Industry Overview

Colorado's energy industry has been an integral part of the state's economy throughout its history, providing a strong foundation of both traditional and alternative energy. The state is a leader in the energy industry and is rich with energy resources including fossil fuels (coal, oil, and natural gas) and both renewable energy resources (solar, wind, and biofuels) and energy efficiency technologies, also known as cleantech. Significant intellectual capital, world-class research institutions, a business-friendly environment, and industry collaboration drive energy job growth and fuel innovation. Further, Colorado's progressive policy initiatives, such as the first voter-led renewable energy standard in the nation and new financial incentives, support the state's balanced energy economy.

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 the Denver South region.[1] Like other recent oil and gas plays in the nation, technological advances in horizontal drilling and hydraulic fracturing techniques allow for greater production in the Niobrara shale formation within the Denver-Julesburg Basin along the Front Range. These advances have drawn significant attention from oil and gas companies, providing substantial economic benefits including capital investment, high-wage job creation, and export possibilities.

This report describes the energy industry in two subclusters: (1) cleantech and (2) fossil fuels. 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.

With nearly 2,990 energy workers in approximately 370 companies across the Denver South region in 2015, the energy industry contributes to the region's overall economic productivity and has created new opportunities in energy generation, research and development, and manufacturing. Employment growth in the Denver South region's energy cluster averaged 7.5 percent per year over the past five years, compared with a 6.6 percent and a 3.3 percent increase in the nine-county Metro Denver and Northern Colorado region[2] and nationwide, respectively. Further, roughly 12 percent of all energy companies in the nine-county Metro Denver and Northern Colorado region are located in the Denver South region.

2015 Industry Highlights

Surrounded by abundant natural resources, sound public policies, and a skilled workforce, the Denver South region is home to a growing and vibrant energy industry. Notable announcements in 2015 included:

- Greenwood Village-based Cool Planet Energy Systems' CoolTerra™ product received the Gold 2015 Edison Award. CoolTerra™ is an innovative solution for agriculture, water conservation, and climate sustainability that sequesters atmospheric carbon to retain water and fertilizer in the root zone of crops, enabling growers to increase agricultural yields and conserve water in drought-prone regions.

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[1] The Denver South region consists of zip codes 80111, 80112, 80124, 80126, 80129, 80130, 80134, and 80237.
[2] The nine-county region is comprised of two principal areas, Metro Denver and Northern Colorado. Metro Denver consists of Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, and Jefferson counties. Northern Colorado consists of Larimer and Weld counties.

- Highlands Ranch-based ARCADIS was named in the *Forbes* inaugural list of 500 of America's Best Employers for 2015. The company ranked in the top half and ranked second among the Engineering and Manufacturing category.
- Englewood-based Gevo Inc. signed an agreement with Alaska Airlines to purchase Gevo's renewable jet fuel and will fly the first-ever commercial flight on alcohol-to-jet fuel (ATJ). The demonstration flight will occur after Gevo receives American Society for Testing and Materials International certification for its ATJ, which can be integrated into existing distribution infrastructure and onto commercial aircraft.
- Gevo, Inc. partnered with India-based Praj Industries Limited to enable the licensing of the company's isobutanol technology to processors of non-corn based sugars, including the majority of Praj's global customer base. Under the licensing agreement, Praj will invest resources into the development and optimization of Gevo's technology and will license up to 250 million gallons of isobutanol capacity over the next 10 years.
- Highlands Ranch-based ADA-ES Inc. launched its EXPERTi™ Technology, a remote monitoring analytics and technical advisory service that will help customers monitor their Mercury and Air Toxics Standard (MATS) compliance strategy and its impact on mercury removal. The technology combines ADA's world-class pollution control domain expertise with a proprietary advanced analytics technology platform.
- Douglas County-based Westmoreland Coal Co. acquired two Ohio coal companies, Buckingham Coal Co. LLC and Oxford Resources GP LLP. The two deals totaled $64 million and will expand the company's North American operations. Westmoreland is the oldest independent coal company in the United States.

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.

