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.)
• 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.

Published January 2015
### Metro Denver Industries Employment Snapshot

<table>
<thead>
<tr>
<th>Metro Denver Industries</th>
<th>Aerospace</th>
<th>Aviation</th>
<th>Bioscience</th>
<th>Broadcasting &amp; Telecommunications</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>19,560</td>
<td>16,350</td>
<td>10,500</td>
<td>4,620</td>
<td>42,810</td>
<td>30,340</td>
<td>19,920</td>
<td>38,970</td>
</tr>
<tr>
<td>Companies</td>
<td>120</td>
<td>570</td>
<td>310</td>
<td>290</td>
<td>2,490</td>
<td>1,510</td>
<td>1,510</td>
<td>3,150</td>
</tr>
<tr>
<td>Five-Year Employment</td>
<td>-3.2%</td>
<td>1.6%</td>
<td>5.4%</td>
<td>-12.5%</td>
<td>0%</td>
<td>38%</td>
<td>22.5%</td>
<td>-8%</td>
</tr>
<tr>
<td>Growth (2009-2014)</td>
<td>(-6.2%)</td>
<td>(0%)</td>
<td>(1%)</td>
<td>(-0.1%)</td>
<td>(-8.9%)</td>
<td>(18%)</td>
<td>(14.9%)</td>
<td>(-1.1%)</td>
</tr>
<tr>
<td>One-Year Employment</td>
<td>-0.4%</td>
<td>2.3%</td>
<td>1.9%</td>
<td>-4.3%</td>
<td>0.9%</td>
<td>6.5%</td>
<td>5.9%</td>
<td>-3.1%</td>
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<tr>
<td>Growth (2014)</td>
<td>(-2.6%)</td>
<td>(0.7%)</td>
<td>(0.7%)</td>
<td>(2.3%)</td>
<td>(1.1%)</td>
<td>(2.7%)</td>
<td>(1.5%)</td>
<td>(-1.7%)</td>
</tr>
<tr>
<td>Direct Employment</td>
<td>1.1%</td>
<td>0.9%</td>
<td>0.6%</td>
<td>0.2%</td>
<td>2.3%</td>
<td>1.6%</td>
<td>1.1%</td>
<td>2.1%</td>
</tr>
<tr>
<td>Concentration (2014)</td>
<td>(0.2%)</td>
<td>(0.7%)</td>
<td>(0.3%)</td>
<td>(0.3%)</td>
<td>(0.8%)</td>
<td>(1.3%)</td>
<td>(0.5%)</td>
<td>(1.8%)</td>
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<tr>
<td>Average Wage</td>
<td>$124,380</td>
<td>$56,670</td>
<td>$72,290</td>
<td>$97,190</td>
<td>$97,700</td>
<td>$109,750</td>
<td>$78,170</td>
<td>$71,110</td>
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<tr>
<td>Employment Concentration Ranking (among 50 largest metros)</td>
<td>1</td>
<td>13</td>
<td>11</td>
<td>25</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>7</td>
</tr>
</tbody>
</table>

U.S. data in ( )
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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Industry Overview

Colorado is an aerospace industry leader, ranking first in the nation in 2014 for private aerospace employment as a percentage of total employment, and third in total private-sector employment. Colorado supports a thriving aerospace ecosystem that includes a broad spectrum of companies, products, and systems for commercial, military, and civil space applications. Colorado’s aerospace companies research, develop, design, and manufacture guided missiles, spacecraft, satellites and other communications equipment, and navigation and detection instruments. Companies in the aerospace cluster also produce planetary spacecraft and launch systems and provide mission support.

The breadth and depth of the aerospace cluster is rooted in support from four military commands, eight major space contractors, National Aeronautics and Space Administration (NASA) research activities, and several universities involved in extensive space research. The state’s wealth of talent, research assets, and synergy between industry, commercialization, research, and workforce development supports its position as a space industry leader. Colorado has 160 businesses classified as aerospace companies, and more than 400 companies and suppliers providing space-related products and services. Direct employment in the aerospace cluster totals 25,110 private sector workers and approximately 27,890 military personnel. These nearly 53,000 workers in the aerospace cluster support an additional 109,680 workers in all industries throughout Colorado, bringing direct and indirect employment supported by the aerospace cluster to 162,680 workers.

The majority of Colorado’s key aerospace businesses, facilities, and research institutions are located in the nine-county Metro Denver and Northern Colorado region. The region’s 19,560 private sector aerospace workers represent about 78 percent of all aerospace workers in Colorado. The region’s 120 aerospace companies represent about 74 percent of the state’s total companies in the cluster.

Private Aerospace Economic Profile

The aerospace cluster consists of 19, six-digit North American Industry Classification System (NAICS) codes including search, detection, and navigation instrument manufacturing; guided missile and space vehicle manufacturing; satellite telecommunications; and research and development.

_The nine-county region ranked first in the nation for its 2014 concentration of private aerospace employment._ The region’s aerospace cluster ranked first out of the 50 largest metro areas in total private-sector employment.

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1 The nine-county Metro Denver and Northern Colorado region consists of Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Jefferson, Larimer, and Weld Counties.
Aerospace Employment

The nine-county region’s aerospace cluster directly employed about 19,560 workers in 2014. Employment in the region’s aerospace cluster declined 0.4 percent between 2013 and 2014, compared with a 2.6 percent decrease at the national level as a result of ongoing agency consolidations and the lingering effects of government spending decreases. From 2009 to 2014, employment in the region’s aerospace cluster declined 3.2 percent, compared with a 6.2 percent decline nationwide. Nearly 6 percent of the nation’s aerospace employment is located in the region. Additionally, aerospace companies employed 1.1 percent of the region’s total employment base, compared with a 0.2 percent employment concentration nationwide.

About 120 aerospace companies operated in the nine-county region in 2014. Approximately 54 percent of the region’s aerospace companies employed fewer than 10 people, while 12 percent employed 250 or more.
AEROSPACE: Metro Denver and Northern Colorado Industry Cluster Profile

Aerospace Employment by County, 2014

- Arapahoe: 41.4%
- Jefferson: 29.9%
- Boulder: 25.3%
- Adams: 2.7%
- All other counties: 0.8%

Sources: Market Analysis Profile, 2014; Development Research Partners.

Aerospace Employment by Industry Sector, 2014

- Guided missiles & space vehicles: 36.5%
- Optical instruments & lenses mfg.: 3.1%
- Aerospace castings & metal mfg.: 0.5%
- Space satellite communications equip. mfg.: 0.8%
- Space vehicle & satellite supplies & parts: 0.6%
- Search, detection, navigation, & guidance: 58.5%
- Space research & technology: 0.1%

Sources: Market Analysis Profile, 2014; Development Research Partners.
Major Aerospace Contractors

Eight of the country’s major space contractors have a significant presence in the nine-county region. These companies support the U.S. Department of Defense (DoD) to procure, place, and manage national space assets for the military. They also provide manned and unmanned spacecraft, instrumentation, and ground control services for the National Aeronautics and Space Administration (NASA) and other agencies.

- **Ball Aerospace & Technologies Corp.** employs nearly 2,100 in Colorado, and supports critical missions for national agencies such as the DoD, NASA, the National Oceanic and Atmospheric Administration, and other U.S. government and commercial entities. The company develops and manufactures spacecraft, advanced instruments and sensors, components, data exploitation systems, and RF solutions for strategic, tactical, and scientific applications. [www.ballaerospace.com](http://www.ballaerospace.com)

- **The Boeing Company** has nearly 2,300 employees at several locations throughout Colorado with the largest concentrations in Arapahoe County and Colorado Springs. Core businesses include: Jeppesen, a key commercial aviation subsidiary; strategic missile defense systems, including Ground-based Midcourse Defense; space and intelligence and Global Positioning System support; and Boeing military aircraft at Fort Carson. Boeing spent $205 million with 255 Colorado suppliers in 2013. [www.boeing.com](http://www.boeing.com)

- **Exelis** has offices in Aurora, Boulder, and Colorado Springs, altogether employing about 900 people. The Information Systems division provides a broad set of services including radiological, nuclear, and missile defense engineering services, space, ground and range services, as well as development and operations support to the Intelligence Community. The Geospatial Systems division is represented on the GPS Operational Control System program. Exelis Visual Information Solutions (VIS) provides software solutions and services for data and image analysis, visualization, image delivery, and rapid development for commercial, research, and government markets. [www.exelisinc.com](http://www.exelisinc.com)

- **Lockheed Martin** employs nearly 8,600 people in Colorado. Of these workers, nearly 5,100 are employed at the Space Systems Company unit headquartered in Jefferson County. Space Systems designs, develops, tests, and manufactures advanced technology systems for its government and commercial customers. The company also develops products ranging from human space flight systems and navigation, meteorological, and communications systems to laser radar and missile defense systems. [www.lockheedmartin.com](http://www.lockheedmartin.com)

- **Northrop Grumman** provides a diverse portfolio of products and services related to systems integration, missile systems and national security technologies, defense electronics, marine and space systems, and battle management. The company also works with advanced aircraft, unmanned aircraft vehicles, naval vessels, and space technology. Northrop Grumman employs more than 2,100 people throughout Colorado. [www.northropgrumman.com](http://www.northropgrumman.com)

- **Raytheon Company** employs about 2,500 people throughout the state, with the majority of employees located in Aurora. Raytheon Company manages spacecraft missions and analyzes post-launch data through a variety of technologies including radio frequency, GPS, communications and intelligence, and electro-optical/infrared. [www.raytheon.com](http://www.raytheon.com)

- **Sierra Nevada Corporation (SNC)** has a significant presence in Colorado, employing more than 900 people in the state. SNC’s Space Systems Group, located in Louisville, develops small spacecraft mechanical subsystems, satellite components, and space propulsion systems for government and commercial customers. The company’s Intelligence, Surveillance and Reconnaissance Group in Centennial provides products and services for a variety of airborne systems. [www.sncorp.com](http://www.sncorp.com)

- **United Launch Alliance (ULA)**, a joint venture between Lockheed Martin’s Atlas and Boeing’s Delta launch divisions, celebrated its eighth year of operation in 2014. ULA employs about 1,700 of its 3,700-person U.S. workforce at its Centennial headquarters. Most of ULA’s management, engineering, and mission support functions are concentrated in Colorado, while most assembly and integration operations are concentrated in Alabama, Texas, and California. The company’s Human Launch Services division supports NASA and its partners in developing capabilities to deliver U.S. astronauts to low Earth orbit and human exploration beyond Earth orbit. Since company formation in 2006, ULA has celebrated more than 75 consecutive, successful Delta II, Delta IV, and Atlas V rocket launches. [www.ulalaunch.com](http://www.ulalaunch.com)
Additional Major Private Aerospace Companies

- ABSL Space Products  
  www.abslspaceproducts.com
- DigitalGlobe, Inc.  
  www.digitalglobe.com
- IHS Aerospace & Defense  
  http://aero-defense.ihs.com
- Intrex Aerospace  
  www.intrexcorp.com
- Merrick & Company  
  www.merrick.com
- Research Electro-Optics, Inc.  
  www.reoinc.com
- Rocky Mountain Instrument Company  
  www.rmico.com
- Science Applications International Corp.  
  www.saic.com
- SEAKR Engineering, Inc.  
  www.seakr.com
- Surrey Satellite Technology US LLC  
  www.sst-us.com
- Trimble Rockies  
  www.trimble.com
- UP Aerospace Inc.  
  www.upaerospace.com

Military Aerospace Profile

Colorado is home to a diverse mix of U.S. Department of Defense (DoD) military installations that foster important synergies between private aerospace companies and government entities.

- **Buckley Air Force Base** in Aurora is home to the 460th Space Wing and supports more than 83 tenant organizations that represent all branches of the military. Tenants are located both on and off the base. The base also hosts the Colorado Air National Guard 120th Fighter Squadron and its F-16C fighters.

- **Air Force Bases** in Colorado Springs include Peterson Air Force Base, Cheyenne Mountain Air Force Station, and Schriever Air Force Base.
  - **Peterson Air Force Base** is the home of the 21st Space Wing as well as the North American Aerospace Defense Command (NORAD), the U.S. Northern Command (USNORTHCOM), Air Force Space Command (AFSPC), U.S. Army Space and Missile Defense Command/U.S. Army Forces Strategic Command (SMDC/ARSTRAT), and the 302nd Airlift Wing (AFRC), as well as a number of other smaller tenant units. The 21st Space Wing is responsible for worldwide missile warning, space control, and missile defense.
  - **Cheyenne Mountain Air Force Station** is owned and operated by Air Force Space Command. It hosts the NORAD and USNORTHCOM Alternate Command Center and other national security activities.
  - **Schriever Air Force Base** is the home of the 50th Space Wing (SW) as well as the Space Innovation and Development Center (SIDC), the 310th Space Wing (AFRC), the Missile Defense Integration and Operations Center (MDIOC), the Joint Functional Component Command for Integrated Missile Defense (JFCC-IMD), and numerous tenant organizations. The 50th SW is responsible for the operation and support of more than 150 DoD satellites and installation support to 16 major tenant units with a workforce of more than 8,100 personnel. The 50th SW provides space combat capability through command, control, operations, and support of communication, navigation, warning, surveillance, and weather satellite weapons systems.

- **The United States Air Force Academy** in Colorado Springs was established in 1954 as an accredited college to educate officers in the U.S. Air Force. The 10th Air Base Wing is the host wing for the Air Force Academy and provides base-level support activities including medical, engineering, base logistics, fire response services, communications, security, and other key support for more than 25,000 military and civilian personnel. The Academy has 20 research centers and institutes with more than 400 professional researchers and faculty dedicated to space, science, air, atmospheric research, modeling and simulation, and Science, Technology, Engineering, and Mathematics (STEM), exceeding $60 million in economic impact annually.
### Government Installation Personnel

<table>
<thead>
<tr>
<th>Installation</th>
<th>Personnel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buckley Air Force Base</td>
<td>8,930</td>
</tr>
<tr>
<td>Peterson Complex*</td>
<td>8,640</td>
</tr>
<tr>
<td>U.S. Air Force Academy</td>
<td>7,320</td>
</tr>
<tr>
<td>Schriever Air Force Base</td>
<td>3,000</td>
</tr>
<tr>
<td><strong>Total Employment</strong></td>
<td><strong>27,890</strong></td>
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</tbody>
</table>

*Peterson Complex total includes personnel at Peterson Air Force Base and Cheyenne Mountain Air Force Station (including NORAD, USNORTHCOM, AFSPC, and SMDC/ARSTRAT).

### 2014 INDUSTRY MILESTONES

#### Key Company Announcements

The nine-county region’s vibrant aerospace hub is an ideal location for companies to establish and expand. In 2014, Lockheed Martin Space Systems opened a new headquarters for its commercial satellite business. The company relocated its communications and remote sensing satellite building operation from Newtown, Pa. The move includes the addition of 350 jobs at the Jefferson County location by mid-2015 and 500 jobs over the next six years. The company will fill positions in engineering and software, supply-chain management, and manufacturing.

#### Research and Education Announcements

The nine-county region’s leading research institutions and educational facilities make significant contributions to the state’s dynamic aerospace economy.

- The University of Colorado Boulder (CU-Boulder) and the Jet Propulsion Laboratory (JPL) extended their partnership in space and Earth-science research. CU-Boulder, which began its collaboration with JPL in the 1960s, has been involved in roughly 40 sponsored research projects with JPL totaling nearly $15 million between 2011 and 2013. Research projects include solar system exploration, star and galaxy formation, advanced telescope optics, and science outreach and climate change.
- NASA and Virgin Galactic selected a CU-Boulder payload to fly on a suborbital space plane. The payload—The Saturated Fluid Pistonless Pump Technology Demonstrator—was developed in partnership with Calif.-based Flometrics to reduce the weight, complexity, and cost of spacecraft fuel systems.
- NASA selected the Colorado Space Grant Consortium (CSGC) as a recipient of the 2014 National Space Grant and Fellowship Program to increase student and faculty engagement in science, technology, engineering, and mathematics (STEM) at community colleges and technical schools. CSGC could receive up to $500,000 to add four new community college campuses as affiliates to the consortium, and students and faculty will participate in STEM activities by signing, building, and launching high-altitude balloon payloads.
- The Colorado Space Business Roundtable completed its first Colorado Aerospace Internship Experience—a two-week immersive program designed to bring together high school and college students from Colorado’s rural areas to experience a “day in the life” of an employee at host organizations including ULA, Boeing, and Lockheed Martin. This STEM program allows students to gain valuable real-world experience as they attend meetings, perform on-the-job tasks, shadow current employees and network, all of which is fostered in a mentor capacity.

#### Major Collaborations

The nine-county region is a leader in major commercial, civil, and military space missions and projects. Examples of these collaborative projects and their progress are highlighted below.

**Dream Chaser®**

Louisville-based Sierra Nevada Corporation’s Space Systems Group continued to work rigorously on the Dream Chaser® spacecraft through significant collaboration with other Colorado-based aerospace companies. The Dream Chaser® is a winged, lifting-body spacecraft designed for International Space Station (ISS) crew
transportation and other human space flight operations, including international and commercial space applications. Program developments in 2014 included:

- Selection of Jefferson County-based Lockheed Martin Space Systems Company to build the composite structure of the spacecraft and to assist with certifying the vehicle for human spaceflight. Sierra Nevada and Lockheed Martin unveiled the orbital spacecraft composite airframe, which will be used to conduct the first orbital test flight in November 2016, atop a United Launch Alliance (ULA) Atlas V rocket.

- Signing three cooperative agreements—with the Japanese Aerospace Exploration Agency (JAXA), CU-Boulder’s BioServe Space Technologies, and Tuskegee University—to collaborate on missions, technologies, and educational opportunities for the Dream Chaser® spacecraft. The collaboration successfully completed a series of wind tunnel tests on scale models of the spacecraft, conducted to study the spacecraft’s reaction to subsonic, transonic, and supersonic conditions that will be encountered during ascent into space and re-entry from low Earth orbit.

- Unveiling plans to develop a smaller Dream Chaser® space plane to launch from a Stratolaunch plane, which could take a crew of three astronauts to low Earth orbit destinations or fly automated missions without a crew. The smaller plane could begin flight tests in 2016, with the first space mission scheduled to launch in 2018.

GMI and GPS III
Ball Aerospace & Technologies Corp. launched its Global Precipitation Measurement-Microwave Imager (GMI) in February 2014. As a joint effort between NASA and JAXA to improve climate, weather, and rainfall predictions, the mission will play an essential role in the Earth’s weather and environmental forecasting.

Lockheed Martin Space Systems Company is developing the U.S. Air Force’s (USAF) next generation of Global Positioning System (GPS III) satellites, which will deliver three times better accuracy, provide up to eight times improved anti-jamming capabilities, and extend spacecraft life by 25 percent. The first satellite is scheduled for completion in 2015.

InSight (Interior Exploration using Seismic Investigations, Geodesy and Heat Transport), a NASA Discovery-class mission to understand the processes that shaped rocky planets such as Mars and Earth, is scheduled to launch in 2016.

- Lockheed Martin Space Systems is constructing the Mars lander spacecraft for NASA’s InSight mission. In addition to conducting the assembly, test, and launch operations phase for the InSight lander, Lockheed Martin is also assembling and testing the spacecraft’s protective aeroshell capsule and cruise stage (which provides communications and power during the journey to Mars). Once the spacecraft has been fully assembled, it will undergo rigorous environmental testing in the summer of 2015.

Joint Polar Satellite System
- NASA awarded Raytheon Company a $185 million modification to its existing Joint Polar Satellite System (JPSS) Common Ground System contract, which increased the contract’s total value to $1.7 billion. The modification will allow the company to add operational capabilities to the space environment-tracking satellites, the first of which is scheduled to launch in 2017.
- Ball Aerospace received the Clouds and Earth Radiant Energy Systems (CERES) instrument for JPSS-1. JPSS-1—scheduled to launch in early 2017—will assist in recognizing and monitoring environmental conditions and also provide vital near-term weather data to meteorologists. Integration of CERES into the JPSS-1 satellite began in late 2014.

MAVEN
Mars Atmospheric and Volatile Evolution (MAVEN) is a prime example of Colorado’s leadership in space exploration with the entire mission and spacecraft being built and launched by Colorado organizations including Lockheed Martin Space Systems, CU-Boulder’s Laboratory for Atmospheric and Space Physics, Exelis, and ULA.

- In September, MAVEN successfully arrived at Mars’ orbit. The $485 million mission will gather data about the Martian upper atmosphere and the planet’s potential for supporting life.
- Early results released by NASA and CU-Boulder indicate the probe has yielded better than expected data and images, and may have fuel reserves to last at least a decade longer than its planned one-year mission.
Orion
Lockheed Martin Space Systems is building Orion, NASA’s first spacecraft designed for long-duration, human-rated deep space exploration. Orion will transport humans to destinations beyond low Earth orbit, such as the moon, asteroids, and eventually Mars. In 2014:

- Lockheed Martin Space Systems completed construction of the spacecraft, while NASA installed the heat shield—the largest ever built—and transported Orion to the Payload Hazardous Servicing Facility at Kennedy Space Center for fueling.
- In December, Orion completed its first test flight, traveling 3,600 miles into space, and orbiting the Earth twice before a successful splashdown and recovery. The highly successful flight enabled engineers to test critical safety systems and evaluate launch and high speed re-entry systems, avionics, altitude control, parachutes, and the heat shield.

OSIRIS-Rex
Lockheed Martin Space Systems will build the Origins Spectral Interpretation Resource Identification Security Regolith Explorer (OSIRIS-REx). OSIRIS-REx is a NASA asteroid study and sample return mission. Following launch in 2016, the mission will study and return a sample of a carbonaceous asteroid to Earth for detailed analyses in 2023.

Aerospace Projects

Launch Missions

- ULA launched nine national security, three space exploration missions, and two commercial missions in 2014, and twice successfully launching two separate missions from two different coasts in one week. The launch year included four Global Position Satellites for the USAF, the USAF’s Defense Meteorological Satellite Program (DMSP-19) payload, and NASA’s Orbiting Carbon Observatory-2 (OCO-2) payload. In addition to Orion EFT-1, other notable ULA launches included the Atlas V carrying the WorldView-3 satellite in August 2014 and the launch of CLIO—a classified communications satellite built by Lockheed Martin Space Systems—atop an Atlas V in September 2014.
- Highlands Ranch-based UP Aerospace Inc. launched its third NASA mission in 2014, with five payloads that included a sun sensor from NASA’s Jet Propulsion Laboratory and a radiation-tolerant computer system from Montana State University. The company’s rockets travel 75 miles into space, with about 4 minutes of time spent in zero gravity.
- NASA’s Launch Services Program selected ULA’s Atlas V to launch the $173 million Solar Orbiter Collaboration mission to study the sun. The Solar Orbiter mission, scheduled to launch in 2017, will observe the sun’s atmosphere with high spatial resolution lenses and will provide images and data covering the sun’s polar regions.
- ULA and the Boeing Company were selected to support NASA’s Commercial Crew program, sending critical cargo and the next generation of astronauts to the ISS. ULA will launch Boeing’s manned CST-100 spacecraft by 2017, playing a pivotal role in advancing human spaceflight.
- ULA and Kent, Wash.-based Blue Origin partnered to develop a new rocket engine called the BE-4. The agreement includes a four-year development process with full-scale testing in 2016 and the first flight scheduled to launch in 2019. The BE-4 will be available for both companies’ next generation launch systems.

Satellite Programs

- DigitalGlobe launched WorldView-3 in 2014, the highest-resolution commercial Earth-imaging satellite ever flown, capable of taking images five times clearer than standard commercial satellites. The satellite is the first of its kind to feature short-wave, infrared bands through a CAVIS instrument—clouds, aerosols, vapors, ice, and snow—that allow accurate imaging and data even through atmospheric obstacles. Four additional Colorado companies played vital roles on WorldView-3. Ball Aerospace built the spacecraft, Lockheed Martin Commercial Launch Services organized the launch, and ULA’s Atlas V delivered the satellite into orbit. Exelis Inc. constructed a telescope, shortwave infrared system, and sensor for the satellite.
- DigitalGlobe unveiled plans to accelerate the launch of WorldView-4 (formerly named GeoEye-2), built by Lockheed Martin, to mid-2016 to meet increased demand. A significant catalyst for this increased opportunity was the recent U.S. directive to allow images with a resolution up to 25 centimeters to be sold freely.
• Lockheed Martin successfully integrated the National Oceanic and Atmospheric Administration’s (NOAA) Geostationary Operational Environmental Satellite-R (GOES-R) system module with the propulsion module at its Littleton facility. When fully assembled, the satellite will provide accurate, real-time weather forecasts and early warning products to NOAA and other public and private organizations. The satellite is scheduled to launch in early 2016.

• Ball Aerospace was awarded a contract from Reston, Va.-based Laser Light™ Communications, LLC to provide its first global, all-optical commercial satellite system. Under the contract, Ball Aerospace will complete eight out of the 12 satellites in Laser Light’s constellation operating in medium Earth orbit. When complete, the constellation will transmit data at 6 terabits per second and a service speed of 200 gigabits per second to address growing commercial bandwidth demand.

• Ball Aerospace was awarded a $5.8 million contract from the Defense Weather System Directorate at the Space and Missile Systems Center in California to produce the Ion Velocity Meter (IVM) under the USAF Space Situational Awareness Environmental Monitoring program. The IVM will fly aboard the Constellation Observing System for Meteorology, Ionosphere and Climate-2 (COSMIC-2), a joint mission with Taiwan to launch a constellation of six satellites into low-inclination orbits in late 2015.

• Sierra Nevada Corporation’s Space Systems Group designed and constructed 17 satellites for the ORBCOMM Generation 2 (OG2) constellation using the nation’s first assembly-line specifically designed to produce a variety of small satellites. OG2 launched in late 2014 and will provide upgraded machine-to-machine communication services for all branches of industry and government, providing relay of small data packets at low latencies from mobile transmitters to ground-based terminals.

• NASA awarded Colorado State University a $4.5 million, three-year contract to design and build a new instrument to measure ice particles in clouds and water vapor in the upper troposphere. Information collected by the Tropospheric Water and Cloud (TWICE) will be used to improve global climate models and provide data regarding ice particles in the upper atmosphere.

• Ball Aerospace is building two air-quality sensors to provide future environmental monitoring. The geostationary ultraviolet visible spectrometers include the Tropospheric Emissions: Monitoring of Pollution (TEMPO) for NASA Earth Venture and the Geostationary Environmental Monitoring Spectrometer (GEMS), which is being jointly developed with the South Korea Aerospace Research Institute. Both instruments will complete critical design in 2015 and will be delivered in 2017.

Defense Missions

• The USAF awarded Lockheed Martin Space Systems a contract to maintain and develop systems for the nation’s Minuteman III nuclear missiles through 2022. Under the initial $109 million contract, Lockheed Martin will repair, modify, and test hardware and software components in the reentry system-reentry vehicle subsystem. The contract has options for an additional four years, totaling up to $452 million.

• Ball Aerospace received a $23.9 million contract from the NATO Seasparrow Project Office to develop a missile-detecting laser system for U.S. Navy ships. Under the contract, Ball Aerospace will provide fabrication test and installation and includes options for spare components, sustaining engineering, and field support.

• The USAF awarded Lockheed Martin Space Systems Company a $1.86 billion contract to complete construction of the fifth and sixth Geosynchronous Earth Orbit (GEO) satellites for the Space-Based Infrared System (SBIRS). The SBIRS GEO satellites provide ongoing early warning of ballistic missile launches and other tactical intelligence with infrared surveillance information and will be completed by 2022.

• DigitalGlobe acquired Boulder-based Spatial Energy’s digital imagery and related services. The $37 million acquisition added to the company’s position as a leading source of geospatial information and insight with new cloud-based solutions tailored to the oil and gas industry.

• Lockheed Martin Space Systems purchased Fairfax, Va.-based Zeta Associates Inc., which will become part of its Jefferson County-based division. The addition of the software company will broaden Lockheed Martin’s product offerings and strengthens its ability to deliver vital ground, air, and space-based intelligence systems.

Spaceport Colorado

In 2014, Front Range Airport continued the application process for certification from the Federal Aviation Administration (FAA) to operate as a horizontal-launch spaceport facility. The subsequent designation for Spaceport Colorado, which may be granted in 2015, fulfills a 2011 declaration by Gov. John Hickenlooper of Colorado’s intent to become a spaceport state. The effort will increase Colorado’s competitiveness in the aerospace industry and support new opportunities in the future growth of commercial space research and
transportation. Plans for Spaceport Colorado include the development of an aerospace and technology park to support a broad range of activities and commercial opportunities, including research and development, testing and evaluation, manufacturing, crew training, scientific research, suborbital flight, point-to-point travel, and unmanned aircraft systems (UAS). Spaceport Colorado has an abundance of surrounding land and convenient access to Denver International Airport and the Metro Denver area’s sizeable aerospace industry, research universities, and talented aerospace workforce.

Unmanned Aerial Systems (UAS)

The nine-county region is a global leader in UAS, with support from unmatched assets including a robust aerospace industry and military presence, established research institutions, and exceptional geographic and climatic diversity for testing sites. With UAS representing a growing portion of the nation’s military budget, and commercial UAS operations set to expand rapidly, the U.S. Congress is encouraging the integration of UAS into the National Airspace System (NAS), which presents Colorado job growth and economic impact opportunities. The nine-county region’s UAS resources and key project announcements in 2014 included:

- The Research and Engineering Center for Unmanned Vehicles (RECUV) at CU-Boulder is a university, government, and industry partnership dedicated to developing and integrating unmanned vehicle systems. RECUV engineers new mobile sensing systems, stimulates strategic discussions among leaders, increases public awareness of UAS, and educates and trains a next generation of engineers. In 2014, RECUV conducted an international research effort—the first multiple, unmanned aircraft interception of a rush of cold air, or gust front—preceding a thunderstorm across the Pawnee National Grassland. The research focuses on developing a smart, small unmanned aircraft system that can plan its own flight path to maximize endurance by combining real-time weather-radar and atmospheric-model data with measurements made from the aircraft.
- The Jonathan Merage Foundation awarded the College of Engineering and Applied Science at CU-Boulder a $130,000 contract to design a tracker vehicle and a new lightning detection instrument for integration into a small, unmanned aircraft. The system will be designed to measure electric field changes associated with lightning strikes. This project will occur in three phases over the next year, with deployments for thunderstorms beginning in the spring of 2015.
- The University of Denver’s Unmanned Systems Research Institute (DU2SRI) promotes knowledge, education, research, and development in unmanned systems, and is pushing forward the frontiers of unmanned systems to develop the next generation of fully autonomous UAS. The DU2SRI infrastructure includes five unmanned ground vehicles, one all-terrain mobile robot, more than 17 (electric and non-electric) unmanned helicopters and quadrotors, FAA-approved simulators, electronics design and fabrication capabilities, and complete UAS design and testing. In April 2014, the University of Denver signed an integrated robotics patent license agreement.
- The U.S. Geological Survey’s (USGS) National Unmanned Aircraft Systems Project Office, located in Denver, leads and coordinates USGS efforts to promote and develop UAS technology for civil and domestic applications. These efforts will directly benefit the U.S. Department of the Interior and USGS missions, including access to an increased level of persistent monitoring of earth surface processes (e.g. forest health conditions, monitoring wildfires, earthquake zones, and invasive species) in previously difficult to access areas.

Industry Infrastructure Support

The nine-county region’s unique public-private partnerships support the state’s thriving aerospace cluster.

- The Colorado Space Coalition (CSC), a group of industry stakeholders, works to make Colorado a center of excellence for space. The Coalition—including aerospace companies, military leaders, academic groups, and economic development organizations—promotes the state’s significant aerospace assets nationally and advances legislation vital to industry growth and success.
- eSpace: The Center for Space Entrepreneurship was established in 2009 as a partnership between the University of Colorado and Sierra Nevada Space Systems. The not-for-profit business incubator develops and catalyzes new entrepreneurial space companies, commercializing aerospace technologies created within these companies, and developing the aerospace workforce to support them. Since its inception, eSpace has generated a $7.1 million economic impact to the state and has fostered a thriving entrepreneurial aerospace industry through three successful programs: eSpace Incubator, Straight to Space workforce initiative, and the Venture Design program.
- The Center of Excellence for Commercial Space Transportation—a partnership between government, industry, the FAA, and nine academic institutions including CU-Boulder—formed in 2010 to address current and future challenges of commercial space transportation. CU-Boulder plays a key role,
offering its experience in spacecraft life-support systems and habitat design, human factors engineering analysis, payload experiment integration, and expertise in space environment and orbital mechanics.

- The Colorado Space Business Roundtable (CSBR) is an independent, nonprofit organization promoting the growth of space and space-related industry in Colorado, with particular focus on small space businesses. CSBR members include a broad cross-section of the Colorado space community including industry, government, and academia that support the space industry with services, advocacy, and procurement. In 2013, the CSBR sponsored a week-long networking road trip to help connect major space contractors along the Front Range with smaller aerospace subcontractors, suppliers, and businesses in Pueblo, Durango, Rifle, Grand Junction, and Alamosa.

Private Aerospace Workforce Profile

Many companies choose locations because of the available workforce. With nearly half of the nine-county region’s 3.6 million residents under the age of 35, employers can draw from a large, young, highly educated, and productive workforce. Of the region’s adult population, 41.2 percent are college graduates and 90.5 percent have graduated from high school. The state has the nation’s second-most highly educated workforce as measured by the percentage of residents with a bachelor’s degree or higher.

The attractiveness of the region draws new residents through migration. The region’s population is expected to grow 53.3 percent from 2010 to 2040, driving a 36.3 percent increase in the region’s labor force over the same period. It is important to note the changing composition of the workforce supply as the baby boomers begin to retire, which will pose implications for businesses whose employee pool includes significant numbers of these workers.

[Graph showing educational attainment and labor force projections]

Source: U.S. Census Bureau, 2013 American Community Survey.

Source: Colorado Division of Local Government, State Demography Office.
The nine-county region’s aerospace industry employs 19,560 people and includes a large pool of talented, well-educated, and highly skilled workers. Compared with the age distribution across all industries, the aerospace cluster has a larger share of employees that are between the ages of 35 and 64 years old.

The aerospace workforce supply consists of four main components: those currently working in the industry; those doing a similar type of job in some other industry; the unemployed; and those currently in the education pipeline. The Metro Denver and Northern Colorado Occupation & Salary Profile below includes the 10 largest aerospace occupations in the region. For these 10 largest occupations, the chart details the total number of workers employed in that occupation across all industries, the number of available applicants that would like to be working in that occupation, the number of recent graduates that are qualified for that occupation, and the median and sample percentile annual salaries.

**Wages**

Wages in the aerospace cluster are among the highest across all industry clusters. The 2013 average annual salary for an aerospace worker in the nine-county region was $124,380, compared with the national average of $100,200. Total nine-county payroll in the aerospace cluster exceeded $2.4 billion in 2013.

**Education & Training**

Colorado’s higher education system provides an excellent support system for businesses in the region. There are 28 public higher education institutions in Colorado, of which seven four-year and six two-year public institutions offering comprehensive curricula are located in the nine-county region. In addition, there are more...
than 100 private and religious accredited institutions and nearly 340 private occupational and technical schools offering courses in dozens of program areas throughout the state. Although not exhaustive, a list of the major, accredited educational institutions with the greatest number of graduates for each of the 10 largest aerospace occupations in the nine-county region are included below. A directory of all higher education institutions with corresponding websites may be accessed via http://highered.colorado.gov.

- Colorado School of Mines
  www.mines.edu
- Metropolitan State University of Denver
  www.msudenver.edu
- University of Denver
  www.du.edu
- Colorado State University
  www.colostate.edu
- Regis University
  www.regis.edu
- University of Northern Colorado
  www.unco.edu
- Colorado State University Global Campus
  www.colostate.edu
- University of Colorado Boulder
  www.colorado.edu
- Jones International University
  www.jiu.edu
- University of Colorado Denver
  www.ucdenver.edu

Key Reasons for Aerospace Companies to Locate in the Nine-County Region
The region is a top aerospace location offering:

1. The ability to recruit and retain technical and scientific employees and entrepreneurial talent
   - Of Colorado’s adult population, nearly 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, 2013 American Community Survey)
   - Colorado ranked ninth in the number of science and engineering graduate students per 1,000 individuals ages 25 to 34 years old in 2011. (National Science Foundation, 2014)
   - Colorado ranked fourth in the number of scientists and engineers as a share of all occupations in 2012. (National Science Foundation, 2014)
   - Colorado ranked 10th in the number of patents issued per 1 million people in 2013. (U.S. Patent and Trademark Office, 2014; U.S. Bureau of Economic Analysis, 2014)
   - The U.S. Department of Commerce’s United States Patent and Trademark Office located one of four new satellite offices in Denver due to the state’s expansive culture of innovation and entrepreneurism. (U.S. Patent and Trademark Office, 2014)
   - Metro Denver ranked as the ninth-best metro area for science, technology, engineering, and mathematics (STEM) graduates in 2014. STEM jobs in Metro Denver represented 8.2 percent of all occupations and the area’s annual mean wage for STEM jobs was $84,380. (NerdWallet, 2014)
   - Denver ranked as the seventh-best city for millennials (ages 25-34) out of 25 major cities with a population over 1 million in 2014. (Niche.com, 2014)
   - Denver ranked among the top five “Best Cities for New College Grads” in 2014. (Kiplinger’s Personal Finance, 2014)

2. Proximity to vendors and customers
   - Colorado received the nation’s fourth-highest National Aeronautics and Space Administration (NASA) prime contract awards in 2013, receiving more than $1.7 billion. The University of Colorado ranked fifth and Colorado State University ranked 58th among the top 100 public educational institutions for NASA research awards in 2013. (NASA, 2014)
   - The nine-county region’s aerospace cluster is anchored by eight large prime contractors: Ball Aerospace, The Boeing Company, Exelis, Lockheed Martin, Northrop Grumman, Raytheon, Sierra Nevada Corporation, and United Launch Alliance.
   - Colorado is home to major military operations including Buckley AFB, Peterson AFB, Schriever AFB, and Cheyenne Mountain Air Force Station. In addition, the U.S. Air Force Academy is located just outside of Colorado Springs.
   - Cheyenne Mountain Complex serves as NORAD and USNORTHCOM's Alternate Command Center and as a training site for crew qualification.
The U.S. Department of Defense (DoD) awarded Colorado a Procurement Technical Assistance Center (PTAC) in 2009, which assists Colorado businesses do business with prime contractors and federal, state, and local governments at nominal or no cost. The central office for Colorado’s PTAC is located in Colorado Springs and satellite offices in Aurora, Golden, and Westminster.

3. Business organizations and public policy programs designed to encourage industry growth
   - In 2013, Gov. Hickenlooper named Maj. Gen. Jay Lindell to be Colorado’s Aerospace and Defense Industry Champion, whose role is to oversee implementation of the state’s aerospace strategic plan and assist aerospace businesses, defense installations, and research institutions.
   - The Advanced Industries (AI) Accelerator Programs were created in 2013 to promote growth and sustainability in Colorado’s advanced industries including advanced manufacturing, aerospace, bioscience, electronics, energy and natural resources, infrastructure engineering, and technology and information. The Colorado Office of Economic Development and International Trade offers Proof of Concept, Early-Stage Capital & Retention, Infrastructure Funding, and AI Exports grants. Since inception, the programs have awarded 67 grants totaling $8.2 million to support these critical industries in their various phases of growth. (The Colorado Office of Economic Development and International Trade, 2014)
   - To further encourage investment in Colorado’s aerospace industry, legislation passed in 2014 will help support the state’s growing aerospace economy. House Bill 1178 (2014) exempted personal property used in an orbital space facility, a space propulsion system, satellite, or space station from sales and use taxes. The exemption will encourage capital investment in aerospace manufacturing supplies.
   - President Obama signed into law the Bipartisan Budget Act of 2013, which includes more than $2.7 billion in funding for Colorado’s space projects and initiatives. The funding includes $1.2 billion for Orion, $824 million for the Joint Polar Satellite System, and $2 million for the Boulder-based COSMIC-2 satellite program. These projects are all being partially built in Colorado.
   - To further pave the way for Spaceport Colorado, legislation passed in 2012 will help expand the state’s aerospace economy. Senate Bill 035 (2012) limited the liability for public and private entities holding a Federal Aviation Administration license for spaceflight activities. The legislation is an important first step in initiating commercial spaceflight activities in the state.

