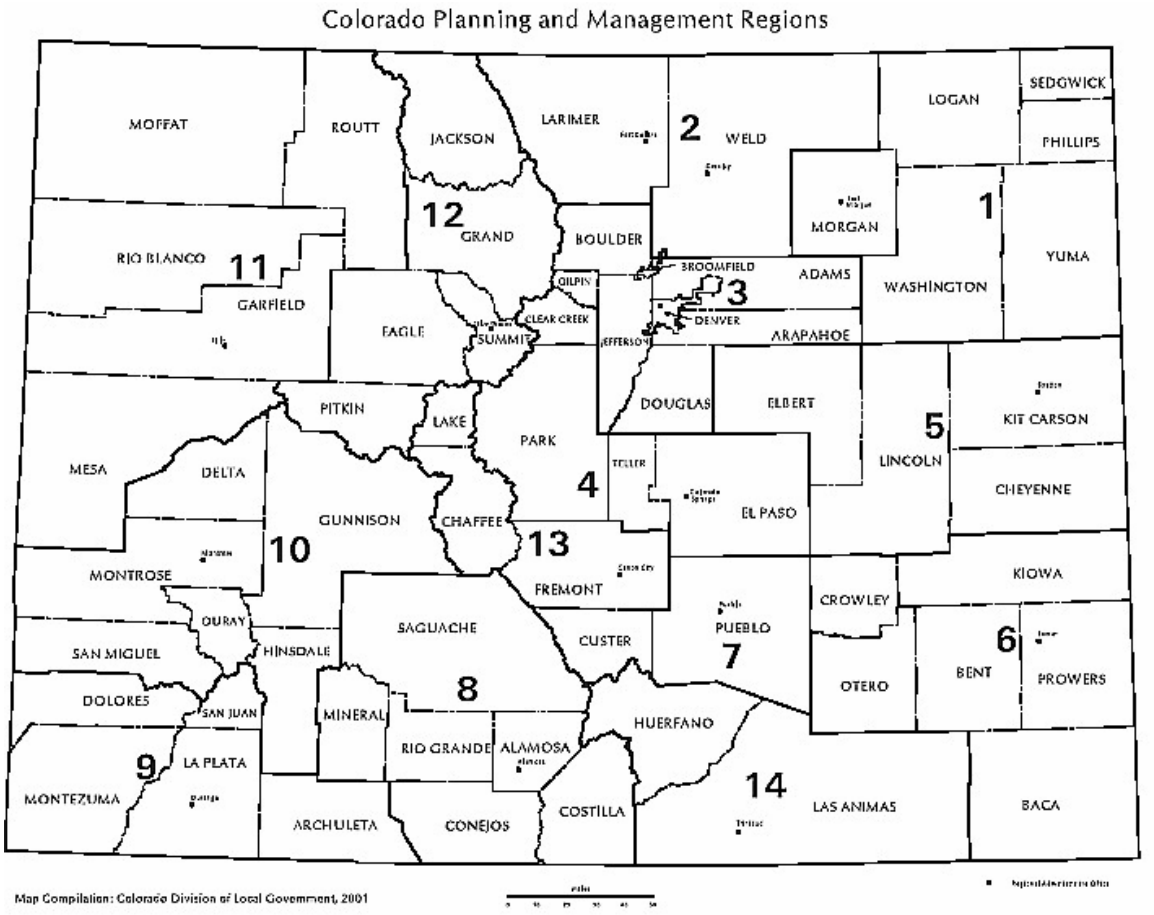
County Target and Growth Industry Analysis

This section of the report provides an analysis of future economic growth opportunities for each Colorado county based on the strengths and threats to the current economic base and the potential of the community to support the industries that were included in the first section of this report. In understanding and using this section, it is important to be aware of the following considerations:

- The industries examined in this study were identified by a group of project leaders from the entities sponsoring this project.
- The growth opportunities identified in this section represent those economic sectors expected to have an economic impact within the next 5 to 10 years.
- Only growth and emerging industries targeted by this study are included. This does not diminish or preclude the additional opportunities that will be appropriate and important to local economies as identified by local and regional interests.
- The industries identified here have potential for general economic growth and do not reflect on the probability of success or failure of individual businesses.
- In many cases, an emerging industry identified as potential for the area will require a more complete feasibility analysis to fully determine its viability.
- In every case, the realization of the identified opportunities will depend on state and local efforts to take the necessary actions to develop the required infrastructure and trained workforce to support existing companies and attract new business activity.

