

Agenda Item X
Demographic and Economic
System Indicators
Attachment A



System Indicators

Demographics and Economy

Final Draft Report

August 2011

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INTRODUCTION

The Sierra Nevada Region provides critical resources for the state, the nation, and even to the world. It is *the* major source of water for the state, providing irrigation for the central valley to produce food for the global market, and is a major supplier of domestic and industrial water for much of California. The Sierra forests provide a large portion of lumber for the state and recreation for local communities as well as tourism destinations for all Californians, people from all over the U.S., and international visitors.

In order to know whether the Sierra Nevada Conservancy (SNC) is effectively carrying out its programs and to track the environmental, economic and social well-being of the Sierra Nevada, SNC's Strategic Plan identifies the need to develop, in collaboration with other organizations, a set of "environmental, economic and social well-being indices to monitor the progress in the various program and geographic areas."

This report is the first in a series of five reports that will summarize the System Indicator data gathered by the SNC and provide some analysis and findings relative to the twenty-three indicators approved by the SNC Governing Board in March 2011. This first report will focus on the Demographics and Economy of the Region. Subsequent reports will cover Water Quality, Air Quality, and Climate; Land Conservation and Habitat; Agriculture and Ranch Lands; and Forest Lands. All of the reports will be developed and presented to the Board by June 2012.

These reports establish a baseline for additional analysis over time. Information relative to each indicator will be available on the SNC Web site and will be updated periodically as the underlying data is updated, providing an opportunity to observe trends over time. We may also identify new sources of data over time, which will provide an opportunity to enhance this original analysis.

In addition to providing information relevant to the administration of the SNC's programs throughout the Sierra Nevada Region, we hope that this information will also be useful to others located in or working in the Region as they develop and implement their own projects and programs. If you would like more detailed information regarding any of the indicators, some additional detail will be available on the SNC Web site and further detail may be available by contacting the SNC at the address and phone number provided on the last page of this report.

In this first report, population and demographic Indicators assess the population distribution across the Region and growth trends, as well as the racial/ethnic, age, and educational characteristics of the Region.

The economic Indicators include fundamental measures of economic vitality: productive output, income, employment patterns, business dynamics, travel spending, and power generation. [Economic output data specifically relevant to farm, rangeland, and forest production will be explored in subsequent reports.]

CHALLENGES AND STRATEGIES

A major challenge in gathering system indicator data for the SNC Region is that so much information is reported in a way that does not align with the Region's boundaries. The SNC's boundary was uniquely established by statute and does not correspond well to political or demographic boundaries that often govern how data is collected.

To the extent possible, data was obtained and developed at the highest resolution possible (often Census Blocks) that are available for Geographical Information System (GIS) processing. However, some of the data are only available at county or other various regional levels. In these instances, the challenge was to align the data as closely as possible with the SNC boundary without skewing the analysis by including misleading information from outside the Region or by not including relevant information from inside the Region. Finding the best alignment between the SNC boundary and how data was collected was addressed on a case-by-case basis, but three approaches were used for purposes of this report. These are described in the following Regional Definitions section.

REGIONAL DEFINITIONS USED IN THIS REPORT

The 22 counties that make up the Sierra Nevada Conservancy (SNC) Region are organized into six Subregions:

North: Modoc, Shasta, Lassen Counties

North Central: Tehama, Butte, Plumas, Sierra Counties

Central: Yuba, Nevada, Placer, El Dorado Counties

South Central: Amador, Calaveras, Tuolumne, Mariposa Counties

South: Madera, Fresno, Tulare, Kern Counties

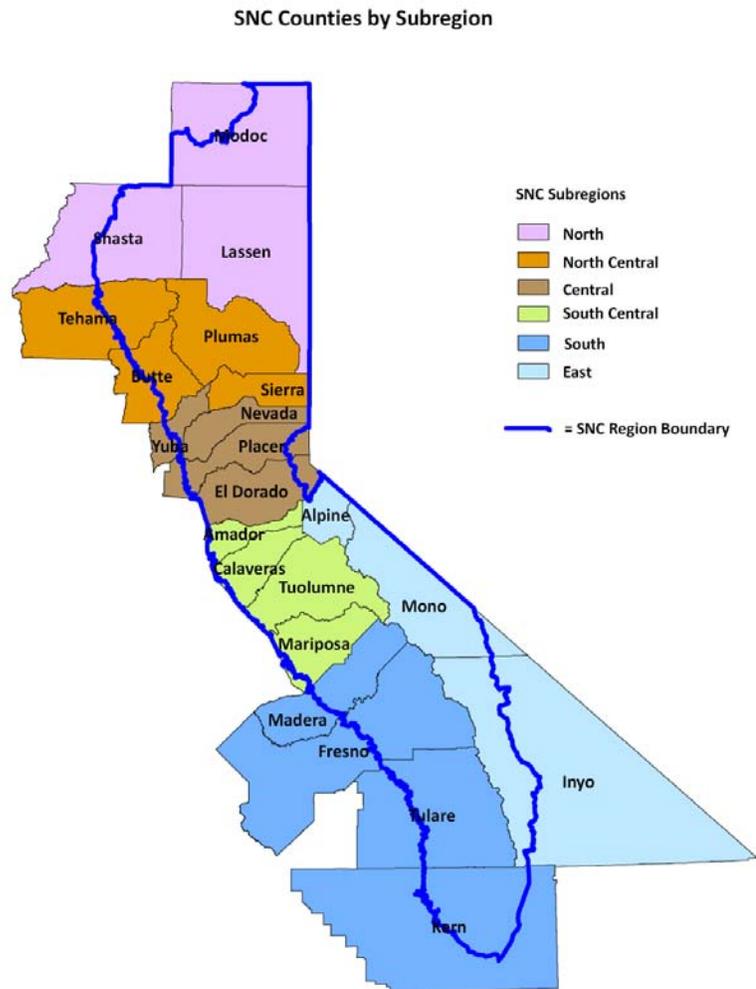
East: Alpine, Mono, Inyo Counties

A number of counties straddle the SNC Region's western foothill boundary (Shasta, Tehama, Butte, Yuba, Placer, Madera, Fresno, Tulare, and Kern Counties), with most of the population centers (i.e. Redding, Red Bluff, Chico, Roseville/Lincoln, Madera, Fresno, Visalia, and Bakersfield)

lying in the Central Valley, outside of the SNC Region. Placer and El Dorado Counties also straddle the eastern boundary (the Tahoe Basin), but have a larger proportion of land area and population within the SNC Region. This situation complicates the compilation of indicator data specifically relevant to the SNC Region.

Because much of the SNC boundary is independent of political or demographic reference lines, there are considerable challenges to developing data that is Sierra-specific. Three regional definitions based on the geographical availability of the data have been developed as a framework for data acquisition and analysis:

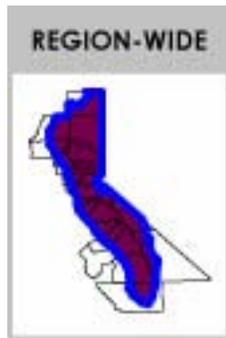
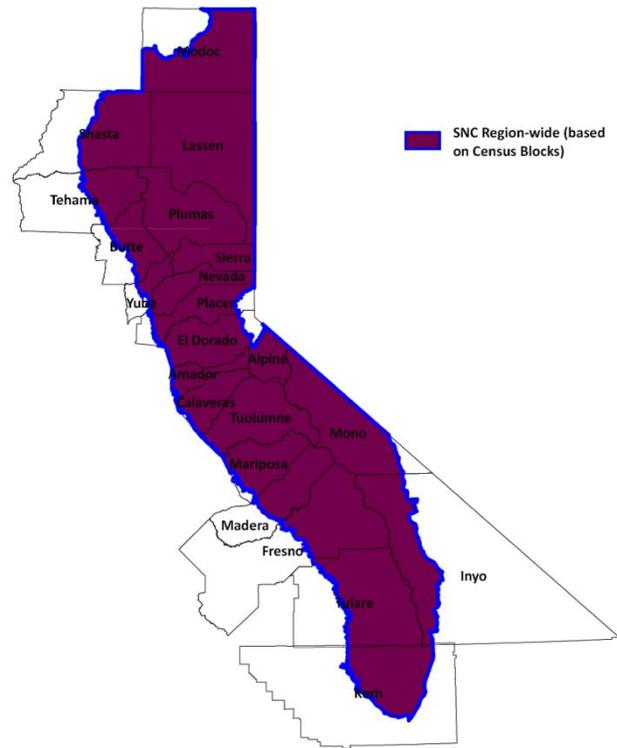
- **SNC Region (Region-wide)**
- **Counties Entirely Within the SNC Region and Counties Partially Within the SNC Region (i.e. all of the 22 counties that comprise the SNC Region)**
- **Counties Entirely Within the SNC Region, plus El Dorado & Placer Counties**



SNC Region-wide

This definition is used for Indicators that have data that align with the SNC boundary. The SNC Region, described by Census Block, is the most precise regional definition. The majority of demographic and economic Indicators use Region-wide data developed through Geographic Information Systems (GIS).

Sierra Nevada Conservancy Region-Wide

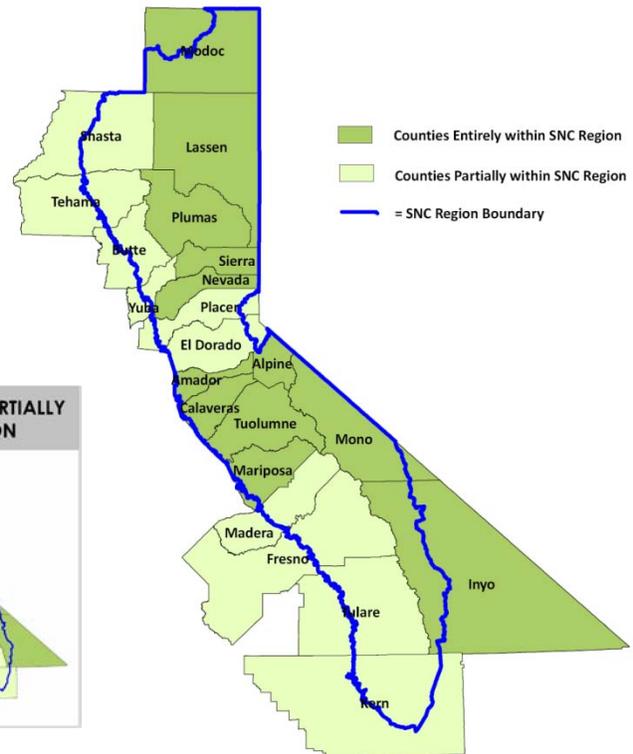


Counties Entirely Within the SNC Region and Counties Partially Within the SNC Region

This definition is used where data is only available at the county level, but it is important that we include data for all 22 counties that comprise the SNC Region, even though it includes a large demographic or economic component that outside of the Regional boundary.

Counties considered entirely within SNC Region include Alpine, Amador, Calaveras, Inyo*, Lassen, Mariposa, Modoc*, Mono*, Nevada, Plumas, Sierra, and Tuolumne Counties. Counties partially within the SNC Region include Butte, El Dorado, Fresno, Kern, Madera, Placer, Shasta, Tehama, Tulare, and Yuba Counties.

Counties Entirely within SNC Region and Counties Partially within SNC Region



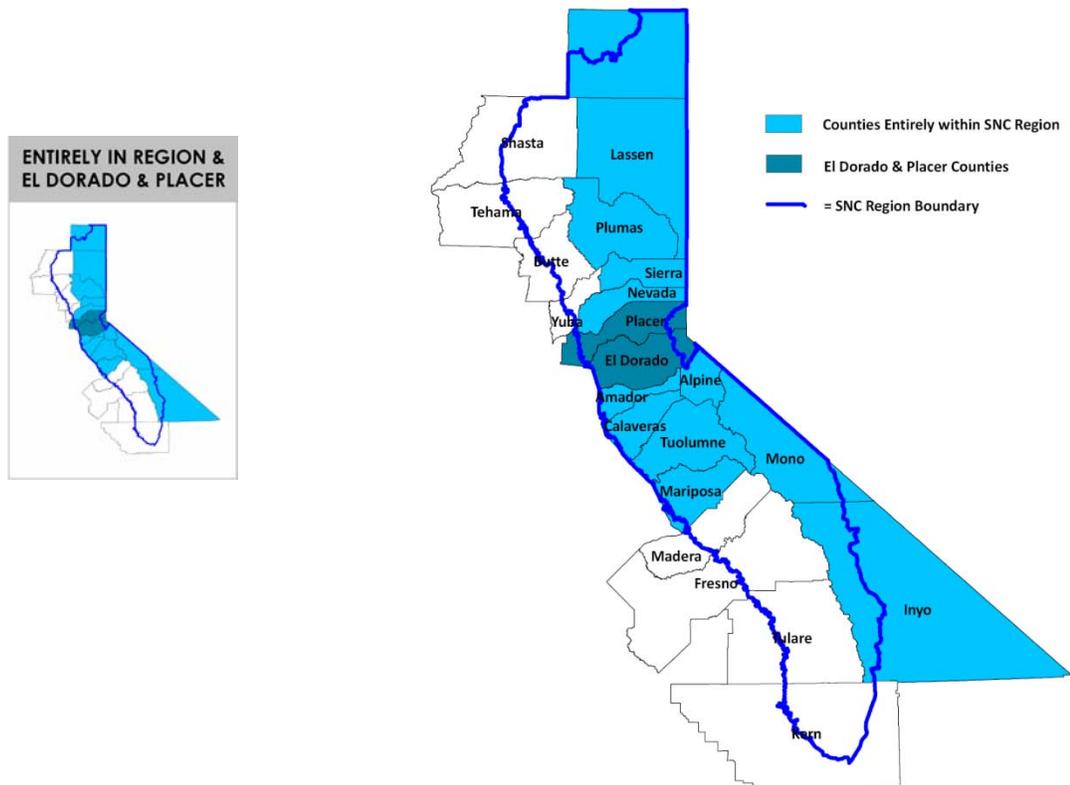
* See discussion of these three counties on the next page.

