AEROSPACE AND DEFENSE

DEFINITION

The Aerospace and Defense cluster consists of companies involved in the production of civilian and military aircraft (including engines, aircraft parts, and equipment), as well as spacecraft and guided missile systems and closely related industries, such as the production of instrumentation and measurement equipment. Figure 7 lists the NAICS codes associated with this cluster as defined and provides an overview of employment trends in the region, state, and the US. In addition, this cluster encompasses a number of technologies that are not well defined by the industrial classification system. Most notable in light of the region's assets is the growth in robotics and unmanned vehicles.

FIGURE 6. REGIONAL SNAPSHOT
AEROSPACE AND DEFENSE CLUSTER

Employment	1,865
Recent trends (%)	40%
LQ	1.05
Establishments	33
Earnings/Job	$97,009
Relative Earnings/Job *(US=1.00)*	0.80

FIGURE 7. EMPLOYMENT OVERVIEW: AEROSPACE AND DEFENSE

NAICS CODE	DESCRIPTION	2015 JOBS		LQ	RECENT TRENDS (2009 TO 2015)			10-YEAR FORECAST (2016-2026)		
		Number	*% of Cluster*	*US=1.00*	*Total Change*	*Region % Chg.*	*US % Chg.*	*Total Change*	*Region % Chg.*	*US % Chg.*
336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing	686	37%	2.19	-215	-24%	9%	168	27%	12%
336419	Other Guided Missile and Space Vehicle Parts and Auxiliary Equipment Manufacturing	379	20%	23.77	-235	-38%	-37%	-115	-31%	-28%
336415	Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Mfg.	238	13%	8.43	-454	-66%	-34%	-219	-92%	-32%
334511	Search, Detection, Navigation, Guidance, Aeronautical/Nautical System and Instrument Mfg.	228	12%	0.63	-250	-52%	-17%	-164	-56%	-12%
336411	Aircraft Manufacturing	221	12%	0.33	-115	-34%	0%	76	36%	2%
336412	Aircraft Engine and Engine Parts Manufacturing	83	4%	0.36	22	36%	-5%	-57	-64%	-5%
336414	Guided Missile and Space Vehicle Manufacturing	29	2%	0.18	-12	-29%	1%	20	83%	7%
	Cluster Total	**1,865**	**100%**	**1.05**	**-1,258**	**-40%**	**-5%**	**-291**	**-16%**	**0%**

Source: EMSI 2016.4 – QCEW Employees, Non-QCEW Employees, and Self-Employed; Haas Center.
Note: Cluster definition based on the US Benchmark Cluster Definitions prepared by Harvard Business School's Institute for Strategy and Competitiveness in partnership with the US Department of Commerce and US Economic Development Administration.

TRENDS

The commercial aviation industry has experienced record growth in recent years due to demand for fleet replacement, passenger growth in emerging markets, and the introduction of new products and manufacturers to the market. According to the most recent data available from the Aerospace Industries Association (AIA), sales of aerospace products started to rebound in 2015 after stalling out at the end of the last decade. Over the past decade, aircraft manufacturing has made up an increasingly larger share of all aerospace sales, rising from 51 percent of the total in 2004 to an estimated 56 percent in 2015, according to the AIA's analysis (Figure 8).

However, when aircraft sales are considered by type (civilian versus military) there are substantial differences in performance during the same time period (Figure 9.). Civilian (commercial) aircraft sales reached record highs in 2014 and 2015, doubling from 2004. By contrast, military-related sales declined after climbing to just over $60 billion (constant 2009 dollars) as the US entered the recession.

Major factors affecting the global outlook for the Aerospace and Defense cluster include:

- CONTINUED HIGH LEVELS OF DEMAND FOR AIRCRAFT: The global aerospace and defense industry saw a decline in profits and revenues in 2015 for the first time in five years, due in large part to the impact of the strong US dollar and restructuring charges taken by two major companies (Bombardier and UTC). Despite the declines, prospects for commercial aircraft remain strong, driven by the replacement of aging fleet in mature markets, new passenger growth in emerging markets (driving fleet expansion), and increasing fuel efficiency standards in North America and Europe.

