b>Total</b>	<b>0%</b>	<b>2%</b>	<b>-2%</b>	<b>0%</b>	<b>0%</b>	<b>2%</b>
<b>PM Peak Hour</b>						
Scenario	VMT	VHT	VMT/VHT	Vehicle Trips	VMT/ Vehicle Trip	VHT/ Vehicle Trip
<b>Baseline Scenario</b>						
Trips Ends Only Beginning in County	77,393	5,154	15.0	2,970	26.1	1.74
Trips Ends Only Ending in County	153,496	9,541	16.1	3,529	43.5	2.70
Trips Beginning and Ending in County	154,262	6,186	24.9	34,136	4.5	0.18
<b>Total</b>	<b>385,152</b>	<b>20,881</b>	<b>18.4</b>	<b>40,636</b>	<b>9.5</b>	<b>0.51</b>
<b>Jobs/Housing Balancing between Sonoma and Solano Counties Scenario</b>						
Trips Ends Only Beginning in County	77,385	5,128	15.1	2,977	26.0	1.72
Trips Ends Only Ending in County	139,507	9,480	14.7	3,539	39.4	2.68
Trips Beginning and Ending in County	153,849	6,231	24.7	34,104	4.5	0.18
<b>Total</b>	<b>370,741</b>	<b>20,839</b>	<b>17.8</b>	<b>40,619</b>	<b>9.1</b>	<b>0.51</b>
<b>Percent Difference</b>						
Trips Ends Only Beginning in County	0%	-1%	0%	0%	-1%	-2%
Trips Ends Only Ending in County	-9%	-1%	-9%	0%	-9%	-1%
Trips Beginning and Ending in County	0%	1%	-1%	0%	1%	-3%
<b>Total</b>	<b>-4%</b>	<b>0%</b>	<b>-4%</b>	<b>0%</b>	<b>-3%</b>	<b>-2%</b>

**Table 5-14**  
**Mode Share Comparison – Baseline to Solano/Sonoma Job Balancing Scenario**

Scenario	Internal Napa Trips		Trips Entering and Leaving Napa County	
	Trips by Mode	Percent of Total Trips	Trips by Mode	Percent of Total Trips
<b>Baseline Scenario</b>				
Persons in Single Occupant Vehicles	67,797	71.5%	63,181	83.6%
Persons in Vehicles of 2 people	14,194	15.0%	8,164	10.8%
Persons in Vehicles of 3 or more people	5,632	5.9%	3,713	4.9%
Persons in Transit, Walking or Bicycling	7,162	7.6%	562	0.7%
<b>Totals</b>	<b>94,785</b>		<b>75,620</b>	
<b>Jobs/Housing Balancing between Sonoma and Solano Counties Scenario</b>				
Persons in Single Occupant Vehicles	67,787	71.5%	63,240	83.6%
Persons in Vehicles of 2 people	14,189	15.0%	8,159	10.8%
Persons in Vehicles of 3 or more people	5,630	5.9%	3,710	4.9%
Persons in Transit, Walking or Bicycling	7,161	7.6%	562	0.7%
<b>Totals</b>	<b>94,767</b>		<b>75,670</b>	
<b>Difference</b>				
Persons in Single Occupant Vehicles	-10	0.0%	58	0.0%
Persons in Vehicles of 2 people	-5	0.0%	-5	0.0%
Persons in Vehicles of 3 or more people	-2	0.0%	-3	0.0%
Persons in Transit, Walking or Bicycling	-1	0.0%	0	0.0%
<b>Totals</b>	<b>-18</b>		<b>50</b>	

The travel model does not analyze the impacts of non-peak hours. The results of vehicle miles of travel or vehicle hours of travel at non-peak hours are not expected to be significantly different simply as a result of reducing development forecasts.

The reduction of new development will also restrict the ability to encourage “smarter” development patterns for non-residential development. The result may be lower demand on the transportation system at peak hours, but limiting development also limits a community’s ability to encourage a new development to occur at densities that may promote increased transit ridership.

### Scenario Seven: "Whatever it Takes" - Expansion of Transit, Bicycle, Pedestrian Accessibility and Paid Parking

**Input Assumptions.** This scenario demonstrates what could happen if the alternative modes recommendations in the strategy are pursued aggressively, and if an additional parking charge is levied for commuting in the county to further add disincentives to driving. In this scenario, all county-wide bus routes are assumed to operate every 10 minutes. The bicycle attractiveness is increased to what is reflected in Davis, California today. The pedestrian accessibility is increased by 5 times what it is considered today. The parking costs are assumed to be \$1.50 per hour for workers. This assumption uses remaining assumptions as the Strategy Scenario.