Counties Entirely Within the SNC Region, plus El Dorado & Placer Counties

For Indicators where pertinent data is available only at the county level, and inclusion of counties that lie substantially outside the SNC boundary would distort analysis of the Region, 'Counties Entirely Within the SNC Region' is used as a best proxy for regional analysis. Nine counties are truly entirely within the SNC Region (Alpine, Amador, Calaveras, Lassen, Mariposa, Nevada, Plumas, Sierra, and Tuolumne), while three others (Modoc, Mono, and Inyo) are included in this definition for purposes of this report. Including these three counties in the group of counties "entirely" within the SNC Region makes sense for purposes of demographic and economic analysis, because, while they have significant land area outside the Region, nearly all of the population and economic activity in these three counties reside in the Region.

For Indicators that are assessed based on this definition of 'Counties Entirely Within the SNC Region,' a supplemental analysis has been developed for El Dorado and Placer Counties. While these two counties have significant population and economic activity outside the Region, they also have a large proportion inside the Region. Eighty-three percent of El Dorado County's population and 33 percent of Placer County's population are within the SNC Region, and combined account for 48 percent of the Region's total population. Because they have large populations and economies, excluding them from a county-level analysis of the Region would leave a huge gap in our understanding of the Sierra Nevada. However, these counties are strongly impacted by proximity to the Sacramento area, and therefore, as a whole, the characteristics of these counties are substantially different from the rest of the Sierra.

Counties Entirely within SNC Region and El Dorado & Placer Counties



REPORT HIGHLIGHTS

Demographic and economic conditions in the Sierra Nevada region mirror those of the rest of the state in many important ways, and also differ substantially in others. For example, while the rates of population growth have been about the same for the Region and the State, the SNC Region is less diverse and older. Also, types of employment in the Region are not as different from the rest of the state as one might suspect, but the Sierra Nevada region seems to have a higher percentage of ‘green jobs’ than the average for California. In terms of income, Median Household Income in the Region is only a little lower than for the state, but it is growing at a slower rate and a larger share of household income derives from sources other than direct employment earnings.

Importantly, just as conditions vary hugely across California, so do they across the Region—averages don’t tell the story. For example, while rates of population growth have been about the same for the Region and the state, growth in different parts of the Region is highly uneven. Median Household Income is much higher in the Central Subregion than in any of the other Subregions. Also, while unemployment rates for the Region as a whole compare favorably with those of California, in 2009 there was a considerable range in the unemployment rates of the Sierra’s six Subregions, ranging from 11 to 16 percent.

Here are some of the key findings from the eleven demographic and economic indicators:

Population

The population of the SNC Region grew by 72,000 between 2000 and 2010, to 788,000 people. Overall regional population growth has been nearly identical to the State and is projected to parallel State growth over the next ten years.

Growth is highly uneven throughout the Region. The Central Subregion accounted for 72 percent of total population growth; some Subregions hardly grew at all.

Population growth has slowed since 2003, and many counties have lost population in the last few years, mostly due to people moving out of the area to other parts of California.

Demographics of Residents

The Sierra Nevada is much less racially and ethnically diverse than the rest of California, although it is becoming slightly more diverse, particularly through a growing Hispanic presence, which now makes up 10 percent of the population.

The median age in the Region is 11 years older than in California overall, and growing older faster.

The Region does a better job of graduating students from high school than most of the State (88 percent of people in the Region have a high school diploma compared to 80 percent of Californians); however, only 21 percent of Sierra Nevadans have a four-year or higher degree compared to 29 percent for the State overall.

Per Capita Gross Domestic Product (GDP)

The region on average generated from \$14,000 to \$17,000 less annual GDP per person than the average for all of California between 2000 and 2008. In 2007, just prior to the recession, GDP per capita for California was \$49,500, but \$34,750 for counties entirely within the SNC Region. Placer and El Dorado Counties were right in between.

Median Household Income (MHI)

Median Household Income overall in the Region is only a little lower than for the state (\$57,000 vs. \$61,600) but is growing at a slower rate. But within the Region incomes are very unequal. The Central Subregion has by far the highest MHI in the Region (\$69,700 in 2009) and also grew the fastest in the past decade. MHI's in the other five Subregions are well below the state median, and several Subregions experienced decreasing household incomes.

Employment by Economic Sector

The three largest employment sectors in the Region are the same as for the State— health, retail trade, and education. The manufacturing and professional/tech sectors are relatively smaller in the Sierra Nevada economy than they are in California generally, while construction is relatively larger. Consistent between the Region and the State, the health sector is growing the fastest while manufacturing is rapidly declining as a component of the economy.

As defined by the California Employment Development Department (EDD), the Sierra Nevada region appears to have a higher level of 'green employment' than the average for California.

Sources of Income

For counties entirely within the SNC Region, earned income comprises a lower proportion (47 percent) of total personal income than for California (58 percent), or for Placer and El Dorado Counties (61 percent). Sierra Nevada Counties have higher levels of income comprised of interest, dividends, and rent (24 percent) than California (19 percent); and higher levels of social transfer payments (19 percent) than for the state (13 percent).

Unemployment Rates

For both the State and the Region, unemployment rose dramatically between 2007 and 2009 due to the recession. In all years, average unemployment in the Region has been about one percent lower than for the state. However, unemployment rates vary considerably across the Region. In 2009, when the California's unemployment rate was 13.8 percent¹, regional unemployment ranged from slightly less than 11 percent in the East Subregion to nearly 16 percent in North-Central. However, even these variations do not capture more localized struggles with high unemployment.

¹ These unemployment rates are Esri Business Analyst estimates, which are higher than what are reported by the US Census Bureau. Census Bureau unemployment data is available only by county and does not align with the SNC boundary.

While unemployment rates worsened in some Subregions in 2010, they improved in others—notably the North-Central Subregion.

Business Churn

Business churn indicates the rate of business creation and failure, and relocation of businesses into and out of an area. Robust churn tends to indicate a healthy business sector. Generally, business churn in the Sierra Nevada Region is fairly similar to the State overall.

Travel and Tourism Spending

Direct travel spending in the Sierra Nevada Region is estimated to be between \$3 billion and \$5 billion per year, out of total California travel spending of nearly \$100 billion. Ground transportation spending (largely higher gas cost) has been by far the fastest growing component of travel spending. Recreational expenditures were nearly stagnant between 1995 and 2007, while retail sales spending actually fell 4 percent.

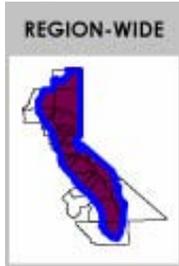
Renewable and Distributed Energy

Large-hydroelectric power² in the Sierra Nevada (9,300 megawatts of capacity) accounts for 73.5 percent of the State's hydroelectric capacity. An estimate of the retail value of electricity generated by Sierra Nevada water is \$2.4 billion in 2010.

Other renewable energy sources in the Region total to a capacity of 674 megawatts as of 2009 (102 megawatts of wind energy was added in 2009). Geothermal (all in Inyo County) is the largest source of renewable energy and the only one with significant growth between 1989 and 2009.

² Large-hydroelectric power generation is not classified as renewable energy by the California Energy Commission and is excluded from the Renewable Portfolio Standard (RPS). Large-hydro is defined by the Commission to be facilities of over 30 megawatt capacity.

Population of the Sierra Nevada Region



People are the driver of the local economy and consumers and stewards of local resources. Understanding the population of the Sierra Nevada Region and its growth trends is important to planning for the present and future needs of the communities and to ascertain the impacts of regional growth on sustaining and protecting the resources of the Region.

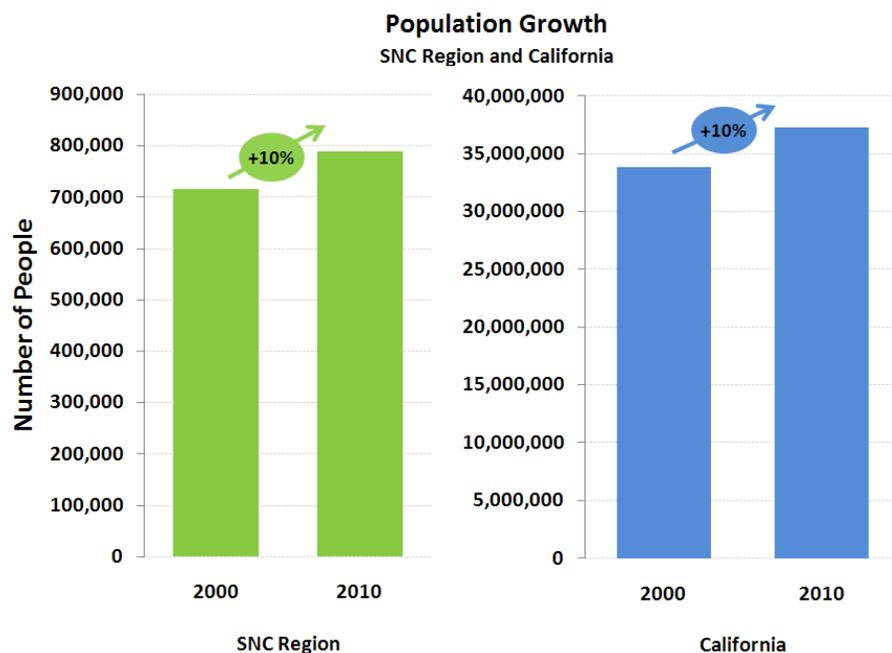
Between 2000 and 2010, the population within the Sierra Nevada grew by 10 percent – nearly exactly the same rate as California as a whole. The number of people in the Region increased by 72,000 – from 716,000 to 788,000. In 2010, 2.1 percent of Californians lived within the boundary of the SNC Region.

Population growth has not been constant over the past decade however. The *rate* of growth has been gradually slowing throughout this period. Growth has also been uneven throughout the Region. The twelve counties defined as entirely within the SNC Region, in aggregate, have actually been losing people each year since 2007, and at an increasing rate. Placer and El Dorado Counties (including those portions outside the SNC Region) have

maintained more robust growth, though the growth rate has been slowing since 2003. (See the next Indicator – Components of Population Change.)

The California Department of Finance (DOF) has released new post-census projections for population change from 2010 to 2020. This assessment predicts slower population growth than the 2007 pre-recession estimates. These figures don't allow correlation with the SNC boundary, but interestingly, the DOF predicts that growth for the aggregate of the counties entirely within the SNC Region will be 11.4 percent, almost exactly the same rate of growth estimate as for the state as a whole – 11.5 percent growth over the next ten years.

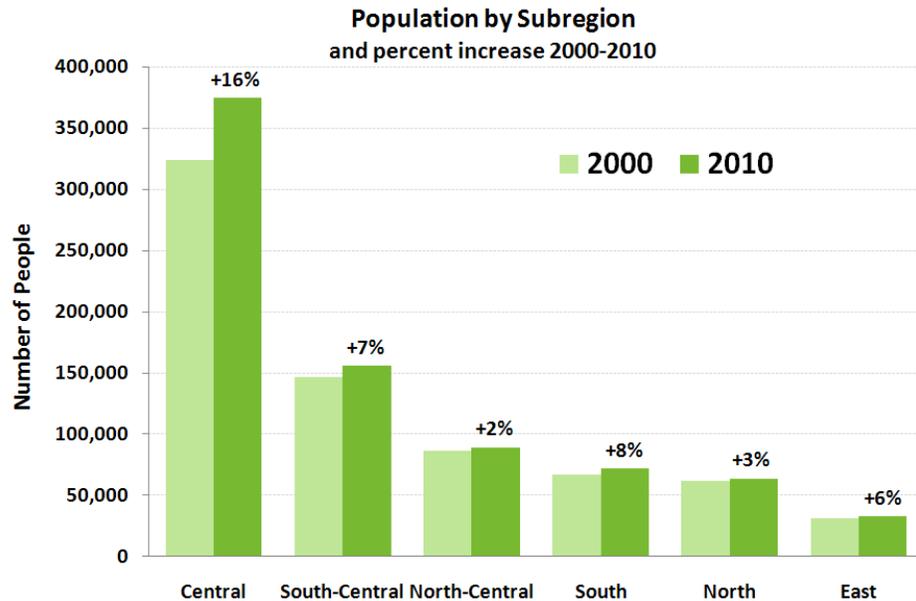
The majority of the population growth over the past ten years occurred in the Central Subregion, which has the largest population (375,000 in 2010) and grew at the fastest rate (16% over the past ten years). In fact, this one Subregion added 51,500 people and accounted for



Geographic Definition: Census Block
Data Source: U.S. Census Bureau, 2000 and 2010 Census of Population and Housing

72% of overall regional growth. (The portion of El Dorado County within the SNC Region grew by 23 percent.) The South-Central Subregion added about 10,000 people, and the South 5,000. The other Subregions grew by a bit less than 2,000 people each. Alpine, Sierra, and Plumas Counties, as well as the portion of Tehama County within the SNC Region, all lost population.

As of 2010, the Central Subregion accounted for 47.6 percent of the Sierra Nevada Region’s population. About 20 percent of the Sierra Nevada’s population lives in the South-Central Subregion. The East Subregion’s 33,000 people represent just four percent of the total regional population.



Geographic Definition: Census Block
Data Source: U.S. Census Bureau, 2000 and 2010 Census of Population and Housing.

