

Administrative Draft



Stantec

Arnold Rural Livable Community Based Mobility Plan

Technical Memorandum No. 1 – Existing Conditions

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Executive Summary

The executive summary is an independent element of Technical Memorandum No. 1 – Existing Conditions (Memorandum). The executive summary is, as its name suggests, a summary of a report as it provides readers with a condensed version of the Memorandum. It is here readers will find the main ideas and facts found throughout the document.

BACKGROUND

The Arnold Rural Livable Community Based Mobility Plan (ARLCBMP) is part of the regional transportation planning process to coordinate transportation and land use within Calaveras County. This Memorandum is the first phase of the planning process for the development of the ARLCBMP and describes the background on existing information concerning the Arnold Planning Study Area. This executive summary serves to summarize main points, and existing conditions outlined in detail in the Memorandum.

RELATIONSHIP TO ARNOLD COMMUNITY PLAN

The Calaveras County Board of Supervisors adopted the *Arnold Community Plan* on December 14, 1998 with the purpose of guiding development in Arnold in a manner which would preserve the rural and forested character of the area. The Arnold Rural Livable Community Based Mobility Plan (ARLCBMP) is to encourage increased pedestrian and bicycle travel, understand and analyze the benefits of in-fill development and compact land use design as it relates to transportation infrastructure as a “complement” of the *Arnold Community Plan*. The ARLCBMP will provide the needed vision of Arnold’s main street (State Route 4), pathways, and sidewalks that will enable private property owners, and public agencies alike to make appropriate streetscape improvements in a more predictable, coordinated and fiscally sensible manner.

SUMMARY OF EXISTING CONDITIONS

SOCIO-ECONOMICS

Socio-economics analyze the relationship between the economy and social life. The following make up the socio-economics of Arnold:

- ?? The population of Arnold is 4,218
- ?? A majority of the population in Arnold is white and speaks English
- ?? 11% of Arnold’s population is disabled
- ?? Of the employed residents in Arnold, a majority work within Calaveras County

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- ?? The average household income of Arnold is \$42,785
- ?? Arnold and Calaveras County have a high percentage of second homes due to the various recreational activities within the County

LAND USE

The following land use factors have helped guide the development of Arnold:

- ?? The Calaveras County General Plan determines the different land uses and other regulatory decisions for Arnold
- ?? The Calaveras County General Plan requires Arnold to have a Community Plan
- ?? Arnold is characterized as a rural environment
- ?? Vacant land along SR-4 is privately owned, except for one parcel which is publicly owned
- ?? Vacant land along SR-4 provides the opportunity for infill development
- ?? Arnold will have a restricted number of subdivisions in the future as they are almost at build-out.

DESTINATIONS

Arnold provides many destinations for residents and tourists alike, they are as follows:

- ?? Residents of Arnold travel to local schools, markets, shopping centers, Big Trees State Park, White Pines Lake, and trail heads
- ?? Ebbetts Pass, a National Scenic Byway, begins at the eastern portion of Arnold

TOPOGRAPHY

Topography describes the specific terrain of an area and place. The following factors have influenced Arnold:

- ?? The existing street patterns in Arnold were developed to conform to existing topography
- ?? There are many streets that have no outlet or cul-de-sacs due to topographic constraints

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ORDERING AND COMMUNITY STRUCTURE

Street ordering provides residents and tourists with a sense of place and helps to establish orientation. The ordering and community structures that influence Arnold are the following:

- ?? SR-4 is the backbone of Arnold
- ?? SR-4 will always remain the main corridor of Arnold

STREET DEFINITION

Street definition provides pedestrians and bicyclists with a comfort level. The following help define Arnold Streets:

- ?? The SR-4 right-of-way has varying geometry as it traverses through Arnold as a result its definition also varies from vertical and horizontal street definition
- ?? The distance between two points, such as between a building and the sidewalk, help to define a specific space. In Arnold, the distance between two points is not clearly defined as the width of the streetscape is greater than the height of the buildings.
- ?? Streets are more defined when they are designed in human scale or intimate human scale. Arnold is not designed within these two scales as SR-4 has a large width, creating a massive streetscape built to accommodate the automobile only.
- ?? Residential streets have limited street definition as they are narrow and have no sidewalks, reducing the sense of place

SCALE: COMPLEXITY AND TIME DISTANCE

With the development of the automobile, the scale of communities have become larger. Generally, one square mile can reveal the level of walkability of a community, as a square mile with more destinations, places and streets allow for easy, more convenient walking. The following factors define the scale in Arnold:

- ?? Arnold has 78 intersections, compared to Truckee which has 71 intersections
- ?? Arnold has low density as the Big Trees Market is the only development identified within a one square mile of Arnold

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ROADWAY NETWORK

Roadway networks determine how a community will live, work and play. The following help to define the roadway network of Arnold:

- ?? SR-4 is the major transportation route through Arnold
- ?? Roadway deficiencies along SR-4 are contributed to limited capacity, narrow lanes, lack of shoulders, parking along the roadway, and vertical and horizontal road alignments that do not meet roadway standards
- ?? Residential streets in Arnold have no sidewalks and are typically narrow which limits site distance

PARKING

Two shopping centers have an abundance of parking in a concentrated location; however, a majority of the remaining parking situation is limited.

- ?? Limited and inadequate parking is available in “downtown” Arnold along SR-4
- ?? No designated parking along SR-4

TRAVEL TO WORK

Arnold is automobile dependent. Therefore, the following describes Arnold’s mobility to work:

- ?? A majority of Arnold residents commute to work, alone in an automobile
- ?? A small percentage of Arnold residents commute by bicycle, walking, or using public transit

SEGMENT LEVEL OF SERVICE AND TRAFFIC VOLUMES

Street segment level-of-service and traffic volumes describe the traffic conditions in Arnold. They are as follows:

- ?? 15 street segments were analyzed for their level-of-service and all segments perform at level-of-service “C” or better
- ?? Arnold has more traffic during winter months due to the numerous recreational activities available

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TRAFFIC CALMING AND TRAFFIC MANAGEMENT

Traffic calming devices are implemented to reduce vehicle speeds and improve safety, while traffic management devices change motor's behavior. The following describe the devices in Arnold:

?? Arnold has limited traffic calming devices

?? Arnold has limited traffic management devices

BICYCLE AND PEDESTRIAN VOLUMES

Participating in walking or bicycling is limited in Arnold. The following describe the levels of pedestrian and bicycle activity in Arnold:

?? Residents of Arnold do not bicycle or walk to their place of employment due to unsafe conditions along SR-4

?? Peak visitor months at Big Trees State Park is mid-June through mid-August, which brings the highest volume of bicyclists and pedestrians

?? Bicycling and walking take place during peak months as weather permits

BICYCLE FACILITIES

Bicycle facilities provide residents and tourists alike to participate in recreational activities and alternative modes to travel. The following describe the existing bicycle facilities in Arnold:

?? Arnold consists of few bicycle facilities which limits resident's ability to participate in recreational activities and alternative forms of transportation.

?? Biking is considered unsafe for bikers due to the current roadway conditions

?? Arnold has two existing bicycle pathways

PEDESTRIAN FACILITIES

Pedestrian facilities allow encourage people to become less dependent on their personal automobiles by providing them with a safe route to travel. The following pedestrian characteristics can be found in Arnold:

?? Residents of Arnold tend to drive personal vehicles from one destination to the next instead of choosing to walk

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- ?? Pedestrians feel unsafe when walking along SR-4 due to high speed traffic and narrow shoulder
- ?? There is a lack of uniform standards for sidewalks throughout Arnold
- ?? Parking lots in front of the businesses along SR-4 have undefined entrances and exits

TRANSIT SERVICE

Arnold has public transportation as an alternative to driving a personal automobile. The transit service has the following characteristics:

- ?? Calaveras Transit serves Arnold's public transportation needs
- ?? Calaveras Transit, Route 4, serves Arnold
- ?? Arnold has two (2) bus stops located at Big Trees Market and the Post Office

ACCESS TO LOCAL SCHOOLS

Arnold has several schools which serve the students of Arnold. Students have several options of transportation modes, they are the following:

- ?? The school district provides buses to transport students living in Arnold to and from school
- ?? A majority of students living in Arnold arrive/depart school by personal automobiles

Specific topics of discussion for the public participation will need to be developed through input from the Steering Committee. In meeting the goals of the ARLCBMP, it will be important to focus the discussion on identifying current issues in the community and offering a range of solutions and implementation strategies to get recommendations of this effort built related to improving the mobility for residents of Arnold.

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List of Acronyms

AB 32	California Assembly Bill 32: Global Warming Solutions Act
ADT	Average Daily Traffic
ARB	Air Resources Board
ARLCBMP	Arnold Rural Livable Community Based Mobility Plan
ASL	Above Sea Level
BMP	Bicycle Master Plan
Caltrans	California Department of Transportation
CCAPCD	Calaveras County Air Pollution Control District
CCOG	Calaveras Council of Governments
CCPWD	Calaveras County Public Works Department
CEQA	California Environmental Quality Act
CIP	Capital Improvement Project
CNDD	California Natural Diversity Database
CTC	California Transportation Commission
GIS	Geographic Information System
LOS	Level of Service
OD	Origin/Destinations
PMP	Pedestrian Master Plan

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List of Acronyms

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PS&E	Plans, Specifications, and Estimates
ROW	Right-of-Way
RTP	Regional Transportation Plan
RTPA	Regional Transportation Planning Agency
RWQCB	Regional Water Quality Control Board
SC	Steering Committee
SIP	State Implementation Plan
SR-4	State Route 4
USFS	United States Forest Service
USGS	United States Geological Survey
V/C	Volume to Capacity Ratios
VHD	Vehicle Hours of Delay
VMT	Vehicle Miles Traveled



1.0 Introduction and Background

1.1 OVERVIEW

In 2006, the Calaveras Council of Governments (CCOG) received an \$80,000 Planning Grant from the California Department of Transportation (Caltrans). CCOG hired Stantec to provide planning, and engineering services in support of preparing the ARLCBMP. This will be developed to encourage increased pedestrian and bicycle travel, understand and analyze the benefits of in-fill development and compact land use design as it relates to transportation infrastructure.