  Net orders for Boeing and Airbus flattened slightly in 2015, dropping below 2,000 aircraft for the first time in four years. However, the firms continue to have record-breaking backlogs, calculated at 12,626 units as of December 31, 2015. At current production rates, PwC estimated the backlog of orders is sufficient to keep manufacturers busy for the next nine years (*Aerospace & Defense: 2015 Year in Review and 2016 Forecast*).

FIGURE 8. AEROSPACE SALES
BY PRODUCT GROUP

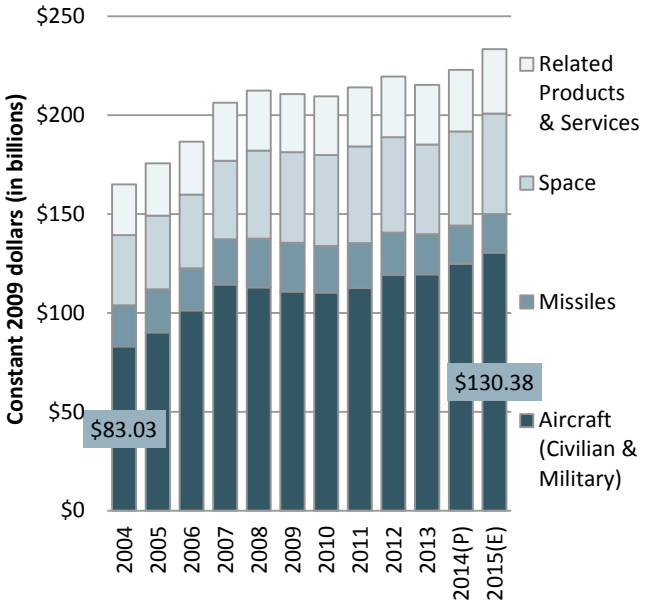
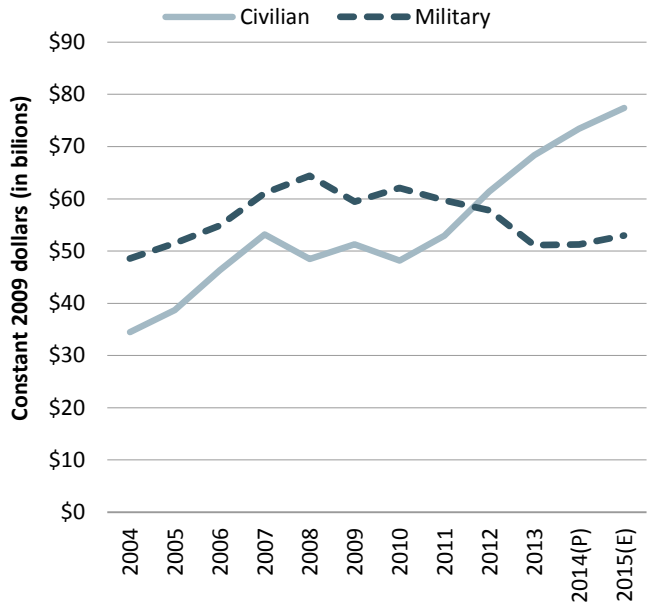


FIGURE 9. AIRCRAFT SALES BY TYPE



Source: Aerospace Industries Association, *2014 Year-End Review and Forecast* (based on company reports; *The Budget of the United States Government,* National Aeronautics and Space Administration, US Department of Commerce, and Department of Defense); TIP Strategies. Note: Government purchases reflected as appropriated funding. P = preliminary, E = estimate

Long-term reauthorization of the US Export-Import Bank (Ex-Im) through 2019 was good news for domestic producers, who often rely on the bank to supplement traditional funding sources. The program is opposed by US carriers who view the program as a subsidy provided to foreign firms purchasing US aircraft, an option not available to domestic airlines.

