



ENERGY & NATURAL RESOURCES

*From extractive industries to
renewables, Colorado's resource mix
powers the economy.*



Often called a “center of influence,” the Metro Denver EDC is the nation’s first regional economic development organization. From Castle Rock to Fort Collins and Golden to Greeley, we represent the nine counties and 66 communities that contribute to our resilient economy and incredible culture.

Thanks to the leadership and generosity of 250 of Colorado’s most influential companies, we work to monitor and respond to the Colorado economy through corporate attraction and retention; workforce development; domestic and global marketing; investments in infrastructure; and public policy that fosters a pro-business climate.

The data we produce is foundational to the work we do. Publications like our annual Cluster Studies offer our clients, investors and community partners timely and relevant information on our regional and state economies.

The information included in this Cluster Study reflects 2019 data that was collected and evaluated prior to the outbreak of COVID-19. For consistency’s sake, as well as the longitudinal integrity of our data, we are distributing this research, recognizing that it may not be reflective of the immediate economic environment.

Looking ahead, the Metro Denver EDC will track the short-term and long-term economic impacts of COVID-19 as our team works to drive competition, foster a culture of impact and innovation, support the business community, and ensure that life and work in Metro Denver are thriving.

- Energy & Natural Resources Report -

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ENERGY & NATURAL RESOURCES

INDUSTRY
snapshot
(U.S. DATA IN PARENTHESES)

Companies	Average Wage	*Emp. Ranking
7,620	\$100,200	10 *Employment Concentration Ranking

Direct Employment:
92,600

Direct Employment Concentration (2019):
3.0% (2.5%)

5-Year Employment Growth (2014-2019):
6.4% (-0.9%)

1-Year Employment Growth (2019):
1.3% (1.9%)

Industry Overview

Colorado is resource rich from traditional oil and gas to a variety of other natural resources from minerals to water. In recent years, the state has also grown its renewable portfolio in solar and wind along with battery storage becoming more prevalent. Because of this vast array of resources, Colorado is also home to many federal research labs, resource experts and strong environmental consultants. Companies in the state's energy and natural resources cluster contribute over \$26 billion in Gross Domestic Product (GDP) to Colorado's economy, or 7.4% of the total. State and local governments also benefit from taxes on energy production. According to the Colorado Office of State Planning and Budgeting, severance tax collections, or taxes collected from natural resources that are severed or removed from the Earth, totaled \$255.2 million in fiscal year 2018-19.

Cluster Definition

The energy and natural resources industry cluster consists of 97, six-digit North American Industry Classification System (NAICS) codes including companies comprised of natural resources, power generation and distribution, renewable resources, and intellectual resources. This definition allows for a comparative analysis of Colorado's energy and natural resources cluster relative to other states.

Cluster Job Growth

- Colorado's energy and natural resources cluster added jobs for the third-consecutive year in 2019, increasing 1.3% between 2018 and 2019.
- With about 92,600 employees in more than 7,620 companies, the energy and natural resources cluster employed 3% of the state's total employment base.
- The state ranked 11th out of the 50 states in energy and natural resources employment concentration in 2019 and ranked among the top 10 states for total employment in the cluster.
- Over the past five years, energy and natural resources employment grew 6.4%, compared with a 0.9% decline nationwide.
- Between 2014 and 2019, the state's energy and natural resources cluster added 5,550 jobs and nearly 1,870 companies.
- Natural resources represents the largest share of employment in the cluster (50.5%), followed by intellectual resources (26.3%), power generation and distribution (14.7%), and renewable resources (8.5%).
- Three of the four subclusters posted employment increases between 2018 and 2019, while natural resources was the only subcluster to post a decline.

Major Industry Investments, Expansions & Milestones

Natural Resources

Fossil fuels dominate the natural resource development in Colorado but coal and nonfuel minerals still have strong production. Many of the top independent oil and gas companies have Denver headquarters including Antero Resources, Cimarex Energy, Ovintiv, and BPX Energy although they have limited to no active operations in Colorado. While other major operators like Noble and Oxy continue to maintain large employee operations as the largest Colorado oil producers mainly in the DJ Basin.