For most of the nine counties that

straddle the SNC western boundary, the majority of the population lives outside of the Sierra Nevada, largely in cities such Bakersfield, Fresno, Chico, and Redding. Some of these counties have a very small proportion of residents living inside the SNC Region: just 1.9 percent for Fresno County, 2.0 percent for Tulare, and 2.1 percent for Kern. In the northern counties, with

Share of Total SNC Region Population by Subregion 2010	
Central	47.6%
South-Central	19.8%
North-Central	11.3%
South	9.1%
North	8.0%
East	4.2%

smaller Valley population centers, the proportion of people living in the Sierra Nevada is larger, though still small: 29 percent for Butte County and 11 percent for Shasta, though only 3 percent for Tehama.

Placer and El Dorado Counties are a somewhat different case. Both counties have significant population centers in the Lake Tahoe basin that are outside the SNC Region. Additionally, a large portion of Placer County’s residents live west of the SNC boundary. The ratios of people living inside the Region to the

overall population of these counties are also changing. In 2000, 40 percent of Placer County residents lived in the SNC Region, but that percentage dropped to 33 by 2010 as most of the growth was in communities such as Roseville and Lincoln. (Lincoln was the fastest growing city in the United States over the past decade.) However, the proportion of El Dorado residents residing in the SNC Region actually increased slightly over the decade to nearly 83 percent in 2010.

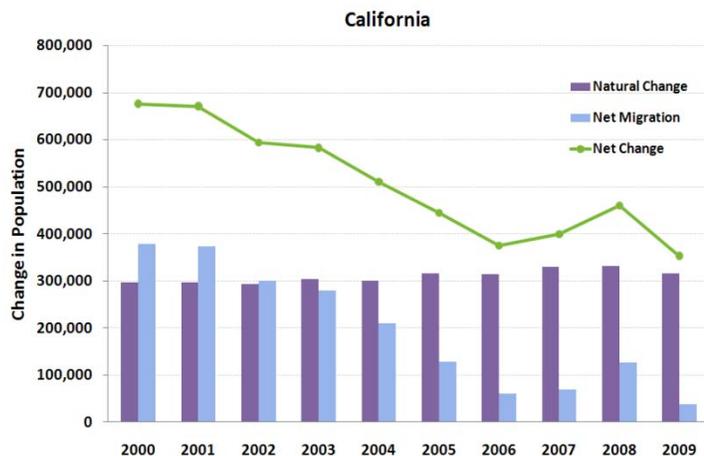
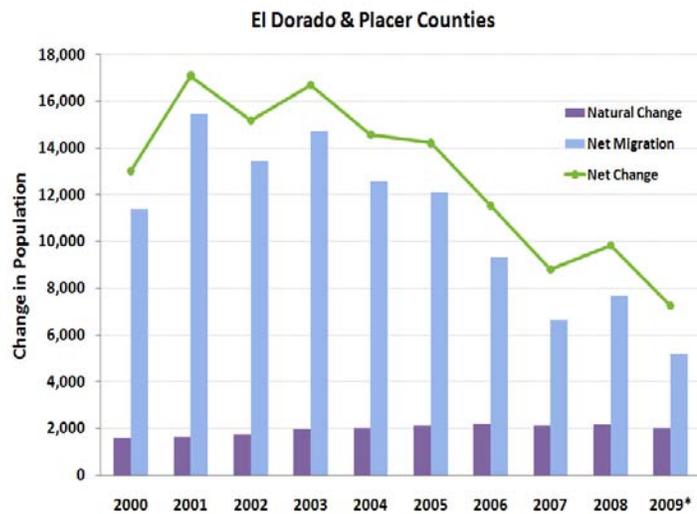
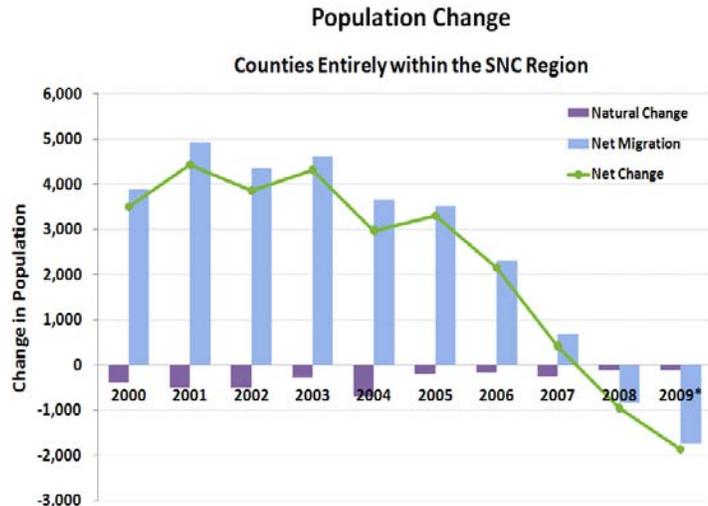
Components of Population Change (for a Portion of the Region)



To plan for the Region's and for communities' needs, we would like to know not only whether the population is growing or shrinking, but what

factors are creating the change. Are local families thriving and expanding or are children leaving the area? Are people moving into the area from other parts of California and the U.S., or from other countries? These determinations contribute to our understanding of the overall demographic trends in the Region. For the counties defined as entirely within the SNC Region, population growth has been slowing since 2001 and the population has actually been declining since 2007. Since at least 2000, death rates have exceeded birth rates in these counties, leading to a negative 'natural' population change. Therefore, between 2000 and 2006, people moving into these counties accounted for all the population growth. In 2008 and 2009, however, more people emigrated from these counties than immigrated, accounting for the recent population decline.

Because 48 percent of Sierra residents live in the SNC portion of El Dorado and Placer counties, it is interesting to note that the growth rates in these two counties have also slowed since 2001, although they have maintained a substantial net growth through 2009 as a result of positive net migration and a consistent natural growth rate by way of higher birth rates due to a younger population. However, since

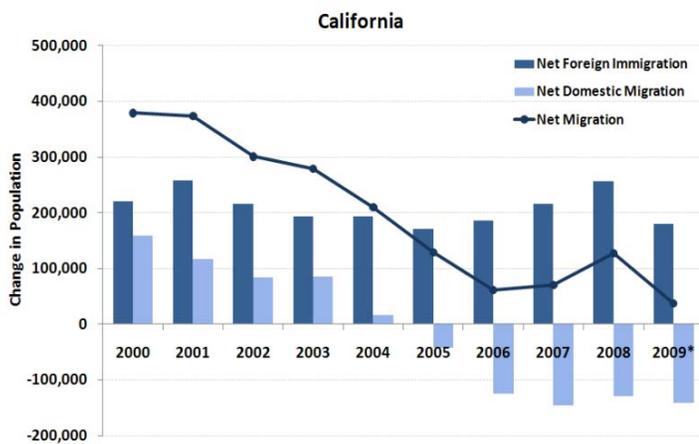
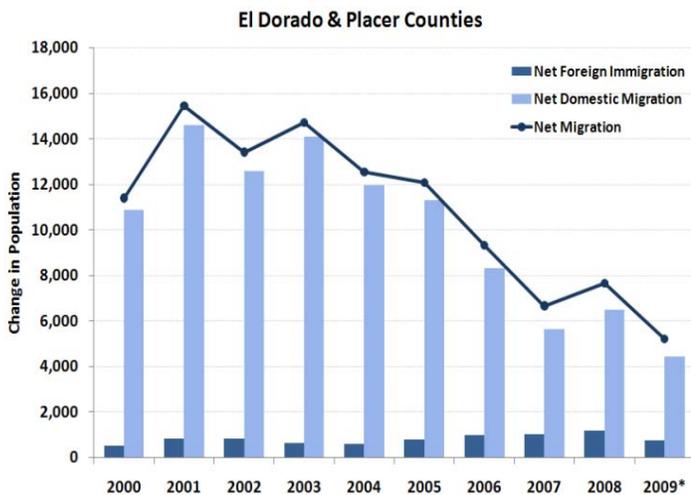
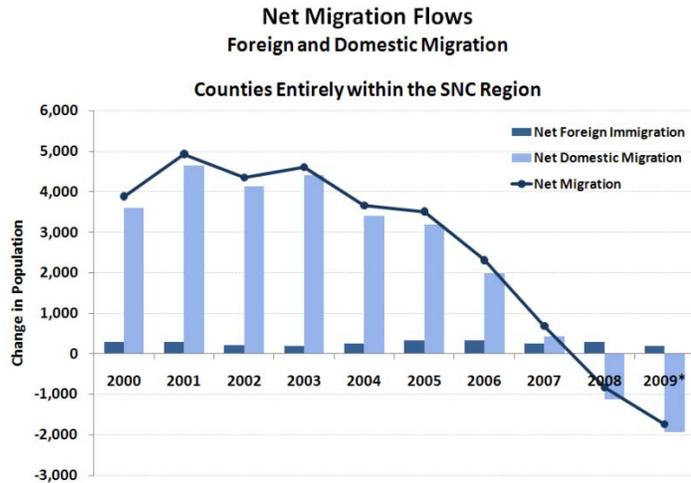


*Preliminary population estimates for 2009
Data Source: California Department of Finance
Analysis: Collaborative Economics

exactly half of El Dorado and Placer County’s combined population reside outside the Region, with much of the growth occurring west of the SNC boundary, what is specifically occurring in the SNC portion of these counties is unclear.

California’s overall growth rate has also slowed during the decade, falling from nearly 700,000 per year in 2000 to about 350,000 per year in 2009. This decline was entirely due to a decline in net migration³. However, a review of the sixth chart shows that foreign immigration has remained consistently strong through all the years. In contrast, while 150,000 more Americans moved to California than moved out of the state in 2000, since 2005 that trend has reversed and now many more Californians leave the state each year.

Since 2001, net migration has been on a downward slope both in the counties entirely within the SNC Region and El Dorado and Placer Counties, as well as for California. However in 2008, the net migration trend in the counties entirely within the SNC Region diverged from the California and El Dorado and Placer Counties. It marked the first year in which more people left the core of the Sierra Nevada than entered the Region. This is due to declining domestic migration, as the region has continued to attract a small number of foreign immigrants. El Dorado and Placer Counties continue



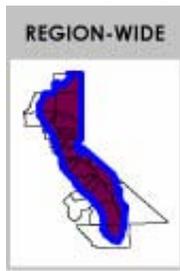
*Preliminary population estimates for 2009
Data Source: California Department of Finance
Analysis: Collaborative Economics

³ Net migration includes all legal foreign immigrants, residents who left the region to live abroad, and domestic migration, the balance of people moving to and from the region from within the United States. It does not include illegal immigration.

Net Migration 2009-2009			
	Counties Entirely Within the SNC Region	El Dorado & Placer Counties	California
Domestic	-1,937	4,447	-141,865
Foreign	194	770	179,493

to experience positive domestic migration, though whether that is true for the portions of the counties within the SNC Region is unknown.

Demographics of Residents



As with Components of Population Change, changes in the demographics of residents may call for changes in services and may have economic impacts, e.g., educational attainment of residents is an indicator of the opportunity for economic vitality.

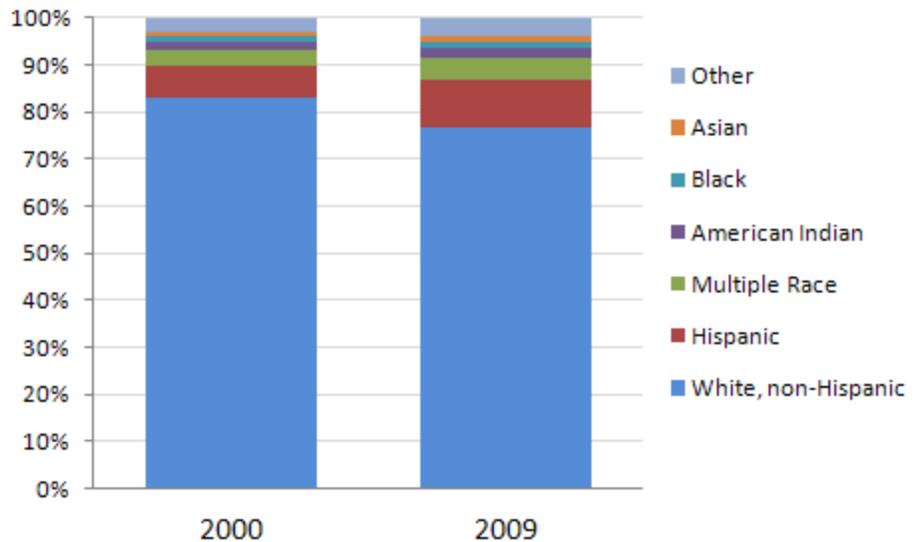
The Sierra population is becoming more diverse, although at a slower rate than California as a whole—the white, non-Hispanic population fell from 83 to 77 percent of the total population between 2000 and 2009.

The Hispanic population grew from 7 percent to 10 percent of the

population of the SNC Region. However, there is considerable variation between counties. Most of the counties of the Central, North-Central, and North Subregions are about 8 percent Hispanic. Mono County and the Sierra portions of Tulare, and Fresno Counties have higher Hispanic populations: 23 percent, 17 percent, and 14 percent respectively. Amador County and the portions of Madera, Fresno, Tulare, and Kern Counties within the Sierra Nevada Region have the fastest growing Hispanic populations.

