The State of the Sierra

A PUBLICATION OF THE SIERRA BUSINESS COUNCIL

IN PARTNERSHIP WITH THE SIERRA NEVADA CONSERVANCY

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Sierra Business Council

Working to secure the social, natural, and financial health of the Sierra Nevada for this and future generations.

About the Sierra Business Council

The Sierra Business Council (SBC) is a nonprofit association of more than seven hundred businesses, agencies, and individuals working to secure the social, natural, and financial health of the Sierra Nevada region for this and future generations. Founded in 1994 and based in Truckee, California, SBC does not believe that Sierra communities must choose between economic and environmental health. On the contrary, we view environmental quality as key to the Sierra Nevada's economic prosperity, and natural resource conservation as essential to building regional wealth.

SBC is a resource for business leaders, government officials, and other decision makers seeking solutions to local and regional challenges. Our work includes research, policy analysis, public education, leadership development, and collaborative initiatives with local partners.

SBC represents a new approach. Our perspective is regional; clearly the challenges our communities face are more alike than different. We are proactive and collaborative and believe that creative solutions rarely emerge without effective leadership. Our approach is long term and inclusive; nothing else will ensure our region's lasting prosperity.

The Sierra Business Council gratefully acknowledges funding support from several organizations whose generous contributions allowed us to dedicate significant time and effort to research and write this project.

The Richard and Rhoda Goldman Foundation

www.goldmanfund.org

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Letter from the Sierra Business Council and Sierra Nevada Conservancy

The Sierra Business Council's original *Sierra Nevada Wealth Index* (1996) stated, "Improving the quality and consistency of data in the Sierra Nevada region must be a priority for policymakers if existing data collection is to produce more tangible public benefit." More than ten years later that statement still holds true.

The State of the Sierra represents the third edition of the Sierra Business Council's indicator project to identify trends affecting the social, natural, and financial capital of the Sierra Nevada. Assessing the Sierra Nevada's social, natural, and financial health provides a framework that allows decision makers and Sierra Nevada residents to appraise their community within the larger context of the region.

The report provides an integrated understanding of our region's wealth by highlighting unique assets, recognizing issues that affect our quality of life, and offering sustainable opportunities to enhance and improve the Sierra Nevada.

The Sierra Business Council (SBC) is a non-profit association of more than seven hundred businesses, agencies, and individuals working to secure the social, natural and financial health of the Sierra Nevada region for this and future generations. Founded in 1994 and based in Truckee, California, SBC explicitly rejects the notion that Sierra communities must choose between economic and environmental health. On the contrary, we view environmental quality as key to the Sierra Nevada's economic prosperity, and natural resource conservation as essential to building regional wealth.

The Sierra Nevada Conservancy (SNC), a State agency created in 2004, is based on the understanding that the environmental, economic, and social well-being of the Sierra Nevada and its communities are intertwined. SNC is the largest conservancy in the state, covering all or parts of 22 counties from Modoc in the north to Kern in the south, comprised of 25 million acres in the mountains and foothills of the Sierra Nevada range, the Mono Basin, Owens Valley, the Modoc Plateau, and a portion of the southern Cascade region.

Charged with initiating, encouraging, and supporting efforts that improve the environmental, economic, and social well-being of the Sierra Nevada, the SNC's broad mission can only be accomplished through collaboration and cooperation with partners, both inside and outside of the region. Two of SNC's primary strategic goals are to ensure that useful information is readily and widely available to decision makers and other stakeholders throughout the region and to increase knowledge and capacity in the region through information, technical assistance, and other resources.

The partnership between SBC and SNC strengthens each organization and benefits the region by providing high-quality research an outreach tools to improve people's understanding of the economic, social, and natural conditions in the region. Although SNC's boundaries differ somewhat from those of SBC, the information provided in the *Wealth Index* and *The State of the Sierra* reports helps communities throughout the region to identify opportunities to improve or enhance community well-being.

The research reflected in this report contributes to another key SNC objective, which is to develop environmental, economic, and social well-being indices or measures to monitor progress in various program and geographic areas in the region. By embracing the notion that social, natural, and financial health are linked, *The State of the Sierra* report embodies a more sustainable method of conservation – one that supports the economy and character of the communities, as well. This style of conservation positions humans as allies and stewards of the environment and sees social justice, economic prosperity, and cultural character as critical components of a healthy environment.

We are pleased to provide this important information and are confident that *The State of the Sierra* report will prove useful for governmental agencies, non-governmental entities, educational institutions, and the myriad of individuals responsible for daily decisions affecting the region and our state. We look forward to working with all of you in our efforts to ensure the environmental, economic, and social well-being of this magnificent region.

David Mattocks
President
Sierra Business Council

Jim Branham
Executive Officer
Sierra Nevada Conservancy

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photo by Tom Rassuchine

Executive Summary

The Sierra Nevada region is under considerable pressure to change because of population increases. The rapidly growing population throughout much of the region has acted as a catalyst for a host of challenges – housing needs, land use changes, and community infrastructure needs – facing the residents of the Sierra Nevada. However, the burgeoning population presents unique opportunities to enhance our rural and historic communities, encourage migration and start-up businesses, and maintain our region's natural and scenic resources. Community and regionwide collaborative planning processes are needed to ensure that we grow in a manner that preserves our excellent quality of life and enhances the unique advantages the Sierra Nevada possesses. Important trends in the region include:

- The region's population is expected to exceed 1 million by 2020, which will nearly double the population from 1990.
- The Sierra Nevada's population is aging faster than that of the rest of the state without a corresponding increase of children and young adults.
- Water originating in the Sierra Nevada supplies roughly 60 percent of California's fresh water, much of which is used to propel the Central Valley's agricultural economy.
- Housing prices more than doubled from 1997 to 2003.
- Second homes make up 15 percent of all housing units.
- Rising home prices and a proliferation of second homes continue to force middle-income earners and families out of the region. Without a wide range of housing options, the income gap amongst Sierra Nevada residents will continue to grow.
- An exceptionally educated resident population, many with bachelor and master degrees, provides an inviting workforce for potential businesses.
- Tourism employs a large segment of the workforce, especially in the East subregion.
- Commuting out of their home county for work is a daily occurrence for one-third of Sierra Nevada residents.
- Local wages provide only half of residents' income. Statewide, 71 percent of income results from local wages. Retirement funds and investments make up a disproportionate amount of income in the Sierra Nevada.
- The region provides a tremendous amount of energy from hydropower and geothermal power to California. The potential to increase energy output by using the region's surplus of woody biomass is high.
- The Sierra Nevada possesses some of the world's most productive carbon sequestering lands.

In order to create sustainable economies and communities that increase the wealth of the Sierra Nevada's social, natural, and financial capital, the Sierra Business Council seeks to link urban and rural constituents through collaborative, inclusive processes that encourage and enable buy-in from across the socioeconomic scale and from people living outside of the Sierra Nevada. Though growing rapidly, the region's population is dwarfed by the population centers surrounding the range. The Sierra Nevada provides critical environmental services to the surrounding communities – clean water, photosynthesis, soil formation, and nutrient cycling – as well as recreation and respite for millions. The Sierra Nevada needs buy-in and involvement from its visitors and part-time residents in order to maintain the quality of the region they have come to expect.

Sierra Nevada communities are well positioned to effectively seize these opportunities and lead broad-based processes to manage change. Sustainable and efficient use of the region's natural resources is important for the whole state because of our water and timber. Proximity to large population centers and forward-thinking urban areas is an asset unmatched by most other mountain ranges in the world. The region primarily resides in a state with a diverse economy larger than all but five nations; the Sierra Business Council believes that if any rural mountainous region has access to the resources to plan for change, it is the Sierra Nevada region. Finally, by developing a strong regional identity the Sierra Nevada will be able to make effective, large-scale management of change possible. Communities in the Sierra Nevada need to manage change induced by the effects of population growth and provide ample opportunity for part-time residents and visitors to have a role in protecting and improving the region's quality of life.

photo by Tom Rassuchine

The State of the Sierra

The need for new, more inclusive measures of wealth has been recognized worldwide as a crucial step in order to grasp the true health of a community or region. The *Sierra Nevada Wealth Index* is a collection of such measures. By examining the Sierra Nevada's social and natural capital, in addition to our financial capital, the *Wealth Index* gives private and public investors a more complete and useful picture of current conditions and trends in our region.

A decade ago, the Sierra Business Council published the *Sierra Nevada Wealth Index*: *Understanding and Tracking Our Region's Wealth*. *The State of the Sierra* report represents a summary of the third edition of that report, and is intended to build upon previous work while identifying trends, challenges, and opportunities.

The Sierra Business Council first developed the *Sierra Nevada Wealth Index* in 1996 to help business leaders and policy makers understand the assets that sustain our region; the *Wealth Index* described the region's social, natural, and financial capital. These three forms of capital are the foundations of the Sierra Nevada economy, and together, they provide an integrated understanding of our region's wealth. The definition of social, natural, and financial wealth with measurable indicators resonated with business leaders and policy makers throughout the Sierra Nevada, and subsequent editions of the *Wealth Index* built upon this work.

The Sierra Nevada's exceptionally high natural and social capital act as magnets attracting and holding

financial capital in our region. Due to our outstanding environmental quality, attractive towns and good schools are no longer simply nice amenities; they are essential elements for retaining business, public and private investment, and growing families, and attracting new residents to the region.

But the pace of change in the Sierra Nevada – population growth, residential development, and land use conversion – could diminish the region's social and natural capital if it occurs without conscious consideration for these wealth centers. Changes for some indicators of Sierra Nevada wealth have come suddenly. The advisory committee for the original *Wealth Index* did not include a single housing indicator because housing concerns were so far below the radar of improving the region's wealth. Now, however, housing concerns have launched to the forefront of concerns that need to be diligently addressed. The second edition of the *Wealth Index* had one housing indicator, whereas the latest edition, the 2005-2006 *Wealth Index*, has nine indicators.

The Sierra Nevada needs to identify challenges and opportunities facing the region, and then develop courses of action that will improve the region's social, natural, and financial capital.

With a few exceptions, such as Modoc and Inyo counties, the Sierra Nevada region has experienced a surge in population growth and its accompanying challenges.

What is a Region?

As a geological entity the Sierra Nevada has a definitive boundary as a mountain range. (Geologists would point out that the "Range of Light" is a fluid and dynamic entity, not static, but we have chosen to work on a smaller scope than geological time.) However, defining the Sierra Nevada as a region is decidedly less fixed.

So how do you define a region? Is it politically, economically, geologically, biologically, or perhaps by emotional attachment to an area? Choosing which factor takes priority results in a particular line on a map. Change the priority and the line changes.

The State of the Sierra utilizes a political boundary to study data and trends. That said, we do not profess that the lines we chose encapsulate the entire Sierra Nevada as a region. Data collection for *The State of the Sierra* began in 2003, a year prior to the creation of the Sierra Nevada Conservancy. As an indicator project seeking to determine trends within the Sierra Nevada, SBC chose to examine data from the 12-county political boundary used in the original 1996 *Sierra Nevada Wealth Index* as well as the second edition released in 2000. Constructing the report around the same region allowed us to compare more than a decade's worth of data and establish trends occurring within that boundary.

Because the Sierra Nevada slices through numerous county and state political boundaries, collecting data for the region has unique challenges. Much of the data used for *The State of the Sierra* is derived from the U.S. Census Bureau, which provides data on national, state, and county level. In order to collect data that accurately represents the Sierra Nevada, we need data collected at a zip code level.

Collecting data by zip code is possible, but choosing which zip codes to include seemed premature, considering that legislative negotiations for the Sierra Nevada Conservancy's boundary were still ongoing when the project began.

With a firmly established political boundary for the Sierra Nevada, the Sierra Business Council believes future indicator projects need to be based on that boundary. Data collection at a zip code level within the Sierra Nevada Conservancy boundary will create the baseline for future studies about the region.

People no longer come to the Sierra with ambitions of finding gold or hauling away large trees. People flock to the Sierra for respite, recreation, and retirement, to enjoy the small-town mountain communities, vast natural areas, and healthful quality of life. As the population increases and the economy changes, sustainable economies, land use practices, and housing trends must evolve, so as not to debilitate the region's social, natural, and financial wealth.

In the new and changing Sierra Nevada, housing prices are rising, the economy is shifting, jobs that depend on natural resources are diminishing, new populations are arriving, air quality is declining, new investment is flooding in, and communities are in transition. These trends require a reevaluation of the ways we conduct business and protect the environment.

Indicators within the 2005-2006 *Sierra Nevada Wealth Index* demonstrate a continuation of troubling trends introduced in the last edition. The technological and demographic changes driving the Sierra Nevada's expanding economic prosperity have not come without costs: rapid loss of farmland, surprisingly high levels of water and air pollution, declining biodiversity, and rural sprawl. The diminishment of natural capital, if it continues, will ultimately drive financial capital from our region.

The Sierra Nevada's expanding economic prosperity has not reached many. In some counties, the growing number of children in poverty, declining personal incomes, and low public school enrollment indicate that entire communities and segments of the population are being left behind. These trends, occurring when much of California has experienced unprecedented prosperity, reinforce the need to invest in social capital in order to build regional wealth.

Businesses must find economically viable ways of using and sustaining the resources of the Sierra Nevada because intact and functioning ecosystems, forests, and watersheds are increasingly valuable assets to the region and the state. The environmental community must employ conservation strategies that sustain human communities while supporting the infrastructure and cultural change that enables Sierra Nevada communities to serve as long-term stewards of the environment.

Ownership of Sierra Nevada land is primarily (84 percent) held in public hands – federal, state, and local government. The small percentage of privately owned land in the Sierra Nevada is under considerable pressure to change land uses because of the burgeoning population. Land use patterns are shifting from open space and working landscapes to rural sprawl, ranchette housing developments, and a proliferation of second homes. The small amount of private land also means that the direction of land development is easier to predict. With accurate projections community leaders and planners can make better-informed decisions about the direction and development patterns of their communities. Complementary solutions to land use and development pressures are both viable and achievable.

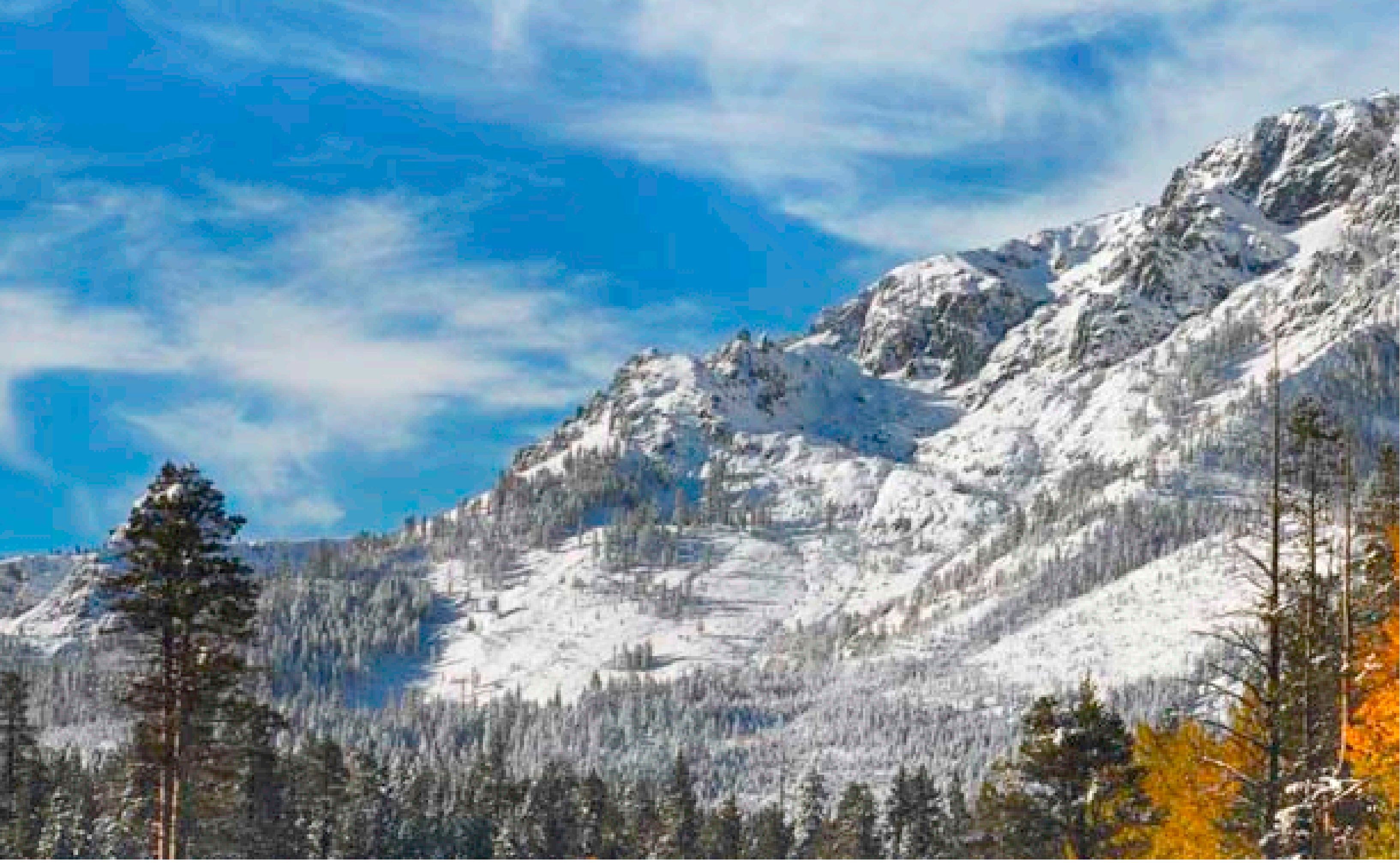
The Sierra Nevada has an excellent opportunity to promote a diverse, creative, and enduring economy that complements and enhances the Sierra's social and natural wealth. The natural beauty and rural charm of Sierra communities and their high quality of life continue to attract residents, visitors, and businesses to the Sierra Nevada. We have an opportunity to capitalize on these assets and ensure that the qualities that attract people and business to the Sierra Nevada will be maintained for future generations.