- Oxy completed a purchase of Anadarko Petroleum in 2019 with a \$10 billion investment from Warren Buffet.
- Major midstream operator, DCP Midstream (also headquartered in downtown Denver) launched an industry-leading innovation and digital transformation program and ranks 320 on the Fortune 500.
- Metro Denver’s easy access to major development basins in North Dakota and West Texas, quality business support services and highly rated quality of life continue to support a strong resource community.
- Denver-based Crestone Peak Resources will purchase 97,000 acres of oil and gas lease territory in Adams and Arapahoe counties and the city of Aurora from Conoco, nearly tripling the company’s size. Crestone Peak Resources produces oil from wells on 51,000 acres north of Metro Denver.
- PDC Energy and SRC Energy Inc. agreed to merge, which will create the second-largest Weld County oil and gas operator.

Mining

A large concentration of global experts in mining are based in Colorado along with several producers. Colorado School of Mines in Golden consistently ranks as a top school for mineral and mining engineering.

- The U.S. Department of Interior approved a 1,720-acre expansion of the underground West Elk coal mine near Somerset, Colorado. The expansion includes 10 million tons of federal coal and adds two years to the life of the mine.
- Newmont Mining Co., based in Englewood, acquired Canada-based Goldcorp, making it the world’s largest producer of gold. The newly formed company is called Newmont Goldcorp.

- Molybdenum production by Freeport McMoRan in Clear Creek and Lake counties delivers a \$187.3 million impact to the state and makes Colorado first in U.S. production.



Locally, the gold mine in Teller County ranks Colorado in the top five for U.S. gold production.

Renewable Resources

Colorado continues to attract renewable and alternative energy innovators. The proximity to both world-class universities and federal labs ensures a strong employment pipeline.

- Sunrun, a major residential solar company, expanded its downtown Denver offices with the opening of its new 188,000-square-foot space and plans to increase its workforce to more than 800.
- Vestas-America Wind Technology will add 300 jobs at its four Colorado factories, including about 200 jobs at its Brighton facility to meet the increasing demand for wind turbines.
- Boulder-based renewable energy startup Catalyze received a \$4.6 million investment to expand its operations, finance, and sales teams to deliver renewable energy data analytics to the industry.
- Leeward Renewable Energy Development LLC plans to build a new wind farm in Weld County in 2020 that will generate as much as 380 MW of electrical power.

Power Generation and Distribution

Xcel Energy is the power utility for the majority of Colorado’s population while Black Hills Energy serves the Pueblo area. But there are also 29 municipal utilities and 22 rural electric cooperatives which serve the remainder of the state. In addition, Tri-State Generation and Transmission is headquartered in Westminster serving 43 cooperatives in four states with wholesale power. The

federal agency that manages hydropower in 11 states, Western Area Power Authority, is also based in Lakewood.

- Platte River Power Authority partnered with GCL New Energy and DEPCOM Power to install 20 megawatts (MW) of new solar power capacity at its Rawhide Energy Station north of Fort Collins.
- Tri-State Generation and Transmission Association will add its fifth utility-scale wind farm in eastern Colorado. Nearly one-third of Tri-State’s power is generated from renewable sources.
- Xcel Energy will complete the Cheyenne Ridge Wind Project in northeast Colorado by the end of 2020. The 100,000-acre project will be the second-largest single-phase wind project in Colorado.
- Colorado based Guzman Energy continues to disrupt the wholesale power market by supplying several western cooperatives. In 2019, Guzman and Holy Cross Energy signed an agreement with NGC Partners to develop a 150MW wind farm in Lincoln County.

Intellectual Resources

Colorado has one of the highest per capital concentrations of federal science, research and engineering facilities in the U.S. including 33 federally funded research facilities and top ranked universities. In 2016, the federal facilities had an estimated \$2.6 billion impact to the state’s economy and supported more than 7,600 direct jobs. The National Renewable Energy Lab (NREL) in Golden had an estimated an impact of nearly \$748 million on Colorado’s economy in fiscal year 2017 and employed 1,745 employees.