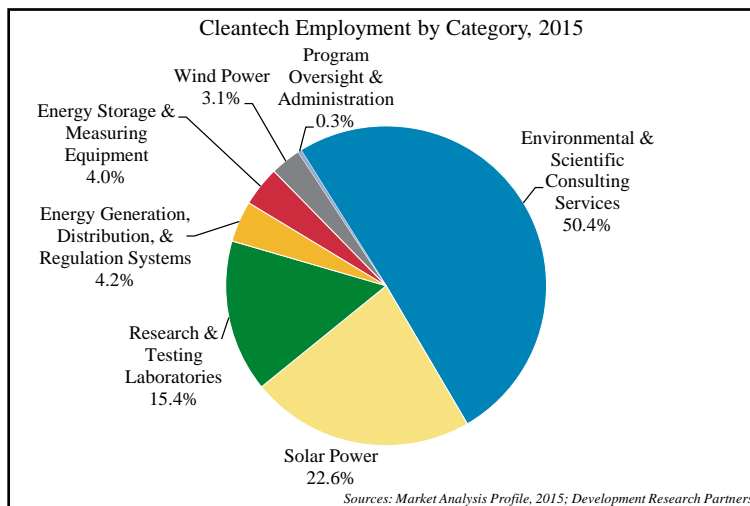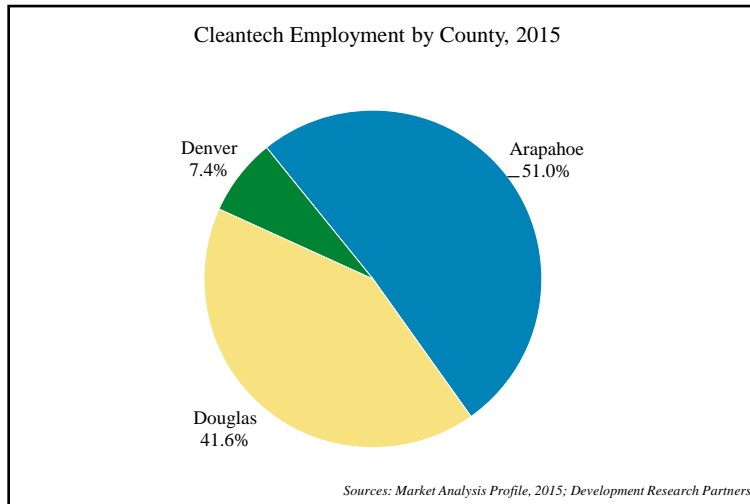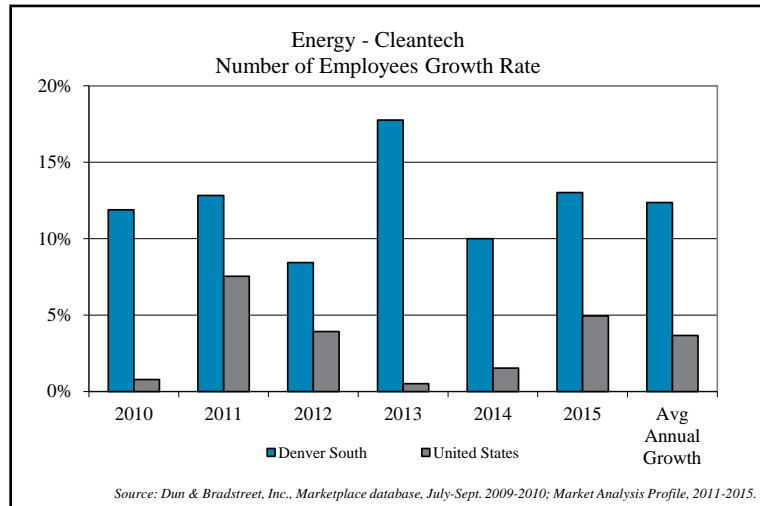**Cleantech Employment and Company Profile, 2015**

	Denver South	United States
Direct employment, 2015	1,470	828,240
Number of direct companies, 2015	140	58,010
One-year direct employment growth, 2014-2015	13.0%	4.9%
Five-year direct employment growth, 2010-2015	79.1%	19.7%
Avg. annual direct employment growth, 2010-2015	12.4%	3.7%
Direct employment concentration	0.6%	0.6%

Sources: Dun & Bradstreet, Inc. Marketplace database, July-Sept. 2009-2010; Market Analysis Profile, 2011-2015; Development Research Partners.