The Calaveras County Board of Supervisors adopted the *Arnold Community Plan* on December 14, 1998 with the purpose of guiding development in Arnold in a manner that was consistent with the stated goals of the community. The ARLCBMP is a “complement” of the *Arnold Community Plan*. The ARLCBMP will provide the needed vision of Arnold’s main street (SR-4), pathways, and sidewalks that will enable private property owners, and public agencies alike to make appropriate streetscape improvements in a more predictable, coordinated and fiscally sensible manner.

The ARLCBMP will be founded on the vision set forth in the adopted *Arnold Community Plan* of encouraging infill development, sense of place, and a small town atmosphere. A large part of achieving this vision depends on improving the public spaces and paths: *the streetscape*. The ARLCBMP will create a master plan of improvements for State Route 4 (SR-4), which functions as Arnold’s main street, through excellent design and an understanding of the unique nature and character of Arnold. The ARLCBMP will also integrate all modes of transportation into a balanced system of streets, pathways, and sidewalks. The ARLCBMP strives to enhance the livability, safety, accessibility, and aesthetics of the public realm, prioritizing first the pedestrian experience, thereby enhancing and encouraging walking, biking, and using transit.

Technical Memorandum No. 1 – Existing Conditions will become part of the Final ARLCBMP and consists of:

- ?? Developing an analysis methodology or process;
- ?? Identifying sources of information to facilitate the analysis, conducting a gap analysis to determine what information was not available; and
- ?? Generating preliminary spatial analyses through mapping.

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This Technical Memorandum No. 1 – Existing Conditions (Memorandum), provides a catalog and description of the features and resources of the Arnold Planning Area and the SR-4 corridor. The basic idea behind the Memorandum is that one must know what exists in an area before one can formulate planning alternatives for it. Among the features called for in this section are Socio-Economic Characteristics, Land Use, Arnold Destinations, Topography Ordering and Community Structure, Scale, Roadway Network, Street Network, Travel to Work, Segment Level-of-Service and Traffic Volumes, Traffic Calming and Traffic Management, Bicycle and Pedestrian Volumes, Bicycle Facilities, Pedestrian Facilities, Transit Service, and Access to School.

The Memorandum represents a combination of the Project Initiation by Stantec Consultants, Data Collection, and a Steering Committee Meeting where input was given concerning the existing transportation conditions and characteristics of Arnold. The next phase of the project is Evaluating the Existing Conditions and Identifying Transportation Gaps and the Potential Solutions to those Gaps. CCOG will conduct a Community Workshop to be held in Arnold during the month of August 2007. Existing Conditions outlined in the Memorandum will be presented to the public to facilitate a workshop to identify transportation gaps and potential solutions.

The ARLCBMP study area is located along SR-4 in Arnold. SR-4 traverses the entire community acting as the “main street” for Arnold. The study area begins at the Intersection of Rancho Paradiso Road and SR-4 on the southern limits of Arnold and runs to the northern end near Upper Moran Road (See Figure 1: Project Vicinity/Location Map and Figure 2: Project Study Area).



2.0 Existing Conditions

2.1 SOCIO-ECONOMIC CHARACTERISTICS

2.1.1 Population

Arnold is not anticipated to have a significant increase in population in accordance to California Department of Finance population projections. The 2000 U.S. Census was used for the analysis of Technical Memorandum - 1. According to the 2000 Census, the population of Arnold is 4,218. This represents approximately 10% of the total 40,554 people living in Calaveras County. The Housing Element of the *Calaveras County General Plan*, adopted December 9, 1996, Arnold is reported as having the highest percentage of population concentrated within a defined community in the unincorporated portion of the County. Overall, Arnold's population is an "older" community, with 36.6% of the population being 45 to 64 years of age, and 20.9% being 65 years of age or older. The median age was reported as 50 years old.

2.1.2 Ethnicity and Language

Based on the 2000 Census, 95% of the population identified themselves as white. English is the most prevalent language spoken in Arnold. It was also reported that 3.34% of the population identified themselves as Hispanic or Latino within Arnold. Other races within Arnold consist of less than one percent each. Other races include: 0.24% black or African American, 0.95% as Native American, 0.50% as Asian, 0.12% as Pacific Islander, 0.71% as "other races", and 2.37% are of two or more races.

2.1.3 Disability Profile

The 2000 Census defines a disability as a physical or mental condition that substantially limits one or more major life activities. Physical disabilities reduce mobility and require design considerations for public access.

The 2000 Census defines six types of disabilities: sensory, physical, mental, self-care, go-outside-home, and employment. Sensory and physical disabilities are defined as "long-lasting conditions." Mental, self-care, go-outside-home, and employment disabilities are defined as conditions lasting six months or more that make it difficult to perform certain activities. A more detailed description of each disability is provided below:

?? Sensory Disability: Refers to blindness, deafness, or severe vision or hearing impairment.

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- ?? Physical disability: Refers to a condition that substantially limits one or more basic physical activities, such as walking, climbing stairs, reaching, lifting or carrying.
- ?? Mental Disability: Refers to a mental condition lasting more than six months that impairs learning, remembering, or concentrating.
- ?? Self-care Disability: Refers to a condition that restricts the ability to dress, bathe, or get around inside the home.
- ?? Go-outside-home: Refers to a condition that restricts the ability to go outside the home along to shop or visit a doctor's office.
- ?? Employment Disability: Refers to a condition that restricts ability to work at a job or business.

Table 1: Disability Profile, presents of the disability status of the population of Arnold in relationship to Calaveras County as a whole. The highest percentage of a disabled population is found within the 16 to 64 year old age group. As shown in Table 1, 11% of the population in Arnold has a disability. This percentage is low when compared to Calaveras County as a whole, which has 54% of the population having a disability.

Table 1: Disability Profile				
Disability by Age and Type	Arnold		Calaveras County	
	Total	%	Total	%
Population 5 to 15 years	558	100%	6,243	100%
With a Disability	32	6%	323	5%
Population 16 to 64 years	2,716	100%	24,989	100%
With a Disability	306	11%	13,459	54%
Going outside the Home	11	0.4%	203	0.8%
Employment disability	117	4%	1,154	5%
Population 65 years and over	788	100%	7,244	100%
With a Disability	93	12%	1,218	17%
Source: US Census Bureau, 2000				

2.1.4 Employment

According to a memorandum titled *FINAL Calaveras County Land Use Assumptions*, prepared by Pacific Municipal Consultants dated September 8, 2006, there is a lack of available information regarding employment in Arnold. However, the *Calaveras County General Plan* Housing Element states that Arnold has 1,329 residents that live in Arnold and work within Calaveras County. In addition, 408 residents live in Arnold, and work outside of Calaveras County. Arnold represents 23.5% of the total working force in Calaveras County that works outside the County.

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According to the *Calaveras County General Plan* Housing Element, 59.1% of the 15,779 individuals living in Calaveras County work within Calaveras County, and 40.9% of county residents work outside the County. It was also reported that 84 individuals within Calaveras County are employed outside the State, but reside in the County; 31 of these 84 individuals live in Arnold.

2.1.5 Income

The residents of Arnold have a higher average household income and lower poverty levels compared to Calaveras County. The median household income in 1999 was estimated at \$42,785, compared to Calaveras County having a median household income of \$41,022. In addition, 11.9% of the population in Arnold is below poverty level.

2.1.6 Household Tenure and Costs

As shown in Table 2: Household Tenure, the number of residents in Arnold who own their own home is greater than that compared to Calaveras County as a whole. Table 2 shows that residents of Arnold are less likely to rent compared to Calaveras County.

Table 2: Household Tenure				
	Arnold Total	%	Calaveras County Total	%
Total Population in Occupied Housing Units	4,218	100%	40,129	100%
Owner Occupied	3,405	81%	31,354	78%
Renter Occupied	813	19%	8,775	22%
Source: US Census Bureau, 2000				

Tourism is a major contributor to the economy of Arnold, and it is important to determine the number of seasonal use homes within the area. The U.S. 2000 Census tracks the number of vacant homes that are seasonally occupied. On a Countywide level, the 2000 Census indicated there were 22,946 housing units within the County in 2000. Of these, 6,477 housing units (28%) were estimated to be occupied seasonally. According to the *Calaveras County Housing Element*, the County's high vacancy rate is attributed to the high number of second homes and recreational houses in the high elevations of the unincorporated county adjacent to the County's lakes and winter sports areas and in lower elevations where seasonal residences are located adjacent to the County's golf course communities. The US Census reports that Arnold has 2,592 vacant housing units. Of these vacant units, 2,455 houses (94%) are for seasonal, recreational, or occasional use.