The future is less bright for defense contractors. Although passage of the Bipartisan Budget Act of 2015 extends relief from the full impacts of sequestration through 2017, uncertainty about the federal budget continues. However, PwC cites "rapidly changing US defense priorities" (including global threats from ISIS, the Russia-Ukraine conflict, and growing modernization of the militaries of North Korea and China) as a force that is likely to help drive compromise in future budget deals.

- DEPARTMENT OF DEFENSE PRIORITIES: In addition to continued uncertainty over global military spending, the cluster has experienced a shift towards vendors that "aren't part of the core defense industry" according to PwC's review of trends affecting aerospace and defense in 2016. The analysis highlights the unusual position traditional defense contractors find themselves in, stating that the "combination of unexpected competitive pressures and a more frugal customer base is a one-two punch that the defense industry has never quite faced before," (PwC, *2016 Aerospace and Defense Industry Trends: Battling Against Technology Firms, Tight Budgets, and Uncertain Military Needs*, p. 3).

  This shift towards technology-oriented vendors can be seen in the Defense Innovation Initiative announced in November 2014 by former Secretary of Defense, Chuck Hagel. This initiative is commonly referred to as the "third offset strategy" because it marks the third evolution of DoD thinking on how the US can maintain strategic advantage over potential adversaries into the future. Priority areas outlined in the Defense Innovation Initiative are designed to accelerate innovation and emphasize the application of breakthrough technologies. These priority areas include the following:

  - *Robotics & Autonomous Systems:* unmanned machines that assess situations and make decisions on their own
  - *Miniaturization:* making components of weapons systems smaller, including warheads, sensors, and electronics
  - *Big Data:* utilizing commercial techniques for analyzing large volumes of intelligence data
  - *Advanced Manufacturing:* using technologies such as 3-D printing that allow for ongoing, rapid changes to test new technologies and customize existing tech for particular situations
- ROBOTICS AND AUTONOMOUS SYSTEMS: A growing number of systems are being designed to operate autonomously, including aerial, ground, and underwater vehicles. Interest in unmanned aerial vehicles (UAVs) for civilian use and among foreign militaries is expected to help push the market to $93 billion in sales over the next decade, according to the Teal Group (www.tealgroup.com). The group's 2015 study estimates that military uses will account for nearly three quarters (72 percent) of the market, with consumer and civil uses capturing 23 percent and 5 percent, respectively. Though a much smaller market, growth in unmanned underwater vehicles (UUVs) is also expected to climb, driven primarily by DoD investments. Increasingly sophisticated sensors will be an important element to the growth of both aerial and underwater systems. Likewise, artificial intelligence (AI) also plays a key role in autonomous systems by allowing machines to place feedback generated by the sensors into context and learn to respond. Although the subject matter differs, the Florida Institute for Human and Machine Cognition in Pensacola, which designs computer systems to extend human capabilities, is an example of this kind of relationship.
- TALENT PIPELINE: The aerospace and defense industry faces a significant brain drain, the result of an aging workforce and stiff competition to attract and retain young talent. According to *Aviation Week's* 2016 Workforce Study, just over one in four workers (26.8 percent) qualified for retirement in 2015. However, the industry's actual retirement rate is "staggeringly low" at roughly 3 percent of the total workforce (or just 10 percent of those eligible). As in prior years, the study highlights the need to increase the pipeline of STEM talent and increase "work-readiness" skills among younger workers. Increasing diversity in the workforce was also cited as an issue.

BENCHMARK GEOGRAPHIES

As the long-time home of Boeing Corporation, it is not surprising that Seattle tops the list of metropolitan areas based on total employment in the aerospace and defense cluster (Figure 10, page 71). The Seattle region also has a strong concentration of employment relative to national averages, as evidenced by its location quotient (LQ) of 10.90. However, Seattle's employment concentration is far exceeded by Wichita's LQ of 24.12, indicating that employment in aerospace manufacturing is 24 times higher than would be expected in an MSA of the same size. Like Seattle, Boeing has had a long-time presence in Wichita. In contrast to Seattle, Boeing's Wichita operations were focused on military work, a sector that has been hard hit in recent years. As a result, Wichita has seen sharp declines in recent years, while Seattle's employment has soared as orders for commercial aircraft continue to surge.