Cleantech Employment

The Denver South region's cleantech employment (1,470 workers) rose 13 percent in 2015 compared with the previous year's level, adding nearly 170 new jobs during the same period. National employment levels also grew over-the-year, rising 4.9 percent, representing an additional 39,030 jobs. Between 2010 and 2015, the region's cleantech employment rose 79.1 percent compared with a 19.7 percent increase nationwide. Cleantech companies employed 0.6 percent of the region's total employment base, compared with the same employment concentration nationwide.

Energy - Cleantech
Number of Employees Growth Rate

Approximately 140 cleantech companies operated in the Denver South region in 2015. Nearly 74 percent of these companies employed fewer than 10 people, while 1.5 percent employed 100 or more.

Cleantech Employment by County, 2015

Denver 7.4%
Arapahoe 51.0%
Douglas 41.6%

Cleantech Employment by Category, 2015

Wind Power 3.1%
Program Oversight & Administration 0.3%
Energy Storage & Measuring Equipment 4.0%
Energy Generation, Distribution, & Regulation Systems 4.2%
Environmental & Scientific Consulting Services 50.4%
Research & Testing Laboratories 15.4%
Solar Power 22.6%

Major Cleantech Companies

- ADA-ES, Inc.
  www.adaes.com
- AECOM
  www.aecom-urs.com
- ARCADIS
  www.arcadis.com
- Chicago Bridge & Iron Company
  www.cbi.com

- Cool Planet Energy Systems
  www.coolplanet.com
- Gevo Inc.
  www.gevo.com
- GE Energy
  www.ge-energy.com
- SolarCity
  www.solarcity.com

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.