2.2 LAND USE

The *Calaveras County General Plan* has the primary jurisdiction over land use and other regulatory decisions for Arnold. Adopted by the County Board of Supervisors, the *Calaveras*

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County General Plan is the primary planning document for the County which consists of goals and policies for how land uses will be utilized (see Figure 3: Calaveras County General Plan Land Use). The *Calaveras County General Plan* requires communities within the County to develop, community plans that are specific to fulfilling the unique needs of each community. The *Arnold Community Plan* is the chief planning document for the ARLCBMP. This Plan will guide the ARLCBMP through established land use goals and zoning classifications (see Figure 4: Arnold Community Plan Land Use and Figure 5: Arnold Community Plan Zoning Classification Map).

State Route 4 (SR-4) has minimal setbacks between buildings and the right-of-way. The lack of setbacks reduces opportunities for off-street parking within the SR-4 corridor. Setbacks for buildings are not uniform within the corridor, with some buildings being located on the right-of-way, while others have more than a 50 foot setback.

Arnold is characterized as a rural area that consists of mostly older service-commercial, light industrial, retail sales, and residential areas. The various land use types are at low densities and spread over a large area. Mixed land uses have been discouraged by the zoning code and County General Plan. The highest concentration of commercial land use is located on the northern end of Arnold. The southern end of Arnold is anchored by highway commercial land uses, typified by “strip commercial” development.

There are several vacant parcels that are underutilized along the SR 4 corridor, (see Figure 6: State Route 4 Public Parcel Ownership). At the Steering Committee Kickoff Meeting, on May 2, 2007, it was stated that all vacant parcels along SR-4 are privately owned, except for one public parcel, with APN 260-0103-1, located along Dunbar Road. Although, a majority of the land along the corridor is privately owned, the vacant parcels create an opportunity for future infill development. Infill development addresses traffic issues by creating communities where people live closer to their work and schools, and where biking, walking, and transit can substitute for automobile travel. With the potential for future in-fill development along SR-4, Arnold would have the opportunity to create a village center where residents and tourists would want to congregate. According to the *Arnold Community Plan*, adopted December 14, 1998, it is the overall desire of the Arnold Community to retain the rural and small town atmosphere, while accommodating future growth and a “Village Center.”

2.3 DESTINATIONS

The Steering Committee (SC) members have identified several destinations that residents frequent. Travel destinations include trips to/from their homes, Big Trees Market, the post office, the library, preschools, elementary schools, churches, Big Trees State Park, White Pines Lake, EPNSB, Avery Middle School (recreational facilities), trail heads for hiking and biking, the Sierra Nevada Logging Museum that also consists of a baseball field, an amphitheater, and a park, and shopping areas throughout the community. The SC noted that these destinations, along with others, are fragmented along SR-4. Therefore, residents use personal vehicles to travel from one destination to the next due to the land use patterns that have been established

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along SR-4. The SC also stated that because SR-4 does not have a wide shoulder, designated walking or bicycle paths along the highway, they concluded that cars are the safest way to travel around Arnold. See Figure 7: Arnold Destinations.

2.3.1 Ebbetts Pass

Ebbetts Pass, a National Scenic Byway, begins at the eastern portion of Arnold where it travels through the High Sierras until it reaches its terminus at State Route 89, ten miles west of the California-Nevada border in Alpine Valley. A National Scenic Byway is a road recognized by the United States Department of Transportation for its archeological, cultural, historical, natural, recreational, and/or scenic qualities. The program was established by Congress in 1991 to preserve and protect the nation's scenic, but often less traveled, roads in order to promote tourism and economic development. The Ebbetts Pass Scenic Byway was designated as a National Scenic Byway on September 22, 2005. Ebbetts Pass is one of only seven National Scenic Byways in the State of California. As the Byway climbs through the High Sierras, it is closed between the months of November through late May due to heavy snowfall. The Byway's travel distance is approximately 60 miles, and takes about two hours to drive.

2.4 TOPOGRAPHY

In general, SR-4 corridor, topography is relatively flat/level with an average slope of approximately two percent. The SR-4 corridor follows a narrow mountain gap which sets between two ridge lines at elevations of over 4,300 feet above sea level (asl) with the bottom of the gap ranging in elevation of 3,750 feet asl on the south end and 3,880 feet asl on the northern end. The width of the mountain gap throughout Arnold ranges from approximately one mile to ¼ mile wide. The sides of the gap rise at a rapid rate resulting in some steep slopes that are not suitable for development.

The street and block patterns of Arnold clearly reflect topography. Intersections are not uniform due to the streets being laid out on the contours of the mountain sides with many dead end cul-de-sac streets. SR-4 occupies the bottom of the gap and all other community streets connect into SR-4 like branches to a tree trunk. The topography prevented the traditional grid pattern of streets found in many towns in valleys. See Figure 8: Arnold Street Patterns.

2.5 WINTER WEATHER CONDITIONS

Arnold is located at the foot of the Sierra Nevada Mountain range. Because of its elevation, the community experiences snow during the winter months creating many obstacles for residents and tourists alike. Winter weather generally ranges from 14 degrees Fahrenheit to 50 degrees Fahrenheit. The coldest month out of the year is typically December. Snow can be found on the ground during the months of November through March. During the months of December through February ice can also be found on the road due to the extremely low temperatures. In

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addition, snow can often be found on the ground during the spring months, like April and May, at the Big Trees State Park and other areas with high elevation.

2.6 WINTER ROAD CONDITIONS

The Calaveras County Public Works Department has stated that each winter, snow conditions present many challenges for the Community such as limited areas to store snow plowed from the road and icy road conditions. When snow falls in Arnold, the Public Works Department uses snow plows to clear the SR 4 corridor. When the snow is plowed from the corridor, it gets pushed to the side of the road, creating piles of snow adjacent to the travel lanes. Currently, there is not adequate space for storage. Therefore, the snow adjacent to the road increases in height each time the road is plowed. In addition, Arnold experiences hazardous icy conditions along the corridor. Due to the mountainous topography, the ice creates hazards within the community by making it difficult to stop vehicles traveling downhill, putting both drivers and pedestrians in danger.

2.7 ORDERING AND COMMUNITY STRUCTURE

Individual streets can be wider, straighter, longer, or more focused than other streets, and as such can help give a sense of orientation to users. Patterns themselves, by their nature, design or juxtapositions one to another, can do the same thing. SR-4 running through Arnold provides the most powerful ordering, structuring streets of their areas and, taken together, of the community itself. SR-4, so much wider, longer and more gentle than any other street, is Arnold's orienting structural spine, and this will remain regardless of what buildings or land uses line its path.

The residential street network of Arnold was developed based on the existing topography and as a result is nonlinear and somewhat inefficient for various modes of transportation. Many streets in Arnold end in cul-de-sacs or have no outlet. This tendency makes it difficult for those residents that choose to utilize forms of transportation other than their personal automobile to navigate through the community. Having a network of cul-de-sacs, and roads with no outlet, limits connectivity for alternative transportation modes and forces automobiles, bicyclists, and pedestrians to drive further distances in order to get from point A to point B. In comparison, the "grid system" provides for better connectivity and shorter distances between point A and B for both alternative forms of transportation and the automobile alike.

2.8 STREET DEFINITION

It is imperative that when identifying the existing conditions of a streetscape, one is able to recognize all qualities which make up the street, not just one or two elements. Streets have definition. It is what creates the unique, special character of that place. They have boundaries that communicate clearly where the edges of the street are, that set the street apart, that keep the eyes engaged in where they are, and which ultimately makes it a place. Generally, streets are defined in two ways: vertically, which refers to the height of buildings or trees along the

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street; and horizontally, which has most to do with the length of and space between whatever is doing the defining. Typically, the wider a street is the more mass or height it takes to define the space. Distances are often key indicators of space. The human scale is the comfortable distance in which one can recognize a person, while intimate human scale is the distance at which facial expressions can be perceived. Streets are more defined when designed more favorably within these scales.

2.8.1 Street Boundaries

SR-4 does not have clear street boundaries due to several factors:

- ?? The number of travel lane varies throughout the corridor
- ?? At times the right-of-way transitions from a roadway right into a shoulder/ditch.
- ?? In several instances, buildings and parking are adjacent to the SR-4 corridor, leaving no setbacks, and provide little space for a pedestrian or bicyclist.
- ?? Vegetation and trees are inconsistent along SR-4 as they are set back and have varying densities.
- ?? There is no clear definition distinguished between the pedestrian and bicycle boundary and the boundary designated for the automobile.

2.8.2 Vertical Street Definition and Horizontal Street Definition

The SR-4 right-of-way has varying geometries throughout Arnold. At times, the road is a two lane road, and at others, a turning lane is provided. As the width of the roadway increases, it becomes difficult to identify activities and people on the opposite side of the street. Also, trees and other vegetation along the corridor are cut back, reducing the horizontal perception, and therefore creating the sense of a massive streetscape designed primarily for the automobile. Figure 9: Human Scale and Intimate Human Scale illustrates a typical roadway scale in Arnold.

2.8.3 Street Angles

Streets also provide definition when height to horizontal distance ratios are at least 1:4, when the pedestrian is looking at a 30-degree angle to the right or left of the direction of the street. When walking along a street, as a person turns their head to the left at a 30-degree angle to look across the street, a comfortable, unforced movement, if the building height across the street where your vision intersects with it is one-fourth of the horizontal distance to that point, then it is likely that you will sense that the street is defined. At height to distance ratios of 1:3 there always seems to be definition, and at 1:2 street definition is strong.

