Metro Denver and Northern Colorado Key Industry Clusters
Executive Summary

A community's economic development efforts should focus on industries in which the community has clear competitive advantages.

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.

Eight 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.

Eight major industry clusters drive the regional economy

- AEROSPACE – The nine-county region ranks first in private-sector aerospace employment concentration out of the 50 largest metropolitan areas, with 19,560 workers. Colorado ranks as the third-largest space economy in the United States in 2014, behind California and Florida.

- AVIATION – Denver International Airport (DIA) is a major economic engine for the region's aviation industry, which employs 16,350 workers. Positive job expansion in the region, with one-year growth of 2.3 percent compared with a -0.4 percent contraction nationally, major expansion at DIA, and the start of a new, nonstop flight to Panama in 2014 created further momentum in the industry.

- BIOSCIENCE – More than 15,120 employees work at 600 bioscience companies in the nine-county region. The medical devices and diagnostics subcluster grew 1.9 percent in 2014 compared with 0.7 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 Life Science District and the adjacent Anschutz Medical Campus in Aurora.

- BROADCASTING & TELECOMMUNICATIONS – With 42,810 broadcasting and telecommunications workers, the nine-county region has the fifth-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 inter-relationship between fossil fuels and cleantech provides unique growth opportunities for this industry that employs 50,260 people at 3,020 companies in the region. The area ranks fourth for fossil fuels and fifth in cleantech employment concentration among the 50 largest metropolitan areas.

- 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. Various associations and service firms support the region's diverse financial services base of 13,360 companies and 94,820 employees. Employment growth in the investments subcluster in 2014 was 4.2 percent compared with 1.3 percent nationally.

- HEALTHCARE & WELLNESS – With more than 192,290 healthcare and wellness workers at 18,160 companies across the region, healthcare and wellness is one of the region's fastest growing industry clusters and is a substantial contributor to the region's overall economic productivity. Employment growth in the industry was 4.9 percent in 2014 compared with 1.6 percent nationally.

- INFORMATION TECHNOLOGY–SOFTWARE – Colorado ranked third in the nation (for the sixth-consecutive year) for high-tech workers per capita, according to TechAmerica Foundation's *Cyberstates 2013* report. A strong entrepreneurial spirit fuels this industry, employing 46,470 workers at 4,530 companies throughout the nine-county region.

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 culture of innovation and entrepreneurism.
- Proximity to quality colleges, research universities, and federal laboratories.
- Efficient access to an international airport.
- 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, nearly 38 percent has a bachelor's or higher-level degree, making Colorado the second-most highly educated state in the nation behind Massachusetts. *(U.S. Census Bureau; 2013 American Community Survey)*

- **Affordable business operating costs** – Colorado ranks No. 1 for labor supply and fifth overall on *Forbes'* 2014 "Best States for Business and Careers" list. Rankings are based on each state's business costs and regulations, economy, labor supply, growth prospects, and quality of life. *(Forbes, 2014)*

- **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 culture of innovation and entrepreneurism** – The first U.S. Patent and Trademark (USPTO) satellite office west of the Mississippi opened in Denver in June 2014. The office will house 20 patent judges to handle appeals and add 120 jobs in the first year of operation. The new location is expected to generate an economic impact of $440 million in the first five years. The USPTO chose Denver because the region has one of the highest per capita rates of people with science and technology degrees, has relatively low living costs, and is a prime location in which to recruit and retain the most talented workers.
  (U.S. Patent and Trademark Office, Metro Denver Economic Development Corp.)

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- Proximity to quality colleges, research universities, and federal laboratories – Colorado is a national leader for producing scientific and engineering talent, ranking among the top 10 states for science and engineering graduate students per 1,000 individuals ages 25 to 34 years old in 2011, in addition to ranking fourth in the number of scientists and engineers as a percent of the workforce in 2012. Colorado also has one of the highest concentrations of federally funded science and research laboratories in the nation. *(National Science Foundation, 2014; CO-LABS, 2014)*

- Efficient access to an international airport – Denver International Airport is the fifth-busiest airport in the nation and is 15th-busiest worldwide for passenger traffic. Denver's central U.S. location allows travelers efficient access to both coasts, and new service to Asia through Tokyo's Narita Airport, as well as nonstop service to Panama broadens the region's global reach. *(U.S. Bureau of Transportation Statistics, 2014; Airport Council International; Denver International Airport, 2014)*

- An overall better quality of life – The Denver-Aurora-Broomfield MSA ranked No. 2 in the country for attracting college-educated workers from 2007-2012. In addition, Colorado was the third-fastest growing state in 2013, up from sixth in 2012. *(U.S. Census Bureau, 2014; Toward a More Competitive Colorado, 2014)*

Marketing industries to promote regional job growth

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, and most importantly, which factors are vital to companies analyzing a community for location or expansion.

Over the past five years, industry clusters and subclusters such as medical devices and diagnostics, fossil fuels, cleantech, investments, healthcare & wellness, and IT-Software have posted employment growth of more than 5 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 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.