Fossil Fuels Employment and Company Profile, 2015

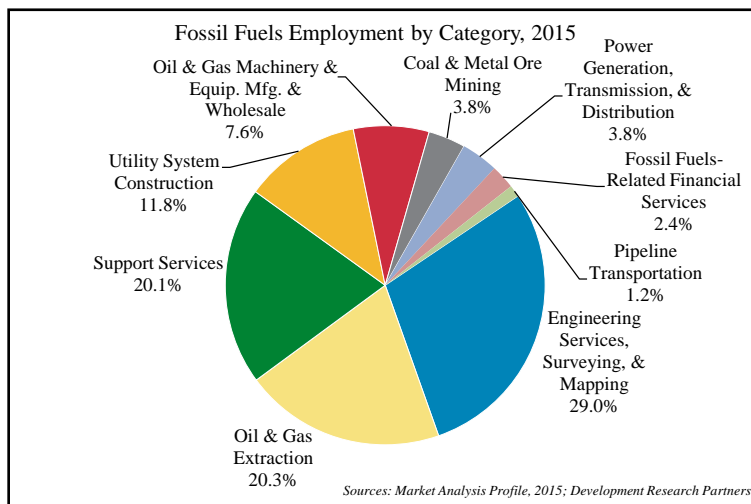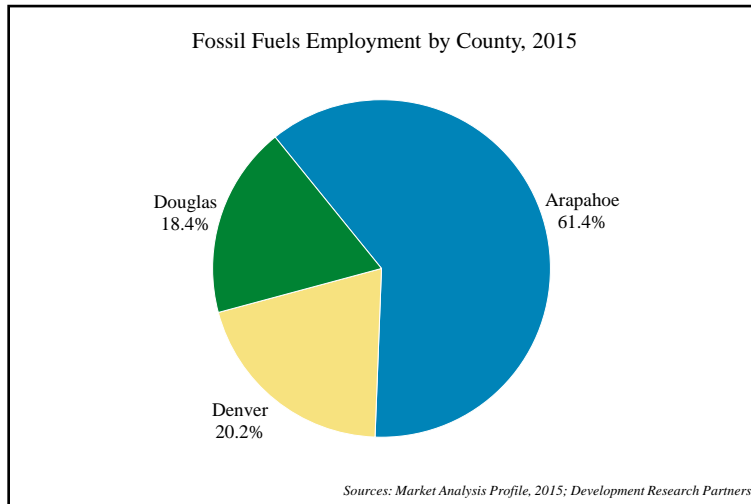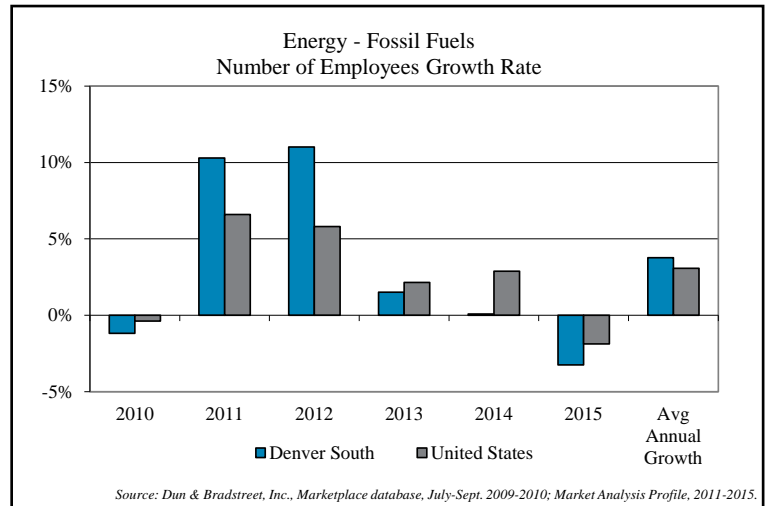|	Denver South	United States
Direct employment, 2015	1,520	1,829,870
Number of direct companies, 2015	230	66,820
One-year direct employment growth, 2014-2015	-3.2%	-1.9%
Five-year direct employment growth, 2010-2015	20.3%	16.3%
Avg. annual direct employment growth, 2010-2015	3.8%	3.1%
Direct employment concentration	0.6%	1.2%

Sources: Dun & Bradstreet, Inc. Marketplace database, July-Sept. 2009-2010; Market Analysis Profile, 2011-2015; Development Research Partners.

Fossil Fuels Employment

The Denver South region's fossil fuels employment (1,520 workers) decreased 3.2 percent in 2015, compared with a 1.9 decline at the national level. Many of the region's service companies and operators trimmed payrolls and shifted operations to locations outside of Colorado in response to the decline in oil prices. Between 2010 and 2015, the region's fossil fuels employment rose 20.3 percent, compared with a 16.3 percent increase nationwide. Fossil fuels companies employed 0.6 percent of the region's total employment base, compared with a 1.2 percent employment concentration nationwide.

Approximately 230 fossil fuels companies operated in the Denver South region in 2015. More than 64 percent of the region's fossil fuels companies employed fewer than 10 people, while 0.9 percent employed 100 or more.

Energy - Fossil Fuels
Number of Employees Growth Rate

Legend: Denver South, United States

Source: Dun & Bradstreet, Inc., Marketplace database, July-Sept. 2009-2010; Market Analysis Profile, 2011-2015.

Fossil Fuels Employment by County, 2015

- Arapahoe 61.4%
- Denver 20.2%
- Douglas 18.4%

Sources: Market Analysis Profile, 2015; Development Research Partners.

Fossil Fuels Employment by Category, 2015

- Oil & Gas Machinery & Equip. Mfg. & Wholesale 7.6%
- Coal & Metal Ore Mining 3.8%
- Power Generation, Transmission, & Distribution 3.8%
- Utility System Construction 11.8%
- Fossil Fuels-Related Financial Services 2.4%
- Support Services 20.1%
- Pipeline Transportation 1.2%
- Engineering Services, Surveying, & Mapping 29.0%
- Oil & Gas Extraction 20.3%

Sources: Market Analysis Profile, 2015; Development Research Partners.

