

## 4. BICYCLE NETWORK NEEDS ANALYSIS

The *Non-Motorized Transportation Plan* sets forth a blueprint for initiating a system of bikeways and support facilities within the City of Hughson. The current *General Plan* sets policies and action items related to providing a bicycle network to encourage bicycling for transportation and recreational purposes. The *General Plan* suggests potential locations for new bicycle facilities, including a specific off-street pedestrian/bike path and on-street bike lanes. The City's first 0.85 miles of bicycle lanes have been installed within the past \_\_ years. This *Non-Motorized Transportation Plan* builds upon these existing on-street bicycle facilities to create a comprehensive vision for the network that focuses on access to the regional bikeway Network established by StanCOG<sup>1</sup>, City and regional parks, Downtown, education centers, employment centers, and shopping centers. This plan is ultimately aimed at creating a X-mile bikeway network.

Hughson has many qualities favorable to bicycle riding, including flat terrain, and climate that is temperate in the spring and fall, relatively cool to mild in the winter, and hot and dry in the summers. There are scenic recreational resources nearby along the Tuolumne River, including the Fox Grove Park on Geer Road. The grid street system in the core area allows for easy navigation, while the grid of collectors and arterials in the new developments provide convenient connections to the core area and to surrounding developments.



*Northbound Santa Fe Avenue at Pine Street/Tully Road*

Many arterial roadways feeding into and surrounding the city are not designed to current standards to accommodate bicyclists and high-speed vehicles simultaneously. Santa Fe Avenue is a prime example of a roadway that provides great connectivity (it bisects the city roadway grid), but that is not designed to accommodate bicyclists.

The roadways that feed directly into Hughson either are too narrow to accommodate bicyclists (i.e., Service Road; Whitmore Avenue west of the strip mall and east of the High School; Fox Road east of Euclid Avenue) or where adequate width is provided, do not provide any designation for bicyclists (i.e, Whitmore Avenue between the strip mall and the High School; Fox Road west of Euclid Avenue; Tully Road south of Santa Fe Avenue).

The surrounding roadways (i.e., Hatch Road and Geer Road) have painted shoulders that do not meet bike lane standards due to their widths (wider bike lanes are needed adjacent to higher-speed roadways) and striping at intersections. Major east-west connectors such as Hatch Road and Whitmore Avenue; and north-south connectors such as Santa Fe Avenue, Geer Road, and Tully Road all are forecasted to carry high traffic volumes (10,000 to 20,000 per day) not conducive to a

1. See Stanislaus Council of Governments' (StanCOG) *Regional Bicycle Action Plan* (2001)

friendly bicycling environment<sup>2</sup>. For bicyclists traveling within the developed areas of the City, the arterial roadways can be generally avoided by using more bicycle-friendly neighborhood streets due to the grid street network.

In addition to busy streets, other constraints unique to Hughson include numerous railroad crossings, farming activities, and irrigation canals. Other than the major arterials, many streets in the developed areas of the city are generally wide enough to accommodate bicycles and vehicles.

### **BICYCLE TRIP TYPES**

Bikeways, like streets and sidewalks, are used by a wide range of people--children riding to school, commuters riding to work, people exercising, racing, or touring. This analysis takes into account the different user groups to design a comprehensive bicycle system that meets their needs in Hughson.

Related to the user groups mentioned above is trip purpose, which helps identify common needs among the groups. In general, bicycle trips can be broken down into recreational (including all discretionary trips), commuter (whether to work or school) or shopping trips. The biggest difference between these groups is that while recreational riders may be interested in routes leading to parks or other areas of interest, commuters and shoppers are interested in the shortest and safest route between two points.

### ***Existing and Future Bicycle Commuters***

A common term used in describing demand for bicycle facilities is "mode split." Mode split refers to the form of transportation a person chooses to take, such as walking, bicycling, public transit, or driving. Mode split is often used in evaluating commuter alternatives such as bicycling, where the objective is to increase the percentage of people selecting an alternative means of transportation to the single-occupant (or drive-alone) automobile. Table 3 presents 2000 Census data for the journey-to-work mode split for the City of Hughson. Table 4 compares Hughson's bicycle commute mode-split to other Cities in the Central Valley.

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2. See City of Hughson *Streets Master Plan* (May 2007)



Table 3 Journey-To-Work Mode Split for City Of Hughson Year 2000	
Mode (Home-based work trips)	Mode Split
Drive Alone	78.9 percent
Carpool	14.7 percent
Motorcycle	0.3 percent
Public Transit	0.3 percent
Bicycling	0.6 percent
Walking	1.7 percent
Other Means	0.8 percent
Work at Home	2.7 percent
Source: 2000 U.S. Census.	

Table 4 Journey-To-Work Bicycle Mode Split for Central Valley Communities Year 2000	
City	Percent Bicycle Commute Trips
Hughson	0.62
Fresno	0.79
Modesto	0.75
Bakersfield	0.53
Ceres	0.78
Turlock	1.07
Waterford	0.00
National Average	0.38
Source: 2000 U.S. Census.	

Bicycle trips represent 0.62 percent of home-based work trips in Hughson. This should not be misinterpreted as the bicycle mode share of all trips for several reasons:

- Journey-to-work data only represents commute trips that tend to be longer trips than shopping, school, recreation, and other trips and are therefore less compatible with bicycling.
- Census journey-to-work data fails to capture people who commute by bicycle one or two days per week.
- Journey-to-work data does not account for commuters with multiple modes of travel to and from work, such as commuters that ride a bicycle to bus stop before transferring to transit for the remainder of their journey to work
- No separate accounting of shopping, school, or recreational trips is made in the Census; these trips make up more than half of the person trips on a typical weekday and a significantly greater proportion on weekend. These trips also tend to be short- to medium-length, which are very well suited for bicycle trips.
- Journey-to-work reports information for adult work trips, but does not request data on school trips, which are much more likely to be bicycling trips as school-aged individuals cannot drive until the latter half of their high school years.