The Sierra Nevada has an excellent opportunity to promote a diverse, creative, and enduring economy.

In regions where the economy has been based on the extraction of natural resources and rapid residential development, such as the Sierra Nevada, conflict persists between environmentalists and the natural resource businesses and land developers. Environmentalists have employed conservation strategies like litigation, command and control mechanisms, and purchases of land in order to stop or slow these developments. Though successful on many fronts, both in the Sierra Nevada region and nationally, the continued overuse of these strategies can perpetuate tension between the environmental community and economic and social interests at a time when a more integrated and inclusive approach to conservation is needed. Collaborative processes when diverse groups come together in order to develop plans benefiting the community in a holistic manner can and should be attempted. Rather than furthering the "us vs. them" mentality, the collaborative process seeks to build partnerships that create and strengthen relations and ties amongst diverse groups within the community.

Given the region's rapid population growth, we cannot achieve long-term conservation in the Sierra without securing social equity and economic well-being. We cannot approach tomorrow's challenges with the tools of yesterday. We must find complementary solutions by changing the ways we do business, conduct our lives, and protect our treasured resources.

In the 1996 and 2000 editions of the *Sierra Nevada Wealth Index*, the Sierra Business Council emphasized its dedication to the Capital Investment Diagram. This decision-making tool visually depicts the strength of making community and business decisions that benefit the region's social, natural, and financial wealth – the triple bottom line. Investments that enhance all three aspects of wealth provide the greatest benefit. Decisions that improve or conserve two forms of capital without diminishing the third also provide significant benefits to the community. Unfortunately, investment decisions that only benefit one and decrease the other two forms of capital still occur with some frequency.



The Sierra Nevada Region

Residents of the Sierra Nevada identify and think of themselves as living in a region. This was not the case 20 years ago. The Sierra Nevada, the longest unbroken mountain range in the United States, runs for 400 miles along the eastern flank of California and the western edge of Nevada. For the purposes of this report, similar to previous editions of the *Wealth Index*, indicator data and trends were collected for 12 Sierra Nevada counties in their entirety: Plumas, Sierra, El Dorado, Nevada, Placer, Amador, Calaveras, Mariposa, Tuolumne, Alpine, Inyo, and Mono counties. Data was collected for these counties because they are wholly encompassed within the region. The historical consistency and breadth of data available on counties makes them the most applicable and smallest unit on which to collect information for a large region. County data is further aggregated into the following subregions:

North: The North region includes Plumas and Sierra counties and has 3.5 percent of the region's residents.

North Central: The North Central region consists of El Dorado, Nevada, and Placer counties and contains 72 percent of the region's residents. The most populous and fastest growing region increased its population by 33 percent from 1990 to 2000 and expects to continue at this clip into 2010.

South Central: Amador, Calaveras, Mariposa, and Tuolumne counties make up the South Central region and have 19.9 percent of the region's residents.

East: The East region includes Alpine, Inyo, and Mono counties with 4.6 percent of the region's population. While slightly more populous than the North, the region is much larger in acreage.

The distinctive geological province of the Sierra Nevada contains all or portions of 25 counties. Many Sierra Nevada counties extend into California's Central Valley and Nevada's Great Basin where large portions of county residents live. Calculating Sierra Nevada-specific data for Modoc, Shasta, Lassen, Tehama, Butte, Yuba, Madera, Fresno, Tulare, Kern, Carson City, Douglas, and Washoe counties requires resources and data sets that are not currently available. The population portions of these counties residing outside of the Sierra Nevada region dominate the county's demographic and economic characteristics. For these reasons, the counties listed above have not been included in this report.

The social, natural, and financial data from these counties exhibits distinctive patterns quite different than the counties we have included in the subregions. However, roughly 1.2 million people live in the Sierra Nevada portions of these counties, and a process is needed to account for the changes in social, natural, and financial wealth that these Sierra Nevada residents are experiencing.

We acknowledge that by not including data for all the counties that have portions extending into the Sierra Nevada, the report fails to be comprehensive for the region. Until recently, the Sierra Nevada lacked a solid political identity. The region's readily identifiable geography had lacked a state-recognized political boundary, which resulted in gaps in assessing the social, natural, and financial health of the Sierra Nevada. However, the opportunity to change and close these gaps arrived with the creation of the Sierra Nevada Conservancy in 2004. Collecting and analyzing data within a delineated political boundary will allow the Sierra Nevada region to more closely identify and track trends.

Trends in the Sierra Nevada

In an attempt to adhere more closely to the Capital Investment Diagram, *The State of the Sierra* combines and highlights indicators from each category – social, natural, and financial – in order to delve into the issues of population growth, economic opportunities, and natural resources. These three topics were selected because (1) The percent of population growth in the Sierra Nevada from 1990-2000 more than doubled California's growth rate; (2) a diffusion of technology has allowed businesses to relocate to rural areas, adding to the existing economic mix of natural resource industries, tourism, business services, and construction; and (3) the tremendous natural resources of the region have long been an economic and social draw.

Along with these indicators of wealth, a greater emphasis has been placed on housing indicators because these indicators have a direct impact on population growth, economic opportunities, and natural resources. Though categorized within social wealth, the broader discussion of housing indicators such as housing prices, housing affordability, and second homes deserves special attention because of the impact that new housing needs in the Sierra Nevada exerts on the region's social, natural, and financial well-being. By understanding and tracking all three forms of capital – social, natural, and financial – *The State of the Sierra* presents a more integrated, accurate, and useful portrait of our region's economy.

Population Growth

The Sierra Nevada experienced a 27 percent population growth rate from 1990-2000, which makes it one of the fastest growing regions in California. However, the population growth has not been distributed evenly amongst different age groups. Sierra Nevada residents aged 35-54 accounted for 35 percent of the Sierra Nevada's population in 2000, while residents aged 15-34 only comprised 22 percent. As the Sierra Nevada population ages, it is not being replaced by residents in their prime childbearing years.

Due to the Sierra Nevada's escalating growth pattern, corresponding investment in building homes, roads, and schools in the region is required. This growth of the Sierra Nevada's built environment and the corresponding investments in needed infrastructure place heightened demands on the region's natural environment and existing communities.

Population growth can help to strengthen and diversify regional economies, however poorly planned growth will diminish the Sierra Nevada's appeal as a place to live and do business. Our challenge as business and community leaders is to make decisions so the population grows in ways that build social and financial capital while also improving the community's natural capital. How we develop private land, build transportation infrastructure, enjoy the outdoors, and conduct public processes all influence who lives here and the well-being of our economies and communities.

Economic Opportunities

Historically, the Sierra Nevada's natural resources – mining, timber production, and agriculture – drove the region's economy. But as the resources were extracted and production decreased, new economic sectors resulted. The Sierra Nevada's population growth has spurred increased development of consumer, producer, and social services as well as tourism and second homes.

Population growth in the Sierra Nevada has a direct correlation with new job creation. The fastest growing sectors vary slightly from one subregion to the next, but generally financial activities, education and health services, tourism, real estate, and local government represent the areas of economic growth.

The proliferation and diffusion of technological capabilities, most notably Internet-based applications and access to broadband, have allowed businesses creating intellectual products to move away from the urban centers to virtually any location of their choosing. The Sierra Nevada's excellent social and natural assets attract businesses competing in a global market because their employees desire and demand such amenities. The relatively high level of education attainment throughout the region indicates the capability to invest in "intellectual capital" and micro-enterprises.

The Sierra Nevada has a long history of attracting visitors to its scenic vistas, grand mountains, and clear lakes. The region's tourism industry continues to be a vital segment of the Sierra Nevada's economy. Regionwide, tourism-related jobs account for one in ten jobs. However, when the North Central subregion is removed from the equation, tourism-related employment jumps to one in five jobs.

Natural Resources

Initially the region's primary economic engine, the Sierra Nevada's natural resources still play an enormous economic role for the region and California. Though not a huge source of jobs or wealth in the Sierra Nevada, water originating in our mountains drives most of California's 386 hydroelectric power projects, accounting for more than 15 percent of California's energy production. In 2005, the gross value of agriculture production in counties utilizing Sierra Nevada water topped $18 billion.

The Sierra Nevada supplies about 60 percent of California's usable fresh water. Beyond mere dollars and cents, a healthy Sierra Nevada ecosystem is essential because of the life-support systems it provides, such as water filtration and storage, nitrogen fixation, carbon sequestration, soil formation, and air purification.

The Sierra Nevada possesses tremendous natural resources and has the opportunity to develop these resources in a sustainable, renewable manner. Production of electricity from biomass plants in the Sierra Nevada would improve renewable energy production in the region, reduce fire loads in Sierra Nevada forests, and provide rural economic opportunities. The Sierra Nevada also possesses some of the world's most productive carbon-sequestering lands. The global carbon sequestration market could be a major economic growth sector for the region and a financial incentive to maintain healthy, sustainable forests in the Sierra Nevada.

What Is Wealth?

Recent economic research has led to new, more inclusive and useful definitions of wealth. Wealth is not just monetary worth. Different types of capital, taken together and viewed in a comprehensive manner, are necessary to sustain a region.

To understand the economy of the Sierra Nevada, it is important to assess and track three types of wealth: (1) social or human capital; (2) natural or natural resource capital; and (3) financial capital. Each must be conserved and increased if the Sierra Nevada economy is to be prosperous, stable, and sustainable.

The superior quality of life in Sierra Nevada communities is the driving force for the continued influx of residents and businesses to the region. Each form of capital supports the economy and overall wealth of the region, and the diminishment of any one undermines the quality of life enjoyed in the Sierra Nevada. By understanding and tracking all three forms of capital – social, natural, and financial – *The State of the Sierra* presents a more integrated and useful portrait of the various facets that create and sustain the region's economy.

What Is a Good Indicator?

Indicators are measurements informing us about the condition of the key assets that comprise our wealth. By measuring change over time, indicators tell us whether the condition of our assets is improving, declining, or remaining constant, and they provide insights into the linkages between various forms of capital.

No set of indicators can be all-inclusive. The Dow Jones Industrial Average, a widely respected indicator of stock market performance, does not include every stock traded on the New York Stock Exchange. Nor does the Consumer Price Index measure the prices of all consumer goods. Both indices are based on developing and monitoring a sample of indicators, which, viewed together, provide a barometer of overall performance. The indicators mentioned in *The State of the Sierra* were selected based on the following criteria:

- They are measurable and can be updated with existing and objective data sources.
- They measure the condition of assets that are of material importance to the Sierra Nevada's wealth.
- They measure the condition of assets that actively interest the public.

Web-based Sierra Nevada Wealth Index Indicators

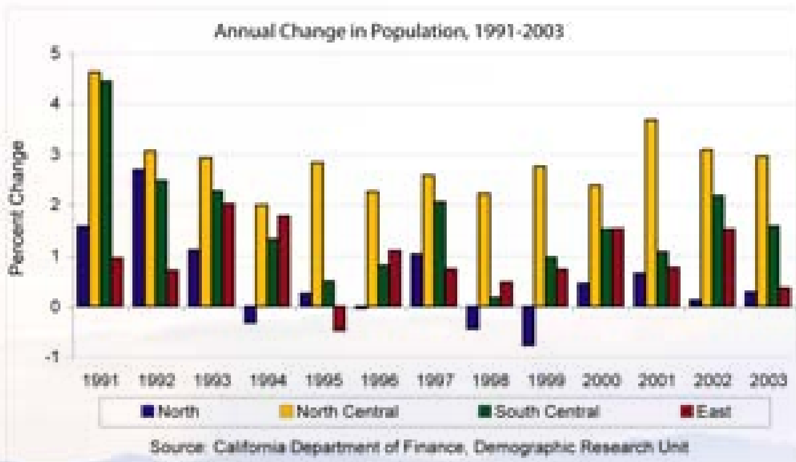
Previous editions of the *Sierra Nevada Wealth Index* included every indicator that the Sierra Business Council had accumulated. This year's print edition highlights some of the 60-plus indicators in *The State of the Sierra*, all the indicators have been placed on our website at http://www.sbcouncil.org.

Population

Throughout the Sierra Nevada, population growth is the driving force of change. Increased population is the origin of the variety of changes and needs occurring in the Sierra Nevada: home construction, changing land uses from agricultural or forestry to commercial and residential, demands for infrastructure improvements such as schools, roads, and utilities, and employment opportunities. Population growth is the starting point from which all the Sierra Nevada's social, natural, and financial indicators need to be balanced and measured.

A 27 percent population growth rate from 1990 to 2000 makes the Sierra Nevada one of California's fastest growing regions. Population in the Sierra Nevada reached 819,000 residents in 2000, which means the Sierra is growing faster than was predicted in the 1999-2000 *Wealth Index*. Almost all the additional growth is in the North Central counties, although the South Central is growing rapidly as well. At this pace, the Sierra will surpass 1 million full-time residents by 2020.

Bear in mind that these numbers account only for full-time residents, not the growing "shadow population" of recreational visitors and second homeowners who also enjoy our region. For example, in 2000, second homes in the Sierra Nevada made up 15.7 percent of the region's total housing units. The growing population of second homeowners is sinking emotional and financial roots in the Sierra Nevada and their presence and involvement in the communities needs to be acknowledged. Second homeowners may not consider the Sierra Nevada their primary residence, but their presence certainly affects the growth and economic patterns as well as the natural environment of the region.