Major Fossil Fuels Companies

- Halker Consulting
  www.halker.com

- Innospec Inc.
  www.innospecinc.com

- Schlumberger Ltd.
  www.slb.com

- Shell Exploration and Production
  www.shell.com

- The Industrial Company (Kiewit)
  www.ticus.com

- Westmoreland Coal Company
  www.westmoreland.com

- XTO Energy
  www.xtoenergy.com

Energy Workforce Profile

Many companies choose locations because of the available workforce. With nearly half of the nine-county region's 3.7 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, 41.3 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 nine-county region draws new residents through migration. The region's population is expected to grow 59.9 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

Legend: Less than 9th Grade; 9th to 12th Grade, No Diploma; High School Graduate (includes equivalency); Some College, No Degree; Associate Degree; Bachelor's Degree; Graduate or Professional Degree

4.3%, 5.2%, 20.4%, 21.3%, 7.6%, 25.8%, 15.5%

Source: U.S. Census Bureau, 2014 American Community Survey.

Metro Denver and Northern Colorado's Labor Force Projections by Age (millions)

Legend: 16-24; 25-34; 35-44; 45-54; 55-64; 65+

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

Cleantech Workforce Profile

Age Distribution

The Denver South region's cleantech industry employs 1,470 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 (71.4 percent) that are between the ages of 35 and 65 years and older, compared with the age distribution of all industries across the nine-county region (64.7 percent).

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

Metro Denver and Northern Colorado's Distribution of Employment by Age

■ Cleantech   ■ All Industries

Source: Provided by Arapahoe/Douglas Works! QCEW Employees, Non-QCEW Employees, & Self Employed - EMSI 2015.3 Class of Worker.

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.
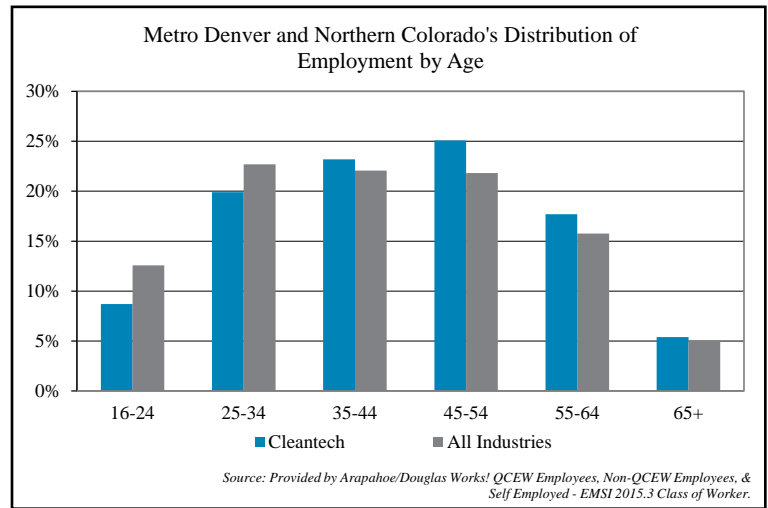
Wages

The 2014 average annual salary for cleantech employees was $76,610 in the nine-county region, compared with the national average of $76,940. The nine-county region's cleantech payroll exceeded $1.5 billion in 2014.

