A major step in crafting a region’s economic development strategy focuses on the types of industries to target for expansion and retention. Industry targets are chosen to meet varying community goals ranging from diversifying the economic base, to increasing the average wage, to utilizing natural and labor resources more fully. A community’s economic development efforts should focus on industries in which the community has clear competitive advantages. Further, target industries should be economically, environmentally, and socially acceptable to the community.

This study is based on the concept of industry clusters, which are geographic concentrations of interconnected companies and institutions in a particular field. Where an industry’s employment concentration is greater than the national economy, it is presumed that the production of goods and services is more than sufficient to meet local demand, and is therefore exported, either physically or financially. Where industries are highly concentrated, it is presumed that a high degree of specialization among firms exists, a feature of competitive industry clusters, commonly called primary jobs. These industries drive wealth creation within a region.

Nine major industry clusters in the nine-county Metro Denver and Northern Colorado region (Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Jefferson, Larimer, and Weld Counties) are key to our economy, making them primary targets for national recruitment as well as economic development retention and expansion efforts to develop and expand the region’s industry cluster base.

This report summarizes key points about each industry cluster, including a brief description, employment concentration ranking compared to the 50 largest U.S. metropolitan areas, workforce profiles, and other major industry information. In addition, primary location factors are identified along with a brief assessment of the region’s competitive position and future viability in attracting additional employment in each industry cluster.
Nine major industry clusters drive the regional economy

• **AEROSPACE** – The nine-county region ranks second in private-sector aerospace employment concentration out of the 50 largest metropolitan areas, with 19,520 workers. The aerospace cluster is anchored by an abundance of high-tech companies, four military commands, eight major space contractors, National Aeronautics and Space Administration (NASA) research activities, and several universities involved in extensive space research. Colorado ranked as the second-largest space economy in the United States in 2015, behind California.

• **AVIATION** – Denver International Airport (DEN) is a major economic engine for the region’s aviation industry, which employs 16,880 workers. Major expansion at DEN including the upcoming opening of the commuter rail line to downtown Denver in April 2016 and the start of a new, nonstop flight to Munich in May 2016 creates further momentum in the industry. Aviation employment rose 11.1 percent between 2010 and 2015 (2.8 percent nationwide). In addition, three reliever airports—those designated by the Federal Aviation Administration to relieve traffic at commercial airports and general aviation airports—are strategically located throughout the nine-county region.

• **BEVERAGE PRODUCTION (NEW)** – With a broad range of beverage producers including malt beverages, wines, distilled liquors, bottled drinks, and ice products, the region ranked third among the 50 largest metropolitan areas for employment concentration. Beverage production employment grew 5.2 percent in 2015 and has been growing since 2010, adding nearly 1,600 jobs over the five-year period. Colorado is home to more than 10 percent of the nation’s craft breweries and the state ranked first in the nation for output per capita.

• **BIOSCIENCE** – Nearly 15,230 employees work at more than 670 bioscience companies in the nine-county region. The medical devices and diagnostics subcluster grew 10 percent from 2010-2015 compared with 4.3 percent nationally. Research universities and numerous innovation assets support the industry, as well as opportunities to bring together academic, research, and bioscience companies at the 578-acre Fitzsimons Innovation Campus and the adjacent Anschutz Medical Campus in Aurora.

• **BROADCASTING & TELECOMMUNICATIONS** – With 41,970 broadcasting and telecommunications workers, the nine-county region has the sixth-highest employment concentration out of the 50 largest metropolitan areas. The region is the largest in the United States to offer one-bounce satellite uplinks due to its unique geographic location in the Mountain time zone.
• **ENERGY** – The region continues to position itself as a leader in the energy industry with both fossil fuels and cleantech together employing 54,720 people at 3,140 companies. The National Renewable Energy Laboratory in Golden, the Department of Energy's only laboratory committed to the research, development, commercialization, and deployment of renewable energy and energy efficiency, is a vital asset to the energy and natural resources industry. The region ranks fourth for fossil fuels and fifth in cleantech employment concentration among the 50 largest metropolitan areas. Cleantech was the region’s fastest growing industry in 2015.