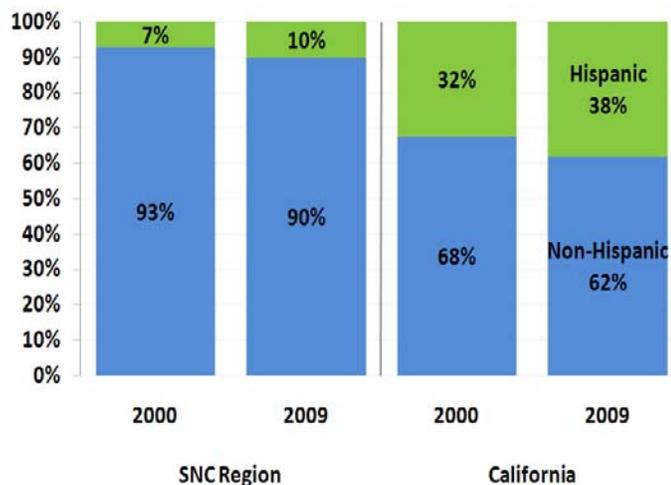
American Indians account for 2.1 percent of the Sierra Nevada population. A few counties have much higher native populations: Alpine County is 19 percent American Indian, and Inyo is 10

Race & Ethnicity - SNC Region



Geographic Definition: Census Block Data Source: U.S. Census Bureau, 2000 Census of Population and Housing. ESRI forecasts for 2009

Hispanic Population



Geographic Definition: Census Block Data Source: U.S. Census Bureau, 2000 Census of Population and Housing. ESRI forecasts for 2009

percent. The portion of the population made up of other minority groups is small: 1.2 percent African-American and 1.5 percent Asian.

It should be noted that Lassen County is a demographic anomaly in the Region. Census Bureau data indicates that the minority populations are much higher than one might expect for that area: 18 percent Hispanic and 8 percent African-American. The presumption that this is due to the large prison population and workforce in that county is supported by another statistic from the Census Bureau – males made up 64 percent of Lassen’s population in 2009.

Two racial classifications that increased in size substantially between 2000 and 2009 were people who classified themselves as ‘multiple race,’ which grew from 3 percent to 4.5 percent; and ‘other,’ which grew from 2.5 percent to 3.7 percent of the total regional population. There has been a general trend in more recent years of people who previously self-classified as a single race to change their status to ‘multiple’ or ‘other’ in later surveys. This should be kept in mind when considering whether changes in demographic data represent actual changes in the character of residents or if part of the explanation for any apparent demographic shifts reflects changes in how people describe themselves.

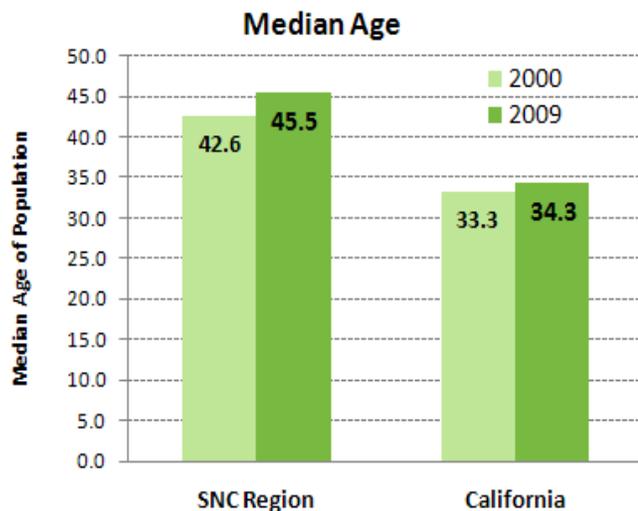
The most significant demographic distinction between the SNC Region and California as a whole is in the Hispanic make up. While the Hispanic population of the Sierra Nevada expanded three percentage points to comprise 10 percent of the population, California’s Hispanic population grew from 32 to 38 percent of the State’s population.

The SNC Region is older and aging more rapidly than the population of California overall. The median age in the SNC Region increased from 42.6 to 45.5 between 2000 and 2009. In the same time period, California’s median age increased by only one percentage point to 34.3 in 2009, more than 11 years younger than the median age for the SNC Region.

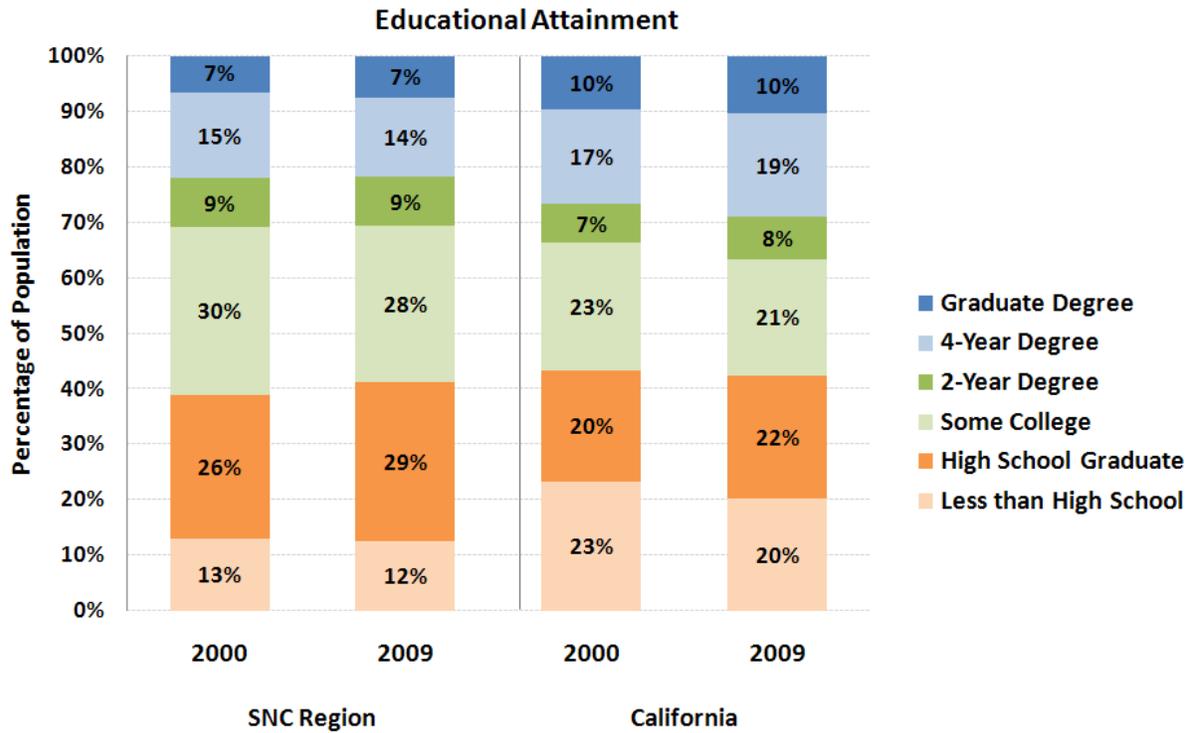
The Sierra Nevada is more successful at getting kids to graduate from high school than is the State as a whole. However, the population of the Region has a lower proportion of

college graduates than the state average. For SNC Region:

- In 2009, only 12% of the population had not graduated from high school; overall, 20% of Californians lacked a high school diploma. Both the state and the Region showed improvement in graduation rates.
- A particularly high proportion of Sierra Nevada residents (28%) had attended some college without completing any kind of degree, compared to 21% of all Californians.



- In 2009, 30% of Sierra Nevada residents possessed a 2-year degree or higher; while 37% of all Californians had some sort of college degree. The gap was even more evident at the higher levels, where only 21% of Sierra Nevada residents had obtained a 4-year or graduate degree compared to 29% for the state.



Geographic Definition: Census Block
 Data Source: U.S. Census Bureau, 2000 Census of Population and Housing. ESRI forecasts for 2009.

Per Capita Gross Domestic Product (for a portion of the Region)



Gross Domestic Product (GDP) is the end value of everything produced by businesses and individuals and is a measure of the size of an economy. GDP is a basic measure of economic health and can indicate whether a region's economy is growing or shrinking. When expressed on a per capita basis it highlights a workforce's effectiveness in creating economic wealth. The level and trend over time of per capita GDP provides a benchmark to gage the needs (improved education?) and opportunities (new policies for business development?) for improving the economic vitality of the region.

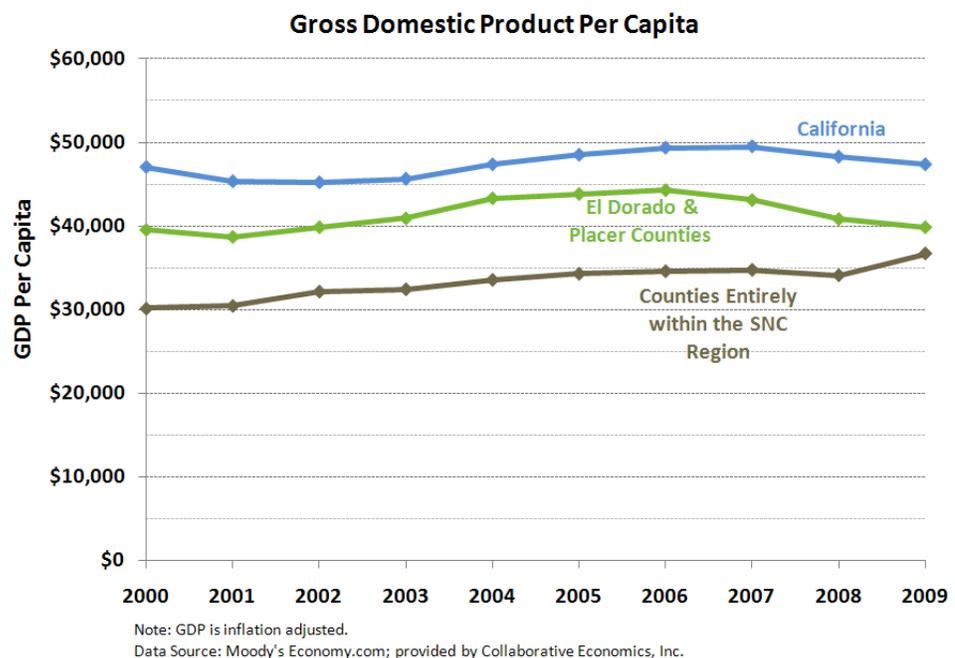
Gross domestic product (GDP) per capita is significantly lower in the Sierra Nevada than for California as a whole. From 2000 to 2007, per capita GDP in the twelve counties defined as entirely within the SNC Region grew steadily from \$30,200 to \$34,800 (adjusted for inflation to 2009 dollars) but throughout this period trailed average state GDP by between \$14,000 and \$17,000 in each year. In 2009, as California's per capita GDP declined in the recession, the economies of these twelve counties increased sharply to \$36,700, narrowing the gap with the state to \$10,700.

Whether 2009 was an anomaly for the Sierra Nevada region or whether the Region will fair relatively better economically and continue to close the gap with the State will only be known when data for subsequent years becomes available.

However, there was a sharp uptick in the number of

new businesses in the previous year (2008) and a relatively low number of business failures [see section on Business Churn]. This may have created a strong basis for a better 2009.

El Dorado and Placer Counties have a higher per capita GDP than the rest of the SNC Region, though still lower than the State. However, these two counties exhibited significant economic declines in GDP between 2006 and 2009.



The twelve counties entirely within the SNC Region accounted for a total of \$13.15 billion of GDP in 2009, compared to California's total GDP of \$1.8 trillion. A rough estimate is that the total GDP for the entire SNC Region was about \$30 billion⁴, which would be 0.7 percent of the statewide figure. In 2009, total GDP in the counties entirely within the SNC Region increased by seven percent over 2008, much faster growth than in previous years. Mariposa and Mono Counties had particularly robust growth in 2009. In contrast, the total GDP of California, adjusted for inflation, fell nearly four percent from 2008 to 2009⁵.

Gross Domestic Product				
Counties Entirely Within the SNC Region	GDP in \$ Millions		Percent Change	Percent Population in SNC Region *
	2008	2009		
Mariposa	\$556	\$648	+17%	100%
Mono	\$1,000	\$1,128	+13%	100%
Amador	\$1,248	\$1,378	+10%	98%
Alpine	\$56	\$62	+10%	100%
Lassen	\$1,120	\$1,211	+8%	100%
Calaveras	\$1,028	\$1,110	+8%	100%
Tuolumne	\$1,892	\$2,029	+7%	100%
Plumas	\$805	\$857	+7%	100%
Inyo	\$760	\$806	+6%	95%
Nevada	\$3,375	\$3,514	+4%	100%
Modoc	\$355	\$337	-5%	89%
Sierra	\$99	\$71	-28%	100%
Total	\$12,295	\$13,152	+7%	99%

Note: GDP is inflation adjusted. * Population is 2010 census

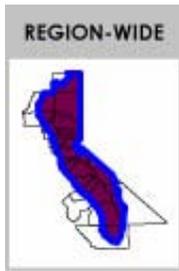
Gross Domestic Product				
Counties Partially Within the SNC Region	GDP in Millions		Percent Change	Percent Population in SNC Region *
	2008	2009		
Tehama	\$1,860	\$2,066	+11%	3%
Yuba	\$1,814	\$1,963	+8%	15%
Placer	\$15,608	\$15,889	+2%	33%
Kern	\$33,115	\$33,372	+1%	2%
Madera	\$4,445	\$4,460	0%	19%
Tulare	\$14,619	\$14,598	0%	2%
Butte	\$8,533	\$8,386	-2%	29%
Fresno	\$37,558	\$36,857	-2%	2%
Shasta	\$6,486	\$6,294	-3%	11%
El Dorado	\$5,591	\$5,097	-9%	83%
Region Total	\$129,631	\$128,982	-1%	13%

Note: GDP is inflation adjusted. * Population is 2010 census

⁴ Based on Regional population and estimate of Regional median (not average) per capita GDP

⁵ U.S. Department of Commerce, Bureau of Economic Analysis: California's Real GDP adjusted for inflation (chained 2005 dollars) was \$1.766 trillion in 2008 and \$1.701 trillion in 2009.