4. Proximity to colleges/universities
   - Two academic institutions in Colorado offer nationally ranked aerospace programs or degrees:
     - The University of Colorado Boulder’s (CU-Boulder) aerospace engineering sciences graduate program ranked among the top 10 in the nation. (U.S. News & World Report, 2014)
     - The National Research Council ranked CU-Boulder’s aerospace engineering sciences graduate program among the top four in the country. (National Research Council, 2010)
   - The University of Colorado system ranked 10th among the nation’s public institutions for science and engineering research and development expenditures totaling $800 million in fiscal year 2012. The university also ranked fourth for federally funded research expenditures. (National Science Foundation, 2014)
   - CU-Boulder’s Laboratory for Atmospheric and Space Physics is the only research institution that has designed and built space instruments for NASA that have launched to every planet in the solar system.
   - CU-Boulder is the only university outside of the Naval Postgraduate School to have two astronaut alumni on its faculty. Thirteen of CU-Boulder’s astronaut alumni are affiliates of the College of Engineering and Applied Science. (University of Colorado, 2014)
   - The University of Colorado is among the top-five U.S. universities, excluding military academies, in the number of astronaut alumni. Of the 20 astronaut alumni, 19 have flown in space as of 2014. (University of Colorado, 2014)

5. Low to moderate costs of doing business
   - Colorado’s simplified corporate income tax structure based on single-factor apportionment allows companies to pay taxes based solely on their sales in the state. Along with few regulatory burdens, Colorado’s corporate income tax rate of 4.63 percent is one of the lowest and most competitive tax structures in the nation. (State of Colorado; The Tax Foundation)
   - Colorado has the nation’s ninth-best tax climate for entrepreneurship and small business. (Small Business & Entrepreneurship Council, 2014)
Metro Denver office rental rates averaged $28.83 per square foot in the fourth quarter of 2014, making the region’s office market highly competitive with other major markets in the U.S. (CoStar Realty Information, The CoStar Office Report, Q4 2014)

6. Pro-business and flexible state and local governments

- Forbes ranked Metro Denver fourth among the “Best Places for Business and Careers” in 2014. Four other Colorado metropolitan areas were included on the list. The Fort Collins metro area ranked fifth overall, Greeley ranked 20th, Boulder ranked 23rd, and Colorado Springs ranked 29th. (Forbes, 2014)
- Colorado tied with Virginia as the eighth-best state for business in 2014 and the state earned top-10 rankings in the categories that measure access to capital (first), workforce (fifth), economy (eighth), and technology and innovation (ninth). (CNBC, 2014)
- Colorado ranked second in innovation and entrepreneurship and was among the top 10 states for infrastructure, business climate, and talent pipeline. (National Chamber Foundation, 2014)
- Colorado ranked as the No. 8 small-business-friendly state in the nation. Fort Collins (24th) and Denver (28th) ranked among 84 cities in the country. (Thumbtack.com, 2014; Ewing Marion Kauffman Foundation, 2014)

**Aerospace Industry Cluster Definition**

<table>
<thead>
<tr>
<th>NAICS Code*</th>
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<th>SIC Description</th>
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<tbody>
<tr>
<td>331512</td>
<td>(P) Steel investment foundries</td>
<td>3324-9901</td>
<td>Aerospace investment castings, ferrous mfg.</td>
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<td>(P) Aluminum foundries (except die-casting)</td>
<td>3365-0201</td>
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<td>331529</td>
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<td>3369-9901</td>
<td>Aerospace castings, nonferrous: except aluminum mfg.</td>
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<td>3462-05</td>
<td>Missile &amp; ordnance forgings mfg.</td>
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<tr>
<td>332112</td>
<td>(P) Nonferrous Forging</td>
<td>3463-02</td>
<td>Nonferrous missile &amp; ordnance forgings mfg.</td>
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<td>332313</td>
<td>(P) Plate work mfg.</td>
<td>3443-1104</td>
<td>Space simulation chambers, metal plate mfg.</td>
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<td>332813</td>
<td>(P) Electroplating, plating, polishing, anodizing &amp; coloring</td>
<td>3471-0204</td>
<td>Decontaminating &amp; cleaning of missile or satellite parts mfg.</td>
</tr>
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<td>332993</td>
<td>(P) Ammunition (except small arms) mfg.</td>
<td>3483-0101</td>
<td>Arming &amp; fusing devices for missiles mfg.</td>
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<td>332993</td>
<td>(P) Ammunition (except small arms) mfg.</td>
<td>3483-9910</td>
<td>Missile warheads mfg.</td>
</tr>
<tr>
<td>333314</td>
<td>(P) Optical instrument &amp; lens mfg.</td>
<td>3827</td>
<td>Optical instruments &amp; lenses</td>
</tr>
<tr>
<td>334220</td>
<td>(P) Radio &amp; television broadcasting &amp; wireless communications equipment mfg.</td>
<td>3663-9910</td>
<td>Space satellite communications equipment mfg.</td>
</tr>
<tr>
<td>334511</td>
<td>(P) Search, detection, navigation, guidance, aeronautical, &amp; instrument mfg.</td>
<td>3812</td>
<td>Search, detection, navigation, guidance</td>
</tr>
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<td>(P) Guided missile &amp; space vehicle mfg.</td>
<td>3761</td>
<td>Guided missiles &amp; space vehicles</td>
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<td>336415</td>
<td>(P) Guided missile &amp; space vehicle propulsion unit &amp; propulsion unit parts mfg.</td>
<td>3764</td>
<td>Space propulsion units &amp; parts</td>
</tr>
<tr>
<td>336419</td>
<td>(P) Other guided missile &amp; space vehicle parts &amp; aux. equipment mfg.</td>
<td>3769</td>
<td>Space vehicle equipment NEC</td>
</tr>
<tr>
<td>339113</td>
<td>(P) Surgical appliance &amp; supplies mfg.</td>
<td>3842-0113</td>
<td>Space suits mfg.</td>
</tr>
<tr>
<td>423860</td>
<td>(P) Transportation equipment &amp; supplies (except motor vehicle) merchant wholesalers</td>
<td>5088-0300</td>
<td>Aircraft &amp; space vehicle supplies &amp; parts - wholesale trade</td>
</tr>
<tr>
<td>423860</td>
<td>(P) Transportation equipment &amp; supplies (except motor vehicle) merchant wholesalers</td>
<td>5088-0305</td>
<td>Guided missiles &amp; space vehicles - wholesale trade</td>
</tr>
<tr>
<td>423860</td>
<td>(P) Transportation equipment &amp; supplies (except motor vehicle) merchant wholesalers</td>
<td>5088-0307</td>
<td>Space propulsion units &amp; parts - wholesale trade</td>
</tr>
<tr>
<td>517919</td>
<td>(P) All other telecommunications</td>
<td>4899-9902</td>
<td>Missile tracking by telemetry or photography</td>
</tr>
<tr>
<td>541712</td>
<td>(P) Research and development in the physical, engineering, and life sciences (except biotechnology)</td>
<td>3761</td>
<td>Guided missiles and space vehicles</td>
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<tr>
<td>927110</td>
<td>Space research and technology</td>
<td>9661</td>
<td>Space research and technology</td>
</tr>
<tr>
<td>927110</td>
<td>Space research and technology</td>
<td>4789-9902</td>
<td>Space flight operations, except government</td>
</tr>
</tbody>
</table>

*(P) indicates that only part of the NAICS industry category is represented in the industry cluster definition. Note: NEC indicates “not elsewhere classified.”
AEROSPACE: Metro Denver and Northern Colorado Industry Cluster Profile

Aerospace Industry Cluster Relationships

Aerospace

Support Industries
- Aviation
- Computer Storage
- Geospatial
- Government
- Manufacturing
- Software
- Telecommunications

Technologies
- GIS
- GPS
- Nanotechnology
- Photonics
- Remote Sensing

Infrastructure
- AUVSI
- BioServe Space Technologies
- Colorado Center for Astrodynamics
- CO Photonics Industry Association
- CO Space Business Roundtable
- CO Space Coalition
- CO Space Education Initiative
- CO Space Grant Consortium
- CU-Aerospace Engineering
- CSU-Dept. of Atmospheric Science
- GIS of the Rockies
- NCAR, NOAA, NIST
- National Defense Industrial Assoc.
- RECUV
- Rocky Mountain Technology Alliance
- Space Foundation
- Spaceport CO & Aeronautical Authority
- Space Science Institute

Client Industries
- Aviation
- Geospatial
- Security/Defense
- Telecommunications

For additional information, contact us:

Metro Denver Economic Development Corporation
1445 Market Street
Denver, CO 80202-1790
303.620.8092
email: info@metrodenver.org
www.metrodenver.org

COLORADO SPACE COALITION

For more information on Colorado’s aerospace industry:
303.620.8133
email: info@spacecolorado.org
www.spacecolorado.org

Industry Overview

The aviation cluster includes companies that manufacture aircraft and provide air transportation services. More specifically, the cluster includes airlines, airports, aircraft manufacturing and technology companies, and support services. Colorado’s robust system of 76 public-use airports supports 265,000 jobs, $12.6 billion in payroll, and generates $36.7 billion in economic output annually. Denver International Airport (DIA) provides an invaluable link between the nine-county Metro Denver and Northern Colorado region and the global community. By promoting trade and commerce, DIA serves as a catalyst to transform the region into one of the nation’s most prosperous and vital economies. In 2013, DIA managed about 1,600 flight operations and more than 144,000 passengers every 24 hours, making it the fifth-busiest airport in the nation and 15th busiest in the world. Total passenger traffic at DIA reached 52.6 million in 2013 and set several records for monthly passenger traffic. This was the sixth year in DIA history that the airport’s yearly passenger traffic exceeded 50 million.

In 2014, DIA served 25.9 million passengers during the first six months, reporting the busiest first half of the year in its 19-year history. In November 2014, DIA’s year-to-date passenger traffic exceeded 49 million and international passenger traffic increased year-over-year for the 31st-consecutive month. International traffic reached the second-highest level ever for the first half of 2014, rising 12 percent between June 2013 and 2014, with 1.1 million international passengers served during the first six months. More than 20 nonstop flights operate between Denver and international destinations in nine countries, including recent additions to Panama City, Guadalajara, and Chihuahua. With the addition of these international cities and existing flights from DIA to Europe, Asia, and South America, these destinations form a global triangle with Denver at the nucleus.

Similar to passenger traffic, air freight activity remains a dynamic part of the airport’s daily operations. Eight cargo airlines and 13 major and national carriers currently provide DIA cargo service. With 24-hour operations, the airfield and a 39-acre cargo ramp make freight handling efficient, with no curfews. The airport’s total cargo operations currently exceed approximately 226,315 metric tons per year.

Aviation Economic Profile

The aviation cluster consists of 41, six-digit North American Industry Classification System (NAICS) codes including aircraft manufacturing, passenger and freight air transportation, airport operations, and air traffic control.

*With direct employment of 16,350 aviation workers, the nine-county region ranked 11th out of the 50 largest metro areas in absolute employment in 2014.* The region ranked 13th for aviation employment concentration. Roughly 73 percent of Colorado’s aviation cluster employees work in the region.

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1 The nine-county Metro Denver and Northern Colorado region consists of Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Jefferson, Larimer, and Weld Counties.
Aviation Employment

The nine-county region's aviation employment (16,350 workers) rose 2.3 percent in 2014, compared with the previous year's level, adding nearly 380 new jobs over the same period. National employment levels declined 0.4 percent over-the-year. Nearly 2 percent of the nation's aviation employment is located in the region. Between 2009 and 2014, the region's aviation employment rose 1.6 percent, compared with no change at the national level. Aviation companies employed 0.9 percent of the region's total employment base, compared with a 0.7 percent employment concentration nationwide.

About 570 aviation companies operated in the nine-county region in 2014. Eighty percent of the region's aviation companies employed fewer than 10 people, while 1.2 percent employed 250 or more.

AVIATION: Metro Denver and Northern Colorado Industry Cluster Profile

Aviation Employment by County, 2014

- Denver: 79.3%
- Arapahoe: 10.0%
- Adams: 2.5%
- Jefferson: 2.4%
- Boulder: 2.1%
- Larimer: 1.9%
- Weld: 0.6%
- Broomfield: 0.3%
- Douglas: 0.8%
- Larimer: 1.9%
- Boulder: 2.1%
- Jefferson: 2.4%
- Adams: 2.5%
- Arapahoe: 10.0%

Sources: Market Analysis Profile, 2014; Development Research Partners.

Aviation Employment by Industry Sector, 2014

- Scheduled air transport: 66.3%
- Airports, flying fields, & airport terminal services: 15.0%
- Nonscheduled air transport: 7.2%
- Other aviation-related services: 3.7%
- Aircraft & aircraft parts mfg.: 2.1%
- Aircraft regulating agencies: 3.4%
- Aviation schools, flying instruction, & air shows: 0.9%
- Aircraft repair services: 1.4%

Sources: Market Analysis Profile, 2014; Development Research Partners.
Nine-County Region Airport Information

The nine-county region’s commercial, reliever, and general aviation airports form a cohesive system for commerce and air travel needs. The diverse system of airports provides residents and businesses outstanding access to regional, national, and international markets. The state’s largest airport—Denver International Airport (DIA)—generates more than $26 billion for the region annually. Combined, the nine-county region’s airports contribute more than $28 billion to the region’s economy annually, according to CDOT’s Division of Aeronautics.

Denver International Airport (DIA)

DIA is a state-of-the-art facility owned and operated by the City and County of Denver. Occupying 53 square miles and located approximately 24 miles northeast of downtown Denver, DIA is the primary airport serving the nine-county region and the state of Colorado. DIA has more than 35,000 badged employees who work for the airport and approximately 1,200 at the City and County of Denver.

DIA accommodates more than 50 million passengers annually with six runways, three concourses, 109 gates, and 42 regional aircraft positions. DIA can serve the ever-expanding international travel market via the sixth runway, the longest in North America. DIA has 15 commercial carriers offering scheduled nonstop service from Denver to more than 180 domestic and international destinations, with major hubs for United, Southwest, and Frontier Airlines.

The nine-county region is a natural hub for cargo operations due to its central U.S. location and access to an extensive freight network and major interstate highways. Additionally, the airport’s air cargo and mail facilities comprise 375,000 square feet in five buildings south of the airfield, with room to expand. DIA is home to several world-class cargo companies and support facilities, including World Port Cargo Support, DHL, UPS, FedEx, and United Airlines cargo. The U.S. Postal Service facility is also located nearby, providing a wide array of competitive shipping and receiving options. Further, more than 50 freight forwarders and customs brokers operate within 20 miles of DIA.

DIA is a recognized leader in sustainability efforts, and was the first airport in the nation to receive ISO 14001 Environmental Management System certification in 2004. The airport is also a Gold Member of the Colorado Department of Public Health and Environment’s Environmental Leadership Program. The airport continually works to reduce its carbon footprint through a variety of energy efficient technologies. DIA is the largest distributed generation photovoltaic energy producer in Colorado and its four solar array systems produce approximately 6 percent of the airport’s total electrical power requirements. The airport has one of the largest compressed natural gas fleets in the country including 172 buses, sweepers, and other alternatively fueled vehicles, and 121 electric and hybrid electric vehicles. Alternative vehicles comprise roughly 51 percent of the airport’s light duty fleet.

Reliever Airports

Three reliever airports—those designated by the Federal Aviation Administration (FAA) to relieve traffic at commercial airports and general aviation airports, and provide other aviation services—are strategically located throughout the nine-county region. These airports support the state and regional economies by creating jobs and contributing to overall economic development efforts. Further, the airports are among the fastest growing in the country and represent a vital part of the Colorado aviation industry’s future economic growth and vitality.

- **Centennial Airport** is the premier reliever and business airport in the state. Supporting 23 business parks and more than 6,000 businesses responsible for more than 27 percent of the state’s GDP, the airport provides all services necessary to compete in a global economy. The airport is home to four, 24/7 award-winning fixed-based operator concierge services, a fully staffed 24/7 FAA Air Traffic Control Tower and on-demand U.S. Customs clearances, nationally ranked catering, a 10,000-foot CAT 1 ILS runway, gateway service to Ronald Reagan Washington National Airport, and some of the most competitive fuel prices in the country. Services such as Flight for Life, law enforcement, medical flights, flight schools, and aircraft maintenance services are also based at the airport. Centennial Airport generates more than $1.3 billion for the region annually, the highest among the state’s general aviation airports.

- **Front Range Airport**, located six miles southeast of DIA, is the region’s only reliever airport without major residential areas nearby and no noise or over-flight impacts making it both remote and convenient. At just under 4,000 acres, Front Range is the largest reliever airport in the region, and includes 1,000 acres for aviation and aerospace development. Additionally, an adjacent 6,300-acre business park is planned for development to support airport-related commercial and business activities. Front Range Airport has the nation’s tallest general aviation tower, which controls two 8,000-foot/CAT 1 ILS
full-precision runways and associated taxiway and ramp system. CDOT’s Division of Aeronautics is located at Front Range Airport in a state-owned building. Spaceport Colorado has proposed to create an aerospace technology park on the airport campus for research and commercial development and the FAA could issue a spaceport operator license by mid-2015.

- **Rocky Mountain Metropolitan Airport** (RMMA), located between downtown Denver and Boulder, is the most convenient reliever airport to downtown Denver, and one of the five busiest airports in Colorado. Averaging more than 120,000 operations each year, RMMA has three runways, including a 9,000-foot CAT 1 ILS runway, and offers a user-fee designated U.S. Customs Office open 24 hours a day. RMMA also has Part 139 FAA airport certification with established requirements for commuter passenger service and large, on-demand aircraft charter. RMMA is home to more than 40 aviation companies and flight departments, including the U.S. headquarters of Pilatus Business Aircraft and HeliQwest. The airport is adjacent to the Interlocken Business Park and Westmoor Technology Park, and also houses the U.S. Forest Service tanker base and the National Center for Atmospheric Research. A new, state-of-the-art FAA control tower opened at the airport in 2012. In 2014, RMMA continued work on the Airport Master Plan Update including a new Corporate Taxilane and enhanced airport pavements, with completion expected in late 2016. The airport generates more than $460 million in annual impact to the region.

**General Aviation Airports**

Colorado’s general aviation airports form a cohesive system for commerce and air travel needs. Five general aviation airports are located in the nine-county region:

- Boulder Municipal Airport
- Erie Municipal Airport
- Fort Collins-Loveland Municipal Airport
- Greeley-Weld County Airport
- Longmont Municipal Airport

Metro Denver’s airports receive significant support from the region, especially from the Colorado Department of Transportation’s (CDOT) Division of Aeronautics and the Metro Denver Aviation Coalition (MDAC). Established in 1991, CDOT's Division of Aeronautics supports Colorado’s general aviation and regional commercial aviation community through aviation fuel tax revenues, a discretionary aviation grant program, and long-range system planning in partnership with Colorado’s general aviation airports. MDAC is an industry affiliate of the Metro Denver Economic Development Corporation that serves as a private-sector advocate dedicated to the continued growth and development of the region’s aviation industry, including the long-term growth and vision of DIA and Metro Denver’s three reliever and five general aviation airports.

**Major Aviation Companies**

- Air Methods Corp. [www.airmethods.com](http://www.airmethods.com)
- American Airlines, Inc. [www.aa.com](http://www.aa.com)
- Air Serv Corp. [www.airservcorp.com](http://www.airservcorp.com)
- Delta Air Lines, Inc. [www.delta.com](http://www.delta.com)
- DHL [www.dhl.com](http://www.dhl.com)
- FedEx [www.fedex.com](http://www.fedex.com)
- Frontier Airlines [www.flyfrontier.com](http://www.flyfrontier.com)
- Great Lakes Aviation [www.greatlakesav.com](http://www.greatlakesav.com)
- Heli-One Colorado [www.heli-one.ca](http://www.heli-one.ca)
- Integrated Airline Services, Inc. [www.iasair.com](http://www.iasair.com)
- Jeppesen [www.jeppesen.com](http://www.jeppesen.com)
- Pilatus Aircraft [www.pilatus-aircraft.com](http://www.pilatus-aircraft.com)
- Signature Flight Support [www.signatureflight.com](http://www.signatureflight.com)
- Southwest Airlines [www.southwest.com](http://www.southwest.com)
- United Airlines [www.united.com](http://www.united.com)
- United Parcel Service Inc. [www.ups.com](http://www.ups.com)
2014 Industry Highlights

Denver International Airport Project Updates

Several projects were underway at DIA in 2014:

- Construction continued on the Hotel and Public Transit Center that will transform the area directly south of Jeppesen Terminal. Several project milestones were reached, including major road and bridge construction and more than 60 percent of the East Rail Line was completed. The $544 million project will include a new onsite 519-room Westin Denver International Airport Hotel and Conference Center, a station for the 23-mile commuter rail line that will connect DIA with Denver Union Station in downtown Denver, an open-air plaza above the station providing connections to the main terminal, and upgrades to the airport’s existing train and baggage systems. The hotel, conference center, and public plaza will open in the fall of 2015, with rail service starting in 2016.

- DIA completed two projects designed to improve two of its most heavily used runways. The first project was a $10.3 million reconstruction of Runway 7-25, which replaced 400 deteriorating concrete slabs. The second project was a $14.7 million upgrade to the lighting system on Runway 8-26. DIA also replaced the lighting in the east and west parking garages with energy-efficient LED lighting, which is expected to trim DIA’s energy use in the garages by 45 percent.

- Southwest Airlines opened five new gates on Concourse C and renovated its existing gates. The airline has more than 170 daily flights to nearly 60 nonstop destinations from Denver, which is the fastest-growing market in the carrier’s history.

- DIA will add 14 new restaurants and stores, including a brewery-themed eatery to the new Westin Hotel airport hotel that is currently under construction. The businesses will include restaurants, bars, coffee kiosks, and high-end fashion stores slated to open in late 2015.

- The U.S. Transportation Security Administration (TSA) opened a new application center for its Pre-Check service at DIA. TSA Pre✓ provides passengers a dedicated security-screening lane with benefits that include leaving on shoes and light outerwear and belts, as well as leaving laptops and compliant liquids in carry-on bags.

- DIA added its fourth solar array capable of generating up to 2 megawatts (MW) of power. The electricity from the new solar array will be used to power the Denver Fire Department’s Aircraft Rescue and Fire Fighting Training Academy at the airport. Collectively, DIA’s four solar systems can generate 10 MW of power.

Key Company Announcements

A number of airlines and aviation companies expanded in the nine-county region in 2014:

- United Airlines will reclaim 175 jobs that were previously outsourced to SkyWest Airlines. The company decided to outsource 600 positions and bring 400 positions back to the company’s airline hubs, including Denver. The available positions include ticket and gate agents, and baggage handlers for United Express flights.

- United Airlines extended its lease with DIA through 2035. The lease agreement could save United nearly $35 million each year through the airport’s debt restructuring.

- Englewood-based Air Methods Corp. purchased a new flight simulator and plans to be a hub for flight training with the addition of three more simulators through 2016. Air Methods operates a fleet of 400 medical aircraft consisting of 380 helicopters and 20 planes, roughly one-third of the country’s medical aircraft.

- Broomfield-based Pilatus Aircraft received a $312 million contract from Santa Monica, Calif.-based Surf Air to build 65 single-engine turboprop planes. Upon completion, Surf Air will be the largest single operator of Pilatus PC-12, a six- or eight-passenger plane. While the aircraft are manufactured in Switzerland, they are shipped to Broomfield for interior fabrication and painting.

- Frontier Airlines leased the former Continental Airlines hangar at DIA. The hangar will serve as a maintenance facility for aircraft and ground service equipment. Under the five-year lease, Denver will reimburse the airline for costs of up to $1.6 million to repair the hangar.

- Southwest Airlines will increase nonstop service in the 2015 summer season from 174 to 185 departures a day, adding 50 jobs at DIA.

Global Market Additions and Service Milestones

DIA increased its presence in several global markets and celebrated numerous service milestones in 2014:
• United Airlines began nonstop service between Denver and Panama City, Panama in December 2014. Panama City will provide a direct link to its hub of international commerce and will serve as a gateway to destinations across Latin America. The flights will be offered daily between November and August and five times weekly between September and October. The new service could have an estimated $35 million to $40 million annual economic impact to Colorado and support more than 400 new jobs.

• Volaris Airlines began nonstop service from Denver to Guadalajara and Chihuahua, Mexico in July 2014. This marked the first airline to offer flights directly from Denver to cities in Mexico that are not vacation hubs or the country’s capital.

• British Airways will increase its capacity on its daily flights between Denver and London by 23 percent and will add first-class service. The airline will begin flying a Boeing 747-400 between DIA and Heathrow Airport in March 2015. The increased capacity will allow more convenient access to the United Kingdom and to connections to other European cities. London is Denver’s largest market in Europe.

• Nonstop flights between Denver and Dallas Love Field began at the end of 2014. Nonstop flights between Dallas and other cities were prohibited by the 1980 Wright amendment. Due to the change in policy, Southwest Airlines initially added three daily nonstop flights to Denver and has since increased to five nonstop flights.

• United Airlines and DIA celebrated the one-year anniversary of the nonstop flight between Denver and Narita International Airport in Tokyo. During the first year of service, nearly 720 Boeing 787 flights carried nearly 130,000 passengers. The nonstop service generated an estimated annual economic impact of $130 million to the state’s economy and created 1,500 jobs.

• Frontier Airlines celebrated 20 years of service in July 2014. The airline began service in 1994 from the Stapleton International Airport to Bismarck, Fargo, Grand Forks, and Minot, North Dakota. Frontier Airlines provides more than 3,300 jobs, 85 daily departures, and served 15 unique destinations in 2014.

Spaceport Colorado

In 2014, Front Range Airport continued the application process for certification from the FAA to operate as a horizontal-launch spaceport facility. The subsequent designation for Spaceport Colorado, which may be granted in 2015, fulfills a 2011 declaration by Gov. John Hickenlooper of Colorado’s intent to become a spaceport state. The effort will increase Colorado’s competitiveness in the aerospace industry and support new opportunities in the future growth of commercial space research and transportation. Plans for Spaceport Colorado include the development of an aerospace and technology park to support a broad range of activities and commercial opportunities, including research and development, testing and evaluation, manufacturing, crew training, scientific research, suborbital flight, point-to-point travel, and unmanned aircraft systems (UAS). Spaceport Colorado has an abundance of surrounding land and convenient access to DIA and the Metro Denver area’s sizeable aerospace industry, research universities, and talented aerospace workforce.

Unmanned Aerial Systems (UAS)

The nine-county region is a global leader in UAS, with support from unmatched assets including a robust aerospace industry and military presence, established research institutions, and exceptional geographic and climatic diversity for testing sites. With UAS representing a growing portion of the nation’s military budget, and commercial UAS operations set to expand rapidly, the U.S. Congress is encouraging the integration of UAS into the National Airspace System (NAS), which presents Colorado job growth and economic impact opportunities. The nine-county region’s UAS resources and key project announcements in 2014 included:

• The Research and Engineering Center for Unmanned Vehicles (RECUV) at the University of Colorado Boulder (CU-Boulder) is a university, government, and industry partnership dedicated to developing and integrating unmanned vehicle systems. RECUV engineers new mobile sensing systems, stimulates strategic discussions among leaders, increases public awareness of UAS, and educates and trains a next generation of engineers. In 2014, RECUV conducted an international research effort—the first multiple, unmanned aircraft interception of a rush of cold air, or gust front—preceding a thunderstorm across the Pawnee National Grassland. The research focuses on developing a smart, small unmanned aircraft system that can plan its own flight path to maximize endurance by combining real-time weather-radar and atmospheric-model data with measurements made from the aircraft.

• The Jonathan Merage Foundation awarded the College of Engineering and Applied Science at CU-Boulder a $130,000 contract to design a tracker vehicle and a new lightning detection instrument for integration into a small, unmanned aircraft. The system will be designed to measure electric field...
changes associated with lightning strikes. This project will occur in three phases over the next year, with deployments for thunderstorms beginning in the spring of 2015.

- The University of Denver’s Unmanned Systems Research Institute (DU2SRI) promotes knowledge, education, research, and development in unmanned systems, and is pushing forward the frontiers of unmanned systems to develop the next generation of fully autonomous UAS. The DU2SRI infrastructure includes five unmanned ground vehicles, one all-terrain mobile robot, more than 17 (electric and non-electric) unmanned helicopters and quadrotors, FAA-approved simulators, electronics design and fabrication capabilities, and complete UAS design and testing. In April 2014, the University of Denver signed an integrated robotics patent license agreement.

- The U.S. Geological Survey’s (USGS) National Unmanned Aircraft Systems Project Office, located in Denver, leads and coordinates USGS efforts to promote and develop UAS technology for civil and domestic applications. These efforts will directly benefit the U.S. Department of the Interior and USGS missions, including access to an increased level of persistent monitoring of earth surface processes (e.g., forest health conditions, monitoring wildfires, earthquake zones, and invasive species) in previously difficult to access areas.

Aviation Workforce Profile

Many companies choose locations because of the available workforce. With nearly half of the nine-county region’s 3.6 million residents under the age of 35, employers can draw from a large, young, highly educated, and productive workforce. Of the region’s adult population, 41.2 percent are college graduates and 90.5 percent have graduated from high school. The state has the nation’s second-most highly educated workforce as measured by the percentage of residents with a bachelor’s degree or higher.

The attractiveness of the region draws new residents through migration. The region’s population is expected to grow 53.3 percent from 2010 to 2040, driving a 36.3 percent increase in the region’s labor force over the same period. It is important to note the changing composition of the workforce supply as the baby boomers begin to retire, which will pose implications for businesses whose employee pool includes significant numbers of these workers.

The nine-county region’s aviation industry employs 16,350 people and includes a large pool of talented, well-educated, and highly skilled workers. Compared with the age distribution across all industries, the aviation cluster has a larger share of employees between the ages of 25 and 64 years old.

The aviation workforce supply consists of four main components: those currently

![Educational Attainment of Metro Denver and Northern Colorado's Population Age 25 and Older](image1)

Source: U.S. Census Bureau, 2013 American Community Survey.

![Metro Denver and Northern Colorado's Labor Force Projections by Age](image2)

Source: Colorado Division of Local Government, State Demography Office.
working in the industry; those doing a similar type of job in some other industry; the unemployed; and those currently in the education pipeline. The Metro Denver and Northern Colorado Occupation & Salary Profile below includes the 10 largest aviation occupations in the region. For these 10 largest occupations, the chart details the total number of workers employed in that occupation across all industries, the number of available applicants that would like to be working in that occupation, the number of recent graduates that are qualified for that occupation, and the median and sample percentile annual salaries.

**Wages**

The 2013 average annual salary for aviation employees in the nine-county region was $56,670, compared with the national average of $66,710. Total nine-county payroll in the aviation cluster exceeded $905 million in 2013.

**Metro Denver and Northern Colorado Aviation Occupation & Salary Profile, 2014**

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<tr>
<td>1. Aviation pilots, copilots, &amp; flight engineers</td>
<td>2,859</td>
<td>114</td>
<td>75</td>
<td>$106,264</td>
<td>$47,744</td>
<td>$87,625</td>
<td>$142,043</td>
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<td>2. Flight attendants</td>
<td>2,476</td>
<td>67</td>
<td>0</td>
<td>$38,899</td>
<td>$31,628</td>
<td>$34,578</td>
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<td>3. Reservation &amp; transportation ticket agents &amp; travel clerks</td>
<td>2,555</td>
<td>35</td>
<td>0</td>
<td>$28,750</td>
<td>$21,513</td>
<td>$23,475</td>
<td>$42,406</td>
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<td>5. Transportation workers, all other</td>
<td>1,839</td>
<td>79</td>
<td>19</td>
<td>$38,225</td>
<td>$21,816</td>
<td>$26,607</td>
<td>$43,835</td>
<td>$47,519</td>
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<td>6. Aircraft mechanics &amp; service technicians</td>
<td>1,696</td>
<td>53</td>
<td>241</td>
<td>$63,313</td>
<td>$35,423</td>
<td>$48,753</td>
<td>$75,241</td>
<td>$82,480</td>
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<td>7. Carpenters</td>
<td>17,912</td>
<td>354</td>
<td>75</td>
<td>$33,419</td>
<td>$24,992</td>
<td>$28,765</td>
<td>$37,256</td>
<td>$42,171</td>
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<tr>
<td>8. Construction laborers</td>
<td>21,184</td>
<td>704</td>
<td>19</td>
<td>$29,182</td>
<td>$21,833</td>
<td>$25,677</td>
<td>$33,204</td>
<td>$38,102</td>
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<tr>
<td>9. Emergency medical technicians &amp; paramedics</td>
<td>1,860</td>
<td>84</td>
<td>939</td>
<td>$42,455</td>
<td>$20,533</td>
<td>$27,314</td>
<td>$61,728</td>
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<td>10. Labor &amp; freight, stock, &amp; material movers, hand</td>
<td>22,984</td>
<td>1,064</td>
<td>0</td>
<td>$25,318</td>
<td>$18,377</td>
<td>$20,793</td>
<td>$32,953</td>
<td>$42,761</td>
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</tbody>
</table>

Notes: The number of available applicants is a point-in-time measurement of the number of people who have registered in Colorado’s workforce development system’s statewide database, Connecting Colorado, as being able and available to work in a particular occupation. Results should be interpreted with caution since registration in Connecting Colorado is self-reported. In addition, the skills rubric may assign up to four occupation codes for each registrant. Therefore, the number of available applicants could be inflated. Source: Provided by Arapahoe/Douglas Works! QCEW Employees, Non-QCEW Employees, Self Employed, & Extended Proprietors - EMSI 2014.3 Class of Worker.

**Education & Training**

Colorado’s higher education system provides an excellent support system for businesses in the region. There are 28 public higher education institutions in Colorado, of which seven four-year and six two-year public institutions offering comprehensive curricula are located in the nine-county region. In addition, there are more than 100 private and religious accredited institutions and nearly 340 private occupational and technical schools offering courses in dozens of program areas throughout the state. Although not exhaustive, a list of the major, accredited educational institutions with the greatest number of graduates for each of the 10 largest
aviation occupations in the nine-county region are included below. A directory of all higher education institutions with corresponding websites may be accessed via http://highered.colorado.gov.

- Colorado State University  
  www.colostate.edu
- Red Rocks Community College  
  www.rrcc.edu
- University of Denver  
  www.du.edu
- Front Range Community College  
  www.frontrange.edu
- Regis University  
  www.regis.edu
- University of Northern Colorado  
  www.unco.edu
- Jones International University  
  www.jiu.edu
- University of Colorado Boulder  
  www.colorado.edu
- Metropolitan State University of Denver  
  www.msudenver.edu
- University of Colorado Denver  
  www.ucdenver.edu

**Key Reasons for Aviation Companies to Locate in the Nine-County Region**

The region is a top aviation location offering:

1. **A prime air transportation location**
   - Denver International Airport (DIA) was the fifth-busiest airport in the nation and 15th-busiest worldwide in terms of passenger traffic in 2013. (U.S. Bureau of Transportation Statistics, 2014; Airports Council International 2014; and Denver International Airport, 2014)
   - Located on the 105th meridian, the nine-county region’s central location at the exact midpoint between Tokyo and Frankfurt positions the region favorably to serve growing world markets. The region is an excellent location for doing business with the entire nation and is within four hours flying time of every North American city with a population of 1 million or more. (Metro Denver Economic Development Corporation)
   - DIA is the largest airport site in North America and the second-largest international airport in the world by land size. Encompassing 53 square miles of land, DIA is one of the few major U.S. airports with room to expand its current facilities to accommodate future growth. (Denver International Airport, 2014)
   - DIA’s six nonintersecting runways offer a competitive advantage for businesses relying on speed to market, facilitated by state-of-the-art logistics facilities, airside-to-grounds interface, and air route connectivity throughout North America and to Asia, Europe, and South America. (Airport City Denver, 2014)
   - DIA ranked fifth among the nation’s 100 largest airports for the greatest decline in average domestic airfares since the first quarter of 2000. The average domestic fare at DIA fell 45.4 percent between the first three months of 2000 and 2014, while the average U.S. domestic fare declined 18.9 percent over the 14-year period. (U.S. Bureau of Transportation Statistics, 2014)
   - Skytrax ranked DIA as the fifth-best domestic airport in the world in its annual World Airport Awards. DIA was also recognized for the best airport staff service in North America, the second-best regional airport in North America, the third-best airport in North America, and the ninth-best world airport serving more than 50 million passengers annually. (Skytrax, 2014)
   - Three general purpose Foreign Trade Zones in Metro Denver and Northern Colorado allow manufacturers using imported parts and materials to expedite customs and reduce or eliminate fees and tariffs. Aspen Distribution, Inc. operates the original site located near the former Stapleton Airport, and the second zone, WorldPort at DIA, is just minutes from DIA. The newest and largest zone geographically—Great Western Industrial Park in Windsor—connects to the Burlington Northern Santa Fe and Union Pacific rail lines via the Great Western Railway of Colorado. (City and County of Denver)

2. **Lower overall costs of doing business**
   - Colorado’s simplified corporate income tax structure based on single-factor apportionment allows companies to pay taxes based solely on their sales in the state. Along with few regulatory burdens, Colorado’s corporate income tax rate of 4.63 percent is one of the lowest and most competitive tax structures in the nation. (State of Colorado; The Tax Foundation)
• To promote aviation growth in the state, aircraft manufacturers or companies that are involved in the maintenance and repair, completion, or modification of aircraft located in aviation development zones can qualify for a state income tax credit of $1,200 per new employee in tax years between 2006 and 2017. (Colorado Department of Revenue)

• Signed into law in 2014, On-demand Air Carrier Sales & Use Tax Exemption supports Colorado’s business-friendly climate for aviation companies. House Bill 1374 (2014) provides sales and use tax exemptions for on-demand air carriers and eligible aircraft that on-demand air carriers utilize only for the purpose of final assembly, maintenance, modification, or completion of the aircraft manufacturing process.

• The City and County of Denver began a two-year phase out of its 3.62 percent sales and use tax on aviation parts in 2014. The exemption will bring new, high-paying aircraft maintenance jobs to Denver. (The City and County of Denver, 2014)

• Legislation passed in 2008 abolished Colorado’s fly-away sales tax on planes manufactured in Colorado. The exemption, a valuable incentive for aircraft manufacturers, applies to aircraft built in Colorado but housed in another state. (State of Colorado, Office of the Governor)

• Forbes ranked Metro Denver fourth among the “Best Places for Business and Careers” in 2014. Four other Colorado metropolitan areas were included on the list. The Fort Collins metro area ranked fifth overall, Greeley ranked 20th, Boulder ranked 23rd, and Colorado Springs ranked 29th. (Forbes, 2014)

• Colorado tied with Virginia as the eighth-best state for business in 2014 and the state earned top-10 rankings in the categories that measure access to capital (first), workforce (fifth), economy (eighth), and technology and innovation (ninth). (CNBC, 2014)

• Colorado has the nation’s ninth-best tax climate for entrepreneurship and small business. (Small Business & Entrepreneurship Council, 2014)

• Metro Denver office rental rates averaged $28.83 per square foot in the fourth quarter of 2014, making the region’s office market highly competitive with other major markets in the U.S. (CoStar Realty Information, The CoStar Office Report, Q4 2014)

3. Access to aviation-related training programs

• The Aviation and Aerospace Science Department at Metropolitan State University of Denver (MSUD) is one of the largest and most advanced collegiate aviation programs in the country, and home to the state-of-the-art Robert K. Mock World Indoor Airport and Advanced Aviation and Aerospace Flight Simulation Training Lab.

• In 2014, Great Lakes Airlines established a priority hiring agreement for MSUD aviation graduates. Students who enter the new program, which provides classes, training, and pilot certifications, are guaranteed an interview at Great Lakes.

• MSUD is revolutionizing aviation and aerospace education with its Aerospace Engineering Sciences building, a high-tech, collaborative-learning facility that will house multiple disciplines to answer the workforce needs of the aviation, aerospace, and advanced manufacturing industries. (Metropolitan State University of Denver, 2014)

• The nine-county region offers nearly 20 flight training schools at Boulder Municipal Airport, Centennial Airport, Erie Municipal Airport, Fort Collins-Loveland Municipal Airport, and Rocky Mountain Metropolitan Airport. These schools provide pilot training, aviation instruction, and certification programs. (Metropolitan State University of Denver, 2014)

• MSUD and Aims Community College in Greeley are among 36 schools approved under the Federal Aviation Administration’s Air Traffic Collegiate Training Initiative. (Federal Aviation Administration, 2014)

• Colorado-based Heli-Ops is one of the nation’s leading high altitude helicopter training centers and helicopter operators and is the first helicopter flight school in the nation to adopt a curriculum-wide Scenario Based Training program. (Colorado Heli-Ops, 2014)

• The Emily Griffith Opportunity School offers a Federal Aviation Administration (FAA)-certified aircraft maintenance program in airframe and powerplant mechanics at its Aircraft Training Center located at Front Range Airport.