School trips, recreation trips and other non-work related trips make the overall bicycle mode split higher than 0.62 percent, and may make it as high as 2.5 percent. Hughson grew rapidly between 2000 and 2005, growing by 47 percent from 1,252 households in 2000 to 1,836 households in 2005. The 2005 Census Population Estimate showed comparable population growth of 49 percent from 3,980 persons in 2000 to an estimated 5,942 persons in 2005. The 2006 Census Population Estimate showed rapid growth of 7 percent from 2005 to an estimated 6,351 persons in 2006. The Building

Department documented that 1,950 constructed households existed in Hughson on January 1, 2006. Assuming approximately 9.6 daily person trips per household<sup>3</sup>, Hughson residents make a total of approximately 19,000 daily person trips, of which approximately 120 to 480 each day are by bicycle (assuming an overall mode share of 0.62 percent to 2.5 percent).

Future bicycle trips will depend on a number of factors such as the availability of well-connected facilities, and location, density, and type of future land development. With appropriate bicycle facilities in place and implementation of employer trip reduction programs, the bicycle mode split could increase above its current rate. Doubling the current mode split (to 1.2 percent for census journey to work trips and up to 5 percent for overall trips) would result in 240 to 960 total bicycle trips daily.

### **Bicycle Trips Forecast**

Expected projections of 20-year residential growth in the 2005 General Plan EIR shows Hughson will more than double the number of residential units from 1,836 households in 2005 to 4,589 households in 2025.<sup>3</sup> The 2005 General Plan EIR also projects new City residents will make 20,000 new person trips. Combining the estimate of existing resident trips and projected new resident trips, approximately 39,000 daily person trips will be made by City residents in 20 years, of which approximately 240 to 980 each day will be by bicycle (assuming an overall mode share of 0.62 percent to 2.5 percent).

### **RECREATION DESTINATIONS AND NEEDS**

Recreation bicycling includes children riding to a nearby park, racers riding tours, casual riders riding in the evening for exercise, and senior citizens riding to a community center. The common attribute of all of these activities is that they are generally done for the pleasure of the ride itself, they have a recreational facility as a final destination, they are discretionary by nature, and they place speed and directness as less important than surroundings or relative safety.

Recreation bicyclists can generally be categorized into two groups. The first group is casual bicyclists who typically have short trips and often include less experienced riders, particularly young children and the elderly. The second group includes more experienced and athletic riders who generally seek scenic back roads as their favorite domain.



It is important to understand these distinct types of bicyclists because the proposed system must provide opportunities for both groups. For the person riding for exercise, the needs are for a relatively quiet route with no stops, away from automobile traffic, if possible, preferably with visual interest and shades from the wind and sun. A loop configuration is preferred so that the rider ends up back at his/her starting point without backtracking. For the person going to another recreation destination (a park or a shopping center), the route may consist of fairly direct back streets that allow arrival with reasonable time through a comfortable environment. For other casual riders, following a route that leads through interesting neighborhoods, along creeks and rivers, and through parks offers the greatest interest.

3. City of Hughson 2005 General Plan EIR (June 30, 2005).

## COMMUTER/STUDENT DESTINATIONS AND NEEDS

Commuter and student destinations include employment centers, office parks, industrial areas, elementary, junior high and high schools, and colleges/universities. Targeting bikeway improvements to commuters is important because most roadway congestion and a significant portion of air contaminants occur during the a.m. and p.m. peak periods.

In many cases, bicycling as a commuter alternative has the potential to improve traffic and air quality. For example, bicycle commuters in the City of Davis have reduced peak hour traffic volumes by over 15 percent to the point that many downtown streets that would normally require four traffic lanes (with no bike lanes) have only two traffic lanes and ample room for bicyclists. While Davis may be an anomaly, national surveys have shown that about 20 percent of the adult population would use a bicycle to ride to work, at least occasionally, if a properly designed bikeway system existed. In 2000, roughly 30 percent of work trips in Hughson were under 15 minutes, and roughly 14 percent of working Hughson residents worked in the City.<sup>4</sup> These percentages show that there is a target group for bicycle commutes.



Commuters and students have similar travel behavior, which is typically to take the most direct route from origin to destination. For elementary school students, this may consist of residential or collector streets, with few crossings of major arterials. For junior high and high school students, riders may have to cross five or six arterials to reach school. For college students and adult commuters, rides are most often less than five miles but may be as long as 10 or 15 miles. The nearest university/community colleges are California State University Stanislaus in Turlock and Modesto Junior College, both between 5 and 10 miles away.

Commuters and students (in the morning) travel during peak periods of traffic to destinations that may have high levels of congestion and speeds. For example, one of the most dangerous parts of a student's commute is the drop-off zone in front of the school where many vehicles search for parking or drop-off spaces.

Commuting bicyclists have simple and obvious needs. They require bike lanes or wide curb lanes along arterials and collectors, loop detectors at signalized intersections, signals where school children need to cross busy arterials, periodic maintenance of the pavement, and adequate bicycle storage and lockers/showers at their destination points (see Chapter 7).

Most commute bicycle trips are less than five miles and are not regional trips, except for those commuters linking to another mode, such as buses and trains. Continuing to allow bicycles on other modes such as buses and or providing bike lockers at bus stops will help extend the range of commute bicyclists in Hughson.

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4. Source: City of Hughson *General Plan EIR* (June 30, 2005)