

## Denver South Economic Development Partnership Industry Cluster Profile AEROSPACE

The aerospace cluster includes companies that develop products and systems for commercial, military, and space applications. Colorado's aerospace companies provide a complete spectrum of research and development, design, and manufacture of guided missiles, space vehicles, satellites and other communications equipment, and navigation and detection instruments. Companies in the aerospace cluster also produce planetary spacecraft and launch systems and provide mission support.

Colorado is an aerospace center of excellence with support from four military commands, eight major space contractors, National Aeronautics and Space Administration (NASA) research activities, and several universities involved in expansive space research. Colorado has 150 businesses classified as aerospace companies, and more than 400 companies and suppliers providing space-related products and services. Direct employment in the aerospace cluster totals 24,890 private sector workers and approximately 28,750 military personnel. These 53,640 workers in the aerospace cluster support an additional 110,250 workers in all industries throughout Colorado, bringing direct and indirect employment supported by the aerospace cluster to 163,890 workers.

A number of the state's key aerospace businesses and facilities are located in the Denver South region.<sup>1</sup> The Denver South region is well positioned between the diverse mix of Department of Defense military installations in Colorado Springs, Buckley Air Force Base in the eastern metro area, and several renowned research entities across the nine-county Metro Denver and Northern Colorado region.<sup>2</sup> Aerospace employment in the Denver South region represents 21 percent of all aerospace employment in the nine-county region.

- The Wings Over the Rockies Air and Space Museum unveiled plans for the Exploration of Flight facility at Centennial Airport. The Exploration of Flight will focus on the future of aerospace and aviation research and provide flight- and experience-based activities, including observation decks and a flight tower. Building completion is slated for mid-2015.
- Arapahoe County-based Bye Aerospace and Thornton-based Ascent Solar Technologies, Inc. announced plans to collaborate on various aircraft projects. Bye Aerospace is in the process of developing a new generation of unmanned aerial vehicles which will rely on Ascent's thin-film solar photovoltaics and the company's expertise in stored electric power and other technologies.
- Centennial-based United Launch Alliance (ULA) celebrated 12 launch successes in 2011, including an Atlas V rocket carrying NASA's Juno probe to Jupiter in August 2011. The solar-powered spacecraft was constructed by Lockheed Martin Space Systems Company to study the planet's upper atmosphere and investigate Jupiter's internal dynamics and will reach the planet in August 2016.
- ULA received notable awards:
  - o The company won a \$1.5 billion U.S. Air Force contract for nine rocket launches in 2012 and ULA employees in Decatur, Alabama will work on the rockets slated for completion in 2014.

<sup>1</sup> The Denver South region consists of zip codes 80111, 80112, 80124, 80126, 80129, 80130, 80134, and 80237.

<sup>2</sup> The nine-county Metro Denver and Northern Colorado region consists of Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Jefferson, Larimer, and Weld Counties.

- o NASA awarded ULA a \$446 million contract to launch two next-generation weather monitoring satellites into orbit in 2015 and 2017 on its Atlas V rockets. The satellites will be used by the National Oceanic and Atmospheric Administration to improve observation and detection of meteorological phenomena and will provide accurate weather forecasts on Earth.
- o The U.S. Air Force awarded ULA's subsidiary, United Launch Services LLC (ULS) a \$398 million contract for two satellite launches scheduled in late 2014. The ULS team will install an Air Force Mobile User Objective System-4 satellite on the Atlas V rocket and launch a global positioning system satellite aboard a Delta IV rocket.
- Highlands Ranch-based launch services company UP Aerospace Inc. received two NASA contracts to integrate and fly technology payloads on its SpaceLoft rocket for NASA's commercial, suborbital reusable platforms in 2011. NASA is purchasing flights from private companies for later use by scientists and engineers. UP Aerospace was one of seven companies selected for NASA contracts totaling \$10 million.
- California-based XCOR Aerospace Inc. and ULA partnered to develop lighter-weight, lower-cost rocket engines. Partially as a result of successful results achieved in 2010 to develop new aluminum alloy engine nozzle technology using modern manufacturing techniques, the new engine technology could lead to more-capable space flights and new engines for ULA's Atlas V and Delta IV launch vehicles.