• Redstone College is located adjacent to Rocky Mountain Metropolitan Airport and offers programs in airframe and power plants (A&P) and electronics technology. Redstone is also one of the largest providers of newly licensed FAA A&P mechanics and graduates are recruited by some of the nation’s top aviation employers. (Redstone College)
4. An overall better quality of life
   - Metro Denver ranked as the fourth-fittest metro area in the nation in 2014. Denver's high percentage of residents participating in physical activity, and low obesity and cardiovascular disease rates contributed to its high rank. (American College of Sports Medicine, 2014)
   - Colorado has the fourth-highest percentage of state land area devoted to the National Forest System. The state offers access to more than 50 national parks and wilderness areas, 42 state parks, and the greatest number of 14,000-foot peaks in the nation that support a healthy, active lifestyle. (U.S. Forest Service, 2014; Colorado State Parks, 2014)
   - Boulder ranked second on the 2014 list of the “Top 100 Best Places to Live.” Aurora (50th) and Lakewood (88th) were also named to the list. (Livability.com, 2014)
   - Castle Rock ranked fourth in MONEY Magazine’s 2014 list of the “Best Places to Live.” Centennial (13th) and Boulder (23rd) were also named to the list’s top 50. (MONEY Magazine, 2014)
   - Denver ranked as the seventh-best city for millennials (ages 25-34) out of 25 major cities with a population over 1 million in 2014. (Niche.com, 2014)
   - FasTracks, a comprehensive project to build out Metro Denver’s entire mass transit system by 2019, is the largest simultaneous transit buildout in U.S. history. The expansion will make Metro Denver one of the top five regions in the country in terms of miles of fixed rail.
   - The cost of living in Metro Denver is only 8 percent above the national average and is well below that of many other major cities. (The Council for Community and Economic Research, Cost of Living Index, Q3 2014)
   - Metro Denver ranked third-sunniest among 20 major U.S. cities with sunshine on almost 70 percent of the days each year. (U. S. National Oceanic and Atmospheric Administration, National Climatic Data Center, 2013)

Aviation Industry Cluster Definition

<table>
<thead>
<tr>
<th>NAICS Code*</th>
<th>NAICS Description</th>
<th>SIC Code</th>
<th>SIC Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>238320</td>
<td>Paint &amp; wall covering contractors</td>
<td>1721-0301</td>
<td>Aircraft painting</td>
</tr>
<tr>
<td>314110</td>
<td>Carpet &amp; rug mills</td>
<td>2273-0100</td>
<td>Aircraft &amp; automobile floor coverings</td>
</tr>
<tr>
<td>314110</td>
<td>Carpet &amp; rug mills</td>
<td>2273-0101</td>
<td>Aircraft floor coverings, except rubber or plastic</td>
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<tr>
<td>326211</td>
<td>Tire mfg. (except retreading)</td>
<td>3011-0102</td>
<td>Airplane inner tubes</td>
</tr>
<tr>
<td>326211</td>
<td>Tire mfg. (except retreading)</td>
<td>3011-0202</td>
<td>Airplane tires, pneumatic</td>
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<tr>
<td>331491</td>
<td>Nonferrous metal (except copper &amp; aluminum) rolling, drawing, &amp; extruding</td>
<td>3357-9901</td>
<td>Aircraft wire &amp; cable, nonferrous</td>
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<tr>
<td>332111</td>
<td>Iron &amp; steel forging</td>
<td>3462-9901</td>
<td>Aircraft forgings, ferrous</td>
</tr>
<tr>
<td>332112</td>
<td>Nonferrous forging</td>
<td>3463-9901</td>
<td>Aircraft forgings, nonferrous</td>
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<tr>
<td>332312</td>
<td>Fabricated structural metal mfg.</td>
<td>3449-9904</td>
<td>Aircraft forgings, nonferrous</td>
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<tr>
<td>332510</td>
<td>Hardware mfg.</td>
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<td>Aircraft hardware</td>
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<td>3492-01</td>
<td>Fluid power valves for aircraft</td>
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<td>332999</td>
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<td>333318</td>
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<td>3699-0302</td>
<td>Flight simulators (training aids), electronic</td>
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<tr>
<td>333924</td>
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<td>334519</td>
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<td>Fuel densitometers, aircraft engine</td>
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<td>336320</td>
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<td>336360</td>
<td>Motor vehicle seating &amp; interior trim mfg.</td>
<td>2399-0404</td>
<td>Automobile &amp; aircraft seat belts</td>
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</tbody>
</table>
**AVIATION: Metro Denver and Northern Colorado Industry Cluster Profile**

<table>
<thead>
<tr>
<th>NAICS Code*</th>
<th>NAICS Description</th>
<th>SIC Code</th>
<th>SIC Description</th>
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<td>Aircraft mfg.</td>
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<td>Aircraft</td>
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<td>336413</td>
<td>Other aircraft part &amp; auxiliary equip. mfg.</td>
<td>3728</td>
<td>Aircraft parts &amp; equip., NEC</td>
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<td>423860</td>
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<td>Aeronautical equip. &amp; supplies</td>
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<td>423860</td>
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<tr>
<td>423860</td>
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<td>424720</td>
<td>(P) Petroleum &amp; petroleum products merchant wholesalers (except bulk stations &amp; terminals)</td>
<td>5172-0201</td>
<td>Aircraft fueling services</td>
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<td>441228</td>
<td>(P) Motorcycle, ATV, &amp; all other motor vehicle dealers</td>
<td>5599-01</td>
<td>Aircraft dealers</td>
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<tr>
<td>481111</td>
<td>Scheduled passenger air transportation</td>
<td>4512</td>
<td>Scheduled air transport</td>
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<tr>
<td>481112</td>
<td>Scheduled freight air transportation</td>
<td>4512</td>
<td>Scheduled air transport</td>
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<tr>
<td>481211</td>
<td>Nonscheduled charter passenger</td>
<td>4522</td>
<td>Nonscheduled air transport</td>
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<td>481212</td>
<td>Nonscheduled charter freight</td>
<td>4522</td>
<td>Nonscheduled air transport</td>
</tr>
<tr>
<td>481219</td>
<td>Other nonscheduled air transportation</td>
<td>7997-9901</td>
<td>Aviation club, membership</td>
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<tr>
<td>488110</td>
<td>Air traffic control</td>
<td>9621-01</td>
<td>Aircraft regulating agencies</td>
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<td>488119</td>
<td>Other airport operations</td>
<td>4581</td>
<td>Airports, flying fields, &amp; airport terminal services</td>
</tr>
<tr>
<td>488190</td>
<td>Other support activities for air transportation</td>
<td>4581</td>
<td>Airports, flying fields, &amp; airport terminal services</td>
</tr>
<tr>
<td>488190</td>
<td>Other support activities for air transportation</td>
<td>7699-2200</td>
<td>Aircraft &amp; heavy equip. repair services</td>
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<tr>
<td>488190</td>
<td>Other support activities for air transportation</td>
<td>7699-2201</td>
<td>Aircraft flight instrument repair</td>
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<tr>
<td>488190</td>
<td>Other support activities for air transportation</td>
<td>7699-2202</td>
<td>Aviation propeller &amp; blade repair</td>
</tr>
<tr>
<td>488190</td>
<td>Other support activities for air transportation</td>
<td>7699-2206</td>
<td>Hydraulic equip. repair</td>
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<tr>
<td>532411</td>
<td>(P) Commercial air, rail, &amp; water transportation equip. rental &amp; leasing</td>
<td>7359-0401</td>
<td>Aircraft rental</td>
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<td>541330</td>
<td>(P) Engineering services</td>
<td>8711-9902</td>
<td>Aviation and/or aeronautical engineering</td>
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<tr>
<td>561330</td>
<td>(P) Professional employer organizations</td>
<td>7363-9908</td>
<td>Pilot service, aviation</td>
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<tr>
<td>561599</td>
<td>(P) All other travel arrangement &amp; reservation services</td>
<td>4729-0101</td>
<td>Airline ticket offices</td>
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<tr>
<td>561720</td>
<td>(P) Janitorial services</td>
<td>4581</td>
<td>Airports, flying fields, &amp; airport terminal services</td>
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<td>611512</td>
<td>Flight training</td>
<td>8249-9901</td>
<td>Aviation school</td>
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<tr>
<td>611512</td>
<td>Flight training</td>
<td>8299-9908</td>
<td>Flying instruction</td>
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<td>(P) Ambulance services</td>
<td>4522</td>
<td>Nonscheduled air transport</td>
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<tr>
<td>713990</td>
<td>(P) All other amusement &amp; recreation industries</td>
<td>7999-1002</td>
<td>Air shows</td>
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<td>811123</td>
<td>(P) Communication equip. repair &amp; maintenance</td>
<td>7622-0101</td>
<td>Aircraft radio equip. repair</td>
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<td>(P) Other electronic &amp; precision equip. repair &amp; maintenance</td>
<td>7629-9901</td>
<td>Aircraft electrical equip. repair</td>
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<tr>
<td>926120</td>
<td>(P) Regulation &amp; admin of transportation programs</td>
<td>9621-01</td>
<td>Aircraft regulating agencies</td>
</tr>
</tbody>
</table>

*(P) indicates that only part of the NAICS industry category is represented in the industry cluster definition.
Note: NEC indicates "not elsewhere classified."
Aviation Industry Cluster Relationships

Support Industries
- Food Service
- Geospatial
- Government
- Hotels
- Maintenance
- Manufacturing
- Rail
- Security
- Trucking
- Warehousing

Technologies
- Flight Simulation
- GPS
- GIS
- Photonics
- Radar

Infrastructure
- CO Airport Operators Assoc.
- CO Aviation Business Assoc.
- CO Pilots Assoc.
- CO Civil Air Patrol
- CO Dept. of Transportation – Aeronautics Division
- Metro Denver Aviation Coalition
- Metropolitan State University of Denver
- Redstone College of Aviation Tech
- Flight Training Schools

Client Industries
- Aerospace
- Air Ambulance
- Business Travelers
- Cargo/Couriers
- Distribution
- Firefighting
- Government
- Tourism/Consumers
- Warehousing

For additional information, contact us:

Metro Denver
1445 Market Street
Denver, CO 80202-1790
303.620.8092
email: info@metrodenver.org
www.metrodenver.org

For more information on the region’s aviation cluster:

303.620.8083
email: info@metrodenver.org
www.metrodenver.org/MDAC

Industry Overview

The bioscience cluster is diverse in both size and scope, including companies that research, develop, and distribute products and services ranging from cutting-edge pharmaceuticals and medical devices and diagnostics to veterinary supplies and chemical testing kits. The cluster contributes to the growth and innovative capacity of other industries that transcend the bioscience cluster including healthcare and wellness, energy, information technology, and agriculture in the nine-county Metro Denver and Northern Colorado region. Advances in biology and breakthroughs in human and animal health will continue to foster innovation and provide the nine-county region a leading role in forming collaborative bioscience partnerships and supporting bioscience infrastructure.

The bioscience cluster is divided into two subclusters, each of which specializes in distinct aspects of the biosciences: (1) medical devices and diagnostics and (2) pharmaceuticals and biotechnology. With more than 15,120 bioscience workers in 600 companies, the bioscience cluster offers numerous opportunities in both academic and clinical discovery and contributes to the region's overall economic productivity. A related subcluster, although not specifically included in this report, is agricultural biotechnology. The agricultural biotechnology subcluster includes companies that utilize distinct elements of conventional breeding, biochemistry, molecular genetics, and plant physiology to improve the health of humans and animals. This subcluster employs nearly 1,030 workers in 100 companies in the region and grew 3.3 percent between 2009 and 2014, compared with a 1.2 percent decline nationwide.

The nine-county region is home to numerous public and private bioscience research and innovation assets, including:

- The Anschutz Medical Campus of the University of Colorado Denver (CU-Denver)
- National Jewish Health
- The Colorado Clinical and Translational Sciences Institute
- The Barbara Davis Center for Diabetes
- The Charles C. Gates Center for Regenerative Medicine and Stem Cell Biology
- The Rocky Mountain Lions Eye Institute
- The Linda Crnic Institute for Down Syndrome
- The Marion Downs Hearing Center
- The Eleanor Roosevelt Institute
- The Webb-Waring Center
- The Centers for Disease Control and Prevention’s National Center for Zoonotic, Vector-Borne, and Enteric Diseases in Fort Collins
- Colorado State University’s (CSU) Seed Laboratory and Animal Reproduction and Biotechnology Laboratory
- The Biofrontiers Institute at the University of Colorado Boulder (CU-Boulder)

The University of Colorado and CSU have created a collaboration of bioscience programs to coordinate bioscience research and commercialize innovative research technologies including the Colorado Institute for Drug, Device and Diagnostic Development (CID4), the Colorado Center for Drug Discovery (C2D2), the BioFrontiers Institute, the Center for Computational Biology, the Center for Translational Pharmacokinetics and Pharmacogenomics, and the Center for Pharmaceutical Biotechnology.

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1 The nine-county Metro Denver and Northern Colorado region consists of Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Jefferson, Larimer, and Weld Counties.
Medical Devices Economic Profile

The medical devices and diagnostics subcluster includes companies that engineer, research, design, and manufacture medical equipment used in the healthcare industry. The medical devices and diagnostics subcluster consists of eight, six-digit North American Industry Classification System (NAICS) codes.

The nine-county region ranked 11th out of the 50 largest metro areas for medical devices and diagnostics employment concentration in 2014. With direct employment in the medical devices and diagnostics subcluster of about 10,500 employees, the region ranked eighth in absolute employment. About 84 percent of Colorado’s medical devices and diagnostics employees work in the nine-county region.

Medical Devices and Diagnostics Employment and Company Profile, 2014

<table>
<thead>
<tr>
<th>Nine-County Region</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct employment, 2014</td>
<td>10,500</td>
</tr>
<tr>
<td>Number of direct companies, 2014</td>
<td>310</td>
</tr>
<tr>
<td>One-year direct employment growth, 2013-2014</td>
<td>1.9%</td>
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<tr>
<td>Five-year direct employment growth, 2009-2014</td>
<td>5.4%</td>
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<tr>
<td>Avg. annual direct employment growth, 2009-2014</td>
<td>1.1%</td>
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<tr>
<td>Direct employment concentration</td>
<td>0.6%</td>
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Medical Devices and Diagnostics Employment

The nine-county region’s medical devices and diagnostics subcluster employment (10,500 workers) rose 1.9 percent in 2014, compared with the previous year’s level, adding roughly 200 new jobs over the same period.

Approximately 310 medical devices and diagnostics companies operated in the nine-county region in 2014. Approximately 66 percent of the region’s medical devices and diagnostics companies employed fewer than 10 workers, while 2.5 percent employed 250 or more.

Major Medical Devices and Diagnostics Companies

- AlloSource  
  [www.allosource.org](http://www.allosource.org)
- Baxter Corporation  
  [www.baxter.com](http://www.baxter.com)
- Biodesix  
  [www.biodesix.com](http://www.biodesix.com)
- Cochlear Americas  
  [www.cochlear.com/us](http://www.cochlear.com/us)
- ConMed Corporation  
  [www.conmed.com](http://www.conmed.com)
- Covidien  
  [www.covidien.com](http://www.covidien.com)
- GE Healthcare  
  [www3.gehealthcare.com](http://www3.gehealthcare.com)
- Hach Company  
  [www.hach.com](http://www.hach.com)
- nSpire Health, Inc.  
  [www.nspirehealth.com](http://www.nspirehealth.com)
- Particle Measuring Systems  
  [www.pmeasuring.com](http://www.pmeasuring.com)
- Sharklet Technologies, Inc.  
  [www.sharklet.com](http://www.sharklet.com)
- SomaLogic, Inc.  
  [www.somalogic.com](http://www.somalogic.com)
- Sorin Group USA, Inc.  
  [www.sorin.com](http://www.sorin.com)
- Sparton Medical Systems  
  [www.sparton.com](http://www.sparton.com)
- Surefire Medical Inc.  
  [http://surefiremedical.com](http://surefiremedical.com)
- Terumo BCT, Inc.  
  [www.terumobct.com](http://www.terumobct.com)
Major Medical Devices and Diagnostics Companies Cont’d

- Lake Region Medical (formerly Accellent)  
  www.lakeregionmedical.com
- Water Pik, Inc.  
  www.waterpik.com
- Medtronic Surgical Technologies  
  www.medtronic.com

Pharmaceuticals and Biotechnology Economic Profile

Pharmaceutical companies manufacture, research, and develop pharmaceutical drugs. Biotechnology companies utilize cellular and molecular biology and medicinal chemistry to develop and commercialize therapeutic medicines. The pharmaceuticals and biotechnology subcluster consists of four, six-digit North American Industry Classification System (NAICS) codes.

*With direct employment in the pharmaceuticals and biotechnology subcluster of about 4,620 workers, the nine-county region ranked 15th in absolute employment of the 50 largest metro areas in 2014.* The region ranked 25th for pharmaceuticals and biotechnology employment concentration. About 95 percent of Colorado’s pharmaceuticals and biotechnology employees work in the nine-county region.

**Pharmaceuticals and Biotechnology Employment and Company Profile, 2014**

<table>
<thead>
<tr>
<th>Nine-County Region</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct employment, 2014</td>
<td>4,620</td>
</tr>
<tr>
<td>Number of direct companies, 2014</td>
<td>290</td>
</tr>
<tr>
<td>One-year direct employment growth, 2013-2014</td>
<td>-4.3%</td>
</tr>
<tr>
<td>Five-year direct employment growth, 2009-2014</td>
<td>-12.5%</td>
</tr>
<tr>
<td>Avg. annual direct employment growth, 2009-2014</td>
<td>-2.6%</td>
</tr>
<tr>
<td>Direct employment concentration</td>
<td>0.2%</td>
</tr>
</tbody>
</table>


Pharmaceuticals and Biotechnology Employment

The nine-county region’s pharmaceuticals and biotechnology subcluster employment (4,620 workers) declined 4.3 percent in 2014, compared with the previous year’s level. National employment levels rose 2.3 percent over-the-year. While the pharmaceuticals and biotechnology subcluster expanded in 2012 and 2013 after two-consecutive years of employment declines, a challenging regulatory environment and company-wide consolidations contributed to employment declines in 2014.

About 290 pharmaceuticals and biotechnology companies operated in the nine-county region in 2014. Nearly 75 percent of the region’s pharmaceuticals and biotechnology companies employed fewer than 10 people, while 1 percent employed 250 or more.
Major Pharmaceuticals and Biotechnology Companies

- Amgen Inc.  
  [www.amgen.com](http://www.amgen.com)
- Array BioPharma Inc.  
  [www.arraybiopharma.com](http://www.arraybiopharma.com)
- Colorado Serum Company  
  [www.colorado-serum.com](http://www.colorado-serum.com)
- Corden Pharma Colorado Inc.  
  [www.cordenpharma.com](http://www.cordenpharma.com)
- GlobeImmune, Inc.  
  [www.globimmune.com](http://www.globimmune.com)
- Heska Corporation  
  [www.heska.com](http://www.heska.com)
- Hospira, Inc.  
  [www.hospira.com](http://www.hospira.com)
- Sandoz, Inc.  
  [www.sandoz.com](http://www.sandoz.com)
- Spectrum Pharmaceuticals  
  [www.spprx.com](http://www.spprx.com)
- TOLMAR, Inc.  
  [www.tolmar.com](http://www.tolmar.com)

2014 Industry Highlights

Bioscience Research and Innovation Assets

One of the largest bioscience developments in the country, the Fitzsimons Life Science District and the adjacent Anschutz Medical Campus are the center of Colorado’s bioscience community. When complete, the $5.2 billion project encompassing 578 total acres and more than six million square feet of new real estate will be a world-class scientific community offering cutting-edge space, services, and support to more than 43,000...
bioscience professionals. Located just 15 minutes from Denver International Airport, the 184-acre Life Science District offers life science companies the opportunity to locate in pre-built laboratories and furnished office space or build-to-suit space. The BioBusiness Incubator and Accelerator facilities located within the 184-acre park are home to about 40 bioscience companies, offering turnkey facilities for research, business development, and product commercialization. In 2014, the Fitzsimons Redevelopment Authority and the University of Colorado’s Bioengineering program broke ground on a new Bioscience 2 building at the Anschutz Medical campus. The 112,000-square-foot building will include the Bioengineering program, accommodate approximately 250 students, and will provide space for potential bioscience startup companies to grow. The building is slated for August 2015.

The Anschutz Medical Campus also includes facilities for University Physicians, Inc., and the Schools of Medicine, Nursing, Dental Medicine, Pharmacy, and Public Health. According to CU-Denver, CU Anschutz contributed more than $2.6 billion to Colorado’s economy between 2012 and 2013 and employment increased by 4,200 jobs over this period of time. Located adjacent to the Anschutz Medical Campus is the U.S. Department of Veterans Affairs (VA) Eastern Colorado Healthcare System hospital and facilities. Construction began in 2011 on the new VA Hospital that will replace the existing facility in Denver and will be completed in 2016. The award-winning Children’s Hospital Colorado is also adjacent to the campus.

Northern Colorado also supports a growing network of accelerators to foster startups and established companies conducting life science research and development and associated business operations. Notably, CSU’s Research Innovation Center (RIC) is a hybrid academic research facility and bioscience incubator and includes a state-of-the-art, wet research laboratory capable of manufacturing clinical-grade vaccines or biologics. The RIC works closely with the area’s other primary startup incubator, Innosphere, which is the only innovation-based startup accelerator in Northern Colorado and provides assistance with raising capital and networking opportunities for high-impact scientific and technology startup companies. Innosphere supports bioscience, technology, and cleantech ventures through its FasTrac TechVenture entrepreneurial program developed by the Ewing Marion Kauffman Foundation. In 2013, Innosphere startups raised $35 million in risk capital and created 300 high wage jobs in Colorado.

- Northern Colorado supports the region’s bioscience hub through the efforts of CSU, the University of Colorado Health (UCH), the cities of Fort Collins and Loveland, and private enterprises. UCH has increased its capacity for clinical trials for national and local bioscience companies and has developed its own innovation capacity for surgical techniques and advancements in cancer treatment for animals.
- CSU, Poudre Valley Hospital, and the Medical Center of the Rockies signed a memorandum of understanding in 2014 to combine resources and personnel to bring CSU research to patients faster and more efficiently. The entities will collaborate in several areas, including clinical trials, funding opportunities, technology transfer, employee education/training, and marketing.
- CSU’s Flint Animal Cancer Center is an internationally recognized leader in clinical veterinary oncology and cancer research and is a flagship program for CSU’s College of Veterinary Medicine and Biomedical Sciences through its translational research.

Key Company Announcements
The nine-county region is a key location for private bioscience companies to grow and thrive. Notable company announcements in 2014 included:

- AntriaBio Inc., a biopharmaceutical research and development company, relocated its company operations from Menlo Park, Calif. to Louisville. The company intends to revive a basal insulin product that was originally being developed by Fort Collins-based PR Pharmaceuticals Inc. With the relocation, the company expects to hire up to 30 new employees at the Louisville site over the next year.
- Medical device manufacturer Terumo BCT completed construction of its new worldwide headquarters and manufacturing operations in Lakewood. The expansion will add up to 250 jobs to its existing 2,000 employee workforce. Terumo BCT specializes in blood transfusion, collection, and processing equipment.
- Nordson Corp. broke ground on a new state-of-the-art manufacturing facility in Loveland. The new facility will meet growing demand for the company’s Value Plastics brand used for bioscience and medical markets. The 115,000-square-foot facility includes full clean-room molding, assembly, packaging, and inventory storage capabilities and is slated for completion in early 2015.
- Vention Medical expanded its design and development operations in Boulder. The 6,000-square-foot expansion will allow the company to accelerate product development for partner companies in interventional and minimally invasive surgical markets.
Ampio Pharmaceuticals, Inc. opened its new headquarters, manufacturing, and research facility in unincorporated Arapahoe County. The new facility will accommodate the company’s production of Ampion™ and could manufacture and package 10 million doses per year for the treatment of osteoarthritis. The facility also includes a state-of-the-art molecular biology and analytical research laboratories.

**Agricultural Biotechnology Announcements**

Northern Colorado is a growing center for agricultural biotechnology business activity.

- Cargill Specialty Seeds & Oils began a $10 million expansion of its Northern Colorado operations. The Fort Collins development includes a 38,000-square-foot expansion of the existing greenhouse, seed storage, and offices. The 30-acre facility employs more than 40 employees who develop and cultivate seed and crops that can be turned into stable, heart-healthy oils for cooking.
- Greeley-based Loveland Products signed an agreement with Australia-based CH Biotech. Under the agreement, Loveland Products will have the right to obtain exclusive, worldwide distribution rights to CH Biotech’s existing plant health technologies as well as access to new product and technology opportunities.

**Innovative Technologies and Regulatory Approvals**

A number of the region’s bioscience companies developed cutting-edge technologies and received significant regulatory approvals to accelerate the success of new products.

- Boulder-based JustRight Surgical LLC received U.S. Food and Drug Administration (FDA) clearance to sell a small stapler device designed for pediatric surgery. The FDA approval comes with $10 million in expected investments from current investors, allowing for the addition of 20 salespeople over the next year in the Boulder offices.
- Boulder-based Array BioPharma and Cambridge, Mass.-based Biogen Idec, Inc. partnered to develop a novel autoimmune and inflammatory disease drug. Array intends to use its screening technology to identify target illnesses and ways to treat them using kinase inhibitors, while Biogen will fund research, support clinical development, and worldwide commercial development.
- Boulder-based CBR International Corp., a biotech research group that helps clients research new drugs and navigate the FDA approval process, aided San Diego, Calif.-based Mapp Biopharmaceuticals Inc. in the experimental Ebola treatment ZMapp. CBR worked to analyze and test the drug to help further the development of ZMapp.
- Golden-based PharmaJet Inc. received FDA approval for its needle-free injectors for flu shots. The approval allows individuals between the ages of 18 and 64 to receive the Afluria influenza vaccine using the needle-free injection. The needleless injectors shoot a narrow stream of medicine through or into a person’s skin, which removes the need for a needle and eliminates the chance of needle-stick accidents. The new technology will be available for nearly 150 million people who receive the vaccine each year.
- Fort Collins-based KromaTiD launched its directional Genomic Hybridization (dGH) screening services. The dGH assays are the only imaging assays capable of determining DNA sequence, location, and orientation data in a single test. KromaTiD will allow researchers to identify new targets for designing unique drug interventions for multiple human diseases and cancers.
- The FDA approved Centennial-based Cochlear Americas’ one-of-a-kind Aqua+ accessory, the only waterproof behind-the-ear solution for cochlear implant recipients. The device allows recipients to swim underwater for up to two hours.

**Industry Infrastructure Support**

The region’s organizations and professionals foster growth and opportunity for the bioscience industry.

- The Colorado BioScience Association (CBSA) hosted the 2014 BioWest Conference and Expo in Denver, attended by more than 300 industry leaders, government representatives, executives, researchers, investors, and entrepreneurs. CBSA also partnered with PrIME Health Collaborative to host the 2014 Digital Health Venture Showcase, a pre-event to the BioWest Conference. The event featured a selection of curated and vetted proposals from top Colorado digital health companies. The finalist companies competed for a share of $50,000 in prize money awarded by PrIME and the Colorado Health Foundation.
- The Colorado Office of Economic Development and International Trade (OEDIT) awarded its second round of grants for the Advanced Industries Accelerator Programs. The programs will support key
industries in Colorado, including bioscience and medical device manufacturers, by providing up to $150,000 for Proof-of-Concept grants, up to $250,000 for Early-Stage Capital grants, and $15,000 matching grants for businesses looking to export to global markets.

- The Denver Office of Economic Development offers the Denver Capital Matrix, a resource directory of over 400 funding sources for small business and entrepreneurs including traditional bank lending, venture capital firms, private equity firms, angel investors, mezzanine sources, and others that have funded Colorado businesses.
- The Innovation Center of the Rockies (ICR) collaborates with tech-transfer offices including the University of Colorado, the University of Denver, Colorado School of Mines, CSU, and the University of Wyoming to create one of the largest entrepreneurial networks in the nation. ICR also works closely with CSU Ventures to accelerate the creation of new businesses and continue building the state’s entrepreneurial ecosystem.

**Cross-Cluster Convergence**

The nine-county region is characterized by its network of collaboration, innovation centers, and unique assets that lead to cross-cluster convergence. The bioscience industry combines these regional assets to strengthen partnerships and enhance growth opportunities across industries such as digital health, IT-software, and aerospace.

- Metro Denver is an emerging digital health community nationally. Founded in July 2012 by the Denver South Economic Development Partnership and Innovation Pavilion, PrIME Health Collaborative is a growing statewide community of 700+ health care executives, physicians, technologists, academics, entrepreneurs, and investors dedicated to improving health and lowering healthcare costs through the commercialization of digital health technologies. The Collaborative is a resource ecosystem for Digital Health—the convergence of the digital and genetics revolutions with bioscience, healthcare and wellness, and information technology-software. In 2014, the Collaborative held a number of important events showcasing the Digital Health Corridor, including a first-of-its kind $150,000 Digital Health Challenge. More information at www.primehealthco.com/challenge.
- Boulder-based Kindara launched Wink, a wireless fertility thermometer to help women easily record their basal body temperature readings. Wink synchronizes with Bluetooth technology to the Kindara fertility app on a user’s mobile devices and provides an integrated fertility charting experience.
- Centennial-based AlloSource signed a Space Act Agreement with the National Aeronautics and Space Administration (NASA) and the Jet Propulsion Laboratory (JPL) to collaborate on microbial research. AlloSource will leverage technologies developed by NASA/JPL for assembly and launch operations of various Mars missions, including rapid molecular microbial burden measurement and genetic inventory cataloging to advance microbial research in tissue processing.

**Venture Capital and Funding Awards**

A number of the region’s bioscience companies received significant awards to advance new technologies and support further research and product development.

- Denver-based UrgentRx secured $17.5 million in private financing to support distribution opportunities and a national marketing campaign for its fast-acting, over-the-counter medications. UrgentRx medications treat allergy attacks, headaches, aches and pains, heartburn, upset stomach, and provide heart attack first aid.
- Boulder-based SomaLogic Inc. raised $16.5 million in new funding to continue building a version of its proteomics assay for Novartis to use for its drug discovery and development efforts.
- Boulder-based Sinopsys Surgical received $8.3 million in private equity financing for its new sinusitis drug-device treatment. The company is developing a technique to repurpose the tear duct to drain into the sinuses as a way to relieve chronic sinusitis.
- Batelle Memorial Institute awarded CSU researchers $2 million to design a vaccine to protect individuals from the Ebola virus. CSU’s Biopharmaceutical Manufacturing and Academic Resource Center will develop a replicon vaccine platform containing a non-infection Ebola antigen.
- Boulder-based BioOptix received $1.4 million in private equity financing to expand sales and marketing efforts, and increase manufacturing to meet growing customer demand. The company will use the funding to market its Enhanced Surface Plasmon Resonance technology platform for the detection of molecular interactions.
- dBMEDx, a wireless medical device company, secured $1.3 million to commercialize its BBS Revolution™ device. The device is an automated bladder-volume measurement technology used for the management of in-hospital urinary catheters to avoid catheter-associated urinary tract infections.
Research and Development Awards

Research and development funding at both the state and federal government levels supported new technologies and innovation for the region’s bioscience companies and research institutes.

- Philanthropists John and Leslie Malone announced a $42.5 million gift to CSU to develop regenerative medical therapies for animals and humans. The donation will launch the CSU Institute for Biologic Translational Therapies to investigate next-generation remedies based on living cells and their products, including patient-derived stem cells, to treat musculoskeletal disease and other ailments. Colorado State veterinarians are expert at analyzing medical treatments for animal patients, then providing knowledge gained to boost human medical advancements; the progression is known as translational medicine and is successful because of similarities in animal and human physiology and disease.

- The National Institutes of Health (NIH) awarded associate CU-Boulder professor Dr. Amy Palmer a coveted Director’s Pioneer Award. The five-year, $3.7 million grant is awarded to researchers showing exceptional creativity in solving biomedical and behavioral research problems. The funding will be used to develop a new technology to determine if zinc is a regulator of protein function in humans.

- CSU assistant professor Brian McNaughton received a $1.5 million NIH research grant to develop synthetic proteins that eliminate disease-causing components in cells that do not respond to traditional drug treatments. McNaughton’s technique utilizes green fluorescent protein originally isolated from a luminescent Pacific jellyfish, which have the potential of developing into new treatments for cancers and HIV.

- The National Institute of Allergy and Infectious Diseases awarded Boulder-based InDevR $2.9 million to expand its application of its new vaccine potency assay to pandemic influenza vaccines. The company recently launched Influenza Titer on Chip (Flu-ToC™) as a service to vaccine producers for rapid evaluation of seasonal flu vaccine potency, including the deadly avian H5N1 and H7N9 viruses.

- Corgenix Medical Corp. received a $2.9 million NIH grant to develop a quick diagnostic test for the Ebola virus. The company intends to collaborate with Viral Hemorrhagic Fever Consortium and will develop a test for clinics and field labs that can return results within minutes.

- The Bill and Melinda Gates Foundation awarded CSU a $224,000 grant to develop a diagnostic breath test for tuberculosis (TB). The breath-test project would transform TB testing and will provide improved control over the infectious disease. The research will be done at CSU’s Biosafety Level-3 facility where researchers will identify unique chemical markers for early TB detection.

- Boulder-based MBio Diagnostics Inc. was awarded a three-year U.S. Army contract to develop a portable cartridge reader for malaria diagnosis. Under the contract, MBio will develop a low-cost, diagnostic device for malaria with enhanced sensitivity, quantitation capabilities, and automated data capture and transmission using the company’s planar waveguide LightDeck technology.

Bioscience Grants and Incentive Programs

The State of Colorado has launched a number of programs in recent years to support early-stage and growth companies in the bioscience cluster.

- Legislation passed in 2014 allows investors to receive tax credits for investing in early-stage, advanced industry companies. House Bill 1012 (2014) allows qualified investors to claim tax credits worth 25 percent of their investment in the company if they do not own more than 30 percent of the business before the investment was made or 50 percent after, up to a maximum of $50,000 in tax credits.

- In fiscal year 2013, the Bioscience Discovery Evaluation Grant Program (BDEGP) awarded more than $4 million in grants to 34 projects. Since the program’s inception in 2006, 220 grants totaling more than $27 million were distributed to research institutions and early-stage bioscience companies.

- Formed in 2009 through the BDEGP, CID4 accelerates life science discoveries and bridges the gap between research and successful product developments. The Institute serves universities, bioscience companies, academic groups, and professional associations by providing seed funding, active management, investor connections, and strategic consulting. When it launched, CID4 received $4.75 million in total funding for grants from the state of Colorado and the Fitzsimons Redevelopment Authority. As of 2014, CID4 had eight companies in its Project Portfolio who have raised over $25 million in additional operating funds.
Bioscience Workforce Profile

Many companies choose locations because of the available workforce. With nearly half of the nine-county region's 3.6 million residents under the age of 35, employers can draw from a large, young, highly educated, and productive workforce. Of the region's adult population, 41.2 percent are college graduates and 90.5 percent have graduated from high school. The state has the nation's second-most highly educated workforce as measured by the percentage of residents with a bachelor's degree or higher.

The attractiveness of the region draws new residents through migration. The region's population is expected to grow 53.3 percent from 2010 to 2040, driving a 36.3 percent increase in the region's labor force over the same period. It is important to note the changing composition of the workforce supply as the baby boomers begin to retire, which will pose implications for businesses whose employee pool includes significant numbers of these workers.

![Educational Attainment of Metro Denver and Northern Colorado's Population Age 25 and Older](image)

Source: U.S. Census Bureau, 2013 American Community Survey.

![Metro Denver and Northern Colorado's Labor Force Projections by Age](image)

Source: Colorado Division of Local Government, State Demography Office.
Medical Devices and Diagnostics Workforce Profile

Age Distribution

The nine-county region’s medical devices and diagnostics subcluster employs 10,500 people and includes a large pool of talented, well-educated, and highly skilled workers. Compared with the age distribution across all industries, the medical devices and diagnostics subcluster has a larger share of employees between the ages of 35 and 64 years old.

The medical devices and diagnostics workforce supply consists of four main components: those currently working in the industry; those doing a similar type of job in some other industry; the unemployed; and those currently in the education pipeline. The Metro Denver and Northern Colorado Occupation & Salary Profile below includes the 10 largest medical devices and diagnostics occupations in the region. For these 10 largest occupations, the chart details the total number of workers employed in that occupation across all industries, the number of available applicants that would like to be working in that occupation, the number of recent graduates that are qualified for that occupation, and the median and sample percentile annual salaries.

Wages

The 2013 average annual salary for medical devices and diagnostics subcluster workers in the nine-county region was $72,290, compared with $77,550 nationwide. Given this average salary, the region’s medical devices and diagnostics payroll reached nearly $745 million in 2013.

Metro Denver & Northern Colorado Medical Devices & Diagnostics Occupation & Salary Profile, 2014

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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Electromechanical equipment assemblers</td>
<td>1,897</td>
<td>59</td>
<td>6</td>
<td>$32,681</td>
<td>$27,983</td>
<td>$29,902</td>
<td>$37,425</td>
<td>$42,103</td>
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<tr>
<td>2. Dental laboratory technicians</td>
<td>568</td>
<td>10</td>
<td>0</td>
<td>$38,240</td>
<td>$24,409</td>
<td>$27,971</td>
<td>$46,362</td>
<td>$56,069</td>
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<tr>
<td>3. Electrical &amp; electronic equipment assemblers</td>
<td>2,844</td>
<td>210</td>
<td>9</td>
<td>$31,030</td>
<td>$20,057</td>
<td>$24,030</td>
<td>$46,362</td>
<td>$56,069</td>
</tr>
<tr>
<td>4. Industrial engineers</td>
<td>2,739</td>
<td>98</td>
<td>11</td>
<td>$88,556</td>
<td>$58,378</td>
<td>$72,291</td>
<td>$108,106</td>
<td>$128,021</td>
</tr>
<tr>
<td>5. Software developers, systems software</td>
<td>10,055</td>
<td>182</td>
<td>630</td>
<td>$97,129</td>
<td>$64,202</td>
<td>$78,914</td>
<td>$118,677</td>
<td>$140,885</td>
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<tr>
<td>6. General &amp; operations managers</td>
<td>32,111</td>
<td>1,554</td>
<td>5,881</td>
<td>$105,579</td>
<td>$53,735</td>
<td>$73,020</td>
<td>$161,855</td>
<td>$233,791</td>
</tr>
<tr>
<td>7. First-line supervisors of production &amp; operating workers</td>
<td>4,951</td>
<td>353</td>
<td>1</td>
<td>$57,240</td>
<td>$35,439</td>
<td>$45,336</td>
<td>$71,175</td>
<td>$90,007</td>
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<tr>
<td>8. Inspectors, testers, sorters, samplers, &amp; weighers</td>
<td>4,806</td>
<td>167</td>
<td>0</td>
<td>$41,022</td>
<td>$26,379</td>
<td>$32,386</td>
<td>$51,170</td>
<td>$57,800</td>
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<tr>
<td>9. Mechanical engineers</td>
<td>4,951</td>
<td>235</td>
<td>454</td>
<td>$81,844</td>
<td>$51,191</td>
<td>$64,329</td>
<td>$105,084</td>
<td>$131,957</td>
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<tr>
<td>10. Machinists</td>
<td>3,923</td>
<td>164</td>
<td>45</td>
<td>$43,182</td>
<td>$25,849</td>
<td>$33,612</td>
<td>$53,106</td>
<td>$60,808</td>
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</table>

Notes: The number of available applicants is a point-in-time measurement of the number of people who have registered in Colorado’s workforce development system’s statewide database, Connecting Colorado, as being able and available to work in a particular occupation. Results should be interpreted with caution since registration in Connecting Colorado is self-reported. In addition, the skills rubric may assign up to four occupation codes for each registrant. Therefore, the number of available applicants could be inflated. Source: Provided by Arapahoe/Douglas Works!; QCEW Employees, Non-QCEW Employees, Self Employed, & Extended Proprietors - EMSI 2014.3 Class of Worker.
Pharmaceuticals and Biotechnology Workforce Profile

Age Distribution

The nine-county region’s pharmaceuticals and biotechnology subcluster employs 4,620 people and includes a large pool of talented, well-educated, and highly skilled workers. Compared with the age distribution across all industries, the pharmaceuticals and biotechnology subcluster has a larger share of employees between the ages of 35 and 54 years old.

The pharmaceuticals and biotechnology workforce supply consists of four main components: those currently working in the industry; those doing a similar type of job in some other industry; the unemployed; and those currently in the education pipeline. The Metro Denver and Northern Colorado Occupation & Salary Profile below includes the 10 largest pharmaceuticals and biotechnology occupations in the region. For these 10 largest occupations, the chart details the total number of workers employed in that occupation across all industries, the number of available applicants that would like to be working in that occupation, the number of recent graduates that are qualified for that occupation, and the median and sample percentile annual salaries.

Wages

Total nine-county payroll in the pharmaceuticals and biotechnology subcluster exceeded $469 million in 2013. The 2013 average annual salary for pharmaceuticals and biotechnology employees in the region was $97,190, compared with the national average of $119,890.

