

Sierra Nevada Alliance

Planning for the Future

A Sierra Nevada Land Use Index



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Keeping light in the range.

Planning for the Future

A Sierra Nevada Land Use Index

By Ellen Hickey

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www.sierranevadaalliance.org

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Sierra Nevada Alliance

The Sierra Nevada Alliance has been protecting and restoring Sierra land, water, wildlife and communities since 1993. The Alliance unites hundreds of individuals and conservation groups to protect Sierra resources. The Alliance is driven by a vision of a Sierra where natural and human communities coexist in harmony. A Sierra where residents and visitors alike understand and value the unique qualities of the range and protect the places they love.

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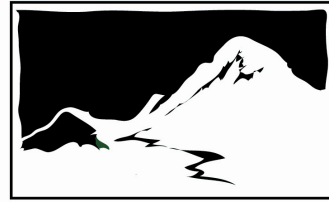
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Sierra Nevada Alliance

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Executive Summary



SIERRA NEVADA ALLIANCE

Keeping light in the range.

Often when people think of the Sierra Nevada, they envision millions of acres of untouched wilderness forming the backdrop for small historic communities—communities that symbolize the rural, small town culture that so many Americans idealize. However, the Sierra Nevada region has been challenged to maintain this mix of rural life and wildness, and will continue to be challenged to preserve qualities that draw so many of us to live and visit in the Range of Light. It is an important time for communities in the Sierra. The planning decisions we make today will have a direct impact on what happens in the coming decades. It is not too late to choose the type of future we want.

The growth that hit the rest of the state in the late 20th century did not bypass the Sierra. Between 1970 and 1990, population doubled, with over 600,000 people now living in the region.¹ While

Between 1990 and 2040, the population of the Sierra Nevada may triple the rate of growth may have slowed since then, it hasn't stopped. Some

estimates show that between 1990 and 2040, the population of the Sierra Nevada may triple to somewhere between 1.5 million and 2.4 million residents.²

Growth and development present both an opportunity and a challenge

We have the opportunity now to make decisions about our future that will preserve our rural way of life and natural areas. But if the region is not prepared to deal with growth, poor land use planning could have devastating impacts on the quality of life and the natural world in the Sierra.

Gridlocked traffic, poor air quality, impaired and polluted rivers and streams, loss of natural areas and scenic vistas, spread of generic communities, fewer recreational opportunities, and disappearing wildlife will be the future of the Sierra Nevada if we do not try to control sprawling development. If communities in the region plan wisely, however, the growth could fuel a stronger local economy, maintain the old town centralized development of the past, protect wildlife corridors, offer ample recreational access, and preserve the rural quality of the region that everyone values.

Community planning and individual commitment to protecting the Sierra is key. It is in this context that we have developed this report, the first in a series that will be released by the Sierra Nevada Alliance to evaluate the health of the Sierra's natural resources. This report examines a number of measurements or indicators related to land use. We hope that this report will help the public, decision makers and conservation leaders assess the health of Sierra resources today and establish a baseline for future reference. On a regular basis, the Alliance will return to these indicators to see what progress or degradation has occurred. The study area for this report includes all or part of the twenty California and three Nevada coun-



Truckee

ties that make up the Sierra Nevada mountain range. We looked at different aspects of growth and land use in these counties in an effort to demonstrate how changes in them affect the Sierra.

Change in the Sierra Nevada—the 1990s

Clearly the population in the Sierra is growing. Our research shows that between 1990 and 2000, the region as a whole grew about 16% with more than half of the counties showing double digit population growth for areas within the Sierra. This growth has spurred a moderate boom in residential and commercial development. For core counties as a whole, the number of residential building permits in 2004 was 22% higher than those issued in 1990. The value of non-residential construction for 2004 in these counties was 35% higher than in 1990.

Development and other factors have also created a rise in traffic. During 1990 to 2004, the 13 core counties as a whole experienced a 30% increase in vehicle miles traveled, while the number of registered vehicles in these counties also increased dramatically by approximately 36%. In addition, at least 348 miles of new city and county roads were built between 1990 and 2003, a 4% increase.

Growth and Development: A Misleading Sense of “Open Space”

Large areas of private land in the Sierra Nevada—areas that are currently viewed as “open space”—may be developed over the next 50 years. According to our analysis, at least 33% of the region is

One third of the Sierra is at risk of development

privately owned and therefore more vulnerable to development.

The sense of open space that characterizes Sierra Nevada counties, especially in the foothills, could prove ephemeral.

The amount and types of land affected will depend, of course, on patterns of development. The Sierra Nevada Ecosystem Project (SNEP), a 1993 U.S. government study of the entire Sierra ecosystem, looked at different scenarios for the Sierra’s

Table 3.1: Public/private land ownership in portion of counties in the Sierra Nevada

<i>County</i>	Total acres	Acres privately owned	% private owned
Calaveras	521,409	389,643	75%
Amador	323,307	235,382	73%
Butte	565,577	407,432	72%
Yuba	218,547	152,096	70%
Nevada	623,659	405,193	65%
Tehama	520,035	279,684	54%
El Dorado	1,143,069	601,565	53%
Placer	760,733	379,190	50%
Kern	1,477,761	713,309	48%
Mariposa	922,740	430,042	47%
Madera	826,839	316,675	38%
Lassen	1,501,653	561,272	37%
Sierra	615,319	176,060	29%
Plumas	1,672,724	472,925	28%
Tulare	2,055,441	535,136	26%
Tuolumne	1,450,334	351,552	24%
Fresno	1,700,009	347,650	20%
Alpine	473,893	34,904	7%
Mono	1,993,669	133,901	7%
Inyo	2,165,222	29,672	1%
Total	21,531,941	6,953,282	32%

Source: GreenInfo Network, PCL California Resources Agency, Public Conservation Trust Lands (PCTL), 2004

future. According to SNEP, if current population growth and development patterns stay the same over the next half century, approximately half of the private land in the Sierra would be converted to residential and commercial development. Even if local growth patterns are concentrated, the developed land area would still double the current amount.³

Currently, parcel data for 13 Sierra Nevada counties indicate that nearly half the privately owned parcels in these

counties may be developed with homes or businesses in the future. So, again, while people may experience many parts of the Sierra as open

Nearly half of privately owned parcels in the Sierra portion of 13 counties are undeveloped

and natural, the reality is that many such areas may be developed in years to come.

Communities can protect large tracts of natural areas and still provide adequate housing. By maintaining the historic development pattern of compact town centers separated by rural countryside, we can build new housing and businesses as part of existing communities and reduce the impact on natural areas. Keeping land in ranches, farms and timber rather than residential development preserves these working landscapes and helps maintain the rural character of the region.

In addition to protecting farm and ranchlands and other open natural areas, local communities should strive to eliminate or at least significantly reduce the loss of critical habitats. Critical habitats include old growth forests, oak woodlands, riparian habitat and endangered species habitat. These habitats provide the natural areas required for the diversity of Sierra wildlife, as well as provide prime recreational lands enjoyed by residents and visitors.

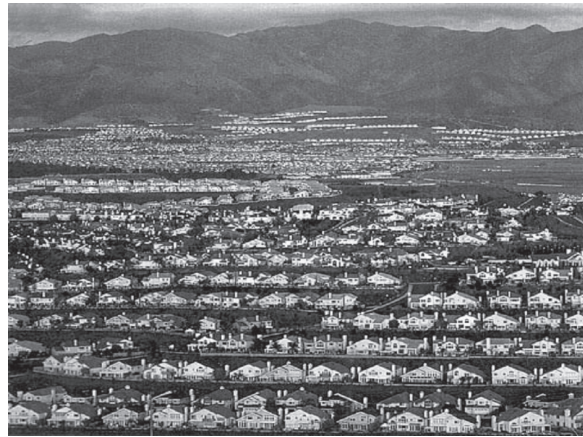
In the Sierra as a whole, there were approximately one million acres of high quality old growth forest in 1996, according to SNEP data. Human activities have dramatically reduced the total amount of old growth forest. Researchers estimate that old growth forests have declined from 66% or more of the Sierra Nevada landscape prior to Euro-American settlement to about 16% today.⁴

But perhaps even more poignant is the threat to the region's oak woodlands, the most diverse ecosystem in the Sierra Nevada. The oak woodlands of the western Sierra foothills, home to approximately 70% of the region's population, have been hardest hit by development.⁵ Less than 1% of the foothills

Less than 1% of the foothills are protected from development, and much of the area lies near growing cities

are protected from development, and much of the area lies within commuting distance of rapidly growing cities in the Central Valley.⁶

Similarly, more than three fourths of hardwood habitats are privately owned in Sierra Nevada



Foothill Sprawl

counties with significant acreage in such habitat. For the region as a whole, approximately 68%—or almost two million acres—of hardwood habitat is privately owned.

Areas near streams, lakeshores and other wetlands, also known as riparian areas, are extremely important to many species, not only because they provide water during the dry summer months, but also because riparian areas have cooler temperatures during the summer than to non-riparian areas. Our research found that approximately 62% of riparian habitat in areas below 5,000 feet in the western Sierra—or almost 600,000 acres—are privately owned and vulnerable to development.

Finally, over 35 endangered species call the Sierra home and require specific habitats to survive. Each of the 20 counties in our study has threatened and/or endangered species in portions of the county that lie within the Sierra Nevada's regional boundaries. Fresno County has the largest number, with 15 threatened or endangered species in the Sierra.

All of these indicators point to the importance of land use planning in our communities and throughout the region.

Communities can protect the qualities they value through land use planning

Good land use planning is not imposed on residents by a remote government bureaucracy; rather, planning should directly manifest a community's choices about the future and how it wants to grow.

We as a community can choose the ways in which we grow, and that ability to choose means that the future is not dependent on some inevitable trend, or on what is happening now.

A powerful planning tool to shape rural development and protect open space and natural areas is the county general plan. For it to be effective,

Seven of twenty Sierra Nevada Counties have general plans more than ten years old

however, the general plan must be based on up-to-date, thorough information. In fact, seven of the

twenty counties in our study have general plans that are more than ten years old. At the same time, five of these counties have at least a partial update planned or in process.

We asked county planning departments in the Sierra region if their county had done any mapping or inventories of endangered or critical habitat. A large majority of Sierra Nevada counties—70%—do not have any type of county-wide map or inventory of areas that need to be protected. Some planners referred to state databases on habitat, but on a project-by-project basis rather than as part of an overall plan. We also asked if the county had habitat conservation plans, natural community conservation plans or conservation banks—all methods of designating and preserving critical habitat. 85% said no.

The Role of Landowners and Land Trusts in Protecting the Sierra

As for individual actions to protect open space and critical habitats, the level of activity in the Sierra has been minimal. The California Land Conservation Act, or the Williamson Act as it is better known, has been helping to protect agricultural land since 1965. We compared acreage from 1991 to the numbers for 2003 and found that while there has been a small increase in acreage—about 3% or 26,000 acres—there are many more landowners throughout the region who have yet to take advantage of this program.

In a similar vein, while the rise of land trusts in the Sierra is a truly hopeful sign, these organiza-

tions are not close to attaining their potential for land preservation. At present, our research shows that total land protected by willing land owners in partnership with local land trusts and/or transferred to other groups or agencies for management in the Sierra Nevada is just over 1% of all privately owned land in the region.⁷

Conclusions and Recommendations

The opportunities and challenges faced by the Sierra are clear. Communities and landowners can choose to preserve natural areas and open space, and protect and strengthen rural communities.

The Sierra Nevada Alliance recommends the following principles be considered for inclusion in county general plans to protect the Sierra's resources and rural quality of life.

1. Maintain the historic development pattern of compact town centers separated by rural countryside.
2. Preserve permanent open space as an integral part of new development both to protect critical natural areas and to provide opportunities for recreation.
3. Protect and restore natural areas.
4. Maintain the sustainable economic productivity of the region's farm and ranch lands and forests.

Specifically, Sierra residents can become involved in the local planning process, support local land trusts, and join local and regional conservation groups working on land use planning. County and city governments can work with residents to identify qualities of their community to preserve, update and implement their general plans, develop and implement conservation plans, and support working landscapes.

The Sierra Nevada Alliance will visit the indicators reviewed in this report in future years and see if smart planning has preserved the Sierra we all love and hope future generations will experience just as fully. Together we can keep light in the range.

Chapter 1 Introduction

This is the first in a series of reports to be released by the Sierra Nevada Alliance that will evaluate the health of Sierra natural resources and look at some of the challenges facing the region. Each report will examine a number of measurements or indicators related to a resource such as Sierra land, water, air or wildlife. We hope that these reports will help the public, decision-makers and conservation leaders assess the health of Sierra resources today and establish a baseline for future reference. On a regular basis, the Alliance will return to these indicators to see what progress or degradation has occurred.

Planning for the future

Often when people think of the Sierra Nevada, they envision millions of acres of untouched wilderness forming the backdrop for small historic communities—communities that symbolize the rural, small town culture that so many Americans idealize. However, the Sierra Nevada region has been challenged to maintain this mix of rural life and wildness, and will continue to be challenged to preserve qualities that draw so many of us to live in and visit the Range of Light. It is an important time for communities in the Sierra. The planning decisions we make today will have a direct impact on what happens in the coming decades. It is not too late to choose the type of future we want.

The growth that hit the rest of the state in the late 20th century did not bypass the Sierra. Between 1970 and 1990, population doubled, and over 600,000 people now live in the region.⁸ While the rate of growth may have slowed since then, it hasn't stopped. Some estimates show that between 1990 and 2040, the population of the Sierra Nevada may triple to somewhere between 1.5 million and 2.4 million residents.⁹ Counties in the southern and central Sierra may grow at even higher rates than the rest of the region since they are close to the metropolitan areas of the Central

Valley and more attractive for commuters. Growth and development present both an opportunity and a challenge. We have the opportunity now to make decisions about our future that will preserve our rural way of life and natural areas. But if the region is not prepared to deal with growth, poor land use planning could have devastating impacts on the quality of life and the natural world in the Sierra. Gridlocked traffic, poor air quality, impaired and polluted rivers and streams, loss of natural areas and scenic vistas, spread of generic communities, fewer recreational opportunities, and disappearing wildlife will be the future of the Sierra Nevada if we do not try to control sprawling development. If communities in the region plan wisely, however, the growth could fuel a stronger local economy, maintain the old town centralized development of the past, protect wildlife corridors, offer ample recreational access, and preserve the rural quality of the region that both residents and visitors value.

The states of California and Nevada and the Sierra Nevada counties must find a new rural development model. We must find new ways to accommodate growth that protect our rural quality of life and preserve natural areas, fish and wildlife, recreational opportunities, and inspirational vistas that are vital to the region's health.

“Smart growth” or good land use planning alone won't eliminate all problems in the Sierra. But smart growth combined with carefully planned conservation and restoration of natural areas can go a long way toward ensuring that our children will be able to find the same wild beauty and wonderful historic towns and communities in the Sierra that we have been able to experience.

In this report, we look at some of the ways that growth has impacted the Sierra in the past 10 to 15 years. This report is a compilation of public data that we hope will illustrate some of the changes the Sierra Nevada region is experiencing

due to growth. The report will also highlight some of the local efforts to protect the region.

Report Methods

The study area for this report includes all or part of the twenty California and three Nevada counties that make up the Sierra Nevada mountain range. We looked at different aspects of growth and land use in these counties in an effort to demonstrate how these changes are affecting our quality of life, our communities and the natural areas around us.

The boundary for our study area is the same as that used for the Sierra Nevada Ecosystem Project (SNEP), a project funded by the U.S. Congress in 1993. Whenever possible, we worked with Green-Info Network to find county data for those parts of the county that lie within the SNEP boundaries. However, due to limited resources, and in some cases, limited data, we were not always able to do this. We indicate when the data is for entire counties as opposed to areas within the Sierra.

When using whole county data, we divided California counties into two groups. The “Core Sierra Nevada Counties” include those counties that have either three-fourths of their population

or land mass in the Sierra. The “Peripheral Counties” have less than three-fourths of their area or population within the Sierra Nevada.

For this report, we have focused on the California counties, due in part to limited resources. We would, however, like to acknowledge that approximately 25% of the total Sierra Nevada population lives in three Nevada counties—Carson City¹⁰, Douglas and Washoe Counties. The Sierra Nevada Alliance will expand our analysis to these counties as funds become available. We have included a brief overview of growth and land use in these counties in Chapter VI, Nevada: Three Counties’ Impacts on the Sierra.

The focus of this report is on preserving natural areas and rural communities through local land use decisions; therefore, our emphasis has been on land that is privately owned rather than areas controlled by state and federal agencies. We acknowledge that proper management of state and federally owned lands is crucial for the health of the region; however, that discussion is outside the scope of this report.

Table 1.1: Core Counties

Core Sierra Nevada Counties	Peripheral Sierra Nevada Counties
Alpine	Butte
Amador	Carson City (NV)
Calaveras	Fresno
Douglas (NV)	Kern
El Dorado	Madera
Inyo	Tehama
Lassen	Tulare
Mariposa	Washoe (NV)
Mono	Yuba
Nevada	
Placer	
Plumas	
Sierra	
Tuolumne	

Planning for Our Future Campaign

The Sierra Nevada Alliance was formed in 1993 to protect Sierra lands, water, wildlife and rural communities, primarily through supporting and strengthening local efforts. The Sierra Nevada Alliance Planning for Our Future Campaign provides information, experts, training and assistance to ensure local conservation groups and Sierra communities effectively engage in the county planning process and shape “smart growth” in the Sierra. The campaign has formed a committee of planners, scientists, and policy experts to guide our work. In the coming year, we will start new efforts where none exist and strengthen local land use planning activities in key Sierra Nevada counties.

For the report, we used publicly available data from the U.S. Census, the California Statistical Abstract, the Sierra Nevada Ecosystem Project Report, Department of Motor Vehicles, the Forest and Range 2003 Assessment, U.S. Department of Agriculture Agricultural Census, and other sources.

Many Sierra Nevada counties are currently in the process of planning for the next wave of population growth that we will experience in the coming decades, often by updating or revising their County General Plan. General Plans can be an important tool in determining a community's

Table 1.2: Amount of Land in the Sierra Nevada

California Counties	Total sq mi	Sq mi in Sierra	% in the Sierra
Alpine	739	739	100%
El Dorado	1,711	1,706	100%
Mono	3,044	3,044	100%
Nevada	958	958	100%
Plumas	2,554	2,554	100%
Sierra	953	953	100%
Mariposa	1,451	1,451	100%
Tuolumne	2,235	2,235	100%
Amador	593	486	82%
Placer	1,404	1,072	76%
Calaveras	1,020	759	74%
Tulare	4,824	3,279	68%
Madera	2,136	1,365	64%
Yuba	631	397	63%
Butte	1,640	807	49%
Fresno	5,963	2,685	45%
Tehama	2,951	1,157	39%
Lassen	4,557	1,645	36%
Inyo	10,203	3,354	33%
Kern	8,141	2,497	31%
Total	57,708	33,144	57%
Nevada Counties			
Douglas	710	403	57%
Carson City	143	46	32%
Washoe	6,342	317	5%
Total	7,195	766	11%

Source: Geolytics, CensusCD 2000 Redistricting, Release 1.1, 2001, California Department of Finance, Nevada State Demographer.

future and in protecting what makes this region so unique. This report looks at whether the General Plans of the Sierra Nevada counties are up-to-date planning documents. We also look at several factors that indicate a county's capacity to deal with future growth and to conserve and protect natural areas.

For information on County General Plans and government activities, we contacted each county's planning department and spoke to a staff member. The General Plans were either sent directly by the Planning Departments or downloaded from the county website or California's LUPIN website.

Table 1.3: Percent of Population in the Sierra Nevada

California Counties	Total population	Population in Sierra	% in Sierra
Alpine	1,208	1,208	100%
Mariposa	17,130	17,130	100%
Mono	12,853	12,853	100%
Nevada	92,033	92,033	100%
Plumas	20,824	20,824	100%
Sierra	3,555	3,555	100%
Tuolumne	54,501	54,501	100%
El Dorado	156,299	150,533	96%
Lassen	33,828	28,274	84%
Inyo	17,945	14,828	83%
Amador	35,100	28,033	80%
Calaveras	40,554	30,015	74%
Placer	248,399	78,292	32%
Madera	123,109	25,734	21%
Yuba	60,219	10,778	18%
Butte	203,171	36,039	18%
Tehama	56,039	4,636	8%
Tulare	368,021	15,040	4%
Kern	661,645	23,672	4%
Fresno	799,407	17,334	2%
Total	3,005,840	665,312	22%
Nevada Counties			
Douglas	41,259	32,980	80%
Washoe	339,486	176,844	52%
Carson City	52,457	10,177	19%
Total	433,202	220,001	51%

Source: GreenInfo Network, Geolytics, CensusCD 2000 Redistricting, Release 1.1, 2001, CA Department of Finance, Nevada State Demographer.

Chapter 2 Change in the Sierra Nevada - the 1990s

While the rate of population growth in the Sierra has slowed since the 1970s and 80s, the 1990s saw significant changes in population in many counties. This section of the report looks at some of the ways the region has grown and changed during the past 15 years. As the population grows and development increases in the Sierra region, there can be widespread impacts. Many changes occur incrementally so that it is often not easy to tell what is happening until it is too late to change the course of events. By examining population growth, increase in traffic and roads, and new residential and commercial development in the 1990s, we hope to highlight the need to prepare for the growth of the coming decades—and seize the opportunity that we have now to decide what type of future we want for our region.

Our research found that the population grew by 16% in the region as a whole from 1990 to 2000. In the core Sierra Nevada counties, from 1990 to 2003 there were approximately 35% more

Region grows by 16% in the 1990s

registered vehicles, and 348 new miles of city and county roads. Residential

building permits increased 22% in core Sierra Nevada counties, while the value of commercial development was 35% higher in 2004 than in 1990.

Population growing in the Sierra

People have lived in the Sierra Nevada for thousands of years, but with the discovery of gold in the mid 1800s, the population increased dramatically. During the gold rush from 1848 to 1860, between 150,000 and 175,000 people moved to the region. The rate of growth then slowed after that period. In the next hundred years, the population roughly doubled.¹¹

There was a second “gold rush” during the 1970s.

The region grew by more than 65% in the 1970s and 39% in the 1980s, with the foothill counties of El Dorado, Placer and Nevada accounting for 40% of that growth. There were more people moving to the Sierra in 1970–1990 than came to the area during the gold rush of the 1800s.¹²

While the rate of population growth has slowed since the 1970s and 80s, people are still moving into the region at a significant rate. New residents—retirees, commuters and escapees from the city—are drawn to the area because of the landscape and the way of life. In a recent study of Nevada County, a survey of 358 households found that just over 3% of adults were born in Nevada County. Prior to moving to the county, 40% of those surveyed in the study were living in the San Francisco Bay Area, 16% in Southern California, 12% in the greater Sacramento area, and 33% were living in other areas in and out of California.¹³

Between 1990 and 2000, the region as a whole grew about 16% with more than half of the counties showing double digit population growth for areas within the Sierra. The Sierra portion of Madera County grew by almost one third, while Mono County saw a population increase of 29%.

El Dorado County saw the greatest influx of people with 28,362 new residents, followed by Nevada and Placer counties with 13,523 and 10,943 respectively.

El Dorado, Nevada and Placer counties alone accounted for approximately 58% of the population increase in the Sierra during the decade.

More than half of the 20 Sierra Nevada counties show double digit population growth for areas within the Sierra between 1990 and 2000

So while the growth rate has slowed for the Sierra since the 1970s and 80s, people continue to move

into the region. Clearly growth is the norm for all Sierra Nevada counties except three. Communities must take a serious look at how to maintain the character and qualities residents and visitors appreciate about these areas as more and more people live in the region. Growth is a serious challenge as well as an opportunity for the Sierra Nevada.