**Findings.** In this scenario, several of the key measures of effectiveness are found to proceed positively when compared to the baseline scenario. (The calculation of vehicle miles traveled, vehicle hours traveled and trips for this analysis is based upon the trip ends within Napa County. For trips that have one end in Napa County and one in another county, the values are divided in half for all measures to appropriately recognize that the non-Napa County portion of the trip is not part of the analysis; the calculation does not assume shorter trip lengths, but merely weights the strategies according to the trip ends in Napa County.)

The overall findings shown in **Table 5-15** are that the peak hour vehicle miles of travel and vehicle hours travel by Napa residents between Napa County and other counties would increase, and would fall about 4 to 6 percent for both the AM and PM time periods, for the rest of the trips with at least one end within Napa County. Also, there would be a slight increase in the average distance (vehicle miles per trip and vehicle hours per trip) at peak hours. The number of peak vehicle trips rises, resulting in higher VMT and VHT per vehicle trip. This occurs because the bulk of these strategies are designed to shift persons from driving for intra-community trips, so that the remaining vehicle trips on the system are those that are traveling to other communities and counties, effectively raising the VMT and VHT per vehicle trips.

**Table 5-16** illustrates more significantly how a great investment in strategies could result in lower mode shares for driving. The bulk of this advantage is shown for trips within Napa County, as these would be these intra-community trips. The estimated combined mode share between transit, bicycle and walk would rise from 7 percent (in the baseline scenario) to 27 percent. The aggregate effect would be dampened somewhat by persons traveling to and from other counties, as the mode share would grow from less than 1 to almost 2 percent.

**Table 5-15 Vehicle Miles and Vehicle Hours of Travel Comparison – Strategy with High Frequency Transit, Easier Walk, Bicycle Cultural Change and Local Parking Cost Scenario to Baseline Scenario**

Scenario	AM Peak Hour					
	VMT	VHT	VMT/VHT	Trips	VMT/ Trip	VHT/ Trip
<b>Baseline Scenario</b>						
Trips Ends Only Beginning in County	170,630	9,100	18.7	3,733	45.7	2.44
Trips Ends Only Ending in County	69,079	4,747	14.6	2,383	29.0	1.99
Trips Beginning and Ending in County	170,661	7,950	21.5	38,745	4.4	0.21
<b>Total</b>	<b>410,370</b>	<b>21,797</b>	<b>18.8</b>	<b>44,861</b>	<b>9.1</b>	<b>0.49</b>
<b>Strategy with High Frequency Transit, Easier Walk, Bicycle Cultural Change and Local Parking Cost Scenario</b>						
Trips Ends Only Beginning in County	165,719	8,883	18.7	3,684	45.0	2.41
Trips Ends Only Ending in County	68,927	4,689	14.7	2,375	29.0	1.97
Trips Beginning and Ending in County	158,277	6,854	23.1	34,409	4.6	0.20
<b>Total</b>	<b>392,924</b>	<b>20,426</b>	<b>19.2</b>	<b>40,467</b>	<b>9.7</b>	<b>0.50</b>
<b>Percent Difference</b>						
Trips Ends Only Beginning in County	-3%	-2%	-1%	-1%	-2%	-1%
Trips Ends Only Ending in County	0%	-1%	1%	0%	0%	-1%
Trips Beginning and Ending in County	-7%	-14%	8%	-11%	4%	-3%
<b>Total</b>	<b>-4%</b>	<b>-6%</b>	<b>2%</b>	<b>-10%</b>	<b>6%</b>	<b>4%</b>
Scenario	PM Peak Hour					
	VMT	VHT	VMT/VHT	Trips	VMT/ Trip	VHT/ Trip
<b>Baseline Scenario</b>						
Trips Ends Only Beginning in County	77,393	5,154	15.0	2,970.0	26.1	1.74
Trips Ends Only Ending in County	153,496	9,541	16.1	3,529.3	43.5	2.70
Trips Beginning and Ending in County	154,262	6,186	24.9	34136	4.5	0.18
<b>Total</b>	<b>385,152</b>	<b>20,881</b>	<b>18.4</b>	<b>40636</b>	<b>9.5</b>	<b>0.51</b>
<b>Strategy with High Frequency Transit, Easier Walk, Bicycle Cultural Change and Local Parking Cost Scenario</b>						
Trips Ends Only Beginning in County	76,766	5,042	15.2	2,951	26	1.71
Trips Ends Only Ending in County	151,323	9,405	16.1	3,469	43.6	2.71
Trips Beginning and Ending in County	140,202	5,220	26.9	29,027	4.8	0.18
<b>Total</b>	<b>368,291</b>	<b>19,667</b>	<b>18.7</b>	<b>35,447</b>	<b>10.4</b>	<b>0.55</b>
<b>Percent Difference</b>						
Trips Ends Only Beginning in County	-1%	-2%	1%	-1%	0%	-2%
Trips Ends Only Ending in County	-1%	-1%	0%	-2%	0%	0%
Trips Beginning and Ending in County	-9%	-16%	8%	-15%	7%	-1%
<b>Total</b>	<b>-4%</b>	<b>-6%</b>	<b>2%</b>	<b>-13%</b>	<b>10%</b>	<b>8%</b>