Metro Denver and Northern Colorado Pharmaceuticals and Biotechnology Occupation & Salary Profile, 2014

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</thead>
<tbody>
<tr>
<td>1. Chemists</td>
<td>1,397</td>
<td>115</td>
<td>239</td>
<td>$71,083</td>
<td>$41,948</td>
<td>$52,592</td>
<td>$96,330</td>
<td>$121,642</td>
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<tr>
<td>2. Business operations specialists, all other</td>
<td>32,981</td>
<td>781</td>
<td>77</td>
<td>$69,929</td>
<td>$36,067</td>
<td>$50,034</td>
<td>$92,618</td>
<td>$120,078</td>
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<tr>
<td>3. Packaging &amp; filling machine operators &amp; tenders</td>
<td>3,012</td>
<td>137</td>
<td>0</td>
<td>$30,883</td>
<td>$18,785</td>
<td>$21,330</td>
<td>$44,659</td>
<td>$58,613</td>
</tr>
<tr>
<td>4. Biological technicians</td>
<td>2,138</td>
<td>104</td>
<td>0</td>
<td>$43,689</td>
<td>$31,109</td>
<td>$35,484</td>
<td>$56,131</td>
<td>$68,580</td>
</tr>
<tr>
<td>5. Natural sciences managers</td>
<td>1,102</td>
<td>30</td>
<td>2,692</td>
<td>$125,714</td>
<td>$89,031</td>
<td>$108,297</td>
<td>$149,668</td>
<td>$192,015</td>
</tr>
<tr>
<td>6. Medical scientists, except epidemiologists</td>
<td>1,170</td>
<td>37</td>
<td>654</td>
<td>$56,718</td>
<td>$38,521</td>
<td>$44,798</td>
<td>$77,868</td>
<td>$106,869</td>
</tr>
<tr>
<td>7. Chemical equipment operators &amp; tenders</td>
<td>466</td>
<td>21</td>
<td>0</td>
<td>$48,319</td>
<td>$28,268</td>
<td>$35,807</td>
<td>$54,865</td>
<td>$61,336</td>
</tr>
<tr>
<td>8. Inspectors, testers, sorters, samplers, &amp; weighers</td>
<td>4,806</td>
<td>167</td>
<td>0</td>
<td>$41,022</td>
<td>$26,379</td>
<td>$32,386</td>
<td>$51,170</td>
<td>$57,800</td>
</tr>
<tr>
<td>9. Secretaries &amp; administrative assistants, except legal, medical, &amp; executive</td>
<td>49,635</td>
<td>661</td>
<td>71</td>
<td>$36,024</td>
<td>$23,579</td>
<td>$29,046</td>
<td>$44,001</td>
<td>$51,969</td>
</tr>
</tbody>
</table>

Notes: The number of available applicants is a point-in-time measurement of the number of people who have registered in Colorado’s workforce development system’s statewide database, Connecting Colorado, as being able and available to work in a particular occupation. Results should be interpreted with caution since registration in Connecting Colorado is self-reported. In addition, the skills rubric may assign up to four occupation codes for each registrant. Therefore, the number of available applicants could be inflated. Source: Provided by Arapahoe/Douglas Works!; QCEW Employees, Non-QCEW Employees, Self Employed, & Extended Proprietors - EMSI 2014.3 Class of Worker.
Education & Training

Colorado’s higher education system provides an excellent support system for businesses in the region. There are 28 public higher education institutions in Colorado, of which seven four-year and six two-year public institutions offering comprehensive curricula are located in the nine-county region. In addition, there are more than 100 private and religious accredited institutions and nearly 340 private occupational and technical schools offering courses in dozens of program areas throughout the state. Although not exhaustive, a list of the major, accredited educational institutions with the greatest number of graduates for each of the 10 largest bioscience occupations in the nine-county region are included below. A directory of all higher education institutions with corresponding websites may be accessed via http://highered.colorado.gov.

- Colorado School of Mines  
  www.mines.edu
- Jones International University  
  www.jiu.edu
- University of Colorado Denver  
  www.ucdenver.edu
- Colorado State University  
  www.colostate.edu
- Metropolitan State University of Denver  
  www.msudenver.edu
- University of Colorado Denver School of Medicine  
  www.medschool.ucdenver.edu
- Colorado State University Global Campus  
  www.colostate.edu
- Regis University  
  www.regis.edu
- University of Denver  
  www.du.edu
- DeVry University - Colorado  
  www.devry.edu
- University of Colorado Boulder  
  www.colorado.edu
- University of Northern Colorado  
  www.unco.edu

Key Reasons for Bioscience Companies to Locate in the Nine-County Region

The region is an emerging bioscience location offering:

1. The ability to recruit and retain technical and scientific employees and entrepreneurial talent
   - Colorado has 10 higher education institutions with bioscience programs. Biological sciences graduate programs at the University of Colorado Boulder (CU-Boulder), Colorado State University (CSU), and the University of Colorado Denver ranked within the nation's top 100 in 2014. (U.S. News & World Report, 2014)
   - Colorado ranked ninth in the number of science and engineering graduate students per 1,000 individuals ages 25 to 34 years old in 2011. (National Science Foundation, 2014)
   - Colorado ranked fourth in the number of scientists and engineers as a share of all occupations in 2012. (National Science Foundation, 2014)
   - The U.S. Department of Commerce's United States Patent and Trademark Office located one of four new satellite offices in Denver due to the state's expansive culture of innovation and entrepreneurism. (U.S. Patent and Trademark Office, 2014)
   - CU-Boulder, CSU, and the University of Denver ranked among the “Top 50 Schools for Startups” in the U.S. (Forbes, 2014)
   - Metro Denver ranked 11th among U.S. life science clusters and received top 10 rankings in life science employment concentration, establishment concentration, and employment growth. (Jones Lang LaSalle, 2014)
   - Colorado ranked fourth in the 2014 State Technology and Science Index. Colorado received top-10 rankings in all five categories, and received its highest individual scores in research and development capacity (third) and technology and science workforce (sixth). (Milken Institute, 2014)
   - Colorado ranked among the second tier of bioscience states and the state ranked among the top tier in bioscience-related venture capital investments since 2009, totaling $1.1 billion. (Battelle Memorial Institute, 2014)
   - Metro Denver ranked as the ninth-best metro area for science, technology, engineering, and mathematics (STEM) graduates in 2014. STEM jobs in Metro Denver represented 8.2 percent of all occupations and the area’s annual mean wage for STEM jobs was $84,380. (NerdWallet, 2014)

2. Affordable operating costs
   - Bioscience companies can recruit affordable, productive employees as the nine-county average wage for bioscience workers is slightly below the national average.
The nine-county region offers a variety of real estate opportunities for bioscience companies, ranging from fully furnished executive suites to build-to-suit laboratories and office space.

3. **A pro-business environment and competitive tax structure**
   - Colorado's simplified corporate income tax structure based on single-factor apportionment allows companies to pay taxes based solely on their sales in the state. Along with few regulatory burdens, Colorado's corporate income tax rate of 4.63 percent is one of the lowest and most competitive tax structures in the nation. (State of Colorado; The Tax Foundation)
   - Manufacturing equipment used in clean room operations is exempt from state sales tax. (Exemption clarified in Colorado House Bill 1277 (2007))
   - Colorado has the nation's ninth-best tax climate for entrepreneurship and small business. (Small Business & Entrepreneurship Council, 2014)
   - *Forbes* ranked Metro Denver fourth among the “Best Places for Business and Careers” in 2014. Four other Colorado metropolitan areas were included on the list. The Fort Collins metro area ranked fifth overall, Greeley ranked 20th, Boulder ranked 23rd, and Colorado Springs ranked 29th. (*Forbes*, 2014)
   - Colorado ranked as the No. 8 small-business-friendly state in the nation. Fort Collins (24th) and Denver (28th) ranked among 84 cities in the country. (Thumbtack.com, 2014; Ewing Marion Kauffman Foundation, 2014)

4. **Access to financial resources to fund research and development**
   - Two grant programs were created by the Colorado Legislature to grow and expand the region’s bioscience industry:
     - The Clean Technology Discovery Evaluation Grant Program established a pool of funds to support research and development of new products and technologies, to support early-stage companies, and to develop infrastructure. This program could generate as much as $2 million each year in new seed money for the bioscience industry.
     - The Bioscience Discovery Evaluation Grant Program was created to grow and expand bioscience research and accelerate the development of new products and services. The program has created 45 new Colorado companies resulting in 381 direct jobs, an additional $418 million in grants and investments to further commercialize these bioscience technologies, and awarded a total of 220 grants totaling more than $27 million to research institutions and early-stage bioscience companies. (Colorado Office of Economic Development and International Trade, 2013)
   - Colorado offers several public and private sources of business funding including the Certified Capital Companies Program, the Colorado Venture Capital Authority, and Colorado Capital Access. (Contact the Colorado Office of Economic Development and International Trade for more information.)
   - The nine-county region has four venture firms currently investing in bioscience: Boulder Ventures, Lightstone Ventures, Morgenthaler Ventures, and Tango/HCV.
   - Colorado ranked fifth in the nation for funds raised per worker from the Small Business Innovation Research (SBIR) grant program. The state received $25.82 SBIR grants per worker compared with the U.S. average of $11.15. (U.S. Small Business Administration, 2014; U.S. Bureau of Labor Statistics, 2014)
   - CSU research expenditures reached $313 million in fiscal year 2013 and was the sixth consecutive year that research dollars exceeded $300 million, indicating a high level of innovation.
   - The University of Colorado system ranked 10th among the nation’s public institutions for science and engineering research and development expenditures totaling $800 million in fiscal year 2012. The university also ranked fourth for federally funded research expenditures. (National Science Foundation, 2014)
   - The University of Colorado ranked among the nation’s top 25 institutions in total NIH funding totaling $162.8 million in fiscal year 2013. (National Institutes of Health, 2014)

5. **Business organizations and public policy programs designed to encourage industry growth**
   - The Advanced Industries (AI) Accelerator Programs were created in 2013 to promote growth and sustainability in Colorado’s advanced industries including advanced manufacturing, aerospace, bioscience, electronics, energy and natural resources, infrastructure engineering, and technology and information. The Colorado Office of Economic Development and International Trade offers Proof of Concept, Early-Stage Capital & Retention, Infrastructure Funding, and AI Exports grants. Since inception, the programs have awarded 67 grants totaling $8.2 million to support these critical industries in their various phases of growth. (The Colorado Office of Economic Development and International Trade, 2014)
Startup Colorado is a regional initiative to increase the breadth and depth of the entrepreneurial ecosystem across Colorado’s Front Range. Launched in 2011, the initiative focuses on improving access to entrepreneurial education, encouraging new company creation, increasing connections among entrepreneurs and mentors, and building a more vibrant entrepreneurial community. (Startup Colorado, 2014)

The Colorado Innovation Network is a catalyst for economic prosperity through innovation by partnering with government, business, and civil society to foster collaboration around global ideas, talent, capital, and the entrepreneurial spirit.

# Bioscience Industry Cluster Definition

<table>
<thead>
<tr>
<th>NAICS Code</th>
<th>NAICS Description</th>
<th>SIC Code</th>
<th>SIC Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>325413</td>
<td>In-vitro diagnostic substance mfg.</td>
<td>2835</td>
<td>Diagnostic substances</td>
</tr>
<tr>
<td>333249 (P)</td>
<td>Other industrial machinery mfg.</td>
<td>3559-9922</td>
<td>Pharmaceutical machinery</td>
</tr>
<tr>
<td>334510</td>
<td>Electromedical &amp; electrotherapeutic apparatus mfg.</td>
<td>3845</td>
<td>Electromedical equipment</td>
</tr>
<tr>
<td>334516</td>
<td>Analytical laboratory instrument mfg.</td>
<td>3826</td>
<td>Analytical instruments</td>
</tr>
<tr>
<td>334517</td>
<td>Irradiation apparatus mfg.</td>
<td>3844</td>
<td>X-ray apparatus &amp; tubes</td>
</tr>
<tr>
<td>339112</td>
<td>Surgical &amp; medical instrument mfg.</td>
<td>3841</td>
<td>Surgical &amp; medical instruments</td>
</tr>
<tr>
<td>339113</td>
<td>Surgical appliance &amp; supplies mfg.</td>
<td>3821</td>
<td>Laboratory apparatus &amp; furniture</td>
</tr>
<tr>
<td>339114</td>
<td>Dental equip. &amp; supplies mfg.</td>
<td>3842</td>
<td>Orthopedics, prosthetics, &amp; surgical appl.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3843</td>
<td>Dental equipment &amp; supplies</td>
</tr>
<tr>
<td>325411</td>
<td>Medicinal &amp; botanical mfg.</td>
<td>2833</td>
<td>Medicinals &amp; botanicals</td>
</tr>
<tr>
<td>325412</td>
<td>Pharmaceutical preparation mfg.</td>
<td>2834</td>
<td>Pharmaceutical preparations</td>
</tr>
<tr>
<td>325414</td>
<td>Biological product (except diagnostic) mfg.</td>
<td>2836</td>
<td>Biological products except diagnostic</td>
</tr>
<tr>
<td>541711</td>
<td>Research &amp; development in biotechnology</td>
<td>8731-01</td>
<td>Biological research</td>
</tr>
<tr>
<td>541711</td>
<td>Research &amp; development in biotechnology</td>
<td>8731-9902</td>
<td>Medical research (commercial)</td>
</tr>
<tr>
<td>541711</td>
<td>Research &amp; development in biotechnology</td>
<td>8733-01</td>
<td>Noncommercial biological research org.</td>
</tr>
</tbody>
</table>

*(P) indicates that only part of the NAICS industry category is represented in the industry cluster definition.
Bioscience Industry Cluster Relationships

Technologies
- Bioinformatics
- Biopharma
- Genetic Engineering
- Nanotechnology
- Nutraceuticals

Support Industries
- Agriculture
- Broadcasting and Telecommunications
- Government
- Hardware
- Manufacturing
- Software

Client Industries
- Agriculture
- Healthcare
- Consumers
- Energy

Bioscience
- Medical Devices & Diagnostics
- Pharmaceuticals & Biotechnology

Infrastructure
- Fitzsimons Life Science District
- Colorado Science + Technology Park at Fitzsimons
- Anschutz Medical Campus
- Colorado BioScience Association
- Colorado Photonics Industry Association
- Colorado State University
- National Jewish Health
- University of Colorado
- Other Research Institutions

For additional information, contact us:

Metro Denver Economic Development Corporation
1445 Market Street
Denver, CO 80202-1790
303.620.8092
email: info@metrodenver.org
www.metrodenver.org

Industry Overview

Colorado is uniquely positioned as a leader in the balanced energy economy, with abundant fossil fuels (coal, oil, and natural gas) and renewable energy resources (solar, wind, and biofuels). The state has a strong energy foundation that includes fossil fuels and both renewable energy and energy efficiency technologies, also known as cleantech. A highly educated workforce, research universities, federal laboratories, advanced policy initiatives, and industry collaboration support Colorado’s energy industry, attracting economic growth, job creation, technology development, and innovation.

This report evaluates the energy industry in the nine-county Metro Denver and Northern Colorado region in two subclusters: (1) cleantech and (2) fossil fuels. With 50,260 energy workers in approximately 3,020 companies in 2014, the nine-county region continues to position itself as a leader in energy activity. Combined, the 71,000 direct energy workers earning $6.4 billion in the state support an additional 179,540 indirect workers earning $9.2 billion in all industries throughout the state. In total, the energy industry in Colorado supports 250,540 workers in all industries earning $15.6 billion annually.

The fossil fuels subcluster includes companies involved in the extraction of naturally occurring fuels used to produce energy as well as the generation, transmission, and distribution of energy resources. The cleantech subcluster includes companies developing and delivering products and technologies across solar, wind, biomass, and sustainable transportation sectors that improve operational performance, efficiency, or productivity, while reducing energy costs and energy consumption.

It is often difficult to distinguish how an organization’s operations are divided between fossil fuels and cleantech components. For example, research is a critical component of all energy industries, from oil and gas to solar and wind energy. So that the two subclusters may be analyzed independently, all energy research entities are included in the cleantech subcluster while all energy transmission and distribution activities are included in the fossil fuels subcluster, even though a portion of the energy may be coming from renewable resources.

Colorado’s fossil fuel extraction has traditionally taken place in western Colorado; however, many companies have Front Range-refining and production facilities and corporate offices in Metro Denver. Like many other recent oil and gas plays in the nation, advances in horizontal drilling and hydraulic fracturing techniques allow for greater production in the Denver-Julesburg Basin and Niobrara formations along the Front Range, drawing significant attention from oil and gas companies. These advances provide substantial economic benefits including capital investment, high-wage job creation, and export possibilities.

Cleantech Economic Profile

The cleantech subcluster includes companies that produce and conserve energy using wind, solar, biomass, fuel cells, hydroelectric resources, and green transportation technologies. Companies that manufacture renewable energy equipment, storage, and power transformers, and businesses that provide engineering and other support services are also included. The subcluster includes energy research companies that provide laboratory testing, scientific and technical consulting services, and institutional research related to the environment, natural resources, and energy. The cleantech subcluster consists of 29, six-digit North American Industry Classification System (NAICS) codes.

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1 The nine-county Metro Denver and Northern Colorado region consists of Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Jefferson, Larimer, and Weld Counties.
**ENERGY: Metro Denver and Northern Colorado Industry Cluster Profile**

The nine-county region ranked fifth out of the 50 largest metro areas in cleantech employment concentration in 2014. With direct employment of 19,920 workers, the region ranked sixth out of the 50 largest metro areas in absolute employment. About 85 percent of Colorado’s cleantech employment was located in the region.

### Cleantech Employment and Company Profile, 2014

<table>
<thead>
<tr>
<th></th>
<th>Nine-County Region</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct employment, 2014</td>
<td>19,920</td>
<td>789,220</td>
</tr>
<tr>
<td>Number of direct companies, 2014</td>
<td>1,510</td>
<td>57,040</td>
</tr>
<tr>
<td>One-year direct employment growth, 2013-2014</td>
<td>5.9%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Five-year direct employment growth, 2009-2014</td>
<td>22.5%</td>
<td>14.9%</td>
</tr>
<tr>
<td>Avg. annual direct employment growth, 2009-2014</td>
<td>4.1%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Direct employment concentration</td>
<td>1.1%</td>
<td>0.5%</td>
</tr>
</tbody>
</table>


### Cleantech Employment

The nine-county region’s cleantech employment (19,920 workers) rose 5.9 percent in 2014 compared with the previous year’s level, adding 1,110 new jobs over the same period. National employment levels also grew over-the-year, rising 1.5 percent and adding 11,950 jobs. Nearly 3 percent of the nation’s cleantech employment is located in the region. Between 2009 and 2014, the region’s cleantech employment rose 22.5 percent compared with 14.9 percent increase nationwide. Cleantech companies employed 1.1 percent of the state’s total employment base, compared with a 0.5 percent employment concentration nationwide.

About 1,510 cleantech companies operated in the nine-county region in 2014, rising 6 percent over the prior year. Approximately 79 percent of these companies employed fewer than 10 people, while 0.7 percent employed 250 or more.
Cleantech Overview

The nine-county region’s cleantech industry fosters innovation, commercialization, and economic vitality through collaboration between research universities, industry, educational institutions, and public agencies. The Colorado Energy Research Collaboratory and the Colorado Cleantech Industry Association (CCIA) are two examples of this collaboration.

The Collaboratory integrates cutting-edge research with the industry expertise to accelerate the transfer of energy technologies into the marketplace through its four research centers: the Colorado Center for Biorefining and Biofuels (C2B2), the Center for Revolutionary Solar Photoconversion (CRSP), the Center for Research and Education in Wind (CREW), and the Carbon Management Center. Since its launch in 2007, the Collaboratory has shown a 9:1 return on investment using state funding of nearly $6.3 million to leverage federal and private-sector dollars totaling $56.2 million and has helped attract several companies to Colorado.

An industry association dedicated entirely to cleantech, the CCIA, provides advocacy, capacity building, and education and training to the cleantech sector. CCIA was one of the first regional cleantech organizations to become a chapter of the national Advanced Energy Economy (AEE) system.

Colorado is a world-class hub for energy research and technology innovation. The state’s 30 federal laboratories—one of the highest per-capita concentrations of federal research facilities in the nation—support the state’s energy research platform. These laboratories employ over 15,680 direct and indirect workers and generate over $2.3 billion in annual economic impact to Colorado, contributing significantly to the evolution of the state’s high-tech industries.
The National Renewable Energy Laboratory (NREL), a Golden-based federally funded research laboratory, is the U.S. Department of Energy’s (DOE) only laboratory committed to the research, development, commercialization, and deployment of renewable energy and energy efficiency. NREL’s $135 million, 182,000-square-foot Energy Systems Integration Facility (ESIF) was named R&D Magazine’s 2014 “Laboratory of the Year” as a first-of-its kind facility that merges an ultra-energy efficient workplace, one of the world’s most energy-efficient, high-performance computing data centers, and sophisticated high-bay laboratory spaces with outdoor test areas. NREL added 28 new Cooperative Research and Development Agreements (CRADAs) in fiscal year 2013, totaling 166 active CRADAs, the highest in the DOE system. In fiscal year 2013, NREL solidified 210 new partnerships including the CRADAs, 20 new license agreements, and more than 60 new patent applications. Since 2002, the 327-acre campus also received more than $3.9 billion in funding and garnered more than 200 awards and honors for its programs and scientific research.

Cleantech Company Announcements

The nine-county region is a key location for cleantech companies to grow and thrive. Notable company announcements in 2014 included:

- Woodward was named “Deal of the Year” award winner by the Metro Denver Economic Development Corporation. The company was recognized for its major campus expansion near downtown Fort Collins, which included a 215,000-square-foot industrial Turbomachinery Systems Building, a new corporate headquarters, and an engines technology building. Overall, the expansion will bring more than 900 net, new employees to the redevelopment site.
- Future Earth, a 10-year research initiative to address global environmental change solutions and actions, selected Colorado as the new U.S. headquarters. The center will be managed by the University of Colorado Boulder (CU-Boulder) and Colorado State University (CSU) and is expected to mobilize nearly 60,000 scientists and students.
- Denver-based RavenBrick LLC added a new $10 million automated manufacturing line to its existing production line. With this addition, the company will increase production from 2,000 square feet of windows a month to 500,000 square feet and could increase employment to 160 workers by 2016.

Solar Energy

The nine-county region is a leader in solar energy capacity and development. The region’s abundant sunshine, specialized manufacturing base, and research institutions give companies a competitive edge. Key solar energy announcements in 2014 included:

- Panasonic Enterprise Solutions Co. plans to create a hub for its business solutions operations and technology center adjacent to Denver International Airport. The new facility will produce large-scale audio-visual displays and solar panels and could employ up to 400 workers.
- IKEA completed its solar-power system expansion, which more than doubled the size of its existing system at its Centennial store. The store’s solar array is the largest rooftop array in Colorado and the system’s 4,700 panels could generate 1.7 megawatt-hours of power each year.
- Denver-based SunShare contracted with two government agencies—Adams County and the City of Arvada—to power its buildings with solar energy from Community Solar Gardens. Adams County will be one of the first counties in the nation to power its buildings with Community Solar energy.
- Vikram Solar, an Indian manufacturer of solar PV modules, opened its newest international office in Boulder. With a strong footprint in Europe, as well as the home market in India, the new office is the latest in its global expansion.
- SunShare LLC signed its largest, single-customer, power-supply contract with Hyland Hills Park and Recreation District. The 1.4-megawatt-supply deal is also one of the largest contracts for any community solar developer in the nation and will be completed in early 2015.
- Community solar developer Clean Energy Collective (CEC) launched the City and County of Denver’s newest community solar facilities. Developed on a 5-acre site in northeast Denver, the two 500-kW solar arrays could produce enough electricity to power 150 homes and reduce CO2 emissions by 54 million pounds.
- Tempe, Ariz.-based First Solar Inc. invested in Colorado-based Clean Energy Collective and plans to develop community solar offerings to residential customers and businesses. The partnership will explore alternative opportunities to rooftop solar, particularly in areas where customers’ rooftops are not accessible.
Wind Energy

A number of economic and policy factors, including declining wind energy production costs and the short-term extension of the federal Production Tax Credit in 2013, continued to support the nine-county region’s wind-energy sector in 2014. Notable wind company announcements in 2014 included:

- Vestas Wind Systems will add 850 temporary workers to its four Colorado factories by the end of 2014 as a result of the company’s increased orders for wind turbines. The company was the world leader in new wind turbine installations in 2013, capturing 13.2 percent of the world market’s new installations.
- Creative Foam Composite Systems relocated its operations from Longmont to an 84,524-square-foot heavy manufacturing facility in Berthoud and will employ 60 workers with the expansion. The company manufactures core kits for wind turbines.

Biofuels and Bioenergy

Colorado has a burgeoning biofuels and bioenergy sector with potential for significant growth. The state’s renewable fuel industry—including conventional and cellulosic ethanol, biodiesel, and advanced biofuels—contributed $2.7 billion to the state’s economy annually and accounted for nearly 10,620 direct and indirect jobs totaling $642.2 million in wages, according to Fuels America. The industry also supports $62.3 million in state tax revenue each year. Notable bioenergy company announcements in 2014 included:

- Southwest Airlines signed an agreement with Fort Collins-based Red Rock Biofuels LLC to purchase 3 million gallons of low-carbon, renewable jet fuel. The blended product will be used at Southwest’s Bay Area operations with first delivery expected in 2016.
- The U.S. Department of Agriculture (USDA) awarded the Colorado State Forest Service a three-year, $250,000 grant to develop wood-to-energy projects. The grant will accelerate the development of wood-energy facilities and technologies across the state to address forest health and wildfire concerns.
- The DOE and the USDA awarded associate CSU professor Dr. John McKay a $1.5 million grant to develop a new biofuel crop. The research will focus on an oilseed feedstock crop that can be grown on less-than-ideal farmland with relatively low fertilizer inputs and limited irrigation.
- Boulder-based Carbon Cycle Energy LLC raised $1.5 million to build facilities for biogas production. The company built the first facility in 2014, with gas production starting in 2015.

Research and Education Announcements

The nine-county region’s universities and research centers support the state’s thriving energy cluster, conduct leading-edge energy research, and develop innovative technologies. Key announcements in 2014 included:

- CSU opened the $18.5 million Powerhouse Energy Campus, which includes the existing 35,000-square-foot Engines and Energy Conversion Lab connected to a four-story, 65,000-square-foot expansion. The Powerhouse also includes office spaces, meeting rooms, research labs, and room for 25 startup companies in an onsite incubator.
- CSU partnered with Front Range Community College to build a small-scale, steam-turbine power plant to train students and conduct energy-related research. The facility will be housed in CSU’s Powerhouse Energy Campus and will contain a steam boiler, turbine generator, condenser, and system controls that can generate up to 20 kilowatts (kW) of electricity.
- CU-Boulder expanded degree options for working professionals interested in specialized graduate education focused on energy and water. Beginning in the fall of 2014, students can earn both a Master of Engineering degree and a Professional Certificate in Renewable and Sustainable Energy or a Professional Certificate in Water Engineering and Management. Partnering to offer courses for the new program are CU’s Lockheed Martin Engineering Management Program, Renewable and Sustainable Energy Institute, and Water Engineering and Management program.
- Colorado universities, companies, and nonprofits will receive $14 million in federal funding over five years to pursue research and use of advanced composite materials. Under the newly announced Institute for Advanced Composites Manufacturing Innovation, Colorado organizations will use advanced composite materials to accelerate clean energy technologies and boost the state’s manufacturing industry.
- Colorado School of Mines (CSM) and ConocoPhillips established a center to promote sustainable energy production and water resources. Areas of focus for the ConocoPhillips Center for a Sustainable WE2ST (Water-Energy Education, Science and Technology) at CSM include education, water sustainability challenges, and integrated water resources assessment research, among others.
Denver Public Schools (DPS) received $7 million in federal Youth CareerConnect grant funds and $2.3 million in philanthropic funding to expand access to Science, Technology, Engineering, and Mathematics (STEM) education programming. The funding will further strengthen the STEM partnership between DPS and CSM. Over the next two years, DPS will create new STEM programming at eight high schools that will focus on energy, engineering, health and medicine, digital careers, finance, information technology, and manufacturing.

The University of Denver broke ground on a new 5-story, 130,000-square-foot STEM building. The $41 million project will include state-of-the-art classrooms, and instructional and research labs. The building will serve as the home to the new School of Engineering and Computer Science and will accommodate the increase in enrolling students through expanded research and instruction space, flexible classrooms, interdisciplinary centers, community areas, and faculty and administration offices.

Green Transportation

Colorado has prioritized the state’s transportation fuels portfolio to promote environmental sustainability and support low energy costs. Among the state’s alternative transportation fuels, natural gas has been identified as a viable, low-cost alternative to gasoline and diesel. The state hosts 28 public compressed natural gas (CNG) fueling stations in 18 cities and several private CNG fueling stations. A number of organizations in the state have transitioned their entire fleet, or portions thereof, to run on CNG. For example, the City and County of Denver added 19 CNG garbage and recycling trucks to its fleet in 2014 and opened a new CNG fueling station dedicated to the city’s trucks near Alameda Ave. and Interstate 25.

- The DOE awarded NREL and Louisville-based Solid Power LLC a $3.5 million grant to develop a solid-state, lithium-ion battery for electric vehicles. The battery will require less protective packaging, which reduces the cost and overall vehicle weight to improve driving range.
- CSU was one of 16 universities selected to participate in EcoCAR 3, a national automotive engineering program sponsored by DOE and General Motors. The four-year competition challenges universities to redesign a Chevrolet Camaro into a hybrid-electric car that will reduce environmental impact.
- CSU was selected as one of four universities nationwide that will receive four all-electric, micro vehicles for research projects. The University Electric Vehicles (UEVS) are equipped with a tablet-sized personal computer controlling a variety of electronics and sensors, and can connect to the campus’s WiFi network to communicate operational data such as position, speed, and battery charge for projects.
- Golden-based eThos Electric Car Share launched its new all-electric car share service in Metro Denver. The service is one of the first in the nation and the company charges $7 an hour for its available vehicles, including a Tesla Model S.

Major Cleantech Companies

- Abengoa Solar [www.abengoasolar.com](http://www.abengoasolar.com)
- AECOM [www.aecom-urs.com](http://www.aecom-urs.com)
- ARCADIS [www.arcadis.com](http://www.arcadis.com)
- Ascent Solar Technologies, Inc. [www.ascentsolar.com](http://www.ascentsolar.com)
- Chicago Bridge & Iron Company [www.cbi.com](http://www.cbi.com)
- Cool Planet Energy Systems [www.coolplanet.com](http://www.coolplanet.com)
- GE Energy [www.ge-energy.com](http://www.ge-energy.com)
- Gevo Inc. [www.gevo.com](http://www.gevo.com)
- juwi Wind/Solar [www.juwi.com](http://www.juwi.com)
- RavenBrick, LLC [www.ravenbrick.com](http://www.ravenbrick.com)
- RES Americas, Inc. [www.res-americas.com](http://www.res-americas.com)
- Senvion USA Corp. [www.repower.com](http://www.repower.com)
- SMA America, LLC [www.sma-america.com](http://www.sma-america.com)
- SolarCity [www.solarcity.com](http://www.solarcity.com)
- Sundrop Fuels, Inc. [www.sundropfuels.com](http://www.sundropfuels.com)
- Tetra Tech Inc. [www.tetratech.com](http://www.tetratech.com)
- Vestas [www.vestas.com](http://www.vestas.com)
Major Cleantech Companies Cont’d

• Lightning Hybrids, Inc.  
  http://lightninghybrids.com  
• Namasté Solar  
  www.namastesolar.com

• Woodward  
  www.woodward.com

Major Renewable Energy Government and Research Facilities

• CO Department of Natural Resources  
  www.dnr.state.co.us  
• CO Department of Public Health & Environment  
  www.dora.state.co.us  
• CO Department of Regulatory Agencies  
  www.dora.state.co.us  
• Colorado Energy Research Institute  
  www.ceri-mines.org  
• Colorado Energy Research Collaboratory  
  www.coloradocollaboratory.org  
• Colorado Energy Office  
  www.colorado.gov/energy  
• JILA  
  http://jila.colorado.edu  
• National Center for Atmospheric Research  
  www.ncar.ucar.edu

Fossil Fuels Economic Profile

The fossil fuels subcluster includes companies that extract naturally occurring mineral liquids, gases, and solids used to produce energy. The fossil fuels subcluster also includes mining machinery manufacturers and companies that provide mining, exploration, and related support services. Companies providing generation, transmission, and distribution of energy resources are also included. The fossil fuels subcluster consists of 29, six-digit North American Industry Classification System (NAICS) codes.

The nine-county region ranked fourth out of the 50 largest metro areas for fossil fuels employment concentration in 2014. With direct employment in fossil fuels of about 30,340 workers, the region ranked fourth in absolute employment. As of 2014, 64 percent of Colorado’s fossil fuels employees work in the region.

Fossil Fuels Employment and Company Profile, 2014

<table>
<thead>
<tr>
<th></th>
<th>Nine-County Region</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct employment, 2014</td>
<td>30,340</td>
<td>1,863,820</td>
</tr>
<tr>
<td>Number of direct companies, 2014</td>
<td>1,510</td>
<td>65,500</td>
</tr>
<tr>
<td>One-year direct employment growth, 2013-2014</td>
<td>6.5%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Five-year direct employment growth, 2009-2014</td>
<td>38.0%</td>
<td>18.0%</td>
</tr>
<tr>
<td>Avg. annual direct employment growth, 2009-2014</td>
<td>6.7%</td>
<td>3.4%</td>
</tr>
<tr>
<td>Direct employment concentration</td>
<td>1.6%</td>
<td>1.3%</td>
</tr>
</tbody>
</table>

Fossil Fuels Employment

The nine-county region’s fossil fuels employment (30,340 workers) rose 6.5 percent in 2014 compared with the previous year’s level, adding 1,840 new jobs during the period. National employment levels also grew over-the-year, rising 2.7 percent and adding 49,630 jobs. About 2 percent of the nation’s fossil fuels employment is located in the nine-county region. Between 2009 and 2014, the region’s fossil fuels employment rose 38 percent, compared with an 18 percent increase nationwide. Fossil fuels companies employed 1.6 percent of the state’s total employment base, compared with a 1.3 percent employment concentration nationwide.

About 1,510 fossil fuels companies operated in the nine-county region in 2014, rising a 4.2 percent increase over the prior year. Nearly 63 percent of these companies employed fewer than 10 people, while 1 percent employed 250 or more.
Fossil Fuels Overview

Colorado offers a rich complement of natural resources, including fossil fuel-rich basins and significant quantities of coal, crude oil, and natural gas. While many fossil fuel companies conduct business operations from the Metro Denver region, the majority of the drilling is concentrated along the Western Slope of the Rocky Mountains and in Weld County. Colorado’s active wells totaled nearly 53,030 as of December 2014, with 42 percent of total active wells located in Weld County.

Colorado’s Niobrara shale formation—located in northeast Colorado’s rich Denver-Julesburg Basin (DJ Basin) and extending into parts of adjacent Wyoming, Nebraska, and Kansas—attracted significant investment in 2014. Oil and gas companies invested $7 billion in 2014 in the 7,000-foot-deep geographic layer, which could hold more than 4 billion barrels of recoverable oil reserves. The increasing activity in the Niobrara has led to substantial economic benefits including job creation, infrastructure development, export possibilities, and technology development.

It is important to note that global oil prices have dropped over 60 percent since June 2014. This significant market change will also change oil and gas development strategies over the next year. Nonetheless, company announcements and new project developments in 2014 included:

- Anadarko Petroleum Corp. plans to drill more than 360 new wells in Weld County. Infrastructure expansion—including the Lancaster plant expected in 2015—and a concentrated acreage position prompted significant growth throughout the company’s Colorado operations.
- Noble Energy Inc. plans to invest $10 billion in the DJ Basin over the next five years and could produce 2.9 billion barrels of oil equivalent.
- Noble Energy Inc. will add 75,300 square feet to its current Greeley site to support its rapid growth in the area. The $9.4 million addition will include training and fitness facilities and will have space for 170 employees and 90 pumpers.
- Taylor, Mich.-based Atlas Oil Co. opened a crude oil-loading facility in Evans. The facility is located on the Union Pacific Railroad, which will increase crude hauling operations from Niobrara and expand the company’s frac-fueling business. The company also opened an office in Evans with 20 employees and plans to add workers by the end of 2014.
- Denver-based ARB Midstream LLC plans to build and operate a $45 million crude oil transloading terminal in Evans. The Niobrara Connector (NiCon) would provide increased crude-by-rail takeaway capacity in the DJ Basin and could accommodate multiple grades of crude oil. NiCon will have three rail loops with the capacity to handle 120 full tank-car unit trains and is slated for completion in early 2015.

Fossil Fuels Company Announcements

The nine-county region’s fossil fuels companies continue to grow and expand. Key company announcements in 2014 included:

- FMC Technologies, Inc. broke ground on a new $11.9 million facility in Brighton’s Energy and Employment Corridor. The company’s 50,000-square-foot facility will support at least 110 employees over the next five years and will serve as a site for the company’s completion services, fluid control, and surface-wellhead business units.
- Badlands NGL LLC, a California startup, will move its headquarters to Denver. In addition, Badlands has proposed building a $4 billion polyethylene manufacturing plant in North Dakota. The plant will help Colorado-based oil and gas companies working in the booming Bakken field deal with excess natural gas.
- WRS Infrastructure & Environment, Inc. opened a new regional office in Denver. The new location will allow the company to better service the oil and gas, petrochemical, mining, and energy industries in the western U.S.
- Tengasco Inc. relocated its headquarters from Knoxville, Tenn. to Greenwood Village. The oil and gas company cited the region’s large pool of experienced oil and gas professionals and proximity to significant oil and gas companies as reasons for its location decision.
- Spencer Ogden, an international energy recruitment company, opened a Denver office in October 2014 to capitalize on the region’s oil and gas industry. The company could have up to 15 people in its Denver office by the end of 2015.
- Denver-based Whiting Petroleum Corp. acquired Denver-based Kodiak Oil & Gas in a $6 billion deal. The merger created the largest crude-oil producer in the Bakken shale of the northern Great Plains.
Pipeline Construction

A number of fossil fuels companies announced significant pipeline construction activity in 2014.

- Xcel Energy opened a new $110 million, 34-mile natural gas pipeline from Fort Lupton to the Cherokee Generating Station in Denver. The pipeline is in response to Colorado’s Clean Air-Clean Jobs Act, which includes the conversion of the Cherokee power plant from coal to natural gas.
- Adams County approved construction of a new crude oil pipeline from Colorado to Oklahoma. The White Cliffs Twin Pipeline will run parallel to an existing pipeline and could transport 150,000 barrels of oil each day. The pipeline will pass through 23 miles in the northeast corner of the county.

Product Development and Innovation

Several companies continue to drive new product development and innovation in the nine-county region’s fossil fuels subcluster.

- Lakewood-based Pioneer Energy designed a new technology to reduce flared natural gas at oil well sites. The Mobile Alkane Gas Separator (MAGS) converts flare gas into shippable, liquid products and dry methane that can be used by generators. MAGS will be used in North Dakota and Colorado oil field operations.
- CSU researchers developed a new water quality monitoring tool for oil and gas sites in the DJ Basin. Colorado Water Watch collects real-time groundwater quality data from oil and natural gas sites and uploads data every hour to the CSU-operated website.

Major Fossil Fuels Companies

- Anadarko Petroleum Corporation [www.anadarko.com](http://www.anadarko.com)
- Antero Resources [www.anteroresources.com](http://www.anteroresources.com)
- Arch Coal, Inc. (West Elk Mine) [www.archcoal.com](http://www.archcoal.com)
- BP America [www.bp.com](http://www.bp.com)
- Bill Barrett Corp. [www.billbarrettcorp.com](http://www.billbarrettcorp.com)
- Cimarex Energy [www.cimarex.com](http://www.cimarex.com)
- Colorado Springs Utilities [www.csu.org](http://www.csu.org)
- ConocoPhillips Co. [www.conocophillips.com](http://www.conocophillips.com)
- Crossfire LLC [www.crossfire-llc.com](http://www.crossfire-llc.com)
- DCP Midstream [www.dcpmidstream.com](http://www.dcpmidstream.com)
- Encana Corporation [www.encana.com](http://www.encana.com)
- Forest Oil [www.foresoil.com](http://www.foresoil.com)
- Halcón Resources Corp. [www.halconresources.com](http://www.halconresources.com)
- Halliburton [www.halliburton.com](http://www.halliburton.com)
- InfraSource, Inc. [www.infrasourceus.com](http://www.infrasourceus.com)
- Kinder Morgan [www.kindermorgan.com](http://www.kindermorgan.com)
- MarkWest Energy Partners, L.P. [www.markwest.com](http://www.markwest.com)
- Noble Energy, Inc. [www.nobleenergyinc.com](http://www.nobleenergyinc.com)
- Northern Pipeline Construction [www.gonpl.com](http://www.gonpl.com)
- Schlumberger Ltd. [www.slb.com](http://www.slb.com)
- Shell Exploration and Production [www.shell.com](http://www.shell.com)
- SM Energy Co. [www.sm-energy.com](http://www.sm-energy.com)
- Suncor Energy Inc. [www.suncor.com](http://www.suncor.com)
- Superior Energy Services Co. [www.supleriorenergy.com](http://www.supleriorenergy.com)
- TransMontaigne Inc. [www.transmontaigne.com](http://www.transmontaigne.com)
- Tri-State Generation & Transmission Assoc. [www.tristategt.org](http://www.tristategt.org)
- TwentyMile Coal Co. (Peabody Energy) [www.peabodyenergy.com](http://www.peabodyenergy.com)
- United Power [www.unitedpower.com](http://www.unitedpower.com)
- Westmoreland Coal Company [www.westmoreland.com](http://www.westmoreland.com)
- Whiting Petroleum Corp. [www.whiting.com](http://www.whiting.com)
ENERGY: Metro Denver and Northern Colorado Industry Cluster Profile

Major Fossil Fuels Companies Cont’d

- Intermountain Rural Electric Association
  www.intermountain-rea.com
- LINN Energy
  www.linnenergy.com
- Williams
  http://co.williams.com
- Xcel Energy
  www.xcelenergy.com

Energy Workforce Profile

Many companies choose locations because of the available workforce. With nearly half of the nine-county region’s 3.6 million residents under the age of 35, employers can draw from a large, young, highly educated, and productive workforce. Of the region’s adult population, 41.2 percent are college graduates and 90.5 percent have graduated from high school. The state has the nation’s second-most highly educated workforce as measured by the percentage of residents with a bachelor’s degree or higher.