When viewed by the concentration of employment in the Aerospace and Defense cluster (as measured by LQs), the top 10 metro areas shift considerably, with only Seattle and Wichita appearing on both lists. By this metric, Ozark, Alabama, is in the top spot, with an LQ of 38.28. The metro area includes Fort Rucker, the primary location for the Army's aviation-related missions, along with a cluster of aerospace firms. These include aircraft parts manufacturers (such as Brauer Aerospace Products), helicopter maintenance and support firms (including Bell Helicopter, US Helicopter and Army Fleet Services), and a number of training providers.

Of the three Northwest Florida metro areas, only one exhibits strengths in Aerospace and Defense cluster employment. The Crestview-Fort Walton Beach-Destin metro area ranked 53rd nationwide in terms of employment levels in the cluster and 42nd based on its location quotient of 3.29.

FIGURE 10. TOP 10 METROS: AEROSPACE AND DEFENSE
RANKED BY NUMBER OF JOBS IN 2015

METROPOLITAN AREA	LOCATION QUOTIENT (US = 1.00)	2015 JOBS	CHANGE FROM 2009	ESTABLISH-MENTS	EARNINGS PER JOB
Seattle-Tacoma-Bellevue, WA	10.90	92,810	+10,121	161	$131,187
Los Angeles-Long Beach-Anaheim, CA	2.62	70,049	-9,423	422	$131,156
Dallas-Fort Worth-Arlington, TX	2.34	33,753	-5,784	122	$139,783
Wichita, KS	24.12	28,758	-7,059	139	$93,967
Phoenix-Mesa-Scottsdale, AZ	2.33	19,589	-6,131	123	$116,485
Hartford-West Hartford-East Hartford, CT	6.99	18,053	-2,054	103	$130,075
San Diego-Carlsbad, CA	2.76	17,667	+6,622	96	$116,352
St. Louis, MO-IL	2.67	15,803	+1,507	34	$135,365
Boston-Cambridge-Newton, MA-NH	1.29	14,670	-2,331	53	$155,887
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	1.12	13,544	-1,932	70	$134,908
NORTHWEST FLORIDA METROPOLITAN AREAS (RANKED BY NUMBER OF JOBS IN 2015)					
Crestview-Fort Walton Beach-Destin, FL	3.29	1,649	-1,162	22	$100,442
Pensacola-Ferry Pass-Brent, FL	0.17	146	-124	6	$62,561
Panama City, FL	0.17	62	+29	3	$72,528

FIGURE 10. TOP 10 METROS: AEROSPACE AND DEFENSE (CONTINUED)
RANKED BY RELATIVE CONCENTRATION OF EMPLOYMENT (US=1.00)

METROPOLITAN AREA	LOCATION QUOTIENT (US = 1.00)	2015 JOBS	CHANGE FROM 2009	ESTABLISH-MENTS	EARNINGS PER JOB
Ozark, AL	38.28	3,105	-500	5	$99,398
Wichita, KS	24.12	28,758	-7,059	139	$93,967
Savannah, GA	14.34	9,910	+2,986	18	$118,827
Cedar Rapids, IA	12.53	7,880	-722	3	$130,719
Arkansas City-Winfield, KS	11.74	686	-113	2	$106,462
Troy, AL	11.47	653	-125	3	$100,591
Milledgeville, GA	11.18	839	+243	1	$73,475
Seattle-Tacoma-Bellevue, WA	10.90	92,810	+10,121	161	$131,187
Jamestown, ND	9.97	520	+34	1	$65,957
Binghamton, NY	9.11	3,900	-1,716	6	$120,573

Source: EMSI 2016.4 – QCEW Employees, Non-QCEW Employees, and Self-Employed

☑ RATIONALE & NICHES

This target capitalizes on the growth of aerospace manufacturing in the southern US, solidified by Airbus's selection of Mobile as the site for a new A320 assembly facility. Data compiled by The Pew Charitable Trusts indicates that southern states have captured an increasing share of aerospace employment in recent years (*Aerospace Manufacturing Takes Off in Southern States*, April 2, 2014). Factors cited by the analysis include lower labor costs and strong incentives, particularly with regard to training packages. Pew points out these factors also explain the expansion of the automotive industry in southern states, which has similar site selection requirements.