**Table 5-16**  
**Mode Share Comparison – Strategy with High Frequency Transit, Easier Walk, Bicycle Cultural Change and Local Parking Cost Scenario to Baseline Scenario**

Scenario	Internal Napa Trips		Trips Entering and Leaving Napa County	
	Trips by Mode	Percent of Total Trips	Trips by Mode	Percent of Total Trips
<b>Baseline Scenario</b>				
Persons in Single Occupant Vehicles	67,797	71.5%	63,181	83.6%
Persons in Vehicles of 2 people	14,194	15.0%	8,164	10.8%
Persons in Vehicles of 3 or more people	5,632	5.9%	3,713	4.9%
Persons in Transit, Walking or Bicycling	7,162	7.6%	562	0.7%
<b>Totals</b>	<b>94,785</b>		<b>75,620</b>	
<b>Job Growth Shift to Solano Scenario</b>				
Persons in Single Occupant Vehicles	54,065	57.1%	62,610	82.8%
Persons in Vehicles of 2 people	10,576	11.2%	7,997	10.6%
Persons in Vehicles of 3 or more people	4,228	4.5%	3,650	4.8%
Persons in Transit, Walking or Bicycling	25,895	27.3%	1,404	1.9%
<b>Totals</b>	<b>94,764</b>		<b>75,660</b>	
<b>Difference</b>				
Persons in Single Occupant Vehicles	-13,732	-14.5%	-572	-0.8%
Persons in Vehicles of 2 people	-3,618	-3.8%	-167	-0.2%
Persons in Vehicles of 3 or more people	-1,404	-1.5%	-63	-0.1%
Persons in Transit, Walking or Bicycling	18,733	19.8%	842	1.1%
<b>Totals</b>	<b>-21</b>		<b>40</b>	

**OVERALL FINDINGS**

There are several relevant analyses which provide some indication of limitations of implementing strategies only within Napa County. Because Napa County contains only a small part of the Bay Area population and employment and because this number is significantly lower than the population and employment in Solano and Sonoma Counties, the resulting effect of strategic changes on congestion is somewhat limited due to the essentially fixed percentage of trips within Napa County compared to through trips.

The Solano-Napa travel demand model was assessed for the proportion of through trips. The findings are shown in **Table 5-17** for the gateway vehicle trips entering Napa County, and **Table 5-18** for gateway traffic leaving Napa County. These estimates are made using the Baseline scenario.

When the model is run, it shows that many of the vehicles that travel on State Route 12, as well as those traveling on SR 29 from Lake County, are making through trips – estimated at between 40 to 60 percent of all vehicles on these roads. The through trip percentage is lower on State Route 29 in southern Napa County, as this road primarily serves persons who are traveling into and out of Napa County. The importance of this is that strategies that deal with movements on SR 12 and on SR 29 from Lake County should be considered more regional in nature.