County summaries are presented in alphabetical order within each of the state's 14 planning regions, and preceded by an overview of the region's economic condition and potential.

Region	Counties
1	Logan, Morgan, Phillips, Sedgwick, Washington, Yuma
2	Larimer, Weld
3	Adams, Arapahoe, Boulder, Broomfield, Clear Creek, Denver, Douglas, Gilpin, Jefferson
4	El Paso, Park, Teller
5	Cheyenne, Elbert, Kit Carson, Lincoln
6	Baca, Bent, Crowley, Kiowa, Otero, Prowers
7	Pueblo
8	Alamosa, Conejos, Costilla, Mineral, Rio Grande, Saguache
9	Archuleta, Dolores, La Plata, Montezuma, San Juan
10	Delta, Gunnison, Hinsdale, Montrose, Ouray, San Miguel
11	Garfield, Mesa, Moffat, Rio Blanco, Routt
12	Eagle, Grand, Jackson, Pitkin, Summit
13	Chaffee, Custer, Fremont, Lake
14	Huerfano, Las Animas



Each county summary includes information about the economy, land mass, population, workforce, higher education facilities, business composition, cost of living, major facilities, cities, highways, national tourist attractions, and energy resources presented in concise charts. The data were selected to provide an overall picture of the economic base and potential of the area.

County Resources

A state map is included on the first page of each analysis. County Resources are identified at the bottom of that page, including:

- Transportation – Airports and interstate highway mileage are included. Airports are categorized based on definitions provided by the Colorado Department of Transportation.
- Military Bases, Federal Facilities, and Prisons
- Higher Education – The section includes only the main location for higher education institutions defined by the Colorado Commission on Higher Education.
- Ski Areas, Casinos, and National Parks/Sites
- Natural Resources – This section includes oil, gas, coal, and carbon dioxide. In addition, wind level ratings and biomass energy potential are presented.

County assets selected for inclusion are those that represent distinctive competencies that would be difficult to replicate and therefore provide a competitive advantage to the area. Obviously, each county has many additional local resources, attractions, and benefits too numerous to list here.

County Overview

The county overview includes basic demographic, business, and geographic information. In addition it looks at the number of establishments by size class, occupations by type, and workers by class as a way of understanding the composition of the local businesses. A final data set shows the breakdown of households by income levels.

County Assets

The analysis on this page compares the assets of the featured county with the surrounding counties for the purpose of better understanding the assets of the region. In addition, county highlights are provided that summarize key components of the county asset, county overview, and county resource sections.

Historical Analysis of Employment and Income

The historical employment and income analysis is based on 2001 data. The compound annual growth rate (CAGR) is for a 10-year period ending in 2001. Charts show the location quotient (LQ) for both industry concentration and growth rates. Additional details to aide understanding of the terms and analysis used is provided below.

The data included for each county were selected based on relevance to the analysis of current, target, and growth industries pertinent to the scope of the study. The industries with current and future economic impact in each county are identified on the final page of each county summary in chart format with an accompanying narrative. A definition of current, target, and growth industries used in this analysis is provided below, along with detail about data sources and methods of analysis.

Historical Employment and Income Data and Analysis – Explanation

Each county summary provides selected historical employment and income data, and analysis of that data. The data were selected to identify prominent and growing sectors of the current economy and important assets to meet industry growth requirements (e.g., education and cost of the labor force, cost of doing business, and availability of transportation and communications infrastructure). The following information identifies data sources and describes how the analyses were performed:

Income and Employment Analysis (Data, Percentage of Total, and LQ) Trends by Sector by County (1991 to 2001)

Historical Employment and Income Data and Analysis - Data Source and Definition of Terms and Growth Categories

The data used in this analysis were provided by the Department of Local Affairs. The employment data are from the series called the Labor Force and Total Employment - both Employed Persons and Jobs Filled, while the income data were compiled from the Wage and Salary Jobs series.

Sector employment and income data are analyzed at the county level by Major SIC for the period 1991 to 2001. In addition, the percentage of total county employment and income is calculated for each sector. For example, if 100 people worked in the TCPU sector at the county level and a total of 1,000 people were employed in the county, then the TCPU sector would be responsible for 10% (share) of total employment.