KEY SITE LOCATION FACTORS:

- Good truck access
- Easy access (not more than 45 to 60 minutes) to multimodal logistics networks
- Reliable and redundant electric service
- Low startup costs
- A plan from the community for recruiting and training top-level production and scientific talent
- Strong education system
- Attractive tax structure

Source: GLDP Partners

According to AIA data, Florida is one of five states accounting for more than one-half of total aerospace and defense employment in the US. The others are Washington, California, Texas, and Michigan. In a separate analysis, the AIA lists Florida as the tenth largest state in terms of aerospace and defense export gains between 2010 and 2015. The state is also well positioned to capture future growth. For the second year in a row, Florida ranked first in PwC's *2015 Aerospace Manufacturing Attractiveness Rankings* report. The state received its highest rank on the industry size component, which considers "existing suppliers and supply/growth of workforce including available aerospace technicians, engineers, mechanics." Florida also scored well on the educational attainment component of the index, suggesting an ability to meet the industry's need for a highly skilled workforce.

FIGURE 11. 2015 AEROSPACE MANUFACTURING ATTRACTIVENESS RANKINGS
50-STATE ANALYSIS PREPARED BY PWC

STATE	OVERALL RANK	INDEX COMPONENT RANKINGS			
		Tax	*Operating costs*	*Industry size*	*Education*
Florida	**1**	**14**	**21**	**5**	**12**
Michigan	**2**	**10**	25	**3**	18
Ohio	**3**	26	18	**1**	17
Utah	**4**	**5**	29	**7**	22
Virginia	**5**	**6**	34	19	**5**
Georgia	**6**	**8**	31	11	16
New York	**7**	20	28	17	**1**
Texas	**8**	39	16	**4**	**9**
Missouri	**9**	**4**	**7**	34	24
North Carolina	**10**	25	**9**	22	15

Source: PwC analyzed the relative 'aerospace industry attractiveness' of the US in a state-by state comparison. The study produced an overall 'attractiveness ranking index' using a weighted average of the following major elements: taxes, operating costs (industry and overall wage rates, business climate, energy costs), industry size (existing suppliers and supply/growth of workforce including available aerospace technicians, engineers, mechanics), and educational attainment.

The 13-county Northwest Florida region has a number of strategic assets that support the Aerospace and Defense cluster's expansion. These include a dense, multimodal transportation network; proximity to several military installations; targeted tax incentives; major employers; and industry-specific training programs and R&D.

FIGURE 12. STRATEGIC ASSETS: AEROSPACE AND DEFENSE

INDUSTRY/INFRASTRUCTURE

- Close proximity to five major Aerospace OEM Assembly facilities.
- Regional employers, such as L-3 Crestview Aerospace, BAE Systems and others.
- Multiple military installations with aviation-related missions, including R&D and testing associated with Elgin AFB.
- Florida Institute for Human and Machine Cognition in Pensacola.
- Multi-modal transportation network (Interstate 10, multiple ports, international air service, Class I and Class III rail access).
- Concentration of machine shops and supportive industries.
- Available sites and buildings, including multiple certified industrial sites.
- High quality of life featuring easy access to recreation and entertainment offerings.

WORKFORCE/TRAINING

- A significant pipeline of skilled military personnel exiting regional military institutions annually.
- Concentration of key occupations (Aircraft Systems Assemblers and Aircraft Mechanics & Service Technicians).
- Aerospace technologies and aviation maintenance academies at area high schools and middle schools.
- Industry-specific postsecondary training programs, including technical centers (Tom P. Haney and George Stone) and colleges (Chipola College, Embry-Riddle, Gulf Coast State College).
- Gulf Power STEM and Career Awareness Programs (various initiatives targeting fifth through 12th students).
- Identified as “Key Industry” by two of the four workforce boards in their local workforce services plans (Escarosa and Gulf Coast).