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As shown in Figure 10: Arnold Angle Scale, Arnold is not designed with a 1:4 ratio. As discussed above, the SR-4 has varying distances. According to the street angle theory, when the distance of the right-of-way increases, the height of the buildings or vegetation should also increase. However, this is not the case in Arnold. Instead, as the right-of-way increases, development along the corridor remains at a single story with various distances of setbacks for buildings. This increase also increases the angle at which the pedestrian would have to turn, creating an uncomfortable atmosphere. If the ratio is not met, a sense of place is not established within a community and pedestrians and bicyclists will not feel they are safe to travel along the roadway.

Great street definition is like an old family recipe, each ingredient must be accounted for or it does not come out right. It is the topography, vegetation, height of the buildings, width of the buildings, and width of the streetscape that all define the street. See Appendix B: CD Fly Through for a detailed virtual look at the SR-4 corridor. The CD encompasses vegetation along the corridor, building placement and height, and the width of SR-4. By identifying what elements create the existing street definition of SR-4, we can then recognize what elements can improve to further define the area.

2.9 SCALE: COMPLEXITY AND TIME-DISTANCE

Differences in the scale of street and block patterns, particularly between older and new communities, stand out. The scale of older communities are generally much smaller and finer than that of newer communities. With time and the advent of the automobile, the scale of blocks and of street patterns has become larger, and covered a greater distance from the center of the community. Over time the patterns of community have become less complicated. The newer developments are almost always simpler, more regular, and much larger scaled due to the automobile.

The amount of development found in a square mile of land area containing distances of which we might have some idea, can tell us something about how easy or difficult it is to get from one place to another and about an area's walkability. A substantial portion of Park City, Utah, can be found in one square mile. Many of the ski resorts, restaurants, hardware store, grocery stores, drug stores, professional services, theaters, hotels, and residential areas can be found within that square mile. To know a square mile of Park City, Utah is to know most of that city. In Arnold, Cedar Center or the Big Trees Market shopping center is the only development within a one square mile, with very limited variety of activities and land uses.

A consequence of the various scales of communities and of how much is in a limited area is the amount that can be experienced intimately, on foot, in one compared to another. The square miles with more activities and services in them seem also to have more streets in them, a greater variety of places for people to be, though not necessarily a greater surface area taken up by streets.

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The more compact the scale is and the larger number of intersections per square miles typically create a more walkable community. Arnold is within the range of intersections per square mile as compared to other mountain communities that are pedestrian friendly and variety of activities within their central core areas (Park City has 77 intersections per square mile, Truckee has 71, and Arnold has 78). The Arnold community does not have uniform blocks which make walking predictable and comfortable. Table 3: Arnold Intersections on SR-4 (Arnold “Main Street”) identifies the random distances between intersections on SR-4.

Table 3: Arnold Intersections on SR-4 (Arnold “Main Street”)

Intersections	Distance to Next Intersection in Feet	Time Walking Between Intersection in Minutes
Rancho Paradiso - McKenzie	1,556	5:54
McKenzie – Ponderosa	1,367	5:28
Ponderosa – McKenzie	1,692	6:24
McKenzie – Shirewood	60	0:13
Shirewood – Cherylyn	1,015	3:50
Cherylyn – Valley View	154	0:58
Valley View – Lakemont	66	0:25
Lakemont – Cedar	321	1:12
Cedar – Meadowview	609	2:18
Meadowview – Cedar	82	0:19
Cedar – Fir	291	1:06
Fir – Cedar	134	0:30
Cedar – Country Club	1,165	4:25
Country Club – Unnamed	2,688	10:11
Unnamed – Meadowview	844	3:11
Meadowview – Oak	3,320	12:34
Oak – Oak	433	1:38
Oak – Willow	848	3:13
Willow – Manuel	420	1:36
Manuel – Blagen	747	2:49
Blagen – Henry	451	1:42

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Henry – Unnamed	723	2:49
Unnamed – Arnold	446	1:41
Arnold – Arnold	2,742	10:23
Arnold – Moran	2,188	8:17

When comparing the street pattern of Arnold with Park City or Truckee which are creating walkable central villages it appears Arnold can achieve the same successes. See Figure 11: Park City, UT Walkability Pattern, and Figure 12: Truckee Walkability Pattern. These figures provide a common scale base for comparison and design.

2.10 ROADWAY NETWORK

According to the *Arnold Community Plan*, SR-4 is, and will continue to be, the major transportation route through Arnold. Current roadway deficiencies along SR-4 are due to the limited roadway capacity caused by restricted passing areas, narrow lanes, lack of road shoulders, and the vertical and horizontal road alignments that do not meet current roadway standards. SR-4, as it traverses Arnold, has the following physical characteristics:

- ?? 2 lane highway traveling in the eastbound and westbound direction
- ?? Travel lanes have widths of 12 feet
- ?? The roadway median consists of a single traffic stripe and has no barrier between the east and west traveling lanes
- ?? SR-4 is an asphalt roadway
- ?? The right-of-way (ROW) varies between approximately 50 feet and 90 feet
- ?? The cross slope of the roadway is generally 2% with shoulders/ditches at 5% or greater
- ?? SR-4 traverses through Arnold beginning at post mile (PM) 39.33 and ending at the Big Trees State Park at PM 44.5

When entering Arnold, from the east at PM 39.3, SR-4 consists of two-lanes, a turning lane, and one travel lane in the westbound direction. The topography is flat and slightly curves as it meanders through Arnold. At PM 39.6, the eastbound travel lane merges from two travel lanes to one travel lane. In addition, at PM 39.8, the turning lane reduces into a double striped line and both the east and west travel lane consist of one lane. At PM 39.97, a left turning lane is provided to make a left hand turns. Also, from the west, there is a right turning lane for drivers to make a right hand turn. From PM 40, a turning pocket emerges and continues for less than a

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quarter mile where it then becomes a double striped line. At PM 41, the elevation begins to slowly increase as it climbs up to the east. Along this PM, development is more abundant and the driver can identify that they are in “downtown” Arnold. Here, the shoulder of the roadway does not have a line identifying the boundary of the ROW. At PM 41.31, a left turn lane emerges, and then continues as a turning pocket until PM 41.57. Here, SR-4 continues as a two lane road, climbing in elevation. At 41.77 SR-4 reaches the “Arnold Byway” and the driver is no longer in “downtown” Arnold. It is at this location that ROW increases and the eastbound travel lane becomes, once again, a two-lane road allowing the opportunity for vehicles to pass.

2.11 PARKING

According to the Steering Committee members at the May 2, 2007 kickoff meeting, parking in Arnold is limited. In Arnold, there are only two large plazas where an abundant amount of parking spaces are located within a condensed area; the Big Trees Market Shopping Center and the Cedar Center. Throughout Arnold, on the eastern portion, there are several small shopping plazas that provide parking spaces for their customers; however, there are limited spaces. In the downtown portion of Arnold, parking is scarce and considered sporadic. Some businesses abut SR-4, leaving no room for a set back, while others have a small parking lot that spans the length of the building and does not provide designated spaces. It is also common to find cars parallel parked along the east and westbound travel lane of SR-4. The Steering Committee members stated that parking is so limited vehicles will utilize any available space along SR-4 as a parking space.

2.12 TRAVEL TO WORK

When gathering data, the US Census asked those who use different modes of transportation on different days of the week to specify which mode they used most often when traveling to work. Those who used more than one mode of transportation to get to work each day were asked to report which form of transportation they used the longest distance during the work trip. Thus, the following information does not include workers who have commutes involving more than one method, such as walking or bicycling to meet a carpool or catch a bus.

Table 4: Travel Modes to Work, below, describes the similarities of traveling to the workplace between Arnold residents and Calaveras County as a whole. As shown in Table 4, Arnold has a high percentage (72.6%) of workers that drive to work alone, which was found to be very similar when compared to Calaveras County (73.6%). Living in Arnold often creates obstacles when trying to utilize alternative modes of transportation as winter weather conditions create challenges when trying to walk, bicycle, or wait for public transportation. Compared to Calaveras County as a whole, Arnold has a higher percentage of people who ride their bicycles (1.1%) and take public transportation (1.1%) to work. Although walking is generally the simplest form of transportation, the residents in Calaveras County do not utilize this mode to travel to work, as walking accounts for only 2.7%; Arnold accounts for only 2.2%. The low percentage of

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walkers in Arnold, and the County as a whole, may be linked to the lack of pedestrian facilities, which leave the pedestrians feeling vulnerable and unsafe.

Table 4: Travel Modes to Work

	Arnold		Calaveras County	
	Total	%	Total	%
Workers 16 years and over	1,768	100%	15,863	100%
Car, Truck, Van -- Drive Alone	1,284	72.6%	11,718	73.9%
Car, Truck, Van -- Carpooled	273	15.4%	2,408	15.2%
Public Transportation	19	1.1%	42	0.3%
Walked	39	2.2%	422	2.7%
Bicycle	20	1.1%	51	0.3%
Other means	20	1.1%	102	0.6%
Worked at Home	113	6.4%	1,103	7.0%

Source: U.S. Census Bureau, 2000.

Travel time to work refers to the total number of minutes, at average, it takes an individual to get from home to work each day. A commute includes time spent waiting for public transportation, picking up passengers in carpools, and time spent in other activities related to getting to work, such as being stuck in traffic or time spent stopped at an intersection. According to US Census, approximately 70% of Arnold has a commute of at least 30 minutes (less than 10 minutes to 29 minutes). Arnold commuters have a median commute time of 26.5 minutes. In comparison, approximately 65% of the residents in Calaveras County have a commute ranging from 10 minutes to 59 minutes. Table 5, Travel Time to Work, below compares the time spent traveling to the workplace by residents of Arnold with Calaveras County as a whole.