Table 2.1: Increase in Population 1990-2000
Portions of California Counties within the Sierra Nevada

	1990 pop	2000 pop	change	% change
Madera	19,551	25,734	6,183	32%
Mono	9,956	12,853	2,897	29%
El Dorado	122,171	150,533	28,362	23%
Fresno	14,475	17,334	2,859	20%
Mariposa	14,302	17,130	2,828	20%
Calaveras	25,347	30,015	4,668	18%
Nevada	78,510	92,033	13,523	17%
Placer	67,349	78,292	10,943	16%
Amador	24,676	28,033	3,357	14%
Butte	31,973	36,039	4,066	13%
Tuolumne	48,455	54,501	6,046	12%
Lassen	25,634	28,274	2,640	10%
Alpine	1,113	1,208	95	9%
Yuba	9,973	10,778	805	8%
Sierra	3,318	3,555	237	7%
Plumas	19,738	20,824	1,086	6%
Tulare	14,173	15,040	867	6%
Inyo	14,883	14,828	-55	0%
Kern	23,766	23,672	-94	0%
Tehama	4,822	4,636	-186	-4%
Total	574,185	665,312	91,127	16%

Source: Greeninfo Network, Geolytics, CensusDC 2000 Redistricting, Release 1.1, 20.

The counties that showed the most significant growth in the past few decades will continue to grow rapidly. Placer, El Dorado and Nevada Counties are projected by 2020 to have their populations increase by 84%, 42% and 38% respectively. Other counties are also projected to show a large increase in the rate of growth. For example, Calaveras County had a growth rate of 18% from 1990 to 2000; however, the Department of Finance predicts that between 2000 and 2020,

the population will grow by 47%.

Current estimates show that by 2040 the population of the

Sierra Nevada will be somewhere between 1.5 million and 2.4 million residents.¹⁴

Counties in the southern and central Sierra are forecast to have

growth rates higher than the rest of the region since they are close to the metropolitan areas of the Central Valley and more suitable for commuting.

Central and southern Sierra counties are facing significant growth now. These counties need to determine ways to accommodate doubling of their populations while maintaining a high quality of semi-rural life. At the same time, all areas of the Sierra should expect growth and start planning now to prepare for their future. (See Table 2.2)

Increase in residential and commercial development in Sierra counties

As the population grows, so too does the demand for housing and commercial development. The data available is for whole counties only, and in the case of commercial development does not indicate square feet of development, but rather the dollar value of the development.

As an indication of the speed at which residential development is occurring, we looked at the number of building permits issued in Sierra Nevada counties. We compared the number of permits issued in 1990 to those issued in 2004. For core counties as a whole, the number of residential building permits in

2004 was 22% higher than those issued in 1990. Some counties such as Placer, El Dorado, Nevada and Calaveras Counties are seeing a high level of building activity. For example, Placer County issued close to

Current estimates show the population of core Sierra counties increasing by almost 50% by 2020—approximately 357,000 people

Residential building permits increase 22% in core Sierra Nevada counties between 1990 and 2004

Table 2.2: Projected population - 2020*
Increase from 2000 population

Core Counties	2000 Pop	2020 Pop	change	% change
Placer	248,399	456,040	207,641	84%
Calaveras	40,554	59,691	19,137	47%
El Dorado	156,299	221,289	64,990	42%
Nevada	92,033	126,912	34,879	38%
Mono	12,853	16,248	3,395	26%
Amador	35,100	42,257	7,157	20%
Mariposa	17,130	20,607	3,477	20%
Tuolumne	54,501	65,452	10,951	20%
Alpine	1,208	1,441	233	19%
Lassen	33,828	38,232	4,404	13%
Sierra	3,555	3,654	99	3%
Inyo	17,945	18,404	459	3%
Plumas	20,824	20,983	159	1%
Total	734,229	1,091,210	356,981	49%
Peripheral Counties				
Madera	123,109	183,966	60,857	49%
Tulare	368,021	543,749	175,728	48%
Kern	661,645	950,112	288,467	44%
Yuba	60,219	84,816	24,597	41%
Fresno	799,407	1,114,654	315,247	39%
Butte	203,171	260,730	57,559	28%
Tehama	56,039	68,323	12,284	22%

* Data is for entire counties including outside the Sierra Nevada.
Source: California Statistical Abstract, 2004. California Department of Finance.

5,000 building permits in 2004, followed by El Dorado County with just over 2,000. However, other counties in more remote areas with smaller populations are not experiencing the same rate of construction.

With a 69% increase in residential building permits, Placer County has by far the highest rate of residential development in 2004. Several other counties are also building housing at an increased rate. It is also important to remember that these numbers are only a snapshot in time, and that rates may vary widely from year to year based on a range of factors.

This increase in residential building permits illustrates that the rate of residential development in the core Sierra Nevada counties is increasing at

a greater rate than population growth. Therefore, comparing residential building permits to population figures may also be an indicator of second and third home development. Looking only at

Table 2.3: Residential building permits issued per year*
% change 1990 to 2004*

Core counties	1990 total units	2004 total units	change	% change
Placer	2,888	4,894	2,006	69%
El Dorado	1,952	2,196	244	13%
Nevada	1,145	979	-166	-14%
Calaveras	645	831	186	29%
Amador	318	443	125	39%
Tuolumne	848	395	-453	-53%
Plumas	297	270	-27	-9%
Mono	247	226	-21	-9%
Lassen	176	212	36	20%
Mariposa	173	175	2	1%
Alpine	14	22	8	57%
Sierra	11	16	5	45%
Inyo	69	16	-53	-77%
Total	8,783	10,675	1,892	22%
Peripheral counties				
Kern	4889	7455	2566	52%
Fresno	5352	6879	1527	29%
Tulare	2133	2751	618	29%
Yuba	373	1697	1324	355%
Butte	1911	1968	57	3%
Madera	1558	1650	92	6%
Tehama	319	640	321	101%
Total	16,535	23,040	6,505	39%

*Data is for entire county including area outside the Sierra Nevada.

Source: Construction Industry Research Board.

population growth without examining residential development can underestimate the growth of housing used by visitors. More houses may lead to sprawling developments with a high impact on natural resources, or they may be designed in ways that protect natural areas and critical habitat and maintain the historic development pattern of compact town centers separated by rural countryside.

We reviewed the value of nonresidential building permits in core Sierra Nevada counties and compared the amounts for 1990 and 2004. The value of non-residential construction in 2004 in

Value of commercial development increases 35% in core Sierra Nevada counties between 1990 and 2004

of non-residential construction in 2004—a 132% increase over 1990.

Commercial development plays a vital role in the region's economic health, and is important to track in addition to other indicators to evaluate the region's sustainability. If this number does not go up as population and residential building increase, it could present a significant challenge in terms of a lack of services and employment. We must, however, also consider where this commercial development takes place in order to reduce or hopefully eliminate impacts on natural areas and wildlife. Concentrating commercial development near existing town centers can also reduce traffic and help revitalize existing communities.

More cars & more roads in the Sierra

Transportation and traffic problems are found everywhere in the state, and the Sierra is no exception. Many traffic problems are related to the sprawling patterns of growth so common today in California, patterns that leave us totally dependent

All but one core Sierra Nevada County had a double digit increase in vehicle miles traveled between 1990 and 2000

daily life. An increasing number of studies show that low-density development can mean increased transportation and travel costs,¹⁵ and that sprawling development generates more vehicles miles traveled (VMT) than more compact development near community centers.¹⁶

the 13 core counties was 35% higher than in 1990. Once again, Placer County greatly surpasses the other counties with almost \$332 million

on automobiles. This type of development makes it necessary for most people to rely on cars for work, school, shopping and the other necessities of

Table 2.4: Non-residential Construction Authorized by Building Permits*

*Comparison of value, 1990 and 2004** (in thousands of dollars, adjusted for inflation)*

Core Counties	1990	2004	change	% change
Placer	\$143,133	\$331,684	\$188,551	132%
El Dorado	\$92,814	\$93,478	\$664	1%
Nevada	\$35,430	\$23,732	-\$11,698	-33%
Mono	\$65,030	\$18,653	-\$46,377	-71%
Tuolumne	\$11,622	\$18,639	\$7,017	60%
Calaveras	\$14,254	\$16,177	\$1,923	13%
Amador	\$16,797	\$14,727	-\$2,070	-12%
Plumas	\$5,118	\$10,419	\$5,301	104%
Mariposa	\$5,830	\$7,184	\$1,354	23%
Lassen	\$4,866	\$6,344	\$1,478	30%
Inyo	\$7,381	\$1,609	-\$5,772	-88%
Sierra	\$617	\$1,002	\$385	62%
Alpine	\$0	\$429	\$429	n/a
Total	\$402,892	\$544,077	\$141,185	35%
Peripheral Counties				
Fresno	\$348,878	\$310,095	-\$38,783	-11%
Kern	\$282,691	\$251,975	-\$30,716	-11%
Tulare	\$173,778	\$163,744	-\$10,034	-6%
Butte	\$70,660	\$72,008	\$1,348	2%
Tehama	\$39,707	\$40,067	\$360	1%
Madera	\$51,265	\$33,663	-\$17,602	-34%
Yuba	\$16,729	\$18,868	\$2,139	13%
Total	\$983,708	\$890,420	-\$93,288	-9%

* Data is for entire county including area outside the Sierra Nevada.

**Converted to 2004 dollars at <http://minneapolisfed.org/research/data/us/calc/>.

Source: Construction Industry Research Board.

We compared total vehicle miles traveled—the total number of miles traveled by all vehicles within a county during a one year period—for 1990 and 2000 in Sierra Nevada counties. Most of these counties experienced a significant increase. The 13 core counties as a whole experienced a 30% increase in vehicle miles traveled. Once again, Placer County had the highest rate of increase at 46%. All counties, except Mono, experienced a double digit increase.

A significant increase in VMT can lead to increased traffic and more time spent commuting, as well as more air pollution. The increase in vehicle miles traveled is related not only to population growth, but also to an increase in tourist travel—the combination of which leads to more cars on the road and more congestion. Traffic congestion is particularly important when many Sierra communities depend on tourism as a leading source of income and jobs. Tourists are much less likely to visit areas with significant traffic and air problems.

Between 1990 and 2003 the total number of vehicles registered in the core Sierra Nevada coun-

ties increased dramatically—by approximately 36%. The number of vehicles more than doubled in Alpine and Placer Counties, and four other counties increased their numbers by more than a third.

Similar to an increase in VMT, an increase in the number of vehicles can lead to more traffic congestion, less parking, and bad air quality.

Registered vehicles increase 36% in core Sierra Nevada counties between 1990 and 2003

Table 2.5: Change in Total Vehicle Miles Traveled Per Year *
1990 to 2000 (in millions of miles)

Core Counties	1990	2000	change	% change
Placer	1,998	2,910	912	46%
Plumas	260	354	94	36%
El Dorado	1,232	1,618	386	31%
Amador	285	368	83	29%
Calaveras	305	386	81	27%
Mariposa	208	261	53	25%
Lassen	466	580	114	24%
Nevada	874	1,085	211	24%
Sierra	90	111	21	23%
Alpine	48	57	9	19%
Tuolumne	481	567	86	18%
Inyo	448	521	73	16%
Mono	300	294	-6	-2%
Total	6,995	9,112	2,117	30%
Peripheral Counties				
Madera	936	1,321	385	41%
Butte	1,455	2,000	545	37%
Kern	5,298	7,016	1,718	32%
Fresno	5,239	6,826	1,587	30%
Yuba	480	603	123	26%
Tulare	2,473	3,077	604	24%
Tehama	731	834	103	14%
Total	16,612	21,677	5,065	30%

*Data is for entire county, including outside the study area.
Source: California Vehicle Stock, Travel and Fuel Forecast, November 2004.

Table 2.6: Change in Number of Registered Vehicles*
1990-2003

Core Counties	1990	2003	change	% change
Alpine	1,236	2,043	807	65%
Placer	200,141	308,817	108,676	54%
Calaveras	44,062	64,502	20,440	46%
Mariposa	18,916	26,060	7,144	38%
Amador	36,786	49,549	12,763	35%
El Dorado	148,329	197,708	49,379	33%
Mono	12,308	16,196	3,888	32%
Tuolumne	57,831	73,230	15,399	27%
Lassen	27,995	34,101	6,106	22%
Sierra	4,237	5,161	924	22%
Plumas	27,153	32,693	5,540	20%
Nevada	99,397	119,277	19,880	20%
Inyo	23,920	25,834	1,914	8%
Total	702,311	955,171	252,860	36%
Peripheral Counties				
Madera	87,916	110,769	22,853	26%
Kern	474,274	571,061	96,787	20%
Tulare	253,123	301,381	48,258	19%
Fresno	537,569	635,952	98,383	18%
Tehama	54,954	61,143	6,189	11%
Butte	190,315	210,040	19,725	10%
Yuba	56,004	57,325	1,321	2%
Total	1,654,155	1,947,671	293,516	18%

*Data is for entire county, including outside the study area.
Source: California Statistical Abstract, 2004 and 1991.

Many communities see new roads as the answer to traffic congestion. However, that isn't necessarily the case. In some cases, building new roads can even be counter-productive. Eight traffic studies reviewed by the

Core Sierra Nevada counties built 348 miles of new city and county roads between 1990 and 2003

Sierra Club found that increasing road capacity can actually lead to new traffic once the initial congestion is reduced. Their study

found that after a brief period of relief, traffic jams return just like before.¹⁷

In the core Sierra Nevada counties, approximately 348 miles of new city and county roads were built between 1990 and 2003—a 4% increase. Placer County leads the list with a 17% increase or 242 miles of new city and county maintained roads since 1990. Many counties that have not experienced the rapid population increases of counties such as Placer and Nevada have added few if any miles of road. In three counties, Lassen, Mono and Tehama, there was a slight decrease in miles of city and county maintained road.

Roads can be responsible for a wide range of problems, including invasions of exotic weeds and pests transferred from other areas, auto pollution of areas with noise as well as heavy metals, carbon monoxide and dioxide. Roadside maintenance can lead to pollution of natural areas from pesticides, which end up in nearby streams and rivers. Roads also make slopes vulnerable to erosion, and increase sedimentation by concentrating surface water flows.¹⁸

Roads also block the movement of wildlife and are responsible for the deaths of birds, mammals, amphibians and reptiles. Some large mammals may avoid roads entirely, while smaller animals may be afraid to cross them. Either way, the result is habitat being cut up into smaller and smaller pieces, threatening species survival.

Table 2.7: Miles of city & county maintained roads*
1990 to 2003

Core Counties	1990	2003	change	% change
Placer	1426	1668	242	17%
El Dorado	1185	1234	49	4%
Amador	461	481	20	4%
Nevada	755	772	17	2%
Calaveras	704	718	14	2%
Plumas	683	696	13	2%
Tuolumne	625	634	9	1%
Inyo	1141	1148	7	1%
Mariposa	559	560	1	0%
Sierra	396	397	1	0%
Alpine	134	133	-1	0%
Mono	738	729	-9	-1%
Lassen	970	952	-18	-2%
Total	9,777	10,125	348	4%
Peripheral Counties				
Fresno	5509	5983	474	9%
Kern	4925	5313	388	8%
Butte	1713	1745	32	2%
Tulare	3772	3852	80	2%
Madera	1719	1732	13	1%
Yuba	654	656	2	0%
Tehama	1197	1190	-7	-1%
Total	19,489	20,471	982	5%

* Data is for entire counties including areas outside of the study area.

Source: California Statistical Abstract, 2004 and 1991.

Chapter 3 Growth and Development: The Fragile Reality of “Open Space”

Large areas of private land in the Sierra Nevada—areas currently viewed as “open space”—may be developed over the next 50 years due to the desire for more residential and commercial development. According to our analysis, at least 33% of the region is privately owned and therefore most vulnerable to development. (See Table 3.1) Therefore, much of what we now experience as natural areas may become ranchettes or shopping centers in years to come.

Natural areas and wildlife have already been affected by the growth of the past few decades. Large tracts of land have been divided and divided again, carving up what were once large tracts of natural areas. Some parts of the Sierra are protected, but vast areas are privately owned and subject to development.

The California Wilderness Coalition makes the point that “Nature needs room to move.”¹⁹ For many plants and animals to live and to survive environmental disturbances such as fire and global climate change, isolated nature preserves will not be enough. These areas must be connected by wildlife corridors and protected from further fragmentation. These corridors, also called linkages, are needed to facilitate the movement of animals, seeds, wildfire and pollen between protected natural areas. However, as development follows the major traffic corridors and converts more oak woodlands and other habitat to houses and commercial development, opportunities to connect existing preserves with wildlife corridors will soon be lost. A survey of biologists determined that 73% of wildlife corridors in the Sierra Nevada are threatened by urban growth.²⁰

While some critical habitat is currently protected, it is important to remember that these areas are not evenly distributed. Most protected wildlands

are in the southern part of the region’s middle to high elevations, primarily in wilderness areas, and national parks and monuments such as Yosemite and Sequoia/Kings Canyon.

Ranchlands, farmlands and forests are an important part of the Sierra economy, providing jobs and income and contributing to the scenic beauty of the region. When managed correctly, these working landscapes can also protect natural resources and play a critical role in providing wildlife habitat.

For many types of wildlife, the remaining isolated tracts of untouched wildlands may be insufficient for their survival. Unplanned growth and new roads are continuing to cut these parcels into even smaller pieces and in some cases virtually eliminating the types of habitat needed for some species to survive. Due to the fact that so much critical habitat is privately owned, it is vitally important that communities identify and protect areas that can serve as wildlife corridors and preserves before it is too late.

Vast areas of private Sierra “open space” may be developed

The perception of vast natural areas in many Sierra Nevada counties—especially in the foothills—may be misleading as much of this land may be developed in coming years. The amount of land affected will depend on how much the population grows and the patterns of development. The Sierra Nevada Ecosystem Project (SNEP), a U.S. government project to study the entire Sierra ecosystem, looked at different scenarios for the future of the Sierra. According to SNEP, if current population growth and development patterns stay the same over the next half century, approximately half of the private land in the Sierra would be

converted to residential and commercial development. If we concentrate local growth patterns, the developed land area would still double from the current amount.²¹

However, communities can protect large tracts of natural areas and still provide adequate housing. By maintaining the historic development pattern of compact town centers separated by rural countryside, we can build new housing and businesses as part of existing communities and reduce the impact on natural areas. Keeping land in ranches, farms and timber rather than residential development preserves these working landscapes and helps maintain the rural character of the region.

Invisible land use changes— Nevada County

The large migration of people from urban areas into many parts of the Sierra since the 1970s has resulted in striking changes in the way land is used. Instead of private land being used primarily for agriculture and timber, it has shifted to residential development and recreation.²² A 2003 study of western Nevada County by the University of Oregon clearly portrays the changes that are taking place in parts of the region currently experiencing large population growth.

According to the study, private land use in Nevada County in 1957 was divided almost evenly among agriculture, timber and residential or recreational use, with small areas for mining and other commercial uses. After studying land use patterns in the county, researchers found that by 2001, major changes had occurred. Most noteworthy was the large increase in rural-residential and recreational use in Nevada County—from 30% to 70% of all private rural land. Agriculture, in turn, decreased from 33% to 10%, and timber from 31% to 18%.²³

Rural residential use refers to land outside of cities and towns that is primarily residential but may also be used for part-time, small-scale agricultural activities or “hobby farming.” Lots are often from one to twenty acres, and usually require wells and

septic systems. These small tracts of land break up natural areas and can create barriers for plants and wildlife so that movement from one area to another becomes even more difficult. This type of residential development can also put a strain on local services such as fire protection and emergency response.

The Nevada County study also found that as the rural-residential area increased, there was a corresponding decrease in the size of “landholdings,” or the total number of acres held by a single owner. Researchers saw a shift from large ranches and timber operations to small parcels for single family residential—the median size of landholdings dropped from 550 acres in 1957 to nine acres in 2001.²⁴

While these dramatic changes in the land use patterns in Nevada County have taken place, much of the area still looks the same, retaining a false perception of rural character. Many of the impacts of this transition in land use are invisible at this time because many of the currently vacant parcels are in a natural state yet zoned and intended for development. As the author of the study states, this “could give a perhaps misleading sense of ‘open space.’” One of the study’s most startling findings was that “more than three-and-a-half times as much private rural land (281,689 acres) remains available for future development than all the private rural land that is already developed in the county (76,145 acres).”²⁵ While it is true that Nevada County has been one of the fastest growing counties in the Sierra, it can be viewed as an example of what might happen to counties throughout the region as population pressures increase.

According to our research, one-third of the Sierra is privately owned. In Calaveras, Amador and Butte counties, almost three-quarters of the land in the Sierra portion

of the county is privately owned. (See Table 3.1). In the counties experiencing the largest influx of population, El Dorado, Placer and Nevada Coun-

***One-third of the Sierra is
at risk of development***

ties, more than half of the area is privately owned. Only three counties, Alpine, Inyo and Mono, have less than 10% privately owned land.

Land that is publicly owned is much less likely to be developed. While all areas that are privately owned may not become sites for houses or businesses, the fact that there is so much private land underscores the importance of good land use planning. (See Table 3.1)

Table 3.1: Public/private land ownership in portion of counties in the Sierra Nevada

<i>County</i>	Total acres	Acres privately owned	% private owned
Calaveras	521,409	389,643	75%
Amador	323,307	235,382	73%
Butte	565,577	407,432	72%
Yuba	218,547	152,096	70%
Nevada	623,659	405,193	65%
Tehama	520,035	279,684	54%
El Dorado	1,143,069	601,565	53%
Placer	760,733	379,190	50%
Kern	1,477,761	713,309	48%
Mariposa	922,740	430,042	47%
Madera	826,839	316,675	38%
Lassen	1,501,653	561,272	37%
Sierra	615,319	176,060	29%
Plumas	1,672,724	472,925	28%
Tulare	2,055,441	535,136	26%
Tuolumne	1,450,334	351,552	24%
Fresno	1,700,009	347,650	20%
Alpine	473,893	34,904	7%
Mono	1,993,669	133,901	7%
Inyo	2,165,222	29,672	1%
Total	21,531,941	6,953,282	32%

Source: GreenInfo Network, PCL California Resources Agency, Public Conservation Trust Lands (PCTL), 2004.

The Sierra Nevada Alliance was able to obtain parcel data for 13 of the 20 counties in our study area. These counties are Butte, Calaveras, El Dorado, Fresno, Inyo, Kern, Lassen, Madera, Mariposa, Nevada, Placer, Tulare, and Yuba. The data included the number of parcels that are pri-

vately owned or owned by local, state or federal government.

In more than half of the 13 counties examined, at least one half of the privately owned parcels have not yet been

developed. In ***Nearly half of privately owned parcels in the Sierra portion of 13 counties are undeveloped***

Yuba County, only 10% of the land lying within the Sierra has been developed, and its proximity to metropolitan areas in the Central Valley makes it a likely candidate for future development activity. Both Kern and Butte Counties have approximately two-thirds of their privately owned parcels vacant or undeveloped at this time. In the counties with available data, about 44% of private parcels are undeveloped, many of which may be further subdivided in the future.