• **FINANCIAL SERVICES** – The nine-county region is one of the few areas outside of the northeast with a significant financial industry in three key market segments: banking and finance, investments, and insurance. The region’s universities and research institutions offer first-class educational resources to engage students and prepare the future financial services workforce. Various associations and service firms support the region’s diverse financial services base of nearly 13,800 companies and about 97,000 employees. Employment growth in the investments subcluster in 2015 was 7 percent, compared with 2.5 percent growth nationally, making it the region’s second-fastest growing industry in 2015.

• **HEALTHCARE & WELLNESS** – With nearly 202,550 healthcare and wellness workers at more than 19,450 companies across the region, healthcare and wellness is the region’s largest cluster in terms of employment. A premier healthcare and wellness hub, the region has one of the fittest populations in the nation and has the nation’s lowest rate of adult obesity due to its active lifestyle and access to the outdoors. The industry posted its 12th-consecutive year of employment growth at 5.5 percent in 2015, compared with 2.9 percent nationally.

• **INFORMATION TECHNOLOGY–SOFTWARE** – The region is a hotbed of innovation activity, fueled by a talented IT workforce, modern infrastructure, and an entrepreneurial spirit. Colorado ranked third in the nation (for the seventh-consecutive year) for high-tech workers per capita, according to CompTIA's *Cyberstates 2015* report. A consortium of supportive programs, organizations, and professional associations provide a synergistic climate for the region’s thriving IT-software industry. The region employs 48,610 IT workers at 4,810 companies throughout the nine-county region. IT-software employment grew 4.5 percent in 2015 and ranked ninth out of the 50 largest metropolitan areas.
Factors driving company location and expansion decisions

Location decisions are driven by a number of factors as companies within each of these industries examine communities in which to locate or expand. Some factors are industry specific. For example, proximity to military customers and prime contractors is important in aerospace company location decisions whereas fossil energy companies focus on access to natural resources. Other key locational factors cut across numerous industries, focusing on broader community attributes. While the combination of factors that enhance company success varies by industry, there are several common themes:

- The ability to recruit and retain technical and scientific talent
- Affordable business operating costs
- Favorable tax policies and pro-business state and local governments
- A central location and easy global access
- A culture of innovation and entrepreneurism
- Proximity to quality colleges, research universities, and federal laboratories
- An overall better quality of life

Competitive positioning to create jobs and investment

- The ability to recruit and retain technical and scientific talent – Of Colorado’s adult population, more than 38 percent has completed a bachelor’s or higher-level degree, making Colorado the second-most highly educated state in the nation behind Massachusetts. (U.S. Census Bureau, 2014 American Community Survey)

- Affordable business and operating costs – Colorado ranks No. 1 for labor supply, fourth for economic climate, and fifth overall on Forbes’ 2015 “Best States for Business and Careers” list. In addition, the Denver-Aurora-Broomfield metropolitan statistical area ranked first overall for economic development and job growth in the “Leading Locations for 2015” list. The Greeley and Boulder metro areas were also named to the list’s top-10. (Forbes, 2015; Area Development, 2015)

- Favorable tax policies and pro-business state and local governments – Legislation passed in 2008 simplified Colorado’s corporate tax structure by establishing a single sales factor for multistate corporations. Single factor apportionment allows companies to pay taxes based solely on their sales in the state. Colorado’s corporate income tax rate of 4.63 percent is one of the lowest in the nation. (State of Colorado; The Tax Foundation)