The attractiveness of the region draws new residents through migration. The region’s population is expected to grow 53.3 percent from 2010 to 2040, driving a 36.3 percent increase in the region’s labor force over the same period. It is important to note the changing composition of the workforce supply as the baby boomers begin to retire, which will pose implications for businesses whose employee pool includes significant numbers of these workers.

![Educational Attainment of Metro Denver and Northern Colorado’s Population Age 25 and Older](chart1)

Source: U.S. Census Bureau, 2013 American Community Survey.

![Metro Denver and Northern Colorado’s Labor Force Projections by Age](chart2)

Source: Colorado Division of Local Government, State Demography Office.
Cleantech Workforce Profile

Age Distribution
The nine-county region’s cleantech industry employs 19,920 people and includes a large pool of talented, well-educated, and highly skilled workers. The age distribution of workers in the cleantech subcluster is similar to the age distribution across all industries. However, the cleantech subcluster has a larger share of employees that are between the ages of 35 and 54 years old, compared with the age distribution of all industries across the nine-county region.

The cleantech workforce supply consists of four main components: those currently working in the industry; those doing a similar type of job in some other industry; the unemployed; and those currently in the education pipeline. The Metro Denver and Northern Colorado Cleantech Occupation & Salary Profile below includes the 10 largest cleantech occupations in the nine-county region. For these 10 largest occupations, the chart details the total number of workers employed in that occupation across all industries, the number of available applicants that would like to be working in that occupation, the number of recent graduates that are qualified for that occupation, and the median and sample percentile annual salaries.

Wages
The 2013 average annual salary for cleantech employees was $78,170 in the nine-county region, compared with the national average of $75,500. The nine-county region’s cleantech payroll reached nearly $1.5 billion in 2013.

Metro Denver and Northern Colorado Cleantech Occupation & Salary Profile, 2014

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</thead>
<tbody>
<tr>
<td>1. Electricians</td>
<td>11,002</td>
<td>321</td>
<td>662</td>
<td>$46,932</td>
<td>$28,113</td>
<td>$34,595</td>
<td>$57,481</td>
<td>$67,408</td>
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<tr>
<td>2. Business operations specialists, all other</td>
<td>31,368</td>
<td>795</td>
<td>77</td>
<td>$65,708</td>
<td>$33,650</td>
<td>$46,449</td>
<td>$88,305</td>
<td>$113,376</td>
</tr>
<tr>
<td>3. Engineers</td>
<td>33,666</td>
<td>1,202</td>
<td>3,414</td>
<td>$88,400</td>
<td>$56,451</td>
<td>$69,659</td>
<td>$110,261</td>
<td>$134,118</td>
</tr>
<tr>
<td>5. Plumbers, pipefitters, &amp; steamfitters</td>
<td>6,665</td>
<td>38</td>
<td>369</td>
<td>$45,071</td>
<td>$28,630</td>
<td>$33,806</td>
<td>$54,235</td>
<td>$63,404</td>
</tr>
<tr>
<td>7. Physical scientists</td>
<td>9,758</td>
<td>337</td>
<td>1,191</td>
<td>$87,131</td>
<td>$53,040</td>
<td>$69,659</td>
<td>$111,758</td>
<td>$132,350</td>
</tr>
<tr>
<td>8. General &amp; operations managers</td>
<td>33,235</td>
<td>1,548</td>
<td>19</td>
<td>$105,711</td>
<td>$54,224</td>
<td>$72,467</td>
<td>$158,683</td>
<td>$230,626</td>
</tr>
<tr>
<td>9. Construction laborers</td>
<td>21,174</td>
<td>1,548</td>
<td>19</td>
<td>$29,455</td>
<td>$22,089</td>
<td>$26,090</td>
<td>$33,145</td>
<td>$37,704</td>
</tr>
</tbody>
</table>

Notes: The number of available applicants is a point-in-time measurement of the number of people who have registered in Colorado’s workforce development system’s statewide database, Connecting Colorado, as being able and available to work in a particular occupation. Results should be interpreted with caution since registration in Connecting Colorado is self-reported. In addition, the skills rubric may assign up to four occupation codes for each registrant. Therefore, the number of available applicants could be inflated. Source: Provided by Arapahoe/Douglas Works!; QCEW Employees, Non-QCEW Employees, Self Employed, & Extended Proprietors - EMSI 2014.3 Class of Worker.
ENERGY: Metro Denver and Northern Colorado Industry Cluster Profile

Fossil Fuels Workforce Profile

Age Distribution

The nine-county region’s fossil fuels industry employs 30,340 people and includes a large pool of talented, well-educated, and highly skilled workers. Compared with the age distribution across all industries, the fossil fuels subcluster has a larger share of employees that are older than 45 years old and fewer workers under the age of 24.

The fossil fuels workforce supply consists of four main components: those currently working in the industry; those doing a similar type of job in some other industry; the unemployed; and those currently in the education pipeline. The Metro Denver and Northern Colorado Fossil Fuels Occupation & Salary Profile below includes the 10 largest fossil fuels occupations in the region. For these 10 largest occupations, the chart details the total number of workers employed in that occupation across all industries, the number of available applicants that would like to be working in that occupation, the number of recent graduates that are qualified for that occupation, and the median and sample percentile annual salaries.

Wages

Wages in the fossil fuels subcluster are among the highest across all industry clusters. The 2013 average annual salary for a fossil fuels worker in the nine-county region was $109,750, compared with the national average of $95,420. The nine-county region’s fossil fuels payroll exceeded $3 billion in 2013.

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</tr>
</thead>
<tbody>
<tr>
<td>1. Civil engineers</td>
<td>6,586</td>
<td>142</td>
<td>408</td>
<td>$78,938</td>
<td>$54,089</td>
<td>$64,170</td>
<td>$96,262</td>
<td>$111,278</td>
</tr>
<tr>
<td>2. First-line supervisors of construction trades &amp; extraction workers</td>
<td>13,175</td>
<td>342</td>
<td>1,016</td>
<td>$50,063</td>
<td>$34,729</td>
<td>$41,514</td>
<td>$60,059</td>
<td>$71,003</td>
</tr>
<tr>
<td>3. Property, real estate, &amp; community association managers</td>
<td>20,880</td>
<td>273</td>
<td>40</td>
<td>$34,311</td>
<td>$26,982</td>
<td>$31,380</td>
<td>$40,110</td>
<td>$44,476</td>
</tr>
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<td>4. Managers, all other</td>
<td>24,252</td>
<td>1,585</td>
<td>6,284</td>
<td>$50,816</td>
<td>$36,778</td>
<td>$43,584</td>
<td>$59,154</td>
<td>$66,824</td>
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<tr>
<td>5. General &amp; operations managers</td>
<td>33,235</td>
<td>1,548</td>
<td>5,881</td>
<td>$105,711</td>
<td>$54,262</td>
<td>$72,467</td>
<td>$158,683</td>
<td>$230,626</td>
</tr>
<tr>
<td>6. Accountants &amp; auditors</td>
<td>33,586</td>
<td>251</td>
<td>683</td>
<td>$64,761</td>
<td>$42,211</td>
<td>$51,261</td>
<td>$83,199</td>
<td>$104,452</td>
</tr>
<tr>
<td>7. Securities, commodities, &amp; financial services sales agents</td>
<td>25,652</td>
<td>30</td>
<td>0</td>
<td>$53,415</td>
<td>$37,119</td>
<td>$43,181</td>
<td>$71,148</td>
<td>$93,359</td>
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<tr>
<td>9. Service unit operators, oil, gas, &amp; mining</td>
<td>2,270</td>
<td>22</td>
<td>0</td>
<td>$39,484</td>
<td>$28,676</td>
<td>$33,526</td>
<td>$48,619</td>
<td>$61,267</td>
</tr>
<tr>
<td>10. Wellhead pumpers</td>
<td>2,122</td>
<td>22</td>
<td>0</td>
<td>$43,765</td>
<td>$31,638</td>
<td>$34,617</td>
<td>$46,164</td>
<td>$48,948</td>
</tr>
</tbody>
</table>

Notes: The number of available applicants is a point-in-time measurement of the number of people who have registered in Colorado’s workforce development system’s statewide database, Connecting Colorado, as being able and available to work in a particular occupation. Results should be interpreted with caution since registration in Connecting Colorado is self-reported. In addition, the skills rubric may assign up to four occupation codes for each registrant. Therefore, the number of available applicants could be inflated. Source: Provided by Arapahoe/Douglas Works!; QCEW Employees, Non-QCEW Employees, Self Employed, & Extended Proprietors - EMSI 2014.3 Class of Worker.
Education & Training

Colorado’s higher education system provides an excellent support system for businesses in the region. There are 28 public higher education institutions in Colorado, of which seven four-year and six two-year public institutions offering comprehensive curricula are located in the nine-county region. In addition, there are more than 100 private and religious accredited institutions and nearly 340 private occupational and technical schools offering courses in dozens of program areas throughout the state. Although not exhaustive, a list of the major, accredited educational institutions with the greatest number of graduates for each of the 10 largest energy occupations in the nine-county region are included below. A directory of all higher education institutions with corresponding websites may be accessed via http://highered.colorado.gov.

- Colorado School of Mines  
  www.mines.edu
- Emily Griffith Technical College  
  www.emilygriffith.edu
- Regis University  
  www.regis.edu
- Colorado State University  
  www.colostate.edu
- Front Range Community College  
  www.frontrange.edu
- University of Colorado Boulder  
  www.colorado.edu
- Colorado State University Global Campus  
  www.colostate.edu
- Jones International University  
  www.jiu.edu
- University of Colorado Denver  
  www.ucdenver.edu
- Ecotech Institute  
  www.ecotechinstitute.com
- Metropolitan State University of Denver  
  www.msudenver.edu
- University of Denver  
  www.du.edu

Key Reasons for Energy Companies to Locate in the Nine-County Region

Colorado is a top-10 fossil fuels location offering access to one of the most energy rich regions in the United States.

- **Coal** - Colorado produced more than 24 million short tons of coal, or 2.5 percent of the nationwide supply in 2013. Colorado was the 11th-most productive coal mining state and borders Wyoming, the nation’s largest producer of coal. (U.S. Department of Energy, Energy Information Administration, 2014)
- **Natural Gas** - Colorado ranked sixth among natural-gas producing states, accounting for 6.6 percent of U.S. natural gas production. The state also had the nation’s largest reserve of coalbed methane and accounts for about one-fourth of Colorado’s natural gas production. (U.S. Department of Energy, Energy Information Administration, 2014)
  - The Rockies Express Pipeline (REX) is a 1,679-mile natural gas pipeline system that extends from the Piceance Basin in Colorado to Clarington, Ohio with a capacity of 1.8 billion cubic feet per day of natural gas. (U.S. Department of Energy, Energy Information Administration, 2014; Kinder Morgan, 2014)
- **Oil** - Colorado ranked as the 8th-largest crude oil producer in the nation in 2013, producing a record 64.3 million barrels of crude oil. Colorado ranked sixth in the number of active rotary rigs in 2013 and Colorado had the seventh-highest proven oil reserves in the nation totaling 1,170 million barrels in 2013. (U.S. Department of Energy, Energy Information Administration, 2014; Baker Hughes, 2014)
  - Nine of the nation’s 100 largest natural gas fields and two of the 100 largest oil fields are located in Colorado. (U.S. Department of Energy, Energy Information Administration, 2014)
  - With the lowest natural gas prices and total energy costs, Colorado was ranked the least energy-expensive state, with an average monthly energy bill of $301. (WalletHub, 2014)

Colorado is a top-10 cleantech location with newly enacted requirements for renewable energy generation and access to clean energy resources.

- **Wind** - Colorado ranked 10th in the nation for total installed wind power capacity in 2013 and has the 13th-highest wind resource potential of the states. (American Wind Energy Association, 2013)
- **Biomass** - Colorado has a growing biomass potential with about 5.2 billion kilowatt hours (kWh) of electricity—enough electricity to power more than 1.4 million homes—that could be generated using renewable biomass fuels. (U.S. Department of Energy, Energy Information Administration, 2014)
- **Solar** - Colorado ranked seventh in the nation for solar energy capacity installed in the state in 2013. (Solar Electric Power Association, 2014)
Denver ranked 10th among 57 U.S. cities for installed solar photovoltaic (PV) capacity and ranked 10th for solar PV capacity generated per capita in 2013. (Environment America Research & Policy Center, 2014)

- **Water** - Colorado has more than 40 potential hydropower sites that could produce more than 737,975 megawatt-hours annually, enough to power 65,000 homes each year. (Colorado Energy Office, 2014)
- Metro Denver ranked 10th in clean technology leadership in 2014 and ranked among the top 10 for green building usage and cleantech investment, innovation, and workforce. (Clean Edge, Inc., 2014)
- Denver ranked seventh among the top 10 U.S. cities with the highest percentage of green commercial space. More than 49 percent of commercial real estate in Denver was certified as green construction. (CBRE Group, 2014; Maastricht University, 2014)
- Metro Denver ranked eighth among the top 25 U.S. cities with the greatest number of energy-efficient buildings that earned the 2013 U.S. Environmental Protection Agency’s Energy Star certification. (U.S. Environmental Protection Agency, 2014)

Colorado is at the forefront of energy development, with a location that offers:

1. **The ability to recruit and retain senior management and scientific talent**
   - Of Colorado’s adult population, nearly 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, 2013 American Community Survey)
   - Colorado ranked seventh in the nation for the number of science and engineering doctorate holders as a percent of the workforce. (National Science Foundation, 2014)
   - Metro Denver ranked among the top five metro areas with the highest median salary for oil and gas engineering jobs in 2014, totaling $73,603 after cost of living adjustments. (PayScale.com, 2014)
   - Colorado ranked ninth in the nation for solar-related jobs and ranked seventh for the number of homes powered by solar in 2013. (The Solar Foundation, 2014)
   - Colorado ranked fifth in the nation for the number of wind-related jobs in 2013. (American Wind Energy Association, 2014)
   - Colorado ranked fourth for new clean energy and clean transportation jobs during the third quarter of 2014, with more than 1,300 new clean energy jobs announced during the quarter. (Environmental Entrepreneurs, 2014)
   - Metro Denver ranked as the ninth-best metro area for science, technology, engineering, and mathematics (STEM) graduates in 2014. STEM jobs in Metro Denver represented 8.2 percent of all occupations and the area’s annual mean wage for STEM jobs was $84,380. (NERDWallet, 2014)

2. **Proximity to energy-related higher education programs and research centers**
   - Colorado ranked ninth in the number of science and engineering graduate students per 1,000 individuals ages 25 to 34 years old in 2011. (National Science Foundation, 2014)
   - Colorado ranked 10th for research and development (R&D) expenditures per capita among academic institutions in fiscal year 2012. (National Science Foundation, 2014)
   - Colorado School of Mines (CSM) in Golden ranked as the nation’s top engineering school in 2014. (College Factual, 2014)
   - CSM is one of the few universities in the world to offer programs from baccalaureate through doctorate levels in all key fields related to energy and is the only institution in the world that offers doctoral programs in five of the major earth science disciplines. (Colorado School of Mines, 2014)
   - Colorado is home to Education Corporation of America’s Ecotech Institute, the world’s only college entirely focused on training students for careers in cleantech. (Ecotech Institute, 2014)
   - The Center for Revolutionary Solar Photoconversion (CRSP) was established in 2008 as a joint research center of the Colorado Energy Research Collaboratory. CRSP conducts basic and applied research that will result in scientific and technological revolutions in solar energy conversion. (Center for Revolutionary Solar Photoconversion, 2014)
   - CSU’s Natural Gas Initiative is an interdisciplinary group of scientists across its eight colleges offering diverse expertise to focus on collaborative solutions for the responsible production of natural gas. (Colorado State University, 2014)
   - Established in 2013, the CSU Energy Institute serves as the nucleus of CSU’s energy-related research, education, and outreach. Through its 13 affiliated centers, the Institute aims to increase collaboration with industry and governmental partners to solve energy problems and create new research and educational opportunities. (Colorado State University, 2014)
   - The Solar Technology Acceleration Center (SolarTAC) in Aurora is the largest test facility for solar technologies in the U.S. (The Solar Technology Acceleration Center, 2014)
3. Access to the research of a broad collection of federal laboratories and private R&D activities

- Key federal offices located in the nine-county region include the National Center for Atmospheric Research; the Office of Surface Mining Reclamation and Enforcement; the U.S. Bureau of Land Management; the U.S. Bureau of Ocean Energy Management, Regulation and Enforcement; the U.S. Bureau of Reclamation; the U.S. Forest Service; the U.S. Department of Energy; the U.S. Environmental Protection Agency; the U.S. Geological Survey; and the Western Area Power Administration.

- Firms with fossil fuel energy R&D programs include Anadarko Petroleum, BP America, Encana, Noble Energy, Shell Exploration & Production, and Suncor Energy.

4. Business organizations and public policy programs designed to encourage industry growth.

- The Colorado Energy Coalition (CEC) is a consortium of leaders and stakeholders dedicated to strengthening the business climate in Colorado supporting all sectors of the energy industry. The CEC’s mission is to brand Colorado as the Balanced Energy Capital of the West. (Metro Denver EDC, 2014)

- The Colorado Clean Energy Cluster (CCEC) is an economic development organization dedicated to growing 1,650 clean energy jobs and aims to generate $325 million in economic activity from clean energy by 2015 in Northern Colorado. CCEC’s initiatives include FortZED, the International Cleantech Network, C3E, and Net Zero Water. (The Colorado Clean Energy Cluster, 2014)

- The Advanced Industries (AI) Accelerator Programs were created in 2013 to promote growth and sustainability in Colorado’s advanced industries including advanced manufacturing, aerospace, bioscience, electronics, energy and natural resources, infrastructure engineering, and technology and information. The Colorado Office of Economic Development and International Trade offers Proof of Concept, Early-Stage Capital & Retention, Infrastructure Funding, and AI Exports grants. Since inception, the programs have awarded 67 grants totaling $8.2 million to support these critical industries in their various phases of growth. (The Colorado Office of Economic Development and International Trade, 2014)

### Energy Industry Cluster Definition

<table>
<thead>
<tr>
<th>NAICS Code*</th>
<th>NAICS Description</th>
<th>SIC Code</th>
<th>SIC Description</th>
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<th>SIC Description</th>
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</table>

**Cleantech**

- Solar electric power generation
- Wind electric power generation
- Geothermal electric power generation
- Biomass electric power generation
- Other electric power generation
- Steam & air-conditioning supply
- Water & sewer line & related structures construction
- Electrical contract. & other wiring install. contractors
- Plumbing, heating & air-conditioning contractors
- Drywall & insulation contractors
- Rope, cordage, twine, tire cord, & tire fabric mills
- Other basic inorganic chemical mfg.
- Ethyl alcohol mfg.
- Heating equipment (except warm air furnaces) mfg.
- Turbine & turbine generator set units mfg.
<table>
<thead>
<tr>
<th>NAICS Code*</th>
<th>NAICS Description</th>
<th>SIC Code</th>
<th>SIC Description</th>
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<td>3674-0305</td>
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*(P) indicates that only part of the NAICS industry category is represented in the industry cluster definition.**

**The NAICS codes are reviewed every five years for potential revisions to reflect new and emerging industries and to allow for industry changes. In 2012, NAICS code 221119 was reclassified into five new industries to distinguish solar (221114), wind (221115), geothermal (221116), biomass (221117), and other electric (221118) power generation. As a result, 221119 was removed from fossil fuels and reclassified into cleantech. Data is limited or not yet available for these five new industries. Note: NEC indicates "not elsewhere classified."
Energy Industry Cluster Relationships

Technologies
- Bioconversion
- Biofuels
- Electric Motors
- Ethanol
- Fuel Cells
- Geographic Information Systems
- Nanotechnology
- Photonics
- Photovoltaics

Support Industries
- Agriculture
- Beverage Production
- Bioscience
- Geospatial
- Government
- Software
- Transportation

Energy
- Fossil Fuels
- Cleantech

Client Industries
- Defense/Security
- Utilities
- Manufacturing
- Transportation
- Consumers
- Businesses

Infrastructure
- CO Clean Energy Cluster
- CO Cleantech Industry Assoc.
- CO Energy Research Institute
- CO-LABS
- CO Mining Association
- CO Renewable Energy Collaboratory
- CO School of Mines
- CO Petroleum Association
- Conservation and Gas Tech. Institute
- Federal Laboratories-NIST, NCAR
- National Renewable Energy Laboratory
- Solar Thermal Alliance of Colorado

For additional information, contact us:

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email: info@metrodenver.org
www.metrodenver.org

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303.620.8092
email: info@metrodenver.org

Industry Overview

The nine-county Metro Denver and Northern Colorado region\(^1\) is the major financial center between Los Angeles and Chicago. Downtown Denver's financial district along 17th Street is known as the “Wall Street of the West.” The region is one of the few areas outside of the northeast with a substantial financial services industry in three subclusters: (1) banking and finance, (2) investments, and (3) insurance. The banking and finance subcluster is comprised of transaction-oriented companies including commercial banks and credit unions, lenders, credit agencies, and mortgage bankers. The investments subcluster includes companies involved in securities and commodities trade, real estate investment trusts (REITs), and portfolio management. The insurance subcluster consists of insurance carriers and brokerages.

Denver is home to a branch of the Federal Reserve Bank and is the location of one of only six U.S. Mints. The Denver Mint manufactures all denominations of circulating coins, coin dies, the Denver “D” portion of the annual uncirculated coin sets, and commemorative coins authorized by the U.S. Congress. The Denver Mint stores gold and silver bullion and produced nearly 5.8 billion coins in 2013. Circulating coin production at the Denver Mint reached nearly 6 billion in 2014, a record that has not been reached since the Great Recession.

A variety of trade associations and service firms support the region’s diverse financial services industry base of nearly 13,400 companies and about 94,800 employees. The Colorado Bankers Association is a key industry partner (www.coloradobankers.org) representing all Colorado banks and provides government relations, community relations, educational and training services, and bank insurance. The Colorado Association of Mortgage Professionals (www.coamp.org) is another nonprofit trade group representing Colorado’s financing professionals specializing in origination of residential and commercial mortgages and offers professional development opportunities and member certification support. The Metro Denver Economic Development Corporation (Metro Denver EDC) formed the Colorado Investment Services Coalition in 2014, which is an advocacy group for Colorado’s large employers in financial management and advisory services. The Coalition is working with universities to develop the talent pipeline for the financial services companies expanding in the region, and will provide a public policy voice on issues of common interest.

Banking and Finance Economic Profile

The banking and finance subcluster consists of 16, six-digit North American Industry Classification System (NAICS) codes including both depository and non-depository institutions such as commercial banks, credit card companies, and mortgage brokers.

The nine-county region ranked seventh out of the 50 largest metro areas in banking and finance employment concentration in 2014. With direct employment in banking and finance of 38,970 workers, the region ranked 11th in absolute employment. About 77 percent of Colorado’s banking and finance industry employees work in the region.

\(^1\) The nine-county Metro Denver and Northern Colorado region consists of Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Jefferson, Larimer, and Weld Counties.
Banking and Finance Employment and Company Profile, 2014

<table>
<thead>
<tr>
<th></th>
<th>Nine-County Region</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct employment, 2014</td>
<td>38,970</td>
<td>2,593,770</td>
</tr>
<tr>
<td>Number of direct companies, 2014</td>
<td>3,150</td>
<td>218,330</td>
</tr>
<tr>
<td>One-year direct employment growth, 2013-2014</td>
<td>-3.1%</td>
<td>-1.7%</td>
</tr>
<tr>
<td>Five-year direct employment growth, 2009-2014</td>
<td>-8.0%</td>
<td>-1.1%</td>
</tr>
<tr>
<td>Avg. annual direct employment growth, 2009-2014</td>
<td>-1.6%</td>
<td>-0.2%</td>
</tr>
<tr>
<td>Direct employment concentration</td>
<td>2.1%</td>
<td>1.8%</td>
</tr>
</tbody>
</table>


Banking and Finance Employment

The nine-county region’s banking and finance employment (38,970 workers) declined 3.1 percent in 2014, compared with the previous year’s level. Similarly, national employment levels declined 1.7 percent over-the-year. While the banking and finance subcluster rebounded from 2011 through 2013 after four-consecutive years of employment declines due to the national finance-related recession, consolidations in the mortgage industry, the changing regulatory landscape, and capital and liquidity management contributed to employment declines in 2014.

About 3,150 banking and finance companies operated in the nine-county region in 2014. Approximately 69 percent of the region’s banking and finance companies employed fewer than 10 people, while 0.6 percent employed 250 or more.
FINANCIAL SERVICES: Metro Denver and Northern Colorado Industry Cluster Profile

Major Banking and Finance Companies

- ADS Alliance Data Systems
  www.alliancedata.com
- Bank of the West
  www.bankofthewest.com
- BBVA Compass Bank
  www.bbvacompass.com
- Bellco Credit Union
  www.bellco.org
- Citywide Banks
  www.citywidebanks.com
- CoBank
  www.cobank.com
- Colorado Business Bank
  www.cobizbank.com
- KeyBank
  www.key.com
- Markit On Demand
  www.markitondemand.com
- National Bank Holdings Corp.
  www.nationalbankholdings.com
- Nelnet
  www.nelnet.com
- Public Service Credit Union
  www.pscu.org
- Pulte Mortgage
  www.pultemortgage.com
- Specialized Loan Servicing LLC
  www.sls.net

Banking & Finance Employment by County, 2014

Banking & Finance Employment by Industry Sector, 2014

Sources: Market Analysis Profile, 2014; Development Research Partners.
Major Banking and Finance Companies Cont’d

- Colorado Housing and Finance Authority  
  [www.chfainfo.com](http://www.chfainfo.com)
- Colorado State Bank and Trust  
  [www.csbt.com](http://www.csbt.com)
- Elavon  
  [www.elavon.com](http://www.elavon.com)
- FirstBank Holding Company  
  [www.efirstbank.com](http://www.efirstbank.com)
- First Data Corporation  
  [www.firstdata.com](http://www.firstdata.com)
- Guaranty Bank and Trust  
  [www.guarantybankco.com](http://www.guarantybankco.com)
  [www.chase.com](http://www.chase.com)

- U.S. Bank  
  [www.usbank.com](http://www.usbank.com)
- Urban Lending Solutions  
  [www.urban-ls.com](http://www.urban-ls.com)
- Vectra Bank Colorado  
  [www.vectrabank.com](http://www.vectrabank.com)
- VISA Debit Processing Services  
  [www.visadps.com](http://www.visadps.com)
- Wells Fargo Bank Colorado  
  [www.wellsfargo.com](http://www.wellsfargo.com)
- Western Union  
  [www.westernunion.com](http://www.westernunion.com)

Investments Economic Profile

The investments subcluster consists of 15, six-digit North American Industry Classification System (NAICS) codes including companies involved in securities, brokerage, real estate investment trusts, and holding companies.

*The nine-county region ranked 12th out of the 50 largest metro areas in investments employment concentration in 2014.* With direct employment of 24,370 investment workers, the region ranked 12th in absolute employment.

Investments Employment and Company Profile, 2014

<table>
<thead>
<tr>
<th></th>
<th>Nine-County Region</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct employment, 2014</td>
<td>24,370</td>
<td>1,344,890</td>
</tr>
<tr>
<td>Number of direct companies, 2014</td>
<td>6,770</td>
<td>308,880</td>
</tr>
<tr>
<td>One-year direct employment growth, 2013-2014</td>
<td>4.2%</td>
<td>1.3%</td>
</tr>
<tr>
<td>Five-year direct employment growth, 2009-2014</td>
<td>9.9%</td>
<td>2.9%</td>
</tr>
<tr>
<td>Avg. annual direct employment growth, 2009-2014</td>
<td>1.9%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Direct employment concentration</td>
<td>1.3%</td>
<td>0.9%</td>
</tr>
</tbody>
</table>

Investments Employment

The nine-county region’s investments employment (24,370 workers) rose 4.2 percent in 2014, compared with the previous year’s level, adding nearly 980 new jobs over the same period. National employment levels rose 1.3 percent between 2013 and 2014. About 1.8 percent of the nation’s investments employment is located in the region. Between 2009 and 2014, the region’s investments employment rose 9.9 percent, compared with 2.9 percent at the national level. Investment companies employed 1.3 percent of the region’s total employment base, compared with a 0.9 percent national employment concentration.

About 6,770 investment companies operated in the nine-county region in 2014. Approximately 94 percent of the region’s investment companies employed fewer than 10 people, while 0.1 percent employed 250 or more.
Major Investment Companies

- AIMCO  
  www.aimco.com
- ALPS  
  www.alpsinc.com
- Atlantic Trust  
  www.atlantictrust.com
- Charles Schwab & Co.  
  www.schwab.com
- Curian Capital  
  www.curian.com
- Edward Jones  
  www.edwardjones.com
- Fidelity Investments  
  www.fidelity.com
- Great West Financial Empower  
  www.empower-retirement.com
- Janus Capital Group  
  www.janus.com
- Johnson Capital  
  www.johnsoncapital.com
- Lipper Analytical Services  
  www.lipperweb.com
- Marsico Capital Management LLC  
  www.marsicocapital.com
- Merrill Lynch  
  www.ml.com
- Morgan Stanley  
  www.morganstanley.com
- Oppenheimer Funds  
  www.oppenheimerfunds.com
- PENSCO Trust Company  
  www.pensco.com
- RBC Wealth Management  
  www.rbcwealthmanagement.com
- Scottrade  
  www.scottrade.com
- TIAA-CREF  
  www.tiaa-cref.org
- Transamerica Capital  
  www.transamerica.com

Insurance Economic Profile

The insurance subcluster consists of 13, six-digit North American Industry Classification System (NAICS) codes including companies involved in all types of insurance ranging from life, accident, health, casualty, title, and surety insurance to pension, health, and welfare funds businesses.

With direct employment in the insurance subcluster of about 31,480 workers, the nine-county region ranked 13th in absolute employment out of the 50 largest metro areas in 2014. The region ranked 18th for insurance employment concentration. About 77 percent of Colorado’s insurance subcluster employment was located in the region.

Insurance Employment and Company Profile, 2014

<table>
<thead>
<tr>
<th>Nine-County Region</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct employment, 2014</td>
<td>31,480</td>
</tr>
<tr>
<td>Number of direct companies, 2014</td>
<td>3,440</td>
</tr>
<tr>
<td>One-year direct employment growth, 2013-2014</td>
<td>2.8%</td>
</tr>
<tr>
<td>Five-year direct employment growth, 2009-2014</td>
<td>4.4%</td>
</tr>
<tr>
<td>Avg. annual direct employment growth, 2009-2014</td>
<td>0.9%</td>
</tr>
<tr>
<td>Direct employment concentration</td>
<td>1.7%</td>
</tr>
</tbody>
</table>

Insurance Employment

The nine-county region’s insurance employment (31,480 workers) rose 2.8 percent in 2014, compared with the previous year’s level, adding nearly 860 new jobs over the same period. National employment levels rose 1.7 percent between 2013 and 2014. About 1.3 percent of the nation’s insurance employment is located in the region. Between 2009 and 2014, the region’s insurance employment rose 4.4 percent, compared with 3.1 percent at the national level. Insurance companies employed 1.7 percent of the region’s total employment base, compared with the same employment concentration nationwide.

About 3,440 insurance companies operated in the nine-county region in 2014. Approximately 87 percent of the region’s insurance companies employed fewer than 10 people, while 0.5 percent employed 250 or more.

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**Financial Services-Insurance Number of Employees Growth Rate**

![Financial Services-Insurance Number of Employees Growth Rate](image)

**Insurance Employment by County, 2014**

Arapahoe 35.2%
Denver 32.8%
Jefferson 9.3%
Weld 7.4%
Douglas 4.5%
Boulder 3.3%
Larimer 3.4%
Adams 3.2%
Broomfield 0.7%

**Sources:** Market Analysis Profile, 2014; Development Research Partners.

**Insurance Employment by Industry Sector, 2014**

- Insurance agents, brokers, & service 64.8%
- Health & medical service carriers 16.2%
- Surety insurance carriers 1.2%
- Property & casualty insurance carriers 6.2%
- Life insurance carriers 3.5%
- Title insurance carriers 3.4%
- Pension, health, & welfare funds 2.4%

**Sources:** Market Analysis Profile, 2014; Development Research Partners.
Major Insurance Companies

- 2-10 Home Buyers Warranty Corp.  
  [www.2-10.com](http://www.2-10.com)
- Allied Insurance  
  [www.alliedinsurance.com](http://www.alliedinsurance.com)
- Allstate Insurance  
  [www.allstate.com](http://www.allstate.com)
- American Family Insurance  
  [www.amfam.com](http://www.amfam.com)
- Anthem Blue Cross and Blue Shield  
  [www.anthem.com](http://www.anthem.com)
- CNA Surety Corp.  
  [www.cnasurety.com](http://www.cnasurety.com)
- Farmers Insurance  
  [www.farmers.com](http://www.farmers.com)
- Great-West Financial  
  [www.greatwest.com](http://www.greatwest.com)
- IMA Financial Group  
  [www.imacorp.com](http://www.imacorp.com)
- Jackson National Life Insurance Co.  
  [www.jackson.com](http://www.jackson.com)
- Kaiser Permanente  
  [www.kaiserpermanente.org](http://www.kaiserpermanente.org)
- Land Title Guarantee Company  
  [www.ltgc.com](http://www.ltgc.com)
- Liberty Mutual  
  [www.libertymutual.com](http://www.libertymutual.com)
- Lockton Companies  
  [www.lockton.com](http://www.lockton.com)
- New York Life  
  [www.newyorklife.com](http://www.newyorklife.com)
- Northwestern Mutual  
  [www.northwesternmutual.com](http://www.northwesternmutual.com)
- Optum (formerly Connextions)  
  [www.optum.com](http://www.optum.com)
- Pinnacol Assurance  
  [www.pinnacol.com](http://www.pinnacol.com)
- State Farm Insurance  
  [www.statefarm.com](http://www.statefarm.com)
- United Healthcare  
  [www.uhc.com](http://www.uhc.com)
- USI Colorado, LLC  
  [www.usi.biz](http://www.usi.biz)
- Voya Financial (formerly ING U.S.)  
  [http://voyacom](http://voyacom)

2014 Industry Highlights

Key Company Announcements

The region is a hotbed of financial services activity with a vibrant workforce, innovative ecosystem, and exceptional quality of life for companies to grow and expand. Notable company announcements in 2014 included:

- The Metro Denver EDC named Charles Schwab a "Deal of the Year" award winner at its 2014 Annual Meeting, in recognition of its new $230-million campus in Lone Tree's RidgeGate development. The company plans to move a significant number of employees from its San Francisco, Calif.-based headquarters to Metro Denver over the next 3 to 5 years.
- CoBank will relocate its headquarters from Greenwood Village to the Denver Tech Center. The company will occupy a new 11-story tower that spans 296,000 square feet of office space and ground floor retail in late 2015.
- Lakewood-based FirstBank Holding Company is expanding its corporate headquarters facility, adding $37 million in new capital investment and more than doubling its existing building. FirstBank also opened three new branches in downtown Denver and Aurora in 2014.
- First Data Corp., a global credit and debit card payments processor, moved from Greenwood Plaza to the Denver Tech Center. The company leased a 98,000-square-foot space and will invest $8 million in remodeling the facility.
- Liberty National Life Insurance Co. opened a new office in Aurora and announced plans to hire more than 100 sales agents and managers. The new positions are independently contracted and are commission-based.

Merger and Acquisition Activity

Financial services companies in the nine-county region announced several mergers and acquisitions in 2014.

- Denver-based Great-West Financial was created in 2014 through the merger of Winnipeg, Manitoba-based Great West Lifeco Inc. and Boston-based Putnam Investments. The combined businesses will have up to $220 billion in assets under administration and more than 5 million participants. In September, Great-West acquired J.P. Morgan Retirement Plan Services, which added
200 clients, 1.9 million participants, and $167 billion in assets to Great-West. The company also received 1,000 employees from the acquisition. Great-West rebranded its retirement business, officially naming it “Empower” following the acquisitions. The deal with J.P. Morgan makes Great-West the second-largest retirement services provider (by participants) in the United States.

- The Boulder Municipal Employees Federal Credit Union and the Community Financial Credit Union merged. The combined company will hold more than $200 million in total assets and serve over 18,000 members between two full-service branches in Broomfield and Boulder.
- IMA Financial Group Inc. merged with Corporate Insurance Group Inc., a privately held insurance agency that produces, services, and markets commercial property.

**Academic and Education Announcements**

The region’s K-12 and higher education systems help prepare students in the financial services industry with expanded academic program offerings.

- The University of Colorado South Denver campus at the Wildlife Experience began offering classes in fall 2014. The campus offers a general business certificate, an entrepreneurship certificate, and non-degree programs providing working professionals with accelerated, short courses in project management, financial modeling, and online marketing.
- Denver Public Schools (DPS) received $7 million in federal Youth CareerConnect grant funds and $2.3 million in philanthropic funding to expand access to science, technology, engineering, and math (STEM) education programs. The funding will further strengthen the K-12 STEM partnership between DPS and Colorado School of Mines. During the next two years, DPS will create new STEM programs at eight high schools that will focus on engineering, health and medicine, digital careers, finance, information technology, energy, and manufacturing.

**Venture Capital and Investment Activity**

The region’s locational assets and competitive environment attract several nationally recognized companies. Forbes’ 2014 Global 2000 list included fourteen companies headquartered in the region, the 2014 Fortune 500 list included 9 companies with revenues totaling more than $93.6 billion, and Inc. 500’s fastest-growing private companies list included 14 local companies.

These growing companies are moving forward with significant venture capital and investment activity. According to PricewaterhouseCoopers’ MoneyTree Report, Colorado’s financial services companies attracted eight deals totaling $20.8 million during the past five years. Across all industries, more than 450 Colorado deals valued at a combined $2.6 billion closed during the same time.

**Industry Infrastructure Support**

A number of associations and organizations support entrepreneurship and venture-capital financing in Colorado.

- The Rocky Mountain Venture Capital Association (www.rockymountainvca.com) represents entrepreneurs, venture capitalists, and service providers in the Rocky Mountain Region and holds a bi-annual “Venture Capital in the Rockies” conference to showcase emerging companies and further venture funding in the region (www.vcintherockies.com). In the past five years, companies in the region have attracted financing from more than 400 institutional venture firms representing over $4 billion in capital under management.
- The Rockies Venture Club (www.rockiesventureclub.org), a nonprofit organization that encourages entrepreneurship in the region by connecting entrepreneurs, service professionals, investors, and venture capitalists, offers workshops, training, and capital conferences for its members. The organization hosts the annual “Angel Capital Summit” that connects investors with entrepreneurial companies seeking funding and is the oldest, longest-operating angel investing group in the nation.
- The Rocky Mountain MicroFinance Institute (RMMFI) is a nonprofit organization serving the needs of community entrepreneurs to foster growth in Colorado. RMMFI combines affordable and accessible business development services and flexible microloans to help entrepreneurs create economic self-sufficiency through business ownership (www.rmmfi.org).
- The Denver Office of Economic Development released the second edition of its Denver Capital Matrix, a resource directory of funding sources for Denver’s small businesses and entrepreneurs. The matrix identifies approximately 400 funding sources including venture capital firms, angel investors, traditional bank lenders, and private equity firms (www.denvergov.org).
Financial Services Workforce Profile

Many companies choose locations because of the available workforce. With nearly half of the nine-county region's 3.6 million residents under the age of 35, employers can draw from a large, young, highly educated, and productive workforce. Of the region's adult population, 41.2 percent are college graduates and 90.5 percent have graduated from high school. The state has the nation's second-most highly educated workforce as measured by the percentage of residents with a bachelor's degree or higher.

The attractiveness of the region draws new residents through migration. The region’s population is expected to grow 53.3 percent from 2010 to 2040, driving a 36.3 percent increase in the region's labor force over the same period. It is important to note the changing composition of the workforce supply as the baby boomers begin to retire, which will pose implications for businesses whose employee pool includes significant numbers of these workers.
Banking and Finance Workforce Profile

Age Distribution

The nine-county region’s banking and finance subcluster employs 38,970 people and includes a large pool of talented, well-educated, and highly skilled workers. The age distribution of workers in the banking and finance subcluster is concentrated in the younger age brackets, especially the 25-34 age group. Compared with the age distribution across all industries, the banking and finance subcluster has a larger share of employees that are between the ages of 25 and 44 years old.

The banking and finance workforce supply consists of four main components: those currently working in the industry; those doing a similar type of job in some other industry; the unemployed; and those currently in the education pipeline. The Metro Denver and Northern Colorado Occupation & Salary Profile below includes the 10 largest banking and finance occupations in the region. For these 10 largest occupations, the chart details the total number of workers employed in that occupation across all industries, the number of available applicants that would like to be working in that occupation, the number of recent graduates that are qualified for that occupation, and the median and sample percentile annual salaries.

