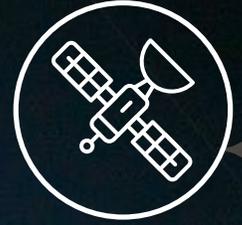




MetroDenverEDC



2023 INDUSTRY CLUSTER STUDY

# AEROSPACE

METRODENVER.ORG

## ABOUT



MetroDenverEDC

The Metro Denver Economic Development Corporation (Metro Denver EDC) is the nation's first regional economic development entity, bringing together the entire nine-county Metro Denver and Northern Colorado region to promote and support the mutual growth of our region's talent and businesses, while also recruiting new talent and new business to join us living a prosperous and elevated life.

Metro Denver is a region on the rise, fueled by the passion of changemakers and boundary breakers that are in it for the long haul. With a culture that's always moving forward, the companies that call this community home are poised to make a real impact - one that goes beyond their own four walls - as we work together to build the best possible future for our region.

As part of the Metro Denver EDC brain trust, our 250+ investors get unmatched access to the decisions, directions and collaboration opportunities that are transforming the landscape of our economy, region and communities.

Join us to make your voice heard, collaborate with the region's top business executives, and be part of leading the changes you want to see happen.



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# THE PERFECT ATMOSPHERE FOR SPACE

**The fact that Colorado is a mile closer to space is only part of the story.**

Supported by an unparalleled concentration of military, commercial and academic space assets, Colorado boasts the second largest space economy in the U.S. It's a unique and largely unmatched ecosystem of space and advanced industry that is driven by a collaborative community of innovators and one of the nation's most educated talent pools.

From major U.S. Department of Defense (DoD) installations to National Aeronautics & Space Administration (NASA) research and development activities, from leaders in space innovation and technology to some of the world's top aerospace research universities.

Our abundance of high-tech companies are developing viable, cutting-edge technologies in fields such as renewable energy, cyber and quantum. And our dynamic atmosphere for business growth is made even stronger by cross- supporting sectors.

The state's strategic location in the center of the country provides one-bounce satellite communications to Europe and Asia in the same business day. Denver International Airport (DEN) serves as a global gateway for Colorado and surrounding states – offering companies and talent in the area non-stop service to almost 200 destinations across 13 countries, including Belize, Canada, Bahamas, Cayman Islands, Costa Rica, United Kingdom, France, Germany, Switzerland, Iceland, Japan, Mexico and Panama.

In Colorado, you'll be part of a high- powered, cohesive space industry in a location that also happens to be a great place to live. In an atmosphere like this, it's no wonder that aerospace companies thrive and prosper at 5,280 feet.

## COLORADO—THE PERFECT ATMOSPHERE FOR AEROSPACE



in the U.S.  
for private  
aerospace  
employment  
concentration



in the U.S.  
for private  
aerospace  
employment



highest on the  
state science  
and technology  
index



highest in  
the U.S. for  
concentration  
of trained  
engineers



# CONTRACTORS & SUPPLIERS

Built upon a legacy of space leadership, Colorado is home to a high concentration of major space contractors. Nine of the nation's top aerospace companies have significant operations in the state. More than 500 companies and suppliers provide space-related products and services in the state. Coupled with a highly robust and ever-growing cluster of smaller aerospace businesses, this collection of programs, missions and assets make Colorado the best place to lead, defend, and innovate in aerospace.

Serving commercial, military, and civil space applications, Colorado's vibrant and collaborative aerospace ecosystem leads in delivering cutting-edge technology and services in fields such as earth observation, remote sensing, space exploration, human spaceflight, and products. Colorado companies also produce planetary spacecraft and launch systems – offering everything from research and development to launch and mission support.

Whether it's pushing the boundaries of space exploration, defending the nation and our allies, or expanding our understanding of Earth and its environment, Colorado aerospace companies are developing solutions for some of the most challenging questions and issues.



## A DYNAMIC INDUSTRY WITH SIGNIFICANT ECONOMIC IMPACT

The aerospace industry is a crucial driver of Colorado's economic growth – spanning four metro areas and at least eight rural counties. The state ranks first in the United States for our high concentration of private aerospace jobs, with more than 37,000 private jobs and \$12.7 billion in total output.

Colorado has seen aerospace employment grow by an unprecedented 32.5% over the past five years, outpacing nationwide growth by over 15 percentage points. The state's unique convergence of aerospace and other high-tech industries, such as cyber security, information technology, and clean energy, provides further opportunities for innovation, collaboration, and growth.

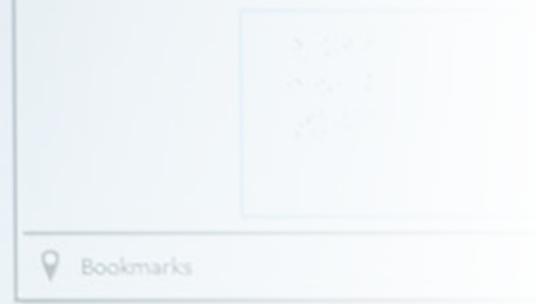
Colorado is a hub of entrepreneurial space activity, advancements in space technology and new means of financing are driving a flurry of investor interest in Colorado. The combination of increased funding and an innovative ecosystem make Colorado a leading location for space startup activity, and a growing number of global space startups are choosing Colorado to establish their footprint in the U.S.



$$\frac{\partial \rho}{\partial t} + \frac{\partial}{\partial x} (\rho u) = 0$$

$$\frac{\partial u}{\partial t} + u \frac{\partial u}{\partial x} = -\frac{1}{\rho} \frac{\partial p}{\partial x}$$

$$\frac{\partial}{\partial t} \left( \frac{p}{\rho^\gamma} \right) + u \frac{\partial}{\partial x} \left( \frac{p}{\rho^\gamma} \right)$$



# A CENTER OF GRAVITY FOR AEROSPACE TALENT

**Dedicated to developing a skilled workforce for today and tomorrow.**

Colorado has the nation's second most highly educated workforce, and our universities and research centers are leading the charge to educate the next generation of aerospace talent.

The **University of Colorado Boulder** receives more NASA funding than any other public university and is a leader in training astronauts and providing a pipeline of qualified aerospace workers.

**Metropolitan State University of Denver** is revolutionizing aviation and aerospace education by housing multiple disciplines to meet the workforce needs of both industries. York Space Systems partnered with MSU Denver to move its headquarters, establishing a new manufacturing facility and Mission Operations Center on the campus.

**The Colorado Space Grant Consortium** includes 21 universities and institutions throughout the state that provide students access to space through innovative courses, real-world hands-on telescope and satellite programs, and interactive outreach programs.

The **Colorado School of Mines' Space Resources Program** is the world's first multi-disciplinary graduate program focused on educating scientists, engineers, economists, entrepreneurs, and policy makers in the developing field of space resources.

The **University of Colorado Colorado Springs (UCCS)** is designated as the Space Education Consortium's lead university to educate the nation's future aerospace workforce.

The **Space Foundation's Center for Innovation & Education**, based in Colorado Springs, provides a global learning platform for qualified individuals looking to work in the space industry.

# WORLD CLASS RESEARCH INSTITUTIONS AND LABORATORIES

Colorado's leading research institutions and more than 30 federal laboratories make significant contributions to the state's dynamic innovation economy.

The **National Oceanic and Atmospheric Administration (NOAA)**, the **University Corporation for Atmospheric Research (UCAR)**, and the **National Center for Atmospheric Research (NCAR)**, located in Boulder, conduct research in atmospheric and related sciences, including exploring and monitoring worldwide weather, climate, the space environment and ocean resources.

A proven training ground for future space scientists and engineers, the **Laboratory for Atmospheric & Space Physics (LASP)** at the University of Colorado Boulder is the only university-based institution in the world to have designed and built space instruments for NASA that have been launched to every planet in the solar system.

Colorado State University's **Cooperative Institute for Research in the Atmosphere (CIARA)** partners with **National Oceanic and Atmospheric Administration (NOAA)** to provide global climate research, satellite observations and air quality measurements.

The National Science Foundation and the Association of Universities for Research in Astronomy selected the University of Colorado Boulder to house the **National Solar Observatory (NSO)** headquarters - adding scientists, engineers and administration staff to manage all data analysis and instrument development.