Table 5: Travel Time to Work

	Arnold		Calaveras County	
	Total	%	Total	%
Workers 16 years and over who do not work at home				
Less than 10 minutes	529	32.0%	2,878	19.5%
10 to 29 minutes	604	36.5%	4,564	30.9%
30 to 59 minutes	389	23.5%	4,848	32.8%
60 or more minutes	133	8%	2,470	16.7%

Source: US Census Bureau, 2000

2.13 SEGMENT LEVEL-OF-SERVICE AND TRAFFIC VOLUMES

Information regarding roadway operations in Arnold is available from various sources including the CCOG and the Calaveras County Development Agency. The data received from the Calaveras County Public Works Department allowed for segment level-of-service to be determined. This data, presented in Table 6 and 7 below, includes descriptions of traffic conditions by volume, Class of street segments, volume to capacity ratios (V/C), and level-of-service (LOS) along SR-4. The average daily traffic (ADT) volumes are the count of vehicles using a roadway during a 24-hour period. LOS is a standard method of describing operating

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conditions based on a comparison of street or intersection volumes to the theoretical capacity of the facility. The six Levels-of-Service, 'A' through 'F', describe conditions from best to worst, respectively, and is calculated for both AM and PM peak travel periods. Factors used by Caltrans in establishing concept LOS for a route are terrain, surrounding land use, travel characteristics, relative importance of the route, relationship to other routes, urban and rural characteristics, functional classification, importance to the economy, the public's perceived needs, safety, and cost of improvement. Another measure of roadway operation used in the following tables is delay. Existing conditions include the count of actual traffic on the roadway segments or in intersections when the counts were conducted.

Table 6: Eastbound Level-of-Service

Street Segment	Class	Lane ^[3]	Cap	AM			PM		
				Vol. ^[1]	V/C	LOS ^[2]	Vol.	V/C	LOS
Pine Drive	III	1	850	52	0.061	A	32	0.037	A
Lilac Drive	III	1	850	4	0.005	A	16	0.019	A
Manuel Dr. (North)	III	1	850	68	0.080	A	37	0.044	A
Manuel Dr. (South)	III	1	850	15	0.017	A	36	0.042	A
Dunbar Road	III	1	850	96	0.113	A	48	0.057	A
Blagen Road	III	1	850	242	0.258	B	155	0.183	B
Arnold Byway (East)	II	1	890	1	0.001	A	4	0.004	A
Arnold Byway (West)	II	1	890	4	0.005	A	13	0.014	A
Moran Rd. (East)	II	1	890	84	0.095	A	161	0.181	A
Patricia Lane	III	1	850	13	0.015	A	7	0.008	A
Flanders Drive	III	1	850	9	0.010	A	40	0.047	A
Country Club Dr.	III	1	850	201	0.236	B	112	0.131	A
Meadowmont Way	III	1	850	39	0.046	A	62	0.073	A
Lakemont Drive	III	1	850	15	0.018	A	55	0.065	A
Moran Road (West)	II	1	890	22	0.025	A	60	0.068	A

Note:
 [1] Volumes are from the Table One-way Traffic Counts
 [2] LOS was determined by comparing the volumes to the Expanded HCM 10-7: Example Service Volumes for Urban Streets, see Attachment A: Roadway Segment Counts.
 [3] Street classes were assumed based on street functions and locations.

Table 7: Westbound Level-of-Service

Street Segment	Class	Lane ^[3]	Cap	AM			PM		
				Vol. ^[1]	V/C	LOS ^[2]	Vol.	V/C	LOS
Pine Drive	III	1	850	17	0.020	A	54	0.064	A
Lilac Drive	III	1	850	13	0.015	A	10	0.011	A
Manuel Dr. (North)	III	1	850	23	0.027	A	63	0.074	A
Manuel Dr. (South)	III	1	850	44	0.052	A	21	0.025	A
Dunbar Road	III	1	850	32	0.038	A	82	0.096	A
Blagen Road	III	1	850	81	0.095	A	265	0.311	B
Arnold Byway (East)	II	1	890	4	0.004	A	2	0.002	A
Arnold Byway (West)	II	1	890	13	0.014	A	7	0.008	A
Moran Rd. (East)	II	1	890	127	0.142	A	94	0.106	A
Patricia Lane	III	1	850	4	0.005	A	11	0.013	A

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Flanders Drive	III	1	850	26	0.031	A	24	0.028	A
Country Club Dr.	III	1	850	145	0.171	A	190	0.224	B
Meadowmont Way	III	1	850	61	0.072	A	58	0.068	A
Lakemont Drive	III	1	850	60	0.071	A	39	0.045	A
Moran Road (West)	II	1	890	34	0.038	A	36	0.040	A

Note:
[1] Volumes are from the Table One-way Traffic Counts
[2] LOS was determined by comparing the volumes to the Expanded HCM 10-7: Example Service Volumes for Urban Streets, see Attachment A: Roadway Segment Counts.
[3] Street classes were assumed based on street functions and locations.

According to Table 6 and 7, of the Arnold Community LOS analysis, Arnold is currently averaging a LOS A, which is the optimal LOS based on the Highway Capacity Manual. Per Caltrans Standards, traffic counts must be conducted during fair weather conditions, Tuesday through Thursday, a non-holiday, and between the hours of approximately 10:00 am to 3:00 pm. However, these guidelines do not account for the seasonal traffic conditions. Arnold has historically been affected by heavier traffic flows that correlate to the local microclimate; in short, as the snow begins to fall, traffic increases. Due to the winter recreational activities, Arnold experiences a high volume of regional traffic along SR 4 as many travelers are trying to reach Bear Valley Ski Resort in the Alpine Valley. Therefore, LOS A designation from the traffic study conducted jointly by Stantec and Calaveras County Public Works Department does not accurately account for this seasonal increase in traffic.

2.14 TRAFFIC CALMING AND TRAFFIC MANAGEMENT

Traffic calming is a traffic management technique installed in order to reduce vehicle speeds, and improve safety. Traffic calming devices are intended to alter a motorist's behavior on a street or street network, while traffic management changes the traffic routes or the flows. Arnold does not have any traffic calming or traffic management devices along SR-4.

2.15 BICYCLE AND PEDESTRIAN VOLUMES

The bicycle and pedestrian volumes within Arnold are considered low as 1.1% of residents bike and 2.2% walk to work, according to the 2000 Census. This low percentage has most likely contributed to the lack of designated pedestrian or bicycle facilities along SR 4 and winter weather conditions. In addition, the Steering Committee members stated at the May 2, 2007 Kickoff Meeting that many Arnold residents chose not to walk or bike along SR-4 because they feel it is unsafe.

According to the Park Ranger at Big Trees State Park, the peak months to visit the State Park are from mid-June to mid-August as the weather tends to be optimal. It is during this time when the volume of walkers and bicyclists increase in Arnold. The park provides several walking and hiking trails and visitors do bring their bicycles for recreational use. As SR-4 does not have bicycle paths from the downtown portion of Arnold to the State Park many corners and turns can be dangerous for pedestrians and bicyclists as there are many blind spots. However, the Park

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has a paved fire road that bypasses the dangerous portions of SR-4. Therefore, pedestrian and bicyclists alike can take advantage of the safe route to travel.

2.16 BICYCLE FACILITIES

The existing Calaveras County bikeway network consists of an incomplete system of just over 4.1 miles of bikeways; including over 1 mile of Class I multi-use pathways, 0.12 miles of Class II bicycle lanes, and almost 3 miles of Class III signed bicycle routes. Calaveras County is primarily a rural county with few existing facilities for bicycling; however, there is a growing demand for safe recreational activities and transportation options. According to *Calaveras County Bicycle Master Plan Draft Final Plan*, the lack of facilities including pathways, wide road shoulders, safe routes, and bicycle parking is a key concern throughout the County. Located on SR 4, near the eastern end of the County, Arnold encompasses White Pines Lake Recreational area and many other outdoor recreation opportunities for bicycling. Arnold has a number of important local destinations such as Hazel Fischer School, the Big Trees Market and many businesses along SR 4 in downtown area. Arnold is a major destination for visitors traveling from outside the County, hoping to take advantage of the many seasonal recreational activities and vacation homes within the area. Currently, Arnold has two existing bicycle pathways as shown in Table 8: Existing Bicycle Facilities, below. These pathways contribute only 0.82 miles of the overall 4.1 mile county bicycle network.

Table 8: Existing Bicycle Facilities				
Bikeway Class	Segment Name	From	To	Distance (miles)
	Blagen Rd/Arnold Post Office Pathway	Arnold Post Office	Henry Street	0.04
III	Blagen Road Bike Route	SR 4	E Street	0.78

Source: *Calaveras County Bicycle Master Plan Draft*, Alta Planning and Design, April 2007.

Class I multi-use paths must meet specific width, clearance, curve radii, gradient, and other requirements, while Class II bike lanes and Class III bike routes must meet specific striping, signing, and other requirements. Off street paved paths do not necessarily need to meet Caltrans standards, and, therefore are not identified as Class I paths on maps or plans. Many rural roads in Calaveras County are narrow and winding, and some have high seasonal traffic volumes, shoulders of varying width, and some steep sections. Application of Caltrans bikeway designs in these areas may be difficult due to the limited right of way and the difficulty of construction.