- A central location and easy global access – Denver International Airport is the fifth-busiest airport in the nation and is 17th-busiest worldwide for passenger traffic. Denver’s central U.S. location allows travelers efficient access to both coasts. Service to Asia through Tokyo’s Narita Airport, as well as new nonstop service to Munich, broadens the region’s global reach. (U.S. Bureau of Transportation Statistics, 2015; Airport Council International, 2015; Denver International Airport, 2015)
• A culture of innovation and entrepreneurism – The U.S. Department of Commerce’s United States Patent and Trademark Office located one of four new satellite offices in Denver, the first permanent office west of the Mississippi, due to the state’s expansive culture of innovation and entrepreneurism. Colorado ranked as the second-most entrepreneurial state, with nearly $18 million in venture capital funding per 100,000 people and 2.81 small businesses per 100 people. (U.S. Patent and Trademark Office, 2015; NerdWallet, 2015)

• Proximity to quality colleges, research universities, and federal laboratories Metro Denver ranked as the fourth-best metro area for science, technology, engineering, and mathematics (STEM) professionals in 2015. Metro Denver ranked fourth for the projected number of STEM jobs needed in 2018 and seventh for openings per capita for STEM graduates. (WalletHub, 2015)

• An overall better quality of life – Denver was named as the best city to live in the West in 2015. The city was cited as a “mecca for millennials” with great access to recreation. Louisville ranked fourth and Erie ranked 13th among the best small towns to live in the United States. (MONEY Magazine, 2015)

Ensuring economic growth through industry diversity

Successful companies rely on market research to guide their marketing efforts, and economic development is no different. Armed with in-depth data on the industries showing the most promising job growth over the long term, the Metro Denver EDC has a business plan to guide its job creation efforts. This industry data helps determine: which legislation will be conducive or detrimental to industry, what opportunities exist to reach industry decision makers and site selection consultants, where might a supplier recruitment strategy come into play, what are the current and future labor force needs, and most importantly, which factors are vital to companies analyzing a community for location or expansion.

This diversified industry strategy showed strong employment growth in many clusters following the Great Recession. From 2010 to 2015, industry clusters and subclusters such as beverage production, fossil fuels, cleantech, investments, healthcare and wellness, and IT-software have posted employment growth of more than 15 percent. This report shows that Metro Denver’s leading industries are among the top performing in the nation, with six clusters/subclusters ranking in the top 10 for employment concentration in 2015 among the nation’s 50 largest metropolitan areas.

For additional information on Metro Denver’s major industry clusters, please contact 303.620.8092, info@metrodenver.org, or the industries section on www.metrodenver.org.
# Metro Denver Industries Employment Snapshot