The LQ is also calculated for each major sector in the county. It compares the sector's share of total county employment with its share of total state employment. For example, if 16% of the people in the state are employed in the TCPU sector, then the LQ for the county would be (10%/16%), or .625. When the LQ is less than 1, it suggests that the county is relatively underrepresented in that sector. Likewise, when the LQ is greater than 1, it implies that the county has a relatively stronger concentration than normal representation. As might be expected, when the LQ = 1, then the percentage of industry concentration is the same at both the state and county levels.

For each of the data, sector share, and LQ series, calculations have been performed to derive the following:

- Slope of the line – Using regression analysis, a "best-fitted" line can be calculated for each of these curvilinear data series. If the slope of the line is positive, this means the trend line shows job growth for the years 1991 to 2001. Similarly, if it has a negative slope, the trend line reflects a decrease in the number of jobs. In the case of the original data, the slope of this line is equal to the number of new jobs created each year.
- R^2 (Pearson's Product Moment) – The correlation coefficient, or the R^2 value, is the proportion of the variance in *y* attributable to the variance in *x*. As R^2 approaches 1, the correlation grows stronger. As R^2 approaches 0, the relationship between the variables becomes more random. For example, if the employment data has $R^2 = .850$, then 85% of the variance in employment growth is attributable to the year-to-year change.
- CAGR – This is the year-over-year growth rate for a specified period of time. It is calculated by taking the n^{th} root of the total percentage growth rate, where *n* is the number of years in the period being considered, or:

  $$\text{CAGR} = (\text{Current Value}/\text{Base Value})^{(1/\#\text{ of years})} - 1$$

  For the period 1991 to 2001, state employment increased at a CAGR of 3.6%, while the Denver/Boulder/Greeley CPI increased at a CAGR of 3.5%.

There are nine major-sector SIC classifications for each of the 63 counties, or a total of 567 county sectors. Based on criteria defined below, these sectors were classified into the following growth categories:

- Strong Growth – All of the following criteria must be met for inclusion in this category:
  - County sector employment exceeds the state CAGR of 3.6%,
  - County sector income exceeds the Denver/Boulder/Greeley CPI CAGR of 3.5%,
  - The slope of the employment and income lines are positive,
  - The slope of the share of county employment and income lines are positive,
  - The slope of the employment and income LQ lines are positive, and

    - In 2001, the sector employed at least 100 people in the county.
- Growth – All sectors not included in the strong growth sector that have county sector employment exceeding the state CAGR of 3.6% and county sector income exceeding the Denver/Boulder/Greeley CPI CAGR of 3.5%.
- Employment Growth – The criteria for inclusion in this category is that the county sector employment exceeds the state CAGR of 3.6%, while the income growth falls below the Denver/Boulder/Greeley CPI CAGR of 3.5%.
- Income Growth – The criteria for inclusion in this category is that the county sector income exceeds the Denver/Boulder/Greeley CAGR of 3.5%, while the employment growth falls below the state CAGR of 3.6%.
- Declining Industries – To be classified as a declining industry, both the county sector employment grew less than the state CAGR of 3.6% and the county sector income grew less than the Denver/Boulder/Greeley CPI CAGR of 3.5%.

It should be noted that in a few data sets, a CAGR was not calculated. The most common reason for a data set not having a CAGR is because a data series was not complete. In other words, it was missing either a beginning point or an endpoint. This typically occurs when data are not disclosed for confidentiality reasons. A CAGR was also not calculated when the value for employment or income was equal to zero in the first year of the series, in this case 1991.

Additionally, the nine major sectors were classified into the following concentration categories based on their 2001 LQ.

- High Concentration and Relative Growth – All of the following criteria must be met for inclusion in this category:
    - The 2001 Employment LQ is greater than one,
    - The 2001 Income LQ is greater than one,
    - The slope of the 1991-2001 LQ trend line for both employment and income is positive, and
    - In 2001, the sector employed at least 100 people in the county.
- High Concentration – All sectors not included in the High Concentration and Relative Growth category with 2001 LQs for both employment and income that were greater than one.
- Employment Concentration – To be classified here, a sector needed to have a 2001 employment LQ greater than one, and a 2001 income LQ less than or equal to one.
- Income Concentration – To be classified here, a sector needed to have a 2001 income LQ greater than one, and a 2001 employment LQ less than or equal to one.
- Low Concentration – All sectors with both employment and income LQs less than or equal to one in 2001 are classified here, unless they also meet the criteria for Low Concentration and Relative Decline.
- Low Concentration and Relative Decline – These sectors not only had both LQs less than or equal to one, but also had slopes of the 1991-2001 trend lines for the LQs that were negative.