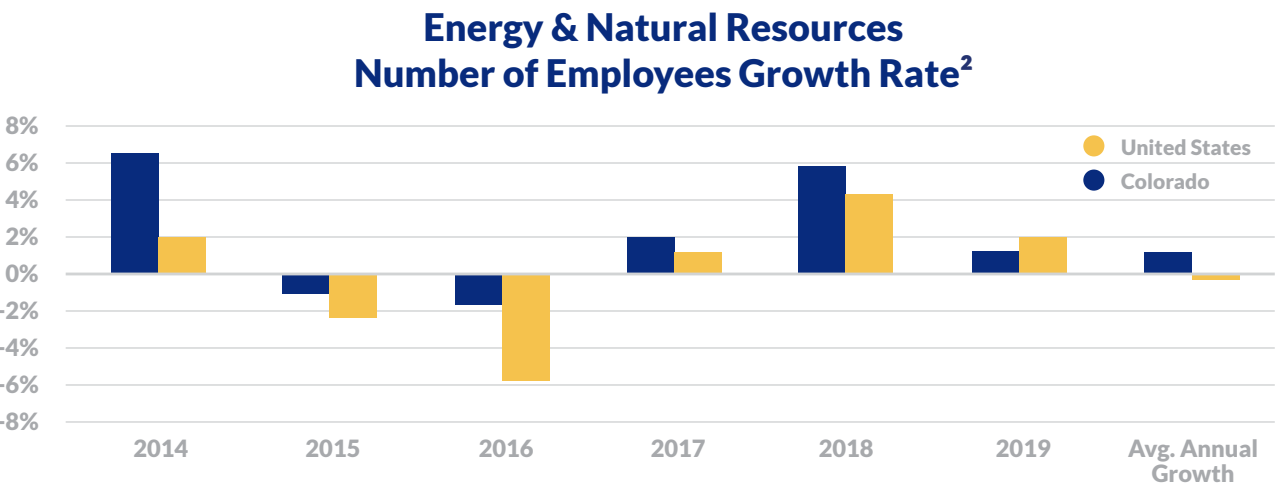
- In partnership with Hewlett Packard Enterprise (HPE), NREL became home to the world’s largest supercomputer dedicated to energy efficiency and renewable energy research and development.
- A new \$100 million agreement between ExxonMobil and NREL is the largest single investment in research at NREL and will focus on transformative advanced energy technologies with a focus on reducing emissions.



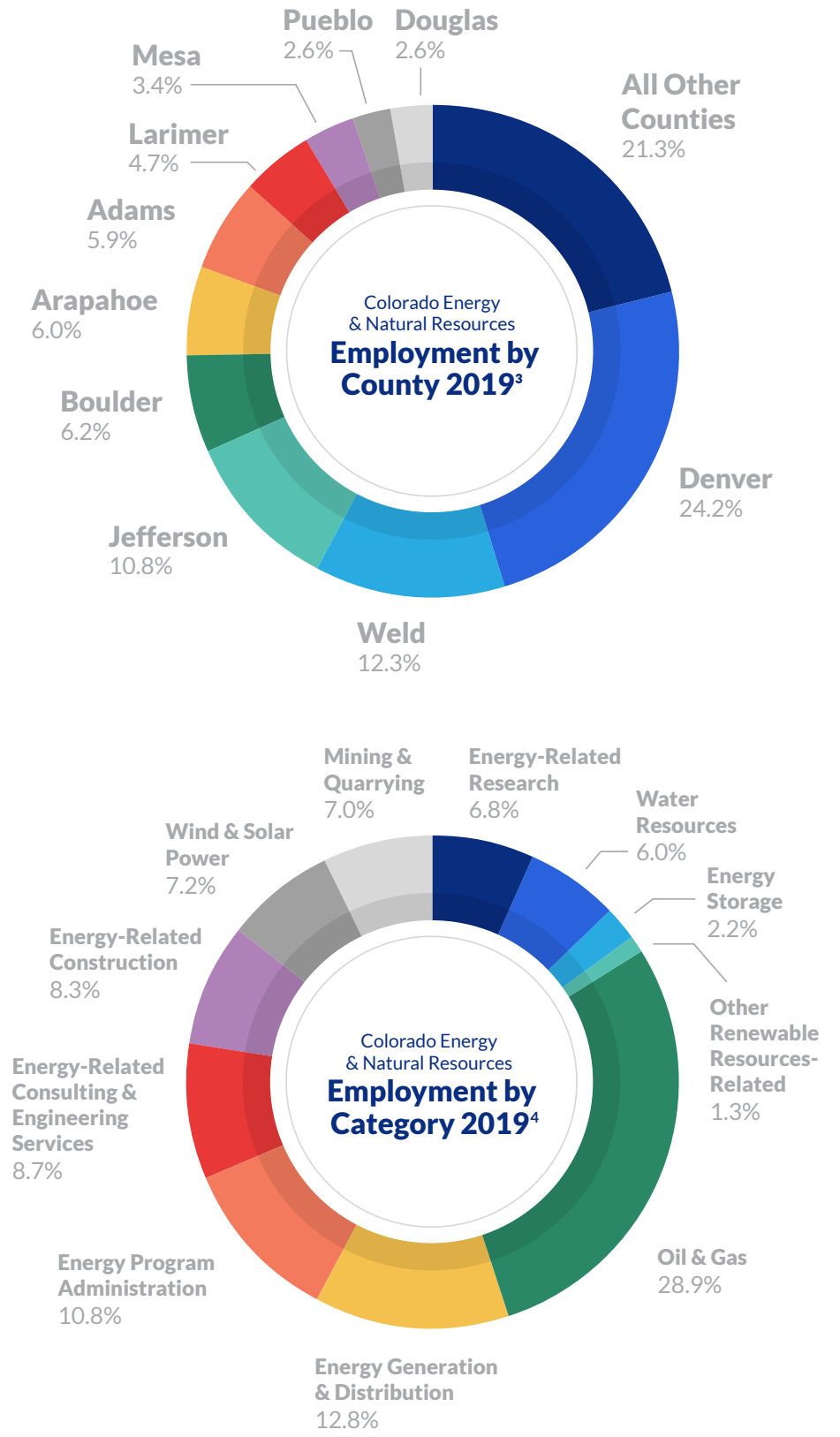
Energy & Natural Resources Economic Profile