The **National Institute of Standards and Technology (NIST)** in Boulder promotes U.S. innovation and industrial competitiveness by advancing measurement science, standards and technology.

The **Cooperative Institute for Research in Environmental Sciences (CIRES)** is a cooperative institute between NOAA and the University of Colorado Boulder that conducts research in Earth system science, including environmental chemistry and biology, atmospheric and climate dynamics, and the solar-terrestrial environment.

Colorado has the largest portfolio of research supported by the **National Science Foundation's Geosciences Division**, with more than \$1.6 billion in active awards.



# WHERE ENTREPRENEURIAL SPACE ACTIVITY THRIVE

Colorado's aerospace industry is propelled by a community of innovators with access to multiple programs designed to support business growth, accelerate commercialization and increase access to market.

The **Colorado Office of Economic Development and International Trade (OEDIT)**'s Advanced Industries Accelerator (AIA) Programs support key industries in Colorado, including aerospace, 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. Since the AIA Program's inception, OEDIT has awarded more than \$14 million in grants to advance aerospace companies and infrastructure projects.

The **Catalyst Campus for Technology & Innovation** in Colorado Springs creates a centralized ecosystem to promote industry, education and venture capital for industries such as aerospace, defense and homeland security, electronics, technology and information, and advanced manufacturing.

With more than a dozen aerospace related units on campus, the University of Colorado Boulder's **AeroSpace Ventures** brings together the University's institutes, centers, government laboratories, and industry partners to develop new technologies focusing on unmanned aircraft, small satellites, as well as Earth and space sensors.

ADAPT, the **Alliance for the Development of Additive Processing Technologies**, is a Colorado industry-academic- government consortium, focused on helping members become global leaders in metal additive manufacturing by addressing data-driven challenges.

The University of Colorado Boulder is a core member of the **Federal Aviation Administration's Center of Excellence for Commercial Space Transportation**. The Center brings together government, industry, and academic institutions to focus on commercial human space flight, space commerce, space launch operations and traffic management, and launch vehicle systems.

The **National Security Innovation Network (NSIN)** is a U.S. DoD program office that collaborates with partners from major research universities and the venture community to provide solutions to real-world warfighter problems. NSIN's Rocky Mountain Region office, located in Colorado, offers programs and services that facilitate catalytic collisions between military innovators and non-traditional problem-solvers.



Loveland-based, **The Warehouse**, is NASA's first business accelerator partner under its Adopt-An-Accelerator program offering select clients the opportunity to receive up to 40 hours of NASA consulting and assistance in developing technology and solving problems.

## INNOVATION AT ALTITUDE

Opened in 2014, the U.S. Patent and Trademark Office (USPTO) in Denver was the first to begin operations in the western U.S. The USPTO chose Denver because the region has one of the highest concentrations of people with science and technology degrees, has relatively low living costs, and is a desirable location in which to retain the most talented workers. Colorado ranked tenth in the number of patents issued per one million people in 2020, and the USPTO's satellite location in Denver continues to expand Colorado's enviable high-tech and innovation economy.

More than 60% of Colorado aerospace companies employ fewer than 10 people, reflecting the state's entrepreneurial and innovative business culture. Cutting-edge technology characterizes Colorado's economic base, and the state ranks third in the nation for high-tech employment concentration.

# INCENTIVES TO ADVANCE YOUR AEROSPACE BUSINESS

Colorado is a forward-thinking state with an entrepreneurial business climate. Key collaborations between the public and private sectors help aerospace companies win contracts and grow their business.

- » The Job Growth Incentive Tax Credit allows companies to apply to the Colorado Economic Development Commission (EDC) for a state income tax credit based on the payroll tax cost from creating new jobs. To qualify, companies must create at least 20 new jobs in the region and pay wages above the local average. If approved by the EDC, the company is credited half of the amount it paid in federal Social Security and Medicare taxes on the jobs created, about 3.8% of each job's annual wage.
- » Colorado has 16 Procurement Technical Assistance Centers located throughout the state to help businesses compete for military and other funding.
- » Colorado has enacted legislation creating a Sales and Use Tax Exemption for qualified property used in space flight.
- » To further pave the way for Colorado Air and Space Port, the state passed legislation to help expand the state's aerospace economy by limiting liability for public and private entities holding a Federal Aviation Administration license for spaceflight activities.
- » 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 aerospace.
- » Colorado has enacted Reciprocal Licensure legislation that enables spouses of active-duty military personnel stationed in Colorado to obtain temporary licenses for any profession or occupation under the purview of the Colorado Division of Professions and Occupations if they hold credentials in good standing from another U.S. state or territory and meet certain other requirements.

# A COMPETITIVE BUSINESS FRIENDLY STATE

Key collaborations between the public and private sectors help aerospace companies win contracts and grow their business.

- » Along with few regulatory barriers, Colorado has one of the nation's lowest corporate income tax rates – a flat 4.55%.
- » Colorado offers single-factor tax apportionment, which

assesses taxes on a company's sales in the state only.

- » Colorado assesses a flat tax of 4.55% of an individual's federal taxable income, one of just nine states having a single-rate tax structure. The state sales tax rate of 2.9% is the lowest of the states that levy a sales tax.
- » Colorado has a liberal "water's edge" system of unitary taxation rather than a "worldwide" one. Specifically, foreign corporations, as well as "80/20" corporations (corporations with 80% of their property and payroll outside the U.S.) are not included in a Colorado income tax return. Corporations doing business in Colorado, as well as other states, must apportion to Colorado that part of their net income derived from sources within the state.

# SUPPORT FROM STATE LEADERSHIP

Colorado's state leadership is actively engaged in efforts to expand the aerospace industry. Colorado's congressional delegation works to provide a long-term, coordinated and unified approach to ensure continued investment in academic, military, and commercial aerospace infrastructure.

Since 2013, Colorado has appointed an Aerospace and Defense leader within the Colorado Office of Economic Development and International Trade, the organization that oversees implementation of the state's aerospace strategic plan and assists aerospace businesses, defense installations and research institutions to establish information networks with both government and the private sector.

Colorado Lieutenant Governor Dianne Primavera serves as Co-Chair of the Colorado Space Coalition and National Chair of the Aerospace States Association (ASA). ASA is an organization of state Lieutenant Governors, Governor appointed delegates and associate members representing states' interests in federal aerospace and aviation policy development.



In 2015, the Colorado legislature formed a bipartisan Aerospace and Defense Caucus to further support the continued expansion of these industries within the state. In addition, Aerospace Day at the Colorado Capitol takes place annually to recognize the industry's importance to the state's economic growth and celebrate the outstanding Contributions Colorado makes in all fields of aerospace.

## AN EXCEPTIONAL ENVIRONMENT THAT ATTRACTS & RETAINS QUALITY WORKERS

Colorado has all of the amenities that both attract and retain a highly educated, productive workforce, including nearly 300 days of sunshine annually and unparalleled access to outdoor recreation. Other vital statistics include high marks for wellbeing as well as having one of the nation's highest rates of physical activity and the lowest obesity rate.

Colorado's aerospace community reflects a workforce that is goal-oriented and ambitious, who constantly rise to the challenge of exploring further, innovating faster and inventing new ways forward.



## ABOUT THE COLORADO SPACE COALITION

The Colorado Space Coalition (CSC), a group of industry stakeholders, works to make Colorado a center of excellence for space.

Coalition members—including aerospace companies, research institutions, academic organizations, and economic development groups—promote Colorado's significant aerospace assets nationally, as well as advance legislation vital to industry growth and success.

Together they span the entire state, representing diverse backgrounds, but united goals.

The CSC focuses on the following initiatives to expand Colorado's position as the nation's second-largest aerospace economy:

- » Recruit new companies and expand existing aerospace employment in the state.
- » Market and promote Colorado's space industry.
- » Provide support for Colorado's military, commercial, and civilian space assets.

- » Maintain an advisory dialogue with Colorado's congressional delegation and state leadership on key aerospace issues.
- » Expand networking and collaboration among the state's space companies.
- » Grow the state's aerospace workforce.
- » Support funding for science, technology, engineering, and mathematics (STEM) education in Colorado.