So while people may be experiencing many parts of the Sierra as open and natural, in reality these areas may be developed in years to come. In addition, this data in some ways understates potential impacts. Parcel data show only the total current number of parcels and do not take into account the fact that many of these pieces of property could be broken up or subdivided into smaller lots in the future. (See Table 3.2)

Important habitat under threat throughout region

SNEP documented some losses, such as the destruction of oak woodland—a loss of 16% or 800,000 acres over the past 40 years.²⁶ But in other areas, such as riparian habitat and old growth forests, we were not able to find historical region-wide data. In some instances, we were able to locate acreage of habitat and the percentage that is privately owned. In other cases, even this type of information was not available. Therefore, much of the data that we compiled on these topics should be viewed as a baseline—something that can be referred to in future years to assess the ongoing impacts of development.

Table 3.2: Number of undeveloped privately owned parcels
In the Sierra Nevada portion of 13 counties¹

County	Total privately-owned parcels ²	Un-developed private parcels ³	% of parcels un-developed
Yuba ⁴	7,435	6,656	90%
Kern	40,437	27,382	68%
Butte ⁴	15,097	9,975	66%
Fresno	14,327	8,507	59%
Tulare	10,685	6,305	59%
Mariposa	12,811	6,920	54%
Lassen	3,175	1,696	53%
Madera	18,006	8,398	47%
Calaveras	40,920	17,319	42%
El Dorado	90,119	32,452	36%
Nevada	44,216	15,855	36%
Inyo	214	71	33%
Placer	65,265	18,887	29%
Total	362,707	160,423	44%

1. Data was obtained only for the counties listed above. For the remaining counties, in some cases the charge for the data exceeded our budget, and other counties did not have the data available digitally.
2. Parcels owned by local, state or federal agencies were deleted from the total.
3. Where the values of improvements data is available, we took a value of less than \$20,000 to mean vacant. This allows wells, barns and other minor improvements to not count as developed property.
4. Data on the improvement value are not available for Butte and Yuba counties. Therefore, parcels listed have \$0 improvements.

Oak woodlands

The oak woodlands of the western Sierra foothills, where approximately 70% of the region's population lives, have been hardest hit by development.²⁷ Less than 1% of the foothills is protected from development, and much of the area lies within commuting distance of rapidly growing cities in the Central Valley.²⁸ Migration from the cities now represents the greatest threat to the wildlife and natural areas in the foothills as the area is being rapidly divided into large residential parcels.

With few exceptions, our research shows that more than three-fourths of hardwood habitats are privately owned in Sierra Nevada counties with significant acreage. In Tehama County, for example, 412,000 acres of hardwood are privately owned, leaving only 19% in public hands. For the region as a whole, approximately 68% or almost two million acres are privately owned. (See Table 3.3)

Change is happening quickly, and communities must take steps now to protect these significant natural areas. Approximately 800,000 acres or 16% of oak woodlands in the Sierra have been developed or converted to agriculture during the past 40 years.²⁹ Conversion to range-land was widespread between 1945 and 1973, while more recent trends are residential and vineyard development in the foothill counties.³⁰

More than three-fourths of oak woodlands are privately owned in Sierra Nevada counties

Of the various types of habitats in the Sierra, the highest number of native species are found in the foothill woodlands.³¹ Because of the relatively mild winters, the foothills also attract migratory birds and wintering mammals that spend summers in higher elevations.³² Eighty-five species specifically need the foothill habitats in order to survive in the Sierra—12 of these are now at risk.³³

A Ray of Woodland Hope

As of January 1, 2005, language has been added to the California Environmental Quality Act that requires all counties to adopt oak woodlands management plans or oak woodlands management ordinances. Under these plans or ordinances, a property owner or business must mitigate any "conversion" of oak woodlands by buying, or otherwise setting aside, two acres of land for every acre converted.

Table 3.3: Ownership of Hardwood Forest and Woodland

For portions of the county within the Sierra Nevada (acres)

County	Total public	Total private	% Private
Tulare	173,750	302,187	63%
Mariposa	77,739	192,087	71%
Kern	97,041	176,957	65%
Fresno	113,157	173,097	60%
El Dorado	27,547	170,253	86%
Madera	49,468	164,234	77%
Butte	30,142	139,827	82%
Nevada	16,665	110,577	87%
Calaveras	17,060	102,781	86%
Amador	8,686	94,834	92%
Tuolumne	108,289	81,285	43%
Placer	46,829	80,836	63%
Yuba	15,834	68,661	81%
Tehama	64,321	67,976	51%
Plumas	32,195	7,633	19%
Sierra	15,496	5,876	27%
Mono	20,137	2,466	11%
Lassen	3,358	1,846	35%
Inyo	14,527	776	5%
Alpine	3,054	499	14%
Region-wide	935,296	1,944,688	68%

Source: GreenInfo Network, California Department of Forestry and Fire Protection, Multi-source land cover data (Fveg02), 2002. California Resources Agency, Public Conservation Trust Lands (PCTL), 2004.

Riparian areas

We were unable to locate historic region-wide data on acreage or condition of riparian habitat. Until the 1960s, little research was done on riparian areas in the Sierra or elsewhere. Few data regarding these areas in the Sierra were collected or archived in a consistent format, and what does exist does not provide a comprehensive picture of the health of the areas near streams and lakes and other wetlands. Information is especially limited about riparian habitat in the foothills.

Areas near streams, rivers, lakeshores and other wetlands, also known as riparian areas, are extremely important to many species, not only be-

cause they provide water during the dry summer months, but also because riparian areas have cooler temperatures during the summer compared to non-riparian areas. They provide food, places to hide, nest sites and routes for migration. Eighty-two species of mammals, birds, reptiles and amphibians in the Sierra are considered dependent on riparian habitat, including wet meadow or lakeshores. Of these, 20 are considered at risk.³⁴

Birds are particularly dependent on riparian habitat. Changes in areas along rivers in the Sierra have been linked to a decrease in the number of birds, including the yellow warbler and yellow-breasted chat.³⁵

Because of their beauty, riparian areas are popular places for houses, roads and trails. Areas near streams, lakeshores and other wetlands are the most altered and damaged areas of the Sierra according to SNEP.³⁶

Our research found that approximately 62% of riparian habitat in areas below 5,000 feet in the western Sierra—or almost 600,000 acres—are privately owned, and therefore more vulnerable to development.

Almost two-thirds of riparian habitat is privately owned in Sierra Nevada

In Butte County, almost 83,000 acres are privately owned, while in fast-growing El Dorado County, 78% or almost 72,000 acres of riparian habitat are unprotected. It is important to note that not all publicly owned lands are managed to protect habitat, and therefore even more riparian habitat may be threatened than these numbers indicate.

Having riparian habitat primarily in private ownership means that private management is key to the health of our waters and wildlife. Human activities can impact riparian areas in a number of ways. Development of subdivisions and individual parcels can damage these areas. Water projects such as dams and flumes can essentially wipe out large strips of riparian habitat. Roads are also responsible for destruction and fragmentation, and

excessive livestock grazing has had a particularly significant impact on riparian areas in the foothill region.

Table 3.4: Riparian Vegetation by Land Ownership*
by county for portions within the Sierra Nevada below 5,000 feet elevation (acres)

County	Total riparian	Privately owned	% privately owned
Butte	102,267	82,714	81%
El Dorado	91,906	71,806	78%
Calaveras	83,793	69,792	83%
Nevada	71,416	57,615	81%
Amador	43,421	39,554	91%
Tulare	96,225	35,806	37%
Tuolumne	60,909	34,192	56%
Mariposa	51,951	33,488	64%
Tehama	58,307	30,226	52%
Placer	45,601	28,845	63%
Yuba	33,732	28,555	85%
Kern	52,260	22,136	42%
Madera	38,835	21,078	54%
Fresno	87,401	17,881	20%
Sierra	6,015	2,770	46%
Plumas	7	7	100%
Total	924,047	576,464	62%

* Table lists acreage of riparian vegetation within the riparian zone that includes all areas below 5000' elevation within a 375 meter buffer around perennial streams.

Source: California Department of Forestry and Fire Protection, *Riparian Vegetation in Hardwood Rangelands (riparian)*, 1994. California Resources Agency, *Public Conservation Trust Lands (PCTL)*, 2004.

Old growth forests

We were unable to locate historic region-wide data on old growth acreage. There is no equivalent historic data with which to determine any change in old growth acreage by county. Therefore, these numbers show in which counties old growth forests currently exist and may be used as a baseline for future comparisons.

Old growth forests are often defined as forests in

the later stages of development, and can also be called late-seral or late successional forests. Under ideal conditions, it is not uncommon for trees in the Sierra to live several centuries, and some species may live thousands of years.

Human activities have dramatically changed conditions in the Sierra, and have reduced the amount of old growth forest. Indiscriminate burning during the 19th century, fire suppression in the 20th century and logging have resulted in removal of large trees and the dense growth of shade tolerant trees—all of which lead to a loss of diversity in these habitats. Researchers estimate that old growth forests have declined from 66 percent or more of the Sierra Nevada landscape prior to Euro-American settlement to about 16 percent today.³⁷

In the entire Sierra, SNEP scientists found old growth forests on only 14% of federal lands, mostly within four

National Parks—Lassen, Yosemite, Sequoia, and Kings Canyon—and some National Forest

Old growth forests in the Sierra Nevada have declined 66 percent to about 16 percent

Wilderness Areas. These areas contain the largest remaining blocks of relatively intact late successional forests.³⁸

Eighteen species of wildlife are dependent on old growth forests; five of these are at risk.³⁹ Studies in the Sierra Nevada have shown a significant population decline of California spotted owls, a species that is dependent on old growth forests, indicating that the species may become federally listed as threatened.⁴⁰

In the Sierra as a whole, there were approximately one million acres of high quality old growth forest in 1996, according to Sierra Nevada Ecosystem Project (SNEP) data. Tulare County had the highest acreage of old growth forest—just over 180,000 acres—followed by Tuolumne and Fresno Counties.

SNEP scientists mapped old growth forests in the

Sierra and ranked areas based on their condition and quality. Table 3.5 is based on this survey and shows the number of acres of high quality old growth forests in areas of each county in the study area. Those ranked 4 were old growth mixed conifer forests with open structures that were often the result of frequent low-intensity fires. Old growth forests of the highest quality that include many large trees were given a ranking of 5.⁴¹ At this time, however, it is not possible to determine the ownership of this acreage.

Our communities should plan how to protect what remains of the Sierra's old growth forests. If future generations are to enjoy the amazing diversity of wildlife and the solitude and beauty of old growth stands, our communities should know the location of these stands and plan for their protection.

Threatened and endangered species

Ninety-five percent of the total number of species listed under the Endangered Species Act are endangered by loss or fragmentation of habitat or some other change in their natural environment. The rate of extinctions is increasing so rapidly throughout the world that conservation biologists predict a third of the world's plant and animal species will be lost within the next 50 years.⁴²

About 300 mammals, birds, reptiles and amphibians use the Sierra Nevada as a major part of their range. Three species that were once found

Each of the 20 counties in our study has threatened and/or endangered species in the Sierra portion of the county

throughout the Sierra are now extinct in the region—Bell's vireo, the California condor and grizzly bear.

Sixty-nine species are considered at risk by state or federal agencies, listing them as endangered, threatened, of "special concern," or "sensitive."⁴³ (See Table 3.7)

Genetic diversity allows plants and animals to adapt to changing conditions. As habitat is destroyed and natural areas are separated by roads

Table 3.5: Acres of High Quality Old Growth Forests
- for portion of county in Sierra Nevada (acres)

County	Rank 4	Rank 5	Total 4 & 5
Tulare	123,048	58,007	181,055
Tuolumne	62,628	77,117	139,745
Fresno	115,408	2,451	117,859
Plumas	95,415	5,706	101,121
Mariposa	15,700	76,702	92,402
Placer	84,380	0	84,380
El Dorado	58,353	11,850	70,203
Sierra	35,134	21,797	56,931
Butte	27,760	0	27,760
Madera	12,530	10,442	22,972
Tehama	21,380	0	21,380
Lassen	12,631	4,808	17,971
Kern	8,105	5,340	13,445
Nevada	10,816	0	10,816
Calaveras	4,111	3,843	7,954
Alpine	6,474	980	7,454
Amador	7,095	3	7,098
Yuba	3,446	0	3,446
Mono	0	0	0
Inyo	0	0	0
Total	704,414	279,046	983,460

Summary includes only the following forest types: Eastside pine, mixed conifer, Jeffrey pine, Upper montane, red fir, White fir, Eastside white fir and white fir/pine, Giant sequoia, and Eastside mixed conifer.

Source: Sierra Nevada Ecosystem Project, 1996.

and development, it becomes harder for populations of plants and animals to interact, and genetic diversity is threatened. Loss of this diversity can be the first step toward extinction.

Fresno County has the largest number with 15 threatened or endangered species in the Sierra portion of the county. Four counties have ten or more threatened or endangered species—El Dorado, Fresno, Madera and Tulare Counties.

The presence of these species highlights the need for county and region wide plans to protect and restore habitat. Counties should note what endangered and threatened species are in their areas, what habitat needs are required for their

preservation, and create plans for their protection. Not only will designating habitat corridors and preserves help the species, it can provide a level of certainty and guidance for property owners.

Table 3.6: Federal Endangered and Threatened Species that may be affected by projects in the Sierra region by county*

Counties	Threatened ¹	Endangered ²
Alpine	3	0
Amador	6	3
Butte	7	1
Calaveras	6	0
El Dorado	8	4
Fresno	10	5
Lassen	2	2
Madera	9	2
Mariposa	7	0
Mono	3	2
Nevada	5	1
Placer	7	1
Plumas	3	0
Sierra	3	0
Tehama	7	1
Tulare	6	4
Tuolumne	9	0
Yuba	7	2

¹ Listed as likely to become endangered within the foreseeable future.

² Listed (in the Federal Register) as being in danger of extinction.

* Data is for portions of counties in the Sierra ecoregion. Inyo County was not listed in the database. Only the Central Valley portion of Kern County is listed in the database and therefore not included in this table.

Source: U.S. Fish and Wildlife Service, http://sacramento.fws.gov/es/spp_lists/coListFormPage.cfm.

Working landscapes in trouble in some counties

Ranchlands, farmlands and forests are an important part of the Sierra economy. These working landscapes provide a source of jobs and income, contribute to the scenic beauty of the area and provide wildlife habitat. How they are managed determines the extent of their impact on natural resources.

Agricultural land may seem “vacant” or unused

to those driving by, and new developments might appear more productive economically. However, the economy and local communities can suffer over time as more and more agricultural land disappears. When agricultural land is converted to urban uses, jobs and revenues connected to the land are gone, and public costs increase. Eighty-five studies of communities throughout the country show that residential development requires on average \$1.24 in expenditures for public services for every dollar it generates in tax revenues. By contrast, farmland or open space generates only 38 cents in costs for each dollar in taxes paid.⁴⁴

Forestland, farmland and rangeland also provide important habitat for many types of wildlife in the Sierra. When managed properly, these lands can provide forage and cover for migratory birds or linkages to natural areas for native plant and wildlife communities. And with proper management, forested land and open farm and ranch land protect watersheds, filtering water and providing buffers for rivers and streams.

While society as a whole derives many benefits from farmland, ranchland and forests, the vast majority of this land is privately owned. Individual landowners must pay most of the costs of maintaining these resources. The costs continue to rise, increasing the likelihood of owners selling their land for future development.

Many farmers face a constant struggle to earn a living. The costs of production, such as labor, energy, machinery, seed and chemicals, have increased, while the prices they receive for their products continue to decline. Unplanned development near working landscapes can also threaten the economic viability of ranch and farm lands. As the amount of agricultural land decreases, local suppliers and other support services may no longer be able to survive. This in turn increases the costs for remaining farmers and ranchers who have to go further to obtain support services.

Most of the cultivated land in the Sierra is privately owned and often directly in the path of residential development. As residential develop-

Table 3.7: Endangered and threatened species in the Sierra Nevada

<p>Amphibians California tiger salamander (T) California red-legged frog (T)</p> <p>Birds Bald eagle (T) California condor (E) Northern spotted owl (T)</p> <p>Fish Central Valley spring-run chinook salmon (T) Central Valley steelhead (T) Lahontan cutthroat trout (T) Little Kern golden trout (T) Modoc sucker (E) Owens tui chub (E) Paiute cutthroat trout (T) South Central California steelhead (T) Winter-run chinook salmon (E)</p> <p>Invertebrate Valley elderberry longhorn beetle (T) Carson wandering skipper (E)</p>	<p>Mammals Riparian brush rabbit (E) Sierra Nevada bighorn sheep (E)</p> <p>Plants Chinese Camp brodiaea (T) El Dorado bedstraw (E) Hartweg's golden sunburst (E) Hoover's spurge (T) lone manzanita (T) lone buckwheat (E) Irish Hill buckwheat (E) Keck's checker-mallow (checkerbloom) (E) Layne's butterweed (ragwort) (T) Mariposa pussy-paws (T) Pine Hill ceanothus (E) Pine Hill flannelbush (E) Red Hills (California) vervain (T) San Joaquin adobe sunburst (T) Springville clarkia (T) Stebbins's morning-glory (E) Succulent (fleshy) owl's-clover (T)</p> <p>Reptiles Blunt-nosed leopard lizard (E)</p>
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(E) Listed (in the Federal Register) as being in danger of extinction.

(T) Listed as likely to become endangered within the foreseeable future.

Source: U.S. Fish and Wildlife Service, http://sacramento.fws.gov/es/spp_lists/coListFormPage.cfm.

ment moves on to agricultural land, it can lead to increasing conflicts with adjacent farms and ranches. New residents often complain about the noise and smell of farm and ranch operations and pesticide drift. This adds to the frustration of farming and ranching, and makes the subdivision and sale of property even more enticing.

Because data were not available for agricultural acreage in the Sierra portions of the counties, we based our analysis on data for the counties as a whole. We used two sets of data for our analysis—the U.S. Department of Agriculture Agricultural Census and data from the California Department of Conservation Farmland Mapping and Monitoring Program (FMMP). Each data set shows different numbers for agricultural acreage in counties in which the data were available. We also reviewed crop reports submitted by Agricultural Commissioners of nine Sierra Nevada coun-

ties and found that the numbers for agricultural acreage in the reports corresponded to neither the USDA nor the FMMP estimates. In summary, the data is inconsistent.

While we are not able to give precise figures for agricultural acreage in the Sierra, we present the data we compiled so that readers may get at least a partial sense of what is happening to ranch and farmland in the region.

The Sierra Nevada Alliance would recommend California Department of Conservation keep detailed data on where agricultural lands are located in each county. The Sierra Nevada and Central Valley have different ecosystems and different economic bases which are important to differentiate. Evaluating whole county data loses the ability to evaluate these differences. Counties such as Butte, Fresno, Kern, Madera, Tehama, Tulare, and

Table 3.8: Farm Mapping and Monitoring Program Total Farmland
— 1992 to 2002 (acres)

Core counties*	1992	2002	Change	% Change
Placer	203,047	175,445	-27,602	-14%
Sierra Valley	193,970	189,033	-4,937	-3%
El Dorado	274,321	269,246	-5,075	-2%
Amador	203,480	202,121	-1,359	-1%
Nevada	152,196	151,618	-578	0%
Mariposa	407,819	406,639	-1,180	0%
Peripheral counties				
Butte	536,600	517,306	-19,294	-4%
Yuba	238,768	233,273	-5,495	-2%
Madera	787,872	772,213	-15,659	-2%
Kern	2,784,632	2,768,302	-16,330	-1%
Tehama	953,580	951,119	-2,461	0%
Fresno	2,229,820	2,233,915	4,095	0%
Tulare	1,310,858	1,313,461	2,603	0%

* Data not available from FMMP for Alpine, Calaveras, Inyo, Lassen, Mono, Plumas, and Tuolumne Counties.

Source: California Department of Conservation Farmland Mapping and Monitoring Program, http://www.conservation.ca.gov/DLRP/fmmp/stats_reports/county_acreage_summaries.htm.

Yuba have large areas in the Central Valley.

Without baseline data for the Sierra it is impossible to measure the success or failure of any policies or practices put in place to protect Sierra ranch and farm lands over time.

Timber

Private forestland can be especially vulnerable to development pressures since it takes many years to grow mature trees.

In general, commercial timberland sells for much less than the land would be worth as residential sites, second homes or recreation areas. One study of 473 counties in the southeastern United States found that the average value of future profits of land in timber production per acre was \$415—compared to its value in residential housing at

\$36,216—a developed value nearly 90 times higher than its forest value.⁴⁵

In Calaveras, Butte, Tehama, Yuba, Nevada and Amador Counties, more than one-half of the conifer forests are privately owned.

Region-wide, approximately 25% of conifer forests are privately owned. ***In six counties, more than one-half of the conifer forests are privately owned, and therefore more vulnerable to be sold and developed***

Plumas County has the highest acreage with almost 300,000 private acres. (See Table 3.10)

While the current numbers imply that these forest acres are open space, future reviews may find they have been converted to developed lands. Developed lands are almost never returned to a natural

Table 3.9: USDA Agricultural Census. Land in Farms — 1992 to 2002 (acres)

Core Counties	1992	2002	change	% change
Mono	103,294	54,366	-48,928	-47%
Amador	236,222	194,144	-42,078	-18%
Inyo	247,550	226,788	-20,762	-8%
Placer	137,723	131,311	-6,412	-5%
Lassen	487,499	481,826	-5,673	-1%
Sierra	55,446	58,649	3,203	6%
Nevada	72,471	82,336	9,865	14%
Tuolumne	137,530	149,767	12,237	9%
Mariposa	206,138	219,133	12,995	6%
Calaveras	246,077	260,865	14,788	6%
El Dorado	102,028	117,064	15,036	15%
Plumas	119,514	170,521	51,007	43%
Total	2,151,492	2,146,770	-4,722	-0.2%
Alpine**	4,768	n/a	n/a	n/a
Peripheral Counties				
Tehama	1,016,851	862,440	-154,411	-15%
Kern	2,839,531	2,731,341	-108,190	-4%
Butte	452,347	381,532	-70,815	-16%
Madera	749,465	682,486	-66,979	-9%
Yuba	234,781	234,129	-652	0%
Tulare	1,354,262	1,393,456	39,194	3%
Fresno	1,774,664	1,928,865	154,201	9%
Total	8,421,901	8,214,249	207,652	2

* Data is for entire counties including area outside the Sierra Nevada.

** Data for 2002 in Alpine is withheld to avoid disclosing data for individual farms.

Source: USDA Agricultural Census, 1992 and 2002.

state and restored to their original condition. Once developed, these lands have a greater impact on air quality, water quality, wildlife, and outdoor recreational opportunities than forest lands. Therefore, communities must strive to protect and maintain private forest lands, and to ensure that these lands are properly managed.

Table 3.10: Ownership of Conifer Forests by County -
for acreage within Sierra Nevada (acres)

Counties	Total privately owned	Total public and private	% privately owned
Calaveras	166,008	247,202	67%
Butte	192,191	308,550	62%
Tehama	117,197	201,314	58%
Yuba	54,981	95,094	58%
Nevada	195,727	346,656	56%
Amador	60,941	120,434	51%
Lassen	208,411	458,607	45%
Placer	172,524	444,913	39%
El Dorado	222,227	633,118	35%
Sierra	94,649	407,259	23%
Plumas	295,466	1,278,725	23%
Tuolumne	130,061	780,407	17%
Kern	17,342	118,302	15%
Mariposa	36,945	320,607	12%
Alpine	15,286	238,412	6%
Fresno	36,893	809,798	5%
Madera	14,144	347,499	4%
Mono	10,317	257,422	4%
Tulare	21,068	840,180	3%
Inyo	996	63,568	2%
Total	2,063,374	8,318,067	25%

Source: GreenInfo Network, California Department of Forestry and Fire Protection, Multi-source land cover data (Fveg02), 2002. California Resources Agency, Public Conservation Trust Lands (PCTL), 2004.