The energy and natural resources industry cluster consists of 97, six-digit North American Industry Classification System (NAICS) codes including companies comprised of natural resources, power generation and distribution, renewable resources, and intellectual resources.

Energy & Natural Resources Employment and Company Profile 2019 ¹		
	Colorado	USA
Direct employment, 2019	92,600	4,206,080
Number of direct companies, 2019	7,620	195,670
One-year direct employment growth, 2018-2019	1.3%	1.9%
Five-year direct employment growth, 2014-2019	6.4%	-0.9%
Avg. annual direct employment growth, 2014-2019	1.2%	-0.2%
Direct employment concentration	3.0%	2.5%
% of companies with <10 employees	80.5%	74.7%



¹ Dun & Bradstreet, Inc., Hoover's Online Database; Market Analysis Profile, 2014-2019; Development Research Partners.
² Dun & Bradstreet, Inc., Hoover's Online Database; Market Analysis Profile, 2014-2019.
³ Market Analysis Profile, 2019; Development Research Partners.



⁴ Market Analysis Profile, 2019; Development Research Partners.
⁵ Direct employment rank based on the number of employees in the industry cluster in a state. Employment concentration rank based on the direct cluster employment in a state expressed as a percent of total employment in all industries in the same state. Rankings are for the 50 states. No multiplier effects are included. 1st = highest for both rankings.

10th

Energy & natural resources direct employment

11th

Energy & natural resources direct employment concentration

Colorado
RANKINGS⁶

Natural
Resources

7th

direct
employment
rank

11th

direct
employment
concentration
rank

Power Generation
& Distribution

22nd

direct
employment
rank

30th

direct
employment
concentration
rank

Renewable
Resources

5th

direct
employment
rank

2nd

direct
employment
concentration
rank

Intellectual
Resources

11th

direct
employment
rank

6th

direct
employment
concentration
rank

Economic Profiles

The energy and natural resources cluster is divided into four subclusters: (1) natural resources, (2) power generation and distribution, (3) renewable resources, and (4) intellectual resources.

Natural Resources includes companies that extract naturally occurring minerals, liquids, gases, and solids used to produce energy; mining machinery manufacturers and companies that provide mining, exploration, and related support services; companies involved in mining metallic and nonmetallic minerals, and companies that manage water resources, and improve the use, quality, and flow of water. The natural resources subcluster consists of 51, six-digit NAICS codes.