The three types of bikeways, described by Caltrans in Chapter 1000 of the Highway Design Manual, are as follows (see Figure: 13 for an illustration of each bikeway):

- ?? Class I Bikeway - Typically called a bike path, provides for bicycle travel on a paved right-of-way completely separated from any street or highway. If a pathway is to be used primarily for recreation use and not with transportation funding, it may be constructed to reflect local conditions and needs.

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- ?? Class II Bikeway - Referred to as a bike lane, provides a striped and stenciled lane for one-way travel on a street or highway.
- ?? Class III Bikeway - Referred to as a bike route, provides for shared use with pedestrian or motor vehicle traffic and is identified only by signing.

Future bikeway improvement projects for Arnold are included in the discussion of the *Calaveras County Bicycle Master Plan Draft Final Plan* discussion below. In addition, the *Calaveras County Pedestrian Master Plan* identifies a future Class I pathway and a multi-use pathway, which are discussed in the *Pedestrian Facilities* section below.

2.17 PEDESTRIAN FACILITIES

CCOG is presently working with Alta Planning and Design on the *Calaveras County Pedestrian Master Plan*. Existing pedestrian facilities throughout Arnold are minimal at this time. The Steering Committee members stated at the May 2, 2007 kickoff meeting that the existing pedestrian facilities along SR-4, or lack thereof, leave pedestrians feeling unsafe and vulnerable to traffic due to high speed regional and local traffic and the narrow shoulders.

Since Arnold is developed along the SR-4 corridor, the commercial and industrial developments present do not have set back requirements, which make it difficult to provide uniform standards for sidewalks. This lack of standards has resulted in the unique development and placement of driveways and parking lot configurations. This type of design can create significant pedestrian and bicyclist safety hazards as a result of the unknown entrance and exit locations, allowing for cars to drive as they see fit. Due to these existing development obstacles, Arnold does not have sidewalks throughout its “downtown” area. Furthermore, Arnold has many large intersections throughout the corridor that do not have pedestrian crosswalks, creating additional pedestrian safety hazards.

The *Calaveras County Pedestrian Master Plan Draft* identifies two proposed Class I pathway segments for Arnold. One high priority project is the Sidepath along SR 4, from Blagen Road to Country Club Drive. This Class I pathway will be approximately 1.2 miles. The second Class I pathway is called a Multi-use pathway, starting at Henry Street and ending at Vallecito Day School. This pathway is estimated to be 0.6 miles.

2.18 TRANSIT SERVICE

Calaveras Transit is a regional transit service that operates throughout Calaveras County. It has five transit routes, with Route 4 serving Arnold. All routes operate Monday through Friday, except for specified Holidays. Route 4 has two bus stops in Arnold; one at the Arnold Post Office and the other at Big Trees Market. Routes in Arnold begin at 6:15 a.m. and continue until 10:30 p.m. All buses are able to accommodate the elderly and those with disabilities. Currently, the entire fleet of transit vehicles is equipped with one bike rack, each carrying a maximum of two bicycles at a time. Racks are usable at any time at no additional cost.

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According to the Calaveras Transit Monthly Operations Report, February 2007, Route 4 had 1,995 passenger trips in January 2007 and 1,911 passenger trips in February. Compared to the other routes, having passenger trips in ranging from approximately 100 to 160, Route 4 is the most used transit route in the County. According to the Calaveras Transit staff, ridership in May 2007 was reported to be the “highest” in months, with 2,174 riders.

2.19 ACCESS TO LOCAL SCHOOLS

In 1969, about half of all students in the United States walked or bicycled to school. Today, however, fewer than 15% of all school trips are made by walking or bicycling, one-quarter are made on a school bus, and instead over half of all children arrive at school in private automobiles.

The decline in walking and bicycling to school has had an adverse effect on traffic congestion and air quality around schools, as well as pedestrian and bicycle safety. In addition, California Center for Physical Activity states that children who lead sedentary lifestyles are at risk for a variety of health problems such as obesity, diabetes, and cardiovascular disease according to the California Center for Physical Activity. However, safety issues are the primary concern of parents, who consistently cite traffic danger as the reason why their children are unable to bike or walk to school.

The school district provides school buses to transport the elementary and middle school students of Arnold to and from school; see Figure 14: Local School Bus Routes. However, according to the Steering Committee members, most students arrive and leave school by personal vehicle.

2.20 RELEVANT STUDIES, REPORTS, AND PLANS

2.20.1 General Plan

It is California State Law that every city and county prepare a comprehensive, long term, general plan in order to guide future development. The general plan is comprised of goals, programs, and actions based on current and future needs as well as available resources. A city's general plan is adopted by the City Council, while a county's general plan is adopted by the County Board of Supervisors. Once adopted, the general plan then becomes the primary planning tool used by planners and local government officials to guide growth. Typically, general plans predict growth fifteen to twenty years into the future; therefore, they must be updated approximately every ten years in order to adequately meet future needs of the community or county.

2.20.2 The Calaveras County General Plan

The *Calaveras County General Plan* provides the County with a balanced plan that effectively meets the needs of the public, while at the same time is sensitive to the local environmental, economic, and social conditions. The most recent county general plan was adopted December

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9, 1996 by the County Board of Supervisors. Although the State requires certain statutes which govern general plans and its preparation, the policies contained within the plans are left to local discretion. As Calaveras County has a relatively small population, and is in a rural environment, the County consists of several communities, each with differing values and needs. The communities within Calaveras look to the county general plan as overall guidance in their development. In addition, Calaveras County has developed community plans for many of the towns within the County, including Arnold. Community plans adopted by the County are incorporated into the general plan, ensuring internal consistency between the general plan and the various community plans.

Arnold will seek guidance from the *Arnold Community Plan*, which is consistent with the *Calaveras County General Plan*, to ensure that its future and rural atmosphere are preserved.

The *Calaveras County General Plan* outlines several goals that are of particular interest to the ARLCBMP. They are the following:

- ?? Goal III-2: Create and maintain a road system to serve the County's needs.
- ?? Goal III-3: Secure funding for State highway improvements needed to keep pace with increased development to provide for the public safety.
- ?? Goal III-20: Provide safe areas for bicycles, pedestrians, and equestrians on existing and proposed roads.

2.20.3 Calaveras Codes

As Arnold develops in accordance with the *Arnold Community Plan*, discussed in further detail below, it will need to insure consistency with the Calaveras County Zoning Code. Fundamental issues are raised as to the type of zoning codes and land use designations that exist as well as the implementation of the zoning codes with the *Arnold Community Plan* Land Use designations. This is important to the development of the ARLCBMP as there is a proven correlation between zoning, land use patterns, and mobility. Many of the issues identified below are concerns that were voiced by the Steering Committee Members, County officials, Stantec Consulting, and county staff:

- ?? Incorporate and analyze the existing zoning and land use regulations in Calaveras County and Arnold, to create a document that identifies the existing obstacles of the Arnold transportation network;
- ?? Evaluate the existing zoning codes for the potential to use a more “design-oriented” approach to regulations within the ARLCBMP, such as form based codes;
- ?? Organize the ARLCBMP to clearly identify and provide references to other pertinent regulations and policies; and

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?? Provide flexibility to allow for design alternatives while recognizing the unique character of each site and the need to protect adjacent properties.

Zoning ordinances are designed to translate the general plan's broad goals and policy statements into specific requirements of an individual landowner. As the zoning ordinances divide all land within the community into zones and specifies the permitted uses and required standards in each zone, the ARLCBMP will look to the Calaveras County Zoning Ordinance for guidance.

2.20.4 Calaveras County Zoning Code

The existing Calaveras County Zoning Code is a Euclidean-based ordinance with limited zoning techniques incorporated over the years. The basic ordinance includes zoning districts and conditional use provisions, with dimensional standards including lot size, coverage, and densities. Calaveras County and Arnold has also implemented the technique of combining districts to provide further restrictions on specific parcels or geographic areas for specific purposes (i.e., neighborhood preservation, ground floor retail, pedestrian shopping, landscaping, etc.).

Table 9: Consistent Zones for Land Use Designations, below indicates the zoning districts which are consistent with the land use designations of the Arnold Community Plan. Several of the Land Use designations have multiple zones which are considered consistent. This does not mean, however, that each parcel is entitled to any of the zones listed. The County considers various factors at the time of application, such as compatibility with surrounding neighborhoods, circulation and any other related issue.