Wages

The 2013 average annual salary for a banking and finance worker in the nine-county region was $71,110, compared with the national average of $70,970. Total payroll for the banking and finance subcluster in the region reached nearly $2.9 billion in 2013.

Metro Denver and Northern Colorado Banking and Finance Occupation & Salary Profile, 2014

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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tellers</td>
<td>5,110</td>
<td>399</td>
<td>2</td>
<td>$27,394</td>
<td>$21,445</td>
<td>$23,504</td>
<td>$32,822</td>
<td>$41,288</td>
</tr>
<tr>
<td>2. Loan officers</td>
<td>5,033</td>
<td>269</td>
<td>344</td>
<td>$67,642</td>
<td>$50,835</td>
<td>$68,848</td>
<td>$84,594</td>
<td>$138,258</td>
</tr>
<tr>
<td>3. Securities, commodities, &amp; financial services sales agents</td>
<td>22,141</td>
<td>32</td>
<td>0</td>
<td>$46,134</td>
<td>$31,346</td>
<td>$36,920</td>
<td>$66,498</td>
<td>$93,974</td>
</tr>
<tr>
<td>4. Customer service representatives</td>
<td>36,610</td>
<td>6,537</td>
<td>0</td>
<td>$31,866</td>
<td>$22,194</td>
<td>$26,562</td>
<td>$40,290</td>
<td>$49,754</td>
</tr>
<tr>
<td>5. Loan interviewers &amp; clerks</td>
<td>3,008</td>
<td>123</td>
<td>2</td>
<td>$43,202</td>
<td>$30,243</td>
<td>$36,234</td>
<td>$50,128</td>
<td>$60,299</td>
</tr>
<tr>
<td>6. First-line supervisors of office &amp; administrative support workers</td>
<td>16,413</td>
<td>1,110</td>
<td>116</td>
<td>$54,746</td>
<td>$34,320</td>
<td>$43,202</td>
<td>$68,484</td>
<td>$84,594</td>
</tr>
<tr>
<td>7. Financial managers</td>
<td>9,144</td>
<td>100</td>
<td>385</td>
<td>$95,950</td>
<td>$63,544</td>
<td>$78,437</td>
<td>$120,598</td>
<td>$137,074</td>
</tr>
<tr>
<td>8. Bookkeeping, accounting, &amp; auditing clerks</td>
<td>27,313</td>
<td>1,208</td>
<td>279</td>
<td>$36,608</td>
<td>$23,878</td>
<td>$29,744</td>
<td>$44,824</td>
<td>$53,830</td>
</tr>
<tr>
<td>10. Business operations specialists, all other</td>
<td>32,981</td>
<td>789</td>
<td>77</td>
<td>$69,930</td>
<td>$36,067</td>
<td>$50,024</td>
<td>$92,375</td>
<td>$120,078</td>
</tr>
</tbody>
</table>

Notes: The number of available applicants is a point-in-time measurement of the number of people who have registered in Colorado’s workforce development system’s statewide database, Connecting Colorado, as being able and available to work in a particular occupation. Results should be interpreted with caution since registration in Connecting Colorado is self-reported. In addition, the skills rubric may assign up to four occupation codes for each registrant. Therefore, the number of available applicants could be inflated. Source: Provided by Arapahoe/Douglas Works!; QCEW Employees, Non-QCEW Employees, Self Employed, & Extended Proprietors - EMSI 2014.3 Class of Worker.
Investments Workforce Profile

Age Distribution
The nine-county region’s investments subcluster employs 24,370 people and includes a large pool of talented, well-educated, and highly skilled workers. Compared with the age distribution across all industries, the investments subcluster has a larger share of employees between the ages of 25 and 44 years old.

The investments workforce supply consists of four main components: those currently working in the industry; those doing a similar type of job in some other industry; the unemployed; and those currently in the education pipeline. The Metro Denver and Northern Colorado Occupation & Salary Profile below includes the 10 largest investments occupations in the region. For these 10 largest occupations, the chart details the total number of workers employed in that occupation across all industries, the number of available applicants that would like to be working in that occupation, the number of recent graduates that are qualified for that occupation, and the median and sample percentile annual salaries.

Wages
Wages in the investments subcluster are among the highest across all industry clusters. The 2013 average annual salary for an investments worker in the nine-county region was $175,930, compared with the national average of $189,190. The region’s investments subcluster payroll exceeded $4.1 billion in 2013.

### Metro Denver and Northern Colorado Investments Occupation & Salary Profile, 2014

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Personal financial advisors</td>
<td>25,741</td>
<td>73</td>
<td>344</td>
<td>$57,782</td>
<td>$43,805</td>
<td>$51,147</td>
<td>$68,370</td>
<td>$77,438</td>
<td></td>
</tr>
<tr>
<td>2. Securities, commodities, &amp; financial services sales agents</td>
<td>22,141</td>
<td>32</td>
<td>0</td>
<td>$46,134</td>
<td>$31,346</td>
<td>$36,920</td>
<td>$66,498</td>
<td>$93,974</td>
<td></td>
</tr>
<tr>
<td>3. Financial analysts</td>
<td>6,883</td>
<td>299</td>
<td>365</td>
<td>$63,690</td>
<td>$47,258</td>
<td>$54,288</td>
<td>$80,434</td>
<td>$98,925</td>
<td></td>
</tr>
<tr>
<td>4. Financial managers</td>
<td>9,144</td>
<td>104</td>
<td>385</td>
<td>$95,950</td>
<td>$63,544</td>
<td>$78,437</td>
<td>$120,598</td>
<td>$173,742</td>
<td></td>
</tr>
<tr>
<td>5. First-line supervisors of non-retail sales workers</td>
<td>10,337</td>
<td>217</td>
<td>77</td>
<td>$43,909</td>
<td>$31,554</td>
<td>$36,192</td>
<td>$55,869</td>
<td>$67,309</td>
<td></td>
</tr>
<tr>
<td>6. Accountants &amp; auditors</td>
<td>33,585</td>
<td>219</td>
<td>683</td>
<td>$63,877</td>
<td>$41,080</td>
<td>$50,294</td>
<td>$81,973</td>
<td>$102,856</td>
<td></td>
</tr>
<tr>
<td>7. Secretaries &amp; administrative assistants, except legal, medical, &amp; executive</td>
<td>49,635</td>
<td>675</td>
<td>71</td>
<td>$36,026</td>
<td>$23,587</td>
<td>$29,034</td>
<td>$43,992</td>
<td>$51,979</td>
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<td>8. Property, real estate, &amp; community association managers</td>
<td>21,224</td>
<td>262</td>
<td>40</td>
<td>$37,731</td>
<td>$29,328</td>
<td>$34,133</td>
<td>$44,762</td>
<td>$51,022</td>
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<tr>
<td>9. Executive secretaries &amp; executive administrative assistants</td>
<td>11,858</td>
<td>1,777</td>
<td>144</td>
<td>$50,856</td>
<td>$36,026</td>
<td>$42,266</td>
<td>$59,696</td>
<td>$71,219</td>
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Notes: The number of available applicants is a point-in-time measurement of the number of people who have registered in Colorado’s workforce development system’s statewide database, Connecting Colorado, as being able and available to work in a particular occupation. Results should be interpreted with caution since registration in Connecting Colorado is self-reported. In addition, the skills rubric may assign up to four occupation codes for each registrant. Therefore, the number of available applicants could be inflated. Source: Provided by Arapahoe/Douglas Works!; QCEW Employees, Non-QCEW Employees, Self Employed, & Extended Proprietors - EMSI 2014.3 Class of Worker.
Insurance Workforce Profile

Age Distribution

The nine-county region’s insurance subcluster employs 31,480 people and includes a large pool of talented, well-educated, and highly skilled workers. Compared with the age distribution across all industries, the insurance subcluster has a larger share of employees between the ages of 25 and 64 years old.

The insurance workforce supply consists of four main components: those currently working in the industry; those doing a similar type of job in some other industry; the unemployed; and those currently in the education pipeline. The Metro Denver and Northern Colorado Occupation & Salary Profile below includes the 10 largest insurance occupations in the region. For these 10 largest occupations, the chart details the total number of workers employed in that occupation across all industries, the number of available applicants that would like to be working in that occupation, the number of recent graduates that are qualified for that occupation, and the median and sample percentile annual salaries.

Wages

Total nine-county payroll in the insurance subcluster reached nearly $2.1 billion in 2013. The 2013 average annual salary for insurance employees in the region was $68,110, compared with the national average of $79,700.

**Metro Denver and Northern Colorado Insurance Occupation & Salary Profile, 2014**

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<td>15,558</td>
<td>149</td>
<td>0</td>
<td>$64,189</td>
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<td>$51,688</td>
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<td>36,610</td>
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<td>0</td>
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<td>3. Claims adjusters, examiners, &amp; investigators</td>
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<td>0</td>
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<td>$41,080</td>
<td>$50,294</td>
<td>$81,973</td>
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<td>4. Insurance claims &amp; policy processing clerks</td>
<td>1,911</td>
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<td>0</td>
<td>$105,206</td>
<td>$57,928</td>
<td>$74,277</td>
<td>$151,965</td>
<td>$206,627</td>
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<td>5. Secretaries &amp; administrative assistants, except legal, medical, &amp; executive</td>
<td>49,635</td>
<td>672</td>
<td>71</td>
<td>$57,782</td>
<td>$43,805</td>
<td>$51,147</td>
<td>$68,370</td>
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<td>6. Business operations specialists, all other</td>
<td>32,981</td>
<td>795</td>
<td>77</td>
<td>$43,909</td>
<td>$31,554</td>
<td>$36,192</td>
<td>$55,869</td>
<td>$67,309</td>
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<tr>
<td>7. Insurance underwriters</td>
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<td>0</td>
<td>$46,342</td>
<td>$27,685</td>
<td>$36,920</td>
<td>$59,530</td>
<td>$85,342</td>
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<td>8. Accountants &amp; auditors</td>
<td>33,585</td>
<td>231</td>
<td>683</td>
<td>$49,275</td>
<td>$30,390</td>
<td>$41,891</td>
<td>$57,886</td>
<td>$67,558</td>
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<td>9. Managers, all other</td>
<td>24,187</td>
<td>1,585</td>
<td>6,284</td>
<td>$36,608</td>
<td>$23,878</td>
<td>$29,744</td>
<td>$44,824</td>
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<td>10. First-line supervisors of non-retail sales workers</td>
<td>10,337</td>
<td>218</td>
<td>77</td>
<td>$45,802</td>
<td>$34,674</td>
<td>$39,042</td>
<td>$58,157</td>
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</table>

Notes: The number of available applicants is a point-in-time measurement of the number of people who have registered in Colorado’s workforce development system’s statewide database, Connecting Colorado, as being able and available to work in a particular occupation. Results should be interpreted with caution since registration in Connecting Colorado is self-reported. In addition, the skills rubric may assign up to four occupation codes for each registrant. Therefore, the number of available applicants could be inflated. Source: Provided by Arapahoe/Douglas Works!; QCEW Employees, Non-QCEW Employees, Self Employed, & Extended Proprietors - EMSI 2014.3 Class of Worker.
Education & Training

Colorado’s higher education system provides an excellent support system for businesses in the region. There are 28 public higher education institutions in Colorado, of which seven four-year and six two-year public institutions offering comprehensive curricula are located in the nine-county region. In addition, there are more than 100 private and religious accredited institutions and nearly 340 private occupational and technical schools offering courses in dozens of program areas throughout the state. Although not exhaustive, a list of the major, accredited educational institutions with the greatest number of graduates for each of the 10 largest financial services occupations in the nine-county region are included below. A directory of all higher education institutions with corresponding websites may be accessed via [http://highered.colorado.gov](http://highered.colorado.gov).

- Colorado State University [www.colostate.edu](http://www.colostate.edu)
- Jones International University [www.jiu.edu](http://www.jiu.edu)
- University of Colorado Boulder [www.colorado.edu](http://www.colorado.edu)
- Colorado State University Global Campus [www.colostate.edu](http://www.colostate.edu)
- Metropolitan State University of Denver [www.msudenver.edu](http://www.msudenver.edu)
- University of Colorado Denver [www.ucdenver.edu](http://www.ucdenver.edu)
- DeVry University – Colorado [www.devry.edu](http://www.devry.edu)
- Red Rocks Community College [www.rrcc.edu](http://www.rrcc.edu)
- University of Denver [www.du.edu](http://www.du.edu)
- Front Range Community College [www.frontrange.edu](http://www.frontrange.edu)
- Regis University [www.regis.edu](http://www.regis.edu)
- University of Northern Colorado [www.unco.edu](http://www.unco.edu)

Key Reasons for Financial Services Companies to Locate in the Nine-County Region

The region is a top location for financial services companies offering:

1. **Access to a large, highly qualified and entrepreneurial workforce**
   - Metro Denver has a higher-than-average concentration of employment in business and financial operations occupations. About 6.4 percent of Metro Denver’s labor force is employed in business and financial operations occupations, compared with the U.S. average of 4.8 percent. ([U.S. Census Bureau](http://www.census.gov), 2013 American Community Survey 1-Year Estimate)
   - About 2.6 percent of the 71,300 certified financial planner certificates in the United States are held in Colorado even though Colorado’s population represents just 1.7 percent of the national population total. ([Certified Financial Planner Board of Standards, Inc.](http://www.cfplat.org), 2014; [U.S. Census Bureau](http://www.census.gov), 2014)
   - Three Metro Denver universities ranked among the nation’s “Best Undergraduate Business Schools” in 2014. The Daniels College of Business at the University of Denver (DU) ranked 67th, the College of Business at Colorado State University (CSU) ranked 73rd, and the Leeds School of Business at the University of Colorado Boulder (CU-Boulder) ranked 97th. ([Bloomberg Businessweek](http://www.bloomberg.com), 2014)
   - [The Princeton Review](http://www.princetonreview.com) named the Daniels College of Business at DU and the College of Business at CSU to the list of the “Best 295 Business Schools” in 2014. DU was listed as having the fourth-best green MBA program, while CSU ranked among the top 10 best-administered programs. ([The Princeton Review](http://www.princetonreview.com), 2014)
   - The Business School at the University of Colorado Denver is the largest accredited graduate school of business in the Rocky Mountain West. The school’s Association to Advance Collegiate Schools of Business accreditation places the Business School in the top 5 percent of business programs worldwide. ([The University of Colorado Denver](http://www.colorado.edu), 2014)
   - The Leeds School of Business at CU-Boulder ranked among the nation’s top 100 full-time MBA programs in 2014. Three Metro Denver part-time MBA programs at CSU, CU-Boulder, and DU ranked among the nation’s top 100. ([U.S. News & World Report](http://www.usnews.com), 2014)
   - Two Metro Denver universities ranked among the top 100 “Best Online MBA Programs” in 2014. The Daniels College of Business at DU ranked 36th and CSU’s Global Campus ranked 82nd. ([U.S. News & World Report](http://www.usnews.com), 2014)
   - Denver ranked among the top five “Best Cities for New Grads” and received particular accolades for its expanding job market for new graduates, higher median salaries for recent graduates, and invigorating outdoor culture. ([Kiplinger’s Personal Finance](http://www.kiplinger.com), 2014)
2. An overall better quality of life

- Castle Rock ranked fourth in *MONEY Magazine*'s 2014 list of the “Best Places to Live.” Centennial (13th) and Boulder (23rd) were also named to the list’s top 50. (*MONEY Magazine*, 2014)
- Metro Denver ranked as the fourth-fittest metro area in the nation in 2014. Denver’s high percentage of residents participating in physical activity, and low obesity and cardiovascular disease rates contributed to its high rank. (American College of Sports Medicine, 2014)
- Colorado has the fourth-highest percentage of state land area devoted to the National Forest System. The state offers access to more than 50 national parks and wilderness areas, 42 state parks, and the greatest number of 14,000-foot peaks in the nation that support a healthy, active lifestyle. (U.S. Forest Service, 2014; Colorado State Parks, 2014)
- Boulder ranked second on the 2014 list of the “Top 100 Best Places to Live.” Aurora (50th) and Lakewood (88th) were also named to the list. (Livability.com, 2014)
- FasTracks, a comprehensive project to build out Metro Denver’s entire mass transit system by 2019, is the largest simultaneous transit buildout in U.S. history. The expansion will make Metro Denver one of the top five regions in the country in terms of miles of fixed rail.

3. Low to moderate costs of doing business

- Metro Denver office rental rates averaged $28.83 per square foot in the fourth quarter of 2014, making the region’s office market highly competitive with other major markets in the U.S. (CoStar Realty Information, The CoStar Office Report, Q4 2014)
- Colorado’s $16 registration fee for brokers and dealer representatives is one of the lowest in the nation. (State of Colorado, Division of Securities)

4. A pro-business environment and competitive tax structure

- Colorado’s simplified corporate income tax structure based on single-factor apportionment allows companies to pay taxes based solely on their sales in the state. Along with few regulatory burdens, Colorado’s corporate income tax rate of 4.63 percent is one of the lowest and most competitive tax structures in the nation. (State of Colorado; The Tax Foundation)
- Colorado’s general Insurance Premium Tax is lower than taxes in 16 other states. The state’s Insurance Premium Tax is generally 2 percent, but businesses with a home or regional office in Colorado are only taxed 1 percent. (National Association of Insurance Commissioners, 2009)
- Colorado has the nation’s ninth-best tax climate for entrepreneurship and small business. (Small Business & Entrepreneurship Council, 2014)
- Metro Denver ranked fourth among *Forbes* 2014 “Best Places for Business and Careers” list. Four other Colorado metropolitan areas were included on the list. The Fort Collins metro area ranked fifth overall, Greeley ranked 20th, Boulder ranked 23rd, and Colorado Springs ranked 29th. (*Forbes*, 2014)
- Colorado ranked as the No. 8 small-business-friendly state in the nation. Fort Collins (24th) and Denver (28th) ranked among 84 cities in the country. (Thumbtack.com, 2014; Ewing Marion Kauffman Foundation, 2014)

5. A central location and easy global access

- Denver International Airport was the fifth-busiest airport in the nation and 15th-busiest worldwide in terms of passenger traffic in 2013. (U.S. Bureau of Transportation Statistics, 2014; Airports Council International 2014; and Denver International Airport, 2014)
- Metro Denver’s unique geographic location in the Mountain time zone makes it the largest region in the U.S. to offer one-bounce satellite uplinks. This capability provides companies with real-time connections to six of seven continents in one business day. (Metro Denver Economic Development Corporation)
- Located on the 105th meridian, the nine-county region’s central location at the exact midpoint between Tokyo and Frankfurt positions the region favorably to serve growing world markets. The region is an excellent location for doing business with the entire nation and is within four hours flying time of every North American city with a population of 1 million or more. (Metro Denver Economic Development Corporation)
- Denver ranked among the top-five safest cities for natural disasters in 2014. (HomeownersInsurance.com, 2014)
### Financial Services Industry Cluster Definition

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<th>NAICS Description</th>
<th>SIC Code</th>
<th>SIC Description</th>
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### Financial Services Industry Cluster Definition Cont’d

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<td>6331</td>
<td>Fire, marine, &amp; casualty insurance</td>
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| Investments |
|--------------|------------------------------------------|
| 523110       | Investment banking & securities dealing  |
| 523120       | Securities brokerage                     |
| 523130       | Commodity contracts dealing              |
| 523130       | Commodity contracts dealing              |
| 523140       | Commodity contracts brokerage            |
| 523210       | Securities & commodity exchanges         |
| 523910       | Misc. intermediation                     |
| 523910       | Misc. intermediation                     |
| 523920       | Portfolio management                     |
| 523920       | Portfolio management                     |
| 523920       | Portfolio management                     |
| 523930       | Investment advice                        |
| 523991       | Trust, fiduciary & custody activities    |
| 523991       | Trust, fiduciary & custody activities    |
| 523991       | Trust, fiduciary & custody activities    |
| 523999       | Misc. financial investment activities    |
| 525910       | Open-end investment funds                |
| 525920       | Trusts, estates & agency accounts       |
| 525990       | Other financial vehicles                 |
| 525990       | Other financial vehicles                 |
| 551111       | Offices of bank holding companies       |
| 551112       | Offices of other holding companies      |

*Note: NEC indicates "not elsewhere classified."*
Financial Services Industry Cluster Relationships

Technologies
- Internet
- High-Speed
- Infrastructure

Support Industries
- Software
- Telecommunications
- Healthcare
- Call Centers
- Professional Services

Financial Services
- Banking and Finance
- Insurance
- Investments

Client Industries
- Consumers
- Businesses
- Government

Infrastructure
- Angel Networks
- CO Assoc. of Mortgage Professionals
- CO Bankers Assoc.
- CO Venture Capital Assoc.
- Rocky Mtn. Venture Capital Assoc.
- RMMI

For additional information, contact us:

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Industry Overview

The healthcare and wellness cluster includes a dynamic and growing group of companies that provide preventive, curative, and rehabilitative services offered by healthcare providers, medical and specialty hospitals, kidney dialysis centers, nutrition and weight loss facilities, fitness centers, medical spas and massage facilities, public health and education, and other healthcare and wellness organizations. Extending beyond healthcare delivery, the cluster represents a continuum of businesses ranging from treating disease to a multidimensional and holistic approach that focuses on complete physical and mental health, social well-being, and disease prevention.

The nine-county Metro Denver and Northern Colorado\(^1\) region is a leading healthcare and wellness hub. The region’s health services industries are truly regional, serving not only surrounding areas of Colorado but several western states ranging from Montana to New Mexico. The region has a large concentration of healthcare and wellness facilities with more than 192,290 healthcare and wellness workers in nearly 18,160 companies across the region. The healthcare and wellness cluster propels the region’s economy forward by attracting substantial resources and promoting company expansions from which patients, educational and research institutions, companies, research and development, and the community all derive significant benefits.

One of the key characteristics of the healthcare and wellness industry is its resiliency to economic cycles, which continues to drive job growth as a result of several key trends. Colorado’s health insurance landscape is undergoing rapid change, and the pace accelerated in 2014. An estimated 500,000 Coloradans are expected to gain insurance through the Affordable Care Act, driven by private insurance enrollment through Connect for Health Colorado, public insurance enrollment in Medicaid, and the expanding health benefits in both. This will also drive further collaboration and cooperation among various healthcare and wellness facilities across the region for specialized services, research, workforce, and facilities.

Another contributing factor is increasing demand for healthcare services, largely due to an aging and growing population. By 2040, Colorado’s population ages 65 and older is projected to double to 1.5 million. This demographic shift toward an older population with the aging of the baby boomer generation will generate economic activity based on increased demand for hospital and nursing care, medical services, and long-term and at-home services.

In addition, the digital healthcare infrastructure, created by electronic health records and software solutions, has greatly improved the way patient care is delivered and compensated. Improvements in the digital healthcare infrastructure have also provided the ability to share patient records with other providers. Lastly, providers are moving toward integrated healthcare to increase efficiencies and mitigate risks by establishing continuity of care. The integrated healthcare approach is changing the way individuals prevent illness and treat diseases. Improved medical practices, holistic approaches, and new intellectual and spiritual philosophies have fostered the movement toward an integrated approach to healthcare.

Healthcare and Wellness Economic Profile

The healthcare and wellness cluster includes the offices of physicians, dentists, chiropractors, optometrists, mental health practitioners, physical and speech therapists, podiatrists, and other health practitioners. The cluster includes hospitals ranging from general medical, surgical, and psychiatric to substance abuse and specialty care, and includes centers focused on family planning, outpatient mental health and substance abuse, kidney dialysis, diagnostic imaging, and emergency care. Companies focused on nursing care, assisted

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\(^1\) The nine-county Metro Denver and Northern Colorado region consists of Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Jefferson, Larimer, and Weld Counties.
living, and long-term care and businesses that provide services for individuals, families, and the elderly are also included. The cluster includes home health and recreation equipment rental, fitness and recreation facilities, diet and weight reducing services, and massage and yoga services. Companies that manufacture ophthalmic goods, sports and athletic equipment, and outerwear and retailers engaged in vitamins and nutrition supplements are also included. The cluster includes government agencies engaged in the planning, administration, and coordination of public health programs and services. The healthcare and wellness cluster consists of 53, six-digit North American Industry Classification System (NAICS) codes.

**With direct employment of 192,290 healthcare and wellness workers, the nine-county region ranked 13th in absolute employment out of the 50 largest metro areas in 2014.** The region ranked 30th for healthcare and wellness employment concentration. About 72 percent of Colorado’s healthcare and wellness cluster employees worked in the region.

### Healthcare and Wellness Employment and Company Profile, 2014

<table>
<thead>
<tr>
<th>Metric</th>
<th>Nine-County Region</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct employment, 2014</td>
<td>192,290</td>
<td>16,877,720</td>
</tr>
<tr>
<td>Number of direct companies, 2014</td>
<td>18,160</td>
<td>1,348,870</td>
</tr>
<tr>
<td>One-year direct employment growth, 2013-2014</td>
<td>4.9%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Five-year direct employment growth, 2009-2014</td>
<td>21.2%</td>
<td>8.3%</td>
</tr>
<tr>
<td>Avg. annual direct employment growth, 2009-2014</td>
<td>3.9%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Direct employment concentration</td>
<td>10.4%</td>
<td>11.6%</td>
</tr>
</tbody>
</table>


### Healthcare and Wellness Employment

The nine-county region’s healthcare and wellness employment (192,290 workers) rose 4.9 percent in 2014, compared with the previous year’s level, adding nearly 8,980 new jobs over the same period.

About 18,160 healthcare and wellness companies operated in the nine-county region in 2014. Approximately 82 percent of the region’s healthcare and wellness companies employed fewer than 10 people, while 0.4 percent employed 250 or more.
HEALTHCARE AND WELLNESS:
Metro Denver and Northern Colorado Industry Cluster Profile

Major Healthcare and Wellness Companies

- 24 Hour Fitness
  [www.24hourfitness.com](http://www.24hourfitness.com)
- American Medical Response
  [www.amr.net](http://www.amr.net)
- Banner Health
  [www.bannerhealth.com](http://www.bannerhealth.com)
- Better Bodies Fitness Centers
  [www.betterbodiesthesecond.com](http://www.betterbodiesthesecond.com)
- Boulder Community Health
  [www.bch.org](http://www.bch.org)
- Boulder Center for Sports Medicine
  [www.bouldersportsmedicine.org](http://www.bouldersportsmedicine.org)
- Centura Health
  [www.centura.org](http://www.centura.org)
- HSS Inc.
  [http://hss-us.com](http://hss-us.com)
- Kaiser Permanente Colorado
  [www.kaiserpermanente.org](http://www.kaiserpermanente.org)
- Kindred Healthcare, Inc.
  [www.kindredhealthcare.com](http://www.kindredhealthcare.com)
- InnovAge
  [www.myinnovage.org](http://www.myinnovage.org)
- Life Care Centers of America
  [www.lcca.com](http://www.lcca.com)
- Longmont United Hospital
  [www.luhcares.org](http://www.luhcares.org)
- Massage Envy
  [www.massageenvy.com](http://www.massageenvy.com)

Healthcare & Wellness Employment by County, 2014

- Denver: 26.4%
- Arapahoe: 16.3%
- Jefferson: 12.4%
- Boulder: 11.3%
- Larimer: 8.8%
- Adams: 14.1%
- Broomfield: 1.3%
- Douglas: 5.3%
- Weld: 4.0%
- Boulder: 11.3%
- Jefferson: 12.4%
- Adams: 14.1%
- Broomfield: 1.3%
- Douglas: 5.3%
- Weld: 4.0%
- Denver: 26.4%

Healthcare & Wellness Employment by Industry Sector, 2014

- General & Medical, Surgical, & Psychiatric Hospitals: 36.9%
- Physician offices & Clinics: 28.7%
- Fitness & Recreational Services: 8.0%
- Nursing Care Facilities: 6.8%
- Kidney Dialysis & Home Health Care Services: 11.0%
- Medical & Dental Laboratories: 1.1%
- Organic & Health Food Stores: 1.8%
- All Other Health Services: 4.0%
- Public Health Programs & Other Health Agencies: 1.6%

Sources: Market Analysis Profile, 2014; Development Research Partners.
HEALTHCARE AND WELLNESS:
Metro Denver and Northern Colorado Industry Cluster Profile

Major Healthcare and Wellness Companies Cont’d

- Children’s Hospital Colorado  
  www.childrenscolorado.org
- Comfort Dental  
  www.comfortdental.com
- CorePower Yoga  
  www.corepoweryoga.com
- Craig Hospital  
  www.craighospital.org
- DaVita Inc.  
  www.davita.com
- Denver Health and Hospital Authority  
  http://denverhealth.org
- Gaia, Inc.  
  www.gaia.com
- HCA-HealthONE LLC  
  www.healthonecares.com
- HealthGrades, Inc.  
  www.healthgrades.com
- National Jewish Health  
  www.nationaljewish.org
- Natural Grocers by Vitamin Cottage  
  www.naturalgrocers.com
- Platte Valley Medical Center  
  www.pvmc.org
- Quest Diagnostics  
  www.questdiagnostics.com
- Rocky Mountain Poison & Drug Center  
  www.rmpdc.org
- Rudi’s Organic Bakery  
  www.rudisbakery.com
- SCL Health System (formerly Exempla Healthcare)  
  www.sclhealthsystem.org
- SlimGenics, LLC  
  www.slimgenics.com
- University of Colorado Health  
  www.uchealth.org

Major Healthcare and Wellness Foundations and Community-Based Organizations

- A.V. Hunter Trust Inc.  
  http://avhuntertrust.org
- Anschutz Family Foundation  
  www.anschutzfamilyfoundation.org
- Arapahoe House  
  www.arapahoehouse.org
- Aurora Mental Health Center  
  www.aumhc.org
- Belle Bonfils Memorial Blood Center  
  www.bonfils.org
- Caring for Colorado Foundation  
  www.caringforcolorado.org
- Catholic Health Initiatives  
  www.catholichealthinit.org
- Children’s Hospital Colorado Foundation  
  www.childrenscoloradofoundation.org
- Clinica Family Health Services  
  www.clinica.org
- Colorado Behavioral Health Council  
  www.cbhc.org
- Colorado Community Health Network  
  www.cchn.org
- The Colorado Health Foundation  
  www.coloradohealth.org
- The Colorado Trust  
  www.coloradotrust.org
- Community First Foundation  
  www.communityfirstfoundation.org
- The Denver Health Foundation  
  www.denverhealthfoundation.org
- The Denver Hospice  
  www.thedenverhospice.org
- El Pomar Foundation  
  www.elpomar.org
- Helen K. & Arthur E. Johnson Foundation  
  www.johnsonfoundation.org
- Kenneth King Foundation  
  www.kennethkingfoundation.org
- Jefferson Center for Mental Health  
  www.jeffersonmentalhealth.org
- Jewish Family Service of Colorado  
  http://jewishfamilyservice.org
- LiveWell Colorado  
  http://livewellcolorado.org
- Mental Health Center of Denver  
  www.mhcd.org
- Mental Health Partners  
  www.mhpcolorado.org
- North Colorado Health Alliance  
  www.northcoloradohealthalliance.org
- Rose Community Foundation  
  www.rcfdenver.org
- Visiting Nurse Association of Colorado  
  www.vnacolorado.org
- Western Dairy Association  
  www.westerndairyassociation.org
Major Healthcare and Wellness Government and Research Facilities

- CO Department of Agriculture
  [www.colorado.gov/ag](http://www.colorado.gov/ag)
- CO Department of Human Services
  [www.colorado.gov/CDHS](http://www.colorado.gov/CDHS)
- CO Department of Public Health & Environment
  [www.cdphe.state.co.us](http://www.cdphe.state.co.us)
- Tri-County Health Department
  [www.tchd.org](http://www.tchd.org)
- University of CO Anschutz Medical Campus
  [www.ucdenver.edu](http://www.ucdenver.edu)
- U.S. Dept. of Agriculture
  [www.usda.gov](http://www.usda.gov)
- U.S. Dept. of Health & Human Services Health Resources & Services Admin.
  [www.hrsa.gov](http://www.hrsa.gov)
- U.S. Dept. of Veterans Affairs
  [www.va.gov](http://www.va.gov)

2014 Industry Highlights

Anschutz Medical Campus and Fitzsimons Life Science District

The nine-county region is a healthcare and wellness powerhouse with cutting-edge research and development facilities, unmatched talent, and state-of-the-art amenities. The region is home to internationally renowned clinical systems, institutions, and organizations including the Fitzsimons Life Science District and the adjacent Anschutz Medical Campus in Aurora. When complete, the $5.2 billion project encompassing 578 total acres and more than six million square feet of new real estate will be the largest medical-related redevelopment in the nation and the world's only completely new research, education, and patient care complex. The campus is home to the schools and colleges of Medicine, Nursing, Dental Medicine, Pharmacy, and Public Health.

According to the University of Colorado Denver, CU Anschutz contributed more than $2.6 billion to Colorado’s economy between 2012 and 2013 and employment increased by 4,200 jobs over this period of time. With two world-class research hospitals—the University of Colorado Hospital (UCH) and Children’s Hospital Colorado—the campus will total 18 million square feet and employ more than 44,000 people at full buildout. A number of facilities expanded in 2014:

- Located adjacent to the Anschutz Medical Campus is the U.S. Department of Veterans Affairs (VA) Eastern Colorado Healthcare System hospital and facilities. The VA’s hospital and facilities in Aurora house the VA Schizophrenia Research Center—one of three in the VA system nationwide—the Mental Illness Research, Education, and Clinical Centers, and conduct research on best practices and care coordination for veterans. Construction began in 2011 on a new VA Hospital that will replace the existing facility in Denver and will be completed in 2016. The new 1.2 million-square-foot VA Hospital will include a spinal-cord injury center and community living center. At buildout, the VA Hospital is expected to employ about 2,000 people and serve nearly 83,000 veterans annually.
- The University of Colorado Health (UCHealth) plans to build a $63 million Center for Personalized Medicine and Biomedical Informatics on the Anschutz Medical Campus. The Center will provide improved healthcare through DNA and molecular testing and will provide services to the Children’s Hospital Colorado locations throughout Colorado and serve as a resource for the UCH system. Over the next five years, the University of Colorado School of Medicine and Children’s Hospital Colorado will add clinicians, genetic counselors, advanced practice nurses, DNA banks, a data warehouse, and analytics tools.
- UCH began construction of four previously unfinished floors in the 12-story expansion tower at the Anschutz Medical Campus. Three of the floors will be acute care floors for 108 beds and the fourth floor will hold a 24-bed intensive care unit. The $32 million project is slated for completion in early 2015.
- Colorado cancer researchers and medical doctors from the University of Colorado and Colorado State University partnered to conduct a $200,000 feasibility study for a proposed $300 million center at CU Anschutz. The center would be home to the nation’s first carbon-ion radiotherapy facility. The collaborators signed a memorandum of understanding to pursue the project with Poudre Valley Hospital in Fort Collins and carbon-ion radiotherapy pioneers at the National Institute of Radiological Sciences in Japan.
- The Anschutz Medical Campus also includes facilities for University Physicians, Inc., the University of Colorado Cancer Center, the Barbara Davis Center for Childhood Diabetes, the Eleanor Roosevelt Institute, and the Webb-Waring Center.
Northern Colorado Healthcare Assets

UCHealth provides evidence-based healthcare and wellness services in Colorado, Nebraska, and Wyoming and includes UCH in Aurora, Poudre Valley Hospital in Fort Collins, Medical Center of the Rockies in Loveland, Mountain Crest Behavioral Healthcare Center, Colorado Health Medical Group, and other clinics and outpatient services.

Located 50 miles north of Denver, the North Colorado Medical Center (NCMC) in Greeley is rated nationally among the top 2 percent of hospitals for clinical quality. NCMC’s specialties in cardiology, pulmonary, gastroenterology, and critical care are among the top in the nation. NCMC serves as a regional medical center with community-based and specialty services covering southern Wyoming, western Nebraska, western Kansas, and northeastern Colorado. Designated as a Level II Trauma Center, NCMC offers patients state-of-the-art technology such as iCare and a telehealth program.

The McKee Medical Center, an acute-care hospital serving the Loveland community, is a leader in healthcare innovation through its latest cancer treatments and offers a full range of inpatient and outpatient services, and is a regional center for robotic surgery. McKee Medical Center also offers an intelligent obstetrics program, a computerized system designed to reduce the chances of complications during labor and delivery.

Northern Colorado’s healthcare and wellness organizations expanded their presence in 2014.

- UCHealth plans to build a 24-hour emergency center at its Harmony Campus in Fort Collins. The $12.3 million, 16,580-square-foot emergency center will have 12 private exam rooms, computed tomography, ultrasound, basic X-ray services, a retail pharmacy, and an outpatient laboratory.
- Banner Health continued construction on its new Fort Collins hospital, part of a 28-acre campus that will also include an outpatient clinic and medical office building. The Banner Fort Collins Medical Center will include an emergency department, a 24-bed inpatient unit, labor and delivery rooms, medical imaging, surgical services, and laboratory services. The hospital is slated to open in 2015.
- Poudre Valley Hospital plans to expand and renovate its existing hospital. The $102 million project includes the construction of a two-story building with a new emergency department, expanded orthopedic wing, and a new laboratory. The building will house a helicopter landing pad on the roof and a new parking lot will be added.

Major Project Updates and Facility Expansions

A number of major nine-county region hospital projects and facility expansions were either completed or moved forward in 2014.

- The new National Jewish Health-Saint Joseph Hospital opened in December. The $623 million, 831,000-square-foot facility replaced the hospital’s existing facility and includes a hybrid operating room that will allow physicians to treat major cardiac problems using both invasive and non-invasive procedures and alleviate the need to move patients between operating rooms during surgery.
- Swedish Medical Center will expand its stroke and neuroscience programs. The $50 million project includes renovations to 28,000 square feet of existing space and adding 65,000 square feet, including the addition of 39 beds specific to the neuroscience program, a new neurocritical care unit, and two additional floors to the south tower.
- Littleton Adventist Hospital plans to renovate and expand its existing building. The $30 million project includes expansion of the pre-operation and post-operation surgery areas, interventional radiology services, and cardiac services. The hospital will also install new technology for radiation and cardiac services, as well as build more conference space. The hospital celebrated its 25th anniversary in 2014.
- Construction continued on Centura Health’s St. Anthony North Health Campus in Westminster. The 350,000-square-foot project includes a Level III trauma center and emergency department, an ambulatory surgery center with inpatient surgery capabilities, a women’s health center, outpatient diagnostics and treatment center, and inpatient beds. The facility will incorporate the company’s health neighborhood approach and is slated for completion in early 2015.
- Platte Valley Medical Center opened in Commerce City and will serve as the first primary care medical building to open in the Reunion community. The $3.7 million, 12,000-square-foot center provides access to four medical practices including Eagle Ridge Medical Family Medicine, Integrative Internal Medicine, Premier Pediatrics, and Alcott Women’s Care.
Jefferson County will be the site of a small, new hospital, located at the corner of Wadsworth Boulevard and Coal Mine Avenue. The new building will be a boutique hospital, a hospital designed for personalized care and high-volume surgeries.

**Key Company Announcements**

Notable healthcare and wellness company expansions and announcements in 2014 included:

- Centura Health opened three new health and wellness centers in north Denver as part of the provider's new neighborhood health program. The centers, located in Dacono, Thornton, and Westminster, offer primary care, specialty services, diagnostic imaging, and wellness services.
- Denver-based InnovAge opened its newest senior services center in Denver. The 36,000-square-foot facility will employ 200 people and could service 1,000 seniors. The company currently operates five locations along the Front Range and offers health, dental, vision, psychiatric care, X-ray services, and physical therapy services.
- SCL Health relocated its headquarters to Broomfield, leasing an additional 104,683 square feet of space. SCL relocated the human resources, finance, and legal departments, as well as the executive and corporate communications office from downtown Denver. The move will retain 920 jobs at the Broomfield campus and allow the company to expand by 150 positions in the future.
- The Stout Street Health Center opened in Denver, the only facility of its kind in the country. The $35 million, 53,190-square-foot facility integrates total healthcare with housing for homeless individuals and allows the organization to serve 50 percent more people. The Center includes general physician care, vision, dental, pharmacy, mental health, and addiction counseling services.
- Boulder Brands Inc. plans to expand its downtown Boulder corporate headquarters, more than doubling its current location by 25,000 square feet. The expansion will allow for an additional 50 employees and an “innovation kitchen” for new idea development, quality control, and education and training.
- Louisville-based Door to Door Organics Inc. secured more than $25 million in Series B funding. The funding will help the company accelerate expansion into new markets, resulting in the addition of new employees in operations, merchandising, and technology.
- Purely Elizabeth, a local natural and organic foods company, relocated its headquarters from New York City to Boulder. The company’s move was motivated by a need to be closer to their manufacturing center and to enter into the local organic foods network. After the relocation, the company secured a contract with Target to sell their products in 1,789 stores nationwide.