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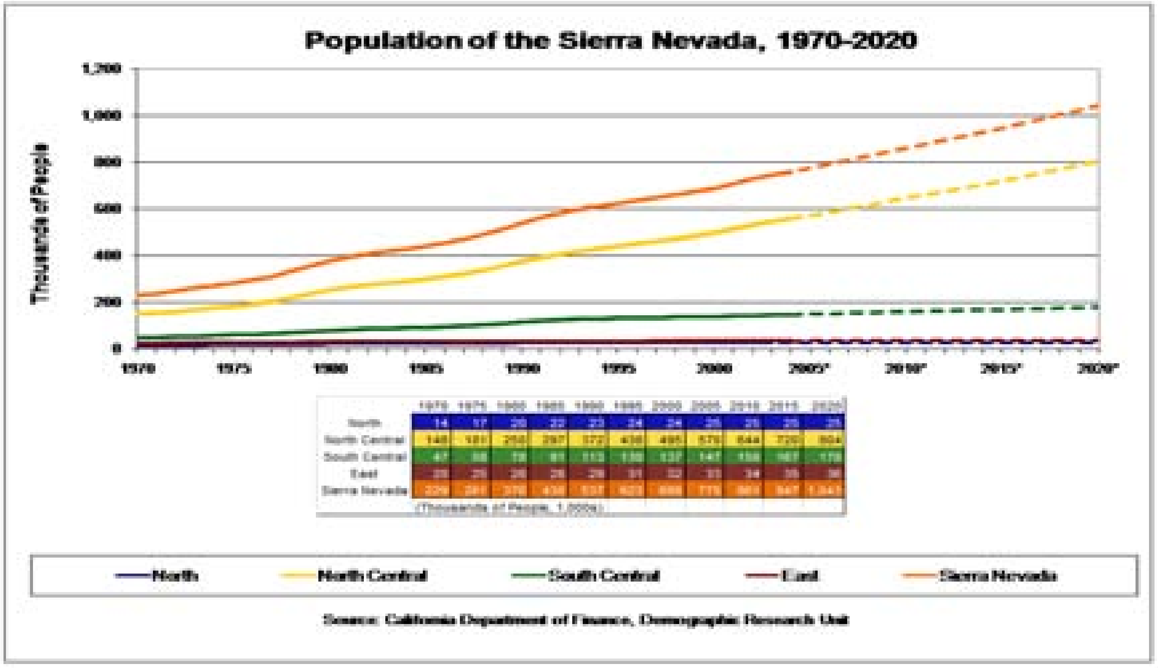


The population growth rates in the North Central and South Central subregions offer unique challenges to accommodate the sheer numbers of new residents. In contrast, the North and East subregions have significantly higher percentages of second homeowners, which presents its own unique set of challenges.

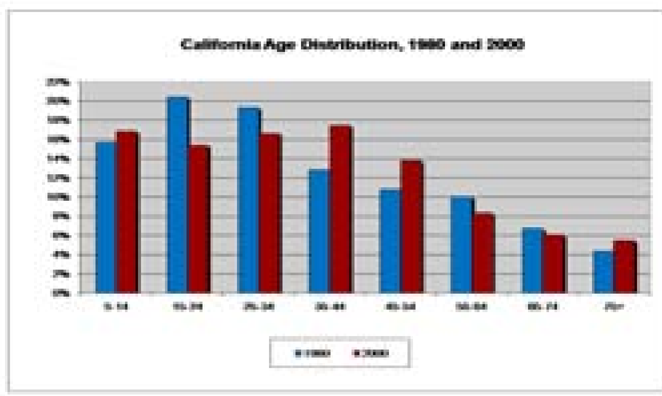
Population Demographics

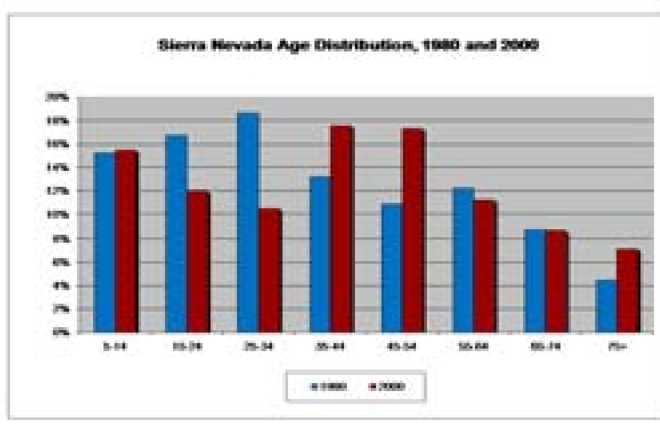
In human terms, the Sierra Nevada is growing older without a complementary increase of the next generation of residents. The Baby Boom population bubble continues to ripple through the Sierra Nevada's age demographics. However, the Baby Boom generation's offspring, Generation X, makes up a significantly smaller proportion of the region's population.

The age distribution across the Sierra Nevada from 1980-2000 shows a significantly older population, which can partially be attributed to the Baby Boom generation. But the age distribution in the Sierra Nevada shows a greater older population proportion than California as a whole and fewer residents 5-34 years old compared to the statewide distribution.

In 1980, the Sierra Nevada had a higher population age 45 and older than the state of California. From 1980-2000, the proportion of Sierra Nevada residents 45-54 years old increased by 286 percent from 1980-2000. This particular rate of growth was nearly 50 percent greater than the state as a whole.

The aging Sierra Nevada Baby Boom generation will require a corresponding increase in economic sectors such as health and human services. As the generation slowly withdraws from the workforce, much of its income will be derived from retirement funds and other investments. However, the region's economic markets will continue to grow and require employees. Significant dedication and planning of workforce housing will be needed to ensure that employees have the opportunity to live in the same community where they work.





The Sierra Nevada's other dramatic population shift occurred amongst Sierra Nevada residents aged 25-34, which only grew by 1 percent from 1980-2000. Meanwhile, statewide, California's residents 25-34 years old increased by 23 percent during that period. Though this age bracket grew numerically, as a percentage of the Sierra Nevada's population the 25-34 age bracket dropped by 44 percent from 1980-2000. Members of this age bracket often are in the beginning stages of a career, frequently have young children, and lack much disposable income. Combining these factors with the escalating costs of housing in the Sierra Nevada makes the region less hospitable to them.

As a result, the percentage of school-aged children in the Sierra Nevada continues to lag behind the state, and with public funding tied to school enrollment our school systems may suffer. This trend perpetuates itself by making the region less welcoming to younger generations and families.

K-12 School Enrollment

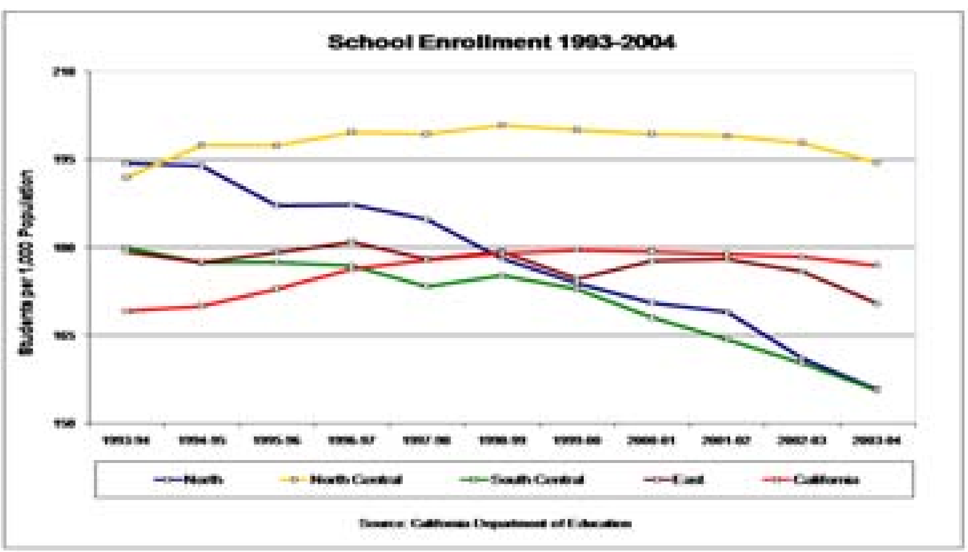
School enrollment figures for the Sierra Nevada depict an overall decline from 1993 to 2004, indicating that families are actually leaving the Sierra Nevada despite the large population increases in recent years. These numbers are not surprising, considering that the greatest population increase in the Sierra Nevada is occurring amongst 45-year-old and older age groups.

School enrollment levels are essential in determining the amount of state funding received by local schools. Funding is based primarily on enrollment and average daily attendance. Enrollment trends over a historical period of time provide insight into a school's financial stability. It is also a good indication of the number of families with children living in a particular area.

During the 1993-94 school year, every region within the Sierra Nevada had a higher school enrollment rate than the statewide average. Yet in the past decade, only the North Central region, with 195 students per 1,000 people, maintained an enrollment rate higher than the California average of 177 students per 1,000 people.

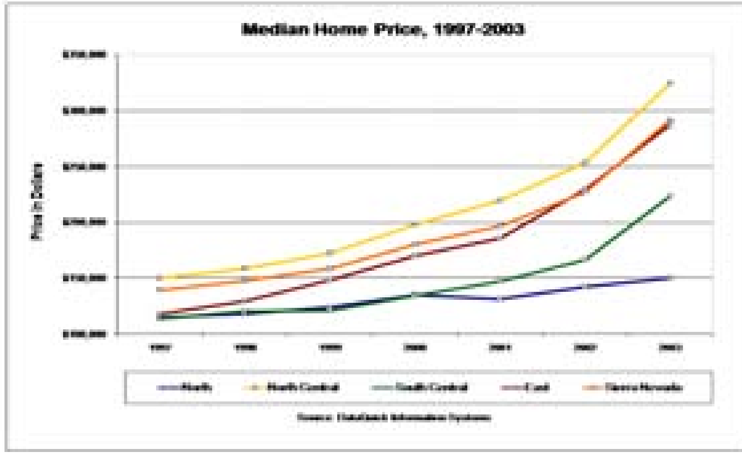
Decreases in school enrollment and in the number of young families living in the Sierra Nevada suggest an element of instability in the region's wealth: the education of future generations is threatened by diminished public funding and a corresponding decline in the quality of education.

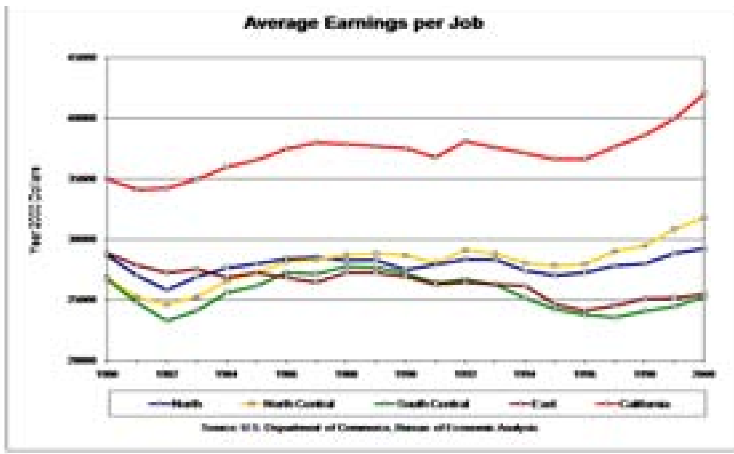
Changes in school enrollment rates can be partially attributed to the increasing home prices compared to average household incomes. Another factor is the loss of living wage jobs in the region. Young families cannot afford to live in the area, let alone purchase a home, and are forced to move beyond the Sierra Nevada in order to find better paying jobs and more affordable homes.



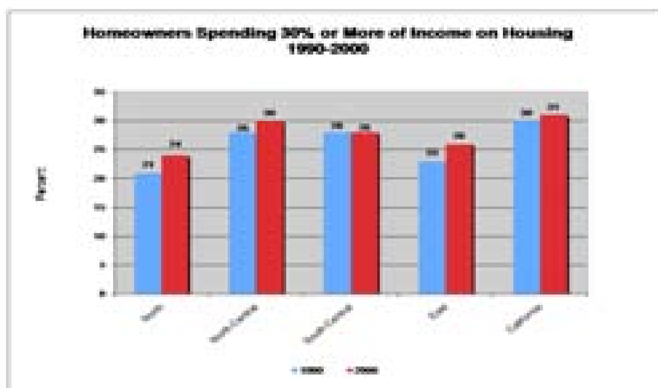
Housing

With population the dominant driver of change in the Sierra Nevada, home prices may be the most immediate indicator of the region's rapid growth. The median price of a home in the Sierra Nevada more than doubled from $139,352 to $291,298 from 1997-2003. The median price of a home in California in 2003 was $371,520. If a resident of the Sierra Nevada did not own a house prior to 1997, the ability to afford a home grew increasingly difficult as prices jumped in the ensuing years. Of the four subregions, only the North did not display a massive increase in median home prices, although it did have a 30.9 percent increase during that time period. The South Central median jumped by 96.7 percent, the North Central by 116.4 percent, and the East by 144.3 percent. During that same time period, the median price of a home in California increased by 99.2 percent.

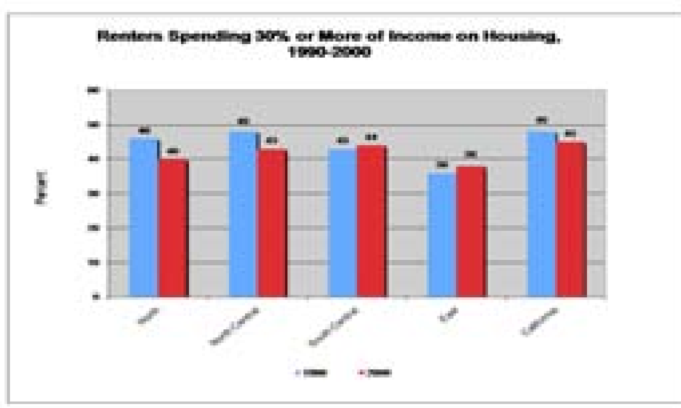




The startling jump of median home prices for the North Central subregion has continued. According to the U.S. Census Bureau's American Community Survey, the median home price had risen to $476,633 in 2005. Updated prices for the other subregions cannot be determined from this source because the American Community Survey does not include the nine counties that make up the three subregions. This is an example of government bureaucracy not keeping up with the Sierra Nevada as a region even though residents increasingly identify themselves as living in the Sierra Nevada region.



Earned wages have not kept pace with the skyrocketing prices of homes in the Sierra Nevada. Average earnings per job increased from 1997-2000, but at nowhere near the clip that home prices increased. Average earnings per job measures money earned by working in the region. Per capita income includes earnings from capital payments – interest, dividends, and rental income – and transfer payments – social security, welfare, and disability and unemployment insurances – that may have been accumulated outside the Sierra Nevada. Average earnings per job, therefore, provides a better indication of the affordability of local housing for the people who live and work in the region.



The North Central region had the highest average earnings per job in the Sierra Nevada at $31,770. However, those earnings only equated to roughly 75 percent of the statewide average. As a region, the Sierra Nevada has failed to keep pace with California's average earnings per job.

Housing is considered unaffordable if it consumes 30 percent or more of household income. At the very least, income obligated toward housing costs is financial capital that could otherwise be distributed to local businesses through purchases of goods and services. The 30 percent threshold is a generally accepted standard used by the National Low Income Housing Coalition.

In 2000, more Sierra homeowners were living in housing considered unaffordable for them than ten years prior. The trend holds true statewide as well. The problem of Sierra homeowners occupying unaffordable homes is severe. More than a quarter of all Sierra Nevada homeowners live in homes considered unaffordable for their income level.

Overall, the problem of unaffordable housing is worse for renters, but improved between 1990 and 2000 in the North and North Central subregions. Nonetheless, approximately 40 percent of Sierra Nevadans renting housing have found themselves in housing unaffordable for their income. A significantly higher percentage of renters than homeowners spend more than 30 percent of their income on housing, and with the rising cost of homes in the Sierra Nevada, making the switch from renter to homeowner can be arduous. Although housing prices continue to rise and the average earnings per job remain below the state average, homeowners and renters spending more than 30 percent of their income on housing remained fairly stable between 1990 and 2000. These two indicators will be important to monitor in the upcoming years, as they represent the intersection of housing and income. Any significant change in these percentages could have corresponding changes in the social makeup and demographics in the Sierra Nevada.

Second Homes

The idea of owning a second home by the lake or a cabin in the woods has slowly ingrained itself into the traditional American value of owning a home. An aging Baby Boom generation, mortgage interest deductions on second homes, and a long period of low interest rates have been primary factors in the continued increase of second home ownership.

The National Association of Realtors reported that slightly more than 1 million homes bought in 2005 nationally were vacation homes. This accounted for 12.2 percent of all home sales in 2005. According to a survey released by the realtor trade association in May 2006, half of vacation homes are located in resort or recreational areas, 18 percent in small towns, and 16 percent in rural areas. Considering that the Sierra Nevada region fits all three of those descriptions, second homes are a prevalent feature in many of its counties.