The CSC is an industry affiliate of the Metro Denver Economic Development Corporation. The state's largest, privately funded economic development authority, the Metro Denver EDC works to "future-proof" 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 Colorado Office of Economic Development and International Trade is a financial contributor to the CSC's marketing initiatives.



## ABOUT ASA COLORADO

The Colorado Chapter of the Aerospace States Association is comprised of the Colorado Space Coalition, the Colorado Space Business Roundtable, and the Colorado Chapter of Citizens for Space Exploration. The partnership collaborates on industry events, outreach, and advocacy efforts.



## 2023 INDUSTRY CLUSTER SCAN

# AEROSPACE

By The Numbers

## INDUSTRY SNAPSHOT

US NUMBERS  
IN PARENTHESIS



COMPANIES: 350  
AVERAGE WAGE: \$135,550  
EMPLOYEE RANKING: 1

Direct Employment: 36,870

Direct Employment Concentration (2022): 1.3% (0.3%)

5-Year Employment Growth (2017 - 2022): 32.5% (15.1%)

1-Year Employment Growth (2022): 5.8% (0.6%)

# INDUSTRY OVERVIEW

Colorado is a global epicenter for the Aerospace cluster, with nearly 350 aerospace companies that have generated 37,000 private jobs and \$12.7 billion in total output. Colorado's aerospace industry is a strong economic driver and represents a vibrant ecosystem covering the full spectrum of aerospace activities including national security operations at military bases, development of technological capabilities by large industry and entrepreneurs, research, and workforce development at the state's educational institutions. Colorado has the highest concentration of aerospace employees among the 50 states and is five-times more concentrated than the national average. The state has the second-largest space economy in the United States, behind California.

Employment growth in Colorado's Aerospace cluster rose 5.8% in 2022 and increased 32.5% over the past five years. Since 2000, the state's Aerospace cluster has expanded almost two-fold, adding 17,000 workers over this period. In total, the 67,420 private and military workers in the Aerospace cluster support an additional 184,560 workers in all industries throughout Colorado, bringing direct and indirect employment supported by the Aerospace cluster to 251,980 workers.

Colorado's space economy spans the state's seven metropolitan statistical areas and at least seven rural counties, but is heavily concentrated in the nine-county Metro Denver and Northern Colorado region. The region's 29,540 private sector aerospace workers represent 80.1% of all aerospace workers in Colorado. The region is home to nearly 240 companies, representing 68.4% of the state's total aerospace companies.

2022 was a momentous year for the aerospace industry, and Colorado companies were involved in many of the projects that are pushing the boundaries of what is possible for aerospace technology and space exploration. Some highlights of 2022 projects that Colorado companies are engaged in include:

- » NASA's Artemis 1 mission sent the Orion space capsule farther into space than spacecraft built for humans has gone before.
- » The James Webb Space Telescope unveiled the first batch of full-color, high detail images of the universe.
- » Continued progress has been made on planning and development of the Orbital Reef space station designed for commercial space activities and space tourism.
- » Amazon's Project Kuiper is building a constellation of satellites that will bring fast, affordable broadband to unserved and underserved communities.

While Colorado has been a long-time home to some of the larger, well-known aerospace companies like Ball Aerospace, Lockheed Martin Space, Northrop Grumman, and Raytheon, the startup ecosystem is contributing to much of the industry's recent expansion as smaller aerospace companies benefit from being in close proximity to the bigger players. Several Aerospace cluster companies added new office, lab, and manufacturing space in 2022 including Northrop Grumman, York Space Systems, Sierra Space, and Moog Inc. Others, like Ball Aerospace, Blue Origin, and Rocket Lab, have announced plans to build or lease new space in 2023 and beyond. While most companies are expanding their physical footprint as their employee count grows, United Launch Alliance is taking a different approach by downsizing to a smaller headquarters – despite growing in numbers – and opting for more hybrid and remote options for its employees.

Since the beginning of 2022, several Colorado aerospace companies, including Maxar Technologies, Boecore, and Numerica, were involved in acquisitions, pooling the unique capabilities of various startups to create businesses with economic scale. As existing aerospace companies continued a trend of growth and expansion in 2022, new companies entered the state, including Karman+, which moved its headquarters to Metro Denver, and Solstar Space Co, which opened a new office in Boulder.

Advancements in space technology and new means of financing are driving continued investor interest in Colorado's space startups. Nationwide, space startups attracted \$17.2 billion in investment in the first three quarters of 2022, according to New York City-based Space Capital. The report found 42% of that money went to seed-stage companies. The combination of increased funding and an innovative ecosystem make Colorado a hub for space startup activity.

The state is home to nine of the nation's top aerospace contractors, major U.S. Department of Defense (DoD) facilities, National Aeronautics and Space Administration (NASA) research and development activities, and the Colorado Air and Space Port in Adams County. Established in 2018, the Colorado Air and Space Port is one of 13 FAA licensed spaceports in the U.S. Colorado's universities are among the world's best for aerospace engineering and the state has one of the highest concentrations of federally funded science and research centers in the nation.

<sup>1</sup>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.

# CLUSTER DEFINITION

In this report, the aerospace industry cluster is defined by 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. This definition allows for a comparative analysis of Colorado and the Metro Denver and Northern Colorado region's aerospace industry clusters relative to other states and metropolitan regions. This definition also avoids double-counting workers in other adjacent technology clusters such as information technology and aviation.

# CLUSTER JOB GROWTH

- » Colorado aerospace employment grew 5.8% between 2021 and 2022, rising for the 12th-consecutive year.
- » Colorado ranked first in the nation for the concentration of private aerospace jobs, and second for total private aerospace employment.
- » Colorado aerospace employment increased by 32.5% over the past five years, outpacing nationwide growth by 17.3 percentage points.
- » 36,870 employees worked at nearly 350 Colorado aerospace companies.
- » 63.2% of Colorado's aerospace companies have 10 or fewer employees, while 8.9% have over 250 employees.

# 2022 RANKINGS<sup>2</sup>

## Nine-County Region:

Aerospace direct employment concentration rank	1st (unchanged from 2021)
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Aerospace direct employment rank	1st (unchanged from 2021)
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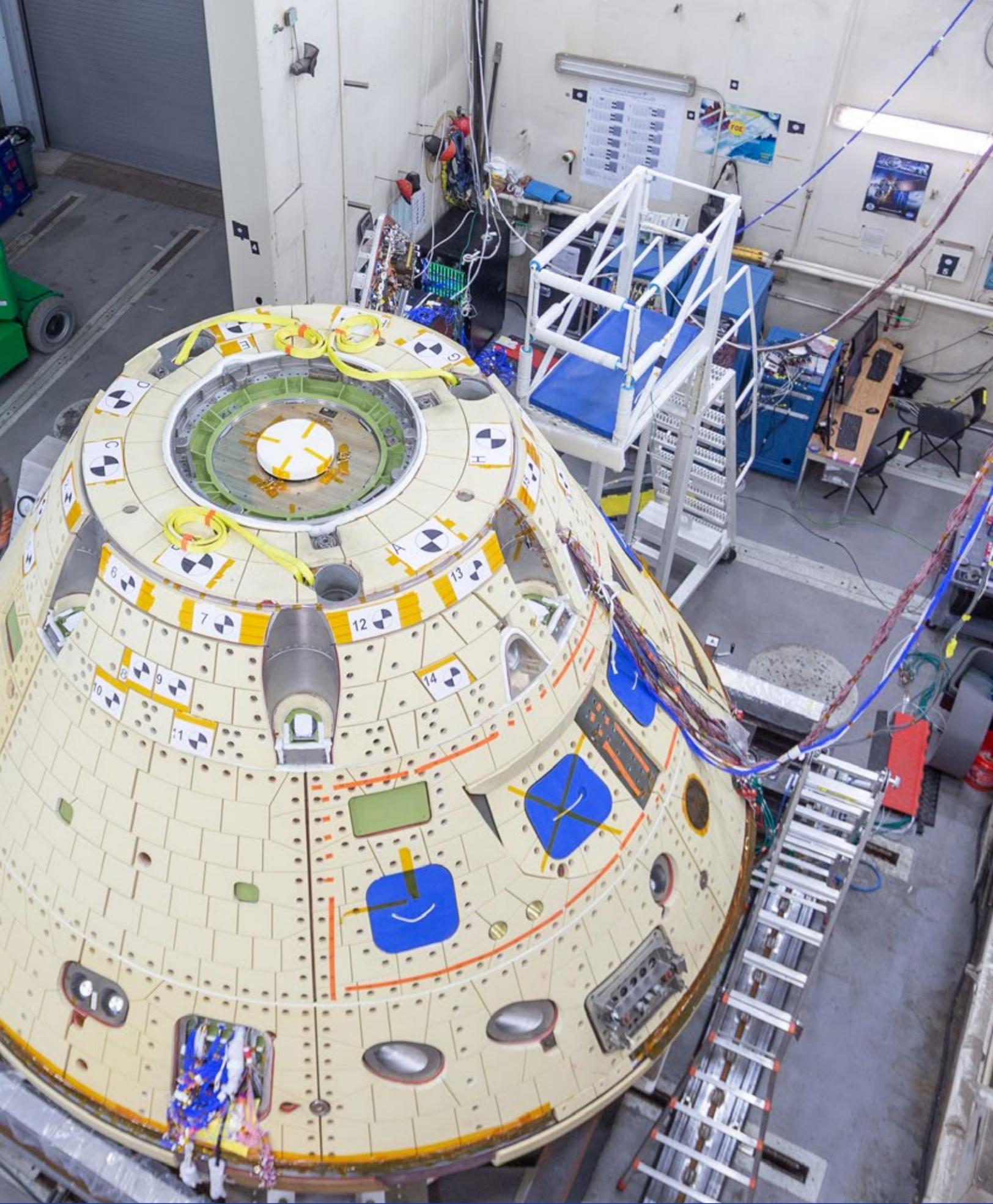
## Colorado