**Health Tourism Announcements**

The nine-county region is a growing health tourism hub, offering high-quality healthcare facilities, a highly skilled workforce, and specialized medical services. Notable developments in 2014 included:

- Construction continued on Craig Hospital’s $90 million expansion and renovation project. Phase 1 of construction was completed in 2014 with the new addition and PEAK Center open. Phase 2 of construction began in August 2014, which will finish the interiors of the new fourth floor Spinal Cord Unit, the spinal cord injury therapy gym, and Adaptive Technology Lab. The project is slated for completion in 2016.
- The town of Estes Park broke ground on a $30 million health and wellness facility on land adjacent to the Stanley Hotel. The Stanley Hotel/Anschutz Medical Center for Wellness will create 70 new jobs and includes a 15,000-square-foot training center, a wellness center, and 13,000 square feet for physician lodging.
- The University of Colorado Anschutz Health and Wellness Center (AHWC) was featured in an ABC documentary series. The Center offers some of the nation’s most advanced research, focusing on a comprehensive wellness approach, including weight loss and management, fitness, and nutrition. Following the documentary, it started the AHWC Destination Weight Loss program, which offers a weeklong boot camp in Denver and continued weight loss and wellness goal monitoring remotely for an entire year.
- The Colorado Center for Reproductive Medicine (CCRM) is one of the nation’s leading fertility clinics, providing a wide variety of treatments ranging from basic infertility care to the most advanced technology available. Two-thirds of CCRM’s patients travel to Colorado from other states and countries for treatment. It is internationally recognized for success rates and scientific achievements in the field of reproductive endocrinology.
HEALTHCARE AND WELLNESS: 
Metro Denver and Northern Colorado Industry Cluster Profile

- National Jewish Health is a worldwide leader in treating patients with respiratory, cardiac, immune, and related disorders, and for groundbreaking medical research. Founded in 1899 as a nonprofit hospital, National Jewish Health remains the only facility in the world dedicated exclusively to these disorders. Roughly 30 percent of National Jewish’s patients come from out-of-state to receive pulmonology care.
- The Medical Center of Aurora is a leader in cardiovascular care and hosts the largest atrial fibrillation center in the Rocky Mountain region. In addition, the center’s main campus and Centennial Medical Plaza are accredited chest pain centers by the Society of Chest Pain Centers and operate a state-of-the-art heart care tower on its main campus.

Major Collaborations and Partnership Activity

2014 was notable for increased partnerships and collaborations among the region’s healthcare and wellness organizations.

- DaVita HealthCare Partners Inc. and Centura Health collaborated to improve patient healthcare. The two companies will offer differentiated healthcare delivery models called Colorado Health Neighborhoods, which are intended to lower patient costs and optimize healthcare value. The partnership provides primary care physicians, specialists, and Centura facilities with tools such as disease management and patient care coordination.
- National Jewish Health and SCL Health signed a joint operating agreement that will allow healthcare providers to handle clinical care together at the new National Jewish Health-Saint Joseph Hospital. Under the agreement, National Jewish will provide outpatient services and SCL Health will provide the inpatient services.
- HCA-HealthONE partnered with Nashville, Tenn.-based Sarah Cannon Cancer Network of Excellence to increase access to clinical tests and improve coordinated cancer care. The initiative is designed for patients to gain access to innovative therapies and clinical trials and enhance patient navigation across facilities.
- Three SCL Health System’s hospitals based in Metro Denver successfully connected to the health information exchange (HIE) network at the Colorado Regional Health Information Organization. Good Samaritan Medical Center in Lafayette, Lutheran Medical Center in Wheat Ridge, and Saint Joseph Hospital in Denver provide care to more than 100,000 residents. The HIE provides access to health information on patients such as hospital discharge notifications, lab test results, X-ray and other imaging reports, and referral information to doctors.

Cross-Cluster Convergence

The nine-county region is characterized by its network of collaboration, innovation centers, and unique assets that lead to cross-cluster convergence. The healthcare and wellness industry combines these regional assets to strengthen partnerships and enhance growth opportunities across industries such as digital health and IT-software.

- Metro Denver is an emerging digital health community nationally. Founded in July 2012 by the Denver South Economic Development Partnership and Innovation Pavilion, PrIME Health Collaborative is a growing statewide community of 700+ health care executives, physicians, technologists, academics, entrepreneurs, and investors dedicated to improving health and lowering healthcare costs through the commercialization of digital health technologies. The Collaborative is a resource ecosystem for Digital Health—the convergence of the digital and genetics revolutions with bioscience, healthcare and wellness, and information technology-software. In 2014, the Collaborative held a number of important events showcasing the Digital Health Corridor, including a first-of-its kind $150,000 Digital Health Challenge. More information at www.primehealthco.com/challenge.
- The University of Colorado launched the first curriculum focused on digital health, using the business-academic partnership. The program will help prepare the newest generation and newest specialty of technology workers in Colorado.
- Boulder-based Kindara launched Wink, a wireless fertility thermometer to help women easily record their basal body temperature readings. Wink synchronizes with Bluetooth technology to the Kindara fertility app on a user’s mobile devices and provides an integrated fertility charting experience.
- Two Metro Denver technology companies—Highlands Ranch-based Zen Planner and Denver-based PaySimple—partnered to help fitness and dance studios manage their business using cloud-based
infrastructure. Zen Planner focuses on scheduling, booking, and business management software, which connects to PaySimple’s payment-processing and payments software.

- Aurora-based Analytical Decision Services LLC designed a program to simulate how healthcare facilities can improve efficiencies and manage an influx of patients. The company created a four-dimensional portrayal of a healthcare system and can add and subtract different factors that will analyze the way the organization handles patients and care.

- Centennial-based Thinklabs designed a new digital stethoscope, which is compatible with iPhone and iPad technology. The Thinklabs One stethoscope is Bluetooth compatible for wireless transmission, has an earphone jack that is compatible with different headphone models, and has volume control to enhance the sound up to 100 times louder than the traditional model.

### Research and Development Awards

The region’s healthcare and wellness companies and organizations received notable awards in 2014.

- The Centers for Medicare and Medicaid Services awarded Colorado health policy leaders $65 million to develop a plan to integrate physical and mental healthcare. The State Innovation Model funding is designed to provide support to states for the development and testing of state-based models for multi-payment and healthcare delivery system transformation aimed at improving health system performance. Colorado’s model, the Statewide Health Innovations Fostering Transformation program, supports the formation of integrated primary care providers, developed within the framework of the state’s existing Medicaid Accountable Care Collaborative.

- DaVita Kidney Care, a division of DaVita Healthcare Partners Inc., received two Dorland Health “Case In Point” Platinum awards. The awards are given to companies that have the most successful and innovative case-management programs working to improve healthcare. DaVita’s model includes collaborating with patients, physicians, health systems, Accountable Care Organizations, and payers to provide integrated care. The two programs to receive the awards were Patient Pathways and VillageHealth.

- The Caring for Colorado Foundation awarded $2.7 million in grants to 51 mental, oral, and safety-net healthcare organizations across Colorado. The beneficiaries included Western slope schools, behavioral health and programs for disadvantaged students, and extended health coverage for the uninsured.

- Denver-based myStength.com received $1.5 million from the Colorado Health Foundation to develop an online behavioral health program that offers mental-health checks, affirmations, and other help. The funding will allow the company to increase capacity and bring the e-platform to public and private clients.

### Industry Infrastructure Support

The nine-county region is home to numerous organizations that promote wellness.

- Colorado hosted the fourth annual USA Pro Cycling Challenge in summer 2014. The 550-mile route through eight host cities from Aspen to Denver generated $130 million in economic impact for the state. Riders from 16 international, professional teams took place in the race, challenging the course’s 40,000 feet of vertical climbing and technical descents.

- Colorado’s northeastern plains communities hosted the third annual Pedal The Plains bicycle tour in 2014. More than 1,000 registered cyclists participated in the event to celebrate the agricultural roots and frontier heritage of the state’s Eastern Plains. The three-day ride covered more than 170 miles and showcased the host communities of Wiggins, Fort Morgan, and Sterling.

- Flat 14ers is an initiative to encourage children, families, teachers, and community members to increase their levels of physical activity by climbing virtual 14,000-foot mountain peaks (14ers). The online tracking system provides individuals an easy and fun way to become active and stay active by converting minutes of physical activity such as running, playing basketball, cycling, or walking into steps toward reaching the summit of a 14er. The initiative is part of the Tri-County Health Department’s Communities Putting Prevention to Work Grant with partners including school districts, parks and recreation agencies in Adams, Arapahoe, and Douglas Counties, CBS4, America On the Move, and Children’s Hospital Colorado.

- The Colorado Health Foundation (CHF) is one of the largest health-focused foundations in the country, providing grants to nonprofits with the focus on encouraging healthy living. Located in Denver, CHF works to increase accessibility to quality healthcare, provides graduate medical education to increase the healthcare workforce, and works with foundation partners to address health issues in Colorado.
CHF hosts the annual Colorado Health Symposium which is one of the leading national health policy conferences in the nation.

- The Colorado Trust was formed in 1985 as a dedicated foundation to advance the health and well-being of Coloradans. The Trust collaborates with individuals, organizations, and communities across the state to expand health coverage and improve the healthcare system. Through grant support, the Trust is dedicated to achieving access to health for all Coloradans by 2018.

**Healthcare and Wellness Workforce Profile**

Many companies choose locations because of the available workforce. With nearly half of the nine-county region’s 3.6 million residents under the age of 35, employers can draw from a large, young, highly educated, and productive workforce. Of the region’s adult population, 41.2 percent are college graduates and 90.5 percent have graduated from high school. The state has the nation’s second-most highly educated workforce as measured by the percentage of residents with a bachelor’s degree or higher.

The attractiveness of the region draws new residents through migration. The region’s population is expected to grow 53.3 percent from 2010 to 2040, driving a 36.3 percent increase in the region’s labor force over the same period. It is important to note the changing composition of the workforce supply as the baby boomers begin to retire, which will pose implications for businesses whose employee pool includes significant numbers of these workers.

The nine-county region’s healthcare and wellness industry cluster employs 192,290 people and includes a large pool of talented, well-educated, and highly skilled workers. Compared with the age distribution across all industries, the healthcare and wellness cluster has a larger share of employees that are between the ages of 25 and 44 years old.

**Educational Attainment of Metro Denver and Northern Colorado’s Population Age 25 and Older**

![Educational Attainment Chart]

**Metro Denver and Northern Colorado’s Labor Force Projections by Age**

![Labor Force Projections Chart]
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The healthcare and wellness workforce supply consists of four main components: those currently working in the industry; those doing a similar type of job in some other industry; the unemployed; and those currently in the education pipeline. The Metro Denver and Northern Colorado Occupation & Salary Profile below includes the 10 largest healthcare and wellness occupations in the region. For these 10 largest occupations, the chart details the total number of workers employed in that occupation across all industries, the number of available applicants that would like to be working in that occupation, the number of recent graduates that are qualified for that occupation, and the median and sample percentile annual salaries.

Wages
The 2013 average annual salary for a healthcare and wellness worker in the nine-county region was $53,440, compared with the national average of $52,690. Total payroll for the healthcare and wellness cluster in the region reached nearly $9.8 billion in 2013.

<table>
<thead>
<tr>
<th>Metro Denver and Northern Colorado Healthcare and Wellness Occupation &amp; Salary Profile, 2014</th>
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<tbody>
<tr>
<td><strong>10 Largest Healthcare and Wellness Occupations in Metro Denver and Northern Colorado</strong></td>
</tr>
<tr>
<td>1. Registered nurses</td>
</tr>
<tr>
<td>2. Personal care aides</td>
</tr>
<tr>
<td>3. Nursing assistants</td>
</tr>
<tr>
<td>4. Home health aides</td>
</tr>
<tr>
<td>5. Business operations specialists, all other</td>
</tr>
<tr>
<td>6. Receptionists &amp; information clerks</td>
</tr>
<tr>
<td>7. Medical assistants</td>
</tr>
<tr>
<td>8. Secretaries &amp; administrative assistants, except legal, medical, &amp; executive</td>
</tr>
<tr>
<td>9. Clinical, counseling, &amp; school psychologists</td>
</tr>
<tr>
<td>10. Medical secretaries</td>
</tr>
</tbody>
</table>

Notes: The number of available applicants is a point-in-time measurement of the number of people who have registered in Colorado’s workforce development system’s statewide database, Connecting Colorado, as being able and available to work in a particular occupation. Results should be interpreted with caution since registration in Connecting Colorado is self-reported. In addition, the skills rubric may assign up to four occupation codes for each registrant. Therefore, the number of available applicants could be inflated. Source: Provided by Arapahoe/Douglas Works! QCEW Employees, Non-QCEW Employees, Self Employed, & Extended Proprietors - EMSI 2014.3 Class of Worker.

Education & Training
Colorado’s higher education system provides an excellent support system for businesses in the region. There are 28 public higher education institutions in Colorado, of which seven four-year and six two-year public institutions offering comprehensive curricula are located in the nine-county region. In addition, there are more than 100 private and religious accredited institutions and nearly 340 private occupational and technical schools offering courses in dozens of program areas throughout the state. Although not exhaustive, a list of the major, accredited educational institutions with the greatest number of graduates for each of the 10 largest healthcare and wellness occupations in the nine-county region are included below. A directory of all higher education institutions with corresponding websites may be accessed via [http://highered.colorado.gov](http://highered.colorado.gov).
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- Colorado School of Traditional Chinese Medicine
  www.cstcm.edu
- Concorde Career College – Aurora
  www.concorde.edu
- Emily Griffith Technical College
  www.emilygriffith.edu
- Front Range Community College
  www.frontrange.edu
- Institute of Taoist Education and Acupuncture, Inc.
  http://itea.edu
- Jones International University
  www.jiu.edu
- Metropolitan State University of Denver
  www.msudenver.edu
- Pima Medical Institute – Denver Campus
  www.pmi.edu
- Regis University
  www.regis.edu
- Southwest Acupuncture College
  www.acupuncturecollege.edu
- University of Colorado Boulder
  www.colorado.edu
- University of Colorado Denver
  www.ucdenver.edu
- University of Colorado Denver School of Medicine
  www.medschool.ucdenver.edu
- University of Northern Colorado
  www.unco.edu
- University of Colorado Denver
  www.ucdenver.edu
- University of Northern Colorado
  www.unco.edu
- Institute of Taoist Education and Acupuncture, Inc.
  http://itea.edu
- Southwestern Acupuncture College
  www.acupuncturecollege.edu

**Key Reasons for Healthcare and Wellness Companies to Locate in the Nine-County Region**

The region is a top healthcare and wellness location offering:

1. **A robust culture of health and wellness**
   - Colorado is the leanest state with the nation’s lowest rate of adult obesity (21.3 percent). (Trust for America’s Health, 2014; Robert Wood Johnson Foundation, 2014)
   - Colorado has the highest participation in physical activities with nearly 62 percent of the state’s adults participating in 150 minutes of moderate or vigorous physical activity per week. (The Henry J. Kaiser Family Foundation, 2014)
   - Colorado ranked as the eighth-healthiest state in the nation and had the lowest rates of obesity, physical inactivity, and diabetes. (United Health Foundation, 2014)
   - Metro Denver ranked as the fourth-fittest metro area in the nation in 2014. Denver's high percentage of residents participating in physical activity, and low obesity and cardiovascular disease rates contributed to its high rank. (American College of Sports Medicine, 2014)
   - Colorado has the fourth-highest percentage of state land area devoted to the National Forest System. The state offers access to more than 50 national parks and wilderness areas, 42 state parks, and the greatest number of 14,000-foot peaks in the nation that support a healthy, active lifestyle. (U.S. Forest Service, 2014; Colorado State Parks, 2014)
   - The park facilities in Denver and Aurora ranked among the top 10 best in the nation in 2014. (The Trust for Public Land, 2014)
   - The City and County of Denver has the nation’s largest city park system with more than 200 parks and more than 34,000 acres of parks located in the nearby mountains. (Metro Denver Economic Development Corporation)
   - More than 100 public and private golf courses are located throughout Metro Denver. In addition, 11 world-class ski resorts are within 100 miles. (Metro Denver Economic Development Corporation)
   - Boulder and Fort Collins ranked among the top five metro areas for residents’ overall health and well-being. Colorado ranked seventh for its residents’ overall well-being. (Gallup-Healthways, 2014)
   - Douglas County ranked as the healthiest county in Colorado. Boulder (fourth), Broomfield (ninth), and Larimer (10th) were also included in the top 10. (University of Wisconsin Population Health Institute, 2014)
   - Colorado scored among the top 10 in the nation on four of the six healthy aging indicators. The state’s older adults had the highest rate of physical activity of any state and ranked eighth for immunization rates. (Colorado Health Foundation, 2014)
   - Colorado ranked as the sixth-healthiest state for adults ages 65 years and older. Colorado’s seniors have the second-lowest prevalence of obesity, high rates of physical activity, low percentage of hospital deaths, and low premature death rate. (United Health Foundation, 2014)
   - Colorado’s nearly 350 organically-certified farmers, ranchers, and food processors account for approximately 10 percent of overall U.S. sales of organic products. Colorado ranked as the nation's
HEALTHCARE AND WELLNESS: 
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largest producer of organic wheat and ranked third in organic millet and organic lettuce production. (Colorado Department of Agriculture, 2014)

2. The ability to recruit and retain a healthy, skilled, and productive workforce
   - Healthy employees are more productive, have less absenteeism, and cost an average of $4,000 less each year in healthcare costs than unhealthy employees. (University of Michigan Health Management Research Center, 2014)
   - Of Colorado’s adult population, nearly 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, 2013 American Community Survey)
   - Colorado ranked ninth in the number of science and engineering graduate students per 1,000 individuals ages 25 to 34 years old in 2011. (National Science Foundation, 2014)
   - Denver ranked as the seventh-best city for millennials (ages 25-34) out of 25 major cities with a population over 1 million in 2014. (Niche.com, 2014)
   - Denver ranked as the ninth-best city for college graduates and received accolades for its highly educated population, moderate cost of living, and higher-than-average wages. (NerdWallet, 2014)
   - The Colorado Rural Health Center’s Colorado Provider Recruitment program focuses on expanding the primary care workforce throughout Colorado’s rural and urban underserved healthcare communities (Colorado Rural Health Center, 2014)

3. The convergence of health-related education, research, and application
   - The University of Colorado School of Medicine ranked 13th nationally for primary care and 40th among research-oriented programs. Three School of Medicine specialties ranked among the top 10 including family medicine (fifth), pediatrics (sixth), and rural medicine (ninth). (U.S. News & World Report, 2014)
   - Three Metro Denver institutions ranked among the nation’s “Best Online Graduate Nursing Programs.” The College of Nursing at the University of Colorado ranked 10th, Loretto Heights School of Nursing at Regis University ranked 37th, and American Sentinel in Aurora ranked 41st. (U.S. News & World Report, 2014)
   - The University of Colorado’s School of Medicine graduates about 150 medical students per year and offers programs in dental medicine, medicine, nursing, pharmacy, and public health. (University of Colorado, 2014)
   - The University of Colorado Denver and Red Rocks Community College are Metro Denver’s only institutions with accredited entry-level physician assistant programs. (Colorado Health Institute, 2014)
   - The College of Nursing at the University of Colorado was the birthplace of the first nurse practitioner program in the world. The College’s Pediatric Nurse Practitioner specialty program ranked among the top five in the nation. (University of Colorado, 2014; U.S. News & World Report, 2014)
   - The Organic Business Initiative at the University of Colorado Boulder’s Deming Center for Entrepreneurship fosters entrepreneurial leaders, world-class scholarship, and research in natural and organic business. (The University of Colorado, 2014)
   - The Colorado School of Public Health (CSPH) is the first accredited and only collaborative school of public health in the Rocky Mountain region. CSPH is home to three nationally funded research and training centers. (The Colorado School of Public Health, 2014)
   - The University of Colorado ranked among the nation’s top 25 institutions in total National Institutes of Health funding totaling $162.8 million in fiscal year 2013. (National Institutes of Health, 2014)

4. A regional health hub, with expanding medical and wellness tourism opportunities
   - HealthGrades named a number of nine-county region hospitals to their 2014 lists. Seven earned the 2014 Distinguished Hospital Award for Clinical Excellence, three ranked among “America’s 100 Best Hospitals, four received awards for Women’s Health Excellence, and four won awards for Outstanding Patient Experience. (HealthGrades, Inc., 2014)
   - Twelve Metro Denver hospitals received “A” grades in hospital safety, 10 hospitals received a “B” grade, and three received a “C” grade. (The Leapfrog Group, 2014)
   - Three Metro Denver hospitals were named to Truven Health Analytics “100 Top Hospitals” in 2014 including North Colorado Medical Center (Greeley), the University of Colorado Hospital (UCH) (Aurora), and Rose Medical Center (Denver). (Truven Health Analytics, 2014)
The Barbara Davis Center for Childhood Diabetes is one of the largest diabetes programs specializing in Type 1 diabetes research and care for children and adults in the world. (The Barbara Davis Center for Childhood Diabetes, 2014)

Seven Metro Denver healthcare facilities have received Magnet status—the most prestigious recognition of nursing excellence. (American Nurses Credentialing Center, 2014)

Children’s Hospital Colorado (CHC) ranked as the sixth-best children’s hospital in the nation with six of its specialty areas also in the top 10 in their respective categories. CHC was also named to the U.S. News’ Honor Roll and ranked fifth on Parents magazine’s “10 Best Children’s Hospitals in America” list. (U.S. News & World Report, 2014; Parents, 2014)

Eleven Metro Denver hospitals were named to the 2014-2015 “Best Hospitals.” UCH ranked as the top facility in Metro Denver and ranked nationally in nine specialties. (U.S. News & World Report, 2014)

HCA-HealthONE’s Rocky Mountain Hospital for Children (RMHC) houses the region’s largest neonatal intensive care unit and the largest high-risk obstetrical program. RMHC cares for infants, children, and teenagers across a six-state region. (Rocky Mountain Hospital for Children, 2014)

5. An overall better quality of life

Castle Rock ranked fourth in MONEY Magazine’s 2014 list of the “Best Places to Live.” Centennial (13th) and Boulder (23rd) were also named to the list’s top 50. (MONEY Magazine, 2014)

Boulder ranked second on the 2014 list of the “Top 100 Best Places to Live.” Aurora (50th) and Lakewood (88th) were also named to the list. (Livability.com, 2014)

Aurora and Denver ranked among the top cities in the nation to retire. Aurora ranked 11th in healthcare and Denver ranked 11th in activities. (WalletHub, 2014)

FastTracks, a comprehensive project to build out Metro Denver’s entire mass transit system by 2019, is the largest simultaneous transit buildout in U.S. history. The expansion will make Metro Denver one of the top five regions in the country in terms of miles of fixed rail.

Healthcare and Wellness Industry Cluster Definition

<table>
<thead>
<tr>
<th>NAICS Code*</th>
<th>NAICS Description</th>
<th>SIC Code</th>
<th>SIC Description</th>
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<td>Men’s &amp; boys’ cut &amp; sew apparel mfg.</td>
<td>2329-01</td>
<td>Men’s &amp; boys’ sportswear &amp; athletic clothing</td>
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<td>423450</td>
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<td>Medical, dental &amp; hospital equip. &amp; supplies (merchant wholesalers except those selling medical, dental, and hospital equipment and supplies via retail method)</td>
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<td>Organic &amp; diet food</td>
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<td>446191</td>
<td>Food (health) supplement stores</td>
<td>5499-01</td>
<td>Health &amp; dietetic food stores</td>
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<td>532291</td>
<td>Home health equipment rental</td>
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<td>Recreational goods rental</td>
<td>7999-9911</td>
<td>Recreation equipment rental</td>
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<td>611620</td>
<td>Sports &amp; recreation instruction</td>
<td>7999-11</td>
<td>Instruction schools, camps, &amp; services</td>
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<td>Meditation therapy</td>
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<td>Offices &amp; clinics of doctors of medicine</td>
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<td>Offices of chiropractors</td>
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</table>
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<table>
<thead>
<tr>
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<td>Fitness &amp; recreational sports centers</td>
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<td>Physical fitness facilities</td>
</tr>
<tr>
<td>713940</td>
<td>Fitness &amp; recreational sports centers</td>
<td>7999-9910</td>
<td>Recreation center</td>
</tr>
<tr>
<td>713990</td>
<td>All other amusement &amp; recreation industries</td>
<td>7999-9912</td>
<td>Recreation services</td>
</tr>
<tr>
<td>812191</td>
<td>Diet &amp; weight reducing centers</td>
<td>7299-0102</td>
<td>Diet center, without medical staff</td>
</tr>
<tr>
<td>812199</td>
<td>Other personal care services</td>
<td>7299-0200</td>
<td>Massage parlor &amp; steam bath services</td>
</tr>
<tr>
<td>812199</td>
<td>Other personal care services</td>
<td>7299-0201</td>
<td>Massage parlor</td>
</tr>
<tr>
<td>813212</td>
<td>Voluntary health organizations</td>
<td>8399-9906</td>
<td>Health systems agency</td>
</tr>
<tr>
<td>813319</td>
<td>Other social advocacy organizations</td>
<td>8399-9905</td>
<td>Health &amp; welfare council</td>
</tr>
<tr>
<td>923120</td>
<td>Administration of public health programs</td>
<td>9431</td>
<td>Administration of public health programs</td>
</tr>
</tbody>
</table>

*(P) indicates that only part of the NAICS industry category is represented in the industry cluster definition.
Note: NEC indicates "not elsewhere classified."
Industry Overview

The information technology (IT) cluster supports business activities in all other sectors of the economy with a variety of products and services, ranging from virus protection and other security programs for computers to specialized, custom software and computer integrated systems design. Technology enterprises are high-knowledge, human capital-based businesses that are expanding globally. This industry cluster report is based on a narrow definition of information technology to avoid double-counting workers in other technology clusters such as telecommunications and aerospace. This analysis divides information technology into two clusters: software and hardware.

- **Hardware** includes companies that manufacture computers and computer storage solutions to manage and protect business information.
- **Software**, which is covered in this report, includes companies involved in off-the-shelf software products to custom computer programming, computer facilities management, computer systems design, and data processing services. Software companies also provide network solutions, web-based applications, and operating systems.

A broader information technology cluster definition includes companies involved in software, hardware, and telecommunications. The definition can be expanded to include individuals employed in information technology occupations across all industries. Using this broader definition, the Colorado Technology Association (CTA) reports there are approximately 140,000 information technology workers in the state representing more than 10,000 software, Internet, hardware, telecommunications, and related technology companies.

Colorado is a global hub of innovation and entrepreneurship, attracting IT companies, a talented IT workforce, and significant capital investments. Colorado ranked third in tech-worker concentration for the sixth-consecutive year, with 8.7 percent of the state’s private sector workforce employed in technology firms, according to the TechAmerica Foundation’s *Cyberstates 2013* report. The report also ranked Colorado sixth for average high-tech wage, 11th for absolute number of high-tech businesses, and 15th for absolute employment in the high-tech industry. Further, the most recent *Cybercities* report by the TechAmerica Foundation ranked Boulder third in tech-worker concentration, while Denver ranked 17th with nearly 9 percent of private-sector workers employed in technology firms. Denver also ranked 13th for average high-tech wage as Denver tech workers earned 81 percent more than the average private-sector worker. In 2014, technology workers in the Denver-Boulder area had the third-highest salaries in the U.S., with an average annual salary of $98,000, according to TriNet.

The nine-county Metro Denver and Northern Colorado region hosts a vibrant entrepreneurial community and is an epicenter for startup activity. In 2014, Denver ranked as the fifth-best place for millennial-aged entrepreneurs and ranked seventh among the “Top 10 Cities for Female Entrepreneurs,” with more than 30 percent of Denver’s businesses that are women-owned, according to NerdWallet. *Forbes* ranked Denver second as the best city to launch a startup business out of the 50 most populated cities and was the ninth-best city in the nation to start a small business, according to NerdWallet. Further, Colorado ranked as the fifth-most entrepreneurial state in the 2013 *Kauffman Index of Entrepreneurial Activity*, with 380 new business owners per 100,000 adults.

Software Economic Profile

The software cluster consists of seven, six-digit North American Industry Classification System (NAICS) codes including software reproduction, software publishers, custom computer programming, data processing and hosting, computer facilities management services, and computer systems design services.

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1 The nine-county Metro Denver and Northern Colorado region consists of Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Jefferson, Larimer, and Weld Counties.
The nine-county region ranked ninth out of the 50 largest metro areas in software employment concentration in 2014. With direct employment of about 46,470 software employees, the region ranked 12th in absolute employment. About 81 percent of Colorado’s software cluster employees work in the region.

Software Employment

The nine-county region’s software employment (46,470 workers) rose 3.2 percent in 2014, compared with the previous year’s level, adding nearly 1,440 new jobs over the same period. About 4,530 software companies operated in the nine-county region in 2014. Approximately 83 percent of the region’s software companies employed fewer than 10 people, while 0.4 percent employed 250 or more.
Major Software Companies

- CGI Group Inc.  
  [www.cgi.com](http://www.cgi.com)
- CIBER, Inc.  
  [www.ciber.com](http://www.ciber.com)
- Cisco Systems, Inc.  
  [www.cisco.com](http://www.cisco.com)
- Constant Contact, Inc.  
  [www.constantcontact.com](http://www.constantcontact.com)
- Dātu Health  
  [www.datuhealth.com](http://www.datuhealth.com)
- Dot Hill Systems Corp.  
  [www.dothill.com](http://www.dothill.com)
- EMC Corporation  
  [www.emc.com](http://www.emc.com)
- Pearson eCollege  
  [www.ecollege.com](http://www.ecollege.com)
- Ping Identity  
  [www.pingidentity.com](http://www.pingidentity.com)
- Qualfon (formerly Center Partners)  
  [www.qualfon.com](http://www.qualfon.com)
- Quark Software Inc.  
  [www.quark.com](http://www.quark.com)
- Rally Software Development Corp.  
  [www.rallydev.com](http://www.rallydev.com)
- Rivet Software  
  [www.rivetsoftware.com](http://www.rivetsoftware.com)
- SendGrid  
  [www.sendgrid.com](http://www.sendgrid.com)
2014 Industry Highlights

Key Company Announcements

The nine-county region’s IT-software companies expanded their presence in 2014.

- New York-based Signpost, a maker of marketing software, plans to hire 70 new sales representatives, account managers, and developers. The company opened its Denver office in 2013 and employs about 30 people.
- Pellucid Analytics Inc., a software developer, relocated to a 7,000-square-foot building in east Boulder from downtown Boulder to expand the company. The company expects to increase from 18 employees to 40 to 50 employees over the next year.
- Skookum Digital Works, a technology consulting firm headquartered in Charlotte, N.C., opened its first satellite office in Denver. The company plans to add 25 employees to the lower downtown office.
- JobAdder, an Australian-based online platform for recruitment professionals, relocated its U.S. operations from San Francisco to downtown Denver and plans to hire an additional 15 employees in the next year.
- OneNeck IT Solutions, an Arizona-based IT firm, broke ground on a $20 million, 35,000-square-foot data center in unincorporated Douglas County. The Tier 3+ data center will include state-of-the-art features such as three-factor security authentication, including iris scanners for personnel identification, multiple levels of redundancy and backup, and an energy-saving cooling design. The facility is slated to open in early 2015.

Venture Capital and Investment Activity

Entrepreneurs and startup companies in the IT-software industry have attracted significant capital and investments in the nine-county region. According to Pricewaterhouse Coopers’ MoneyTree Report, Colorado companies in the IT-software industry have attracted $1.9 billion in venture capital in more than 400 deals, representing almost 32 percent of the total amount invested across all industries in the state and about 41 percent of all deals over the last 10 years. Further, venture capital has grown over the last five years.
Between 2009 and 2013, investments in the IT-software industry rose 35 percent, compared with no change across all industries in the state.

Venture capital deals and investment opportunities increased for the nine-county region’s IT-software companies in 2014.

- Boulder-based SolidFire closed an $82 million Series D funding round, bringing its total funding to $150 million to support its cloud storage technology and expand its sales and marketing teams. The company produces flash memory storage devices to accelerate the retrieval of data from shared servers in data centers around the world.
- Boulder-based LogRhythm Inc. raised $40 million in venture capital funding that will allow it to add technical staff, develop new products, and expand sales and marketing operations.
- SendGrid, a Boulder-based company, raised $20 million in new venture capital funding to grow its business. The expansion will include additional employees and improved email management for a more powerful online business tool.
- Denver-based Peak raised $16 million in funding to grow its business operations. The data center and cloud computing company plans to grow its channel-centric cloud platform, expand into additional markets, and serve a larger client base.
- Denver-based Wayin secured $13.1 million in funding to expand its research to TV networks, brands, agencies, and publishers around the globe and increase engineering to support their technology roadmap. The company’s social technology platform helps global brands launch, run, monitor, and measure social media marketing efforts.
- Two Metro Denver startups raised a combined $10 million in venture capital investment to fuel growth. Boulder-based Simple Energy closed on a $6 million investment round to grow its application development for utility companies, while Denver-based GutCheck Inc. secured $4 million to grow its online market research services.

Industry Infrastructure Support

The nine-county region’s organizations and professional associations foster growth and opportunity for the IT-software industry.

- Denver hosted the third-annual Denver Startup Week in September 2014. The event showcased the region’s entrepreneurs, employees, and startup companies fueling innovation in the region with a specific focus on downtown Denver. Hosted by the Downtown Denver Partnership and the CTA, Denver Startup Week is a platform to convene all those who are building startups, those who want to build startups, and those who want to be involved in the community. The 2014 event attracted 7,800 attendees and 700 companies to more than 180 events to celebrate great companies, innovation, and ideas in the region.
- Boulder startup accelerator TechStars is a three-month program that provides up to $18,000 in seed funding for startups and an optional $100,000 convertible debt note, intensive mentorship and idea development, and the chance to present to angel investors and venture capitalists for those companies selected to participate. TechStars is supported by more than 75 different venture capital firms and angel investors. After graduating from TechStars, companies average more than $1.6 million in outside venture capital.
- Galvanize, a technology coworking and office space for digital startups, is helping to attract new businesses and foster entrepreneurship. The concept combines venture capital, flexible workspace, and an experimental engineering and business school called gSchool. Galvanize is expanding throughout Colorado and in San Francisco, having raised $18 million in venture capital to broaden its education offerings including teaching entrepreneurship and technology skills.
- Google Inc. awarded Galvanize $1 million and other assistance to increase female involvement in the technology community. The funding is expected to raise the number of female entrepreneurs by 25 percent. Galvanize is one of seven companies that received funding from Google Inc.
- The first phase of Industry Denver opened in May 2014. The 50,000 square feet of creative and coworking office space has been fully leased to IT-software companies Uber Technologies Inc., Roximity, Zenman, and Spotzer Media Group. Two more phases of the 120,000-square-foot, two-building complex will be completed by 2015.
- Launch Longmont opened in late 2014 and is a new coworking space for entrepreneurs, startups, and freelancers. The organization will eventually become an incubator and accelerator and its first phase could accommodate up to 40 people.
INFORMATION TECHNOLOGY-SOFTWARE:
Metro Denver and Northern Colorado Industry Cluster Profile

- SCORE Denver provides mentoring and training to entrepreneurs and small business owners either starting a new business or expanding an existing one. In 2013, SCORE created 67,319 jobs in 38,630 new startup businesses, and mentored and trained 124,617 small business owners and entrepreneurs.
- The Blackstone Entrepreneurs Network at the Denver Art Museum launched in early 2014. The new organization, funded by a three-year, $4 million grant from Blackstone Charitable Foundation, is designed to help entrepreneurs find resources and thrive in Colorado. The network has a variety of business advisors in fields for entrepreneurship, technology, biotechnology, and health technology industries.
- SendGrid partnered with TechStars, 500 Startups, and Global Accelerator to provide new startup companies with access to its program. The SendGrid program will provide subscriptions to their email-handling technology to all companies entering the accelerator programs. SendGrid manages other companies’ automated email responses such as confirmation emails sent after an app is downloaded.

**Academic and Education Announcements**

The region’s K-12 and higher education systems help prepare students with the vital IT-software and computer information skills and provide a synergistic climate for the region’s thriving IT-software cluster.

- Regis University opened its College of Computer & Information Sciences, Colorado’s first college fully dedicated to computer and information sciences. The College of Computer & Information Sciences will provide classes for technical skills and the impact of technology.
- The Colorado State University partnered with Indiana University, the University of Michigan, the University of Florida, and the University of Wisconsin-Madison to improve the way digital educational content is shared across universities and delivered to students. The technology consortium launched a new online platform, Unizin, as a one-stop shop for digital education that allow faculty to design effective learning experiences and improve how course content is created and delivered to students.
- The CTA launched the Colorado Technology Foundation to educate students in technical education and technology careers. The Colorado Technology Foundation partnered with the Rose Community Foundation to connect Colorado technology companies with educators and programs to improve science, technology, engineering, and math (STEM) education.
- Catalyze CU, a program designed by the University of Colorado Boulder, will help students launch a startup. The program is intended to function as a startup incubator and will mentor six teams of 22 student entrepreneurs. The entrepreneurs will be offered grants, space at the Spark Boulder coworking and innovation center, and mentorship from startup veterans.
- Denver Public Schools (DPS) received $7 million in federal Youth CareerConnect grant funds and $2.3 million in philanthropic funding to expand access to STEM education programming. The funding will further strengthen the STEM partnership between DPS and Colorado School of Mines. During the next two years, DPS will create new STEM programming at eight high schools that will focus on energy, engineering, health and medicine, digital careers, finance, information technology, and manufacturing.

**Cross-Cluster Convergence**

The nine-county region is characterized by its network of collaboration, innovation centers, and unique assets that lead to cross-cluster convergence. The IT-software industry combines these regional assets to strengthen partnerships and enhance growth opportunities across industries such as digital health and healthcare and wellness.

- Metro Denver is an emerging digital health community nationally. Founded in July 2012 by the Denver South Economic Development Partnership and Innovation Pavilion, PrIME Health Collaborative is a growing statewide community of 700+ health care executives, physicians, technologists, academics, entrepreneurs, and investors dedicated to improving health and lowering healthcare costs through the commercialization of digital health technologies. The Collaborative is a resource ecosystem for Digital Health—the convergence of the digital and genetics revolutions with bioscience, healthcare and wellness, and information technology-software. In 2014, the Collaborative held a number of important events showcasing the Digital Health Corridor, including a first-of-its kind $150,000 Digital Health Challenge. More information at [www.primehealthco.com/challenge](http://www.primehealthco.com/challenge).
- Boulder-based Kindara launched Wink, a wireless fertility thermometer to help women easily record their basal body temperature readings. Wink synchronizes with Bluetooth technology to the Kindara fertility app on a user’s mobile devices and provides an integrated fertility charting experience.
- Two Metro Denver technology companies—Highlands Ranch-based Zen Planner and Denver-based PaySimple—partnered to help fitness and dance studios manage their business using cloud-based
information. Zen Planner focuses on scheduling, booking, and business management software, which connects to PaySimple's payment-processing and payments software.

- Analytical Decision Services LLC, an Aurora-based startup, designed a program to simulate how healthcare facilities can improve efficiencies and manage an influx of patients. The company created a four-dimensional portrayal of a healthcare system and can add and subtract different factors that will analyze the way the organization handles patients and care.

**Merger and Acquisition Activity**

Companies in the nine-county region announced several mergers and acquisitions in 2014.

- Douglas County-based TriZetto Corp. sold to New Jersey-based Cognizant Technology Solutions Corp. The $2.7 billion deal will expand both companies' offerings and will integrate information technology services such as consulting and IT infrastructure, and existing delivery models. TriZetto’s 980 area employees will combine with the 450 Cognizant workers in Colorado.
- Denver-based Rivet Software Inc. was purchased by Calif.-based Equity Administration Solutions Inc. Rivet helps public companies comply with financial reporting requirements. More than 300 public companies use Rivet's software and Equity Administration Solutions has more than 900 customers.
- Nest Labs, a Google-owned company, acquired Revolv, a Boulder-producer of a hub for smart-home products. The hub serves as the central brain for app-powered smart-home devices such as locks, lights, and sprinklers. Revolv will be part of the “Works With Nest” program that helps other smart home products work with Nest.
- Greenwood Village-based Highstreet IT Solution purchased New York City, N.Y.-based Computer Network Solutions LLC (CNS). CNS is a company that provides telecommunications and engineering services and offers technology to manage data center and IT infrastructure services. The purchase will make Highstreet IT 50 percent larger by revenue.
- Swiftpage, a software company located in Denver, will sell one of its two lines of business to New York City, N.Y.-based Infor Financial. The sale of the customer relationship management software will allow Swiftpage to focus on small business sales conversion technology. When the sale is complete, Swiftpage will have about 70 employees in its downtown Denver headquarters.
- Oracle Corp. purchased Lafayette-based Front Porch Digital Inc. Front Porch Digital helps its clients store and manage digital content, managing near 750 petabytes of digital content. Oracle plans to retain Front Porch Digital's current employees and executives.

**Software Workforce Profile**

Many companies choose locations because of the available workforce. With nearly half of the nine-county region's 3.6 million residents under the age of 35, employers can draw from a large, young, highly educated, and productive workforce. Of the region's adult population, 41.2 percent are college graduates and 90.5 percent have graduated from high school. The state has the nation's second-most highly educated workforce as measured by the percentage of residents with a bachelor's degree or higher.