Second home development contributes to the consumption of agricultural and forest lands in the Sierra through land use zoning changes. In communities where second homes are a prominent feature of the housing landscape, increased property values and land values can push average wage earners out of the community.

In 2000, second homes in the Sierra Nevada made up 15.7 percent of the region's total housing units, significantly higher than the state average of 2 percent. However, second homes dominated the housing landscape in several counties, especially Alpine (61.8 percent) and Mono (49.8 percent).

The popularity of second homes is prominent in the Sierra foothills near Yosemite National Park (Tuolumne County: 21.3 percent, and Mariposa County: 18.8 percent) and just north of Yosemite in Calaveras County, 24.2 percent. The northern Sierra counties of Plumas, 26.7 percent, and Sierra, 23.9 percent, also had a significant portion of their housing market devoted to second homes.

Simply looking at the raw number of second homes, the region connecting the Sacramento metro region and Lake Tahoe contains the highest amount of second homes. El Dorado, Nevada, and Placer counties account for 49.8 percent of all the second homes in the Sierra Nevada counties.

In some regions of the Sierra Nevada – Lake Tahoe, Lake Almanor, and Mammoth Lakes – the market for third and fourth homes has emerged as a factor in land use patterns and property values. Unlike primary or second home buyers, people seeking to purchase a third or fourth home are generally not affected by local or even national fluctuations in the housing market. However, when they purchase seven-figure homes it does cause shifts in the local market.

Urban residents who sell their homes and move to the Sierra Nevada create a social and economic phenomenon known as "equity refugees." The cost of their urban community has forced them elsewhere, and their presence in their new communities creates a similar effect. As the cost of living increases in the Sierra Nevada, long-term residents are selling their homes and moving to less expensive regions where they can sustain or improve their standard of living. Sierra Nevada residents moving to other rural communities perpetuate the "equity refugee" effect when they move to other, more affordable, rural communities.

Sierra Nevada Economy

photo by Tom Rassuchine

As a region, the Sierra Nevada is prospering financially. However, that prosperity is concentrated largely in the North Central counties, where job creation has outpaced population growth and unemployment is lower than in California as a whole. In addition, per capita income in the North Central Sierra exceeds the California average.

By contrast, trends in the other Sierra regions – South Central, East, and North – are mixed. In the South Central region, population is growing faster than jobs. In all three regions, unemployment has climbed since the recession in 2002. Seasonal unemployment continues to be a problem in the North and the East, as well as in parts of the South Central. Per capita incomes in these three regions have fallen behind the North Central as the income gap continues to widen. Also, the number of low-paying jobs exceeds the number of higher skilled, higher paying jobs, resulting in unaffordable housing for many.

Tourism – heavily dependent on the natural beauty and landscape of the Sierra – makes up 10 percent of the region's total payroll. In a number of counties, it is the single most important economic activity.

Since 1980, the percent of personal income earned locally has dropped in every subregion except the North Central. However, even in the North Central it only accounted for 52.2 percent of personal income in 2001. On the other hand, capital investments and transfer payments make up 32.8 percent of personal income in the Sierra Nevada. Capital investments and transfer payments (retirement, veterans, medical, and unemployment) as sources are significantly higher than the state average except, once again, for the North Central subregion.

A significant portion of capital investments and transfer payments belong to the Baby Boom generation, which comprises about 30 percent of the Sierra Nevada population. Forty years from now, when this generation has passed on, personal income in the region may be forced to rely more heavily on wages earned locally, which, as of 2001, only accounted for 50.7 percent of the region's income.

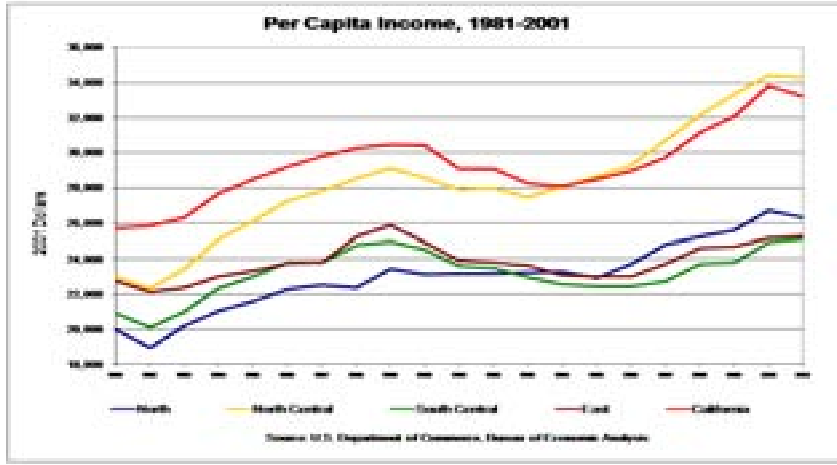
Per Capita Income

Per capita income measures a region's economic strength and the standard of living its residents enjoy. To calculate it, all sources of income – wages, capital payments, and other transfer payments – are added together, divided by total population, and then adjusted for inflation to track real income over time. When per capita income rises, a region's financial capital is growing faster than its population.

Since 1993, the Sierra Nevada's per capita income grew on average 2.06 percent per year, faster than the California rate of 1.53 percent, suggesting a strong overall economy. But when examined more closely, the size and strength of the North Central's economy obscured weaker economies with declining financial capital elsewhere in the Sierra Nevada. The North Central's spectacular per capita income growth is primarily due to the growth of Sacramento. As the city spreads out, western North Central is evolving from a collection of bedroom communities to an economic engine in its own right.

Several factors have spurred the North Central's growing and diversifying economy, including proximity to the state capital, an international airport in Sacramento, and access to the major trade corridors of Interstate 80 and Highway 50. The burgeoning population of the North Central region has resulted in expansion and diversification of the job market.

The North, with a growth rate of 1.46 percent, barely kept pace with California. The South Central and East both lost ground with growth rates of only 0.77 percent and 0.70 percent, respectively.

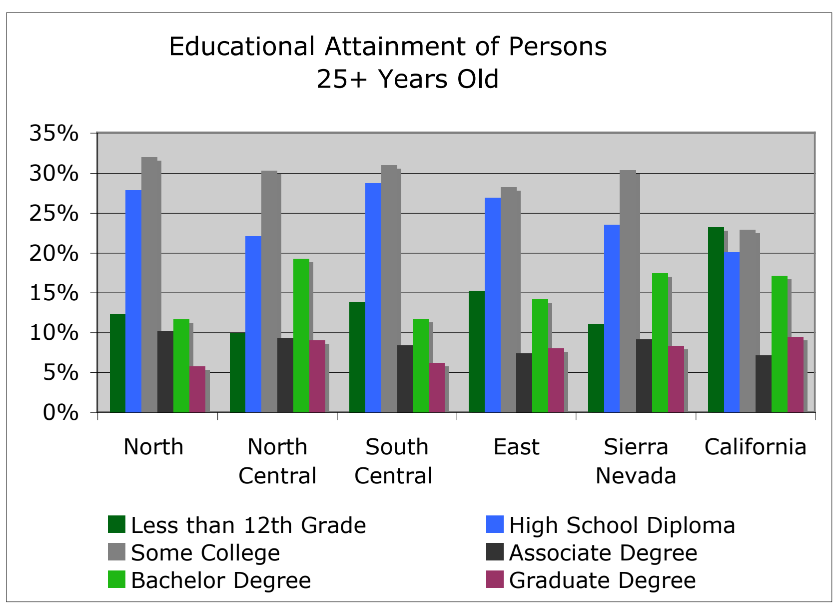


These trends mirror those found in rural areas across the United States where rural incomes average 70 percent of urban levels and the gap continues to grow. The widening income gap puts rural Sierra Nevada residents at a disadvantage with urban residents who can afford to pay higher prices for retirement or second homes.

Educational Attainment

Adults with higher education earn higher incomes and have broader employment options than less-educated adults. As the link between skills and opportunity grows ever stronger, individuals without advanced education are likely to be left further behind. A solid high school education plus at least two years of higher education provides a base for learning the skills needed for today's professions. When entrepreneurs look for places to grow their businesses, they are attracted to places with more highly educated populations, indicating the quality and diversity of the labor pool.

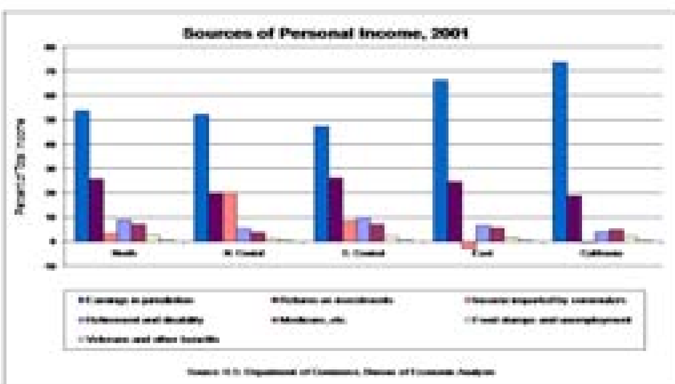
The Sierra Nevada has a relatively higher concentration of high school graduates, 89 percent, compared with the entire state of California, where only 78 percent have graduated from high school. In fact, in each education category except graduate degrees, the Sierra Nevada surpasses the state average.

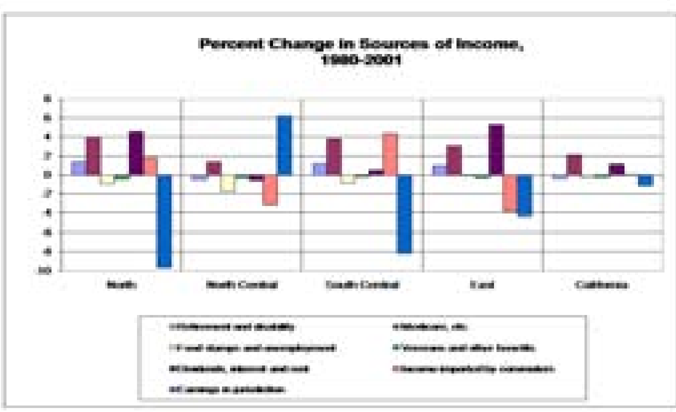


Higher Education Opportunities in and near the Sierra Nevada

The following list represents higher education institutes within the Sierra Nevada and in close proximity to the region.

School	County
Feather River College	Plumas
Sierra College	Nevada and Placer
Lake Tahoe Community College	El Dorado
Columbia College	Tuolumne
Lassen College	Lassen
Sierra Nevada College	Washoe County, Nevada
Butte College	Butte
Merced College	Merced
Yuba College	Sutter
California State University-Sacramento	Sacramento
California State University-Chico	Butte
California State University-Fresno	Fresno
California State University-Stanislaus	Stanislaus
University of California-Merced	Merced
University of Nevada-Reno	Washoe County, Nevada





The North Central led all subregions in every category of educational attainment. The North Central's large population of residents with bachelor degrees (19.2 percent) and graduate degrees (9 percent) significantly boosted the region's statistics. However, higher levels of education attainment were not solely clustered in the North Central area. Nineteen percent of Mono County residents have a bachelor degree, as do 19.8 percent of Alpine County residents.

Each subregion has a significant population with some higher education background. When businesses seek to relocate or start up, they study a variety of factors, including the potential workforce. As technologic advancements, such as constantly improving telecommunications, allow businesses greater freedom regarding their location, entrepreneurs will look to communities with natural amenities to attract new talent. The Sierra Nevada needs to actively encourage new businesses by marketing the high education levels of its residents. Anecdotal evidence indicates that the Sierra Nevada has many underemployed residents working in positions that fail to adequately utilize their education and skills. Most new businesses will find an educated workforce ready for them.

Personal Income Sources

A comprehensive view of income origination helps identify key resources and how overall wealth will be affected by changes in the economy and population characteristics.

Local wages are closely tied to the local economy and measure its productivity through the value of goods and services produced by social, natural, and financial capital within the community. Capital payments are income from stocks, bonds, and real estate. Derived from accumulated wealth, this income is linked to national and global markets.

Commute wages are earned outside a person's county of residence. People commute when they prefer to live elsewhere from where they work, they can't afford to live where they work, or they can't find appropriate work where they live. Commute income is offset by external costs such as traffic congestion, air pollution, and time away from family and friends. Transfer payments are a hodgepodge of payments, including retirement, disability, medical payments, food stamps, and unemployment.

Non-local sources of income, especially capital and transfer payments, buffer the local economy against downturns in important regional or seasonal industries such as timber and tourism. On the other hand, they also disconnect residents from local economic fortunes.

Personal income sources show how and where communities make their money. These graphs depict the variety of sources that Sierra Nevada residents use for income, and how each has fluctuated in the past two decades.

In 2001, local wages provided only half of the Sierra Nevada's income, significantly less than the 70.9 percent that local wages contributed to California's economy. Capital payments paid 20.7 percent, commute wages 17 percent, and transfer payments 12.1 percent. None of these proportions has changed much since 1980, but this is due to the overwhelming influence of the North Central economy.

The strength of earnings within the North Central is large enough to offset losses within the same economic category in the North, South Central, and East. Personal income sources within the South Central, North, and East subregions combined are only 27.8 percent of what is found in the North Central. The North Central's greater population partially accounts for this dramatic difference, but the point is to show how significantly the North Central economy skews economic analysis for the entire region.

Within transfer payments, medical payments were the fastest growing source of income, likely due to increasing medical costs. If age or poverty were driving factors of transfer payments, food stamps and unemployment would be expected to increase as well, but instead they have shrunk as sources of personal income in every single region, indicating that levels of poverty have dropped from 1980-2001.

Within the Sierra Nevada, significant shifts in the source of personal income occurred. Rapidly growing employment in the western North Central subregion caused stabilization of local wages in the Sierra Nevada as a whole because it offset declines elsewhere. Although local wages dropped by 5 to 10 percentage points in the other Sierra subregions, they still contribute two-thirds of income in the East, but they have dropped to 55 percent of income in the North and 47 percent in South Central.

Changes in commuter wages show that as Sacramento expanded, jobs themselves moved to the suburbs in Placer and El Dorado counties. The growth of Sacramento and Reno indicates that the South Central and the North are becoming bedroom communities. In the East, commute wages flow out of the Sierra Nevada because people living outside the region commute to jobs at mines and ski resorts. In the North, South Central, and East, capital payments are becoming more important as retirees and others derive income from accumulated wealth.

photo by Betony Jones

As the Baby Boom generation slowly withdraws from the workforce and retires, much of their income will be derived from retirement funds and other investments. The retirement, transfer, and capital funds accumulated by this generation play a significant role in the Sierra Nevada economy.

As a percentage of personal income, 29.6 percent, the North Central transfer capital – capital payments, retirement, medical, and unemployment funds – is on par with the state average of 29.1 percent. However, in the other regions, transfer capital makes up a much greater segment of personal income. It accounts for 39.3 percent in the East, 44.3 percent in the North, and 45.2 percent in the South Central. The reliance on income not earned in the region can be detrimental to the region's overall economic health.

Much of this transfer capital wealth, concentrated in the Sierra Nevada, belongs to the Baby Boom generation, the largest generation in American history. But this generation is aging and in 25 years most will have passed on. This begs the questions, what will happen to that transfer capital? Will it leave the region through inheritance, philanthropic donations, and taxes?

If that money does indeed leave the region, Sierra Nevada communities will need to develop new sustainable economies that produce locally earned wages to replace the lost transfer capital. Earned local wages from a diversity of economic sectors will significantly bolster local economies and help insulate the region from national and international fluctuations.

Economic Structure and Sectors

The economic structure of a region changes over time in response to global markets, new technologies, population growth, and public policy. When business and community leaders have an accurate picture of an

photo by Betony Jones

economy's structure, they have a better opportunity to meet future challenges and choose investments that most benefit their community, whether in education or infrastructure, planning or building design.

Although a belief pervades that local wages have fallen because manufacturing declined and services grew, not all service jobs are low paying. Business services include such high-wage jobs as law, finance, real estate, and technical positions. Social services are more ambiguous because they include high-paying medical jobs and lower paying education jobs. Comments about the low-paying service economy tend to be aimed at seasonal tourism and resort jobs, which often do not pay a living wage.