Aerospace direct employment concentration rank	1st (unchanged from 2021)
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Aerospace direct employment rank	2nd (unchanged from 2021)
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<sup>2</sup> Direct employment rank based on the number of employees in the industry cluster in a state or region. Employment concentration rank based on the direct cluster employment in a state or region expressed as a percent of total employment in all industries in the same state or region. Rankings are for the 50 largest metropolitan statistical areas (MSAs) and 50 states. No multiplier effects are included. 1st = highest for both rankings.





# MAJOR INDUSTRY INVESTMENTS, EXPANSIONS, AND MILESTONES

## Headquarter Relocation & New Local Offices

- » Asteroid mining company Karman+ selected Metro Denver as the location of its new headquarters, creating 150 high-paying new jobs over the next seven years. The Netherlands-based company pointed to Denver's quality of life, the potential for collaboration with higher education institutions, and a state regulatory environment conducive to advancing the development of space resources as reasons for their selection.
- » Solstar Space Co, a New Mexico-based company that makes persistent in-orbit communications available, opened an office in Boulder in 2022.
- » United Launch Alliance (ULA) consolidated some of its headquarters office space in Centennial, dropping about 150,000 square feet of office space, and began looking for new office space to add. Since the COVID-19 pandemic, the company has reconsidered how it uses workspace and is now opting for more hybrid work options for aerospace engineers, executives, and other headquarters employees.

## Several aerospace cluster companies announced expansions and growth

- » Colorado Springs-based Bluestaq, a software development firm that works in the aerospace industry, selected to remain in Colorado Springs for a large-scale expansion that is expected to create 585 net new jobs in the area over the next eight years. Bluestaq currently has 65 employees, all in Colorado. The new jobs will have an average annual wage of \$188,208 and will include engineers, operations staff, and operations managers.
- » Ball Aerospace & Technologies Corp. plans to expand its east Boulder campus by adding 310,000 square feet of new building space to its aerospace campus at Arapahoe Road and 48th Street. The addition will bring the total square footage of the campus to just under 751,000. Construction of the expansion is expected to occur in four phases over the next 15 years with full build-out expected by 2037. The expanded campus could house as many as 2,000 employees.
- » Northrop Grumman opened a 23,680-square-foot office building on its campus in the Longbow office park in Boulder and is recruiting to fill a variety of positions

working on satellite instrument development, satellite ground systems, and related data technologies. The Virginia-based defense contractor already employs 400 people at the Boulder campus and expects to add 100 new jobs in engineering, business management, contracts, and administrative roles.

- » Rocket and space company Blue Origin plans to open a new office at 8744 Lucent Boulevard in Highlands Ranch. The office will be a hub for program management, systems engineering, avionics, software, integration, and mission design in support of their launch vehicle and space systems programs.
- » Denver-based small-satellite maker York Space Systems began operations at a new factory in the Denver Tech Center. The 138,000-square-foot building adds to the company's existing downtown Denver factory near Ball Arena and offices on the Metropolitan State University of Denver campus. With the addition of the Denver Tech Center site, the company is setting up manufacturing capacity to build more than 700 satellites per year, with enough space to employ more than 550 people.
- » Louisville-based Sierra Space is expanding rapidly, and hired more than 1,000 people in 2022. The company increased its headcount to 1,300 in Metro Denver and 2,000 nationwide. The company leased space in Centennial and further expanded its Metro Denver footprint by adding 180,000 square feet of new office and manufacturing space in Broomfield. The company is also establishing locations in Florida and North Carolina.
- » Denver-based Zivaro, a company that upgrades software, hardware, and platforms for the aerospace and defense industry, plans to expand in Colorado Springs and add more than 300 jobs in the coming years. Currently 132 of the company's 175 employees are in Colorado.
- » New Zealand-based Rocket Lab Inc. plans to add 40,000 square feet of office, lab, and production space in Littleton, which will include two mission operations centers. The new space systems complex will be near the current offices of Advanced Solutions, Inc. (ASI), a company that Rocket Labs acquired in October 2021. ASI develops flight software used by both government and commercial satellite operators. The complex will allow



Rocket Lab to double its local headcount to more than 120 people by early 2023, adding jobs in space-flight software development, spacecraft guidance, navigation and control, spacecraft simulation, and systems engineering.

- » New York-based space hardware manufacturer Moog Inc. opened a 29,000-square-foot manufacturing space in Arvada. The facility almost quadruples Moog's space in Metro Denver, adding to its Golden location and giving the 60-employee operation room for its planned hiring of 20 more people.
- » Raytheon Intelligence & Space is expanding its presence in Metro Denver as the company plans to add hundreds of jobs across its three offices in Metro Denver. Most of the jobs are in software development and engineering roles.
- » Switzerland-based defense and space manufacturer Beyond Gravity – formerly called RUAG – has added dozens of employees in Metro Denver over the past four years and is planning to hire 60 more people between its Denver and Alabama sites. The company currently has 1,300 employees total.

#### **Acquisitions & Mergers**

- » Westminster-based Maxar Technologies acquired Puerto Rico-based data company Wovenware, a company that makes artificial intelligence software. The transaction added 150 employees working in artificial intelligence and machine learning, software engineering, and other functions.
- » Maxar Technologies will be acquired and taken private in a \$6.4 billion deal that is expected to close in mid-2023. Advent International, the private equity company that purchased Maxar, indicated that the acquisition will give Maxar increased resources, operational expertise, and the capacity for future investment. Maxar will continue to operate under the same name and will retain its Westminster headquarters.
- » Washington, D.C.-based Aerospace, Defense, Government, and Technology investment firm Enlightenment Capital acquired Colorado Springs-based Boecore, a provider of technology solutions to customers within the space, missile defense, hypersonic, and deterrent mission areas. Boecore will serve as Enlightenment's latest platform company, as the firm becomes a premium provider of emerging space and strategic defense technologies.

- » In its first acquisition with the help of new ownership, Boecore purchased fellow space-market focused and Colorado Springs-based contractor Ascension Engineering Group (AEG). With this acquisition, Boecore will add capabilities in areas including software and systems engineering, the DevSecOps software development practice, modeling and simulation, and systems integration and testing.
- » Fort Collins-based defense contractor Numerica sold its space division to Slingshot Aerospace, an Austin, Texas-based builder of space simulators with offices in California, Colorado Springs, and now Fort Collins. With this deal, Numerica will now focus solely on air and missile defense.
- » Lakewood-based provider of complex machined components and assembly solutions for the aerospace, defense, and space industry, Primus Aerospace, acquired Raloid Corporation, a company that machines critical components for several strategic defense programs.