Power generation and distribution includes companies that provide generation, transmission, distribution, and storage of energy resources. The power generation and distribution subcluster consists of 19, six-digit NAICS codes.

Renewable resources includes companies that produce energy from wind, solar, biomass, fuel cells, green transportation, and hydroelectric resources and companies that manufacture renewable energy equipment. The renewable resources subcluster consists of 18, six-digit NAICS codes.

Intellectual resources companies provide laboratory testing, scientific and technical consulting services, engineering services, and institutional research related to energy and natural resources. Federal laboratories and firms that provide energy and natural resources-related program administration are also included. The intellectual resources subcluster consists of nine, six-digit NAICS codes.

⁶ Direct employment rank based on the number of employees in the industry cluster in a state. Employment concentration rank based on the direct cluster employment in a state expressed as a percent of total employment in all industries in the same state. Rankings are for the 50 states. No multiplier effects are included. 1st = highest for both rankings.

⁷ Dun & Bradstreet, Inc., Hoover's Online Database; Market Analysis Profile, 2014-2019; Development Research Partners.



Energy & Natural Resources Subcluster
Employment and Company Profile, 2019⁷

	Natural Resources		Power Generation & Distribution		Renewable Resources		Intellectual Resources	
	CO	USA	CO	USA	CO	USA	CO	USA
Direct employment, 2019	46,750	1,942,710	13,650	1,312,440	7,830	121,390	24,370	829,540
Number of direct companies, 2019	3,380	97,580	1,230	25,950	280	8,410	2,740	63,730
One-year direct employment growth, 2018-2019	-1.3%	4.6%	1.0%	-0.5%	6.0%	-1.0%	5.0%	0.2%
Five-year direct employment growth, 2014-2019	-3.8%	-4.3%	2.8%	-0.4%	56.1%	-0.7%	20.9%	7.0%
Avg. annual direct employment growth, 2014-2019	-0.8%	-0.9%	0.5%	-0.1%	9.3%	-0.1%	3.9%	1.4%
Direct employment concentration	1.5%	1.2%	0.4%	0.8%	0.3%	0.1%	0.8%	0.5%

Industry Infrastructure



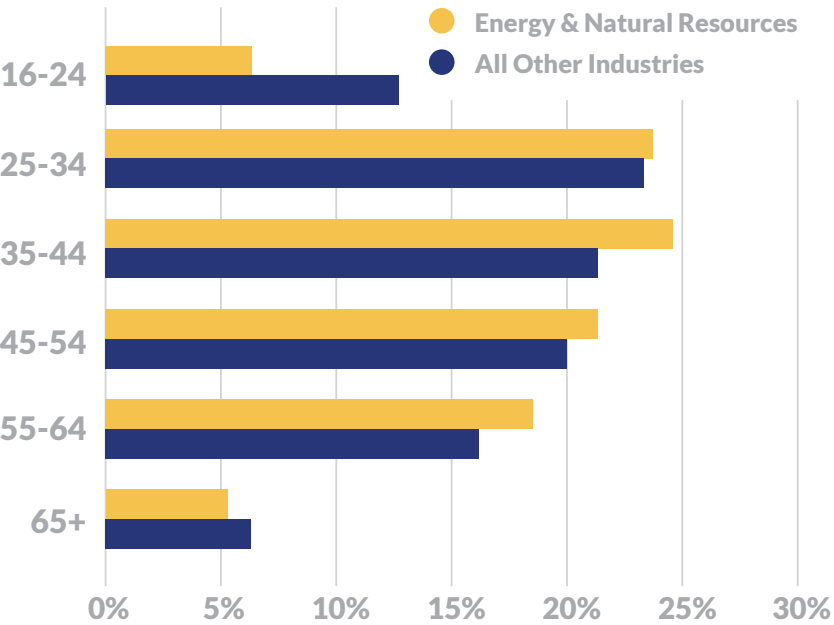
Energy & Natural Resources Workforce Profile

- Colorado has a high concentration of energy and natural resources employment, with nearly 92,600 workers statewide. The demand for top jobs in energy and natural resources continues to grow.
- According to the 2019 U.S. Energy and Employment Report, energy-related employers in Colorado expect to add jobs at a faster pace than the U.S.
- Colorado ranked third in the nation for wind industry employment, according to the American Wind Energy Association.
- The Solar Foundation's Solar Jobs Census 2018 ranked Colorado eighth among the 50 states for solar employment and ranked eighth for solar jobs per capita.
- The U.S. Bureau of Labor Statistics reported Colorado is among the top 5 states with the highest employment levels in mining and geological engineers and roustabouts, among others.