Note: Total public and private includes all of the following: Privately owned, Bureau of Land Management, Bureau of Reclamation, Misc State, CA Dept of Fish and Game, CA Dept of Forestry and Fire Protection, CA Dept of Parks and Recreation, CA National Guard, CA State Academic Institution, Local Water District, Conservancy/Land Trust, CA Dept of Water Resources, Dept of Defense, Regional Park District, Misc Local, Open Space District, NASA, City/County Park, CA State Conservancy, CA State Lands Commission, Unknown Federal, Public Lands Unknown Owner, US Fish and Wildlife Service, US Postal Service, USDA Forest Service, National Park Service.

Chapter 4 Communities can protect natural areas and manage rural sprawl

Population growth and development are having impacts on the Sierra Nevada—both good and bad. Local communities in the region can play a major role in promoting the positive aspects of growth and preventing those that may have a negative impact on natural areas, working landscapes and our rural lifestyle. One of the most effective ways communities can prepare for future growth is through the land use planning process.

Land use planning can and should be a direct reflection of a community's choices about how it will grow in the future

Land use planning can and should be a direct reflection of a community's choices about how it will grow in the future—not something imposed on residents

by a remote bureaucracy. Through the planning process, communities can manage the spread of rural sprawl, concentrate growth in existing towns and protect the region's natural resources.

In California, key tools for shaping growth are city and county general plans—documents that should be based on the communities' vision of the future and should serve as the framework for all local planning decisions. In this section, we look briefly at the role that county general plans can play and examine if Sierra Nevada counties have kept their plans up-to-date. We also contacted each county's planning department to see if the county has put programs in place for countywide mapping of critical habitat or developed plans for protection and restoration of important natural areas.

In a future report, the Sierra Nevada Alliance will take a more in-depth look at policies that local communities can use to shape growth and control sprawl. We will also review each county's plan to determine if any of these policies are reflected in the county documents.

California County General Plans need to be based on up-to-date information

The General Plan is California's version of the "master" or "comprehensive" plan—a blueprint for future development in a county.⁴⁶ It represents the community's vision of its future and should serve as the basis for all land use decisions made by the board of supervisors and planning commission. The general plan looks to the future, identifying types of development that will be allowed and the general pattern of future growth. All subdivisions, public works projects and zoning decisions must be consistent with the general plan or they should not be approved. The zoning ordinance, which divides all land in the county into zones and specifies the permitted uses and standards in each zone, should implement the goals and policies stated in the general plan.

The general plan identifies the pattern of future growth

State law requires that each county adopt a general plan containing seven components or elements: land use, circulation, housing, conservation, open space, noise and safety. Counties are also free to adopt additional elements such as recreation, agriculture, urban design or public facilities.

Even though general plans are required by state law, there is no procedure for any state agency to review the documents for compliance. In fact, compliance is only ensured through litigation⁴⁷—which means that the process is heavily dependent on citizen enforcement. If, as a result of a lawsuit, a county's general plan is determined in court to be invalid, the county government loses all power to make land use decisions, such as approving new developments, until such time as the plan is brought into compliance.

For this report, we looked at three elements in the general plans of the 20 counties that are part of our study area⁴⁸: land use, open space and conservation. Land use is the most basic part of the plan and deals with issues such as population density, building intensity and the distribution of land uses. It must lay out a plan for roads, development and public facilities not only for the present, but for the future. The conservation element deals with the need to conserve natural resources such as agricultural land and endangered species. And, the open space element should provide a plan for long-term conservation of open space in the county. We recorded when those three elements of the general plan were last updated.

Three Sierra Nevada counties, Mariposa, Tehama and Tulare, have general plans that date from the 1970s to the early 1980s; however, all three counties are currently in the process of updating their plans. Such plans are clearly out of compliance and could easily be challenged in court. Amador,

Eight Sierra Nevada counties have general plans that are at least ten years old

Mariposa, Nevada and Placer counties all have plans that are at least ten years old, and considering the growth

taking place in these counties, a current general plan would be an important part of planning that growth. Amador County is currently in the early stages of updating its general plan.

For a county general plan to be effective it must be based on up-to-date information. Having a current general plan is a necessary to prepare for future growth. Without a current plan, growth may destroy values the community holds dear.

In addition, outdated general plans often lead community members to use the court system to shape growth. As stated in the State's General Plan Guidelines: "A general plan based upon outdated information and projections is not a sound basis for day-to-day decision-making and may be legally inadequate. As such, it will be susceptible to successful legal challenge."⁴⁹ (See Table 4.1)

**Table 4.1: Sierra County General Plans—
Last updates - Land use, Conservation
and Open Space Elements**

County	Land use	Conser- vation	Open space	Status
Alpine	1999	1999	1999	
Amador	1991	1991	1991	Plan to start update this year.
Butte	revised in 2000*	1971	1973	Technical update currently underway.
Calaveras	1996	1996	1996	
El Dorado	2004	2004	2004	Updated GP passed by referendum, March 2005.
Fresno	2000	2000	2000	
Inyo	2001	2001	2001	County website lists 2006 for next update
Kern	2004	2004	2004	
Lassen	2000	2000	2000	
Madera	1995	1995	1995	
Mariposa	1981	1981	1981	Update currently underway
Mono	2000	2000	2000	
Nevada	1995	1995	1995	
Placer	1994	1994	1994	
Plumas	2003	2000	2000	
Sierra	1996	1996	1996	
Tehama	1983	1983	1983	Update currently underway
Tulare	1981	1972	1972	Update currently underway
Tuolumne	1996	1996	1996	
Yuba	1996	1996	1996	

* While the Butte General Plan states that it was revised in 2000, most of the language in the Land Use Element relates to the 1970s.

Source: County web sites, conversations with planning staff, or General Plan documents.

Sierra Nevada counties lacking in conservation mapping and planning

In order to protect critical habitat from fragmentation or destruction and to preserve important recreational and natural areas, these areas must

Planning policies to protect natural areas, agricultural lands and communities in the Sierra

These policies can be included in county general plans to promote planned growth and protection of the Sierra's resources, including natural areas, open space, and agricultural land.

1. Maintain the historic development pattern of compact town centers separated by rural countryside.

- Promote infill development and redevelopment where transportation facilities and utilities already exist in order to minimize development of open lands, such as natural areas and farmland. Encourage development that is compact and contiguous to existing community infrastructure.
- Develop compact mixed-use centers at a scale appropriate for the community and the region.

2. Preserve permanent open space as an integral part of new development both to protect critical natural areas and to provide opportunities for recreation.

- Provide mechanisms for transferring development rights from highly sensitive lands to lands suitable for higher density.
- Design developments to create open space linkages to adjacent and regional natural areas so that open space exists not as islands but as connected habitat.

3. Protect and restore natural areas.

- Use the development process to enhance and restore streams, wetlands and lakes, and to enhance their potential as wildlife habitat, and recreational and aesthetic amenities.
- Locate and plan new development to provide buffers between sensitive natural areas and intensive use areas.
- Minimize changes to natural topography, soils, and vegetation to preserve land, water and soil relationships that are essential for sustaining plant and animal habitat.

4. Maintain the sustainable economic productivity of the region's farm and ranch lands and forests.

first be identified. Conservation mapping is an important tool to accomplish this goal. Easy access to reliable, appropriately-scaled data about important natural systems in the area and the region enable communities to reduce conflicts between natural systems and new development.⁵⁰ For truly effective preservation, mitigation must go beyond a project-specific level. A county or regionwide plan to preserve critical natural areas, habitat linkages and important open space should be developed and used as key part of the decision making process.

To be useful, a conservation plan must map all the unincorporated lands within a county and prioritize habitats to acquire and protect. Project-by-project conservation decisions made without at least a countywide overview have little chance to be effective. (See Table 4.2).

We asked county planning departments in the Sierra region if their county had done any mapping or inventories of

endangered or critical habitat. A large majority of Sierra Nevada counties—70%—do not have any type of county-

wide map or inventory of areas that need to be protected. Some planners referred to use of state databases on habitat, but on a project by project basis and not as part of an overall plan.

70% of Sierra Nevada counties do not have any mapping or inventories of endangered or critical habitat

We asked counties if they had habitat conservation plans (HCP), natural community conservation plans or conservation

banks—all methods of designation and preserving critical habitat. Eighty five percent said no. Only Tuolumne County has a county-wide habitat preservation

plan in place. Kern and Placer Counties have plans for certain areas, and Yuba County is in the process of developing a plan.

85% of Sierra Nevada counties do not have habitat conservation plans (HCP), natural community conservation plans or conservation banks

Table 4.2: Conservation mapping and plans in Sierra Nevada counties

County	County-wide mapping or inventories of endangered or threatened habitats?	HCP,¹ natural community conservation plans, conservation banks?
Alpine	no	no
Amador	yes, lone area only	no
Butte	no	no
Calaveras	no	no
El Dorado	no	no
Fresno	no	no
Inyo	no	no
Kern	no	yes, for metro Bakersfield area
Lassen	no	no
Madera	no	no
Mariposa	no	no
Mono	no	no
Nevada	no, only by project	no
Placer	yes	yes, Placer County Conservation Plan, Phase 1 Auburn West
Plumas	no ²	no
Sierra	yes	no
Tehama	no ²	no
Tulare	yes	no ³
Tuolumne	yes	yes, wildlife habitat plan - county wide
Yuba	in process	in process

1 Habitat conservation plans.

2 County uses state databases.

3 A background study was completed, but a plan has not been developed.

Source: Telephone interviews with county planners.

Natural areas cannot be protected unless a community and local government know the location of these areas. A general plan, for example, cannot designate land for preservation if the critical areas have not been identified.

Once important natural areas are designated, communities with their local governments must develop comprehensive plans to protect them. Mitigating impacts on a project-by-project basis without an overall plan will not protect the large tracts of land needed to ensure that sufficient habitat is preserved.

Habitat Conservation Planning in Bakersfield

The City of Bakersfield and Kern County have developed a habitat conservation plan (HCP) to protect habitat for the endangered and threatened species listed under the Endangered Species Act and found in the Bakersfield area. Developers have two options: they can pay a one time habitat mitigation fee when they develop or they can prepare a separate on-site mitigation plan with state and federal agencies—a more expensive option.

Paying the mitigation fee has several advantages. Property owners can develop their property on a predictable schedule and contribute to a trust that purchases important natural areas in the western part of the county. The second option usually takes more time and requires property owners to pay more money. Plus on-site mitigation rarely saves enough habitat to protect the animals and plants that are threatened.

The Bakersfield habitat conservation program has generated more than \$3 million since its adoption in 1994—enabling the county to buy and manage more than 3,100 acres of critical habitat for endangered and threatened species.

Source: Planning for Prosperity, Sierra Business Council, 1997

Chapter 5 Landowners and local land trusts can preserve agricultural land and open space

While local government land use planning shapes future rural development, landowners and local residents also play a major role in protecting open space and natural areas. Owners of farm and ranch lands who want their lands to stay as working landscapes can protect their lands a number of ways including entering into a contract with their local government to receive lower property taxes in exchange for maintaining the property as open space. They can also partner with land trusts to set up conservation easements. Local residents can support their local land trust by becoming members and working to help landowners preserve their land.

Protected agricultural land disappearing in fast growing counties

The California Land Conservation Act, or the Williamson Act as it is better known, has been helping to protect agricultural land since 1965. It is a state policy administered by local governments. These governments are given some leeway to tailor the program to the particular needs of their area. The Act allows a landowner to enter into a contract with the local county government in which he or she agrees not to develop the land in return for lower property taxes. The local government gives up a portion of its property tax revenue in return for the value of retaining land in agriculture or open space. These agreements are estimated to save landowners from 20% to 75% in property taxes each year.⁵¹

Williamson Act contracts have an initial term of ten years, with renewal occurring automatically each year. The contracts stay with the land even if it is sold. For land to qualify under the Williamson Act, it must be located within an agricultural

preserve which must be designated by resolution of the board of supervisors. The rules of each agricultural preserve specify what uses will be allowed.

While the Act does not protect the land forever, it is one way to help farmers and ranchers

who want to keep their land in agriculture.

Land protected under the Williamson Act in core Sierra Nevada counties increased slightly between 1991 - 2003, to just over 26,000 acres or 3%

We reviewed the amount of land protected under the Williamson Act in the 13 core counties—Alpine, Amador, Calaveras, El Dorado, Inyo, Lassen, Mariposa, Mono, Nevada, Placer, Plumas, Sierra and Tuolumne. Inyo County is not part of the program. Alpine County now participates in the program but as of 2003, the year of most recent data, had not entered into a contract with a landowner.

The State has been tracking the amount of land protected by the Act since 1991. We compared acreage from 1991 to the numbers for 2003 and found that while there has been a small increase in acreage—about 3% or 26,000 acres—there are many more landowners throughout the region who could be taking advantage of this program.

Placer County has seen the largest decline in the amount of agricultural land no longer protected from development under the act. Between 1991 and 2003, the amount of land in Placer County under the Williamson Act dropped 41% or almost 31,000 acres. El Dorado County was second with a 26% decrease —13,000 acres no longer protected.

Saving Martis Valley

No Sierra development issue has attracted as much attention as the debate over the future of Martis Valley.

Spearheaded by Sierra Watch, conservationists have worked to ensure a healthy future for the Tahoe-Truckee Region – and to provide an inspiring example of how we can work together to protect the places we love.

In late 2003, Placer County decision-makers approved the Martis Valley Community Plan, which calls for more than 6,000 new houses—enough development for an urban population of 20,000—in Martis Valley, between North Lake Tahoe and Truckee.

Plan policies call for more than 1,000,000 square feet of new commercial development (more than enough space for six Walgreens) and two new golf courses. New car traffic would require the widening of Highway 267—a key gateway to Tahoe—from two to at least four lanes. New development would add more than 2,000 new daily car trips to the Tahoe Basin, accounting for 27% of the traffic coming over Brockway Summit and adding 55 to 97 pounds of air pollution to the Tahoe Basin every day. In 2004, the Wall Street Journal reported, “the sheer magnitude makes it one of the biggest such developments in the nation.”

Led by Sierra Watch, local residents, second homeowners, and Sierra visitors embarked on a concerted Martis Valley Campaign. To ensure a responsible plan—one that calls for a reasonable amount of development and ensures permanent protection of priority conservation land—conservationists employed planning expertise, organized citizen volunteers, and mounted legal challenges to irresponsible development approvals.

By early 2005, Sierra Watch and its allies marked significant progress. In March, Sierra Watch announced an unprecedented agreement to limit development at Northstar and raise \$30 million for conservation in Martis Valley, and followed up with an agreement with Eaglewood developers, raising an additional \$8 million.

In May, a Placer County Superior Court judge handed down a final decision in the case against the Martis Valley Community Plan, clearly siding with Sierra Watch and co-plaintiffs League to Save Lake Tahoe, Mountain Area Preservation Foundation, Planning and Conservation League, and Sierra Club. The Court ruled that recent development approvals violate state law and ordered Placer County to suspend all approvals and activities under the Martis Valley Community Plan.

For more information about Sierra Watch and the Martis Valley Campaign, please visit www.sierrawatch.org, or call (530) 265-2849.

Table 5.1: Changes in protected agricultural land: Williamson Act acreage*

Core Counties	1991	2003	change	% change
Placer	75,543	44,799	-30,744	-41%
El Dorado	49,761	36,752	-13,009	-26%
Tuolumne	125,016	118,422	-6,594	-5%
Nevada	5,875	5,574	-301	-5%
Calaveras	134,174	133,994	-180	0%
Plumas	82,203	82,996	793	1%
Amador	95,456	96,896	1,440	2%
Sierra	37,035	40,498	3,463	9%
Lassen	287,225	308,066	20,841	7%
Mariposa	165,751	203,907	38,156	23%
Mono	0	12,607	12,607	n/a
Total	1,058,039	1,084,510	26,471	3%
Peripheral Counties				
Butte	226,065	213,096	-12,969	-6%
Tulare	1,134,095	1,113,122	-20,973	-2%
Kern	1,737,823	1,713,804	-24,019	-1%
Fresno	1,559,407	1,557,837	-1,570	0%
Madera	554,536	552,984	-1,552	-0%
Tehama	802,886	802,167	-719	0%
Total	6,014,812	5,953,010	-61,802	-1%

* Data is for whole counties. Alpine County has adopted the program but as of 2003 had not entered into a contract. Inyo and Yuba counties have not adopted the program as of 2003.

Source: The California Land Conservation (Williamson) Act, 2004 Status Report.

On a positive note, Mariposa increased the amount of protected land by 23% or 38,000 acres, while Sierra, Amador and Plumas Counties had more modest gains. Mono County, which had no land protected in 1991, had more than 12,000 in the Williamson Act in 2003.

Working landscapes are an important part of the Sierra. Lands protected by the Williamson Act will, at least for the short term, remain agricultural. And, in general, lands that are taken out of the program indicate that landowners are preparing to develop their property or to sell to developers.

Local Land Trusts: Protecting natural areas and farm and ranch lands

In this report, we are focusing on local land trusts in the Sierra—nonprofit conservation organizations directly involved in helping protect natural,

scenic, recreational, agricultural or historic property. The trusts listed in Table 5.2 are working to protect land primarily through the use of conservation easements, management agreements, and donations.

Land trusts may obtain land through donation, they may work with landowners who wish to donate or sell conservation easements (permanent deed restrictions that prevent specific land uses), or at times trusts may buy land outright to maintain it as open space. Throughout the U.S., land trusts have been extraordinarily successful, having protected more than 9.3 million acres of open space nationwide, according to the National Land Trust

Total land protected by local trusts or transferred to other groups or agencies for management is just over 1% of all privately owned land in the Sierra Nevada region⁵²

Census.⁵³ Although independent organizations, land trusts frequently work with each other, with national conservation organizations, and with government agencies on some projects. While we are looking only at local trusts, trusts can also be regional, statewide or even national.

Land trusts throughout the region are now managing almost 40,000 acres of land and have

transferred an additional 38,000 to other groups or agencies for management.

These lands will be permanently protected. Other programs, such as the Williamson Act, may protect agricultural land and natural areas in the short term, but there is no guarantee that development will not occur in future years.

Table 5.2: Local Land Trusts Working to Preserve Land in the Sierra
Acreage now being managed by the local trust or transferred to another group or agency for management

<i>Land Trust</i>	<i>County</i>	<i>Land trust acreage</i>	<i>Acreage transferred to another group or agency*</i>
Amador Land Trust, Amador City	Amador	2,400	0
American River Conservancy, Coloma	El Dorado	3,999	8,800
Eastern Sierra Land Trust, Bishop	Inyo/Mono	63	0
Feather River Land Trust, Quincy	Plumas/Sierra	3,925	17,540
Lassen Land & Trails Trust, Susanville	Lassen	792	0
Mountain Meadows Conservancy, Westwood	Lassen	0	0
Nevada County Land Trust, Grass Valley	Nevada	5,110	493
Northern California Regional Land Trust, Chico	Butte	500	0
Placer Land Trust	Placer	356	183
Sequoia Riverlands Trust, Visalia	Tulare	5,642	0
Sierra Foothill Conservancy, Prather	Fresno/Madera	12,163	2,450
Truckee Donner Land Trust, Truckee	Nevada	4,100	5,500
Tuolumne County Land Trust, Sonora	Tuolumne	0	524
Nevada Land Conservancy, Reno, NV	Reno, NV	605	2,155
Total		39,655	37,645

** These include Trust for Public Land, The Nature Conservancy, Sierra Business Council, BLM, USFS, Dept. of Parks and Recreation, etc.*

Source: Kerri Timmer, Survey for Sierra-Cascade Land Trust Council, January 2005.

Sierra Valley and the Bar One Ranch

Sierra Valley, a 130,000-acre alpine valley straddling Plumas and Sierra Counties in the Sierra, is breathtakingly beautiful. It is also the focus of intense development pressure, from the Tahoe area 30 miles to the south and the City of Reno, only 30 miles east. A large part of this valley is now permanently protected, thanks to the ranch owners and a coalition of non-profits, foundations and government agencies.

The coalition was able to secure an easement on the 13,000-acre Bar One Ranch, the largest in Sierra Valley. The Bar One agreement is important for several reasons. It sends a strong signal that ranching is here to stay in Sierra Valley. It has prompted other ranch owners to consider easements on their properties. And it has set a model for other easements that balance the economics and ecology of ranching. The easement includes language on how the ranch will be managed in the future to preserve the property's habitat values, while continuing to support a profitable cattle-grazing business.

The coalition included the Sierra Business Council, California Rangeland Trust, Feather River Land Trust, Resources Legacy Fund, the State of California Wildlife Conservation Board and the Packard Foundation.

Source: Sierra Business Council, SBC News, Fall 2002

Chapter 6 Nevada: Three Counties' Impacts on the Sierra

Nevada is the fastest growing state in the country for the 18th year with some of the highest growth in the northern counties that border the Sierra.⁵⁴ The total population in these counties—Washoe, Carson City, and Douglas—has grown 40%, from 292,640 in 1986 to 487,402 in 2004. From 1998 to 1999, over half of the immigrants to these northwestern counties came from rural Nevada counties as well as from California.⁵⁵

Portions of Nevada's counties in the Sierra grew 30% between 1990 and 2000

For portions of the counties within the Sierra, the population grew by 30% between 1990 and 2000. Douglas County experienced the highest rate of increase with 37%, while Washoe County had the largest number of new residents with 40,315. (See Table 6.1)

Just over 86% of land in the state as a whole is federally owned. Approximately 13% of the state is in private hands, with the remaining owned by state and local governments.

Parts of Washoe, Douglas and Carson City Counties are within the Sierra Nevada Ecosystem Project boundaries used for this report. In addition, the population in northwestern Nevada is within as little as a 30 minute drive to the high mountains due to the geological formation of the Sierra crest which rises sharply from the valley floor on the eastern side of the range. Thus growth on the valley floor impacts Sierra Nevada resources from people commuting to and from the Sierra and by an increase in recreational traffic from surrounding areas. (See Table 6.2.)

Planning law enables local governance of land use

Unlike California's use of the State Office of Planning and Research, Nevada houses this func-

Table 6.1: Increase in population —1990 & 2000
Portions of Nevada counties within the Sierra Nevada

<i>Nevada Counties</i>	1990	2000	% change	
Douglas	24,002	32,980	8,978	37%
Washoe	136,529	176,844	40,315	30%
Carson City	8,344	10,177	1,833	22%
Total	168,875	220,001	51,126	30%

Source: GreenInfo Network, Geolytics, CensusCD 2000 Redistricting, Release 1.1, 20.

Table 6.2: Land in the Sierra Nevada by County

<i>Nevada Counties</i>	Total sq miles	Sq miles in the Sierra	% in the Sierra
Douglas	710	403	57%
Carson City	143	46	32%
Washoe	6,342	317	5%
Total	7,195	766	11%

Source: Geolytics, CensusCD 2000 Redistricting, Release 1.1, 2001, California Department of Finance, Nevada State Demographer.

tion within the Division of State Lands under the State Land Use Planning Agency. This agency has only two staff members who provide technical planning assistance to local governments and other agencies, as well as represent the state on federal land management matters.⁵⁶

Under Nevada law, land use planning and zoning is a local matter. While all counties are required by the State to have Master Plans that are comprehensive, long-term general plans for the physical development of the city, county or region,⁵⁷ the plans' contents are not mandated by state law.⁵⁸ Regional Plans are also required for counties with populations over 100,000, which includes Washoe

Table 6.3: County and Master Plan Status

County/City	Master Plan Status
Carson City	Master Plan in update process—completion date December 2005.
Douglas County	Master Plan updated in 1996. Next update 2006.
Washoe County	Regional Plan updated in 2002. Next update December 2006.
Washoe County	Comprehensive Plan elements updated between 1991 & 2002. Whole plan currently in update process with elements & area plans due to be updated by December 2006.
City of Reno	Master Plan ongoing updates.
City of Sparks	Master Plan updated in 2002. No update currently scheduled.