Median Household Income

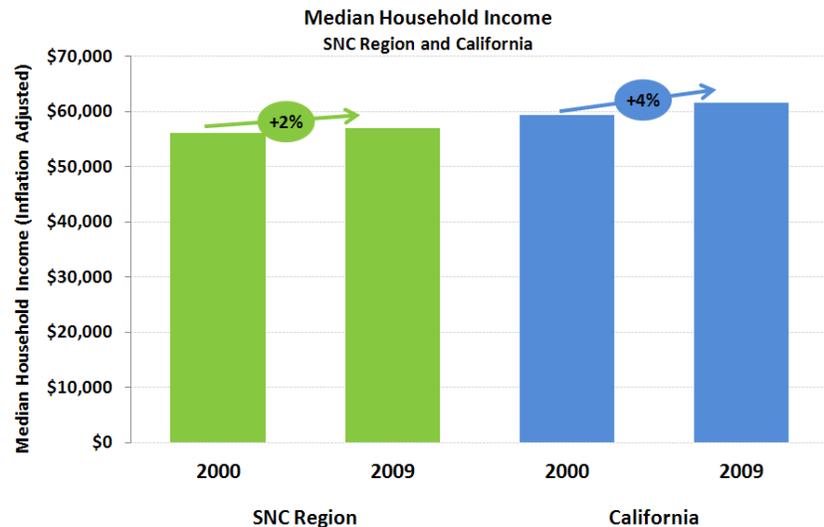


Household Income is the most direct measure of how average families are doing economically. It is the flip side of per capita GDP – it measures what people earn and receive as compared to the wealth they produce.

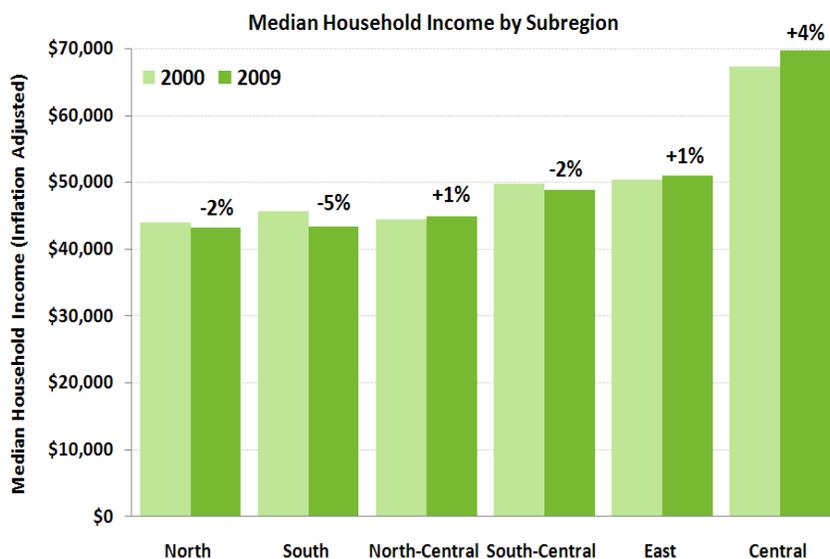
With an average median household income of roughly \$57,000 in 2009, the SNC Region fell \$3,600 below the state median. However, this aggregation masks large income differences within the Sierra Nevada.

There is a large income disparity between the Central Subregion and the rest of the Sierra. The median household income level in the Central Subregion was \$69,700 in 2009 (considerably higher than California) while the other five Subregions had average income levels ranging between \$43,200 and \$51,000 (considerably lower than the State). With a four percent increase from 2000 to 2009, average income of the Central Subregion also grew the fastest. Average median household income in three of the Subregions, adjusted for inflation, declined in the past decade.

Even though the Region’s median household income increased by two percent in the last decade, the median income for Californians as a whole increased at a faster rate—4 percent, widening the income gap between those living in the Sierra Nevada and the rest of the State.

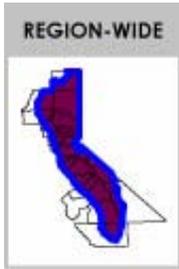


Note: For SNC Region, MHI is the average of the median household incomes for each county
 Geographic Definition: Census Block
 Data Source: U.S. Census Bureau, 2000 Census of Population and Housing. ESRI forecasts for 2009.



Note: For each Subregion the MHI is the average median household income for each county in the Subregion
 Geographic Definition: Census Block
 Data Source: U.S. Census Bureau, 2000 Census of Population and Housing. ESRI forecasts for 2009.

Employment by Economic Sector



Measuring employment by industry illustrates the composition of the Region's economy. Employment shifts across industry sectors can be indicative of structural changes to the economy. The economy constantly evolves over time, with new industries growing and some old ones withering away. Understanding the employment levels and growth, or decline, of industry sectors helps communities plan for their educational, infrastructure, and policy needs.

Health, Retail Trade, and Education represent the largest sectors of both the Region's and the state's economies. Health accounted for 14.5 percent of total jobs in the SNC Region in 2009, compared to 12.4 percent of California's jobs.

Health was also the fastest growing sector in the Sierra since 2000, overtaking Retail Trade as the top employer. California followed a similar trend with Health overtaking the Manufacturing and Retail Trade sectors, which had been the biggest employers in 2000. Other economic sectors that have experienced some growth in the Sierra include: education, professional & technology, finance, and arts & entertainment. All of these sectors displayed similar growth patterns to the whole of the state.

Manufacturing has exhibited the steepest decline in the Sierra Nevada, with employment falling from 7.7 percent to 5.2 percent of total jobs between 2000 and 2009. This is not just a regional phenomenon, however. Manufacturing declined as an employer of California's workforce at essentially the same rate (but representing a larger proportion of workers), dropping from 13 percent to 9 percent of the workforce during the same period. In 2000, manufacturing was by far the largest employment sector in the state – now it is fourth (and ninth in the Sierra).

Other sectors with significant declines in employment in the Sierra include public administration and transport/warehousing. These declines are not in line with state trends; public administration employment actually increased for the state. Construction in both the Sierra and California grew as a provider of jobs between 2000 and 2007 and then immediately saw a drop between 2007 and 2009 due to the recession.

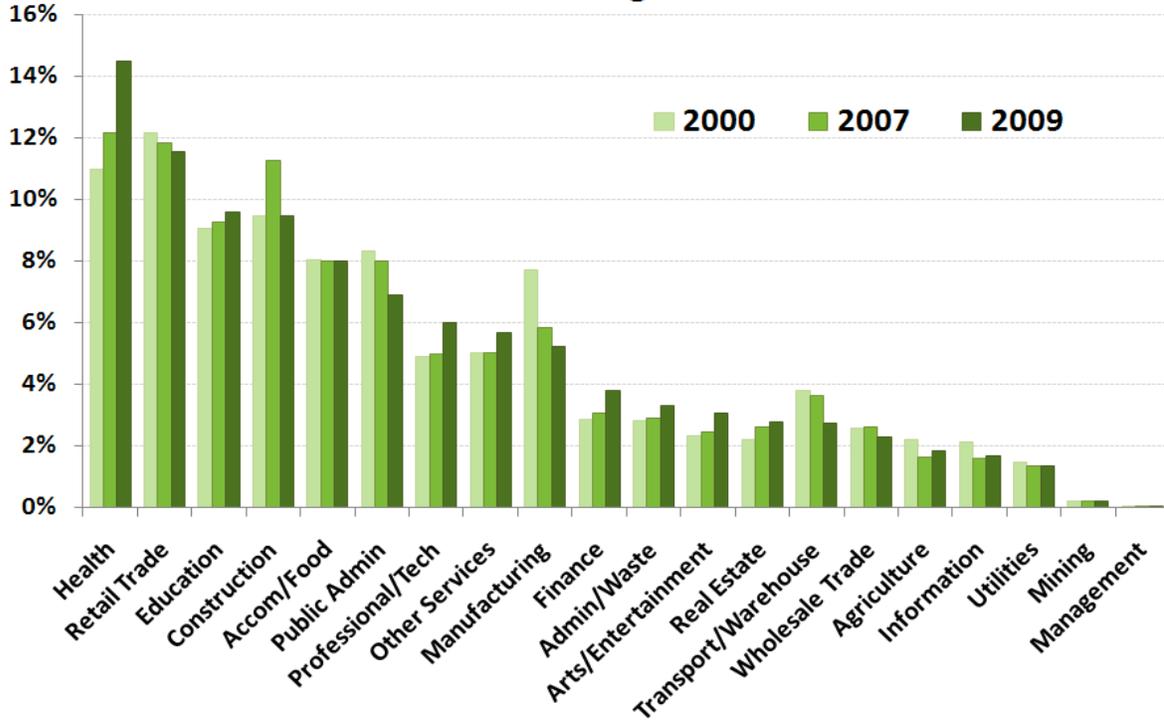
The Green Economy

The green economy is not an employment sector as described above, but rather individual jobs within any industry that support a greener economy. As defined by the California Employment Development Department (EDD), the green economy consists of jobs whose activities:

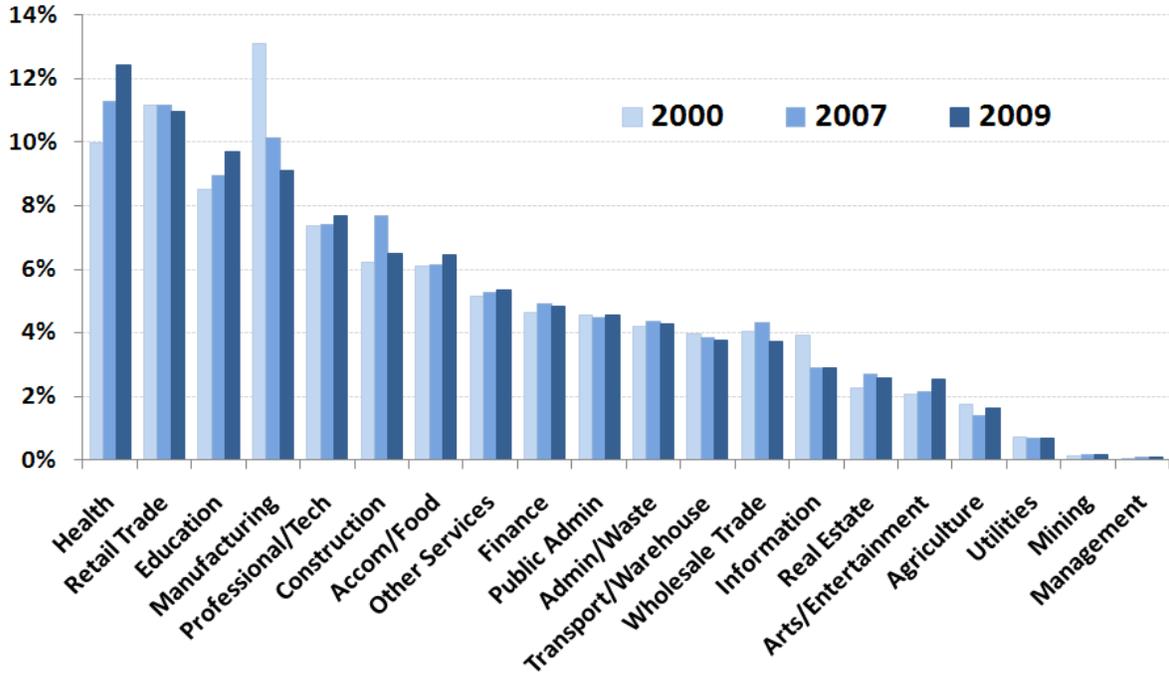
1. Generate and store renewable energy
2. Recycle existing materials
3. Manufacture, distribute, construct, install, or maintain energy efficient products
4. Foster education, awareness, or compliance of the green economy
5. Manufacture natural and sustainable products

Employment by Industry Percent of Total Employment by Sector

SNC Region



California



Geographic Definition: Census Block
 Data Source: U.S. Census Bureau, 2000 Census of Population and Housing. ESRI Forecasts for 2007 and 2009.

The 2010 EDD *California's Green Economy* survey reported 432,840 green jobs out of 12.6 million total jobs reported in the survey, indicating that green jobs comprise 3.4 percent of the state's employment. The survey breaks down these jobs into nine regions; unfortunately, the configuration of these regions fits very poorly with the configuration of the SNC Region, making it impossible to provide an accurate estimate of green jobs in the Sierra Nevada using this information.

The only EDD region that is entirely within the SNC Region is their Central Sierra region consisting of Alpine, Amador, Calaveras, Inyo, Mariposa, Mono, and Tuolumne Counties. These seven counties reported 1,990 green jobs, which accounted for 4.8 percent of total reported jobs in those counties, a higher ratio than the state average.

The Northern California region includes Lassen, Modoc, Nevada, Plumas, and Sierra Counties, but also other northern and north-west counties. This northern region reported 10,360 green jobs accounting for 8.1 percent of total jobs. This ratio is much higher than the state average and is by far the 'greenest' economy in California. However, only about 30 percent of the population of these northern counties resides in the SNC Region, so it impossible to say if this 8.1 percent figure is indicative of the North and North-Central SNC Subregions (and Nevada County in the Central Subregion). But it would be reasonable to surmise that there is enough similarity among these counties that green employment in the northern Sierra is considerably higher than the state average of 3.4 percent.

Placer and El Dorado Counties, with their larger populations, is a more difficult case to assess. They are included in the Greater Sacramento region in the EDD analysis. This region reported only 2.9 percent green employment, lower than the state average.

It is unclear if the portions of these counties inside the SNC Region have a green employment rate higher than 2.9 percent. Although one cannot say for sure, based on the figures described above, it seems likely that the SNC Region has higher 'green employment' than the state average.

The EDD report also categorizes green jobs by industry sector, but only for the state as a whole, not by county or region. The employment sectors with the most green jobs are manufacturing (accounting for 20.5 percent of all green jobs in California), construction (14.2 percent), professional & technical services (9.7 percent), wholesale trade (7.6 percent), and agriculture and forestry (7.3 percent). The Utilities sector (accounting for 4.1 percent of all green jobs) has the highest proportion of green jobs of any sector – 28 percent of Utilities jobs are green.