Age Distribution

- There is a larger share of employees in this cluster between the ages of 35 and 64 years old (64.6%), compared with the age distribution across all industries in the state (57.6%).
- The largest share of workers in the energy and natural resources cluster were between the ages of 35 and 44 years old.

Colorado's Distribution of Employment by Age ⁸



⁸ Provided by Arapahoe/Douglas Works!; QCEW Employees, Non-QCEW Employees, & Self Employed - EMSI 2019.3 Class of Worker.
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Wages

- The 2018 average annual salary for workers in the energy and natural resources cluster was \$100,200 in the state, compared with the national average of \$94,100.
- The average starting salary for workers in the energy and natural resources cluster was \$44,220 in the state, compared with \$35,540 across all industries.
- Total payroll exceeded \$9.1 billion in 2018.

Occupation & Salary Profile

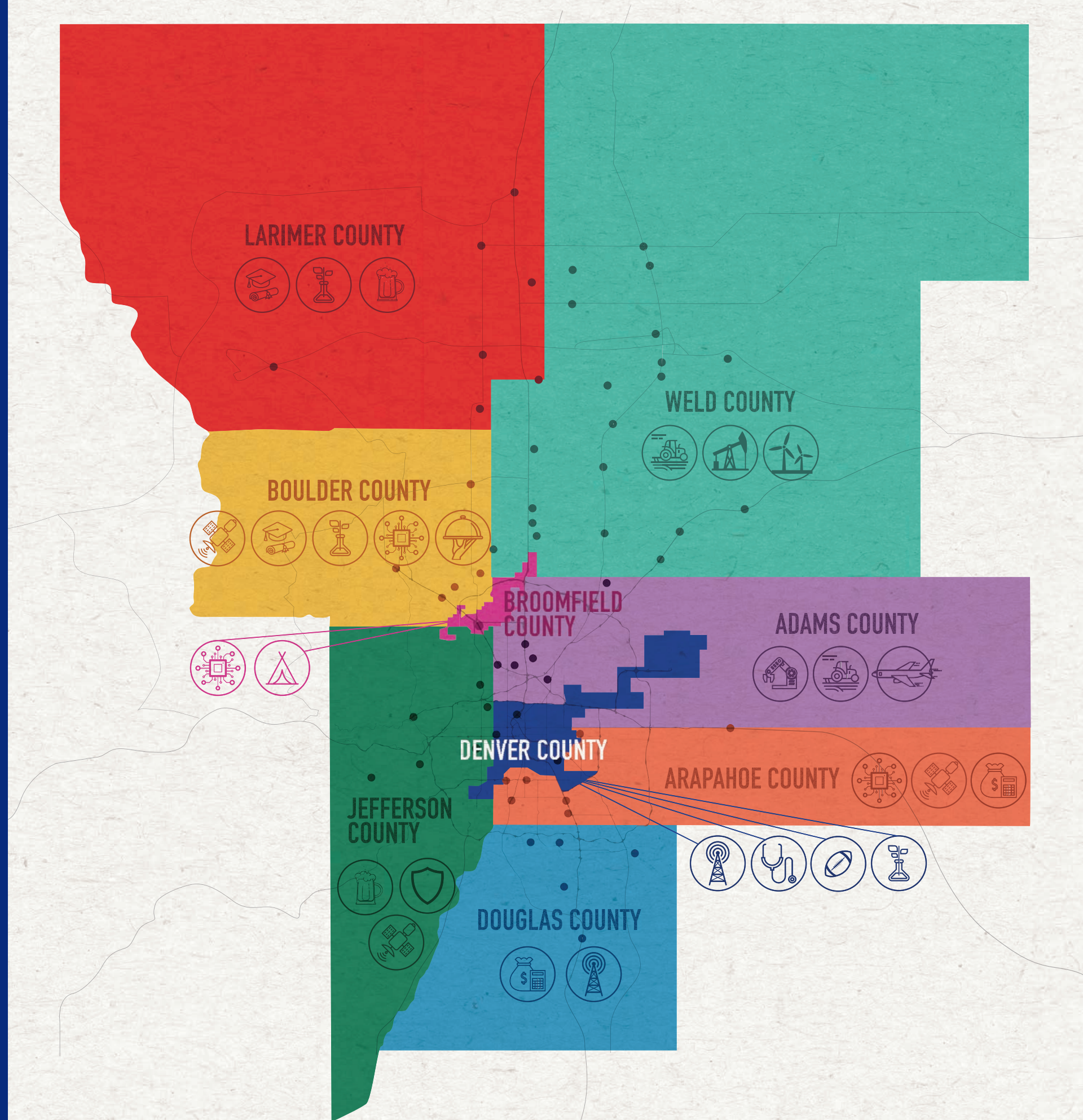
The Occupation & Salary Profile below includes the 10 largest energy and natural resources occupations in the state. For these 10 largest occupations, the chart details the total number of workers employed in that occupation across all industries, the number of available applicants that would like to be working in that occupation, the number of recent graduates that are qualified for that occupation, and the median and sample percentile annual salaries.