<table>
<thead>
<tr>
<th>Metro Denver Industries</th>
<th>Aerospace</th>
<th>Aviation</th>
<th>Beverage Production</th>
<th>Bioscience</th>
<th>Broadcasting &amp; Telecom</th>
<th>Energy</th>
<th>Financial Services</th>
<th>Healthcare &amp; Wellness</th>
<th>IT Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Employment</td>
<td>19,520</td>
<td>16,880</td>
<td>8,640</td>
<td>10,820</td>
<td>4,410</td>
<td>41,970</td>
<td>33,120</td>
<td>21,600</td>
<td>38,140</td>
</tr>
<tr>
<td>Companies</td>
<td>120</td>
<td>590</td>
<td>180</td>
<td>340</td>
<td>330</td>
<td>2,560</td>
<td>1,590</td>
<td>1,550</td>
<td>3,130</td>
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<tr>
<td>Five-Year Employment Growth (2010-2015)</td>
<td>0.9% (-3.3%)</td>
<td>11.1% (2.8%)</td>
<td>22.4% (19.7%)</td>
<td>10% (4.3%)</td>
<td>-6.8% (2.0%)</td>
<td>-1.1% (-3.4%)</td>
<td>48.7% (16.3%)</td>
<td>23.7% (19.7%)</td>
<td>-0.8% (0.3%)</td>
</tr>
<tr>
<td>One-Year Employment Growth (2015)</td>
<td>0.03% (-1.2%)</td>
<td>2% (0.7%)</td>
<td>5.2% (5.1%)</td>
<td>2.8% (2.4%)</td>
<td>-4.3% (1.6%)</td>
<td>-0.8% (-1.9%)</td>
<td>2.8% (4.9%)</td>
<td>8.5% (-0.3%)</td>
<td>7% (2.5%)</td>
</tr>
<tr>
<td>Direct Employment Concentration (2015)</td>
<td>1% (0.2%)</td>
<td>0.9% (0.7%)</td>
<td>0.4% (0.2%)</td>
<td>0.6% (0.3%)</td>
<td>0.2% (0.3%)</td>
<td>2.2% (0.8%)</td>
<td>1.7% (1.2%)</td>
<td>1.1% (0.6%)</td>
<td>2% (1.7%)</td>
</tr>
<tr>
<td>Average Wage</td>
<td>$128,120</td>
<td>$58,300</td>
<td>$60,520</td>
<td>$75,880</td>
<td>$102,550</td>
<td>$106,060</td>
<td>$110,070</td>
<td>$76,610</td>
<td>$73,860</td>
</tr>
<tr>
<td>Employment Concentration Ranking (among 50 largest metros)</td>
<td>2</td>
<td>13</td>
<td>3</td>
<td>11</td>
<td>27</td>
<td>6</td>
<td>4</td>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>

U.S. data in ()

- **Medical Devices & Diagnostics**
- **Pharma & Biotechnology**
- **Fossil Fuels**
- **Cleantech**
- **Banking & Finance**
- **Investments**
- **Insurance**

Direct Employment Concentration (among 50 largest metros)
Metro Denver and Northern Colorado Industries Economic Performance Snapshot

Bubble charts are popular tools used to illustrate industry clusters. These charts allow multiple variables to be plotted within the same graph, making it easy to assess relative economic performance. Bubble charts are often used for pinpointing priority industries since they allow visual comparisons of economic measures.

This chart illustrates industry cluster relationships for the 13 industry clusters and subclusters. The following three variables are plotted:

- One-year direct employment growth, 2014 to 2015; on the x-axis (horizontal);
- The industry’s location quotient, 2015; on the y-axis (vertical); and
- Employment size of the industry, 2015; indicated by the size of the bubble.

Industry subcluster bubbles are color coded to reflect that they belong to the same cluster. For example, fossil fuels and cleantech are green, indicating that they belong to the energy cluster.

Bubble charts show the clusters in a state or region as measured by total employment size (the bigger the bubble, the larger the industry in terms of employment), employment growth (the further to the right on the graph, the more growth), and the location quotient (the further up in the graph, the higher the location quotient (LQ)).

The LQ is a ratio that compares the region’s employment share of a particular industry with the employment share nationwide. The following guidelines are used to evaluate the LQ:

- LQ > 1 indicates a significant employment concentration compared with the nation.
- LQ = 1 indicates that the region’s employment concentration is equal to that of the nation.
- LQ < 1 indicates that the region has less of an employment concentration compared with the nation.

The dotted red line on the graph represents the location quotient equal to 1 to easily identify the bubbles that are above this demarcation.

For example, cleantech had substantial employment growth from 2014 to 2015, aerospace had a key locational advantage represented by its high LQ position on the graph, and healthcare and wellness had a significant number of employees represented by the size of its bubble. Looking at other clusters, broadcasting and telecommunications and IT-Software are relatively large industries represented by their bubble size and have above-average employment concentration compared with the nation. While three of the region’s industry clusters and subclusters contracted between 2014 and 2015—broadcasting and telecommunications, pharmaceuticals, and banking and finance—the majority of the region’s industries reflect growing employment and have location quotients greater than 1. This indicates that the Metro Denver and Northern Colorado region remains a competitive location for these clusters, making them priority industries to pursue.
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