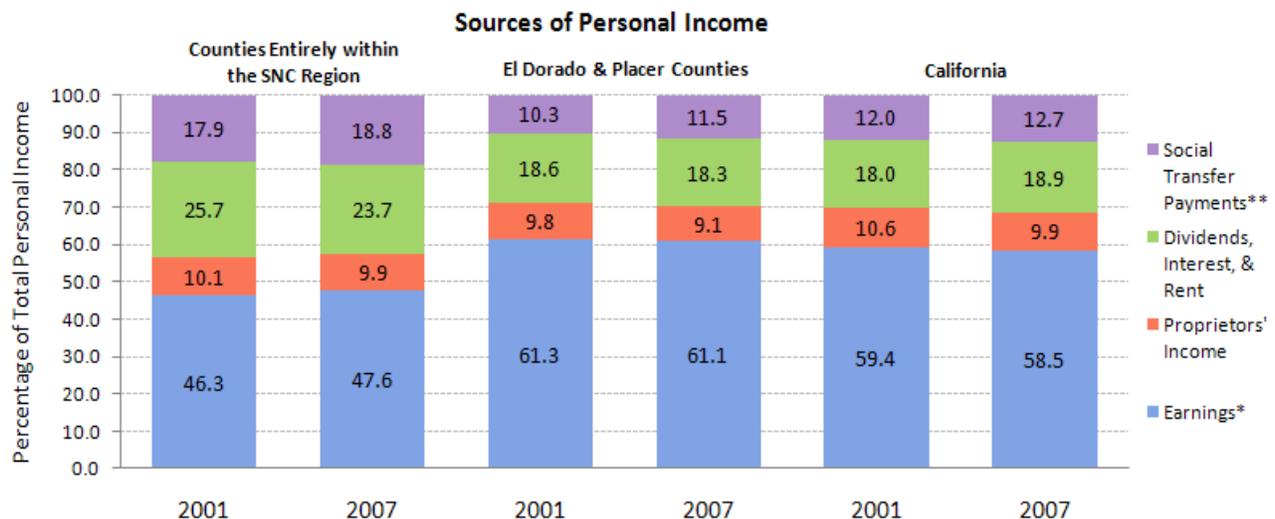
Employment in manufacturing and professional services is lower in the SNC Region than for the state, indicating two large sectors where the Sierra lacks green job opportunities. On the other hand, statewide, 8.8 percent of agriculture and forestry jobs were reported as 'green'. It is possible that some of the forestry work taking place in the Sierra around fuels treatments and biomass is not being picked up by the EDD. As needed work in this area expands, the role of the Sierra Nevada in California's 'green economy' needs to be tracked and documented.

Sources of Income (for a Portion of the Region)



While the dominant source of income for a community, region, or state is employment earnings, there are other significant sources: business and investment income; rent; and a variety of local, state, and federal social transfer payments, including social security. The relationship between those sources and changes over time provides another window into the economic balance and vitality of a region.

In the twelve counties defined as entirely within the SNC Region, retirement and investment income provides a much larger share of total income than for the State, or for Placer and El Dorado Counties. In 2007, 19 percent of the income in the twelve counties was social transfer payments, in contrast to 13 percent for California and 11 percent for Placer and El Dorado Counties. The twelve counties also had a much higher proportion of investment income (24 percent from dividends, interest, or rent) compared to 19 percent for the state and 18 for Placer and El Dorado. Across the board, proprietors' income accounted for 10 percent of total income.



*Earnings includes Wage & Salary Disbursements, Supplements to Wages and Salaries, and Adjustments for Residence; less Contributions for government social insurance.

**Social Transfer Payments (Federal, State, and Local) is Personal Current Transfer Receipts.

Data Source: U.S. Bureau of Economic Analysis

Income from 'earnings' (wages and salaries) accounted for only 47.6 percent of total income in the twelve counties entirely within the Region, compared to 61 percent in Placer and El Dorado Counties and 58.5 percent for the State.

Although earnings in the twelve counties accounts for less than half of total income, that source grew slightly from 2001 to 2007, increasing from 46.3% to 47.6% of total income. Earnings as a proportion of total income was unchanged from 2001 to 2007 for Placer and El Dorado Counties, and declined overall in California by one percentage point. Social transfer payments increased by one percentage point, while dividends, interest, and rent declined sunstantially from 25.6 percent to 23.7 percent in the twelve counties.

In real terms, total income in the twelve counties entirely within the SNC Region rose 17.2 percent from 2001 to 2007, to \$12.7 billion. This was better than for the State, where total income rose 14.4 percent (to \$1.573 trillion). Placer and El Dorado Counties (including those portions outside the Region) had a more robust income growth of nearly 27 percent.

In the twelve counties, social transfer payments was the fastest growing income component, increasing 23 percent in real terms from 2001 to 2007. However, this was about the same rate of growth as for California, while transfer payments increased 41 percent in Placer and El Dorado Counties.

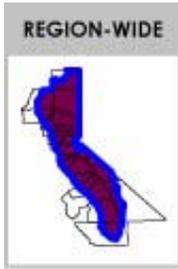
Earnings (wages and salaries) in the twelve counties increased 20 percent (over \$1 billion) between 2001 and 2007, compared to a 13 percent increase in California. Earnings increased 26 percent in Placer and El Dorado Counties.

Dividend, interest, and rent income increased weakly in the twelve counties (8 percent real growth from 2001 to 2007 – with most of that growth just in the last year) compared to Placer and El Dorado (25 percent) and California (20 percent).

Proprietors' income declined dramatically in 2006-2007, erasing nearly half the gains since 2001.

Percent Change in Personal Income						
Source of Income	Counties Entirely Within the SNC Region		El Dorado & Placer Counties		California	
	2001-2007	2006-2007	2001-2007	2006-2007	2001-2007	2006-2007
Social Transfer Payments (Federal, State, and Local)**	+23%	+3%	+41%	+5%	+21%	+3%
Earnings*	+20%	+2%	+26%	+2%	+13%	+2%
Proprietors' Income	+14%	-11%	+17%	-11%	+7%	-6%
Dividends, Interest, & Rent	+8%	+6%	+25%	+6%	+20%	+7%

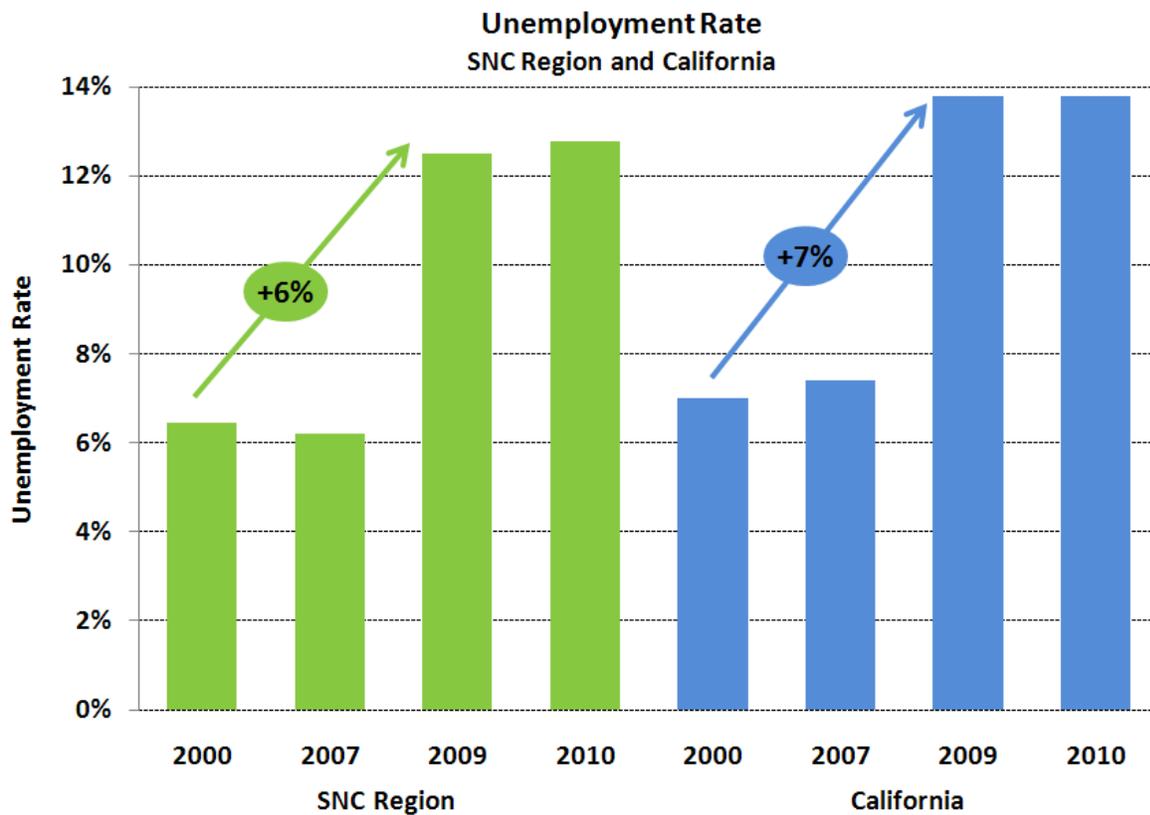
Unemployment Rate



Different regions can have very different economic toolboxes. A diversified local economy may hedge against high employment; on the other hand, a specialized industry base may more vulnerable or less vulnerable to a recession. In any case, the fact is that unemployment rates can vary a great deal from one region to another, and each region needs to be able to assess its economic vulnerabilities.

The U.S. economic recession hit California and the SNC Region hard.

Unemployment in the Region and the State essentially doubled from 2007 to 2010: from 6.2 to 12.8 percent within the SNC Region and from 7.4 to 13.8 percent in the State. Both before and during the recession, unemployment in the SNC Region as a whole has been about one percent lower than the State as a whole.

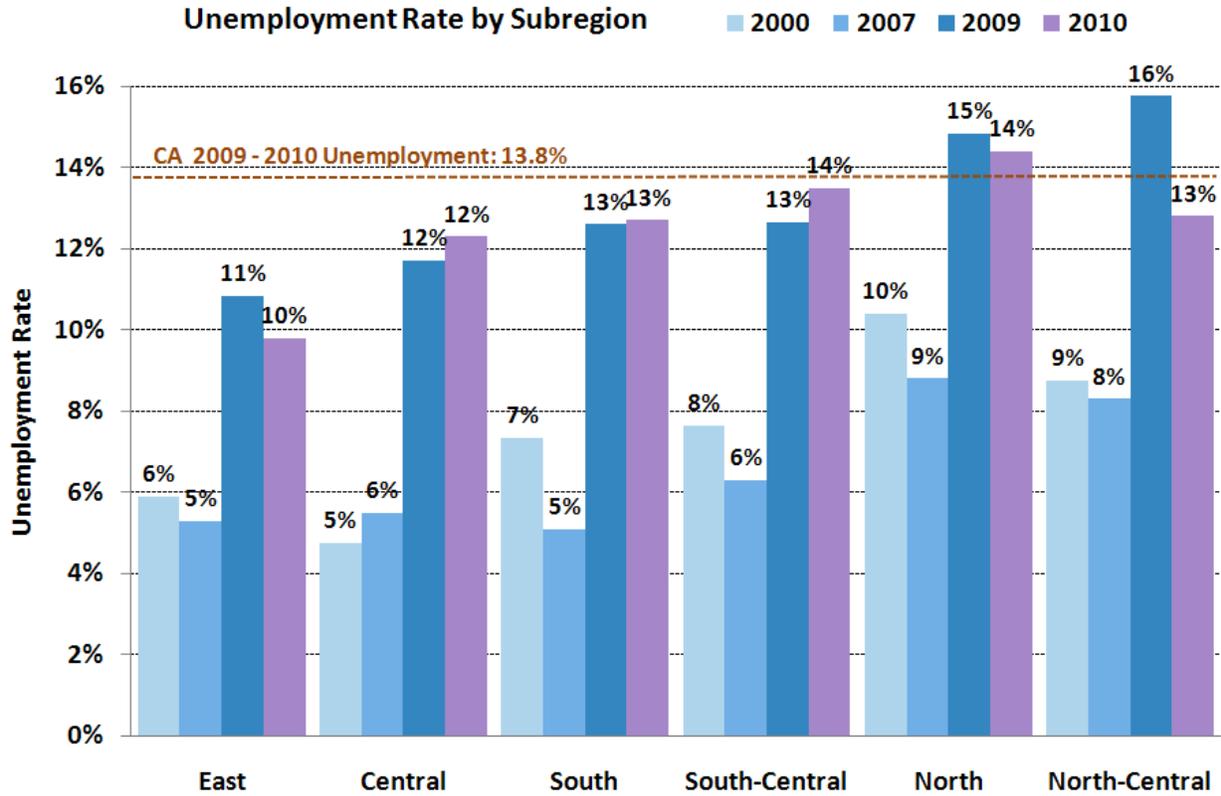


Geographic Definition: Census Block

Data Source: U.S. Census Bureau, 2000 Census of Population and Housing. ESRI forecasts for 2007-10.

The unemployment rate varies greatly between the Subregions, however. Between 2000 and 2007 all of the Subregions except the Central experienced an improving employment picture. Nevertheless, the North and North-Central Subregions struggled with comparatively high unemployment even during that period.

That pattern has carried through the current economic downturn. In 2009, the North and North-Central Subregions continued to exceed the state average with 15 and 16 percent unemployment respectively. The East Subregion continues to have the lowest unemployment rate, with the remainder just a little below the state average.



Geographic Definition: Census Block

Data Source: U.S. Census Bureau, 2000 Census of Population and Housing. ESRI forecasts for 2009 & 2010.