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Metro Denver Industries Employment Snapshot

Metro Denver Industries	Aerospace	Aviation	Bioscience		Broadcasting & Telecommunications	Energy		Financial Services			Healthcare & Wellness	IT-Software
			Medical Devices & Diagnostics	Pharmaceuticals & Biotechnology		Fossil Fuels	Cleantech	Banking & Finance	Investments	Insurance		
Direct Employment Companies	19,560 120	16,350 570	10,500 310	4,620 290	42,810 2,490	30,340 1,510	19,920 1,510	38,970 3,150	24,370 6,770	31,480 3,440	192,290 18,160	46,470 4,530
Five-Year Employment Growth (2009-2014)	-3.2% (-6.2%)	1.6% (0%)	5.4% (1%)	-12.5% (-0.1%)	0% (-8.9%)	38% (18%)	22.5% (14.9%)	-8% (-1.1%)	9.9% (2.9%)	4.4% (3.1%)	21.2% (8.3%)	9.1% (23.2%)
One-Year Employment Growth (2014)	-0.4% (-2.6%)	2.3% (-0.4%)	1.9% (0.7%)	-4.3% (2.3%)	0.9% (1.1%)	6.5% (2.7%)	5.9% (1.5%)	-3.1% (-1.7%)	4.2% (1.3%)	2.8% (1.7%)	4.9% (1.6%)	3.2% (4.1%)
Direct Employment Concentration (2014)	1.1% (0.2%)	0.9% (0.7%)	0.6% (0.3%)	0.2% (0.3%)	2.3% (0.8%)	1.6% (1.3%)	1.1% (0.5%)	2.1% (1.8%)	1.3% (0.9%)	1.7% (1.7%)	10.4% (11.6%)	2.5% (2.0%)
Average Wage	$124,380	$56,670	$72,290	$97,190	$97,700	$109,750	$78,170	$71,110	$175,960	$68,110	$53,440	$99,770
Employment Concentration Ranking (among 50 largest metros)	1	13	11	25	5	4	5	7	12	18	30	9

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 12 industry clusters and subclusters. The following three variables are plotted:

- One-year direct employment growth, 2013 to 2014; on the *x-axis (horizontal)*;

- The industry's location quotient, 2014; on the *y-axis (vertical)*; and

- Employment size of the industry, 2014; 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 light purple, 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.
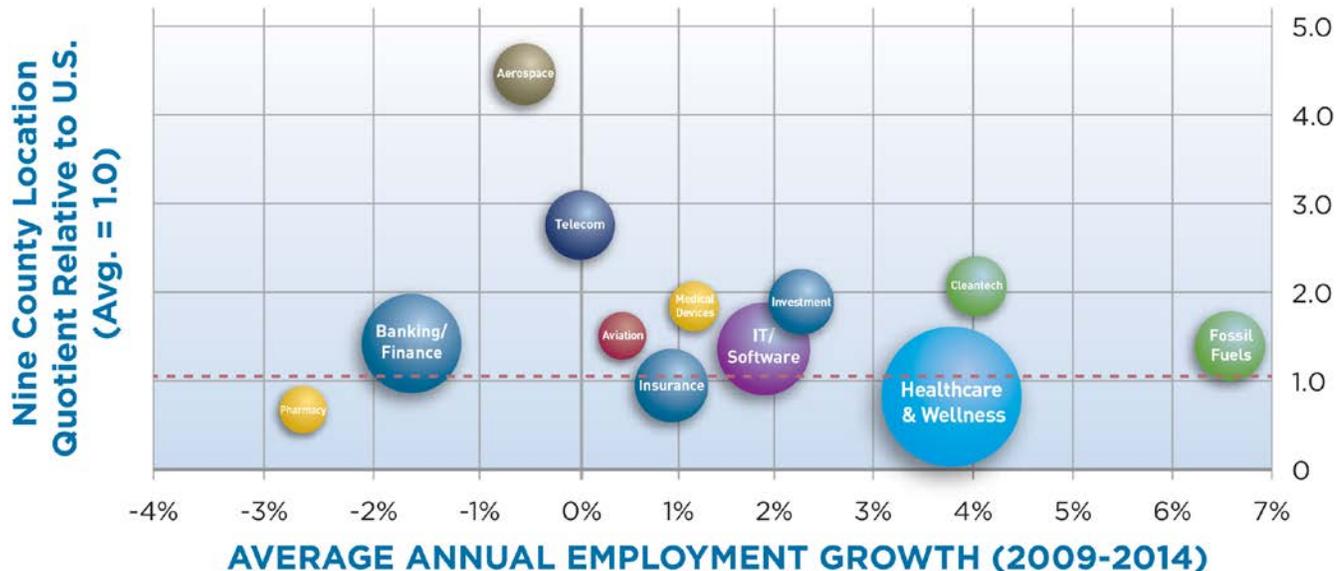
For example, fossil fuels had substantial employment growth from 2009 to 2014, aerospace had a key locational advantage represented by its high LQ position on the graph, and healthcare and wellness had a significant number of employees represented by the size of its bubble. Looking at other clusters, 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 2009 and 2014—particularly aerospace, 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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