Colorado Energy & Natural Resources Occupation & Salary Profile, 2019 ⁹								
10 Largest Energy & Natural Resources Occupations in Colorado	Total Working Across All Industries (2019)	Number of Available Applicants (2019)	Number of Graduates (2018)	Median Salary	10th Percentile Salary	25th Percentile Salary	75th Percentile Salary	90th Percentile Salary
1. Electricians	17,157	474	152	\$54,263	\$32,704	\$40,880	\$67,112	\$79,542
2. Business operations specialists, all other	45,454	1,255	53	\$74,865	\$42,856	\$55,482	\$99,662	\$128,358
3. Plumbers, pipefitters, & steamfitters	12,187	336	81	\$51,140	\$31,895	\$39,026	\$62,727	\$77,666
4. Construction laborers	30,264	835	13	\$34,426	\$21,467	\$26,016	\$42,790	\$52,571
5. Civil engineers	11,388	314	417	\$86,919	\$54,161	\$66,982	\$114,563	\$143,976
6. First-line supervisors of construction trades & extraction workers	18,888	521	552	\$67,239	\$41,594	\$52,213	\$85,734	\$105,980
7. Heating, air conditioning, refrigeration mechanics & installers	7,082	195	316	\$50,903	\$31,763	\$37,804	\$62,670	\$78,227
8. Operating engineers & other construction equipment operators	11,999	331	88	\$49,376	\$34,132	\$41,500	\$58,351	\$64,387
9. General & operations managers	41,968	1,158	9,969	\$106,536	\$45,842	\$67,063	\$169,521	\$245,361
10. Office clerks, general	52,360	1,445	0	\$38,283	\$23,483	\$29,445	\$49,291	\$62,230

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.



Metro Denver Industry Map



Notable Rankings

#1

In 2019, U.S. News and World Report ranked Colorado as the top state economy in the United States for the third year in a row.

#1

Moody Analytics and The Wall Street Journal ranked Colorado the top state in the country for labor force participation.

#1

According to the National Endowment for the Arts in 2019, Metro Denver ranked first with 76.8% attendance at performing arts events.

#1

In 2020, the Brookings Institution's Metro Monitor named Metro Denver the top U.S. region for growth, prosperity and inclusion.

#2

In 2019, U.S. News & World Report ranked Denver, our capital city, the second-best place to live in the United States of 125 cities across the country.

#2

Colorado is home to the nation's second most highly-educated workforce with 41% of our population boasting a bachelor's degree or higher.

#2

The Miliken Institute placed Colorado second on its 2018 State Technology & Science Index.

#3

Denver ranked third among the nation's top markets for jobs, according to the Wall Street Journal.

#3

Colorado ranked third on a new list of the "10 Best States for Entrepreneurs and Startups", according to The Motley Fool.

#4

Forbes named Metro Denver as the country's fourth best place for business and careers – and has ranked in the top five for five consecutive years.

#4

Colorado has the fourth highest concentration of high-tech workers according to Cyberstates 2019.

#5

According to Wallet Hub, Colorado is the nation's fifth most innovative state.



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