Business Churn (for a Portion of the SNC Region)

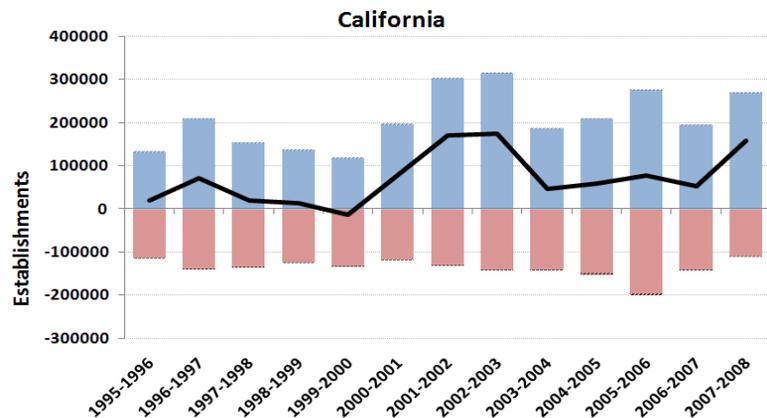
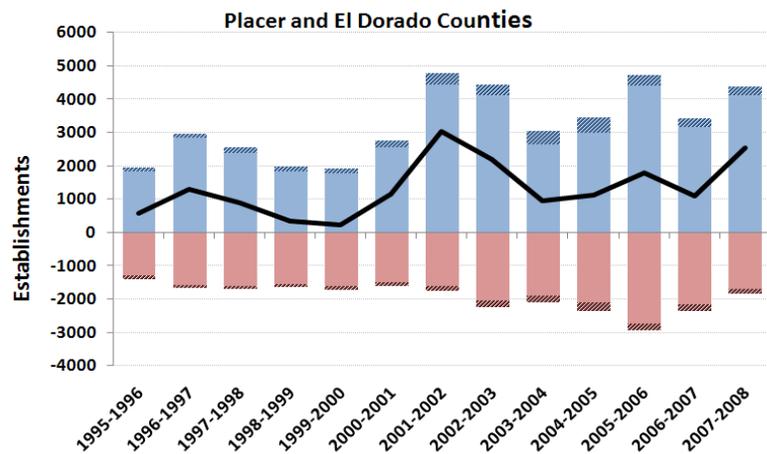
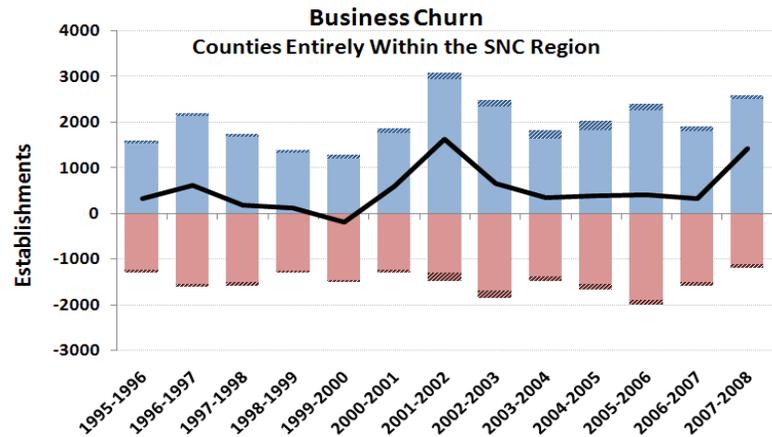


Business churn, the pattern of how businesses start and fail and relocate, reflects the dynamism of the economy.

An economy “churns” as business establishments open, close, move in, and move out of the area. A dynamic, healthy economy usually has a high rate of churn with more firms opening and moving in, than closing and moving out of the area.

What is true for the SNC Region and California overall is that almost all of the net new business establishments are the product of business creation rather than firms moving into the region. In other words, business relocations are a very small proportion of the churn in the Region’s and the State’s economies. The growth in business establishments is based almost entirely on how much greater the number of company openings are than business shutdowns.

The annual number of business openings in counties entirely within the SNC Region has grown faster over the last decade than the number of business closings. Openings have exceeded closings—sometimes by large margins—every year since 2000. Between 1995 and 2008, these counties gained from 2,000 to 4,500



Geographic Definition: County
 Source: National Establishment Time Series Database (NETS)
 Analysis: Collaborative Economics

- ▨ Firms Moving In
- ▨ Firms Moving Out
- Net Firm Churn (Gains-Losses)
- Firm Openings
- Firm Closings

establishments annually due to businesses opening or moving in, while losing an average of 1,500 to 3,000 establishments annually due to businesses closing or moving out. The annual net gain was typically about 500 businesses per year.

Placer and Eldorado Counties have experienced even greater churn and higher net gains (though the majority of these were likely outside of the SNC Region).

The churn in the counties within the SNC Region, as well as Placer and El Dorado Counties, produced an overall net gain in jobs in every year between 1995 and 2008 except for 1999-2000. Since the latest data available is 2008, the recent recession will likely impact this trend.

In terms of how this churn relates to the total number of business establishments in a region or the state, for the counties entirely within the SNC Region, 500 establishments represents about two percent of the total number of establishments. The average net change in Placer and El Dorado Counties has typically been closer to three percent of total establishments. California has averaged around two percent annual net gain in these years. In this sense, the counties in the Sierra Nevada are not much different in business creation than California as a whole.

There has been a change in the relationship between California and the rest of the U.S. in terms of migration of businesses since 1995. For the counties entirely within the SNC Region, in 1995-96 only 3 percent of businesses moving into these counties relocated from outside of California, and 15 percent of those moving out of the Region relocated out of state. By 2007-08, 15 percent of relocations to the Region came from outside California, and 29 percent of existing businesses moved to other states. The pattern for Placer and El Dorado Counties was not much different.

Business Migration Summary					
Counties Entirely Within the SNC Region					
		Establishments		Jobs	
		1995-1996	2007-2008	1995-1996	2007-2008
% of Total Moving In	From Rest of California	97%	85%	98%	91%
	From Rest of U.S.	3%	15%	2%	9%
% of Total Moving Out	To Rest of California	85%	71%	88%	93%
	To Rest of U.S.	15%	29%	12%	7%
Placer & El Dorado Counties					
		Establishments		Jobs	
		1995-1996	2007-2008	1995-1996	2007-2008
% of Total Moving In	From Rest of California	95%	86%	97%	91%
	From Rest of U.S.	5%	14%	3%	9%
% of Total Moving Out	To Rest of California	78%	64%	88%	65%
	To Rest of U.S.	22%	36%	12%	35%

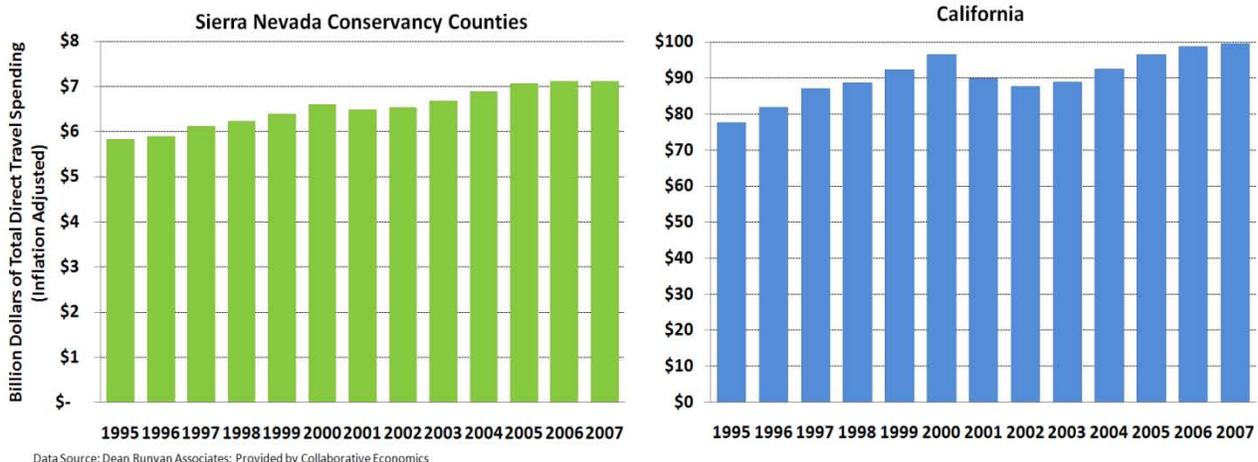
Travel and Tourism Spending



The Sierra Nevada Region’s wealth of natural assets such as national parks and countless recreation opportunities attracts visitors from across the globe, which makes travel and tourism an important component of the Region’s economic activity. Properly gauging the size, trend, and impacts of this economic sector is important to optimizing the development of this huge resource for the welfare of communities and residents in a sustainable manner.

Direct travel spending in the 22 counties that lie entirely or partly within the Sierra Nevada region (including those portions that lie outside the SNC’s boundaries) increased by 22 percent between 1995 and 2007, reaching a high of \$7.1 billion. However, since 2005, total travel spending in these counties has plateaued. Travel spending for California as a whole increased 28 percent since 1995, though year-to-year growth was more variable. Focusing on the twelve counties entirely within the SNC Region, growth in direct travel spending was a little lower at 19 percent over the twelve years.

Total Direct Travel Spending



Because the data were reported only for whole counties, it is not possible to separate out that portion of the spending in the counties that are only partly in the SNC Region. Travel spending in 2007 strictly within the entire SNC Region was certainly much less than the \$7.2 billion reported for all 22 counties. About \$1.9 billion was spent in the twelve counties entirely within the SNC Region in 2007.

With regard to travel spending in the 10 counties that are mostly outside the SNC Region, what amount of the \$5.8 billion was actually spent inside the Region would be difficult to tease out. Certainly, some significant portion of the travel spending in those counties is inside the Region. Most of these counties are gateways to the Sierra and the SNC portion of them include Sequoia and Kings Canyon, Lake Isabella, Yosemite, Mt. Lassen, Lake Oroville, and recreation in the Central Subregion including major ski areas. On the other hand, some travel spending related to getting to the Sierra Nevada (such as gas) is spent in the Central Valley portion of

these counties. A reasonable estimate on total spending related to tourism in the SNC Region might be between \$3 billion and \$5 billion.

Likely due mostly to rising gas prices, Ground Transportation and Motor Fuel spending has experienced the most dramatic uptick in spending, increasing 99 percent between 1995 and 2007. Most other travel spending categories increased to a lesser extent, but retail sales have declined in recent years.

In 1995, total direct travel spending in the 22 counties that comprise the SNC Region accounted for 7.5 percent of total travel spending for California (the counties entirely within the SNC Region accounted for two percent of state travel spending). By 2007, this number had dropped 0.4 percent, to 7.1 percent for the 22 counties (1.9 percent for counties entirely within the SNC Region).

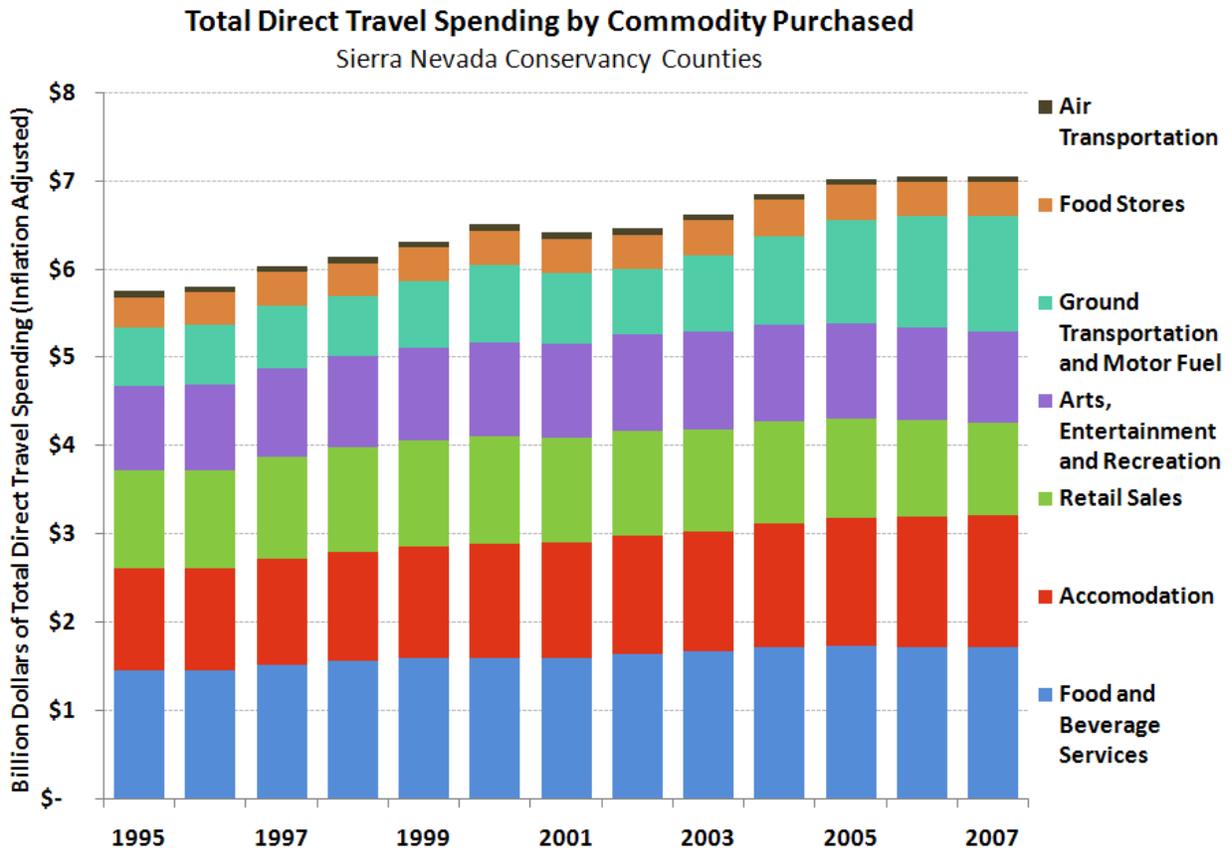
All of these figures are prior to 2008, when the recession hit. The next Indicator update will capture that impact. There are some indications that Sierra tourism has fared comparatively well in these tough economic times. In the tourism-centric East Subregion, unemployment is well below the state level, and Mariposa County had 17% GDP growth in 2009, possibly due to strong