County. State law governing Regional Plans includes requirements for counties with populations over 400,000 and additional requirements for counties with populations of 100,000 to 400,000.

Plan Status in Washoe, Carson City and Douglas Counties

The Master Plans for Washoe, Carson City and Douglas Counties range in age, but the last update was no more than nine years ago. The Regional plan for Washoe County, the Truckee Meadows Regional Plan, was first adopted in March 1991 and updated in 2002. A third update is scheduled for 2006. Washoe County's Comprehensive Plan has five elements, updated at various times, and twelve area plans, which act as community-based Master Plans. The City of Reno Master Plan is updated as part of an ongoing process. The City of Sparks Master Plan was updated last in December 2002, and there are no updates scheduled at this time. Carson City is currently updating its Master Plan, and Douglas County will start to update its nine-year-old plan in 2006.

Washoe County

Washoe County includes two incorporated cities, Reno and Sparks. The total population of the county has grown 65% since the 1980s—from

232,270 in 1986 to 383,453 in 2004. Over 78% of the county is federally owned, primarily the vast areas north of Reno and Sparks.

The easiest access to the Sierra is a 30-minute trip on Interstate 80 from Reno to Truckee or the Mount Rose Highway from Reno to Incline Village (Lake Tahoe). Day trips to resort areas in and around Lake Tahoe are a norm for locals as well as visitors flying in to the Reno Tahoe International airport. Additionally, daily commuter traffic flows in both directions.

In 1989 the Nevada legislature created the Truckee Meadows Regional Planning Agency (TMRPA) to foster cooperation among Washoe County, the City of Reno and the City of Sparks. The Board of Directors of TMRPA is comprised of representatives from the three local governments. The current regional plan, adopted in 2002, is the second update. The regional plan is implemented through conformance review, meaning the other plans in the region, including City of Sparks Master Plan, City of Reno Master Plan, Washoe County Master Plan, Regional Water Plan, Airport Authority, Washoe County School District, and Regional Transportation Plan, must conform to the regional plan, using a negotiation model to work with staff of the other agencies.

Carson City

Carson City, the state capital, has seen its population grow 55%— from 36,340 in 1986 to 56,146 in 2004. Carson City and the county share the same boundaries, and the city and county government are one in the same. The total acreage makes this county the smallest in the state. Over 52% of Carson City land is federally owned.

The population is primarily on the valley floor against the Sierra. Since travel time from Carson City to Lake Tahoe is 30 minutes, travel includes recreational day trips and commuters from Carson City to jobs at Lake Tahoe towns and resort areas. Commuter travel incorporates trips from the mountain communities to the Capital City as well.

The Carson City Master Plan is currently being updated with a 20-year horizon. The Parks, Recreation and Trails Plan is also being updated at the same time. There have been two rounds of public meetings so far (as of April 15, 2005) with over 180 people attending the first set of meetings and 150 at the second. Many comments from these meetings have supported infill and compact development.

Douglas County

Douglas County population has almost doubled in 18 years from 24,030 in 1986 to 47,803 in 2004. The demographics of the county are changing as highlighted by flat enrollment in the schools over the past four years.⁵⁹ Over 51% of the land in Douglas County is federally owned.⁶⁰

The population is primarily along the valley floor on Route 395. Some live in the Lake Tahoe portion of the county. Most new growth is found in the northern portion of the county next to the Carson City border. Travel time to the Sierra is 20 minutes to Daggett Pass on Kingsbury Grade and 35 minutes to Carson Pass and the Sierra Crest. Commuters also travel between the mountain communities and Douglas County's valley floor.

The current Master Plan, approved in 1996, will be reviewed in 2006. The Master Plan set the stage to develop the Open Space and Agricultural Lands Protection Plan, which was approved in 2000. This plan focuses on purchase or transfer of development rights as opposed to direct purchase of property to preserve natural areas and farm and ranch lands.

Preserving natural areas in the face of rapid growth is critical to saving the rural character and wildlife of northwestern Nevada. As an important component to the eastern Sierra Nevada range, it remains critical that western Nevada communities manage the impacts of rural and urban development as they plan for future growth.

Chapter 7 Conclusion & Recommendations

The opportunities and challenges faced by the Sierra are clear. The region's population and attendant pressures are growing rapidly. Large tracts of land are privately owned, especially in the foothills, where much of what appears to be natural areas is made up of parcels that may be developed. At the same time, residential and commercial building has increased in many counties of the Sierra, as have the number of vehicles driving Sierra roads and traffic congestion on those roads.

Farm and ranch lands throughout the region, as well as privately owned forests, also face the potential of being developed. Natural areas are also being fragmented and degraded, with growth and development pressures continuing to mount.

Hope remains, however, for the Sierra Nevada. Communities and landowners can take action to stop poorly planned growth and sprawling development, to preserve natural areas and open space, and to protect and strengthen rural communities.

The Sierra Nevada Alliance recommends the following principles be considered by community members for inclusion in their county's general plans to promote planned growth and protection of the Sierra's resources and rural quality of life.

1. Maintain the historic development pattern of compact town centers separated by rural countryside.

- Promote infill development and redevelopment where transportation facilities and utilities already exist in order to minimize development of open lands, such as natural areas and farmland. Encourage development that is compact and contiguous to existing community infrastructure.
- Develop compact mixed-use centers at a scale appropriate for the community.

2. Preserve permanent open space as an integral part of new development both to protect critical natural areas and to provide opportunities for recreation.

- Provide mechanisms for transferring development rights from highly sensitive lands to lands suitable for higher density.
- Design developments to create open space linkages to adjacent and regional natural areas so that open space exists not as islands but as connected habitat.

3. Protect and restore natural areas.

- Use the development process to enhance and restore streams, wetlands and lakes, and to enhance their potential as wildlife habitat, and recreational and aesthetic amenities.
- Locate and plan new development to provide buffers between sensitive natural areas and intensive use areas.
- Minimize changes to natural topography, soils, and vegetation to preserve land, water and soil relationships that are essential for sustaining plant and animal habitat.

4. Maintain the sustainable economic productivity of the region's farm and ranch lands and forests.

Individual Sierra residents can make a difference on how the Sierra grows. There are many levels an individual can voice their desires for the future of their community and get involved.

Specifically, Sierra residents can:

- Become involved in the local planning process, especially in general plan updates.
- Support local land trusts where they exist, and help start them where they don't. Visit our website for a list of land trusts in the Sierra Nevada.

- Join a local conservation group where they exist, help start one if they don't. Visit the Sierra Nevada Alliance website for a list of conservation groups in the region you care about.
- Support efforts of region-wide groups—including the Sierra Nevada Alliance—that are working to protect all of the Sierra Nevada's treasured resources and communities.

Local elected officials and staff also play an extremely important role in shaping the future of the Sierra. County supervisors, city council members, planning commissioners and local government staff lead the planning process. These leaders can not only ensure their values for the future are incorporated into the plans, but ensure that their community members are involved in the process.

County and city governments can work with residents to:

- Identify qualities and characteristics of their community to preserve into the future.
- Update their general plans regularly to reflect changing populations and circumstances
- Implement their general plans in a timely manner

- Institute county-wide mapping of important or threatened natural areas.
- Develop and implement conservation plans to preserve and protect natural areas and open space.
- Develop programs to support and preserve working landscapes.

There is hope for the Sierra. The roaring rivers with their sparkling water, old town centers with thriving local businesses, breath-taking vistas of the snow-capped peaks, calls of wildlife echoing through our forests and woodlands can all be maintained and enhanced with thoughtful planning.

The Sierra Nevada Alliance will visit the indicators reviewed in this report in future years. We can use the statistics reviewed in this report and evaluate if smart planning is preserving the Sierra we all love.

The Sierra Nevada Alliance looks forward to working with conservation groups, local leaders and elected officials to plan for the future. Together we can keep light in the range.

End Notes

- ¹ See Table 2.1, Increase in population —1990 and 2000: Portions of county within the Sierra, p. 6.
- ² *Summary of the Sierra Nevada Ecosystem Project Report*, University of California, Davis, Centers for Water and Wildland Resources, 1996, p. 15.
- ³ *Summary of the Sierra Nevada Ecosystem Project Report*, University of California, Davis, Centers for Water and Wildland Resources, 1996, p. 16.
- ⁴ *Restoring Our Forest Legacy: Blueprint for Sierra Nevada National Forests: The FSEEE-Sponsored Plan for the National Forests of the Sierra Nevada submitted to the U.S. Forest Service*, 1999, Forest Service Employees for Environmental Ethics, 1999, p 40-41.
- ⁵ *Summary of the Sierra Nevada Ecosystem Project Report*, University of California, Davis, Centers for Water and Wildland Resources, 1996, p. 15.
- ⁶ *Sierra Nevada Ecosystem Project, Final Report to Congress, vol II, Assessments and Scientific Basis for Management Options*, University of California, Davis, Centers for Water and Wildland Resources, 1996, pp. 671- 683.
- ⁷ See Table 3.1, Public/private land ownership in portion of counties in the Sierra Nevada, p. 13.
- ⁸ See Table 2.1, Increase in population —1990 and 2000: Portions of county within the Sierra, p. 6.
- ⁹ *Summary of the Sierra Nevada Ecosystem Project Report*, University of California, Davis, Centers for Water and Wildland Resources, 1996, p. 15.
- ¹⁰ Carson City and Carson City County share the same boundaries, and the city and county government are the same.
- ¹¹ *Sierra Nevada Ecosystem Project, Final Report to Congress, vol. I, Assessment Summaries and Management Strategies*, University of California, Davis, Centers for Water and Wildland Resources, 1996, p. 21.
- ¹² *Sierra Nevada Ecosystem Project, Final Report to Congress, vol II, Assessments and Scientific Basis for Management Options*, University of California, Davis, Centers for Water and Wildland Resources, 1996, p. 244.
- ¹³ A Sierra Landscape in Transition Land use and social change in western Nevada County, California Peter A. Walker, Assistant Professor of Geography, section III.
- ¹⁴ *Summary of the Sierra Nevada Ecosystem Project Report*, University of California, Davis, Centers for Water and Wildland Resources, 1996, p. 15.
- ¹⁵ Holtzclaw, John, “Using Residential Patterns and Transit To Decrease Auto Dependence and Costs,” Natural Resources Defense Council and California Home Energy Efficiency Rating Systems, 1994, “Location Efficiency: Neighborhood and Socio-Economic Characteristics Determine Auto Ownership and Use – Studies in Chicago, Los Angeles and San Francisco” by John Holtzclaw, John, et al. “Location Efficiency: Neighborhood and Socio-Economic Characteristics Determine Auto Ownership and Use – Studies in Chicago, Los Angeles and San Francisco,” Transportation Planning and Technology, March 2002.
- ¹⁶ Heimlich, Ralph, et al. Development at the Urban Fringe and Beyond: Impacts on agriculture and rural land, Economic Research Service, U.S. Department of Agriculture. Agricultural Economic Report No. 803, June 2001.
- ¹⁷ Goodwin, Phil. “Empirical Evidence on Induced Traffic,” Transportation, Vol. 23, No. 1, February 1996, p. 35-54. Hansen, Mark and Yranling Huang. “Road Supply and Traffic in California Urban Areas,” Transportation Research, 1997, p. 205-218.
For a list of additional studies on this topic visit www.sierraclub.org/sprawl/transportation/seven.asp.
- ¹⁸ Ohland, Gloria, “Biodiversity and Smart Growth: Sprawl threatens our natural heritage,” Funders’ Network for Smart Growth and Livable Communities, Translation Paper Number 10, October 2002. Shilling, Fraser, et al. A Guide to Wildlands Conservation in the Greater Sierra Nevada Bioregion, California Wilderness Coalition, Oakland, CA, February 2002, p. 26.
- ¹⁹ *Missing Linkages: Restoring connectivity to the California landscape*, California, Wilderness Coalition, p. 67.
- ²⁰ *Missing Linkages: Restoring connectivity to the California landscape*, California, Wilderness Coalition, p. 67.
- ²¹ *Summary of the Sierra Nevada Ecosystem Project Report*, University of California, Davis, Centers for Water and Wildland Resources, 1996, p. 16.
- ²² Wacker, M. et al, “Forty Years of land use and land ownership change in Central Sierra Nevada Oak Woodlands,” USDA Forest Service Gen. Tech. Rep. PSW-GTR-184. 2002.
- ²³ Walker, Peter A. A Sierra Landscape in Transition Land use and social change in western Nevada County, California, February 2003, p. 5.
- ²⁴ Ibid, p. 6.

- ²⁵ Ibid, p. 8.
- ²⁶ *Summary of the Sierra Nevada Ecosystem Project Report*, University of California, Davis, Centers for Water and Wildland Resources, 1996, p. 6.
- ²⁷ *Summary of the Sierra Nevada Ecosystem Project Report*, University of California, Davis, Centers for Water and Wildland Resources, 1996, p. 15.
- ²⁸ *Sierra Nevada Ecosystem Project, Final Report to Congress, vol II, Assessments and Scientific Basis for Management Options*, University of California, Davis, Centers for Water and Wildland Resources, 1996, p. 671- 683.
- ²⁹ *Summary of the Sierra Nevada Ecosystem Project Report*, University of California, Davis, Centers for Water and Wildland Resources, 1996, p. 6.
- ³⁰ Shilling, Fraser, et al. *A Guide to Wildlands Conservation in the Greater Sierra Nevada Bioregion*, California Wilderness Coalition, Oakland, CA, February 2002, p. 23.
- ³¹ *Sierra Nevada Ecosystem Project, Final Report to Congress, vol. I, Assessment Summaries and Management Strategies*, University of California, Davis, Centers for Water and Wildland Resources, 1996, p. 11.
- ³² *Sierra Nevada Ecosystem Project, Final Report to Congress, vol II, Assessments and Scientific Basis for Management Options*, University of California, Davis, Centers for Water and Wildland Resources, 1996, p. 722.
- ³³ *Summary of the Sierra Nevada Ecosystem Project Report*, University of California, Davis, Centers for Water and Wildland Resources, 1996, p. 5. The last number is misleadingly low because many species at risk in the Sierra are more widely distributed elsewhere, such as the Coast Range.
- ³⁴ *Summary of the Sierra Nevada Ecosystem Project Report*, University of California, Davis, Centers for Water and Wildland Resources, 1996, p. 5.
- ³⁵ *Sierra Nevada Ecosystem Project, Final Report to Congress, vol III, Assessments, Commissioned Reports and Background Information*, University of California, Davis, Centers for Water and Wildland Resources, 1996, p. 201-274.
- ³⁶ *Summary of the Sierra Nevada Ecosystem Project Report*, University of California, Davis, Centers for Water and Wildland Resources, 1996, p. 8.
- ³⁷ *Restoring Our Forest Legacy: Blueprint for Sierra Nevada National Forests: The FSEEE-Sponsored Plan for the National Forests of the Sierra Nevada submitted to the U.S. Forest Service, 1999*, Forest Service Employees for Environmental Ethics, 1999, p. 40-41.
- ³⁸ *Sierra Nevada Ecosystem Project, Final Report to Congress, vol II, Assessments and Scientific Basis for Management Options*, University of California, Davis, Centers for Water and Wildland Resources, 1996, p. 648.
- ³⁹ *Sierra Nevada Ecosystem Project, Final Report to Congress, vol. I, Assessment Summaries and Management Strategies*, University of California, Davis, Centers for Water and Wildland Resources, 1996, p. 81.
- ⁴⁰ Mayer, Craig, et al. *Sierra Nevada Ecoregional Plan*, "Montane and subalpine coniferous forests," The Nature Conservancy, California, December 1999.
- ⁴¹ *Sierra Nevada Ecosystem Project, Final Report to Congress, vol. I, Assessment Summaries and Management Strategies*, University of California, Davis, Centers for Water and Wildland Resources, 1996, p. 97.
- ⁴² Ohland, Gloria, "Biodiversity and Smart Growth: Sprawl threatens our natural heritage," Funders' Network for Smart Growth and Livable Communities, Translation Paper Number 10, October 2002, p. 2.
- ⁴³ *Summary of the Sierra Nevada Ecosystem Project Report*, University of California, Davis, Centers for Water and Wildland Resources, 1996, p. 5.
- ⁴⁴ Heimlich, Ralph, et al. *Development at the Urban Fringe and Beyond: Impacts on agriculture and rural land*, Economic Research Service, U.S. Department of Agriculture. Agricultural Economic Report No. 803, June 2001, p. vi.
- ⁴⁵ Kline, Jeffrey. "Forestland Social Values and Open Space Preservation," *Journal of Forestry*, December 2004.
- ⁴⁶ Cities in California are also required to have General Plans; however, in this report, we look only at the General Plans for counties in the Sierra Nevada.
- ⁴⁷ The housing element is an exception to this rule. There are detailed statutory requirements regarding its content and it is subject to mandatory review by a state agency. It must also be updated every five years.
- ⁴⁸ Due to limited resources, we were not able to review all elements or view accompanying land use maps. We did, however, attempt to verify our work by sending each planning department a copy of our findings, and asking for corrections or revisions.
- ⁴⁹ State of California, *General Plan Guidelines 2003*, Governor's Office of Planning and Research, October 2003, p. 14.
- ⁵⁰ See *Planning for Prosperity: Building Successful Communities in the Sierra Nevada*, Sierra Business Council, 1997, p. 35 for a more detailed explanation and example.

- ⁵¹ Department of Conservation, Division of Land Resource Protection, “Williamson Act: Questions and Answers.”
<http://www.conservation.ca.gov/dlrp/lca>.
- ⁵² Total private acreage is listed in Table 5.2, page 32.
- ⁵³ Land Trust Alliance, National Land Trust Census, November 2004, www.lta.org/aboutlt/census.shtml.
- ⁵⁴ Nevada State Demographer, March 14, 2005.
- ⁵⁵ Nevada State Demographer, March 14, 2005.
- ⁵⁶ Nevada Division of State Lands, State Land Use Planning Agency web site, www.lands.nv.gov/program/slupa.
- ⁵⁷ Nevada Revised Statutes, Chapter 278.150.
- ⁵⁸ Nevada Revised Statutes, Chapter 278.160.
- ⁵⁹ Telephone interview with Mimi Moss, Douglas County Planning Director, April 19, 2005.
- ⁶⁰ Nevada State Land Use Planning Agency, March 30, 2005.

Appendix A County reports: Compilation of data by county

Land Use Statistics: Alpine County

The following data was compiled from the Sierra Nevada Alliance report, *Planning for the Future: A Sierra Nevada Land Use Index (2005)*. The study area for the report included all or part of the twenty California and three Nevada counties that make up the Sierra Nevada mountain range as it was bounded in the Sierra Nevada Ecosystem Project (SNEP), a project funded by the U.S. Congress in 1993.

The focus of the Sierra Nevada Alliance 2005 report is on preserving natural areas and rural communities through local land use decisions. Emphasis is placed on land that is privately owned and so controlled by local governments, rather than areas controlled by state and federal agencies. Publicly available data was collected from the U.S. Census, the California Statistical Abstract, the Sierra Nevada Ecosystem Project Report, Department of Motor Vehicles, the Forest and Range 2003 Assessment, U.S. Department of Agriculture Agricultural Census, and other sources. For a complete listing of sources, refer to the full report, available online at www.sierranevadaalliance.org.

Current Land and Population				
Land in the Sierra Nevada study area (square miles)	total	in Sierra	% in Sierra	
	739	739	100	
County population in Sierra	total	in Sierra	% in Sierra	
	1,208	1,208	100	
Change in the Sierra—the 1990s				
Population in Sierra Nevada portion of county	1990	2000	change	% change
	1,113	1,208	95	9%
Population projection*	2000	2020	change	% change
	1,208	1,441	233	19%
Residential building permits*	1990	2004	change	% change
	14	22	8	57%
Value of non-residential building permits*	1990	2004	change	% change
	\$0	\$429	\$429	N/a
Vehicle miles traveled* (millions of miles)	1990	2000	change	% change
	48	57	9	19%
Registered vehicles*	1990	2003	change	% change
	1,236	2,043	807	65%
Miles of city & county maintained roads*	1990	2003	change	% change
	134	133	-1	0%

Land Use Statistics: Alpine County con't

Growth and Development				
Public/private land ownership	total acres	private	% privately owned	
	473,893	34,904	7%	
Undeveloped privately owned parcels	total private	undeveloped	% undeveloped	
	N/a	N/a	N/a	
Ownership of hardwood forest and woodland	total public	total private	% private	
	3,054	499	14%	
Riparian vegetation by land ownership below 5,000 feet	total	private	% private	
	N/a	N/a	N/a	
High quality old growth forests (acres)	rank 4	rank 5	total 4& 5	
	6,474	980	7,454	
Federal endangered and threatened species	threatened	endangered		
	3	0		
Total farmland*	1992	2002	change	% change
Farmland Mapping and Monitoring Program	N/a	N/a	N/a	N/a
Land in farms (acres)*	1992	2002	change	% change
USDA Agricultural Census	4,768	N/a*	N/a	N/a
Ownership of conifer forests (acres)	private	total public & private	% private	
	15,286	238,412	6%	
Protecting and Managing Rural Sprawl				
General plan update	land use	conservation	open space	
	1999	1999	1999	
County wide mapping of habitat?	No			
Habitat conservation plans?	No			
Preserving Agricultural Land and Natural Areas				
Williamson Act acreage	1991	2003	change	% change
	N/a	N/a	N/a	N/a
Land trusts	name	acreage protected	acreage transferred	
	N/a	N/a	N/a	

* Data is for entire county, including area outside of Sierra Nevada.

(Footnotes)

□ Data for 2002 in Alpine is withheld to avoid disclosing data for individual farms.

Land Use Statistics: Amador County

The following data was compiled from the Sierra Nevada Alliance report, *Planning for the Future: A Sierra Nevada Land Use Index (2005)*. The study area for the report included all or part of the twenty California and three Nevada counties that make up the Sierra Nevada mountain range as it was bounded in the Sierra Nevada Ecosystem Project (SNEP), a project funded by the U.S. Congress in 1993.

The focus of the Sierra Nevada Alliance 2005 report is on preserving natural areas and rural communities through local land use decisions. Emphasis is placed on land that is privately owned and so controlled by local governments, rather than areas controlled by state and federal agencies. Publicly available data was collected from the U.S. Census, the California Statistical Abstract, the Sierra Nevada Ecosystem Project Report, Department of Motor Vehicles, the Forest and Range 2003 Assessment, U.S. Department of Agriculture Agricultural Census, and other sources. For a complete listing of sources, refer to the full report, available online at www.sierranevadaalliance.org.