## PRIVATE AEROSPACE ECONOMIC PROFILE

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

	<b>Denver South</b>	<b>Nine-County Region</b>	<b>U.S.</b>
Direct Employment, 2011	4,110	19,500	356,270
Number of Direct Companies, 2011	20	110	4,970
One-Year Direct Employment Growth, 2010-2011	9.4%	1.7%	-0.5%
Five-Year Direct Employment Growth, 2006-2011	163.7%	11.9%	-1.7%
Avg. Annual Direct Employment Growth, 2006-2011	21.4%	2.3%	-0.3%
Direct Employment Concentration	2.0%	1.1%	0.2%

*Note: Data reflects only private aerospace employment in the region and excludes military employment.*

*Sources: Dun & Bradstreet, Inc. Marketplace database, July-Sept. 2006-2010; Market Analysis Profile, 2011; Development Research Partners.*

### Private Aerospace Employment

- The aerospace cluster directly employed 4,110 people in the Denver South region in 2011.
- Aerospace companies employed two percent of the Denver South region's total employment base, compared with 1.1 percent and 0.2 percent employment concentrations in the nine-county region and nationwide, respectively.
- The majority of the Denver South region's aerospace employees manufactured guided missiles and space vehicles (49 percent) and search and navigation equipment (45 percent).

## Wages

Total nine-county payroll in the aerospace cluster was more than \$2.1 billion in 2010. The 2010 average annual salary for an aerospace worker in the nine-county region was \$110,860, compared with the national average of \$90,870.

### Denver-Aurora-Broomfield MSA Occupational Salaries, 2010 Annual Average

Atmospheric and Space Scientists	\$106,480
Aerospace Engineers	\$106,440
Software Developers, Systems Software	\$95,190
Aerospace Engineering and Operations Technicians	\$65,190
Computer-Controlled Machine Tool Operators, Metal and Plastic	\$43,120

*Note: Mean annual salary data is for the 10-county Denver-Aurora-Broomfield Metropolitan Statistical Area (MSA) consisting of Adams, Arapahoe, Broomfield, Clear Creek, Denver, Douglas, Elbert, Gilpin, Jefferson, and Park Counties.*

*Source: U.S. Bureau of Labor Statistics, Metropolitan Area Occupational Employment and Wage Estimates, May 2010, www.bls.gov.*

## Private Aerospace Companies

- Approximately 20 aerospace companies operated in the Denver South region in 2011.
- Nearly 29 percent of the Denver South region's aerospace companies employed fewer than 10 people, while 14 percent employed 250 or more.
- Roughly 96 percent of the Denver South region's aerospace companies were located in Arapahoe (86 percent) and Douglas (10 percent) Counties.

### Major Private Aerospace Companies

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| • IHS Aerospace & Defense<br><a href="http://aero-defense.ihs.com">http://aero-defense.ihs.com</a> | • Sierra Nevada Corporation<br><a href="http://www.sncorp.com">www.sncorp.com</a>          |
| • Jeppesen<br><a href="http://www.jeppesen.com">www.jeppesen.com</a>                               | • Surrey Satellite Technology US LLC<br><a href="http://www.sst-us.com">www.sst-us.com</a> |
| • Science Applications International Corp.<br><a href="http://www.saic.com">www.saic.com</a>       | • United Launch Alliance<br><a href="http://www.ulalaunch.com">www.ulalaunch.com</a>       |
| • SEAKR Engineering, Inc.<br><a href="http://www.seakr.com">www.seakr.com</a>                      | • UP Aerospace Inc.<br><a href="http://www.upaerospace.com">www.upaerospace.com</a>        |

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