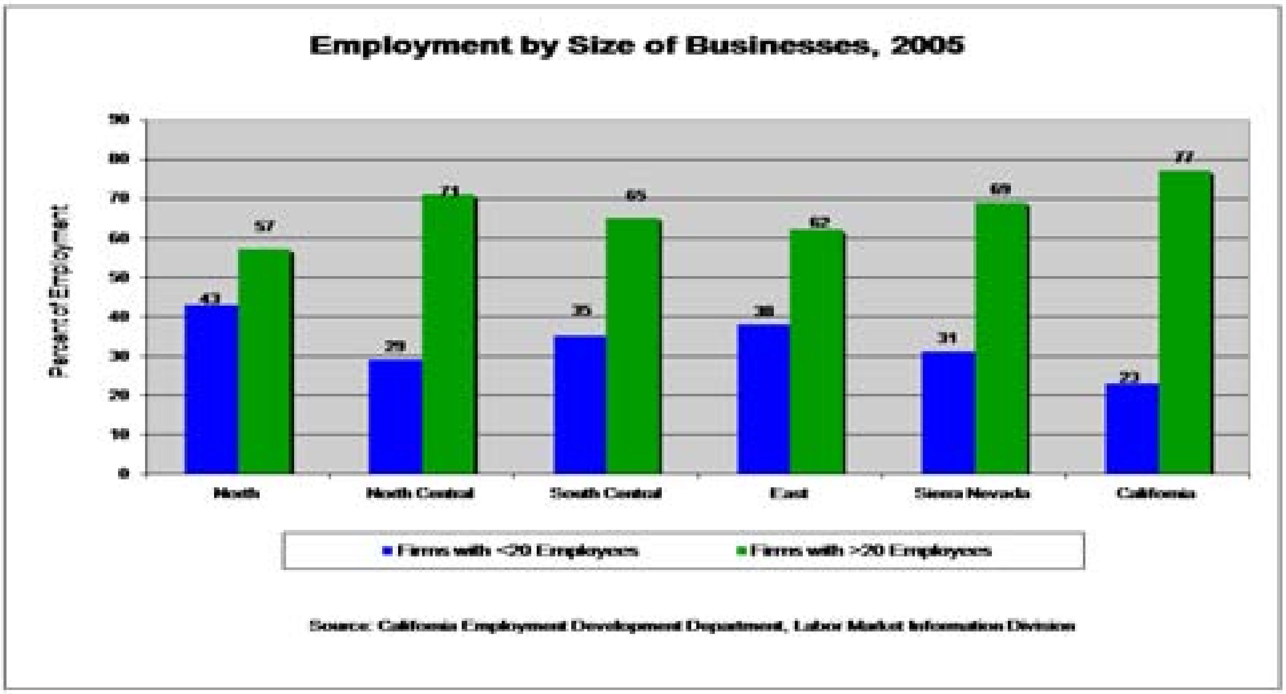
The Sierra Nevada economy has structural weaknesses that must be addressed in order to avoid compromising our region's long-term prosperity. Compared with California, the Sierra Nevada has higher percentages of jobs in construction and retail. The construction industry is notoriously sensitive and linked to state and national economic cycles. Retail primarily creates low-wage jobs that don't support families, especially when housing prices are high. As the Sierra Nevada's economy grows, we must expand economic sectors that pay living wages and offer steady, year-round jobs.

On the positive side, business services were among the fastest growing sectors of the economy in the Sierra Nevada during the past 20 years. Most of this growth was in business management and engineering.

Growth and Decline of Economic Sectors

Economic sectors that grow rapidly in the short term build local financial capital and are good candidates for economic development. Declining sectors, on the other hand, may be difficult to revive at any price, especially if the decline is a long-term trend. If a sector is in decline, officials should understand the reasons why and consider carefully before investing more in the sector.

In the short term, some of the Sierra Nevada's fastest growing sectors corresponded to California trends, especially local government, education, and health services. In fact, government positions often provide the highest paying jobs in rural communities. Financial sectors – finance, insurance, and real estate – also grew rapidly in the Sierra Nevada, counter to their



trend in the California economy. However, unlike the rest of the state, natural resources and mining declined significantly in the Sierra Nevada economy. Traditional natural resource extraction industries continue to decline in economic importance in the Sierra Nevada. Creating and developing sustainable natural resource industries within the region through biomass energy production and carbon sequestration would allow realization of financial wealth while maintaining or improving natural and social wealth. Please see the "Sustainable Sierra Opportunities" section for more information about biomass and carbon sequestration.

Small Business Workforce

Small, locally owned businesses make up more than 89 percent of all business establishments in the Sierra Nevada: North 95 percent, North Central 89 percent, South Central 92 percent, and East 90 percent. These small businesses are the economic backbone of the region. But because these jobs are scattered throughout the economy, they can easily be overlooked.

According to the U.S. Census Bureau's County Business Patterns, small businesses in the Sierra Nevada account for 70-95 percent of all job growth in a community. One powerful form of economic development demands focus on local firms by asking what they need to be more successful – better information, access to markets, broadband capabilities, etc. Determining why businesses locate in a community may reveal unusual community assets worth conserving and investing in for future economic development. Determining the opposite, why businesses leave a community, also needs to be studied.

Businesses with 20 or more employees represent roughly one in ten firms located throughout the Sierra Nevada. However, these businesses employ a much larger proportion of the workforce than do smaller firms. Within the Sierra Nevada and the state of California, the percentage of employees working for a small firm decreased by one percentage point from 1997-2005. The North subregion showed the greatest fluctuation during this time period with a substantial increase, 37 percent in 1997 and 43 percent in 2005, of employees working for small firms. According to the U.S. Census Bureau's County Business Patterns, the North added 109 new businesses between 1998 and 2004 with the vast majority of growth occurring in construction.

The data represented in the graph above only includes businesses with employees and omits sole proprietors. The portion of the workforce taking advantage of technological advances in telecommunications and Internet-based applications that chooses to work where they live has been excluded. Sole proprietors can encompass a large percentage of a county's workforce. According to an analysis completed by The Wilderness Society, sole proprietors represented 29 percent of Plumas County's workforce in 2000, 40 percent in Nevada County, and 34 percent in Mariposa County.

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Tourism

Tourism-related jobs account for 10.4 percent of total employment in the Sierra Nevada. But a regionwide perspective fails to depict the significance of tourism in portions of the Sierra Nevada. For example, when the North Central subregion is removed from the equation, tourism-related jobs jump to 20.4 percent.

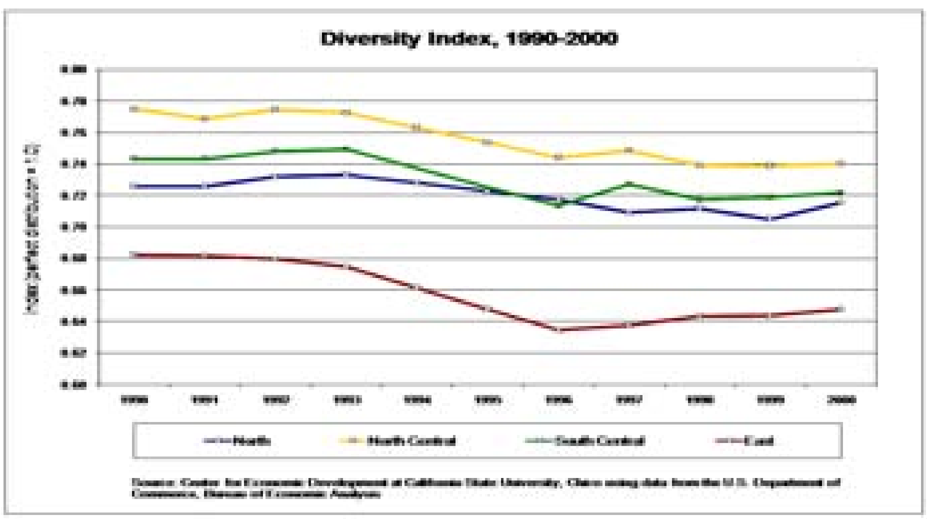
Tourism is completely dependent on the natural advantages the Sierra Nevada possesses and is a primary economic engine in some counties. In the East subregion, tourism has an important role in the economy, accounting for 38.1 percent of total employment and 25.1 percent of payroll earnings.

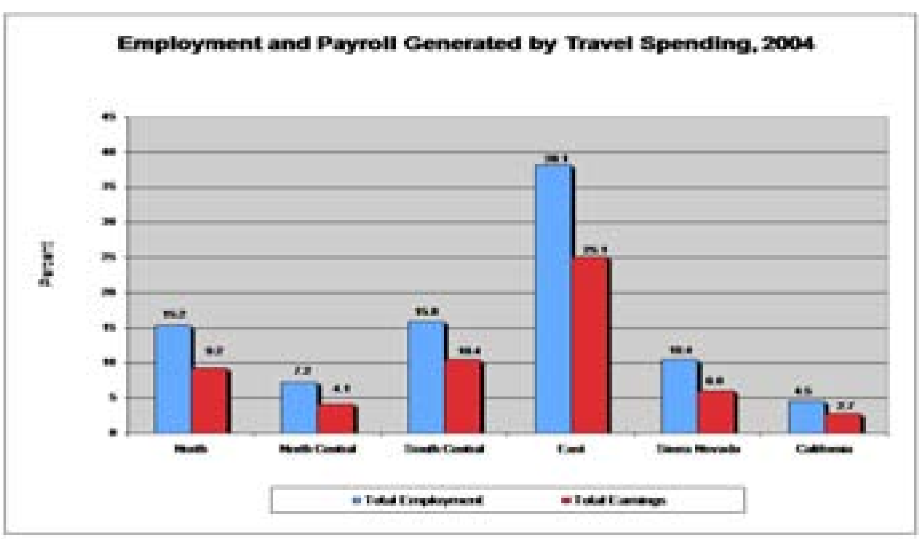
Several counties in California generate $2 billion or more annually from tourism – Los Angeles, San Diego, Orange and San Francisco. But as a percentage of a county's total earnings, six of the top seven counties based on tourism revenue are found in the Sierra Nevada – Alpine, Calaveras, Inyo, Mariposa, Mono, and Sierra counties.

Whereas low population density can be a disadvantage for some kinds of economic activities, it can be beneficial for others, like tourism and retirement communities, which actively seek "high amenity" rural regions. With scenic beauty or tourism offerings such as historic towns and mountain recreation, these rural regions attract visitors and residents who stimulate local business development, boost the demand for higher quality local services, and elevate per capita income.

However, heavy reliance on one economic sector such as tourism or construction leaves communities susceptible to the boom-and-bust cycles that the region experienced with its natural resource extraction industries. Downturns in the economy can occur from unforeseeable circumstances. For example, in 2005 and 2006, road closures due to landslides near Yosemite National Park resulted in significant economic losses to communities along the Highway 120 and 140 corridors.

Diversifying the economy relies on the same principle as diversifying an investment portfolio. Higher diversity reduces a local economy's exposure to shocks such as factory closures, downturns in major sectors, and general recessions. Places with high economic diversity rebound more quickly than those with low diversity. The North Central subregion, which has the highest per capita income and highest economic diversity in the Sierra Nevada, has tourist economy numbers more in tune with California than with the Sierra Nevada.





Commuters

While many Sierra Nevada communities rely heavily on visitors and tourists to support their economies, a growing number of Sierra Nevada residents are leaving their community in search of work. A good indicator of rural residents commuting to urban centers is calculated by the U.S. Census Bureau, which tracks employees 16 years and older who work outside their county of residence.

The greatest concentrations of out-of-county workers within the Sierra Nevada are near the region's gateway cities: Sacramento, Reno, Stockton, and Modesto. Several counties within the region had roughly 40 percent of their workforce leaving their home county in 2000: Calaveras (40.6 percent), Placer (39 percent) and El Dorado (37.3 percent).

Commuting out of county is a daily occurrence for a growing number of Sierra Nevada county residents. In addition to the abovementioned counties, the following counties had at least 20 percent of their workforce driving elsewhere for work: Amador, Mariposa, Nevada, and Sierra.

As people move to the fringes of developed city or town centers, they inevitably move further from their jobs, which leads to more congestion on the roads as their commute lengthens. Plus, these workers' counties of residence inevitably lose large chunks of sales tax revenue when commuting residents shop near their place of employment.

Of course, not all out-of-county commuters are leaving the Sierra Nevada for the gateway cities. Former bedroom communities, over time, develop into economic engines in their own right. The fast-growing region in southwest Placer County – Roseville, Rocklin, Lincoln, and the Sunset Industrial Area – includes a thriving high-tech industry. Without doubt, commuters from El Dorado and Nevada counties are traveling to work in this section of Placer County.

Commuting out of county is a daily occurrence for many Sierra Nevada residents.

Foundation Giving

In 1978, California voters approved Proposition 13, which capped the assessed value of property taxes. While homeowners benefited, local governments that rely heavily on property taxes found it increasingly difficult to meet all their civic duties. Many California cities and counties have asked voters to approve special assessment taxes in order to maintain government services. Sales taxes have also increased across the state.

These measures, however, have failed to fully recuperate local government budgets. In 2006, the James Irvine Foundation conducted a study about foundation giving in California. Vast differences in per capita spending, the number of foundations, and foundation assets were seen across the state. For example, San Francisco County received $678 per capita in annual foundation giving while Calaveras County received $4 per capita.

photo by Tom Rassuchine

The Sierra – defined in the foundation's report as Alpine, Amador, Calaveras, Inyo, Mariposa, Mono, Nevada, Plumas, Sierra, and Tuolumne – does not have a large philanthropic presence. In fact, five Sierra Nevada counties – Alpine, Mariposa, Mono, Sierra, and Tuolumne counties – do not have a single foundation. The Sierra Nevada also received the fewest grants of any region within California in 2003 and had the fewest nonprofits.

As a region, the Sierra Nevada's network of foundations and assets pales compared with other California regions. The Sierra Nevada affords some of the most compelling and pressing charitable investments in the nation. In addition to being one of America's most biologically diverse areas, with more than 3,500 plant and 720 animal species, the Sierra continues to be a great economic engine for the sixth largest economy in the world.

The many forms of the Sierra Nevada's natural capital create wealth. Take water, for example. California is increasingly dependent on the Sierra to provide more than 60 percent of its water resources. This fact is especially compelling because California grows more than half of America's produce, and as individuals our daily intake of food requires 4,500 gallons of water to produce that food, according to the California Farm Bureau. In addition to California's escalating need, the exploding population in northern Nevada is also increasingly dependent on the Sierra for its water supply.

Opportunities to invest philanthropic assets in Sierra counties abound.

We take these ecosystem services for granted. To our detriment, we have subscribed to the myth that these ecosystem services and the natural capital will always continue to produce. Our dependency on Sierra natural resources and services will be threatened without reinvesting in the continued health and functioning of these natural systems.

We have also done little to assist the many rural communities that are long-term stewards of these iconic landscapes. Opportunities to invest philanthropic assets in Sierra communities, rural education, workforce housing, renewable energy, and sustainable agriculture, and in combating growing inequities abound. If the philanthropic community fails to invest in the Sierra and its communities today, future generations will not be so fortunate.

Natural Resources

Natural capital in the Sierra Nevada exhibits both strengths and weaknesses. Because most land in the Sierra Nevada is publicly owned by local, state, and federal governments, future settlement patterns on the available private lands are somewhat predictable. Designations of land use through General Plans provide a balance in communities and help preserve open space.

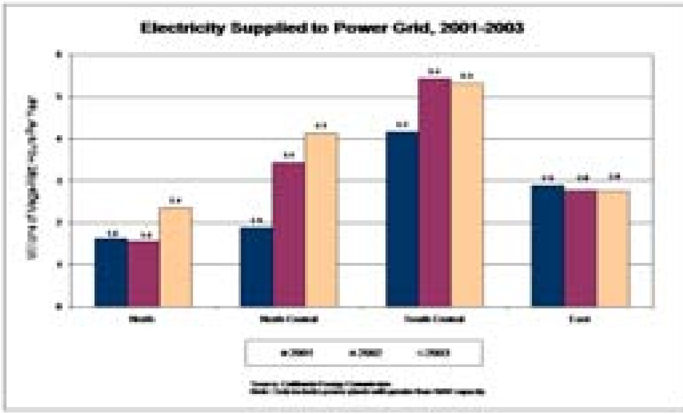
The Sierra Nevada supplies about 60 percent of California's usable fresh water. Between 1990 and 2003, the value of agriculture produced in the Central and San Joaquin valleys using Sierra Nevada water was valued at $15-18 billion per year. Advances in hydropower, biomass, and geothermal electricity production allow the Sierra Nevada to provide its own power and export electricity to a wider portion of California.