Current Land and Population				
Land in the Sierra Nevada study area	total	in Sierra	% in Sierra	
(square miles)	593	486	82%	
County population in Sierra	total	in Sierra	% in Sierra	
	35,100	28,033	80%	
Change in the Sierra—the 1990s				
Population	1990	2000	change	% change
in Sierra Nevada portion of county	24,676	28,033	3,357	14%
Population projection*	2000	2020	change	% change
	35,100	42,257	7,157	20%
Residential building permits*	1990	2004	change	% change
	318	443	125	39%
Value of non-residential building permits*	1990	2004	change	% change
	\$16,797	\$14,727	-\$2,070	-12%
Vehicle miles traveled*	1990	2000	change	% change
(millions of miles)	285	368	83	29%
Registered vehicles*	1990	2003	change	% change
	36,786	49,549	12,763	35%
Miles of city & county maintained roads*	1990	2003	change	% change
	461	481	20	4%

Land Use Statistics: Amador County con't

Growth and Development				
Public/private land ownership	total acres	private	% privately owned	
	323,307	235,382	73%	
Undeveloped privately owned parcels	total private	undeveloped	% undeveloped	
	N/a	N/a	N/a	
Ownership of hardwood forest and woodland	total public	total private	% private	
	8,686	94,834	92%	
Riparian vegetation by land ownership below 5,000 feet	total	private	% private	
	43,421	39,554	91%	
High quality old growth forests (acres)	rank 4	rank 5	total 4& 5	
	7,095	3	7,098	
Federal endangered and threatened species	threatened	endangered		
	6	3		
Total farmland*	1992	2002	change	% change
Farmland Mapping and Monitoring Program	203,480	202,121	-1,359	-1%
Land in farms (acres)*	1992	2002	change	% change
USDA Agricultural Census	236,222	194,144	-42,078	-18%
Ownership of conifer forests (acres)	private	total public & private	% private	
	60,941	120,434	51%	
Protecting and Managing Rural Sprawl				
General plan update	land use	conservation	open space	status
	1991	1991	1991	Plan to start update this year
County wide mapping of habitat?	Yes, lone area only			
Habitat conservation plans?	No			
Preserving Agricultural Land and Natural Areas				
Williamson Act acreage	1991	2003	change	% change
	95,456	96,896	1,440	2%
Land trusts	name	acreage protected	acreage transferred	
	Amador Land Trust, Amador City	2,400	0	

* Data is for entire county, including area outside of Sierra Nevada.

Land Use Statistics: Butte County

The following data was compiled from the Sierra Nevada Alliance report, *Planning for the Future: A Sierra Nevada Land Use Index (2005)*. The study area for the report included all or part of the twenty California and three Nevada counties that make up the Sierra Nevada mountain range as it was bounded in the Sierra Nevada Ecosystem Project (SNEP), a project funded by the U.S. Congress in 1993.

The focus of the Sierra Nevada Alliance 2005 report is on preserving natural areas and rural communities through local land use decisions. Emphasis is placed on land that is privately owned and so controlled by local governments, rather than areas controlled by state and federal agencies. Publicly available data was collected from the U.S. Census, the California Statistical Abstract, the Sierra Nevada Ecosystem Project Report, Department of Motor Vehicles, the Forest and Range 2003 Assessment, U.S. Department of Agriculture Agricultural Census, and other sources. For a complete listing of sources, refer to the full report, available online at www.sierranevadaalliance.org.

Current Land and Population				
Land in the Sierra Nevada study area (square miles)	total	in Sierra	% in Sierra	
	1,640	807	49%	
County population in Sierra	total	in Sierra	% in Sierra	
	203,171	36,039	18%	
Change in the Sierra—the 1990s				
Population in Sierra Nevada portion of county	1990	2000	change	% change
	31,973	36,039	4,066	13%
Population projection*	2000	2020	change	% change
	203,171	260,730	57,559	28%
Residential building permits*	1990	2004	change	% change
	1,911	1,968	57	3%
Value of non-residential building permits*	1990	2004	change	% change
	\$70,660	\$72,008	\$1,348	2%
Vehicle miles traveled* (millions of miles)	1990	2000	change	% change
	1,455	2,000	545	37%
Registered vehicles*	1990	2003	change	% change
	190,315	210,040	19,725	10%
Miles of city & county maintained roads*	1990	2003	change	% change
	1,713	1,745	32	2%

Land Use Statistics: Butte County con't

Growth and Development

Public/private land ownership	total acres	private	% privately owned	
	565,577	407,432	72%	
Undeveloped privately owned parcels ¹	total private	undeveloped	% undeveloped	
	15,097	9,975	66%	
Ownership of hardwood forest and woodland	total public	total private	% private	
	30,142	139,827	82%	
Riparian vegetation by land ownership below 5,000 feet	total	private	% private	
	102,267	82,714	81%	
High quality old growth forests (acres)	rank 4	rank 5	total 4& 5	
	27,760	0	27760	
Federal endangered and threatened species	threatened	endangered		
	7	1		
Total farmland*	1992	2002	change	% change
Farmland Mapping and Monitoring Program	536,600	517,306	-19,294	-4%
Land in farms (acres)*	1992	2002	change	% change
USDA Agricultural Census	452,347	381,532	-70,815	-16%
Ownership of conifer forests (acres)	private	total public & private	% private	
	192,191	308,550	62%	

Protecting and Managing Rural Sprawl

General plan update	land use	conservation	open space	status
	Revised in 2000 ²	1971	1973	Technical update currently underway
County wide mapping of habitat?	No			
Habitat conservation plans?	No			

Preserving Agricultural Land and Natural Areas

Williamson Act acreage	1991	2003	change	% change
	226,065	213,096	-12,969	-6%
Land trusts	name	acreage protected	acreage transferred	
	Northern California Regional Land Trust, Chico	500	0	

* Data is for entire county, including area outside of Sierra Nevada.

¹ Data on the improvement value are not available for Butte County. Therefore, parcels listed have \$0 improvements.

² While the Butte General Plan states that it was revised in 2000, most of the language in the Land use Element relates to the 1970s.

Land Use Statistics: Calaveras County

The following data was compiled from the Sierra Nevada Alliance report, *Planning for the Future: A Sierra Nevada Land Use Index (2005)*. The study area for the report included all or part of the twenty California and three Nevada counties that make up the Sierra Nevada mountain range as it was bounded in the Sierra Nevada Ecosystem Project (SNEP), a project funded by the U.S. Congress in 1993.

The focus of the Sierra Nevada Alliance 2005 report is on preserving natural areas and rural communities through local land use decisions. Emphasis is placed on land that is privately owned and so controlled by local governments, rather than areas controlled by state and federal agencies. Publicly available data was collected from the U.S. Census, the California Statistical Abstract, the Sierra Nevada Ecosystem Project Report, Department of Motor Vehicles, the Forest and Range 2003 Assessment, U.S. Department of Agriculture Agricultural Census, and other sources. For a complete listing of sources, refer to the full report, available online at www.sierranevadaalliance.org.

Current Land and Population				
Land in the Sierra Nevada study area (square miles)	total	in Sierra	% in Sierra	
	1,020	759	74%	
County population in Sierra	total	in Sierra	% in Sierra	
	40,554	30,015	74%	
Change in the Sierra—the 1990s				
Population	1990	2000	change	% change
in Sierra Nevada portion of county	25,347	30,015	4,668	18%
Population projection*	2000	2020	change	% change
	40,554	59,691	19,137	47%
Residential building permits*	1990	2004	change	% change
	645	831	186	29%
Value of non-residential building permits*	1990	2004	change	% change
	\$14,254	\$16,177	\$1,923	13%
Vehicle miles traveled*	1990	2000	change	% change
(millions of miles)	305	386	81	27%
Registered vehicles*	1990	2003	change	% change
	44,062	64,502	20,440	46%
Miles of city & county maintained roads*	1990	2003	change	% change
	704	718	14	2%

Land Use Statistics: Calaveras County con't

Growth and Development				
Public/private land ownership	total acres	private	% privately owned	
	521,409	389,643	75%	
Undeveloped privately owned parcels	total private	undeveloped	% undeveloped	
	40,920	17,319	42%	
Ownership of hardwood forest and woodland	total public	total private	% private	
	17,060	102,781	86%	
Riparian vegetation by land ownership below 5,000 feet	total	private	% private	
	83,793	69,792	83%	
High quality old growth forests (acres)	rank 4	rank 5	total 4& 5	
	4,111	3,843	7,954	
Federal endangered and threatened species	threatened	endangered		
	6	0		
Total farmland*	1992	2002	change	% change
Farmland Mapping and Monitoring Program	N/a	N/a	N/a	N/a
Land in farms (acres)*	1992	2002	change	% change
USDA Agricultural Census	246,077	260,865	14,788	6%
Ownership of conifer forests (acres)	private	total public & private	% private	
	166,008	247,202	67%	
Protecting and Managing Rural Sprawl				
General plan update	land use	conservation	open space	
	1996	1996	1996	
County wide mapping of habitat?	No			
Habitat conservation plans?	No			
Preserving Agricultural Land and Natural Areas				
Williamson Act acreage	1991	2003	change	% change
	134,174	133,994	-180	0%
Land trusts	name	acreage protected	acreage transferred	
	N/a	N/a	N/a	

* Data is for entire county, including area outside of Sierra Nevada.

Land Use Statistics: Carson City (NV)

The following data was compiled from the Sierra Nevada Alliance report, *Planning for the Future: A Sierra Nevada Land Use Index (2005)*. The study area for the report included all or part of the twenty California and three Nevada counties that make up the Sierra Nevada mountain range as it was bounded in the Sierra Nevada Ecosystem Project (SNEP), a project funded by the U.S. Congress in 1993.

The focus of the Sierra Nevada Alliance 2005 report is on preserving natural areas and rural communities through local land use decisions. Emphasis is placed on land that is privately owned and so controlled by local governments, rather than areas controlled by state and federal agencies. Publicly available data was collected from the U.S. Census, the California Statistical Abstract, the Sierra Nevada Ecosystem Project Report, Department of Motor Vehicles, the Forest and Range 2003 Assessment, U.S. Department of Agriculture Agricultural Census, and other sources. For a complete listing of sources, refer to the full report, available online at www.sierranevadaalliance.org.

Current Land and Population			
Land in the Sierra Nevada study area (square miles)	total	in Sierra	% in Sierra
	143	46	32%
County population in Sierra	total	in Sierra	% in Sierra
	52,457	10,177	19%

Land Use Statistics: Douglas (NV) County

The following data was compiled from the Sierra Nevada Alliance report, *Planning for the Future: A Sierra Nevada Land Use Index (2005)*. The study area for the report included all or part of the twenty California and three Nevada counties that make up the Sierra Nevada mountain range as it was bounded in the Sierra Nevada Ecosystem Project (SNEP), a project funded by the U.S. Congress in 1993.

The focus of the Sierra Nevada Alliance 2005 report is on preserving natural areas and rural communities through local land use decisions. Emphasis is placed on land that is privately owned and so controlled by local governments, rather than areas controlled by state and federal agencies. Publicly available data was collected from the U.S. Census, the California Statistical Abstract, the Sierra Nevada Ecosystem Project Report, Department of Motor Vehicles, the Forest and Range 2003 Assessment, U.S. Department of Agriculture Agricultural Census, and other sources. For a complete listing of sources, refer to the full report, available online at www.sierranevadaalliance.org.

Current Land and Population			
Land in the Sierra Nevada study area (square miles)	total	in Sierra	% in Sierra
	710	403	57%
County population in Sierra	total	in Sierra	% in Sierra
	41,259	32,980	80%

Land Use Statistics: El Dorado County

The following data was compiled from the Sierra Nevada Alliance report, *Planning for the Future: A Sierra Nevada Land Use Index (2005)*. The study area for the report included all or part of the twenty California and three Nevada counties that make up the Sierra Nevada mountain range as it was bounded in the Sierra Nevada Ecosystem Project (SNEP), a project funded by the U.S. Congress in 1993.

The focus of the Sierra Nevada Alliance 2005 report is on preserving natural areas and rural communities through local land use decisions. Emphasis is placed on land that is privately owned and so controlled by local governments, rather than areas controlled by state and federal agencies. Publicly available data was collected from the U.S. Census, the California Statistical Abstract, the Sierra Nevada Ecosystem Project Report, Department of Motor Vehicles, the Forest and Range 2003 Assessment, U.S. Department of Agriculture Agricultural Census, and other sources. For a complete listing of sources, refer to the full report, available online at www.sierranevadaalliance.org.

Current Land and Population				
Land in the Sierra Nevada study area (square miles)	total	in Sierra	% in Sierra	
	1,711	1,706	100%	
County population in Sierra	total	in Sierra	% in Sierra	
	156,299	150,533	96%	
Change in the Sierra—the 1990s				
Population in Sierra Nevada portion of county	1990	2000	change	% change
	122,171	150,533	28,362	23%
Population projection*	2000	2020	change	% change
	156,299	221,289	64,990	42%
Residential building permits*	1990	2004	change	% change
	1,952	2,196	244	13%
Value of non-residential building permits*	1990	2004	change	% change
	\$92,814	\$93,478	\$664	1%
Vehicle miles traveled* (millions of miles)	1990	2000	change	% change
	1,232	1,618	386	31%
Registered vehicles*	1990	2003	change	% change
	148,329	197,708	49,379	33%
Miles of city & county maintained roads*	1990	2003	change	% change
	1,185	1,234	49	4%

Land Use Statistics: El Dorado County con't

Growth and Development

Public/private land ownership	total acres	private	% privately owned	
	1,143,069	601,565	53%	
Undeveloped privately owned parcels	total private	undeveloped	% undeveloped	
	90,119	32,452	36%	
Ownership of hardwood forest and woodland	total public	total private	% private	
	27,547	170,253	86%	
Riparian vegetation by land ownership below 5,000 feet	total	private	% private	
	91,906	71,806	78%	
High quality old growth forests (acres)	rank 4	rank 5	total 4& 5	
	58,353	11,850	70,203	
Federal endangered and threatened species	threatened	endangered		
	8	4		
Total farmland*	1992	2002	change	% change
Farmland Mapping and Monitoring Program	274,321	269,246	-5,075	-2%
Land in farms (acres)*	1992	2002	change	% change
USDA Agricultural Census	102,028	117,064	15,036	15%
Ownership of conifer forests (acres)	private	total public & private	% private	
	222,227	633,118	35%	

Protecting and Managing Rural Sprawl

General plan update	land use	conservation	open space	status
	2004	2004	2004	Updated GP passed referendum, March 2005
County wide mapping of habitat?	No			
Habitat conservation plans?	No			

Preserving Agricultural Land and Natural Areas

Williamson Act acreage	1991	2003	change	% change
	49,761	36,752	-13,009	-26%
Land trusts	name	acreage protected	acreage transferred	
	American River Conservancy, Coloma	3,999	8,800	

* Data is for entire county, including area outside of Sierra Nevada.

Land Use Statistics: Fresno County

The following data was compiled from the Sierra Nevada Alliance report, *Planning for the Future: A Sierra Nevada Land Use Index (2005)*. The study area for the report included all or part of the twenty California and three Nevada counties that make up the Sierra Nevada mountain range as it was bounded in the Sierra Nevada Ecosystem Project (SNEP), a project funded by the U.S. Congress in 1993.

The focus of the Sierra Nevada Alliance 2005 report is on preserving natural areas and rural communities through local land use decisions. Emphasis is placed on land that is privately owned and so controlled by local governments, rather than areas controlled by state and federal agencies. Publicly available data was collected from the U.S. Census, the California Statistical Abstract, the Sierra Nevada Ecosystem Project Report, Department of Motor Vehicles, the Forest and Range 2003 Assessment, U.S. Department of Agriculture Agricultural Census, and other sources. For a complete listing of sources, refer to the full report, available online at www.sierranevadaalliance.org.

Current Land and Population				
Land in the Sierra Nevada study area (square miles)	total	in Sierra	% in Sierra	
	5,963	2,685	45%	
County population in Sierra	total	in Sierra	% in Sierra	
	799,407	17,334	2%	
Change in the Sierra—the 1990s				
Population in Sierra Nevada portion of county	1990	2000	change	% change
	14,475	17,334	2,859	20%
Population projection*	2000	2020	change	% change
	799,407	1,114,654	315,247	39%
Residential building permits*	1990	2004	change	% change
	5,352	6,879	1,527	29%
Value of non-residential building permits*	1990	2004	change	% change
	\$348,878	\$310,095	-\$38,783	-11%
Vehicle miles traveled* (millions of miles)	1990	2000	change	% change
	5,239	6,826	1,587	30%
Registered vehicles*	1990	2003	change	% change
	537,569	635,952	98,383	18%
Miles of city & county maintained roads*	1990	2003	change	% change
	5,509	5,983	474	9%

Land Use Statistics: Fresno County con't

Growth and Development				
Public/private land ownership	total acres	private	% privately owned	
	1,700,009	347,650	20%	
Undeveloped privately owned parcels	total private	undeveloped	% undeveloped	
	14,327	8,507	59%	
Ownership of hardwood forest and woodland	total public	total private	% private	
	113,157	173,097	60%	
Riparian vegetation by land ownership	total	private	% private	
below 5,000 feet	87,401	17,881	20%	
High quality old growth forests (acres)	rank 4	rank 5	total 4& 5	
	115,408	2,451	117,859	
Federal endangered and threatened species	threatened	endangered		
	10	5		
Total farmland*	1992	2002	change	% change
Farmland Mapping and Monitoring Program	2,229,820	2,233,915	4,095	0%
Land in farms (acres)*	1992	2002	change	% change
USDA Agricultural Census	1,774,664	1,928,865	154,201	9%
Ownership of conifer forests	private	total public & private	% private	
(acres)	36,893	809,798	5%	
Protecting and Managing Rural Sprawl				
General plan update	land use	conservation	open space	
	2000	2000	2000	
County wide mapping of habitat?	No			
Habitat conservation plans?	No			
Preserving Agricultural Land and Natural Areas				
Williamson Act acreage	1991	2003	change	% change
	1,559,407	1,557,837	-1,570	0%
Land trusts	name	acreage protected	acreage transferred	
	Sierra Foothill Conservancy, Prather	12,163	2,450	

* Data is for entire county, including area outside of Sierra Nevada.

Land Use Statistics: Inyo County

The following data was compiled from the Sierra Nevada Alliance report, *Planning for the Future: A Sierra Nevada Land Use Index (2005)*. The study area for the report included all or part of the twenty California and three Nevada counties that make up the Sierra Nevada mountain range as it was bounded in the Sierra Nevada Ecosystem Project (SNEP), a project funded by the U.S. Congress in 1993.

The focus of the Sierra Nevada Alliance 2005 report is on preserving natural areas and rural communities through local land use decisions. Emphasis is placed on land that is privately owned and so controlled by local governments, rather than areas controlled by state and federal agencies. Publicly available data was collected from the U.S. Census, the California Statistical Abstract, the Sierra Nevada Ecosystem Project Report, Department of Motor Vehicles, the Forest and Range 2003 Assessment, U.S. Department of Agriculture Agricultural Census, and other sources. For a complete listing of sources, refer to the full report, available online at www.sierranevadaalliance.org.

Current Land and Population				
Land in the Sierra Nevada study area	total	in Sierra	% in Sierra	
(square miles)	10,203	3,354	33%	
County population in Sierra	total	in Sierra	% in Sierra	
	17,945	14,828	83%	
Change in the Sierra—the 1990s				
Population	1990	2000	change	% change
in Sierra Nevada portion of county	14,883	14,828	-55	0%
Population projection*	2000	2020	change	% change
	17,945	18,404	459	3%
Residential building permits*	1990	2004	change	% change
	69	16	-53	-77%
Value of non-residential building permits*	1990	2004	change	% change
	\$7,381	\$1,609	-\$5,772	-88%
Vehicle miles traveled*	1990	2000	change	% change
(millions of miles)	448	521	73	16%
Registered vehicles*	1990	2003	change	% change
	23,920	25,834	1,914	8%
Miles of city & county maintained roads*	1990	2003	change	% change
	1,141	1,148	7	1%

Land Use Statistics: Inyo County con't

Growth and Development				
Public/private land ownership	total acres	private	% privately owned	
	2,165,222	29,672	1%	
Undeveloped privately owned parcels	total private	undeveloped	% undeveloped	
	214	71	33%	
Ownership of hardwood forest and woodland	total public	total private	% private	
	14,527	776	5%	
Riparian vegetation by land ownership	total	private	% private	
below 5,000 feet	N/a	N/a	N/a	
High quality old growth forests (acres)	rank 4	rank 5	total 4& 5	
	0	0	0	
Federal endangered and threatened species	threatened	endangered		
	N/a	N/a		
Total farmland*	1992	2002	change	% change
Farmland Mapping and Monitoring Program	N/a	N/a	N/a	N/a
Land in farms (acres)*	1992	2002	change	% change
USDA Agricultural Census	247,550	226,788	-20,762	-8%
Ownership of conifer forests	private	total public & private	% private	
(acres)	996	63,568	2%	
Protecting and Managing Rural Sprawl				
General plan update	land use	conservation	open space	status
	2001	2001	2001	County website lists 2006 for next update
County wide mapping of habitat?	No			
Habitat conservation plans?	No			
Preserving Agricultural Land and Natural Areas				
Williamson Act acreage	1991	2003	change	% change
	N/a	N/a	N/a	N/a
Land trusts**	name	acreage protected	acreage transferred	
	Eastern Sierra Land Trust, Bishop	63	0	

* Data is for entire county, including area outside of Sierra Nevada.

** Data is for both Inyo and Mono Counties combined.

Land Use Statistics: Kern County

The following data was compiled from the Sierra Nevada Alliance report, *Planning for the Future: A Sierra Nevada Land Use Index (2005)*. The study area for the report included all or part of the twenty California and three Nevada counties that make up the Sierra Nevada mountain range as it was bounded in the Sierra Nevada Ecosystem Project (SNEP), a project funded by the U.S. Congress in 1993.

The focus of the Sierra Nevada Alliance 2005 report is on preserving natural areas and rural communities through local land use decisions. Emphasis is placed on land that is privately owned and so controlled by local governments, rather than areas controlled by state and federal agencies. Publicly available data was collected from the U.S. Census, the California Statistical Abstract, the Sierra Nevada Ecosystem Project Report, Department of Motor Vehicles, the Forest and Range 2003 Assessment, U.S. Department of Agriculture Agricultural Census, and other sources. For a complete listing of sources, refer to the full report, available online at www.sierranevadaalliance.org.

Current Land and Population				
Land in the Sierra Nevada study area	total	in Sierra	% in Sierra	
(square miles)	8,141	2,497	31%	
County population in Sierra	total	in Sierra	% in Sierra	
	661,645	23,672	4%	
Change in the Sierra—the 1990s				
Population	1990	2000	change	% change
in Sierra Nevada portion of county	23,766	23,672	-94	0%
Population projection*	2000	2020	Change	% change
	661,645	950,112	288,467	44%
Residential building permits*	1990	2004	change	% change
	4,889	7,455	2,566	52%
Value of non-residential building permits*	1990	2004	change	% change
	\$282,691	\$251,975	-\$30,716	-11%
Vehicle miles traveled*	1990	2000	change	% change
(millions of miles)	5,298	7,016	1718	32%
Registered vehicles*	1990	2003	change	% change
	474,274	571,061	96,787	20%
Miles of city & county maintained roads*	1990	2003	change	% change
	4,925	5,313	388	8%

Land Use Statistics: Kern County con't

Growth and Development				
Public/private land ownership	total acres	private	% privately owned	
	1,477,761	713,309	48%	
Undeveloped privately owned parcels	total private	undeveloped	% undeveloped	
	40,437	27,382	68%	
Ownership of hardwood forest and woodland	total public	total private	% private	
	97,041	176,957	65%	
Riparian vegetation by land ownership below 5,000 feet	total	private	% private	
	52,260	22,136	42%	
High quality old growth forests (acres)	rank 4	rank 5	total 4& 5	
	8,105	5,340	13445	
Federal endangered and threatened species¹	threatened	endangered		
	N/a	N/a		
Total farmland*	1992	2002	change	% change
Farmland Mapping and Monitoring Program	2,784,632	2,768,302	-16,330	-1%
Land in farms (acres)*	1992	2002	change	% change
USDA Agricultural Census	2,839,531	2,731,341	-108,190	-4%
Ownership of conifer forests (acres)	private	total public & private	% private	
	17,342	118,302	15%	
Protecting Natural Areas and Managing Rural Sprawl				
General plan update	land use	conservation	open space	
	2004	2004	2004	
County wide mapping of habitat?	No			
Habitat conservation plans?	Yes, for metro Bakersfield area			
Preserving Agricultural Land and Natural Areas				
Williamson Act acreage	1991	2003	change	% change
	1,737,823	1,713,804	-24,019	-1%
Land trusts**	name	acreage protected	acreage transferred	
	N/a			

* Data is for entire county, including area outside of Sierra Nevada.