Total Direct Travel Spending by County (in dollars)					
		1995	2007	Percent Change 95-07	% of County Pop. in SNC Region
Counties Entirely within the SNC Region	Alpine	25,873,173	28,268,863	9%	100%
	Amador	86,010,817	115,850,939	35%	98%
	Calaveras	136,498,467	157,277,672	15%	100%
	Inyo	166,986,854	195,312,141	17%	95%
	Lassen	58,319,530	66,714,516	14%	100%
	Mariposa	294,674,457	315,686,098	7%	100%
	Modoc	19,299,988	23,129,069	20%	89%
	Mono	288,940,403	393,810,954	36%	100%
	Nevada	226,565,079	286,183,685	26%	100%
	Plumas	103,212,980	107,216,086	4%	100%
	Sierra	16,502,888	18,708,847	13%	100%
	Tuolumne	148,665,851	168,893,604	14%	100%
Counties Partially within the SNC Region	Butte	213,978,130	266,344,083	24%	29%
	El Dorado	637,319,175	625,512,831	-2%	83%
	Fresno	893,953,076	1,119,446,957	25%	2%
	Kern	984,858,818	1,232,522,407	25%	2%
	Madera	175,518,009	205,797,319	17%	19%
	Placer	584,174,280	810,134,203	39%	33%
	Shasta	318,030,240	375,410,495	18%	11%
	Tehama	97,339,071	122,532,670	26%	3%
	Tulare	292,576,633	388,465,569	33%	2%
	Yuba	61,815,904	82,442,283	33%	15%
Total		5,831,113,823	7,105,661,292	22%	21%

Percent Change in Travel Spending in the 22 Counties of the SNC Region		
Category	1995-2007	2006-2007
Food and Beverage Services	+18%	+0.2%
Accommodation	+24%	+1%
Retail Sales	-4%	-4%
Arts, Entertainment & Recreation	+6%	-3%
Ground Transportation & Motor Fuel	+99%	+4%
Food Stores	+14%	+0.3%
Air Transportation	-12%	-1%

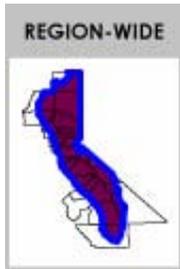
tourism related to Yosemite as people find the Sierra Nevada a relative bargain for their vacation dollars in tough economic times.

Direct travel spending is well distributed amount the five largest categories for the 22 counties. Food and beverage services is the largest component at about 24 percent of total spending in 2007. Accommodation accounted for about 21 percent and ground transportation just under 19 percent.



Data Source: Dean Runyan Associates; Provided by Collaborative Economics

Renewable and Distributed Energy Sources



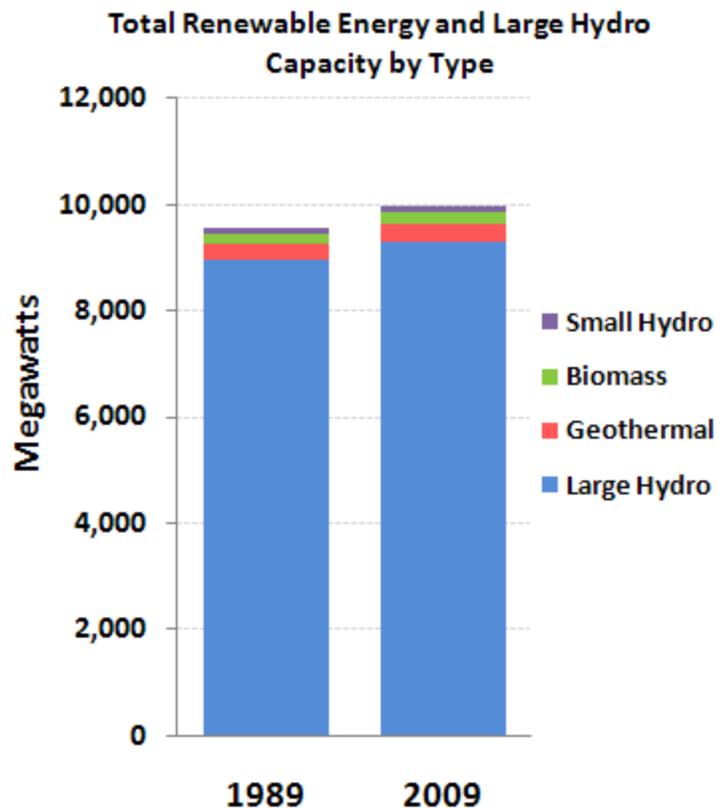
Hydroelectric power is an important economic resource provided by the Sierra Nevada region. Most of the value of this resource flows out to the rest of the state. The value of this resource, and its reliance on water, must be understood and appreciated by all Californians. Additionally, development of renewable energy from other sources is an opportunity to create economic value for the Region.

Renewable sources of energy are viewed as the future of energy production.

Generating energy through ecologically sustainable sources not only protects the environment but creates new economic growth opportunities and lessens dependence on fossil fuels. The State of California has mandated that twenty percent of its energy (excluding large hydropower) come from renewable sources by 2017. Most recently, Governor Brown has proposed the creation of 20,000 Megawatts (MW) of new 'green energy' by 2020. Different parts of the State are assessing their own unique mixes of natural and energy resources.

Ninety-three percent of all the non-fossil energy produced in the SNC Region is by large-scale hydro-electric power plants, which are not classified as 'renewable energy' by the State. Most of this is 'distributed energy', meaning it is sold outside of the Region in which it is generated. The SNC Region is nonetheless a large contributor to the state's carbon-free energy production. Large hydro capacity was 9,300 Megawatts in 2009, accounting for over 70% of California's installed hydro capacity. (Since much of the remainder is represented by facilities located just outside of the SNC Region, but supplied by Sierra water, nearly all of the state's hydro power actually comes from the Sierra.)

Total "renewable energy" capacity from small-scale hydro-electric power plants, geothermal, and biomass was 674 Megawatts.

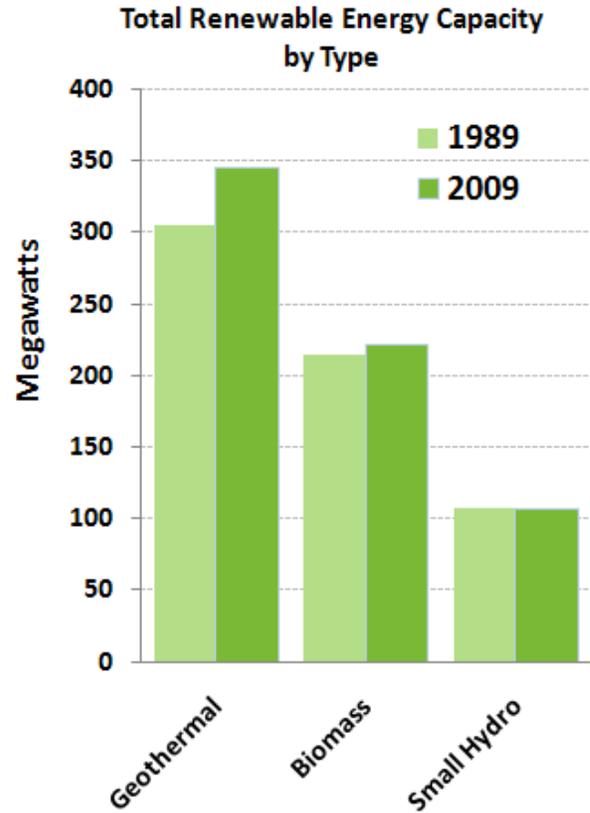


Geographic Definition: Zip Code
Data Source: California Energy Commission

Combined, these 9,974 Megawatts of non-carbon generating sources accounted for 14.3 percent of California's total installed electrical capacity in 2009.

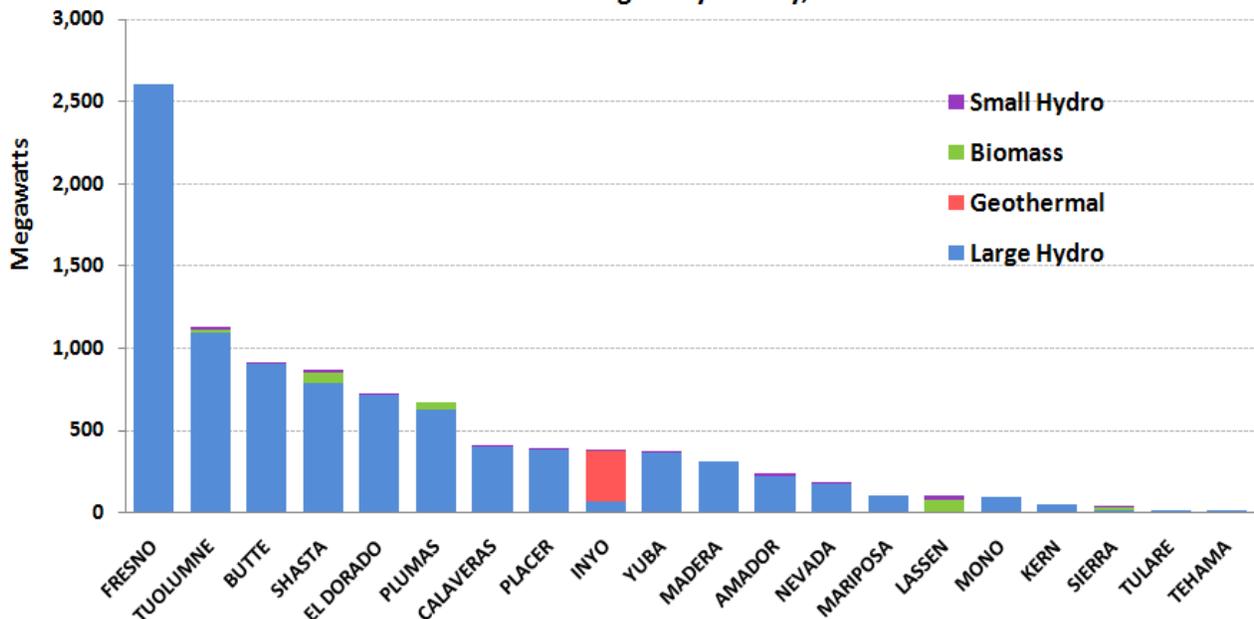
There was miniscule growth in both large hydro and renewable energy in the 20 years from 1989 to 2009; each expanding by only about four percent. Geothermal energy in Inyo County accounted for nearly all the growth in renewable energy, expanding from 305 MWs to 345 MWs.

With a capacity of 2,600 Megawatts of large hydro, Fresno County leads the region in non-fossil distributed energy capacity. For comparison, the typical coal/natural gas power plant has a capacity of 500 MW. The northern Sierra Nevada – Shasta, Lassen, and Plumas Counties – hold most of the biomass capacity of 222 Megawatts. Additionally, there are several biomass plants just outside of the SNC boundary in Placer, Butte, and Shasta Counties that utilize fuel material from the SNC Region. These plants have a capacity of 129 Megawatts that is not reflected in the SNC data.



Geographic Definition: Zip Code
Data Source: California Energy Commission

Renewable Energy and Large Hydro Capacity by Type within the SNC Region by County, 2009



Geographic Definition: Zip Code
Data Source: California Energy Commission

Wind power is emerging as a significant potential new source of renewable energy in the Sierra Nevada, though siting in the Region is likely to bring challenges. Prior to 2010, the only commercial wind power generated within the SNC boundary was an portion of the Tehachapi Pass wind farm that straddles Highway 58 (which is also the SNC boundary in that area), with 805 Megawatts of total facility capacity. The Hatchet Ridge wind project above Burney in Shasta County went online in 2010. Its 46 turbines have a capacity of 102 Megawatts. While located far inside the Region, it represents more distributed energy that is exported to the grid. The Bureau of Land Management has recently accepted a proposal to build a 51MW wind farm project on Fredonyer Peak near Eagle Lake in Lassen County.

Value of Sierra Nevada Energy

It is important to understand that *capacity* (the maximum number of watts that can be generated at an optimum time) of an energy generator is much different from the *amount* (in watt-hours) of electricity that is actually generated over the course of a year. This is particularly important for large hydro and renewable sources, which operate at less than full capacity or not at all for large portions of time. Large hydro is particularly dependent on the amount of precipitation from year to year⁶.

What the generation and sales of electricity means to the Region is unclear. Much deeper research would be required to determine how much of the revenues funnel through the regional economy. What can be estimated is the *value* of the electricity that the Region's water resources create. *Electric Power Monthly* reported the average retail price of electricity in California across all use sectors (residential, commercial, industrial, and transportation) in 2010 at 12.83 cents per kilowatt-hour. This allows for a rough estimate of the retail value of large hydro electricity produced in the SNC Region of \$2.4 billion.⁷

Since renewable energy sources in the Sierra Nevada are relatively tiny by comparison at this time, the value of electricity generated by these renewable sources would be much less, perhaps one to two hundred million dollars.

⁶ According to the California Energy Commission, in 2009 the state's large hydro generation totaled 25.15 Gigawatt-hours of electricity, 12.2 percent of electricity generated in the State, whereas in 2007, large hydro generated 43.6 Gigawatt-hours or 14.5 percent of the state's electricity.

⁷ This estimate relies on the assumption that since Sierra hydro represents about 73.5 percent of the state's hydro capacity, it accounts for 73.5 percent of the electricity generated (i.e. about 18.5 Gigawatt-hours in 2009) at a retail rate of 12.83 cents per kilowatt-hour.

CONTACT INFORMATION

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