### **New Labs & Training Centers**

- » Star Harbor Academy, a startup launching a commercial space-flight training center, plans to develop a 53-acre campus in Lone Tree where people can learn to be astronauts and companies can develop new space technologies. Star Harbor will have an airplane for low-gravity parabolic flights, pools for water training that simulate weightlessness, underwater habitats, a high-gravity centrifuge where people can experience the G-force of flight, and other specialized instructional gear. Although the main building is not expected to be finished until 2026, the academy plans to begin training its first classes of astronauts sooner.
- » Douglas County has partnered with Lockheed Martin to develop a manufacturing incubator lab at one of Lockheed Martin's facilities in Highlands Ranch. The Ignite Lab will be a high-tech space for companies from across the state to collaborate on projects and share resources, information, and technical capabilities. Through this agreement, local businesses will have new access to the aerospace and defense industries and supply chains. Local students will also have opportunities to work on projects with experts in science, technology, engineering, and math.
- » The Aerospace Corp. has completed its \$100 million Space Warfighting Center (SWC) in Colorado Springs. The center encompasses 90,000 square feet and includes laboratory space. The Aerospace Corp. currently employs 250 people in Colorado Springs with the capacity to employ 250 more in the new facility. The SWC provides a unique environment for leveraging cutting-edge digital

tools to support the company's government partners in developing advanced space warfighting concepts that enhance the resiliency and agility of the nation's space systems.

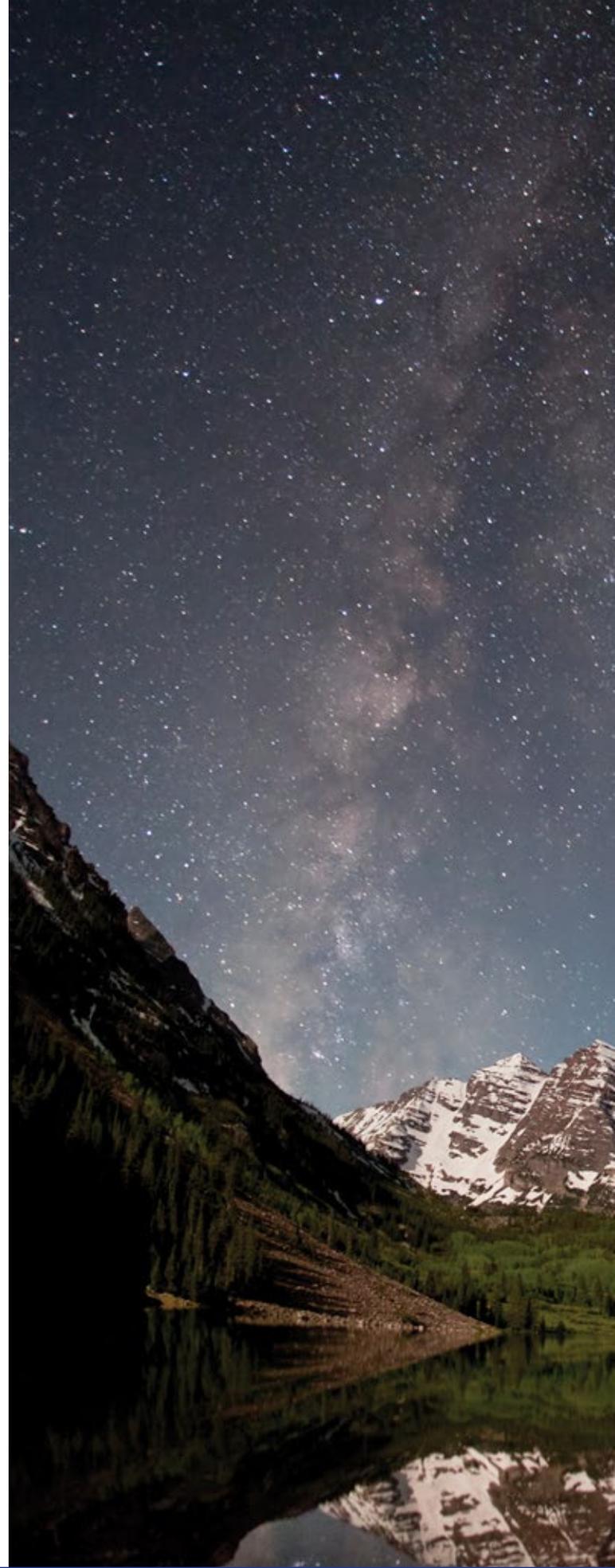
### **Funding Announcements**

- » Sierra Space created a new venture capital division called Sierra Space Ventures, which will allow the company to partner with pioneering, growing companies for the purpose of innovating their products on the Sierra Space platform in space. Investments made by the ventures will focus on companies working to enable breakthroughs in human health, computing systems, telecommunications, and clean energy that can be further accelerated through access to Sierra Space's research facilities in low-Earth orbit.
- » Albedo, a satellite imagery startup that is co-headquartered in Austin and Denver, recently raised \$48 million in a series A funding round. The company has 21 employees and is actively growing its headcount.
- » Golden-based Lunar Outpost, a startup that designs autonomous rover vehicles for space exploration, recently raised \$12 million in seed funding. The company plans to use the capital to develop a new type of rover, deploy its robotics systems, and improve existing rover platforms.
- » Erie-based Gravitics Inc., an aerospace company developing human-centric space solutions, raised \$6.7 million out of a total offering of almost \$24 million in a fundraising round in November.



# MAJOR CONTRACT AWARDS

- » According to National Defense Magazine, Colorado ranked No. 3 in the country behind California and Virginia for total awards from the Pentagon's Defense Innovation Unit between June 2016 and September 2021. Of the 279 contracts with a total value of \$892.7 million, Colorado companies received 6 contracts worth \$56 million.
- » Maxar Technologies won a 10-year contract award worth up to \$3.24 billion to provide civilian, unclassified satellite imagery and data under a program run by the U.S. National Reconnaissance Office.
- » NASA finalized a \$1.99 billion contract ordering three more Orion capsules from Lockheed Martin Space. The new order lets the aerospace company start tasking suppliers for long-lead items needed to build the sixth, seventh, and eighth versions of Orion that NASA will need for future Artemis program missions to and around the moon. While NASA has previously paid for development of the spacecraft and the first three production versions of the capsules, the latest contract spacecraft, mission planning, and support will last into the 2030s.
- » Lockheed Martin Space won a \$700 million contract from the Department of Defense's Space Development Agency (SDA) to build 42 small satellites for the transport layer network. York Space System also won a \$382 million contract from the SDA to build 42 satellites at its Denver production center. Satellites built by both companies are scheduled to be ready to launch in September 2024. The SDA also awarded York Space Systems an additional \$200 million contract to build and deploy 12 more satellites that will augment the SDA's Tranche 1 Transporter Layer, a low-Earth orbit constellation of small satellites.
- » Lockheed Martin Space won a \$581.6 million contract from the Space Force to provide engineering services and support for operating the four generations of GPS satellites that the military currently has in orbit. The satellites provide global positioning signals used by the military and for civilian navigation.
- » Northrop Grumman won a \$341 million Space Force contract to build a radar system to track objects in distant orbits around the Earth. Work on the advanced radar will be led from the company's offices in Colorado Springs and assisted by its employees in Aurora. Northrop Grumman is expected to design, test, and build the first site and have it ready in 2025.