Table 9: Consistent Zones for Land Use Designations			
Land Use Designation	Public Services	Density	Consistent Zone
Forest	District services, well, or septic	20 acre density	GF, TP, PS
Rural Residential	Well and septic District water and septic or sewer	5 acre density 1 acre density	RA, RR-5, PS, RR-1, PS
Single Family Residential	Well and septic District water and septic District water and sewer	5 acre density 1 acre density 10,000 square foot density	RR, R1-5, PS, RR-1, PS R1, PS
Multiple Family Residential	Well and septic District water and septic District water and sewer	3 units per 5 acres 6 units per acre 12 units per acre	R2, R3, PS, R2, R3, PS
Commercial*	District water and septic District water and sewer	75% lot coverage 90% lot coverage	C1, C2, CP, PS
Professional Offices	District water and septic District water and sewer	75% lot coverage 90% lot coverage	CP, PS
Mixed Use	District water and septic District water and sewer	75% lot coverage 90% lot coverage	C1, CP, C2
Industrial	District water and septic District water and sewer	75% lot coverage 90% lot coverage	M1, M4, PS

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Public Service	District water and septic District water and sewer	75% lot coverage 90% lot coverage	PS, REC
Recreation	District services, well or septic	35% lot coverage	REC, PS
GF- General Forest	R1- Single Family Residential	C1-Local	
Commercial	M1-Light Industrial		
TP- Timber Production	R2- Two Family Residential	C2- General	
Commercial	M4- Business Park		
RR- Rural Residential	R3- Multi Family Residential	C3- Professional	
Offices	REC- Recreation		
			PS- Public Service
* For all commercial, industrial, and recreational zones, residential uses may require a conditional use permit, and the maximum density may not exceed those indicated above in the single family and multifamily designations.			
Source: <i>Arnold Community Plan</i> , Calaveras County California, adopted December 14, 1998			

2.20.5 Euclidean Zoning Codes

The traditional zoning code most frequently found in communities around the country is the “Euclidean” code, which is named after the Village of Euclid, Ohio’s regulations, reviewed and upheld in the landmark 1926 Supreme Court case. Euclidean zoning is typically based on a system of zoning districts, lists of uses associated with each zoning district, and dimensional standards:

1. Zoning *districts* specify a category of uses (i.e., single-family residential, multi-family residential, commercial, industrial, etc.) and are applied geographically on the community’s zoning map.
2. Allowable *uses* indicate the range of residential, non-residential, public, or other uses permitted within a zoning district. While certain uses are “permitted” within the zone, others are identified as “accessory” to the permitted uses, requiring a conditional use permit to determine that the use is appropriate for a specific site and applying special conditions to the use.
3. *Dimensional standards* include criteria that outline the parameters for the creation of lots and the placement of structures on a lot, i.e., the building “envelope.” These standards generally include, but are not limited to: minimum lot size, minimum setbacks, and maximum height.

Euclidean zoning is proscriptive, which means building contrary to the uses and standards outlined in the code is prohibited. Assuming the standards of the code are met, a project would generally be approved. Over time, a number of other development standards have become accepted additions to the basic dimensional standards, including density and floor-area ratios, to attempt to better control the impacts of development.

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Most current zoning codes, including Calaveras County, are based on the Euclidean model. The primary advantages of the Euclidean approach are its logical presentation of districts, uses, and standards; a form that is widely familiar to professionals, public officials, and the public. However, there are some disadvantages to the Euclidean model, which include a lack of flexibility to address the particulars of a site and its surroundings, and that it does not prescribe precisely what is to be done, allowing for considerable uncertainty as to what the development product will look like.

2.20.6 The Arnold Community Plan

The *Arnold Community Plan* was adopted by the Calaveras Board of Supervisors in December 1998. The Arnold Rural Livable Community-Based Mobility Plan will complement the *Arnold Community Plan* by implementing pedestrian and bicycle facilities and balancing the existing transportation system. According to the *Arnold Community Plan*, there is not only a need, but a community desire to provide pedestrian and bicycle pathways throughout Arnold, especially to and around the shopping areas. The implemented future pathways would not only decrease vehicular traffic by providing additional travel alternatives, but would enhance the rural character, and preserve the community atmosphere through these additional recreational opportunities.

The *Arnold Community Plan* outlines several goals that are of particular interest to the success of the ARLCBMP. They are the following:

- ?? Goal 1: Preserve and enhance the rural, forested environment of the Arnold Community Plan area.
- ?? Goal 7: Improve traffic circulation
- ?? Goal 8: Reduce the amount of traffic on Highway 4
- ?? Goal 9: Provide for safe intermix of vehicular and non-vehicular traffic

Specific Arnold circulation and safety improvements in the *Arnold Community Plan* include:

- ?? Realign and improve the intersection of Lakemont Drive and Highway 4;
- ?? Reconstruct Meadowview Road from Fir Drive to Country Club Drive;
- ?? Construct three lane routes on Highway 4 from Upper Meadowview Road to an area west of the southern intersection of Highway 4 and the Arnold Bypass;
- ?? Reconstruction of the Blagen Road/Highway 4 intersection and reconstruction of Blagen Road from Highway 4 to White Pines Lake;
- ?? Pave Dunbar Road; and

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?? Minimize direct access to Highway 4 for newly developed commercial areas.

2.20.7 Calaveras County Bicycle Master Plan Draft Final Plan

The *Calaveras County Bicycle Master Plan Draft Final Plan* has been prepared as a countywide document. It is also intended to guide efforts to improve the bicycling conditions at the local level throughout the various communities within Calaveras County. This bike plan integrates the goals and policies of the *Calaveras County General Plan*, the *Calaveras County Regional Transportation Plan (RTP)*, along with other various planning efforts. The *Calaveras County Bicycle Master Plan Draft Final Plan* is primarily a coordinating and resource document for the County, with a focus on developing a primary network of bikeways, programs, and specific policies and enhancements. In addition, this bicycle master plan will help promote accessibility to popular destinations countywide and ensure the development and application of consistent design standards.

According to the Calaveras County Chamber of Commerce, the existing roadway network of Calaveras County includes 867.5 miles of developed roads. Travel in the County is primarily by automobile due to the rural nature of the roadway network and the limited opportunities for alternative modes of travel. The *Calaveras County Bicycle Master Plan Draft Final Plan* states that most residents of the County reside in Ebbetts Pass and Valley Springs. As Ebbetts Pass begins in Arnold, transportation issues need to be addressed. By improving the existing county bicycle network, the bicycle network of Arnold will also benefit.

2.20.8 Future Bicycle Projects

The goal of constructing bikeways is to provide safer, more direct routes for cyclists. Recommended segments are divided into Caltrans Class I, II, and III facilities. The *Calaveras County Bicycle Master Plan Draft* includes the following recommendations for specific bicycle projects in Arnold. Table 10: Proposed Bikeway Segments, below illustrates the proposed bikeway segments for Arnold.

Table 10: Proposed Bikeway Segments			
Bikeway Class	Segment Name	From	To
I	Multi-Use Path	Green Meadow Court	Cedar Lane
I	Multi-Use Path	Henry Street	Vallecito Day School
I	Multi-Use Path	Willow Street	Oak Circle
I	Multi-Use Path	Oak Court	Pine Drive
I	Sidepath Along SR 4	Blagen Road	Country Club Drive
III	Cedar Lane	Pine Drive	SR 4
III	Dunbar Road	Henry Street Connector	Linebaugh Road
III	Fir Street	Willow Street	Dunbar Road
III	Henry Street	Henry Street Connector	SR 4
Source: <i>Calaveras County Bicycle Master Plan Draft Final Plan</i> , Alta Planning and Design, April 2007.			

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2.20.9 Calaveras County Pedestrian Master Plan Draft Final Plan

The *Calaveras County Pedestrian Master Plan Draft* is a result of the efforts of the Calaveras Council of Governments, Calaveras County, the communities of Calaveras, public agencies, and citizens interested in improving the pedestrian environment in Calaveras County. The *Calaveras County Pedestrian Master Plan Draft* has been prepared as a countywide document, but is also intended to guide the efforts to improve the walking conditions at the local level within various communities in Calaveras County. The *Calaveras County Pedestrian Master Plan Draft* also integrates the results of the *Calaveras County General Plan*, the Regional Transportation Plan (RTP), and other previous planning efforts. This plan represents the County's first comprehensive pedestrian planning effort.

The *Calaveras County Pedestrian Master Plan Draft* is primarily a coordinating and resource document for the County, which focuses on developing local networks of walkways, programs, and specific pedestrian policies. The *Calaveras County Pedestrian Master Plan Draft* shall promote accessibility to popular destinations countywide, and ensure the development and application of consistent design standards.

As walking is the simplest form of transportation, as well as physical exercise, improving the existing pedestrian network within the County will greatly benefit both Calaveras County and Arnold. Pedestrian facilities will provide residents with the option of safely walking from one destination to the next and therefore, will help alleviate traffic congestion and improve the quality of life, while at the same time maintaining the rural nature and community character of both the Calaveras County and Arnold.

2.20.10 Future Pedestrian Projects

The *Calaveras County Pedestrian Master Plan Draft* includes recommendations for specific pedestrian projects involving physical improvements, which include improved or additional roadway crossings, traffic calming devices, enforcement, and the elimination of travel barriers. Future pedestrian improvements are as follows:

Priority "A" Projects:

?? Blagen Road and C/D Sts

- o 2 Re-striped Crosswalks;
- o 4 Single Curb Ramp/Landings;
- o 2 Pedestrian Crossing Beacons; and
- o 1 Turn Radius Reduction.

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?? SR 4 and Lilac:

- o 1 New Crosswalk;
- o 2 Single Curb Ramp/Landings;
- o 2 Advanced Warning Signs; and
- o 1 Pedestrian Crossing Beacon.

?? SR 4 and Manuel:

- o 1 New Crosswalk;
- o 2 Single Curb Ramp/Landings;
- o 2 Advanced Warning Signs; and
- o 1 Pedestrian Crossing Beacon.

?? SR 4 and Country Club Drive:

- o 1 New Crosswalk;
- o 2 Single Curb Ramp/Landings;
- o 2 Advanced Warning Signs; and
- o 1 Pedestrian Crossing Beacon.

Priority “B” Projects:

?? Blagen Road at Library:

- o 1 Re-striped Crosswalk; and
- o 2 Advanced Warning Signs.