**Table 5-17**  
**Gateway Vehicle Trips Entering in Napa County**

Gateway	Trips Ending in Napa County	Through Trips
<i>AM Peak Hour</i>		
From Jamieson Canyon SR 12	52%	48%
From American Canyon SR 29	86%	14%
From Carneros SR 12	57%	43%
From Lake County SR 29	43%	57%
From Petrified Forest Road	95%	5%
<i>PM Peak Hour</i>		
From Jamieson Canyon SR 12	56%	44%
From American Canyon SR 29	89%	11%
From Carneros SR 12	56%	44%
From Lake County SR 29	45%	55%
From Petrified Forest Road	87%	13%

Source: DKS, 2008

**Table 5-18**  
**Gateway Vehicle Trips Leaving in Napa County**

<b>Gateway</b>	<b>Trips Beginning in Napa County</b>	<b>Through Trips</b>
<i>AM Peak Hour</i>		
To Jamieson Canyon SR 12	54%	46%
To American Canyon SR 29	91%	9%
To Carneros SR 12	48%	52%
To Lake County SR 29	50%	50%
To Petrified Forest Road	90%	10%
<i>PM Peak Hour</i>		
To Jamieson Canyon SR 12	59%	41%
To American Canyon SR 29	93%	7%
To Carneros SR 12	45%	55%
To Lake County SR 29	46%	54%
To Petrified Forest Road	95%	5%

Source: DKS, 2008

The effect of these through trips and how traffic is affected by them can be measured through examining link-based performance measures. One method used to measure the performance of the roadway system is with the analysis of vehicle miles of travel and vehicle hours of travel on roadways within Napa County. This measure is different than the trip-based analysis of these measures earlier in this chapter. Instead, the measurement looks at all trips on the roadways in Napa County, and does not consider what happens to any trips (including those that begin and end in Napa County) beyond the county line. Thus, this provides an indication of how traffic volumes may change as a result of the various strategies. It is particularly useful when examining whether local vehicle trips removed from of the system would be replaced by through trips traveling between other counties, such as Sonoma and Solano Counties.

**Table 5-19** summarizes the results of the Scenarios on link-based vehicle miles of travel and vehicle hours of travel, essentially including more of the through-traffic effect. This reinforces the conclusion that the Scenarios do not have a significant effect on the overall congestion pattern in the County.

**Table 5-19**  
**Link-Based Vehicle Miles of Travel (VMT) and Vehicle Hours of Travel (VHT) on Napa County Roadways**

Scenario	AM Peak Hour			PM Peak Hour		
	VMT	VHT	VMT/VHT	VMT	VHT	VMT/VHT
Existing (2008) Scenario	311,901	10,823	28.8	300,852	9,348	32.2
Baseline Future Scenario	475,844	20,105	23.7	447,172	16,248	27.5
Strategy Adoption Scenario	482,506	19,864	24.3	456,922	15,920	28.7
Percent Difference	1%	-1%	3%	2%	-2%	4%
Strategy Adoption with Land Use Reallocation Scenario	485,155	20,298	23.9	463,248	16,514	28.1
Percent Difference	2%	1%	1%	3%	2%	2%
Shift Job Growth to Solano County Scenario	478,307	20,143	23.7	446,590	16,033	27.9
Percent Difference	1%	0%	0%	0%	-1%	1%
Strategy Adoption with Land Use Reallocation and Increased Gas Prices	473,373	19,155	24.7	448,346	15,689	28.6
Percent Difference	-1%	-5%	4%	0%	-4%	4%
Shift Households to Solano County and Jobs to Sonoma County Scenario	482,510	21,166	22.8	440,141	16,143	27.3
Percent Difference	1%	5%	-4%	-2%	-1%	-1%
Strategy with High Frequency Transit, Easier Walk, Bicycle Cultural Change and Local Parking Cost Scenario	479,706	19,495	24.6	452,105	15,662	28.9
Percent Difference	1%	-3%	4%	1%	-4%	5%

**Limitations of Travel Model Use.** As noted in overall discussions, a travel demand model can provide some information for “what if” scenarios, but the major emphasis of the travel model is to simulate traffic conditions. The model design and testing was primarily directed towards this objective. As a result, the travel model has the potential of simulating other approaches to the transportation system but it does not contain a robust set of mathematical testing to verify its use for these scenarios. Thus, the results should be considered to be indicative of what impacts different strategies may have, and a starting point from which to reallocate both the transportation network and the land use location choices interactively to maximize the benefit for all residents and commuters.

In addition, the model assumes that travel behavior choices change as a result of additional supply in the transportation system, increased costs of travel, or changes in land use. It does not automatically assume the impacts of a *cultural* shift to travel mode choices and trip distances as a result of a deliberate behavioral (non-cost) cultural shift by Napa residents and workers. In fact, the success of the strategies proposed in this document will likely require a cultural shift in travel choices, rather than merely on market-based strategies that are applied to the current cultural approach to travel choices.