Metro Denver and Northern Colorado Cleantech Occupation & Salary Profile, 2015

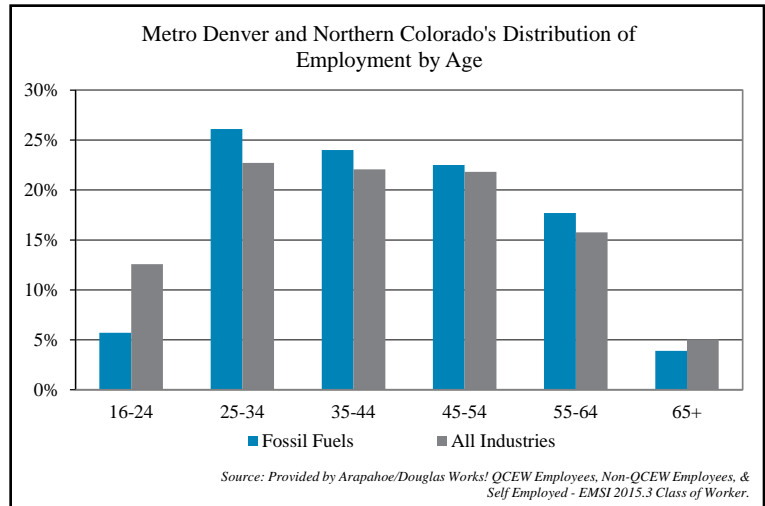| 10 Largest Cleantech Occupations in Metro Denver and Northern Colorado	Total Working Across All Industries (2015)	Number of Available Applicants (2015)	Number of Graduates (2014)	Median Salary	10th Percentile Salary	25th Percentile Salary	75th Percentile Salary	90th Percentile Salary
1. Electricians	12,311	348	863	$45,149	$28,565	$34,454	$58,135	$69,980
2. Business operations specialists, all other	33,049	705	42	$72,259	$38,646	$51,958	$95,805	$124,238
3. Plumbers, pipefitters, & steamfitters	7,093	46	393	$46,238	$29,856	$35,277	$57,349	$66,890
4. Engineers	33,634	1,284	3,549	$94,827	$59,821	$74,901	$120,266	$146,640
5. Secretaries & administrative assistants, except legal, medical, & executive	47,380	643	70	$36,754	$23,566	$29,494	$45,323	$53,747
6. Physical scientists	9,463	342	1,238	$87,381	$51,064	$66,373	$116,958	$145,413
7. Heating, air conditioning, & refrigeration mechanics & installers	4,426	114	213	$47,429	$31,573	$39,924	$56,403	$63,193
8. Office clerks, general	28,293	2,450	0	$34,322	$20,740	$26,091	$45,813	$57,934
9. General & operations managers	30,063	1,514	5,777	$109,117	$51,397	$72,862	$171,538	$248,331
10. First-line supervisors of construction trades & extraction workers	10,897	328	1,347	$58,224	$38,042	$47,228	$72,095	$85,891

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 - EMSI 2015.3 Class of Worker.*

Fossil Fuels Workforce Profile

Age Distribution

The Denver South region's fossil fuels industry employs 1,520 people and includes a large pool of talented, well-educated, and highly skilled workers. The fossil fuels subcluster has a larger share of employees (90.3 percent) that are between the ages of 25 and 64 years old in the nine-county region, compared with the age distribution across all industries (82.4 percent).

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

Metro Denver and Northern Colorado's Distribution of Employment by Age

Source: Provided by Arapahoe/Douglas Works! QCEW Employees, Non-QCEW Employees, & Self Employed - EMSI 2015.3 Class of Worker.

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 2014 average annual salary for a fossil fuels worker in the nine-county region was $110,070, compared with the national average of $98,660. The nine-county region's fossil fuels payroll exceeded $3.5 billion in 2014.

Metro Denver and Northern Colorado Fossil Fuels Occupation & Salary Profile, 2015

10 Largest Fossil Fuels Occupations in Metro Denver and Northern Colorado	Total Working Across All Industries (2015)	Number of Available Applicants (2015)	Number of Graduates (2014)	Median Salary	10th Percentile Salary	25th Percentile Salary	75th Percentile Salary	90th Percentile Salary
1. Civil engineers	5,680	144	412	$79,061	$51,043	$62,774	$100,069	$127,920
2. Service unit operators, oil, gas, & mining	2,852	64	0	$44,075	$31,650	$36,992	$52,327	$67,430
3. Mechanical engineers	5,526	231	541	$83,741	$52,478	$66,560	$112,486	$140,816
4. Business operations specialists, all other	33,049	705	42	$72,259	$38,646	$51,958	$95,805	$124,238
5. Secretaries & administrative assistants, except legal, medical, & executive	47,380	643	70	$36,754	$23,566	$29,494	$45,323	$53,747
6. Roustabouts, oil & gas	2,136	204	0	$36,914	$27,378	$32,177	$50,229	$58,304
7. Accountants & auditors	28,700	166	748	$69,576	$42,494	$52,936	$90,917	$116,251
8. Geoscientists, except hydrologists & geographers	2,310	107	171	$103,727	$53,600	$77,277	$145,096	$190,660
9. General & operations managers	30,063	1,514	5,777	$109,117	$51,397	$72,862	$171,538	$248,331
10. Petroleum engineers	1,776	129	170	$151,671	$89,028	$112,822	$206,492	$260,623