Finally, it should be noted that Broomfield County is not included in the analysis. Since it became a county in November 2001, data are not available. However, a similar analysis of Broomfield's industry breakdown and concentration, based on Colorado Department of Labor and Employment ES202 data, is included.

County Sector Breakdown

This section provides a breakdown of 528 industries using 2000 data from the Minnesota Implan Group. The data provides estimates of the number of workers, total production, percentage of production exported outside the county and the value of the exports.

The top sectors are listed for total employment, production, and primary industries. In addition, a brief industry summary highlights key industries in the county.

County Sector Breakdown - Reconciliation of Data from Multiple Sources

The process of collecting and processing data from various sources sometimes results in apparent discrepancies. In general, the initial reaction to these data anomalies is often to assume that the data collection is somehow flawed. However, upon closer inspection, there almost always exists a rational explanation behind each anomaly. As some anomalies may exist in the data presented in this section, the reader may benefit from this explanation of the process.

One of the data sources used is the Minnesota IMPLAN group. The IMPLAN group combines government data from several sources and produces social accounts at the county level for every county in the United States.

The data handling process requires integration of data sources that often contain conflicting information. In addition, the accounts must conform to several *economic consistency conditions.* In order to meet these conditions, the data manipulation process uses average employment or output shares when data are missing or as conditions for consistency.

Occasionally, this process creates employment where it does not really exist. For example, there are counties in Colorado that do not produce oil or coal, although the IMPLAN dataset shows some employment and output in this sector. These counties may have banks that handle the accounts for the oil producers or may have bank accounts in the company's name – even though the company does not even have an oil well! Since the government accounts show transactions under the oil company's name, this spending or income must be reconciled. IMPLAN assumes that these transactions represent some sort of economic activity and also some associated employment. This leads to apparent discrepancies between IMPLAN and other data sources (e.g., ES202).

Overall, the Minnesota Implan Group appears to do a very good job aggregating government information to produce consistent and reasonable descriptions of each county's economy.

For more information about how the IMPLAN dataset is generated, see the IMPLAN website at <http://www.implan.com>.

In addition, these discrepancies are not only in the IMPLAN data. For example, data taken from the ES202 data for San Miguel County show that total employment in 2001 was 7,209 – even though total population in this county is estimated to be 6,951. Although these differences appear impossible at first, they can actually be quite reasonable. In the case of San Miguel, there are many commuters who work in San Miguel, but live outside of the county. Such commuting between counties is actually very common.

County Summary Page - Identification of Current, Target, and Growth Industries

In each county analysis, the following industries were evaluated by analyzing industry needs and requirements against county and regional assets to determine the current, target, and growth industries appropriate to the future economy of the area:

- Agriculture (Animals, Crops, Dairy)
- Manufacturing (General, Computer Hardware/Storage, Photonics
- Energy and Environmental (Minerals, Gas/Petroleum; Renewable Energy, Environmental Industries)
- Transportation (Air, Trucking, Rail, General)
- Aerospace/Space
- Defense/Homeland Security
- Telecommunications
- Biotechnology
- Nanotechnology
- Services (Call Centers, Financial, Healthcare, Research and Development)
- Software
- Tourism
- Film

More information on the markets, opportunities, and requirements of each industry is presented in the industry analysis reports.

The following definitions were used to identify current, target, and growth industries displayed in chart and narrative form at the end of each county summary:

Current Industry - Current industries are those sectors or subsectors of the economy that currently make a significant employment or wage contribution to the local economy. These industries may have a greater concentration (LQ greater than one) of wages or employment than the state or U.S., or they might be the largest sectors of the economy.

Target Industry - Target industries are those sectors or subsectors of the economy that will make a significant employment or wage contribution to the local economy during the next 5 to 8 years. These industries are typically in a mature stage and are characterized by varying stages of growth.

Growth Industry - Emerging industries are those sectors or subsectors of the economy that will experience strong growth in the concentration (location quotient) of wages or employment in the next 5 to 8 years. These industries are typically in their infant or growth stages.