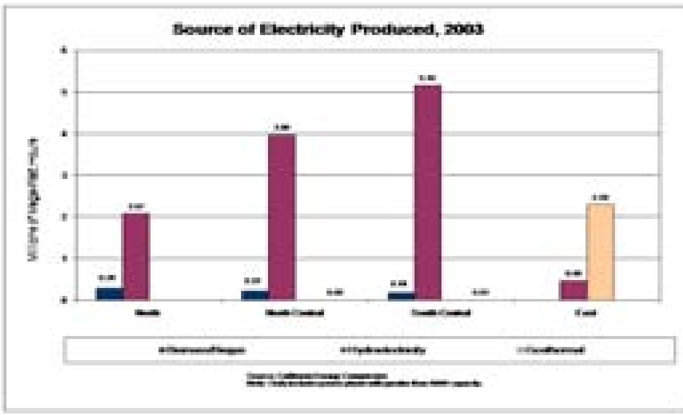
Troubling trends include the loss of farmland in the North Central counties, where thousands of acres of highly valuable fruit orchards and nut trees have been lost. Pressures for development continue to threaten open space, particularly in the North and North Central counties. Throughout the Sierra, certain habitats have limited protection from conversion, including oak-dominated landscapes, riparian areas, and agricultural lands.

To evaluate the Sierra Nevada's natural capital, we will examine energy production, forest and timber production, water use, agricultural production from Sierra Nevada water, global warming, and development patterns.

Energy Production

The production of electricity through hydropower, biomass, and geothermal power is a transfer of natural capital to financial capital in the Sierra Nevada. In particular, the production of renewable energy through biomass increases the Sierra Nevada's natural and financial wealth simultaneously. In 2002, a bill enacted in California required the state to generate 20 percent of its energy from renewable sources, excluding hydropower, by no later than 2017. More creative production of renewable energy will be required as the demand continues to grow.





The Sierra Nevada exports an enormous amount of electricity to California's urban areas. Residential use is less than five megawatt-hours per person per year, so even the North Central, where per capita production is by far the lowest, exports electricity to the power grid for use elsewhere in California. Generation has been increasing in the North and North Central subregions and holding fairly stable in the East and South Central subregions.

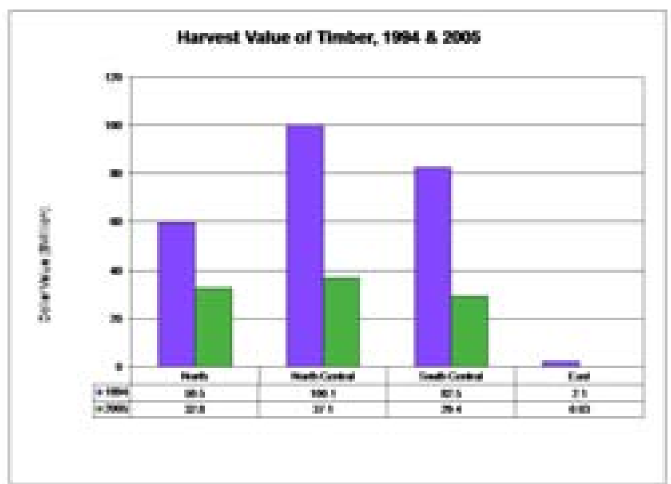
The North, North Central, and South Central subregions rely heavily on hydropower for electricity production. Sierra Nevada water flow is a direct source of electricity for both the Sierra Nevada and the Central Valley. The East subregion has the greatest existing and potential production of geothermal electricity in the Sierra Nevada. Utilizing state funding for research and development, the Mammoth Pacific Limited Partnership has received awards for innovation and research for developing the world's first air-cooled geothermal electricity production facility. This design helps generate clean, renewable electricity in the summer when demand for electricity rises.

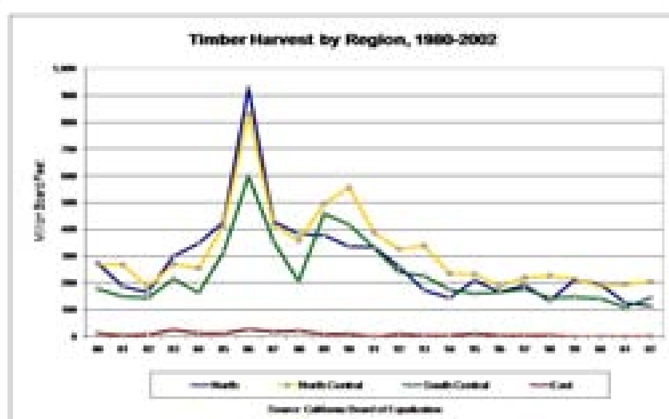
Forests and Timber Production

Since the days of the Gold Rush, timber harvesting has occurred continuously and been a significant economic driver in the Sierra Nevada. In terms of gross revenue, timber is one of the Sierra Nevada's most valuable products. Timber is also one of the largest net contributors to county government funds through forest reserve revenue and timber yield taxes. A large majority of California's diverse forest resources are found within the Sierra Nevada, and well-managed forests help maintain healthy water quality and plant diversity and contribute to forest fire prevention.

Oak woodlands, concentrated in the private lands of the western foothills between 450 and 4,500 feet elevation, have experienced considerable change through conversion to rangelands and urban development. Between 1945 and 1985 roughly 800,000 acres of the 4.7 million total were lost due to changes in land use or vegetation types. This figure represents an annual decline of almost 16 percent. Some counties, such as Tuolumne County, experienced a 42 percent decline. Other counties with high loss rates during that time period include Calaveras at 29 percent and Amador with 28 percent loss.

The biggest factor in loss of oak woodlands is not ecological change but development. California's Fire and Resource Assessment Program, a program of the Department of Forestry and Fire Protection, reports that future development in the region will definitely impact private forest, range, and agricultural lands. These





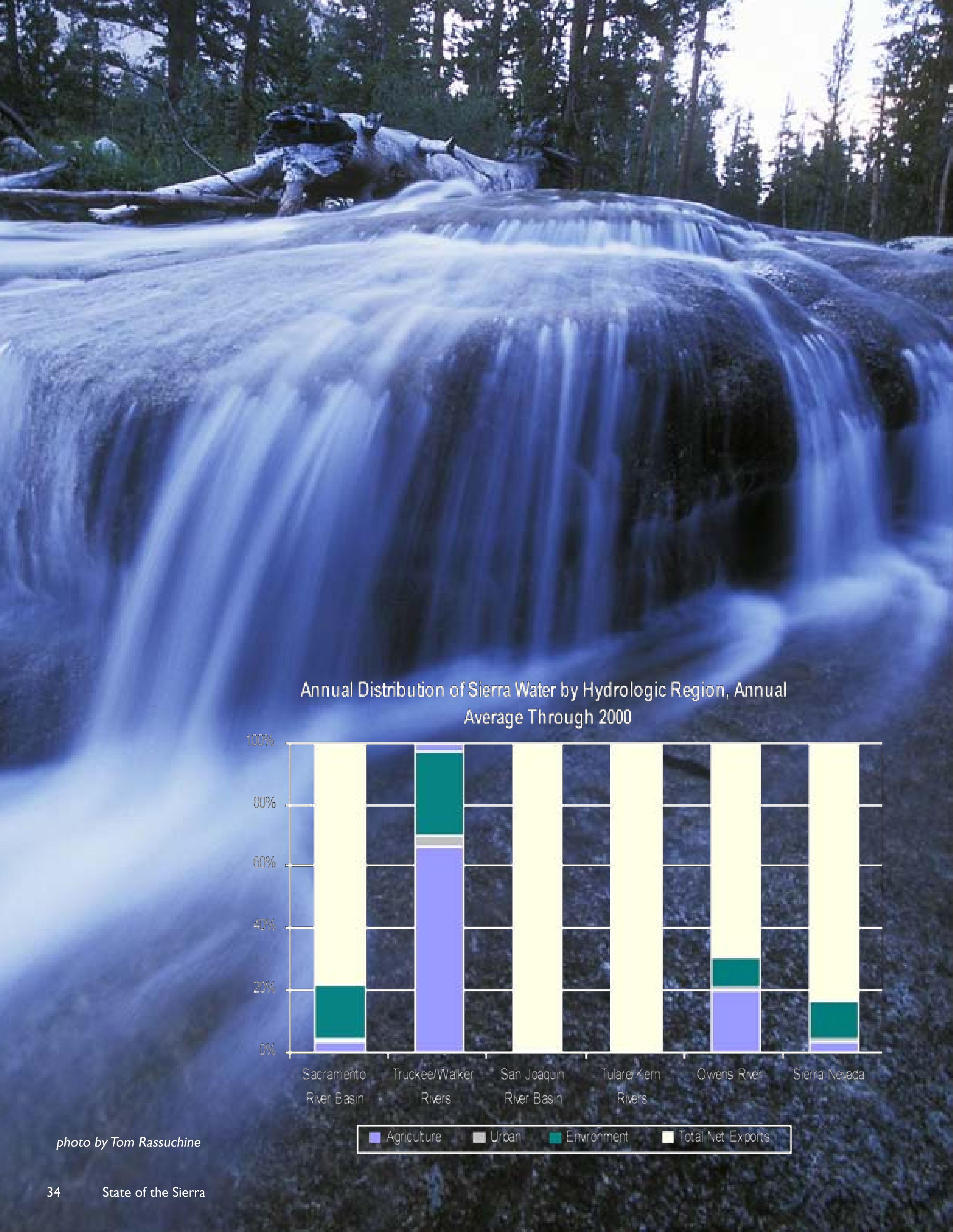


photo by Tom Rassuchine

development challenges are especially true in the Sierra, as more people leave the urban areas seeking a rural lifestyle in the Sierra foothill communities.

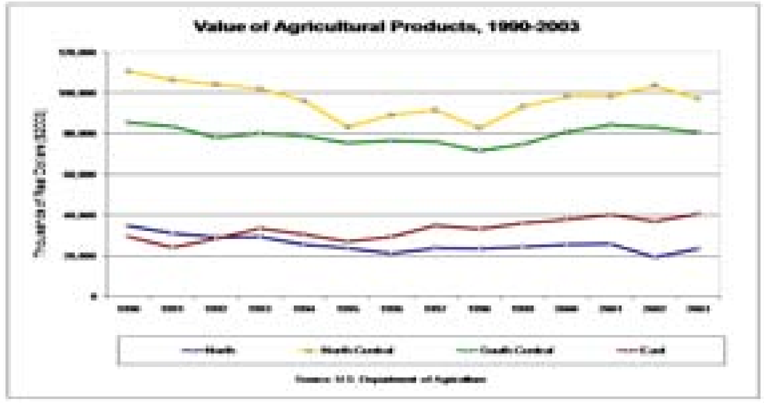
The majority of timber production in the Sierra Nevada now comes from private harvests. Federal legislation on forest production has contributed to a reduced availability of timber production on USDA Forest Service lands. These decisions have led to a dependence upon private timber harvesters to support communities. Outside of the East subregion, which has a small forestry economy, timber harvesting on private lands accounts for 67-90 percent of total timber harvests in the Sierra Nevada. Although timber exports throughout the Sierra Nevada continue to be an important source of revenue, the industry has experienced a considerable drop in revenue. A decrease in available timber harvest continues to result in mill closings, lost jobs, and decreasing potential financial capital.

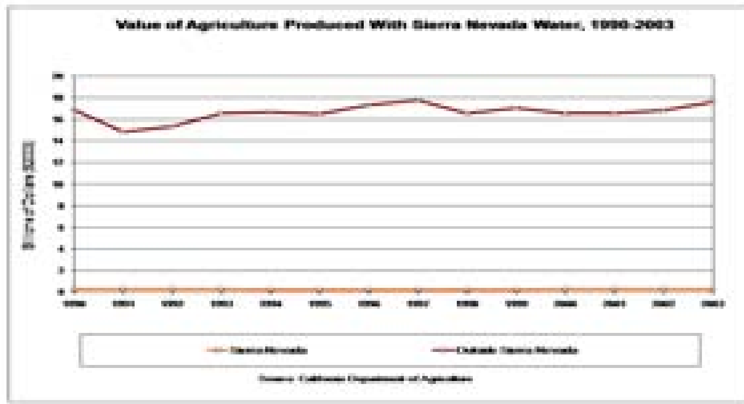
The North subregion continues to rely heavily on timber harvesting as an integral part of its economy. While the North Central and South Central produced large amounts of timber in 2002, their diversified economies are less reliant upon this resource.

Water Use

The Sierra Nevada supplies about 60 percent of usable fresh water in California. Although local water availability in the Sierra Nevada is critical to local agriculture, environment, recreation, and residents, most of the water supply is utilized downstream or exported to other water basins.

Most Sierra Nevada water – 22 million-acre feet or 59 percent – is used for agricultural purposes, and most of this water use, 20 million acre-feet, occurs in the Central Valley. About 13 million acre-feet per year (34 percent of usable fresh water) are used for environmental preservation and enhancement, including in-stream flows for aquatic and riparian health and diversion to wetlands. Water classified as used by the environment includes in-stream flows but also the natural consumption by vegetation throughout the Sierra Nevada. Urban use of Sierra Nevada water is minuscule in comparison, accounting for only 5 percent, or 1.5 million acre-feet of water.





Nearly all of the water originating in the San Joaquin River Basin and the Tulare and Kern rivers is exported to the Central Valley. About 21 percent of Sierra Nevada water in the Sacramento River Basin is used in the Sierra Nevada, mostly by transpiration in the environment.

More than 30 percent of Owens River water is used in the Sierra Nevada, primarily for agriculture, and the Los Angeles Aqueduct exports most of the remainder. Nearly all Sierra Nevada water in the Truckee and Walker rivers is used for agriculture and by the environment, although in-stream flows for environmental purposes are also likely used again downstream in Nevada.

Agricultural Production from Sierra Nevada Water

Water is the Sierra Nevada's most valuable resource. The snowpack and water sustain the region's unique biodiversity, supply much of California's fresh water, and are major driving forces behind the agricultural economies of the Central and San Joaquin valleys.

The monetary value of agriculture in the Sierra is relatively small, especially compared with other sectors such as construction or travel and tourism, but agriculture's non-commodity-based contributions to the social, cultural, natural, and historic fabric of our region and its communities are immeasurable.

Farming and ranching do not constitute a large portion of the Sierra's economy, but agriculture does play a critical role in defining the region's rural way of life and protecting cherished resources such as open space, waterways, habitat for wild species, and more. Without the Sierra's ranchers and farmers and the many commodity- and non-commodity-based benefits they provide, Sierra Nevada communities risk losing core qualities that make the region so attractive and unique.

The value of agricultural products in the Sierra Nevada has held fairly constant between 1990 and 2002, fluctuating between $211 million and $259 million annually. Production in the North has been relatively steady during this time period even with a significant increase in farm acreage. Although both declining yield and market prices for livestock products likely play a role. The East has experienced an increase in agricultural production since 1991 without an increase in water availability or acreage dedicated to agriculture, indicating a more efficient use of water and land in the area.

The North Central has continued to experience relatively high agricultural production even with decreasing farm acreage and average farm sizes. Although individual farm sizes were decreasing, in 2002 the South Central had nearly as much acreage, 823,909 acres, in agricultural production as the other three subregions combined, 841,035 acres.

As the primary source of water for the Central and San Joaquin valleys, the Sierra Nevada has a direct impact on production in two of the state's most important agricultural areas. The large scale of agriculture requires a continued and timely water supply in order to meet state and worldwide food and fiber demands. With the exception of Glenn, Colusa, and Tehama counties, which do not receive their water from Sierra sources, the value of agricultural production in the Central and San Joaquin valleys is both a quantitative and qualitative financial benefit of Sierra Nevada water.