¹ Only the Central Valley portion of Kern County is listed in the database and therefore not included in this table.

** Data is for Fresno and Madera Counties combined.

Land Use Statistics: Lassen County

The following data was compiled from the Sierra Nevada Alliance report, *Planning for the Future: A Sierra Nevada Land Use Index (2005)*. The study area for the report included all or part of the twenty California and three Nevada counties that make up the Sierra Nevada mountain range as it was bounded in the Sierra Nevada Ecosystem Project (SNEP), a project funded by the U.S. Congress in 1993.

The focus of the Sierra Nevada Alliance 2005 report is on preserving natural areas and rural communities through local land use decisions. Emphasis is placed on land that is privately owned and so controlled by local governments, rather than areas controlled by state and federal agencies. Publicly available data was collected from the U.S. Census, the California Statistical Abstract, the Sierra Nevada Ecosystem Project Report, Department of Motor Vehicles, the Forest and Range 2003 Assessment, U.S. Department of Agriculture Agricultural Census, and other sources. For a complete listing of sources, refer to the full report, available online at www.sierranevadaalliance.org.

Current Land and Population				
Land in the Sierra Nevada study area	total	in Sierra	% in Sierra	
(square miles)	4,557	1,645	36%	
County population in Sierra	total	in Sierra	% in Sierra	
	33,828	28,274	84%	
Change in the Sierra—the 1990s				
Population	1990	2000	change	% change
in Sierra Nevada portion of county	25,634	28,274	2,640	10%
Population projection*	2000	2020	change	% change
	33,828	38,232	4,404	13%
Residential building permits*	1990	2004	change	% change
	176	212	36	20%
Value of non-residential building permits*	1990	2004	change	% change
	\$4,866	\$6,344	\$1,478	30%
Vehicle miles traveled*	1990	2000	change	% change
(millions of miles)	466	580	114	24%
Registered vehicles*	1990	2003	change	% change
	27,995	34,101	6,106	22%
Miles of city & county maintained roads*	1990	2003	change	% change
	970	952	-18	-2%

Land Use Statistics: Lassen County con't

Growth and Development

Public/private land ownership	total acres	private	% privately owned	
	1,501,653	561,272	37%	
Undeveloped privately owned parcels	total private	undeveloped	% undeveloped	
	3,175	1,696	53%	
Ownership of hardwood forest and woodland	total public	total private	% private	
	3,358	1,846	35%	
Riparian vegetation by land ownership below 5,000 feet	total	private	% private	
	N/a	N/a	N/a	
High quality old growth forests (acres)	rank 4	rank 5	total 4& 5	
	12,631	4,808	17,971	
Federal endangered and threatened species	threatened	endangered		
	2	2		
Total farmland*	1992	2002	change	% change
Farmland Mapping and Monitoring Program	N/a	N/a	N/a	N/a
Land in farms (acres)*	1992	2002	change	% change
USDA Agricultural Census	487,499	481,826	-5,673	-1%
Ownership of conifer forests (acres)	private	total public & private	% private	
	208,411	458,607	45%	

Protecting and Managing Rural Sprawl

General plan update	land use	conservation	open space
	2000	2000	2000
County wide mapping of habitat?	No		
Habitat conservation plans?	No		

Preserving Agricultural Land and Natural Areas

Williamson Act acreage	1991	2003	change	% change
	287,225	308,066	20,841	7%
Land trusts	name	acreage protected	acreage transferred	
	Lassen Land & Trails Trust, Susanville	792	0	

* Data is for entire county, including area outside of Sierra Nevada.

Land Use Statistics: Madera County

The following data was compiled from the Sierra Nevada Alliance report, *Planning for the Future: A Sierra Nevada Land Use Index (2005)*. The study area for the report included all or part of the twenty California and three Nevada counties that make up the Sierra Nevada mountain range as it was bounded in the Sierra Nevada Ecosystem Project (SNEP), a project funded by the U.S. Congress in 1993.

The focus of the Sierra Nevada Alliance 2005 report is on preserving natural areas and rural communities through local land use decisions. Emphasis is placed on land that is privately owned and so controlled by local governments, rather than areas controlled by state and federal agencies. Publicly available data was collected from the U.S. Census, the California Statistical Abstract, the Sierra Nevada Ecosystem Project Report, Department of Motor Vehicles, the Forest and Range 2003 Assessment, U.S. Department of Agriculture Agricultural Census, and other sources. For a complete listing of sources, refer to the full report, available online at www.sierranevadaalliance.org.

Current Land and Population				
Land in the Sierra Nevada study area	total	in Sierra	% in Sierra	
(square miles)	2,136	1,365	64%	
County population in Sierra	total	in Sierra	% in Sierra	
	123,109	25,734	21%	
Change in the Sierra—the 1990s				
Population	1990	2000	change	% change
in Sierra Nevada portion of county	19,551	25,734	6,183	32%
Population projection*	2000	2020	change	% change
	123,109	183,966	60,857	49%
Residential building permits*	1990	2004	change	% change
	1,558	1,650	92	6%
Value of non-residential building permits*	1990	2004	change	% change
	\$51,265	\$33,663	-\$17,602	-34%
Vehicle miles traveled*	1990	2000	change	% change
(millions of miles)	936	1,321	385	41%
Registered vehicles*	1990	2003	change	% change
	87,916	110,769	22,853	26%
Miles of city & county maintained roads*	1990	2003	change	% change
	1,719	1,732	13	1%

Land Use Statistics: Madera County con't

Growth and Development				
Public/private land ownership	total acres	private	% privately owned	
	826,839	316,675	38%	
Undeveloped privately owned parcels	total private	undeveloped	% undeveloped	
	18,006	8,398	47%	
Ownership of hardwood forest and woodland	total public	total private	% private	
	49,468	164,234	77%	
Riparian vegetation by land ownership below 5,000 feet	total	private	% private	
	38,835	21,078	54%	
High quality old growth forests (acres)	rank 4	rank 5	total 4& 5	
	12,530	10,442	22,972	
Federal endangered and threatened species	threatened	endangered		
	9	2		
Total farmland*	1992	2002	change	% change
Farmland Mapping and Monitoring Program	787,872	772,213	-15,659	-2%
Land in farms (acres)*	1992	2002	change	% change
USDA Agricultural Census	749,465	682,486	-66,979	-9%
Ownership of conifer forests (acres)	private	total public & private	% private	
	14,144	347,499	4%	
Protecting Natural Areas and Managing Rural Sprawl				
General plan update	land use	conservation	open space	
	1995	1995	1995	
County wide mapping of habitat?	No			
Habitat conservation plans?	No			
Preserving Agricultural Land and Natural Areas				
Williamson Act acreage	1991	2003	change	% change
	554,536	552,984	-1,552	-0%
Land trusts**	name	acreage protected	acreage transferred	
	Sierra Foothill Conservancy, Prather	12,163	2,450	

* Data is for entire county, including area outside of Sierra Nevada.

** Data is for both Fresno and Madera Counties combined.

Land Use Statistics: Mariposa County

The following data was compiled from the Sierra Nevada Alliance report, *Planning for the Future: A Sierra Nevada Land Use Index (2005)*. The study area for the report included all or part of the twenty California and three Nevada counties that make up the Sierra Nevada mountain range as it was bounded in the Sierra Nevada Ecosystem Project (SNEP), a project funded by the U.S. Congress in 1993.

The focus of the Sierra Nevada Alliance 2005 report is on preserving natural areas and rural communities through local land use decisions. Emphasis is placed on land that is privately owned and so controlled by local governments, rather than areas controlled by state and federal agencies. Publicly available data was collected from the U.S. Census, the California Statistical Abstract, the Sierra Nevada Ecosystem Project Report, Department of Motor Vehicles, the Forest and Range 2003 Assessment, U.S. Department of Agriculture Agricultural Census, and other sources. For a complete listing of sources, refer to the full report, available online at www.sierranevadaalliance.org.

Current Land and Population				
Land in the Sierra Nevada study area	total	in Sierra	% in Sierra	
(square miles)	1,451	1,451	100%	
County population in Sierra	total	in Sierra	% in Sierra	
	17,130	17,130	100%	
Change in the Sierra—the 1990s				
Population	1990	2000	change	% change
in Sierra Nevada portion of county	14,302	17,130	2,828	20%
Population projection*	2000	2020	change	% change
	17,130	20,607	3,477	20%
Residential building permits*	1990	2004	change	% change
	173	175	2	1%
Value of non-residential building permits*	1990	2004	change	% change
	\$5,830	\$7,184	\$1,354	23%
Vehicle miles traveled*	1990	2000	change	% change
(millions of miles)	208	261	53	25%
Registered vehicles*	1990	2003	change	% change
	18,916	26,060	7,144	38%
Miles of city & county maintained roads*	1990	2003	change	% change
	559	560	1	0%

Land Use Statistics: Mariposa County con't

Growth and Development				
Public/private land ownership	total acres	private	% privately owned	
	922,740	430,042	47%	
Undeveloped privately owned parcels	total private	undeveloped	% undeveloped	
	12,811	6,920	54%	
Ownership of hardwood forest and woodland	total public	total private	% private	
	77,739	192,087	71%	
Riparian vegetation by land ownership below 5,000 feet	total	private	% private	
	51,951	33,488	64%	
High quality old growth forests (acres)	rank 4	rank 5	total 4& 5	
	15,700	76,702	92,402	
Federal endangered and threatened species	threatened	endangered		
	7	0		
Total farmland*	1992	2002	change	% change
Farmland Mapping and Monitoring Program	407,819	406,639	-1,180	0%
Land in farms (acres)*	1992	2002	change	% change
USDA Agricultural Census	206,138	219,133	12,995	6%
Ownership of conifer forests (acres)	private	total public & private	% private	
	36,945	320,607	12%	
Protecting and Managing Rural Sprawl				
General plan update	land use	conservation	open space	status
	1981	1981	1981	Update currently underway
County wide mapping of habitat?	No			
Habitat conservation plans?	No			
Preserving Agricultural Land and Natural Areas				
Williamson Act acreage	1991	2003	change	% change
	165,751	203,907	38,156	23%
Land trusts	name	acreage protected	acreage transferred	
	N/a	N/a	N/a	

* Data is for entire county, including area outside of Sierra Nevada.

Land Use Statistics: Mono County

The following data was compiled from the Sierra Nevada Alliance report, *Planning for the Future: A Sierra Nevada Land Use Index (2005)*. The study area for the report included all or part of the twenty California and three Nevada counties that make up the Sierra Nevada mountain range as it was bounded in the Sierra Nevada Ecosystem Project (SNEP), a project funded by the U.S. Congress in 1993.

The focus of the Sierra Nevada Alliance 2005 report is on preserving natural areas and rural communities through local land use decisions. Emphasis is placed on land that is privately owned and so controlled by local governments, rather than areas controlled by state and federal agencies. Publicly available data was collected from the U.S. Census, the California Statistical Abstract, the Sierra Nevada Ecosystem Project Report, Department of Motor Vehicles, the Forest and Range 2003 Assessment, U.S. Department of Agriculture Agricultural Census, and other sources. For a complete listing of sources, refer to the full report, available online at www.sierranevadaalliance.org.

Current Land and Population				
Land in the Sierra Nevada study area	total	in Sierra	% in Sierra	
(square miles)	3,044	3,044	100%	
County population in Sierra	total	in Sierra	% in Sierra	
	12,853	12,853	100%	
Change in the Sierra—the 1990s				
Population	1990	2000	change	% change
in Sierra Nevada portion of county	9,956	12,853	2,897	29%
Population projection*	2000	2020	change	% change
	12,853	16,248	3,395	26%
Residential building permits*	1990	2004	change	% change
	247	226	-21	-9%
Value of non-residential building permits*	1990	2004	change	% change
	\$65,030	\$18,653	-\$46,377	-71%
Vehicle miles traveled*	1990	2000	change	% change
(millions of miles)	300	294	-6	-2%
Registered vehicles*	1990	2003	change	% change
	12,308	16,196	3,888	32%
Miles of city & county maintained roads*	1990	2003	change	% change
	738	729	-9	-1%

Land Use Statistics: Mono County con't

Growth and Development				
Public/private land ownership	total acres	private	% privately owned	
	1,993,669	133,901	7%	
Undeveloped privately owned parcels	total private	undeveloped	% undeveloped	
	N/a	N/a	N/a	
Ownership of hardwood forest and woodland	total public	total private	% private	
	20,137	2,466	11%	
Riparian vegetation by land ownership	total	private	% private	
below 5,000 feet	N/a	N/a	N/a	
High quality old growth forests (acres)	rank 4	rank 5	total 4& 5	
	0	0	0	
Federal endangered and threatened species	threatened	endangered		
	3	2		
Total farmland*	1992	2002	change	% change
Farmland Mapping and Monitoring Program	N/a	N/a	N/a	N/a
Land in farms (acres)*	1992	2002	change	% change
USDA Agricultural Census	103,294	54,366	-48,928	-47%
Ownership of conifer forests	private	total public & private	% private	
(acres)	10,317	257,422	4%	
Protecting and Managing Rural Sprawl				
General plan update	land use	conservation	open space	
	2000	2000	2000	
County wide mapping of habitat?	No			
Habitat conservation plans?	No			
Preserving Agricultural Land and Natural Areas				
Williamson Act acreage	1991	2003	change	% change
	0	12,607	12,607	N/a
Land trusts**	name	acreage protected	acreage transferred	
	Eastern Sierra Land Trust, Bishop	63	0	

* Data is for entire county, including area outside of Sierra Nevada.

** Data is for both Inyo and Mono Counties combined.

Land Use Statistics: Nevada County

The following data was compiled from the Sierra Nevada Alliance report, *Planning for the Future: A Sierra Nevada Land Use Index (2005)*. The study area for the report included all or part of the twenty California and three Nevada counties that make up the Sierra Nevada mountain range as it was bounded in the Sierra Nevada Ecosystem Project (SNEP), a project funded by the U.S. Congress in 1993.

The focus of the Sierra Nevada Alliance 2005 report is on preserving natural areas and rural communities through local land use decisions. Emphasis is placed on land that is privately owned and so controlled by local governments, rather than areas controlled by state and federal agencies. Publicly available data was collected from the U.S. Census, the California Statistical Abstract, the Sierra Nevada Ecosystem Project Report, Department of Motor Vehicles, the Forest and Range 2003 Assessment, U.S. Department of Agriculture Agricultural Census, and other sources. For a complete listing of sources, refer to the full report, available online at www.sierranevadaalliance.org.

Current Land and Population				
Land in the Sierra Nevada study area	total	in Sierra	% in Sierra	
(square miles)	958	958	100%	
County population in Sierra	total	in Sierra	% in Sierra	
	92,033	92,033	100%	
Change in the Sierra—the 1990s				
Population	1990	2000	change	% change
in Sierra Nevada portion of county	78,510	92,033	13,523	17%
Population projection*	2000	2020	change	% change
	92,033	126,912	34,879	38%
Residential building permits*	1990	2004	change	% change
	1,145	979	-166	-14%
Value of non-residential building permits*	1990	2004	change	% change
	\$35,430	\$23,732	-\$11,698	-33%
Vehicle miles traveled*	1990	2000	change	% change
(millions of miles)	874	1,085	211	24%
Registered vehicles*	1990	2003	change	% change
	99,397	119,277	19,880	20%
Miles of city & county maintained roads*	1990	2003	change	% change
	755	772	17	2%

Land Use Statistics: Nevada County con't

Growth and Development				
Public/private land ownership	total acres	private	% privately owned	
	623,659	405,193	65%	
Undeveloped privately owned parcels	total private	undeveloped	% undeveloped	
	44,216	15,855	36%	
Ownership of hardwood forest and woodland	total public	total private	% private	
	16,665	110,577	87%	
Riparian vegetation by land ownership below 5,000 feet	total	private	% private	
	71,416	57,615	81%	
High quality old growth forests (acres)	rank 4	rank 5	total 4& 5	
	10,816	0	10,816	
Federal endangered and threatened species	threatened	endangered		
	5	1		
Total farmland*	1992	2002	change	% change
Farmland Mapping and Monitoring Program	152,196	151,618	-578	0%
Land in farms (acres)*	1992	2002	change	% change
USDA Agricultural Census	72,471	82,336	9,865	14%
Ownership of conifer forests (acres)	private	total public & private	% private	
	195,727	346,656	56%	
Protecting and Managing Rural Sprawl				
General plan update	land use	conservation	open space	
	1995	1995	1995	
County wide mapping of habitat?	No, only by project			
Habitat conservation plans?	No			
Preserving Agricultural Land and Natural Areas				
Williamson Act acreage	1991	2003	change	% change
	5,875	5,574	-301	-5%
Land trusts	name	acreage protected	acreage transferred	
	Nevada County Land Trust, Grass Valley	5,110	493	
	Truckee Donner Land Trust, Truckee	4,100	5,500	

* Data is for entire county, including area outside of Sierra Nevada.

Land Use Statistics: Placer County

The following data was compiled from the Sierra Nevada Alliance report, *Planning for the Future: A Sierra Nevada Land Use Index (2005)*. The study area for the report included all or part of the twenty California and three Nevada counties that make up the Sierra Nevada mountain range as it was bounded in the Sierra Nevada Ecosystem Project (SNEP), a project funded by the U.S. Congress in 1993.

The focus of the Sierra Nevada Alliance 2005 report is on preserving natural areas and rural communities through local land use decisions. Emphasis is placed on land that is privately owned and so controlled by local governments, rather than areas controlled by state and federal agencies. Publicly available data was collected from the U.S. Census, the California Statistical Abstract, the Sierra Nevada Ecosystem Project Report, Department of Motor Vehicles, the Forest and Range 2003 Assessment, U.S. Department of Agriculture Agricultural Census, and other sources. For a complete listing of sources, refer to the full report, available online at www.sierranevadaalliance.org.

Current Land and Population

Land in the Sierra Nevada study area (square miles)	total	in Sierra	% in Sierra
	1,404	1,072	76%
County population in Sierra	total	in Sierra	% in Sierra
	248,399	78,292	32%

Change in the Sierra—the 1990s

Population in Sierra Nevada portion of county	1990	2000	change	% change
	67,349	78,292	10,943	16%
Population projection*	2000	2020	change	% change
	248,399	456,040	207,641	84%
Residential building permits*	1990	2004	change	% change
	2,888	4,894	2,006	69%
Value of non-residential building permits*	1990	2004	change	% change
	\$143,133	\$331,684	\$188,551	132%
Vehicle miles traveled* (millions of miles)	1990	2000	change	% change
	1,998	2,910	912	46%
Registered vehicles*	1990	2003	change	% change
	200,141	308,817	108,676	54%
Miles of city & county maintained roads*	1990	2003	change	% change
	1,426	1,668	242	17%

Land Use Statistics: Placer County con't

Growth and Development				
Public/private land ownership	total acres	private	% privately owned	
	760,733	379,190	50%	
Undeveloped privately owned parcels	total private	undeveloped	% undeveloped	
	65,265	18,887	29%	
Ownership of hardwood forest and Woodland	total public	total private	% private	
	46,829	80,836	63%	
Riparian vegetation by land ownership below 5,000 feet	total	private	% private	
	45,601	28,845	63%	
High quality old growth forests (acres)	rank 4	rank 5	total 4& 5	
	84,380	0	84,380	
Federal endangered and threatened Species	threatened	endangered		
	7	1		
Total farmland*	1992	2002	change	% change
Farmland Mapping and Monitoring Program	203,047	175,445	-27,602	-14%
Land in farms (acres)*	1992	2002	change	% change
USDA Agricultural Census	137,723	131,311	-6,412	-5%
Ownership of conifer forests (acres)	private	total public & private	% private	
	172,524	444,913	39%	
Protecting Natural Areas and Managing Rural Sprawl				
General plan update	land use	conservation	open space	Status
	1994	1994	1994	N/a
County wide mapping of habitat?	Yes			
Habitat conservation plans?	Yes, Placer County Conservation Plan, Phase 1 Auburn West			
Preserving Agricultural Land and Natural Areas				
Williamson Act acreage	1991	2003	change	% change
	75,543	44,799	-30,744	-41%
Land trusts	name	acreage protected	acreage transferred	
	Placer Land Trust. Auburn	356	183	

* Data is for entire county, including area outside of Sierra Nevada.

Land Use Statistics: Plumas County

The following data was compiled from the Sierra Nevada Alliance report, *Planning for the Future: A Sierra Nevada Land Use Index (2005)*. The study area for the report included all or part of the twenty California and three Nevada counties that make up the Sierra Nevada mountain range as it was bounded in the Sierra Nevada Ecosystem Project (SNEP), a project funded by the U.S. Congress in 1993.

The focus of the Sierra Nevada Alliance 2005 report is on preserving natural areas and rural communities through local land use decisions. Emphasis is placed on land that is privately owned and so controlled by local governments, rather than areas controlled by state and federal agencies. Publicly available data was collected from the U.S. Census, the California Statistical Abstract, the Sierra Nevada Ecosystem Project Report, Department of Motor Vehicles, the Forest and Range 2003 Assessment, U.S. Department of Agriculture Agricultural Census, and other sources. For a complete listing of sources, refer to the full report, available online at www.sierranevadaalliance.org.

Current Land and Population

Land in the Sierra Nevada study area (square miles)	total	in Sierra	% in Sierra
	2,554	2,554	100%

County population in Sierra	total	in Sierra	% in Sierra
	20,824	20,824	100%

Change in the Sierra—the 1990s

Population in Sierra Nevada portion of county	1990	2000	change	% change
	19,738	20,824	1,086	6%

Population projection*	2000	2020	change	% change
	20,824	20,983	159	1%

Residential building permits*	1990	2004	change	% change
	297	270	-27	-9%

Value of non-residential building permits*	1990	2004	change	% change
	\$5,118	\$10,419	\$5,301	104%

Vehicle miles traveled* (millions of miles)	1990	2000	change	% change
	260	354	94	36%

Registered vehicles*	1990	2003	change	% change
	27,153	32,693	5,540	20%

Miles of city & county maintained roads*	1990	2003	change	% change
	683	696	13	2%

Land Use Statistics: Plumas County con't

Growth and Development				
Public/private land ownership	total acres	private	% privately owned	
	1,672,724	472,925	28%	
Undeveloped privately owned parcels	total private	undeveloped	% undeveloped	
	N/a	N/a	N/a	
Ownership of hardwood forest and woodland	total public	total private	% private	
	32,195	7,633	19%	
Riparian vegetation by land ownership	total	private	% private	
below 5,000 feet	7	7	100%	
High quality old growth forests (acres)	rank 4	rank 5	total 4& 5	
	95,415	5,706	101,121	
Federal endangered and threatened species	threatened	endangered		
	3	0		
Total farmland*	1992	2002	change	% change
Farmland Mapping and Monitoring Program	N/a	N/a	N/a	N/a
Land in farms (acres)*	1992	2002	change	% change
USDA Agricultural Census	119,514	170,521	51,007	43%
Ownership of conifer forests	private	total public & private	% private	
(acres)	295,466	1,278,725	23%	
Protecting Natural Areas and Managing Rural Sprawl				
General plan update	land use	conservation	open space	status
	2003	2000	2000	N/a
County wide mapping of habitat?	No ¹			
Habitat conservation plans?	No			
Preserving Agricultural Land and Natural Areas				
Williamson Act acreage	1991	2003	change	% change
	82,203	82,996	793	1%
Land trusts**	name	acreage protected	acreage transferred	
	Feather River Land Trust, Quincy	3,925	17,540	

* Data is for entire county, including area outside of Sierra Nevada.