MARKET TRENDS/POLICY

- Strong outlook for aerospace, including unmanned vehicle systems.
- Growing concentration of aerospace employment in southern states.
- Tax incentives including the Qualified Target Industry Tax Refund and the Qualified Defense and Space Contractor Tax Refund.
- Favorable state business climate (Florida ranked “Best Business Climate” in 2016 by Business Facilities magazine).
- Low operating costs and favorable tax structure (including no state personal income tax).
- Gulf Power Job Creation Rate Incentive for qualified business customers.

Source: TIP Strategies research

TALENT

The top five career clusters account for nine out of ten jobs in the US Aerospace and Defense industry cluster (Figure 13). Manufacturing is the largest career cluster, totaling 42.0 percent of the industry cluster's employment nationwide. Jobs in the Science, Technology, Engineering and Mathematics (STEM) career cluster represent the second largest group, with roughly one in five workers (18.5 percent) found in this occupational cluster.

The Production pathway—part of the Manufacturing career cluster—accounts for slightly more than one in four workers in the industry cluster (Figure 14). It is the Aerospace and Defense industry cluster's largest pathway, representing 27 percent of total employment. The second largest pathway, Engineering and Technology, comprises 18 percent of the industry cluster's employment nationally. It is one of two pathways within the STEM career cluster; Science and Mathematics is the other.

FIGURE 13. TOP CAREER CLUSTERS: AEROSPACE AND DEFENSE
BASED ON SHARE OF TOTAL EMPLOYMENT IN THE INDUSTRY CLUSTER IN THE US

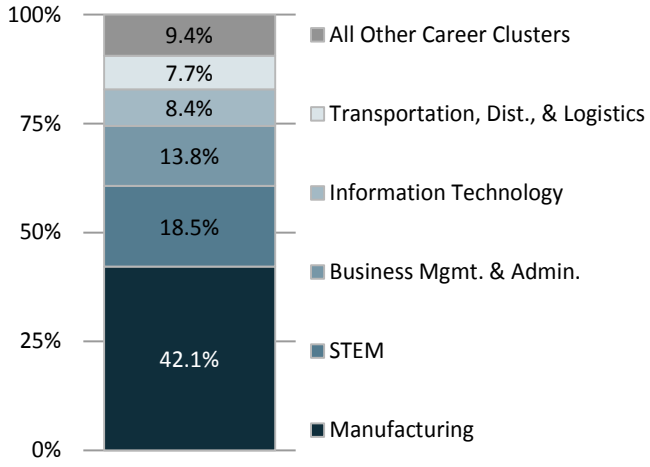


FIGURE 14. TOP 10 CAREER PATHWAYS: AEROSPACE AND DEFENSE
BASED ON SHARE OF TOTAL EMPLOYMENT IN THE INDUSTRY CLUSTER IN THE US

	Pathway | CAREER CLUSTER	*Share of total US employment in industry cluster*
1	Production | MANUFACTURING	27.3%
2	Engineering and Technology | STEM	18.2%
3	Programming and Software Development | INFORMATION TECHNOLOGY	6.5%
4	Manufacturing Production Process Development | MANUFACTURING	6.3%
5	Quality Assurance | MANUFACTURING	6.0%
6	Administrative Support | BUSINESS MGMT. & ADMIN.	5.4%
7	Operations Management | BUSINESS MGMT. & ADMIN.	4.7%
8	Facility and Mobile Equipment Maintenance | TRANSPORTATION, DIST., & LOGISTICS	4.4%
9	Maintenance, Installation & Repair | MANUFACTURING	2.6%
10	Logistics Planning and Management Services | TRANSPORTATION, DIST., & LOGISTICS	1.9%