Adjusted for inflation, the value of agriculture produced in the Central and San Joaquin valleys using Sierra Nevada water between 1990 and 2003 has had enormous economic impact, shifting between $15 billion and $18 billion annually.

Climate Change

Global warming has affected the amount of snowmelt in the Sierra Nevada since 1950. Precipitation in the form of snow, rather than rainfall, increases water availability originating from the Sierra Nevada by delaying water flows downstream into spring and summer months when water, particularly for agriculture, is needed most. In 2004, Dr. Philip Mote, the Washington State Climatologist, testified before the U.S. Senate that snow water provides about 75 percent of the water supply in all of the western United States and that it increases water storage and groundwater recharge capacity. The amount of snowmelt is affected by changes in snow precipitation, percolation, and evaporation. A reduction in snow precipitation and percolation is influenced by the global warming environmental effect.

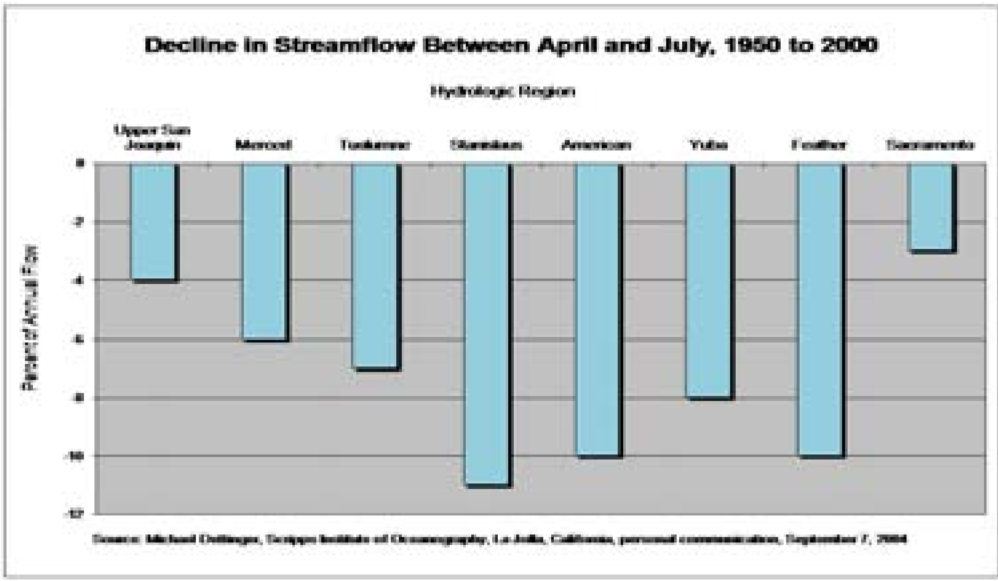
The Sierra Nevada snowpack essentially acts as a giant reservoir of water for the surrounding regions. Warmer temperatures in the high elevations reduce snowfall and cause snowmelt-generated runoff in the Sierra Nevada rivers to occur earlier in the spring. Several studies have shown that throughout the latter half of the twentieth century the spring runoff has been occurring earlier in many basins of northern and central California. This pattern was also detected for the entire twentieth century in the Sacramento and San Joaquin rivers.

California's water infrastructure systems, such as the Central Valley Project and the State Water Project, were developed in order to deliver water to decreed owners, to provide flood control, and to produce hydropower. Managing the infrastructure systems becomes a much more arduous task when water levels fluctuate and the timing of water runoff is altered. An earlier runoff requires water managers to release water from storage in order to meet their flood protection objectives. However, earlier releases do not satisfy the needs of agriculturalists, the main consumers and owners of Sierra Nevada water rights, who require a more gradual release of water throughout the early summer months.

Decreases in snowpack and stream levels also affect California's power supply. The state is one of the nation's top producers of hydropower, but less water initiates a sharp drop in hydropower generation capabilities and requires increased use of fossil fuels to meet electricity demands. During California's drought in the late 1980s, the decreased amount of hydropower electricity cost ratepayers more than $3 billion between 1987 and 1991 and also resulted in increased greenhouse gas emissions.

Climate modeling conducted by the National Center for Atmospheric Research in the United States and the Hadley Centre for Climate Change in the United Kingdom predicts significant changes in Sierra Nevada temperatures, snowpack, and river flows toward the end of the twenty-first century. Both models incorporated global

photo by Tom Rassuchine



emission levels at the current rate of discharge and at a feasible lower discharge level.

Results from both models as well as both emission levels predict that California snowpack and river flows will drastically decrease by the end of the century. A study of the Sacramento and San Joaquin basins, which supply most of the water to the agricultural centers in the Central and San Joaquin valleys, determined that snowpack levels could decline by more than 50 percent by 2098. As California's water supply changes and the population continues to grow, difficult decisions on how and where the Sierra Nevada's water is utilized will need to be made.

Emissions of greenhouse gases affect the entire globe. Grappling with a global problem is obviously a difficult task, but local governments are making efforts to reduce their carbon footprints. The ICLEA-Local Governments for Sustainability, an international local government association, has roughly 700 local governments participating in its Cities for Climate Protection program. The program enlists cities to adopt policies and implement measures to achieve quantifiable reductions in local greenhouse gas emissions, improve air quality, and enhance urban livability and sustainability. More than 150 jurisdictions in the United States participate in the program, including 26 cities, three counties, and a water district in California. However, the Sierra Nevada does not have any participants in the program, even though similar small mountain communities in other states are enrolled. Participants in the program seek to reduce global warming pollution, reduce local traffic, save tax dollars, and improve their community's quality of life.

The California Climate Action Registry has more than 250 members including businesses, nonprofits, municipalities, state agencies, and other entities committed to measuring and recording their greenhouse gas emissions. The Registry encourages voluntary actions to increase energy efficiency and decrease greenhouse gas emissions. Only a handful of their members are from the Sierra Nevada: Plumas County, Plumas Corporation, and Collins Pine Company (in Plumas County). Greater participation in this state registry would signify the region's commitment to combating climate change." (If this is too much, the snowmelt/water section is quite redundant and could be pared back.

Development Patterns and Opportunities

The Sierra Nevada's natural wealth attracts visitors and businesses and is a driving force behind the continued migration of people to the region as new residents. The mountains, lakes, working landscapes, open spaces, and rural communities and amenities of the Sierra Nevada are integral to the region's social and financial health. Economic calculations for the open space, wildlife habitat, culture, history, and the general rural character of the Sierra Nevada are hard to quantify. But these elements and the land use patterns that support them are highly valued by residents and visitors alike.

Numerous factors – population growth, land use change, and development patterns – affect private lands throughout the Sierra Nevada. Population growth throughout the region is the major driver of change on privately held lands, such as agriculture, forestry, and open space lands. Nearly 70 percent of California's Sierra Nevada population resides along the western foothills and the population in these counties is expected to grow by 50 to 100 percent by 2020.

The increasing population requires homes, businesses, and schools for the new residents. All these people and businesses require land. Frequently, the most economical and easily accessible lands for development are agricultural and forest lands. Less efficient land use development patterns through ranchettes, sprawling second homes, and leapfrog development increase consumption of agricultural lands. With much of the Sierra Nevada's land publicly owned and topography less than conducive for development, developable land in Sierra Nevada communities is a limited asset. Communities need to maximize the benefits of their existing assets when planning for future growth.

As the Sierra Nevada population grows, community leaders are required to make decisions about land use patterns in order to accommodate the housing and infrastructure needed. General Plan updating processes, housing assessments, and ordinances, as well as encouraging infill and brownfield development allow communities to build the infrastructure needed to fully develop their social and financial wealth sectors without detracting from their natural wealth.

The state of California requires every county and incorporated city to produce a General Plan. As part of the General Plan, an open space element along with a conservation element must be included. Also in the General Plan process, communities can opt to include an agricultural element and/or an economic development element. The two non-required elements are strongly recommended if a community has extensive agricultural lands and timberlands or if a community has underutilized or nonexistent industries and businesses. General Plans must contain vision statements and guiding principles along with an action program identifying specific techniques that the county or city intends to use in implementing its goals. Thus, the process is both regulatory and visionary.

In most cases, the required open space and conservation elements are combined to promote the management, preservation, and conservation of natural resources and open space. The goal is to assure the availability of those resources for future generations.

General Plan updates can also include a community character element, which helps protect and maintain the visual identity of the community as well as the community's personality. A community character element emphasizes the relationship between the community's built and natural environments by focusing on viewsheds, community landmarks, neighborhoods, streets, and natural landmarks.

Inefficient uses of land coupled with population growth are the greatest threats to maintaining natural and working landscapes. A community's ability to provide appropriate levels of community planning and affordable housing directly impacts its ability to maintain its natural and social wealth. Housing consumes large chunks of land within and surrounding Sierra Nevada communities. In order to supply appropriate housing without sacrificing the natural wealth, which helped to attract the new residents in the first place, community leaders have a variety of action-oriented options available to them:

- Conduct regular housing needs assessments to direct the mix of housing in the community
- Create local financial incentives to encourage affordable housing
- Adopt local inclusionary zoning ordinances
- Encourage programs directly linking employment with housing
- Encourage infill development and commercial mixed use

By adopting policies that encourage land use efficiency within previously developed regions, the pressure to convert a community's natural wealth – open space, farmlands, timberlands, ranchlands – to other uses will lessen. Lands situated along the urban/rural border are the most likely targets for development. Greenfields, previously undeveloped land, along this border, are often more desirable land for developers simply because they are cheaper and the possibility of amassing large parcels of land exists. If land is cheaper on the fringe, it stands to reason that housing prices will be cheaper as well. Cost of community services studies show that working lands and open space require $0.36 of public services for every dollar of revenue raised, whereas residential lands require $1.15 of services for every dollar of revenue raised. So these greenfield developments end up costing the community tax revenue.

But disturbed lands within a community center or its sphere of influence already have infrastructure such as sewer and water systems, roads, and schools provided and therefore burden the general public less with expense. Redeveloping these "brownfield" sites increases density within established community centers and maintains natural lands close by.

Housing Sustainability

The Sierra Nevada needs to develop a wide-range of housing options. The growing population within the Sierra Nevada presents the region with an incredible opportunity to diversify its housing stock. In order to meet housing needs, communities need to consider a variety of options, including commercial mixed use housing, workforce housing, cohousing, infill development, and efficient land use planning for siting new housing. To ensure an adequate supply of affordable housing, especially in the Sierra Nevada's resort areas, more communities may want to consider incorporating inclusionary requirements similar to those in Mammoth Lakes and Truckee. Significant planning and focus must be dedicated to the Sierra Nevada's housing needs to prevent housing from overwhelming the built environment and rural character of the region's communities.

Commercial mixed use housing and cohousing offer communities alternative housing designs that have a strong emphasis on utilizing the existing built environment and creating vibrant neighborhoods. Commercial mixed use development combines commercial and residential units within the same development. Based on historic Sierra Nevada town patterns, commercial property is placed on the street level while residential units are built above. A balance of workplaces, restaurants, coffee shops, housing, and civic amenities such as a library and parks enhances a community's character and increases interaction amongst its residents. Pedestrian-friendly mixed use developments reduce reliance on personal vehicles and increase the potential use of public transit by encouraging density.

Cohousing differs from traditional housing developments because the process allows for more participation from future residents. Key components of cohousing developments include designing with a clustered, neighborhood goal in mind, shared common facilities, and resident management. Private, fully equipped housing units share amenities such as gathering rooms and open space. A cohousing project was completed in Nevada City, California, in 2006 with 100 percent occupancy. Other cohousing projects in the process of forming within the Sierra Nevada are occurring in Grass Valley and Truckee.

Empty or underutilized lots within Sierra Nevada communities are prime candidates for infill development. These spaces allow developers to increase density within the existing built environment. Infill development can more easily utilize the community's existing infrastructure of schools, roads, sewer lines, water lines, and emergency services, which helps minimize the public cost of development. Commercial mixed use and infill development also provide maintenance of open spaces and working landscapes to preserve the rural character of Sierra Nevada communities. In this manner, commercial and residential development occurs, helping to grow the community's economy while maintaining and improving the social and natural wealth of the area.

Rising prices and demand for housing may necessitate adoption of an inclusionary housing program at the county or municipality level. Regions with disproportionate median house prices compared with average annual personal incomes are also prime candidates for inclusionary housing. An inclusionary housing program requires developers to make a certain percentage of units affordable once they reach a threshold for total units built in a development. For example, the Montgomery County, Maryland, program requires developers of 50 or more units to make 12.5 percent of the units affordable.

The Truckee, California Town Council updated its General Plan's housing element to include an employee linkage program and an inclusionary housing program in March 2005. The Truckee regulation requires 15 percent of housing in new residential developments to be affordable to households with incomes less than $77,000.

Employee linkage or workforce housing programs help communities ensure that as commercial or industrial developments occur, accompanying housing development for the expected workforce will also be constructed. Affordable housing needs and rates are determined by a ratio according to development type: commercial, industrial, multiple-unit residential, and single family residential. A formula estimates the number of full-time equivalent employees for each development type and then determines the amount of affordable housing needed for each.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To facilitate the growth of affordable workforce housing, the county or municipality may adopt an affordable housing overlay zone where all units must be for low-income and moderate-income households. Additionally, fees normally imposed on development projects may be waived. Developers may also be compensated for their efforts by receiving density bonuses, thus allowing them to construct more units than the zoning typically permits.

In a rapidly expanding real estate market, a variety of opportunities exist for requiring developers and their projects to contribute back to the community. Two such tools are mitigation fees and a real estate transfer tax.

Assessing mitigation fees authorizes funds to finance public facilities necessary to ameliorate and offset the impacts – transportation infrastructure, service infrastructure, police and fire services, and other impacts – of new development and population growth. Mitigation fees are usually exacted from the developer within the planning process and are most commonly collected at building permit issuance or prior to the construction of a new residential or commercial building. The fee is charged in connection with approval of a development project.

The flexibility of crafting mitigation fees allows communities to earmark funds for specific goals. These goals could be to improve infrastructure, protect open space, or meet other pressing community needs. Properly crafted, mitigation fees allow a community to maintain and sustain its social and natural wealth while its financial wealth grows. Mitigation fees can balance the needs of developers while considering the impact to the community and its needs. If the mitigation fees demand too much, then there's the risk of losing financial capital. But if you ask for too little, the risk of losing community and social capital increases.

Real estate transfer taxes are assessed on real property when ownership of the property is transferred between parties. In California, counties and cities have authorization to tax the transfer of realty deeds. The seller is usually responsible for the taxed amount, though various conditions exist for both the buyer and the seller.

If no jurisdictional authority exists, transfer taxes can be agreed upon in a development agreement and applied to real estate transactions within a specific planned development or subdivision, and a predetermined land conservation organization receives the funds. Transfer fees are not limited solely to land conservation. They can be used for infrastructure needs, schools, and a variety of other options. Historically, this type of funding mechanism is created on a project-by-project basis, but opportunities exist to make it a permanent program for any community.

Heritage Economy

Linking the varied natural and cultural resources to tourism is one suggestion for building a heritage economy in the Sierra Nevada region. Communities can use awareness from traditional tourism activities to foster economic growth of heritage economy businesses. Other suggestions for supporting a place-based heritage economy include marketing Sierra Nevada products, conducting an inventory of Sierra Nevada cultural assets, engaging local artists, and planning and implementing community infrastructure in order to support sustainable transportation, energy use, consumption, and enterprise.

As communities in the Sierra Nevada face the next 50 years of growth and development, they seek new and innovative models to balance their natural capital with their social and financial capital. Building upon principles outlined in *Investing for Prosperity*, heritage economies seek to expand economic development opportunities in a manner consistent with historic town patterns and activities, but in tune with the changing demographic trends and interests of a growing population.

The following six principles encapsulate the needed efforts to support and encourage heritage economies in the Sierra Nevada:

- Support the arts
- Cultivate local agriculture
- Preserve and enhance historic assets
- Promote sustainable tourism opportunities
- Celebrate cultural diversity
- Enjoy and preserve natural landscapes

These common themes can and should drive the economic development strategies of the Sierra Nevada's rural communities. Our communities need to differentiate themselves from one another, but also from communities in Washington, Colorado, or Utah. By investing in and developing products that tell a community story and enhance natural, cultural, historic, and recreational resources, the economies and thereby the communities of the Sierra Nevada will succeed.