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 - EMSI 2015.3 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 380 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

- Colorado State University
  www.colostate.edu

- Colorado State University Global Campus
  www.colostate.edu

- Ecotech Institute
  www.ecotechinstitute.com

- Emily Griffith Technical College
  www.emilygriffith.edu

- Front Range Community College
  www.frontrange.edu

- Metropolitan State University of Denver
  www.msudenver.edu

- Regis University
  www.regis.edu

- University of Colorado:
  Boulder, Denver
  www.cu.edu

- University of Denver
  www.du.edu

Key Reasons for Energy Companies to Locate in the Denver South Region and the Surrounding 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 2014. Colorado was the 10th-most productive coal mining state and borders Wyoming, the nation's largest producer of coal. (U.S. Department of Energy, Energy Information Administration, 2016)
- **Natural Gas** - Colorado ranked sixth among natural-gas producing states, accounting for 6.3 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, 2015)
  - The Rockies Express Pipeline (REX) is a 1,679-mile interstate 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. REX is undergoing an expansion that will increase east-to-west delivery of natural gas from Ohio to markets in the Midwest, Gulf Coast, and Southeast. (U.S. Department of Energy, Energy Information Administration, 2015; Tallgrass Energy, 2015)
- **Oil** - Colorado ranked as the nation's seventh-largest oil producer in 2014, producing a record 94.4 million barrels of crude oil. Colorado ranked seventh in the number of active rotary rigs as of October 2015, 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, 2015; Baker Hughes, 2015)
- Colorado is home to two of the 100 largest oil fields and nine of the nation's 100 largest natural gas fields. (U.S. Department of Energy, Energy Information Administration, 2015)

Colorado is a top-10 cleantech location with access to clean energy resources and robust renewable energy generation requirements.
- **Wind** - Colorado ranked seventh in the nation for wind power generation capacity installed and ranked 10th for total installed wind power capacity as of September 2015. Nearly 14 percent of all in-state

electricity production was generated with wind. (U.S. Department of Energy, Energy Information Administration, 2015; American Wind Energy Association, 2015)

- **Biomass** - Colorado has extensive biomass potential. Roughly 25 percent of the state's 24 million acres of forestland have a high or moderate potential for future biomass production, with a typical yield in the Front Range of four to 10 dry tons of woody biomass per acre per year. (Colorado State Forest Service, 2015)
- **Solar** - Colorado ranked ninth in the nation for total installed solar capacity in 2014 with 430 MW. (Solar Energy Industries Association, 2015)
  - Metro Denver ranked fifth among the top-10 largest U.S. metro areas for solar power system installations. Denver has 6.22 solar power systems per capita, compared with the U.S. average of 2.26. (BuildZoom, 2015)
  - Denver ranked eighth among the top-20 largest U.S. cities for installed solar photovoltaic (PV) capacity and ranked No. 7 for solar PV capacity generated per capita in 2014. (Environment America Research & Policy Center, 2015)
- **Water** - With a combined installed capacity of 1,162 megawatts (MW), Colorado's more than 60 hydropower facilities generate roughly 1 million MW-hours of electricity annually. (Colorado Energy Office, 2015)
- Metro Denver ranked 11th in clean technology leadership in 2015 and ranked among the top-10 for green building usage and cleantech investment, innovation, and workforce. (Clean Edge, Inc., 2015)
- Denver ranked sixth among the top-10 U.S. cities for green commercial space. Nearly half of all leasable office space in Denver was classified as either ENERGY STAR® or Leadership in Energy and Environmental Design (LEED)-certified. (CBRE Group, 2015; Maastricht University, 2015)
- Metro Denver ranked among the top-10 U.S. metropolitan areas with the greatest number of ENERGY STAR® certified buildings in 2014. (U.S. Environmental Protection Agency, 2015)
- Denver ranked 10th among 51 U.S. cities for energy-efficient policies and programs in the 2015 *City Energy Efficiency Scorecard*. (American Council for an Energy-Efficient Economy, 2015).