- » Ball Aerospace and Technologies Corp. secured a \$176 million contract to develop, manufacture, and operate 10 experimental satellites for the Space Development Agency. The satellites are scheduled to begin launching in 2024 and are part of the agency's National Defense Space Architecture Experimental Testbed, or NeXT, which will demonstrate low-latency data transport and beyond line-of-sight command and control.
- » Advanced Space LLC won a \$72 million contract from the U.S. Air Force Research Lab to build an experimental spacecraft to demonstrate space situational awareness, object detection, and tracking in the region of the moon. This goal supports a resurgence of interest in lunar exploration and development across civil, commercial, and international space agencies. The satellite, Oracle, is planned to launch in 2025 and will be designated to conduct object-tracking experiments for two years. The spacecraft will be tasked with positioning itself in orbit in a gravitational balancing point near the moon about 200,000 miles from Earth, a region that is ten times farther into space than the Air Force typically operates or watches for spacecraft.
- » Delta Solutions and Strategies, a Colorado Springs-based defense contractor, won a five-year contract with U.S. Space Command to provide services and support to the Space Command headquarters. The contract will provide 155 jobs in intelligence, logistics, communications, and war game exercise. As a result of the contract, Delta Solutions expects to add 35 employees to its current base of 315 workers in Colorado Springs.
- » The U.S. Naval Information Welfare Center selected Virginia-based Northrop Grumman to build new ground system technology for a relay station on the island of Guam that will help manage the U.S. Space Force's missile-launch detection satellite fleet. About 60% of the work is expected to be handled from Boulder, and the remaining 40% from Guam.
- » The Laboratory for Atmospheric and Space Physics (LASP) at the University of Colorado Boulder was selected by NASA to design and build an instrument to investigate the ionosphere, the outermost layer of Earth's atmosphere.
- » NASA awarded Longmont-based Honeybee Robotics LLC, a subsidiary of Blue Origin, a nearly \$7.7 million contract to build components for the agency's Mars Sample Return mission. That mission seeks to use robots to help bring samples collected on Mars to Earth for study.



## MAJOR CONTRACTORS

Nine of the country's major space contractors have a significant presence in Colorado. These companies support the 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 NASA and other agencies.



### **Ball Aerospace & Technologies Corp.**

[www.ball.com/aerospace](http://www.ball.com/aerospace)

Based in Boulder, Ball Aerospace & Technologies Corp. provides support of space and Earth science, space exploration, national security and intelligence, and tactical programs. Ball Aerospace creates innovative space solutions, enables more accurate weather forecasts, drives insightful observations of our planet, and delivers actionable data and intelligence.



### **Boeing**

[www.boeing.com](http://www.boeing.com)

The Boeing Company has several locations throughout Colorado with the largest concentrations in Arapahoe and Douglas Counties. Metro Denver is home to the company's Digital Solutions and Analytics division based in Englewood and the Boeing Denver Engineering Center in Aurora. Located in Colorado Springs with operations at Schriever Space Force Base, the Boeing Mission Operations Support Center maintains satellite ground control system

test environments and solutions. Boeing also has leading missile and weapon systems programs in Colorado including the Ground-based Midcourse Defense system, the nation's only homeland defense against long-range ballistic missile attacks.



**L3HARRIS™**

### **L3Harris Technologies, Inc.**

[www.l3harris.com](http://www.l3harris.com)

L3Harris Technologies, Inc. provides advanced defense and commercial technologies across air, land, sea, space, and cyber domains. The company has offices across Colorado, including Broomfield and Colorado Springs. Colorado is a key location for the Applied Defense Solutions segment, which provides aerospace engineering, software development, and space situational awareness.



### **Lockheed Martin**

[www.lockheedmartin.com](http://www.lockheedmartin.com)

Lockheed Martin develops products ranging from human space flight systems and navigation, meteorological, and communications satellites to ground station and missile defense systems. The Lockheed Martin Space unit headquartered in Jefferson County designs, develops, tests, and manufactures advanced technology systems for its government, international, and commercial customers.





**Maxar Technologies**  
[www.maxar.com](http://www.maxar.com)

Headquartered in Westminster, Maxar Technologies is a global innovator in Earth intelligence and space infrastructure. The company delivers systems to help monitor, understand, and navigate Earth, delivers global broadband communications, and explores and advances the use of space. The company provides vertically integrated capabilities and expertise including satellites, Earth imagery, robotics, geospatial data, and analytics to help customers anticipate and address mission-critical challenges.



**Northrop Grumman**  
[www.northropgrumman.com](http://www.northropgrumman.com)

Northrop Grumman provides a range of products and services in autonomous systems; cyber; command, control, communications and computers, intelligence, surveillance, and reconnaissance (C4ISR); space strike; and logistics and modernization. The company also works with advanced aircraft, unmanned aircraft vehicles, naval vessels, and space technology.



**Raytheon Technologies Corporation**  
[www.rtx.com](http://www.rtx.com)

Aurora serves as a major hub for Raytheon Technologies Corp.'s Intelligence & Space division that provides satellite ground-control system development and data management specialties. The company develops technologically advanced and integrated products, services, and solutions

across integrated air and missile defense; electronic warfare; command, control, communications, computers, cyber, intelligence, surveillance, and reconnaissance; and space systems.



**Sierra Nevada Corporation**  
[www.sncorp.com](http://www.sncorp.com)

Sierra Nevada Corporation's (SNC) subsidiary, Sierra Space, based in Louisville, designs and manufactures advanced spacecraft, satellites, propulsion and environmental systems, spacecraft subsystems, and owns and operates the Dream Chaser® spacecraft. The company's two Centennial divisions—the ISR (Intelligence, Surveillance & Reconnaissance), Aviation, and Security (IAS) and the Electronic and Information Systems (EIS)—provide products and services for a variety of airborne systems.



**United Launch Alliance (ULA)**  
[www.ulalaunch.com](http://www.ulalaunch.com)

ULA's rockets lead the industry in mission and schedule reliability, building on more than 100 years of combined launch heritage. ULA employs nearly half of its workforce at its Centennial headquarters. ULA's program management, engineering, test, and mission support functions are headquartered in Colorado, which includes development of ULA's new Vulcan Centaur rocket.

# NOTABLE AEROSPACE PROJECTS & UPDATES

- » After months of setbacks due to fuel leaks and weather conditions, NASA's Artemis 1 flight commenced in November 2022 with the launch of the Space Launch System (SLS) rocket carrying the Orion space capsule. The unmanned capsule made a wide orbit around the moon reaching a maximum distance of 268,563 miles from Earth, a new record distance for a spacecraft built for humans, before flying within 60 miles of the lunar surface and then splashing down in the Pacific Ocean after the 25-day flight. The space agency is aiming to send four astronauts around the moon on the next flight, in 2024, and land humans there as early as 2025. Jefferson County-based Lockheed Martin Space led development of the Orion space capsule, a 12-foot diameter capsule made for NASA's Artemis moon-landing program and journeys to Mars.
- » The first launch of United Launch Alliance (ULA)'s Vulcan rocket is planned for early 2023 and will launch the Peregrine robotic lunar lander on a flight to the moon. As a secondary payload, the rocket will also carry two small test satellites for Amazon's Project Kuiper.
- » Internet streaming service Amazon hired Centennial-based United Launch Alliance to launch 47 rockets carrying about 2,000 satellites as part of their Project Kuiper. The project is designed to be a 3,236-satellite constellation beaming down internet service of at least 100 megabits-per-second to millions of far-out suburban and rural homes in the U.S. and to customers around the world.
- » Sierra Space is partnered with Blue Origin, Jeff Bezos' aerospace manufacturing company, to build the Orbital Reef space stations, which are planned to start being launched and built by 2027.
- » Louisville-based Sierra Space signed a partnership agreement with Tokyo-based Mitsubishi Heavy Industries (MHI). The companies plan to collaborate on a wide range of technologies for the Orbital Reef commercial space station, which is planned to be in orbit by 2028.
- » NASA's \$10 billion James Webb Space Telescope publicly unveiled the first batch of full-color, high detail images of the universe in 2022 showing a level of detail created from two decades of work from Ball Aerospace. Ball Aerospace made the 18 hexagonal mirrors that gather light waves for the telescope as well as the three layers of secondary mirrors





that precisely reflect light to the Webb's various instruments. Additionally, Lockheed Martin Space helped design and manufactured one of the primary instruments that made the images possible.