Ironically, traditional tourism, the emergent major economic driver of the region, is also a significant factor in diluting authenticity and converting land to rural sprawl. To avoid this, Sierra Nevada communities must identify, preserve, enhance, and market the heritage resources that made them successful and attractive in the past in order to retain their sense of place for the future.

Maintaining the region's heritage resources will also help maintain its tourism economy. In 2003, 81 percent of American adult travelers included a cultural, arts, heritage, or historic activity or event while on a trip of 50 miles or more, according to a Travel Industry Association of America/Smithsonian survey. This was a marked increase from the 65 percent identified in 1998. A community deprived of its cultural and historical presence will suffer a downturn in its economy.

In the absence of a heritage economy strategy, a traditional tourism-based model will fill the void. New economic drivers, particularly tourism, must be assessed in context with the effects of traditional tourism on land use and rural residential development issues as well as the low-paying service sector jobs created by traditional tourism. If promotion of a heritage economy can become a counter-balance to unchecked rural residential sprawl,

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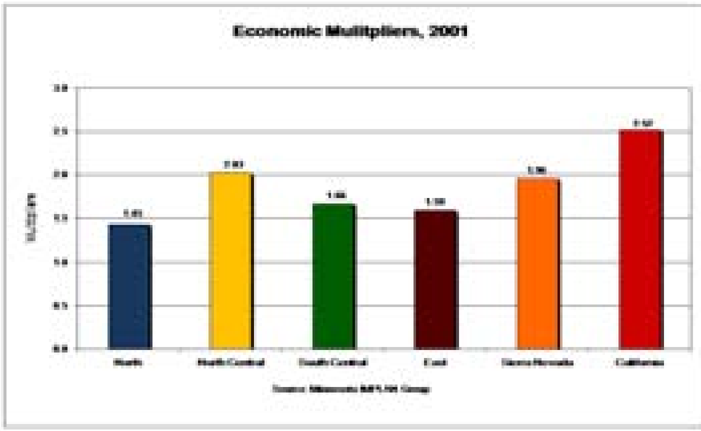
it can provide a valuable service to local communities by allowing them to clearly define their boundaries and develop within them.

The heritage economy extends far beyond the tourism industry, but the leverage points remain the same. The success of a heritage tourism agenda depends on restoring, preserving, and "marketing" authenticity, which will lead to the success of other heritage industries. Sierra Nevada forestry practices must manage forest stands to temper fuel buildup in order to prevent catastrophic wildfire. Sierra Nevada agriculture must invest in and market the region's heirloom and unique crop and fruit varieties. Authenticity is the Sierra Nevada's competitive advantage. The Sierra Nevada region has the resources to take the lead in developing alternative energy sources like biomass, solar, and biodiesel. Investing in, protecting, and marketing authentic places, value-added products, and innovative processes is the path of sustainability for the new Sierra Nevada economy. The heritage economy, based on authenticity, equity, innovation, and place-based values, can become a model for proactive engagement in the rapid change facing rural regions everywhere.



Locally Produced and Bought

Sierra Nevada leaders must develop awareness for community-based businesses through consumer education and marketing programs that encourage consumers and businesses to purchase locally and support independent businesses. Communities that produce and buy products locally create more self-reliant, stronger economies by keeping and re-spending dollars. Buying and producing locally serves multiple purposes by linking economic development with improving social infrastructure and environmental protection. Effective marketing needs to be tied to community policies that strengthen and improve the ability of local independent businesses to do business in the region and provide valuable and useful products to the community.

Economic Multipliers

Economic multipliers show how many times a new dollar circulates in a local economy; a multiplier of two means a dollar is spent twice before it leaves. When multipliers are high, dollars flowing into an economy create more jobs than when they are low.

The chart above depicts statistical evidence that Sierra Nevada locals could tell you off the top of their head: you go down valley to shop. Similar to the region's water, residents of the Sierra Nevada frequently head downstream to communities along and beyond the Sierra Nevada foothills to purchase goods.

Typically, when you have a larger area, like the entire state of California, for example, the multiplier is a larger number. However, compare the multiplier for North Central, 2.03, with the overall Sierra Nevada multiplier, 1.96. This comparison indicates that there is more connectivity between the Sierra Nevada and surrounding areas such as Reno, Sacramento, Stockton, Modesto, and other communities in Nevada's Carson Valley and California's Central Valley than there is interconnectivity within the Sierra Nevada. Most dollars spent outside of the North, South Central, and East subregions are not spent in other Sierra Nevada subregions. The region's geographic and geological boundaries make connectivity along the north-south axis difficult. When residents shop outside their region, they go to cities such as Sacramento or Reno instead of other communities within the Sierra Nevada. The North has the most leaky economy, followed by the East and South Central. Plugging the leaks would be a good development strategy for each of these three subregions.

Communities increase economic multipliers when they buy from local businesses. Encouraging local businesses to supply goods that the community routinely buys elsewhere helps complete the circle. This economic development strategy, called "plugging the leaks," is an alternative to recruiting new businesses. The strategy's effectiveness results from its investment in social capital – the local businesses and entrepreneurs at the heart of a community.

Think Sierra First

A buy local campaign has several distinctive goals: build strong communities, create vibrant and diverse economies, and promote a healthier environment. The Sierra Business Council seeks to create a "Think Sierra First" educational campaign to educate consumers and businesses on the multiple benefits of supporting locally-owned independent businesses. Not all purchasing decisions can practically be made locally, but buying even 10 percent more local goods and services can produce significant economic, social, and environmental benefits in our communities. Culturally and geographically, Sierra Nevada residents are already connected; Think Sierra First provides a tangible, readily identifiable way to connect local businesses with local residents.

Local food is fresher and better tasting because the food has less distance to travel, so it can remain in the field or on the vine longer. Supporting local farmers and ranchers increases their economic viability, which helps to maintain healthy working landscapes in the Sierra Nevada. From a natural resource perspective, decreasing the distance that your food travels has environmental benefits by reducing consumption of fossil fuels and emissions of carbon dioxide.

Several local agricultural associations successfully operate in the Sierra Nevada: PlacerGROWN, CalaverasGROWN, Farms of Amador, and Farms of Tuolumne. Think Sierra First looks to build upon these successes by expanding the scope to include all types of locally made products, services, and locally-owned independent businesses.

Local Sierra Nevada businesses and entrepreneurs supply services and products that can fulfill most every need. The trick requires knowing where to find them. Among the various tasks, Think Sierra First seeks to initiate creation of a directory of local businesses to facilitate local and regional awareness. At its very core, Think Sierra First wants to raise awareness for local businesses, encourage consumers to buy locally, and in the process strengthen the financial and social ties within communities.

What does local mean? Neighbors in Inyo County may live 30 miles apart and consider people, places, and businesses more than an hour away local. Conversely, residents of western Placer County may have a much more condensed definition of local, perhaps just their town or even several blocks within their town.

In rural settings like the Sierra Nevada, local is not bound strictly by proximity. Geographic, cultural, and economic characteristics have just as important roles when defining what is local.

Landscape-level Conservation and Planning

Tools for implementing conservation planning at a community scale as well as a regional scale include conservation easements on working landscapes, prioritizing conservation areas with connectivity for movement of wildlife, maintaining a distinct rural/urban interface, assisting with community visioning and planning, developing markets and incentives for implementation of a regional forest management program, consolidating inholdings, and more.

In order to achieve long-term environmental protection, conservation and planning must be regional in scope. Conservation that focuses on preserving agricultural buffers between human and natural communities helps provide connectivity for the movement and migration of wildlife. By encouraging infill, brownfield, and commercial

mixed use development, community leaders and planners can help Sierra Nevada communities maintain their much-desired rural character by reducing sprawl. Regional management plans should include reducing the patchiness of land ownership and managing watersheds, forests, and other ecosystems to minimize natural disasters, improve air and water quality, and preserve other ecosystem services on which we depend.

In addition to Sierra Nevada rivers and forests, towns and farms are also essential patches on the Sierra Nevada landscape. The goal of protecting wildlife habitat and corridors must extend to providing the Sierra Nevada human communities with livable environments and quality habitats. Investing in the planning of the built environment is important for developing a heritage economy, securing long-term economic sustainability, and striving for social equity in the region. Maintaining working farms and ranches is important for the wildlife and ecosystem functions such landscapes provide, but also for maintaining the rural character and natural beauty of the region.

Beyond these social values, however, deliberately supporting and enhancing livability of human habitat in the Sierra Nevada region will ultimately reinforce investments in improving and protecting wildlife habitat. Community leaders must recognize the trends of human population growth and implement appropriate planning guidelines to accommodate this growth in ways that are compatible with the needs of the natural environment. Fundamentally, conservation and planning policies need to create a philosophical shift away from seeing humans as invaders and destroyers of the environment

and charter a new culture of respect, in which humans are allies of the natural environment and its inhabitants. Ultimately, conservation and economic viability in the Sierra Nevada region will depend on the compatibility, functionality, and quality of the natural and built environments in the region.

Renewed Resource Economy

The tremendous natural resources of the Sierra Nevada have long been a magnet for humans and a dominant focus of the region's economy. The lure of gold and big trees originally spurred massive immigration to the region in the nineteenth century, but more than 150 years later the grandeur of the Sierra Nevada's mountains, valleys, rivers, and lakes supports an annual $3 billion tourism industry. By maintaining our natural resources we sustain our tourism economy, but we can also have opportunities to develop new sustainable natural resource economies. Our mining heritage now plays a role in the tourism industry. Forestry and timber, albeit with decreased production and revenue numbers recently, still have a significant economic impact on the region and the potential to have an even bigger role through biomass energy production and carbon sequestration.

Biomass has the unique potential to improve the social, natural, and financial capital of the Sierra Nevada. Reducing fuel levels in Sierra Nevada forests helps lessen the impact of forest fires, which are a natural and inevitable occurrence. The impacts of wildfires are most evident to the region's natural capital – trees die, sediment chokes rivers, and landscapes can remain denuded for decades.

Wildfires in the Sierra are an escalating problem because fire suppression and past timber harvesting practices have allowed flammable material in forests to build to between 25 and 40 percent greater than healthy levels. Decreasing the amount of flammable material in forests to healthy levels effectively reduces wildfire damage and also reduces the costs of firefighting and damage to resources. A study comparing two 1,000-acre plots burned by wildfire determined that the plot not treated before wildfire hit cost $1,100 per acre in lost trees and fire suppression. In the second plot, where flammable material was previously reduced to healthy levels, the wildfire cost was $165 per acre in lost trees and advance treatment.

Continuing population growth in rural areas of the Sierra Nevada increases fire hazards, particularly in areas with large, spread-out housing developments. The growing prevalence of the built environment in wildland areas has important implications for the impact and management of wildfires. High wildfire potential exists throughout the western Sierra Nevada foothills as well as the North subregion.

The challenge facing Californians involves trusting that fuel-reduction activities will occur in a sustainable manner that truly improves the health of forests without opening the door for excessive logging practices.

In 2006, the Western Governors' Association released a report proclaiming that western states have the potential to supply 15,000 megawatts of energy from biomass by 2015. Biomass energy production reduces fire loads, provides rural economic opportunities, and improves air quality. By burning biomass materials in a biomass plant instead of in outdoor slag heaps, particulate matter pollution can be reduced by 99 percent. Particulate air pollution causes illness, especially among infants and children, resulting in costly hospitalization and even death.

Instead of putting the excess flammable material into the air, on the ground, or into limited landfill space, biomass energy turns waste into a good, and thereby offsets costs and creates jobs.

Biomass plants exist in Plumas, Sierra, Placer, and Tuolumne counties, but these plants only represent the proverbial tip of the iceberg. The plants provided 4.7 percent of the electricity supplied to the power grid by Sierra Nevada sources, but the potential for greater production exists. The region is uniquely situated to improve its contributions to the state's renewable energy needs.

In late 2006, the U.S. Department of Agriculture provided grants to 46 projects for the production and marketing of biomass, biofuels, and wind power. However, none of the projects were located in California or Nevada. Another round of grants will be issued in 2007 with a stated emphasis on biomass research and production. Opportunities such as these grants need to be explored by businesses and local governments throughout the Sierra Nevada.

Some of the most carbon-dense land in the world exists in the Sierra Nevada. The giant conifer forests of California absorb more than twice the amount of carbon that tropical rainforests and temperate forests do. The potential development of carbon sequestration markets in the Sierra Nevada could be a major economic growth market for the region. The global carbon market jumped from $11 billion in 2005 to $21.5 billion in the first nine months of 2006. Unlike previous natural resource economies in the Sierra Nevada, carbon sequestration requires sustaining the region's ecosystems in a renewable manner.

The Kyoto Protocol set up an international market in trading carbon dioxide credits generated by projects, such as wind farms or solar energy generators. Wealthier countries can help offset their emissions and reach their emission reduction targets by funding these projects in poorer countries.

In 2006, China, with 63 percent of the market for selling credits, was the most popular location for projects generating carbon credits. China was followed by India with 12 percent of credits; meanwhile, the entire continent of Africa captured only six percent.

Selling credits makes up a small fraction of the carbon market compared to the European Union Emission Trading Scheme, which accounted for $19 billion in carbon trading in the first ten months of 2006. The European Union currently does not provide credit for carbon sequestration or "sinks" from natural settings such as trees, soils, and oceans. The California Climate Action Registry has been working on protocols for carbon sequestration in natural forests to be traded in future carbon markets.

Conclusion

The need for new, more inclusive measures of wealth has been recognized worldwide as a crucial step in order to understand the true health of a community or region and to measure progress toward a more sustainable society. For over a decade, the Sierra Business Council has published the Sierra Nevada Wealth Index in order to measure and track social, natural, and financial indicators of wealth in our region. The third edition of our Wealth Index, with a plethora of additional data, can be located on our web site.

The State of the Sierra is a comprehensive summary of this work and delves into the issues of population growth, economic opportunities, and natural resources. These three topics were selected because (1) The percent of population growth in the Sierra Nevada from 1990-2000 was more than double California's growth rate; (2) the technological revolution has allowed businesses to relocate to rural areas, adding to the existing economic mix of natural resource industries, tourism, business services, and construction; and (3) the tremendous natural resources of the region have long been an economic and social draw and the underpinning of the Sierra Nevada economy. By understanding and tracking all three forms of capital – social, natural, and financial – The State of the Sierra presents a more integrated, accurate, and useful portrait of our region's economy.

But The State of the Sierra is just a starting point to enable communities to manage growth and take charge of creating a better future. Opportunities exist to leverage the region's growth and associated capital investments to ensure a sustainable future the Sierra Nevada. We can link people, nature, and the economy by investing in conservation, community based planning, leadership development, and sustainable business practices.

Become a Member!

The Sierra Business Council is a member-based, non-profit organization of more than 700 business, civic, and individual leaders working together to ensure a sustainable future for the Sierra Nevada region and beyond. SBC provides communities with the tools and models to balance and grow their social, natural, and financial capital. We implement positive, proactive programs and projects that apply, model, and educate about sustainability through the creation of partnerships that bring together business, environmental, and community leaders to transcend the culture of division.

Can you make a difference? Absolutely! How? By getting directly involved in your community and by working region-wide to leverage the network of visionaries working towards a sustainable future for the Sierra Nevada. We also encourage you to become a member of the Sierra Business Council by visiting www.sbcouncil.org. Each valuable dollar you contribute allows SBC to leverage additional investment by linking people, nature, and the economy at the center of progress. Together, we have the opportunity to create great communities and economies in a sustainable manner for our children and grandchildren.

"We are pleased to partner with the Sierra Business Council in providing high quality research and an outreach tool to improve people's understanding of the economic, social, and natural conditions in the Sierra Nevada region. ***The State of the Sierra*** and the web-based ***Sierra Nevada Wealth Index*** will prove useful for governmental agencies, non-governmental entities, educational institutions, and the many individuals responsible for the daily decisions affecting the region and our state."

-- Jim Branham, Executive Officer, Sierra Nevada Conservancy

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