The region 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, more than 38 percent has completed a bachelor's or higher-level degree, making Colorado the second-most highly educated state in the nation behind Massachusetts. (U.S. Census Bureau, 2014 American Community Survey)
   - Colorado ranked fifth for the number of scientists and engineers as a share of all occupations in 2014. (National Science Foundation, 2015)
   - Colorado ranked ninth in the nation for solar jobs per capita, with over 4,200 solar jobs concentrated in installation and manufacturing. (The Solar Foundation, 2015)
   - Colorado ranked first for wind manufacturing jobs and was among the top-three states for wind-related employment. (American Wind Energy Association, 2015)
   - Colorado ranked seventh in the nation for the number of new clean energy jobs created in 2014, with more than 1,580 new clean energy jobs announced during the year. (Environmental Entrepreneurs, 2015)
   - Denver ranked as the third-best city for college graduates, with millennials (ages 20-34) representing 26 percent of the total population. (Rent.com, 2015)
   - Lone Tree ranked among the 10 best places in Colorado for millennial job seekers and eight of the 10 cities are within commuting distance to Denver. (NerdWallet, 2015)
   - Metro Denver ranked as the fourth-best metro area for science, technology, engineering, and mathematics (STEM) professionals in 2015. Metro Denver ranked fourth for the projected number of STEM jobs needed in 2018 and seventh for openings per capita for STEM graduates. (WalletHub, 2015)

2. **Proximity to energy-related higher education programs and research centers**
   - Colorado ranked ninth for the number of science, engineering, and health graduate students per 1,000 individuals ages 25 to 34 years old in 2013. (National Science Foundation, 2015)
   - Located near the Denver South region, the Education Corporation of America's Ecotech Institute is the world's only college entirely focused on training students for careers in cleantech. (Ecotech Institute, 2015)
   - The University of Colorado and The Wildlife Experience collaborated to offer new classes and certificates in engineering, business, education, and healthcare in the Denver South region. Engineering certificates such as integrated construction, management, and leadership, and software engineering are offered. (The University of Colorado, 2015)
   - The Denver South region is in close proximity to the Solar Technology Acceleration Center (SolarTAC) in Aurora, which is the largest test facility for solar technologies in the U.S. (The Solar Technology Acceleration Center, 2015)

3. **Access to the research of a broad collection of federal laboratories and private R&D activities**
   - The National Renewable Energy Laboratory (NREL), the U.S. Department of Energy's (DOE) only laboratory committed to the research, development, commercialization, and deployment of renewable energy and energy efficiency, is located in close proximity to the Denver South region in Golden. In fiscal year 2014, NREL's research resulted in 440 U.S. patents in the clean energy industry.
   - 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 in the Denver South region with fossil fuel energy R&D programs include Shell Exploration & Production and XTO Energy.

4. **Business organizations and public policy programs designed to encourage industry growth**
   - Legislation passed in 2015 refunds sales and use tax for equipment used in R&D of medical devices or clean technology. House Bill 1180 (2015) refunds up to $50,000 per year in sales and use taxes for companies with less than 35 employees and more than 50 percent employed in Colorado.
   - 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, 2015)
   - The Advanced Industries (AI) Accelerator Programs include four types of grants and a global business support program 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. These industries account for nearly 30 percent of the state's wage earnings and nearly 35 percent of the state's total exports. (The Colorado Office of Economic Development and International Trade, 2015)

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