- » Sierra Space partnered with Kansas-based Spirit AeroSystems Inc. to help build its planned Shooting Star cargo module and further develop Sierra Space's planned family of Dream Chaser spaceplanes. The Shooting Star will be a 15-foot transport vehicle with a 10,000-pound payload that will attach to the Dream Chaser spaceplane.
- » Westminster-based Maxar Technologies won a project to build hundreds of millions of dollars' worth of orbiters for New York City-based radio and telematics company SiriusXM. Maxar will build two satellite car service satellites scheduled to launch in the second half of this decade. These satellites are in addition to the two that SiriusXM already hired Maxar to build, which are expected to launch in 2024 and 2025, respectively.
- » Westminster-based Advanced Space LLC built a small satellite for an experimental lunar orbit mission, which arrived at the moon and inserted itself into an oblong-shaped orbit lapping the moon and becoming the first small satellite to operate in lunar orbit. This was five weeks after being recovered from an uncontrolled spin due to a malfunction in flight.
- » Maxar Technologies has partnered with Sierra Space on a \$700 million Space Force satellite project that aims to improve satellite detection of hypersonic missiles. Sierra Space will make the solar power arrays that will power the 14 experimental missile-launch detection satellites.
- » Space has partnered with IBM Corp. to develop space technology and software platforms. The companies plan to integrate IBM's technology to coordinate the tasks and workload of Sierra Space astronauts through the company's data analysis and collection technology. In addition, IBM plans to support Sierra Space through its journey of building a seamless technology platform in space.

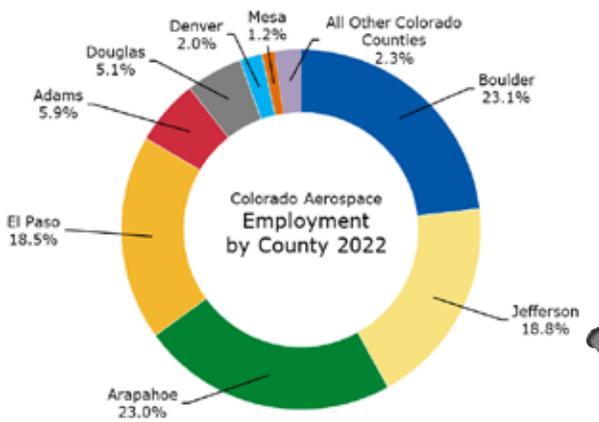


# PRIVATE AEROSPACE ECONOMIC PROFILE

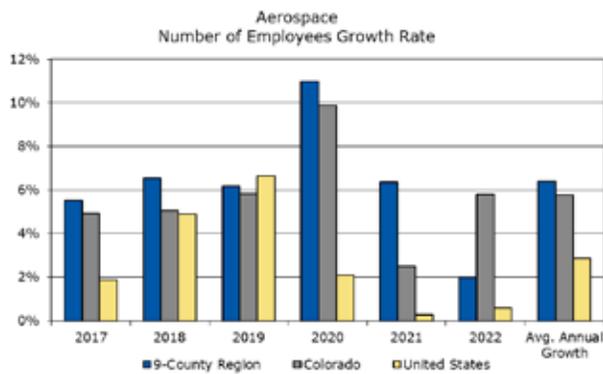
## Aerospace Employment and Company Profile, 2022

	9-County Region	Colorado	USA
Direct employment, 2022	29,540	36,870	380,020
Number of direct companies, 2022	240	350	6,700
One-year direct employment growth, 2020-2021	2.0%	5.8%	0.6%
Five-year direct employment growth, 2016-2021	36.3%	32.5%	15.1%
Avg. annual direct employment growth, 2016-2021	6.4%	5.8%	2.9%
Direct employment concentration	1.4%	1.3%	0.3%
% of companies with <10 employees	60.1%	63.2%	66.4%

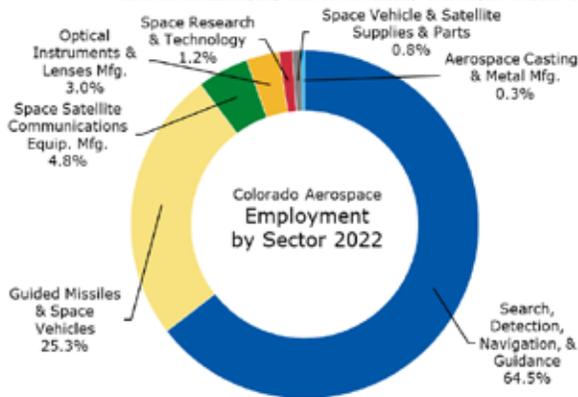
Sources: Dun & Bradstreet, Inc., Hoover's Online Database; Market Analysis Profile, 2017-2022; Development Research Partners.



Sources: Market Analysis Profile, 2022; Development Research Partners.



Sources: Dun & Bradstreet, Inc., Hoover's Online Database; Market Analysis Profile, 2017-2022.



Sources: Market Analysis Profile, 2022; Development Research Partners.

# PRIVATE AEROSPACE WORKFORCE PROFILE

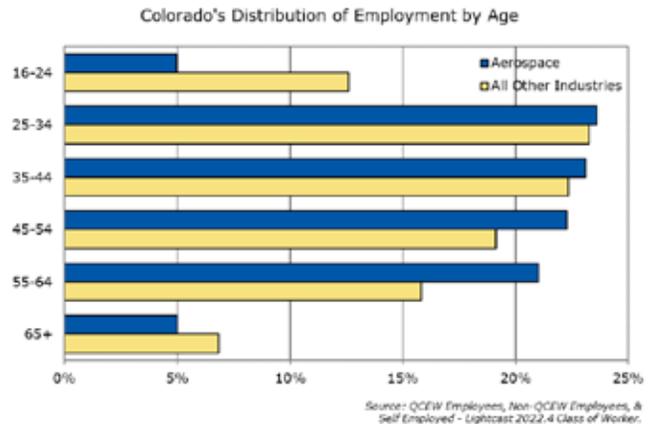
- » Colorado ranked 2nd among the states for its technology and science workforce, with 7.8% of Colorado's workforce employed in science and engineering occupations, above the national average of 5.26% (Milken Institute, 2022).
- » Colorado has the second-highest concentration of trained engineers among the 50 states. (National Science Foundation, 2021).
- » Colorado's world-class higher education system provides a strong pipeline of aerospace talent.
- » The U.S. Air Force Academy offers the No. 6 undergraduate program in engineering where a doctoral degree is not offered in 2022. (U.S. News & World Report).
- » The University of Colorado Boulder ranked 8th in the nation for best aerospace engineering programs and 23rd for best engineering school (U.S. News & World Report, 2022).
- » For the sixth straight year, investment in the University of Colorado systems topped \$1 billion, reaching \$1.46 billion awarded across all four system campuses in FY 2022. CU Boulder researchers alone attracted a record \$658 million.
- » Research fueled by a 5-year, \$7.5 million Department of Defense grant at CU Boulder investigates the breakdown and collision of nitrogen, oxygen, and carbon molecules during hypersonic flight using advanced computational modeling and experimental tests.
- » Two new CubeSats, to be built by the Laboratory for Atmospheric and Space Physics (LASP) at CU Boulder, will provide the first-of-its-kind measurements of gravity waves in Earth's upper atmosphere and explosions in the sun's corona. NASA will contribute \$14 million to fund both the DYNamics Atmosphere GLObal-Connection (DYNAGLO) and the Sun Coronal Ejection Tracker (SunCET) missions.
- » The University of Colorado Boulder was one of the top 25 educational and nonprofit institutions receiving the largest amounts of NASA funding in fiscal year 2021.
- » The Colorado SKIES Academy is an aerospace-focused charter school for middle school students on the campus of the Wings Over the Rockies Exploration of Flight building at Centennial Airport.
- » Metropolitan State University of Denver's Aerospace & Engineering Sciences Building is comprised of industrial,

engineering, computer science, robotics, and space operations lab and learning spaces. AES houses nine state-of-the-art aerospace and aviation laboratories for enhanced academic and applied skills mastery.

- » The Colorado School of Mines Space Resources Program is the world's first multi-disciplinary graduate program in the developing field of space resources.
- » The University of Colorado–Colorado Springs is designated as the Space Education Consortium's lead university to educate the nation's future workforce.

## Age Distribution

- » The Aerospace cluster has a larger share of employees that are between the ages of 35 and 64 years old (66.4%), compared with the age distribution across all other industries in the state (57.3%).
- » The largest share of workers in the aerospace cluster were between the ages of 25 and 34 years old.