¹ County uses state data bases.

** Data is for both Plumas and Sierra Counties combined.

Land Use Statistics: Sierra County

The following data was compiled from the Sierra Nevada Alliance report, *Planning for the Future: A Sierra Nevada Land Use Index (2005)*. The study area for the report included all or part of the twenty California and three Nevada counties that make up the Sierra Nevada mountain range as it was bounded in the Sierra Nevada Ecosystem Project (SNEP), a project funded by the U.S. Congress in 1993.

The focus of the Sierra Nevada Alliance 2005 report is on preserving natural areas and rural communities through local land use decisions. Emphasis is placed on land that is privately owned and so controlled by local governments, rather than areas controlled by state and federal agencies. Publicly available data was collected from the U.S. Census, the California Statistical Abstract, the Sierra Nevada Ecosystem Project Report, Department of Motor Vehicles, the Forest and Range 2003 Assessment, U.S. Department of Agriculture Agricultural Census, and other sources. For a complete listing of sources, refer to the full report, available online at www.sierranevadaalliance.org.

Current Land and Population

Land in the Sierra Nevada study area (square miles)	total	in Sierra	% in Sierra
	953	953	100%

County population in Sierra	total	in Sierra	% in Sierra
	3,555	3,555	100%

Change in the Sierra—the 1990s

Population in Sierra Nevada portion of county	1990	2000	change	% change
	3,318	3,555	237	7%

Population projection*	2000	2020	change	% change
	3,555	3,654	99	3%

Residential building permits*	1990	2004	change	% change
	11	16	5	45%

Value of non-residential building permits*	1990	2004	change	% change
	\$617	\$1,002	\$385	62%

Vehicle miles traveled* (millions of miles)	1990	2000	change	% change
	90	111	21	23%

Registered vehicles*	1990	2003	change	% change
	4,237	5,161	924	22%

Miles of city & county maintained roads*	1990	2003	change	% change
	396	397	1	0%

Land Use Statistics: Sierra County con't

Growth and Development				
Public/private land ownership	total acres	private	% privately owned	
	615,319	176,060	29%	
Undeveloped privately owned parcels	total private	undeveloped	% undeveloped	
	N/a	N/a	N/a	
Ownership of hardwood forest and Woodland	total public	total private	% private	
	15,496	5,876	27%	
Riparian vegetation by land ownership below 5,000 feet	total	private	% private	
	6,015	2,770	46%	
High quality old growth forests (acres)	rank 4	rank 5	total 4& 5	
	35,134	21,797	56,931	
Federal endangered and threatened Species	threatened	endangered		
	3	0		
Total farmland*	1992	2002	change	% change
Farmland Mapping and Monitoring Program	193,970	189,033	-4,937	-3%
Land in farms (acres)*	1992	2002	change	% change
USDA Agricultural Census	55,446	58,649	3,203	6%
Ownership of conifer forests (acres)	private	total public & private	% private	
	94,649	407,259	23%	
Protecting Natural Areas and Managing Rural Sprawl				
General plan update	land use	conservation	open space	
	1996	1996	1996	
County wide mapping of habitat?	Yes			
Habitat conservation plans?	No			
Preserving Agricultural Land and Natural Areas				
Williamson Act acreage	1991	2003	change	% change
	37,035	40,498	3,463	9%
Land trusts	name	acreage protected	acreage transferred	
	Feather River Land Trust, Quincy	3,925	17,540	

* Data is for entire county, including area outside of Sierra Nevada.

** Data is for both Plumas and Sierra Counties combined.

Land Use Statistics: Tehama County

The following data was compiled from the Sierra Nevada Alliance report, *Planning for the Future: A Sierra Nevada Land Use Index (2005)*. The study area for the report included all or part of the twenty California and three Nevada counties that make up the Sierra Nevada mountain range as it was bounded in the Sierra Nevada Ecosystem Project (SNEP), a project funded by the U.S. Congress in 1993.

The focus of the Sierra Nevada Alliance 2005 report is on preserving natural areas and rural communities through local land use decisions. Emphasis is placed on land that is privately owned and so controlled by local governments, rather than areas controlled by state and federal agencies. Publicly available data was collected from the U.S. Census, the California Statistical Abstract, the Sierra Nevada Ecosystem Project Report, Department of Motor Vehicles, the Forest and Range 2003 Assessment, U.S. Department of Agriculture Agricultural Census, and other sources. For a complete listing of sources, refer to the full report, available online at www.sierranevadaalliance.org.

Current Land and Population				
Land in the Sierra Nevada study area	total	in Sierra	% in Sierra	
(square miles)	2,951	1,157	39%	
County population in Sierra	total	in Sierra	% in Sierra	
	56,039	4,636	8%	
Change in the Sierra—the 1990s				
Population	1990	2000	change	% change
in Sierra Nevada portion of county	4,822	4,636	-186	-4%
Population projection*	2000	2020	change	% change
	56,039	68,323	12,284	22%
Residential building permits*	1990	2004	change	% change
	319	640	321	101%
Value of non-residential building permits*	1990	2004	change	% change
	\$39,707	\$40,067	\$360	1%
Vehicle miles traveled*	1990	2000	change	% change
(millions of miles)	731	834	103	14%
Registered vehicles*	1990	2003	change	% change
	54,954	61,143	6,189	11%
Miles of city & county maintained roads*	1990	2003	change	% change
	1,197	1,190	-7	-1%

Land Use Statistics: Tehama County con't

Growth and Development				
Public/private land ownership	total acres	private	% privately owned	
	520,035	279,684	54%	
Undeveloped privately owned parcels	total private	undeveloped	% undeveloped	
	N/a	N/a	N/a	
Ownership of hardwood forest and woodland	total public	total private	% private	
	64,321	67,976	51%	
Riparian vegetation by land ownership below 5,000 feet	total	private	% private	
	58,307	30,226	52%	
High quality old growth forests (acres)	rank 4	rank 5	total 4& 5	
	21,380	0	21,380	
Federal endangered and threatened species	threatened	endangered		
	7	1		
Total farmland*	1992	2002	change	% change
Farmland Mapping and Monitoring Program	953,580	951,119	-2,461	0%
Land in farms (acres)*	1992	2002	change	% change
USDA Agricultural Census	1,016,851	862,440	-154,411	-15%
Ownership of conifer forests (acres)	private	total public & private	% private	
	117,197	201,314	58%	
Protecting Natural Areas and Managing Open Space				
General plan update	land use	conservation	open space	Status
	1983	1983	1983	Update currently underway
County wide mapping of habitat?	No ¹			
Habitat conservation plans?	No			
Preserving Agricultural Land and Natural Areas				
Williamson Act acreage	1991	2003	change	% change
	802,886	802,167	-719	0%
Land trusts	name	acreage protected	acreage transferred	
	N/a	N/a	N/a	

* Data is for entire county, including area outside of Sierra Nevada.

¹ County uses state databases.

Land Use Statistics: Tulare County

The following data was compiled from the Sierra Nevada Alliance report, *Planning for the Future: A Sierra Nevada Land Use Index (2005)*. The study area for the report included all or part of the twenty California and three Nevada counties that make up the Sierra Nevada mountain range as it was bounded in the Sierra Nevada Ecosystem Project (SNEP), a project funded by the U.S. Congress in 1993.

The focus of the Sierra Nevada Alliance 2005 report is on preserving natural areas and rural communities through local land use decisions. Emphasis is placed on land that is privately owned and so controlled by local governments, rather than areas controlled by state and federal agencies. Publicly available data was collected from the U.S. Census, the California Statistical Abstract, the Sierra Nevada Ecosystem Project Report, Department of Motor Vehicles, the Forest and Range 2003 Assessment, U.S. Department of Agriculture Agricultural Census, and other sources. For a complete listing of sources, refer to the full report, available online at www.sierranevadaalliance.org.

Current Land and Population				
Land in the Sierra Nevada study area	total	in Sierra	% in Sierra	
(square miles)	4,824	3,279	68%	
County population in Sierra	total	in Sierra	% in Sierra	
	368,021	15,040	4%	
Change in the Sierra—the 1990s				
Population	1990	2000	change	% change
in Sierra Nevada portion of county	14,173	15,040	867	6%
Population projection*	2000	2020	change	% change
	368,021	543,749	175,728	48%
Residential building permits*	1990	2004	change	% change
	2,133	2,751	618	29%
Value of non-residential building permits*	1990	2004	change	% change
	\$173,778	\$163,744	-\$10,034	-6%
Vehicle miles traveled*	1990	2000	change	% change
(millions of miles)	2,473	3,077	604	24%
Registered vehicles*	1990	2003	change	% change
	253,123	301,381	48,258	19%
Miles of city & county maintained roads*	1990	2003	change	% change
	3,772	3,852	80	2%

Land Use Statistics: Tulare County con't

Growth and Development				
Public/private land ownership	total acres	private	% privately owned	
	2,055,441	535,136	26%	
Undeveloped privately owned parcels	total private	undeveloped	% undeveloped	
	10,685	6,305	59%	
Ownership of hardwood forest and woodland	total public	total private	% private	
	173,750	302,187	63%	
Riparian vegetation by land ownership below 5,000 feet	total	private	% private	
	96,225	35,806	37%	
High quality old growth forests (acres)	rank 4	rank 5	total 4& 5	
	123,048	58,007	181,055	
Federal endangered and threatened species	threatened	endangered		
	6	4		
Total farmland*	1992	2002	change	% change
Farmland Mapping and Monitoring Program	1,310,858	1,313,461	2,603	0%
Land in farms (acres)*	1992	2002	change	% change
USDA Agricultural Census	1,354,262	1,393,456	39,194	3%
Ownership of conifer forests (acres)	private	total public & private	% private	
	21,068	840,180	3%	
Protecting Natural Areas and Managing Rural Sprawl				
General plan update	land use	conservation	open space	status
	1981	1972	1972	Update currently underway
County wide mapping of habitat?	Yes			
Habitat conservation plans?	No ¹			
Preserving Agricultural Land and Natural Areas				
Williamson Act acreage	1991	2003	change	% change
	1,134,095	1,113,122	-20,973	-2%
Land trusts	name	acreage protected	acreage transferred	
	Sequoia Riverlands Trust, Visalia	5,642	0	

* Data is for entire county, including area outside of Sierra Nevada.

¹ A background study was completed, but a plan has not been developed.

Land Use Statistics: Tuolumne County

The following data was compiled from the Sierra Nevada Alliance report, *Planning for the Future: A Sierra Nevada Land Use Index (2005)*. The study area for the report included all or part of the twenty California and three Nevada counties that make up the Sierra Nevada mountain range as it was bounded in the Sierra Nevada Ecosystem Project (SNEP), a project funded by the U.S. Congress in 1993.

The focus of the Sierra Nevada Alliance 2005 report is on preserving natural areas and rural communities through local land use decisions. Emphasis is placed on land that is privately owned and so controlled by local governments, rather than areas controlled by state and federal agencies. Publicly available data was collected from the U.S. Census, the California Statistical Abstract, the Sierra Nevada Ecosystem Project Report, Department of Motor Vehicles, the Forest and Range 2003 Assessment, U.S. Department of Agriculture Agricultural Census, and other sources. For a complete listing of sources, refer to the full report, available online at www.sierranevadaalliance.org.

Current Land and Population				
Land in the Sierra Nevada study area	total	in Sierra	% in Sierra	
(square miles)	2,235	2,235	100%	
County population in Sierra	total	in Sierra	% in Sierra	
	54,501	54,501	100%	
Change in the Sierra—the 1990s				
Population	1990	2000	change	% change
in Sierra Nevada portion of county	48,455	54,501	6,046	12%
Population projection*	2000	2020	change	% change
	54,501	65,452	10,951	20%
Residential building permits*	1990	2004	change	% change
	848	395	-453	-53%
Value of non-residential building permits*	1990	2004	change	% change
	\$11,622	\$18,639	\$7,017	60%
Vehicle miles traveled*	1990	2000	change	% change
(millions of miles)	481	567	86	18%
Registered vehicles*	1990	2003	change	% change
	57,831	73,230	15,399	27%
Miles of city & county maintained roads*	1990	2003	change	% change
	625	634	9	1%

Land Use Statistics: Tuolumne County con't

Growth and Development				
Public/private land ownership	total acres	private	% privately owned	
	1,450,334	351,552	24%	
Undeveloped privately owned parcels	total private	undeveloped	% undeveloped	
	N/a	N/a	N/a	
Ownership of hardwood forest and woodland	total public	total private	% private	
	108,289	81,285	43%	
Riparian vegetation by land ownership below 5,000 feet	total	private	% private	
	60,909	34,192	56%	
High quality old growth forests (acres)	rank 4	rank 5	total 4& 5	
	62,628	77,117	139,745	
Federal endangered and threatened species	threatened	endangered		
	9	0		
Total farmland*	1992	2002	change	% change
Farmland Mapping and Monitoring Program	N/a	N/a	N/a	N/a
Land in farms (acres)*	1992	2002	change	% change
USDA Agricultural Census	137,530	149,767	12,237	9%
Ownership of conifer forests (acres)	private	total public & private	% private	
	130,061	780,407	17%	
Protecting and Managing Rural Sprawl				
General plan update	land use	conservation	open space	
	1996	1996	1996	
County wide mapping of habitat?	Yes			
Habitat conservation plans?	Yes, wildlife habitat plan—county wide			
Preserving Agricultural Land and Natural Areas				
Williamson Act acreage	1991	2003	change	% change
	125,016	118,422	-6,594	-5%
Land trusts	name	acreage protected	acreage transferred	
	Tuolumne County Land Trust, Sonora	0	524	

* Data is for entire county, including area outside of Sierra Nevada.

Land Use Statistics: Washoe (NV) County

The following data was compiled from the Sierra Nevada Alliance report, *Planning for the Future: A Sierra Nevada Land Use Index (2005)*. The study area for the report included all or part of the twenty California and three Nevada counties that make up the Sierra Nevada mountain range as it was bounded in the Sierra Nevada Ecosystem Project (SNEP), a project funded by the U.S. Congress in 1993.

The focus of the Sierra Nevada Alliance 2005 report is on preserving natural areas and rural communities through local land use decisions. Emphasis is placed on land that is privately owned and so controlled by local governments, rather than areas controlled by state and federal agencies. Publicly available data was collected from the U.S. Census, the California Statistical Abstract, the Sierra Nevada Ecosystem Project Report, Department of Motor Vehicles, the Forest and Range 2003 Assessment, U.S. Department of Agriculture Agricultural Census, and other sources. For a complete listing of sources, refer to the full report, available online at www.sierranevadaalliance.org.

Current Land and Population			
Land in the Sierra Nevada study area (square miles)	total	in Sierra	% in Sierra
	6,342	317	5%
County population in Sierra	total	in Sierra	% in Sierra
	339,486	176,844	52%
Land trusts	name	acreage protected	acreage transferred
	Nevada Land Conservancy, Reno, NV	605	2,155

Land Use Statistics: Yuba County

The following data was compiled from the Sierra Nevada Alliance report, *Planning for the Future: A Sierra Nevada Land Use Index (2005)*. The study area for the report included all or part of the twenty California and three Nevada counties that make up the Sierra Nevada mountain range as it was bounded in the Sierra Nevada Ecosystem Project (SNEP), a project funded by the U.S. Congress in 1993.

The focus of the Sierra Nevada Alliance 2005 report is on preserving natural areas and rural communities through local land use decisions. Emphasis is placed on land that is privately owned and so controlled by local governments, rather than areas controlled by state and federal agencies. Publicly available data was collected from the U.S. Census, the California Statistical Abstract, the Sierra Nevada Ecosystem Project Report, Department of Motor Vehicles, the Forest and Range 2003 Assessment, U.S. Department of Agriculture Agricultural Census, and other sources. For a complete listing of sources, refer to the full report, available online at www.sierranevadaalliance.org.

Current Land and Population				
Land in the Sierra Nevada study area (square miles)	total	in Sierra	% in Sierra	
	631	397	63%	
County population in Sierra	total	in Sierra	% in Sierra	
	60,219	10,778	18%	
Change in the Sierra—the 1990s				
Population	1990	2000	change	% change
in Sierra Nevada portion of county	9,973	10,778	805	8%
Population projection*	2000	2020	change	% change
	60,219	84,816	24,597	41%
Residential building permits*	1990	2004	change	% change
	373	1,697	1,324	355%
Value of non-residential building permits*	1990	2004	change	% change
	\$16,729	\$18,868	\$2,139	13%
Vehicle miles traveled*	1990	2000	change	% change
(millions of miles)	480	603	123	26%
Registered vehicles*	1990	2003	change	% change
	56,004	57,325	1,321	2%
Miles of city & county maintained roads*	1990	2003	change	% change
	654	656	2	0%

Land Use Statistics: Yuba County con't

Growth and Development				
Public/private land ownership	total acres	private	% privately owned	
	218,547	152,096	70%	
Undeveloped privately owned parcels ¹	total private	undeveloped	% undeveloped	
	7,435	6,656	90%	
Ownership of hardwood forest and woodland	total public	total private	% private	
	15,834	68,661	81%	
Riparian vegetation by land ownership below 5,000 feet	total	private	% private	
	33,732	28,555	85%	
High quality old growth forests (acres)	rank 4	rank 5	total 4& 5	
	3,446	0	3,446	
Federal endangered and threatened species	threatened	endangered		
	7	2		
Total farmland*	1992	2002	change	% change
Farmland Mapping and Monitoring Program	238,768	233,273	-5,495	-2%
Land in farms (acres)*	1992	2002	change	% change
USDA Agricultural Census	234,781	234,129	-652	0%
Ownership of conifer forests (acres)	private	total public & private	% private	
	54,981	95,094	58%	
Protecting Natural Areas and Managing Rural Sprawl				
General plan update	land use	conservation	open space	
	1996	1996	1996	
County wide mapping of habitat?	In process			
Habitat conservation plans?	In process			
Preserving Agricultural Land and Natural Areas				
Williamson Act acreage	1991	2003	change	% change
	N/a	N/a	N/a	N/a
Land trusts	name	acreage protected	acreage transferred	
	N/a	N/a	N/a	

* Data is for entire county, including area outside of Sierra Nevada.

¹ Data on the improvement value are not available for Yuba county. Therefore, parcels listed have \$0 improvements.

Appendix B Further Reading & Websites

Additional Reading

Sierra Nevada Alliance

www.sierranevadaalliance.org
530-542-4546

Sierra Nevada Grazing in Transition: The Role of Forest Service Grazing in the Foothill Ranches of California, June 2002.

Troubled Waters of the Sierra: California and Nevada's Threatened Water Supply, 2003.

Sierra Business Council

www.sbcouncil.org
530-582-4800

Planning for Prosperity: Building Successful Communities in the Sierra Nevada, 1997.

Investing for Prosperity: Building Successful Communities and Economies in the Sierra Nevada, 2003.

Sierra Nevada Wealth Index, 1990-2000 edition.

Greenbelt Alliance

www.greenbelt.org
415-398-3730

Bound for Success: A citizens' guide to using urban growth boundaries for more livable communities and open space protection in California, April 1997.

Toward a Bright Future: Updating Sonoma County's General Plan, November 2004.

California Wilderness Coalition

www.calwild.org
415-451-1450

Missing Linkages: Restoring connectivity to the California landscape, 2001.

Wild Harvest: Farming for wildlife and profitability, A Report on Private Land Stewardship, July 2002.

Planning and Conservation League

www.pcl.org
916-444-8726

Citizen's Guide to the General Plan, 2000

Guide to Local Growth Control Initiatives, March 2002

Citizen's Guide to the California Environmental Quality Act, March 1997

Additional resources

Better Models for Development in California: Ideas for Enhancing Small Towns and Suburban Communities, Edward T. McMahon with Shelley Mastran, The Conservation Fund and Local Government Commission, 2003.

A Citizen's Guide to Planning, Governor's Office of Planning and Research, www.opr.ca.gov, January 2001.

Creating Successful Communities: A Guidebook to Growth Management Strategies, Mantell, Harper, Propst. Island Press, Washington D.C., 1990.

Development at the Urban Fringe and Beyond: Impacts on agriculture and rural land, Heimlich, Ralph, et al. USDA Economic Research Service, AER-803, www.ers.usda.gov/publications/aer803/.

Endangered by Sprawl: How runaway development threatens America's wildlife, National Wildlife Federation, 2005, www.smartgrowth.org.

Getting to Smart Growth: 100 policies for implementation, Smart Growth Network, January 2002, www.smartgrowth.org.

Guide to California Planning, Second Edition, William Fulton. Solano Press, Point Arena, CA, 1999.

Land Use and the General Plan—Full Guidebook, LandWatch Monterey County, www.landwatch.org.

Protecting Water Resources with Smart Growth, U.S. Environmental Protection Agency, Available free from www.epa.gov/smartgrowth.

A Sierra Landscape in Transition: Land use and social change in western Nevada County, California, Peter A. Walker, February 2003, www.geography.uoregon.edu/walker/Sierra_report_2003.pdf.

Smart Growth Shareware: A library of smart growth resources for everyone interested in creating livable, well-planned communities, www.smartgrowth.org.

Tools for Preserving Open Space in Amador County, California, Foothill Conservancy, Pine Grove, CA, February 2002, www.foothillconservancy.org.

Websites for Smart Growth

American Farmland Trust
www.aft.org

American Planning Association
www.planning.org

California Chapter of the American Planning Association
www.calapa.org

Nevada Chapter of the American Planning Association
www.nvapa.org

Congress for New Urbanism
www.cnu.org

Greenbelt Alliance
www.greenbelt.org

Landwatch Monterey
www.landwatch.org

Local Government Commission
www.lgc.org

Natural Resources Defense Council – Smart Growth & Sprawl
www.nrdc.org/cities/smartGrowth

Planning and Conservation League
www.pcl.org

Sierra Club—Stopping Sprawl
www.sierraclub.org/sprawl

Smart Growth America
www.smartgrowthamerica.com

Smart Growth Network
www.smartgrowth.org

State of California web sites

California Land Use Planning Information Network (LUPIN)
www.ceres.ca.gov/planning

CA Planners' Information Network
www.calpin.ca.gov

Governor's Office of Planning and Research
www.opr.ca.gov

Smart Growth Caucus – CA Legislature
www.assembly.ca.gov/sgc

State of Nevada Planning website
www.lands.nv.gov

U.S. Environmental Protection Agency: Smart Growth
www.epa.gov/smartgrowth

The Urban Land Institute: California Smart Growth Initiative
www.smartgrowthcalifornia.uli.org

Websites for information on the Sierra and natural resources

California Fire and Resource Assessment Program
www.frap.cdf.ca.gov

California Oaks Foundation
www.californiaoaks.org

California Wilderness Coalition
www.calwild.org

Defenders of Wildlife
www.defenders.org

Foothill Conservancy
www.foothillconservancy.org

High Sierra Resource Conservation and Development Council
www.highsierra-rcandd.org

Mountain Lion Foundation
www.mountainlion.org

Sierra Business Council
www.sbcouncil.org

Sierra Nevada Alliance
www.sierranevadaalliance.org

Sierra Nevada Forest Protection Campaign
www.sierracampaign.org

Sierra Watch
www.sierrawatch.org

U.S. Fish & Wildlife Service, Sacramento Fish and Wildlife Office
www.sacramento.fws.gov



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