?? Blagen Road at Post Office:

- o 1 New Crosswalk;
- o 2 Single Curb Ramp/Landings;
- o 2 Advanced Warning Signs; and

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- o 1 Pedestrian Crossing Beacon.

2.20.11 Calaveras County Travel Demand Forecasting Model

The Calaveras County Travel Demand Forecast Model shows three different scenarios: the 2000 trip table, the 2022 model with RTP trip table, and the 2022 model with no RTP trip table. These models illustrate the average daily travel (ADT), traffic volumes, and the origin/destinations (OD) throughout the County.

A traffic model is a tool for analyzing the major travel behaviors of people via a computer program. The output of a traffic model usually includes the number of cars traveling on any given road at any given time, and also identifies the roads and intersections which are congested during special events and peak hours of the day. The model provides some measure of effectiveness of the participating road networks. This includes Vehicle Miles Traveled (VMT) and Vehicle Hours of Delay (VHD).

Based on the Calaveras County Travel Demand Forecasting models, Arnold will be able to estimate future traffic volumes and congested areas based on the roadway networks of the County. As Arnold is home to a majority of the County's residents and is also the "gateway to Big Trees State Park", Arnold will be able to efficiently plan and update its existing transportation network.

2.20.12 Calaveras County Traffic Circulation Study Working Paper 3:

Recommended Improvements

The Calaveras County Traffic Circulation Study Working Paper 3: Recommended Improvements (Traffic Circulation Study) was adopted April 17, 2007. The Traffic Circulation Study identifies the key areas within Calaveras County where the lack of a secondary full public access route is a concern. The areas of concern identified in the Traffic Circulation Study were the following:

- ?? Pennsylvania Gulch and Skunk Ranch Road;
- ?? Forest Meadow Area;
- ?? Appaloosa Drive and Morgan Road Area; and
- ?? Skyline Drive Area.

The Traffic Circulation Study also contains a recommended circulation plan, which identifies roadway improvements on both country roads and state highways and suggestions for improving focus fire accessibility.

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2.20.13 Calaveras County 2007 Regional Transportation Plan – Administrative Draft

As the Regional Transportation Planning Agency (RTPA) for the region, the Calaveras Council of Governments (CCOG) is required by California law to adopt and submit an approved Regional Transportation Plan (RTP) to the California Transportation Commission (CTC) every four years. The California Department of Transportation (Caltrans) assists with plan preparation and reviews the draft RTP documents for compliance and consistency.

The Calaveras County 2007 RTP provides a coordinated 20-year vision of the regionally significant transportation improvements and policies needed to efficiently move goods and people within Calaveras County. The purpose of the RTP is to provide a vision of transportation services and facilities, supported by the appropriate goals, for 10 and 20 year planning horizons. The RTP documents the policy direction, actions, and funding strategies designed to maintain and improve the existing regional transportation system. In addition, it also contains general policies, guidelines, and proposed projects and programs.

The following documents, described above, will help provide guidance to the development of the ARLCBMP as each provides specific information regarding existing mobility and land uses within Calaveras County and Arnold. The ARLCBMP is the first attempt to enhance both the transportation network, by providing a balance transportation system through the implementation of bicycle and pedestrian pathways, as well as the character of the community by implementing traffic calming measures, encouraging infill development and creating a true scene of “place.”

2.20.14 Air Quality Management Plan

In 1967, California's Legislature established the Air Resources Board (ARB) in order to establish state wide rules and regulations regarding air quality. ARB is responsible for attaining and maintaining healthy air quality, conducting research into the values of and solutions to air pollution, and systematically attacking the serious problem caused by motor vehicles, which are the primary causes of air pollution in the State. However, as ARB establishes rules and regulations for the state, each region within the state has unique factors that contribute to differing air quality levels. Air quality is affected most by automobiles, weather conditions, and industrial pollutants. In order to manage each region appropriately, Air Quality Management Districts and Air Pollution Control Districts were established. Every three years, each Air Quality Management District (AQMD) prepares an overall plan for air quality improvements.

The goal of the ARLCBMP is to provide a balanced transportation system for the residents of Arnold, so that residents and tourists have the option of using alternative forms of transportation (walking, biking, or using transit) instead of being dependent upon personal automobile use when traveling from one destination to the next. As residents start to utilize these alternative forms of transportation, air quality will improve as less people are driving. As other forms of transportation are being utilized, mobile source pollutants are being spared and thus, Arnold is helping to meet the goals of the California State Implementation Plan (SIP) by reducing the

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amount of criteria pollutants emitted. Also, in 2006, Governor Schwarzenegger signed AB 32: the Global Warming Solutions Act, in order to reduce the green house gasses emitted by the State of California to 1990 levels by the year 2020. As California is the twelfth largest source of carbon dioxide, the primary heat-trapping gas that causes global warming, it has taken responsibility to reduce its share of emissions emitted into the atmosphere. In addition to reducing the criteria pollutants, residents of Arnold will also be reducing their global ecological footprint by reducing the amount of green house gases they emit by reducing the amount of short trips traveled around town.

2.20.15 Big Trees State Park General Plan

The Big Trees State Park is located in the northeastern portion of Arnold, approximately four miles from the “downtown” area. Tourists and residents alike come to the Park year round to take advantage of the many recreational activities the Park has to offer. Big Trees State Park is used for day use (hiking, boating, and swimming), night use (camping) and recreational use (picnics and short hikes). The general plan does recognize the need to improve amenities and trails and more parking at the river use area. However, as the ARLCBMP will improve the streetscape, bicycle and pedestrian facilities, and the environment of Arnold, the park and the community can work together to connect Arnold to the Park.

The ARLCBMP hopes to change the dynamic between the regional traffic destined for Big Trees State Park and Arnold. As the ARLCBMP will provide the opportunity to ride a bicycle, walk or use public transit, people will get out of their cars and instead utilize the community corridor. Also, improvements to the streetscape will help create a sense of place that will draw both residents and tourists to the area. As biking or walking becomes a safe and comfortable option, people can choose to take alternative forms of transportation to and from the park as it is a short distance from the “downtown” area. This will create a connection between the Park with the Community where both can benefit from each other.

2.20.16 Stanislaus National Forest Direction Plan

The Stanislaus National Forest surrounds Arnold. According to the Stanislaus National Forest Direction Plan, it is a goal of the Stanislaus National Forest Direction Plan to provide community stability by managing the Forest in an economically efficient and cost-effective manner while responding to the economic and social needs of the public and local communities. This goal, in combination with the ARLCBMP would provide the opportunity to connect the two areas allowing both to benefit. As Arnold is within such a short distance to the Forest, a day trip for locals and campers would be feasible. With a balanced transportation, one could use public transportation to travel to the Forest and to Arnold.

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3.0 Key Findings Summary

Through this existing conditions analysis, it was possible to paint a picture of what it is like to live, work, and travel within Arnold. The following key findings were compiled from review of general community characteristics, socio-economic demographics, and previous plans and studies.

- ?? Arnold is automobile dependent, and has a low percentage of biking, walking, and transit use. Residents use personal vehicles to travel from one destination to the next.
- ?? Traffic control is rudimentary along SR-4 through Arnold.
- ?? The design of SR-4 and many streets within Arnold provide limited comfort levels to pedestrians.
- ?? According to the Calaveras County Land Use Map, all vacant parcels along SR-4 are privately owned, except for one public parcel along Dunbar Road.
- ?? Due to the winter recreational activities, Arnold experiences a high volume of regional/through traffic along SR-4 as many travelers are trying to reach Bear Valley Ski Resort in the Alpine County.

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- ?? There are no traffic calming or traffic management devices along SR-4.
- ?? Minimal walking and bicycle facilities exist along SR-4 or throughout Arnold. Currently, two bicycle facilities exist; a Class I path and a Class III route.
- ?? There is no distinct beginning or end of Arnold “Main Street” versus a rural state highway designed to move vehicles at higher speeds.
- ?? There are no street lights along SR-4 to provide for pedestrian night time access and safety.
- ?? SR-4 is not a unique roadway, in that there are no obvious physical features that reveal they are on a designated streetscape. Recognition, discussion, communication, and community are discouraged by the existing nature of SR-4.
- ?? Parking in Arnold is limited as there are minimal spaces available for parking along the SR-4 corridor.
- ?? Vegetation and trees are cut back from the edge of the roadway on SR-4, which reduces the marking of the route and create a sense of place.
- ?? Arnold has loose grid of streets connecting to SR-4. There is no special pattern to the streets within the planning study area. Generally streets follow the topography.
- ?? Many of the streets end abruptly and provide little connectivity from one destination to the next.
- ?? Streets and block lengths vary without a standard distances, which limits directional choices to pedestrians. The longest distance between intersections is 3,320 feet while the shortest distance is 60 feet along SR-4.
- ?? Arnold is not designed within human scale or intimate human scale due to the large width of SR-4 and the one-story buildings developed along the corridor.
- ?? At the southern end of Arnold the scale is more commercial with Meadowmont Center which is characterized as “Highway Commercial” which provides less intimacy. A sense of habitation is missing that one finds in the intimate human scale. The land use is designed for the automobile on every scale; with a large massive sea of asphalt parking lot, and low priority for pedestrians. Highway Commercial scale leads to motorists behavior void of pedestrian consideration. No sense of comfort is provided for pedestrians due to values and priority focused on the automobile.

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- ?? There is no physical continuity amongst destinations in Arnold. There is no grand design to unify street designs with land use, and consequently human activity derived from existing land uses. There is no single identifiable community center.



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