## Wages

- » Wages in the Aerospace cluster are among the highest across all industry clusters: the 2021 average annual salary was \$135,550, compared with \$117,340 nationwide, or 15.5% more than the national average.
- » The average starting salary for workers in the Aerospace cluster was \$69,250 in the state, compared with \$41,260 across all industries.
- » Total Colorado aerospace payroll exceeded \$4.6 billion in 2021.



### Occupation & Salary Profile

» The Occupation & Salary Profile below includes the 10 largest cluster occupations. It 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 AEROSPACE OCCUPATION & SALARY PROFILE, 2022

10 Largest Aerospace Occupations in Colorado	Total Working Across All Industries (2022)	Number of Available Applicants (2022)	Number of Graduates (2021)	Median Salary	10th Percentile Salary	25th Percentile Salary	75th Percentile Salary	90th Percentile Salary
Software Developers	43,931	309	4,494	\$120,896	\$77,008	\$97,109	\$134,616	\$167,970
Aerospace Engineers	3,268	55	2,239	\$131,577	\$80,573	\$100,278	\$175,179	\$192,885
Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers	4,941	19	128	\$37,746	\$30,068	\$36,570	\$47,454	\$60,018
Electronics Engineers, Except Computer	6,569	108	1,185	\$109,224	\$77,229	\$92,613	\$133,418	\$167,583
Computer Hardware Engineers	5,446	32	1,737	\$128,271	\$79,908	\$100,578	\$163,521	\$192,839
Biological Technicians	3,223	32	1,640	\$50,336	\$37,814	\$39,603	\$64,022	\$81,224
Business Operations Specialists, All Other	36,662	479	20,527	\$78,240	\$46,493	\$60,218	\$102,570	\$132,453
Industrial Engineers	4,407	28	277	\$98,901	\$62,015	\$77,417	\$126,918	\$153,257
Mechanical Engineers	6,191	121	1,784	\$97,631	\$60,791	\$76,644	\$127,633	\$164,062
Miscellaneous Assemblers and Fabricators	11,904	366	0	\$36,678	\$28,940	\$29,843	\$43,052	\$48,866

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: Arapahoe/Douglas Works!; QCEW Employees, Non-QCEW Employees, & Self Employed - Lightcast 2022.4 Class of Worker.

# MILITARY AEROSPACE PROFILE

Colorado is the U.S. center for military space and is an integral part of the state's foundation. The state is the headquarters for some of the nation's most critical defense operations, and military assets generate approximately \$36.6 billion, or just over 7% of the state's total economic output. Defense-related economic activity directly and indirectly supports about 247,000 jobs, or 7.5% of the state's workforce. Colorado is also home to the National Cybersecurity Center and is rapidly becoming a national leader in cybersecurity commerce, employment, and innovation. The state's unique position as a diverse hub for IT companies, higher education, and national defense has created a thriving environment for the cybersecurity industry to flourish, benefiting job seekers, entrepreneurs, and established companies in the process.

## Major Military Installations

- » Buckley Space Force Base in Aurora is home to the Buckley Garrison of the United States Space Force and supports over 85 tenant organizations that represent all branches of the military. The base is also home to the Aerospace Data Facility-Colorado, one of the nation's three satellite ground stations operated by the National Reconnaissance Office. Buckley is home to the only space-based missile warning system in the nation. The base also hosts the Colorado Air National Guard 120th Fighter Squadron and its F-16C fighters. Buckley has an annual economic impact of \$1 billion to the region and provides some 9,500 jobs.
- » Headquartered at Peterson Space Force Base, Space Base Delta 1 enables U.S. Space Force operations for eight of the nine USSF space deltas and more than 100 other mission partners across 23 worldwide locations. SBD 1 is unique in that it currently hosts real property at seven installations, three of which are in Colorado Springs, Colorado: Peterson SFB, Schriever SFB, and Cheyenne Mountain SFS. These three installations have an estimated \$6.3 billion annual economic impact.
- » Peterson Space Force Base is the headquarters for Space Base Delta 1 and is the home of the 21st Space Wing, which is responsible for worldwide missile warning and space control. The base is also the home of the North American Aerospace Defense Command (NORAD), U.S. Northern Command, U.S. Space Command, Space Operations Command, and the 302nd Airlift Wing (Reserve), as well as a number of other smaller tenant units.

- » Cheyenne Mountain Space Force Station is operated by U.S. Space Force and hosts the NORAD and USNORTHCOM Alternate Command Center and supports U.S. Space Command's Missile Warning Center, in addition to other national security activities.
- » Schriever Space Force Base is the home of the Space Innovation and Development Center, the Missile Defense Agency, the 310th SW, the 100th Missile Defense Brigade, the Joint Functional Component Command for Integrated Missile Defense (JFCC-IMD), numerous tenant organizations, and the former 50th SW.
- » 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, law enforcement and force protection, engineering, communications, logistics, military and civilian personnel, and financial management with over 30 programs of study and 24 research centers and institutes.

## Defense and Aerospace-Related Personnel Profile, 2022

<i>Government Installation</i>	<i>Personnel</i>
Space Base Delta 1*	12,380
Buckley Space Force Base	9,500
U.S. Air Force Academy	8,670
<b>Total Employment</b>	<b>30,550</b>

\*Space Base Delta 1 includes Peterson SFB, Schriever SFB, and Cheyenne Mountain SFS.



# AEROSPACE ECOSYSTEM



The Colorado Space Coalition (CSC), a group of industry stakeholders, works to promote Colorado as a leader in the aerospace industry. Coalition members—including aerospace companies, academic groups, and economic development organizations—promote Colorado’s significant aerospace assets nationally and advance legislation vital to industry growth and success.



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 that support the space industry with services, advocacy, and procurement.



The Colorado Chapter of the Aerospace States Association is comprised of the CSC, the CSBR, and the Colorado Chapter of Citizens for Space Exploration. The partnership collaborates on industry events, outreach, and advocacy efforts in support of federal aerospace and aviation policy development. Colorado Lt. Governor Dianne Primavera serves as national Vice Chair of the Aerospace States Association.



The Space Foundation, a Colorado Springs-based organization, is a global, non-profit advocate offering a gateway to education, information, and collaboration for space exploration and space-inspired industries that define the global space ecosystem. Founded in 1983, the Space Foundation develops objective space awareness for business, government, education, and local communities. The Space Foundation also hosts the annual Space Symposium, the premier gathering of the global space community.



The Colorado Chapter for Citizens for Space Exploration comprises private citizens, small business owners, students, teachers, space and non-space business representatives, and county and municipal officials. The Chapter actively promotes awareness of the benefits of America’s Human Space Exploration Program and support for NASA.



The American Institute of Aeronautics & Astronautics (AIAA) Rocky Mountain Section represents aerospace technical professionals, students, and educators in Colorado, Wyoming, Montana, Alberta, Northwest Territories, and Nunavut regions. Members advance innovation and technical excellence through monthly programs, university chapters, policy advocacy, public outreach, STEM education, technical committees, and professional development.

## Accelerators

- » OEDIT Advanced Industries Accelerator Program
- » E-Space
- » Air Force Accelerator Powered by Techstars
- » Catalyst Campus
- » National Security Innovation Network

## Aerospace-Related Research Institutions & Laboratories Boulder

- » The National Oceanic & Atmospheric Administration (NOAA)
- » The University Corporation for Atmospheric Research (UCAR)
- » National Center for Atmospheric Research (NCAR)
- » Aerospace Mechanics Research Center
- » Earth Science & Observation Center
- » Integrated Remote and In-Situ Sensing
- » Space Weather Technology, Research, & Education Center
- » BioServe Space Technologies
- » Colorado Center for Astrodynamic Research (CCAR)
- » JILA
- » TAP Lab
- » Center for National Security Initiatives
- » Laboratory for Atmospheric & Space Physics (LASP)
- » National Solar Observatory
- » National Institute of Standards and Technology
- » Cooperative Institute for Research in the Environmental Sciences (CIRES)

## Fort Collins

- » Cooperative Institute for Research in the Atmosphere (CIRA)

Colorado has the largest portfolio of research supported by the National Science Foundation’s Geosciences Division, with more than \$1.8 billion in active awards.



**AerospaceCO**

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