![Educational Attainment of Metro Denver and Northern Colorado's Population Age 25 and Older](source: U.S. Census Bureau, 2013 American Community Survey)
INFORMATION TECHNOLOGY-SOFTWARE:
Metro Denver and Northern Colorado Industry Cluster Profile

The attractiveness of the region draws new residents through migration. The region’s population is expected to grow 53.3 percent from 2010 to 2040, driving a 36.3 percent increase in the region’s labor force over the same period. It is important to note the changing composition of the workforce supply as the baby boomers begin to retire, which will pose implications for businesses whose employee pool includes significant numbers of these workers.

The nine-county region’s software industry cluster employs 46,470 people and includes a large pool of talented, well-educated, and highly skilled workers. The age distribution of workers in the software cluster is concentrated in the younger age brackets, especially the 35-44 age group. Compared with the age distribution across all industries, the software cluster has a larger share of employees that are between the ages of 25 and 54 years old.

The software workforce supply consists of four main components: those currently working in the industry; those doing a similar type of job in some other industry; the unemployed; and those currently in the education pipeline. The Metro Denver and Northern Colorado Occupation & Salary Profile below includes the 10 largest software occupations in the region. For these 10 largest occupations, the chart details the total number of workers employed in that occupation across all industries, the number of available applicants that would like to be working in that occupation, the number of recent graduates that are qualified for that occupation, and the median and sample percentile annual salaries.

**Wages**

Total payroll for the software industry cluster in the nine-county region reached nearly $4.5 billion in 2013. The 2013 average annual salary for software cluster employees in the region was $99,770, compared with $102,740 nationwide.
### Metro Denver and Northern Colorado Software Occupation & Salary Profile, 2014

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</thead>
<tbody>
<tr>
<td>1. Software developers, applications</td>
<td>19,382</td>
<td>340</td>
<td>585</td>
<td>$91,021</td>
<td>$56,056</td>
<td>$71,718</td>
<td>$111,696</td>
<td>$134,472</td>
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<td>2. Computer systems analysts</td>
<td>10,348</td>
<td>367</td>
<td>1,052</td>
<td>$77,771</td>
<td>$53,102</td>
<td>$63,731</td>
<td>$99,715</td>
<td>$136,115</td>
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<tr>
<td>3. Software developers, systems software</td>
<td>10,055</td>
<td>105</td>
<td>630</td>
<td>$97,136</td>
<td>$64,210</td>
<td>$78,915</td>
<td>$118,685</td>
<td>$140,878</td>
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<tr>
<td>4. Computer user support specialists</td>
<td>11,626</td>
<td>855</td>
<td>549</td>
<td>$51,126</td>
<td>$33,675</td>
<td>$41,018</td>
<td>$65,083</td>
<td>$79,373</td>
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<td>5. Computer programmers</td>
<td>4,895</td>
<td>359</td>
<td>480</td>
<td>$74,360</td>
<td>$47,507</td>
<td>$57,762</td>
<td>$98,654</td>
<td>$131,102</td>
<td></td>
</tr>
<tr>
<td>6. Web developers</td>
<td>4,507</td>
<td>151</td>
<td>1,552</td>
<td>$50,024</td>
<td>$32,677</td>
<td>$41,059</td>
<td>$61,152</td>
<td>$71,989</td>
<td></td>
</tr>
<tr>
<td>7. Network &amp; computer systems administrators</td>
<td>8,567</td>
<td>523</td>
<td>696</td>
<td>$78,312</td>
<td>$50,835</td>
<td>$62,816</td>
<td>$95,389</td>
<td>$113,214</td>
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<tr>
<td>8. Computer &amp; information systems managers</td>
<td>5,596</td>
<td>438</td>
<td>1,134</td>
<td>$127,296</td>
<td>$88,109</td>
<td>$105,102</td>
<td>$153,899</td>
<td>$250,890</td>
<td></td>
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<td>9. Business operations specialists, all other</td>
<td>32,981</td>
<td>789</td>
<td>77</td>
<td>$69,930</td>
<td>$36,067</td>
<td>$50,024</td>
<td>$92,622</td>
<td>$120,078</td>
<td></td>
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<tr>
<td>10. Sales representatives, services, all other</td>
<td>17,631</td>
<td>1,286</td>
<td>77</td>
<td>$50,877</td>
<td>$24,960</td>
<td>$34,674</td>
<td>$75,546</td>
<td>$110,864</td>
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</tr>
</tbody>
</table>

Notes: The number of available applicants is a point-in-time measurement of the number of people who have registered in Colorado’s workforce development system’s statewide database, Connecting Colorado, as being able and available to work in a particular occupation. Results should be interpreted with caution since registration in Connecting Colorado is self-reported. In addition, the skills rubric may assign up to four occupation codes for each registrant. Therefore, the number of available applicants could be inflated. Source: Provided by Arapahoe/Douglas Works!; QCEW Employees, Non-QCEW Employees, Self Employed, & Extended Proprietors - EMSI 2014.3 Class of Worker.

### Education & Training

Colorado’s higher education system provides an excellent support system for businesses in the region. There are 28 public higher education institutions in Colorado, of which seven four-year and six two-year public institutions offering comprehensive curricula are located in the nine-county region. In addition, there are more than 100 private and religious accredited institutions and nearly 340 private occupational and technical schools offering courses in dozens of program areas throughout the state. Although not exhaustive, a list of the major, accredited educational institutions with the greatest number of graduates for each of the 10 largest software occupations in the nine-county region are included below. A directory of all higher education institutions with corresponding websites may be accessed via [http://highered.colorado.gov](http://highered.colorado.gov).

- Colorado State University
  [www.colostate.edu](http://www.colostate.edu)
- Colorado State University Global Campus
  [www.colostate.edu](http://www.colostate.edu)
- DeVry University – Colorado
  [www.devry.edu](http://www.devry.edu)
- Front Range Community College
  [www.frontrange.edu](http://www.frontrange.edu)
- Jones International University
  [www.jiu.edu](http://www.jiu.edu)
- Metropolitan State University of Denver
  [www.msudenver.edu](http://www.msudenver.edu)
- Regis University
  [www.regis.edu](http://www.regis.edu)
- University of Colorado Denver
  [www.ucdenver.edu](http://www.ucdenver.edu)
- University of Denver
  [www.du.edu](http://www.du.edu)
- University of Colorado Boulder
  [www.colorado.edu](http://www.colorado.edu)
Key Reasons for Information Technology Companies to Locate in the Nine-County Region

The region is a top information technology location offering:

1. The ability to attract and retain high-quality IT professionals and technical talent
   - Of Colorado’s adult population, nearly 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, 2013 American Community Survey)
   - Colorado had the nation’s sixth-largest employment base in the software publishing industry in 2012. Further, Colorado had the sixth-highest paid tech workers earning an average wage of $97,100, which was 98 percent more than the average private-sector worker. (TechAmerica Foundation, Cyberstates 2013: The Definitive State-by-State Analysis of the U.S. High-Tech Industry, 2013)
   - Colorado ranked fourth in the number of scientists and engineers as a share of all occupations in 2012. (National Science Foundation, 2014)
   - Colorado ranked among the top five most innovative states in the nation in the 2014 State Innovation Index. (U.S. Department of Commerce, 2014)
   - Metro Denver ranked as the ninth-best metro area for science, technology, engineering, and mathematics (STEM) graduates in 2014. STEM jobs in Metro Denver represented 8.2 percent of all occupations and the area’s annual mean wage for STEM jobs was $84,380. (NerdWallet, 2014)
   - Denver ranked ninth on CIO.com’s “11 Best Cities to Find an IT Job 2013.” (CIO.com, 2014)
   - Fort Collins ranked among the top 10 “Most Promising Technology Hubs to Watch in 2014” and received accolades for its highly educated population, top research facilities, and green technology environment. (Techie.com, 2014)
   - Colorado ranked sixth in the nation in the 2014 State New Economy Index and earned several top-10 rankings in five broad categories including second in workforce education; third in high-tech jobs; and sixth in information technology jobs, among others. (The Information Technology and Innovation Foundation, 2014)
   - The University of Colorado Boulder, the University of Denver, and Colorado State University are among the “Top 50 Schools for Startups” in the U.S. (Forbes, 2014)
   - Denver ranked seventh among the “Top 10 Cities for Female Entrepreneurs 2014.” More than 30 percent of Denver’s businesses are women-owned. (NerdWallet, 2014)
   - Denver ranked as the ninth-best city for college graduates and received accolades for its highly educated population, moderate cost of living, and higher-than-average wages. (NerdWallet, 2014)

2. Direct access to a large and growing customer base
   - Colorado ranked fifth in the nation for funds raised per worker from the Small Business Innovation Research (SBIR) grant program. The state received $25.82 SBIR grants per worker compared with the U.S. average of $11.15. (U.S. Small Business Administration, 2014; U.S. Bureau of Labor Statistics, 2014)
   - Colorado ranked as the fifth-most entrepreneurial state in the 2013 Kauffman Index of Entrepreneurial Activity, with 380 new business owners per 100,000 adults. (Ewing Marion Kauffman Foundation, 2014)
   - Colorado ranked ninth for 2013 venture capital investments per $1,000 of gross domestic product. (PricewaterhouseCoopers, MoneyTree Report, 2014; Bureau of Economic Analysis, 2014)
   - Colorado’s leading exports are computers and electronic products, which accounted for nearly one-quarter of all Colorado exports in 2013, compared with 13 percent of U.S. exports. (U.S. Department of Commerce, International Trade Administration, 2014)

3. Low to moderate costs of doing business and a competitive tax structure
   - Colorado’s simplified corporate income tax structure based on single-factor apportionment allows companies to pay taxes based solely on their sales in the state. Along with few regulatory burdens, Colorado’s corporate income tax rate of 4.63 percent is one of the lowest and most competitive tax structures in the nation. (State of Colorado; The Tax Foundation)
   - Installed or downloaded standardized software products are exempted from state sales and use tax. The City and County of Denver also exempts custom software products from sales tax. (Colorado Department of Revenue)
Metro Denver and Northern Colorado Industry Cluster Profile

- Denver ranked as the third-best city in the nation for small business in 2014. Denver had the second highest average business credit score (649) and 10th average annual revenue ($482,483). (Biz2Credit, 2014)
- Colorado has the nation’s ninth-best tax climate for entrepreneurship and small business. (Small Business & Entrepreneurship Council, 2014)
- Metro Denver ranked fourth among Forbes 2014 “Best Places for Business and Careers” list. Four other Colorado metropolitan areas were included on the list. The Fort Collins metro area ranked fifth overall, Greeley ranked 20th, Boulder ranked 23rd, and Colorado Springs ranked 29th. (Forbes, 2014)

4. An overall better quality of life
- Castle Rock ranked fourth in MONEY Magazine’s 2014 list of the “Best Places to Live.” Centennial (13th) and Boulder (23rd) were also named to the list’s top 50. (MONEY Magazine, 2014)
- Metro Denver ranked as the fourth-fittest metro area in the nation in 2014. Denver’s high percentage of residents participating in physical activity, and low obesity and cardiovascular disease rates contributed to its high rank. (American College of Sports Medicine, 2014)
- Colorado has the fourth-highest percentage of state land area devoted to the National Forest System. The state offers access to more than 50 national parks and wilderness areas, 42 state parks, and the greatest number of 14,000-foot peaks in the nation that support a healthy, active lifestyle. (U.S. Forest Service, 2014; Colorado State Parks, 2014)
- Boulder ranked second on the 2014 list of the “Top 100 Best Places to Live.” Aurora (50th) and Lakewood (88th) were also named to the list. (Livability.com, 2014)
- Denver ranked as the seventh-best city for millennials (ages 25-34) out of 25 major cities with a population over 1 million in 2014. (Niche.com, 2014)
- FasTracks, a comprehensive project to build out Metro Denver’s entire mass transit system by 2019, is the largest simultaneous transit buildout in U.S. history. The expansion will make Metro Denver one of the top five regions in the country in terms of miles of fixed rail.

Information Technology-Software Industry Cluster Definition

<table>
<thead>
<tr>
<th>NAICS Code</th>
<th>NAICS Description</th>
<th>SIC Code</th>
<th>SIC Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>334614</td>
<td>Software reproducing</td>
<td>7372</td>
<td>Prepackaged software</td>
</tr>
<tr>
<td>511210</td>
<td>Software publishers</td>
<td>7372</td>
<td>Prepackaged software</td>
</tr>
<tr>
<td>518210</td>
<td>Data processing, hosting &amp; related services</td>
<td>7374</td>
<td>Data processing</td>
</tr>
<tr>
<td>541511</td>
<td>Custom computer programming services</td>
<td>7371</td>
<td>Custom computer programming services</td>
</tr>
<tr>
<td>541512</td>
<td>Computer systems design services</td>
<td>7373</td>
<td>Computer integrated systems design</td>
</tr>
<tr>
<td>541513</td>
<td>Computer facilities management services</td>
<td>7376</td>
<td>Computer facilities management</td>
</tr>
<tr>
<td>541519</td>
<td>Other computer related services</td>
<td>7379</td>
<td>Computer related services NEC</td>
</tr>
</tbody>
</table>

Note: NEC indicates “not elsewhere classified.”
Information Technology-Software Industry Cluster Relationships

Technologies
- Internet
- High-Speed Infrastructure

Client Industries
- Aerospace
- Aviation
- Bioscience
- Energy
- Finance
- Geospatial
- Healthcare
- Telecommunications
- Security/Defense
- Businesses
- Consumers

Support Industries
- Computer Hardware
- Computer Storage
- Telecommunications

Infrastructure
- CO Technology Partners
- Colorado School of Mines-Computer Engineering Department
- CTA-COLORADO Technology Association
- CU-Software Engineering Research Lab
- DU Center for Tech. Innovation
- TechAmerica Foundation

For additional information, contact us:

Metro Denver Economic Development Corporation
1445 Market Street
Denver, CO 80202-1790
303.620.8092
email: info@metrodenver.org
www.metrodenver.org

Industry Overview

The broadcasting and telecommunications cluster includes companies that help deliver voice, data, and video to end users. This cluster includes landline and wireless telephone communications companies, radio and television communications services, and cable and Internet service providers.

Broadband and mobile technologies have become more widely accessible business modes of communication for many nine-county Metro Denver and Northern Colorado companies. The advancement of high-speed Internet connections has helped to increase the number of employees that telework or work at home while connected by information technology. The nine-county region is one of the nation’s top areas for teleworking due to the region’s expansive telecommunications infrastructure, the percentage of high-tech companies, innovative ecosystem, and vibrant workforce. According to the U.S. Census Bureau, Colorado ranked ninth among the 50 states for the largest percentage of individuals living in a home with a high-speed Internet subscription, five percent higher than the national average of 78 percent. The downtown Denver WiFi Zone was among the first in the nation to provide large-scale, public Internet access and several locations throughout Denver offer free WiFi, including the 16th Street Mall, Skyline Park, and Denver International Airport. The Denver Regional Council of Government’s Telework Colorado program offers free telework consulting services for employers in the region including information, materials, expert advice, and customized programs.

A number of strategic initiatives are underway to expand Colorado’s broadband infrastructure. Colorado has a five-year strategic plan to enable statewide broadband connectivity by partnering with the private sector to assure availability to all Coloradans. Further, the Colorado Broadband Data and Development Program was created via a grant from the National Telecommunications and Information Administration for broadband mapping and planning. Colorado received funding to continue the assessment of broadband deployment across the state and engage in planning and outreach activities to promote broadband adoption.

The nine-county region’s governments and local communities use digital technologies to enhance services, maximize efficiency, and expand information technology networks to better service their population and streamline operations. Douglas County ranked fifth in the 250,000 to 499,999 population category of the “2014 Digital Counties Survey.” The city of Denver ranked seventh in the more than 250,000 population category, the city of Fort Collins ranked seventh in the 125,000 to 249,999 population, and the cities of Boulder and Westminster ranked among the top five in the 75,000 to 124,999 population category in the “2014 Digital Cities Survey.” Both surveys, compiled by e.Republic’s Center for Digital Government and Digital Communities, recognized counties and cities that provided exemplary digital service to their residents and highlighted the areas’ best practices.

Wireless and wired networks upgrades are enhancing speed, reliability, coverage, and performance for residents and businesses in the nine-county region. Since 2011, AT&T has invested nearly $550 million in wireless and wired networks across the state. Advancing its Project Velocity IP (VIP), an investment plan to expand and enhance its wireless and wired IP broadband networks, AT&T made 292 network upgrades in Colorado in 2013, including new cell sites, additional wireless network capacity, and new broadband network connections. Verizon Wireless launched faster mobile broadband technology in five Colorado cities and other nationwide markets. Denver, Colorado Springs, Fort Collins, Greeley, and Pueblo will have access to Verizon’s XLTE network, which will deliver faster peak data speeds and a minimum of double the bandwidth to fourth-generation mobile broadband, long-term evolution network, or 4G LTE customers in high-traffic areas.

1 The nine-county Metro Denver and Northern Colorado region consists of Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Jefferson, Larimer, and Weld Counties.
Sprint launched its enhanced LTE network in Denver, with improved in-building signal, expanded coverage, and intelligence offered by the enhanced network capability. The LTE network offers customers wireless speeds of 6 to 15 megabits per second (Mbps), with peaks of 50 to 60 Mbps.

Broadcasting and Telecommunications Economic Profile

The broadcasting and telecommunications industry cluster consists of 16, six-digit North American Industry Classification System (NAICS) codes including radio and television communications equipment, telephone communications, and cable television services.

*The nine-county region ranked fifth out of the 50 largest metro areas for broadcasting and telecommunications employment concentration in 2014.* With direct employment of about 42,810 broadcasting and telecommunications employees, the region ranked 10th in absolute employment. About 88 percent of Colorado’s broadcasting and telecommunications cluster employees work in the region.

### Broadcasting and Telecommunications Employment and Company Profile, 2014

<table>
<thead>
<tr>
<th>Nine-County Region</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct employment, 2014</td>
<td>42,810</td>
</tr>
<tr>
<td>Number of direct companies, 2014</td>
<td>2,490</td>
</tr>
<tr>
<td>One-year direct employment growth, 2013-2014</td>
<td>0.9%</td>
</tr>
<tr>
<td>Five-year direct employment growth, 2009-2014</td>
<td>0.0%</td>
</tr>
<tr>
<td>Avg. annual direct employment growth, 2009-2014</td>
<td>0.0%</td>
</tr>
<tr>
<td>Direct employment concentration</td>
<td>2.3%</td>
</tr>
</tbody>
</table>


Broadcasting and Telecommunications Employment

The nine-county region’s broadcasting and telecommunications employment (42,810 workers) rose 0.9 percent in 2014, compared with the previous year’s level, adding nearly 370 new jobs over the same period. National employment levels increased 1.1 percent over-the-year. About 3.5 percent of the nation’s broadcasting and telecommunications employment is located in the region.

Approximately 2,490 broadcasting and telecommunications companies operated in the nine-county region in 2014. About 78 percent of the region’s broadcasting and telecommunications companies employed fewer than 10 people, while 0.9 percent employed 250 or more.

Broadcasting and Telecommunications Number of Employees Growth Rate

Major Broadcasting and Telecommunications Companies

- Alcatel-Lucent
  [www.alcatel-lucent.com](http://www.alcatel-lucent.com)
- AT&T Inc.
  [www.att.com](http://www.att.com)
- Avaya Inc.
  [www.avaya.com](http://www.avaya.com)
- BI Incorporated
  [http://bi.com](http://bi.com)
- Birch Communications
  [www.birch.com](http://www.birch.com)
- BT Conferencing, Inc.
  [www.btconferencing.com](http://www.btconferencing.com)
- CenturyLink, Inc.
  [www.centurylink.com](http://www.centurylink.com)
- Charter Communications Inc.
  [www.charter.com](http://www.charter.com)
- iHeartMedia, Inc. (formerly Clear Channel Comm., Inc.)
- Integra Telecom, Inc.
  [www.integratelecom.com](http://www.integratelecom.com)
- Jones International, Ltd.
  [www.jones.com](http://www.jones.com)
- Level 3 Communications, Inc.
  [www.level3.com](http://www.level3.com)
- Liberty Media Corp.
  [www.libertymedia.com](http://www.libertymedia.com)
- Sprint Corp.
  [www.sprint.com](http://www.sprint.com)
- Starz
  [www.starz.com](http://www.starz.com)
- T-Mobile
  [www.t-mobile.com](http://www.t-mobile.com)
Major Broadcasting and Telecommunications Companies Cont’d

- Comcast Corp.  
  www.comcast.com
- DIRECTV, Inc.  
  www.directv.com
- DISH Network  
  www.dishnetwork.com
- EchoStar Corp.  
  www.echostar.com
- Google  
  www.google.com
- Verizon  
  www.verizon.com
- XO Communications, LLC  
  www.xo.com
- WildBlue Communications, Inc.  
  www.wildblue.com
- Zayo Group  
  www.zayo.com

2014 Industry Highlights

Expanded Broadband and Network Improvements

The nine-county region’s broadcasting and telecommunications companies offered expanded broadband and increased network speeds in 2014.

- CenturyLink, Inc. expanded its Internet television service in the region to Douglas County, unincorporated Jefferson County, Denver, Centennial, and Castle Rock. CenturyLink, Inc.’s television service Prism™ was first offered to residents in Highlands Ranch and is delivered through the company’s fiber-optic network.
- CenturyLink began offering Internet speeds of 1 gigabit per second to its Metro Denver customers. The upgraded speed will allow users to stream high-definition video, download movies, songs, and shows in seconds and is up to 100 times faster than the 10 Mbps or less that is the national average.
- Comcast Corp. and Englewood-based Liberty Global PLC formed an agreement to offer the industry’s first international WiFi roaming connectivity to their subscribers. The service will be offered beginning in 2015 and will allow subscribers to access each other’s WiFi networks without consuming allotted data on their wireless plans.
- Comcast Corp. doubled its two most popular Internet speed plans in Colorado for no additional cost. The Blast! Plan increased download speeds from up to 25 Mbps to up to 50 Mbps, Extreme 50 increased download speeds from up to 50 Mbps to up to 105 Mbps, and the Performance plan increased speeds from 15 Mbps to up to 20 Mbps.
- DISH Network signed an agreement with The Walt Disney Company to provide DISH customers with access to Disney’s sports, news, and entertainment content across Internet devices. Under the agreement, DISH customers can access Disney’s authenticated live and video-on-demand products.

Key Company Announcements

The nine-county region is a key location for broadcasting and telecommunication companies to grow and expand. Notable company announcements in 2014 included:

- Layer3 TV relocated its headquarters from Boston to downtown Denver. The company provides IP video and technology and could generate 312 jobs over the next few years.
- Google plans to build a four-acre campus in Boulder, which includes three, four-story buildings at 30th and Pearl Streets. The expansion includes a 600-space underground parking garage, 300 spaces for bicycles, and enough space for up to 1,500 employees. The company’s Boulder workforce of 340 employees is dispersed throughout the city and would be consolidated into the site in early 2017.
- ViaWest opened their newest greenfield data center in a 200,000-plus-square-foot building in Metro Denver. The data center is located south of Centennial Airport near E-470 and Peoria. The $208 million facility contains 140,000 square feet of raised floor dedicated to data servers and the company plans to invest $316 million over the next seven years.
- Charter Communications Inc. broke ground on a $25.5 million research and development facility at the Compark Business Campus in unincorporated Douglas County. The 85,000-square-foot industrial building will include 60,000 square feet of office space, conference rooms, and break areas, and the
residual space will include a data center laboratory. The new facility will accommodate more than 200 technical staff and is slated for completion in 2015.

- Avaya Inc. relocated its laboratory operations from Westminster to Thornton and will move its Westminster-based services business to Highlands Ranch. The new 116,000 square feet of space in Thornton includes infrastructure upgrades, additional parking, and landscaping upgrades.
- Boulder-based Zayo Group LLC opened a 24,000-square-foot facility in downtown Denver. The new office near Denver's Union Station will house about 125 employees.

Merger and Acquisition Activity

Companies in the nine-county region announced several mergers and acquisitions in 2014.

- Douglas County-based tw telecom was purchased by Broomfield-based Level 3 Communications, Inc. The $5.3 billion deal will add business and local fiber-optic rings in 76 U.S. metropolitan areas and improve data carrying capacity. The deal increased Level 3's international fiber-optic network to 212,000 miles, which carries Internet traffic, video, and business data for client companies. The combined companies have nearly 4,000 Colorado employees and 13,600 worldwide.
- Imagine Communications, a media technology business that was formerly part of Colorado-based Harris Broadcast, acquired OpenTV's Advanced Advertising business unit. The company will add more than 75 developers, research and development staff, and customer service representatives to Imagine’s Denver and California facilities.
- Greenwood Village-based ViaWest Inc. was sold to Canadian cable multiple-system operator Shaw Communications Inc. The $1.2 billion deal will expand Shaw's data service offerings and cloud capabilities business, while boosting ViaWest's company operations in North America. ViaWest’s headquarters will remain in Greenwood Village.
- Zayo Group acquired three companies including Paris-based Neo Telecoms, London-based Geo Networks Ltd., and Dallas, Texas-based CoreXchange, Inc. The acquisitions will add more than 2,100 miles to its existing fiber-optic network in Europe and will bring Zayo's total data center count to 27 locations across the U.S.

Cross-Cluster Convergence

The nine-county region’s unique convergence of broadcasting and telecommunications and other high-tech industries, such as aviation and aerospace, provides further opportunities for innovation, collaboration, and growth.

- Broomfield-based Gogo Biz launched its in-flight WiFi and voice services for business jets flying over Canada. The offering is the largest territorial expansion the company has undergone since launching its service in 2009. The company’s Gogo service is the dominant domestic in-flight WiFi for 2,300 domestic planes operated by Delta Airlines, American Airlines, US Airways, United Airlines, Frontier Airlines, and AirTran Airways.
- Northrop Grumman Corp. selected Broomfield-based Level 3 Communications Inc. to deliver images and communications via its network to a national simulation training system for the U.S. Air Force. Under the agreement, Level 3 will deliver real-time communications and high-resolution images for the simulations.

Research and Educational Announcements

The nine-county region’s leading research institutions and educational facilities make significant contributions to the region's broadcasting and telecommunications industry.

- The University of Colorado approved the new College of Media, Communication, and Information. The majors offered include media design, advertising, communication, information, and science and media studies. College enrollment will begin in the fall of 2015.
- Colorado State University partnered with Indiana University, the University of Michigan, the University of Florida, and the University of Wisconsin-Madison to improve the way digital educational content is shared across universities and delivered to students. The technology consortium launched a new online platform, Unizin, as a one-stop shop for digital education that allows faculty to design effective learning experiences and improve how course content is created and delivered to students.
Broadcasting and Telecommunications Workforce Profile

Many companies choose locations because of the available workforce. With nearly half of the nine-county region’s 3.6 million residents under the age of 35, employers can draw from a large, young, highly educated, and productive workforce. Of the region’s adult population, 41.2 percent are college graduates and 90.5 percent have graduated from high school. The state has the nation’s second-most highly educated workforce as measured by the percentage of residents with a bachelor’s degree or higher.

The attractiveness of the region draws new residents through migration. The region’s population is expected to grow 53.3 percent from 2010 to 2040, driving a 36.3 percent increase in the region’s labor force over the same period. It is important to note the changing composition of the workforce supply as the baby boomers begin to retire, which will pose implications for businesses whose employee pool includes significant numbers of these workers.

The nine-county region’s broadcasting and telecommunications industry employs 42,810 people and includes a large pool of talented, well-educated, and highly skilled workers. Compared with the age distribution across all industries, the broadcasting and telecommunications cluster has a larger share of employees that are between the ages of 25 and 54 years old.

The broadcasting and telecommunications workforce supply consists of four main components: those currently working in the industry; those doing a similar type of job in some other industry; the unemployed; and those currently in the education pipeline. The Metro Denver and Northern Colorado Occupation & Salary Profile below includes the 10 largest broadcasting and telecommunications occupations in the region. For these 10 largest occupations, the chart details the total number of workers employed in that occupation across all industries, the number of available applicants that would like to be working in that occupation, the number of recent graduates that are qualified for that occupation, and the median and sample percentile annual salaries.
**Wages**

The 2013 average annual salary for broadcasting and telecommunications employees in the nine-county region was $97,700, compared with $80,110 nationwide. Total payroll for the broadcasting and telecommunications cluster in the region exceeded $4.1 billion in 2013.

### Metro Denver and Northern Colorado Broadcasting and Telecommunications Occupation & Salary Profile, 2014

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Customer service representatives</td>
<td>36,610</td>
<td>6,494</td>
<td>0</td>
<td>$31,866</td>
<td>$22,194</td>
<td>$26,562</td>
<td>$40,290</td>
<td>$49,754</td>
</tr>
<tr>
<td>2. Telecommunications equipment installers &amp; repairers, except line installers</td>
<td>3,731</td>
<td>201</td>
<td>9</td>
<td>$63,523</td>
<td>$39,166</td>
<td>$53,082</td>
<td>$69,742</td>
<td>$73,653</td>
</tr>
<tr>
<td>3. Sales representatives, services, all other</td>
<td>17,631</td>
<td>1,286</td>
<td>77</td>
<td>$50,877</td>
<td>$24,960</td>
<td>$34,674</td>
<td>$75,546</td>
<td>$110,864</td>
</tr>
<tr>
<td>4. Business operations specialists, all other</td>
<td>32,981</td>
<td>789</td>
<td>77</td>
<td>$69,930</td>
<td>$36,067</td>
<td>$50,024</td>
<td>$92,622</td>
<td>$120,078</td>
</tr>
<tr>
<td>5. Electronics engineers, except computer</td>
<td>4,292</td>
<td>86</td>
<td>356</td>
<td>$92,955</td>
<td>$59,634</td>
<td>$72,758</td>
<td>$119,246</td>
<td>$144,352</td>
</tr>
<tr>
<td>6. Network &amp; computer systems administrators</td>
<td>8,567</td>
<td>523</td>
<td>696</td>
<td>$78,312</td>
<td>$50,835</td>
<td>$62,816</td>
<td>$95,389</td>
<td>$113,214</td>
</tr>
<tr>
<td>7. Software developers, applications</td>
<td>19,382</td>
<td>340</td>
<td>585</td>
<td>$91,021</td>
<td>$56,056</td>
<td>$71,718</td>
<td>$111,696</td>
<td>$134,472</td>
</tr>
<tr>
<td>8. Software developers, systems software</td>
<td>10,055</td>
<td>105</td>
<td>630</td>
<td>$97,136</td>
<td>$64,210</td>
<td>$78,915</td>
<td>$118,685</td>
<td>$140,878</td>
</tr>
<tr>
<td>9. Computer network architects</td>
<td>3,091</td>
<td>95</td>
<td>1,552</td>
<td>$96,720</td>
<td>$49,442</td>
<td>$72,821</td>
<td>$115,440</td>
<td>$138,674</td>
</tr>
<tr>
<td>10. Secretaries &amp; administrative assistants, except legal, medical, &amp; executive</td>
<td>49,635</td>
<td>654</td>
<td>71</td>
<td>$36,026</td>
<td>$23,587</td>
<td>$29,037</td>
<td>$43,992</td>
<td>$51,979</td>
</tr>
</tbody>
</table>

**Notes:** The number of available applicants is a point-in-time measurement of the number of people who have registered in Colorado’s workforce development system’s statewide database, Connecting Colorado, as being able and available to work in a particular occupation. Results should be interpreted with caution since registration in Connecting Colorado is self-reported. In addition, the skills rubric may assign up to four occupation codes for each registrant. Therefore, the number of available applicants could be inflated. *Source: Provided by Arapahoe/Douglas Works!; QCEW Employees, Non-QCEW Employees, Self Employed, & Extended Proprietors - EMSI 2014.3 Class of Worker.*

### Education & Training

Colorado’s higher education system provides an excellent support system for businesses in the region. There are 28 public higher education institutions in Colorado, of which seven four-year and six two-year public institutions offering comprehensive curricula are located in the nine-county region. In addition, there are more than 100 private and religious accredited institutions and nearly 340 private occupational and technical schools offering courses in dozens of program areas throughout the state. Although not exhaustive, a list of the major, accredited educational institutions with the greatest number of graduates for each of the 10 largest broadcasting and telecommunications occupations in the nine-county region are included below. A directory of all higher education institutions with corresponding websites may be accessed via [http://highered.colorado.gov](http://highered.colorado.gov).
Key Reasons for Broadcasting and Telecommunications Companies to Locate in the Nine-County Region

The region is a top 10 broadcasting and telecommunications location offering:

1. **A central location and easy global access**
   - Metro Denver’s unique geographic location in the Mountain time zone makes it the largest region in the U.S. to offer one-bounce satellite uplinks. This capability provides companies with real-time connections to six of seven continents in one business day. (Metro Denver Economic Development Corporation)
   - Denver International Airport was the fifth-busiest airport in the nation and 15th-busiest worldwide in terms of passenger traffic in 2013. (U.S. Bureau of Transportation Statistics, 2014; Airports Council International 2014; and Denver International Airport, 2014)
   - Located on the 105th meridian, the nine-county region’s central location at the exact midpoint between Tokyo and Frankfurt positions the region favorably to serve growing world markets. The region is an excellent location for doing business with the entire nation and is within four hours flying time of every North American city with a population of 1 million or more. (Metro Denver Economic Development Corporation)
   - Denver ranked among the top-five safest cities for natural disasters in 2014. (HomeownersInsurance.com, 2014)

2. **A large concentration of high-quality technology workers and entrepreneurial talent**
   - Of Colorado’s adult population, nearly 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, 2013 American Community Survey)
   - Colorado had the third-highest tech-worker concentration in 2012, with 8.7 percent of the state’s private-sector workforce employed in technology firms. Colorado also had the nation’s 11th-largest employment base in the Internet and telecommunications services industry and ranked sixth for average high-tech wage, 11th for absolute number of high-tech businesses, and 15th for absolute employment in the high-tech industry. Colorado tech workers earn 98 percent more than the average private sector worker. (TechAmerica Foundation, Cyberstates 2013: The Definitive State-by-State Analysis of the U.S. High-Technology Industry, 2013)
   - Colorado ranked as the fifth-most entrepreneurial state in the 2013 Kauffman Index of Entrepreneurial Activity, with 380 new business owners per 100,000 adults. (Ewing Marion Kauffman Foundation, 2014)
   - Denver ranked as the second-best city to launch a startup business out of the 50 most populated cities. (Forbes, 2014)
   - Technology workers in the Denver-Boulder area had the third-highest salaries in the U.S. in 2014. Adjusted for cost of living, the average annual salary for the Denver-Boulder area’s technology workforce was $98,000. (TriNet, 2014)
   - Denver ranked as the ninth-best city for college graduates and received accolades for its highly educated population, moderate cost of living, and higher-than-average wages. (NerdWallet, 2014)
   - Denver ranked as the seventh-best city for millennials (ages 25-34) out of 25 major cities with a population over 1 million in 2014. (Niche.com, 2014)
3. **Low to moderate costs of doing business**
   - *Forbes* ranked Colorado fifth on its 2014 “Best States for Business and Careers” list. The state received its highest rankings for labor supply (first overall), growth prospects (fourth overall), economic climate (eighth overall), and quality of life (ninth overall). (*Forbes*, 2014)
   - Metro Denver ranked fourth among *Forbes* 2014 “Best Places for Business and Careers” list. Four other Colorado metropolitan areas were included on the list. The Fort Collins metro area ranked fifth overall, Greeley ranked 20th, Boulder ranked 23rd, and Colorado Springs ranked 29th. (*Forbes*, 2014)
   - Metro Denver office rental rates averaged $28.83 per square foot in the fourth quarter of 2014, making the region’s office market highly competitive with other major markets in the U.S. (CoStar Realty Information, The CoStar Office Report, Q4 2014)

4. **A pro-business environment and competitive tax structure**
   - Colorado’s simplified corporate income tax structure based on single-factor apportionment allows companies to pay taxes based solely on their sales in the state. Along with few regulatory burdens, Colorado’s corporate income tax rate of 4.63 percent is one of the lowest and most competitive tax structures in the nation. (State of Colorado; The Tax Foundation)
   - Colorado has the nation’s ninth-best tax climate for entrepreneurship and small business. (Small Business & Entrepreneurship Council, 2014)
   - Colorado ranked second in innovation and entrepreneurship and was among the top 10 states for infrastructure, business climate, and talent pipeline. (National Chamber Foundation, 2014)
   - Colorado ranked as the No. 8 small-business-friendly state in the nation. Fort Collins (24th) and Denver (28th) ranked among 84 cities in the country. (Thumbtack.com, 2014; Ewing Marion Kauffman Foundation, 2014)

5. **An overall better quality of life**
   - Castle Rock ranked fourth in *MONEY Magazine’s* 2014 list of the “Best Places to Live.” Centennial (13th) and Boulder (23rd) were also named to the list’s top 50. (*MONEY Magazine*, 2014)
   - Metro Denver ranked as the fourth-fittest metro area in the nation in 2014. Denver’s high percentage of residents participating in physical activity, and low obesity and cardiovascular disease rates contributed to its high rank. (American College of Sports Medicine, 2014)
   - Colorado has the fourth-highest percentage of state land area devoted to the National Forest System. The state offers access to more than 50 national parks and wilderness areas, 42 state parks, and the greatest number of 14,000-foot peaks in the nation that support a healthy, active lifestyle. (U.S. Forest Service, 2014; Colorado State Parks, 2014)
   - Boulder ranked second on the 2014 list of the “Top 100 Best Places to Live.” Aurora (50th) and Lakewood (88th) were also named to the list. (Livability.com, 2014)
   - FasTracks, a comprehensive project to build out Metro Denver’s entire mass transit system by 2019, is the largest simultaneous transit buildout in U.S. history. The expansion will make Metro Denver one of the top five regions in the country in terms of miles of fixed rail.
### Broadcasting and Telecommunications Industry Cluster Definition

<table>
<thead>
<tr>
<th>NAICS Code*</th>
<th>NAICS Description</th>
<th>SIC Code</th>
<th>SIC Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>334210</td>
<td>Telephone apparatus mfg.</td>
<td>3661</td>
<td>Telephone &amp; telegraph apparatus</td>
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<tr>
<td>334220</td>
<td>Radio &amp; television broadcasting &amp; wireless communications equipment mfg.</td>
<td>3663</td>
<td>Radio &amp; tv communications equipment</td>
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<tr>
<td>334290</td>
<td>Other communications equipment mfg.</td>
<td>3357</td>
<td>Drawing &amp; insulating of nonferrous wire</td>
</tr>
<tr>
<td>335921</td>
<td>Fiber optic cable mfg.</td>
<td>3357</td>
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<tr>
<td>335929</td>
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<td>3357</td>
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<td>Radio stations</td>
<td>4832</td>
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<td>4833</td>
<td>Television broadcasting stations</td>
</tr>
<tr>
<td>515210</td>
<td>Cable networks &amp; other subscription prog.</td>
<td>4841</td>
<td>Cable &amp; other pay television services</td>
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<tr>
<td>517110</td>
<td>Wired telecommunications carriers</td>
<td>4813</td>
<td>Telephone communication except radio</td>
</tr>
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<td>Wired telecommunications carriers</td>
<td>4822</td>
<td>Telegraph &amp; other communications</td>
</tr>
<tr>
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<td>Cable &amp; other pay television services</td>
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<tr>
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<td>Wireless telecommunications carriers (except satellite)</td>
<td>7375</td>
<td>Information retrieval services</td>
</tr>
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<td>Wireless telecommunications carriers (except satellite)</td>
<td>4812</td>
<td>Radiotelephone communication</td>
</tr>
<tr>
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<td>Wireless telecommunications carriers (except satellite)</td>
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<td>Communication services, NEC</td>
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<tr>
<td>517410</td>
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<td>Information retrieval services</td>
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<td>Communication services, NEC</td>
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<tr>
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<td>Telecommunications resellers</td>
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<tr>
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<td>Telephone communication except radio</td>
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<tr>
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<tr>
<td>519130</td>
<td>Internet publishing &amp; broadcasting &amp; web search portals</td>
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<tr>
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<td>All other business support services</td>
<td>8999-0800</td>
<td>Communication services</td>
</tr>
</tbody>
</table>

*(P) indicates that only part of the NAICS industry category is represented in the industry cluster definition.

Note: NEC indicates "not elsewhere classified."
Broadcasting and Telecommunications Industry Cluster Relationships

Technologies
- Wi-Fi - Wireless Fidelity
- Fiber Optic Networks
- VoIP - Voice over Internet Protocol
- Nanotechnology
- Internet
- Photonics

Support Industries
- Aerospace
- Computer Storage
- Fiber Optics
- Geospatial
- Photonics
- Software

Client Industries
- Aerospace
- Aviation
- Bioscience
- Energy
- Financial Services
- Healthcare
- Software
- Consumers
- Businesses

Infrastructure
- CO Technology Partners
- One-Bounce Satellite Location
- High-Speed Digital Network
- CO Telecom Association
- CO Photonics Industry Association
- CU-Telecom Systems Lab
- CTA-Colorado Technology Association
- DU Center for Technology Innovation

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