Source (both figures): US Cluster Mapping Benchmark Definitions; National Career Clusters Framework (Perkins IV Crosswalks, rev. August 2012); EMSI; TIP Strategies

At the individual occupation level, one-half of the top 10 occupations in the Aerospace and Defense cluster are part of the Manufacturing career cluster (Figure 15). Of these, Aircraft Systems Assemblers (SOC 51-2011) is the largest single occupation, representing 6.0 percent of all jobs in the cluster nationally. The STEM career cluster also features prominently in the top occupations, with Aerospace Engineers (SOC 17-2011) being the largest detailed occupation, at 4.7 percent of US Aerospace and Defense employment.

Figure 16 (page 77) provides the top occupations in the cluster in the 13-county region. Aircraft Systems Assemblers (SOC 51-2011) tops the list at the regional level, but accounts for a slightly larger share of the cluster's employment (8.7 percent) than it does nationally. Two of the cluster's top occupations are more concentrated in Northwest Florida than would be expected based on national patterns with LQs of roughly 3.0: Aircraft Mechanics & Service Technicians (SOC 49-3011) and Avionics Technicians (SOC 49-2091). With the exception of Business Operations Specialists, All Other (SOC 13-1199), which is a catchall category, the cluster's largest occupation in the region is Team Assemblers (SOC 51-2092), with 1,720 jobs in the 13 counties in 2015.

FIGURE 15. CAREER CLUSTERS FOR LARGEST OCCUPATIONS: AEROSPACE AND DEFENSE
BASED ON SHARE OF TOTAL EMPLOYMENT IN THE INDUSTRY CLUSTER IN THE US

			CAREER CLUSTER					
	SOC CODE	DESCRIPTION	*Manufacturing*	*STEM*	*Info. Tech.*	*Transp. & Logistics*	*Bus. Mgmt. & Admin.*	SHARE OF TOTAL US EMPLOYMENT IN INDUSTRY CLUSTER
1	51-2011	Aircraft Systems Assemblers	■					6.4%
2	17-2011	Aerospace Engineers		■				4.6%
3	51-9061	Inspectors, Testers, Sorters, Samplers, & Weighers	■					4.0%
4	17-2112	Industrial Engineers		■				4.0%
5	51-4041	Machinists	■					3.4%
6	49-3011	Aircraft Mechanics & Service Technicians				■		3.3%
7	17-2141	Mechanical Engineers		■				3.0%
8	15-1133	Software Developers, Systems Software			■			2.8%
9	51-2092	Team Assemblers	■					2.7%
10	51-2022	Electrical & Electronic Equip. Assemblers	■					2.4%
11	15-1132	Software Developers, Applications			■			2.3%
12	13-1023	Purchasing Agents, Exc, Whls., Retail, & Farm	■					2.1%
13	51-1011	First-Line Supvsr., Production & Operating Workers	■					2.1%
14	43-5061	Production, Planning, & Expediting Clerks	■					1.9%
15	51-4011	CNC Machine Operators, Metal/Plastic	■					1.8%
16	13-1081	Logisticians				■		1.7%
17	13-1199	Business Operations Specialists, All Other					■	1.7%
18	11-9041	Architectural & Engineering Mgrs.		■				1.6%
19	17-2071	Electrical Engineers		■				1.6%
20	17-2072	Electronics Engineers, Except Computer		■				1.3%

Source: US Cluster Mapping Benchmark Definitions (Delgado, Porter, Stern 2013); National Career Clusters Framework (Perkins IV Crosswalks, rev. August 2012); EMSI; TIP Strategies

Among the largest occupations, only two had median hourly wage rates below the region rate for all industries ($17.27). At the other end of the spectrum, several occupations offer median hourly wage rates in excess of $40 per hour. These include Engineers, All Other (SOC 17-2199) and Software Developers, Systems Software (SOC 15-1133), with median hourly wage rates of $49.99 and $48.40, respectively.

Generally speaking, wages correlate with education requirements. However, a few of the occupations offer the opportunity for high-wage employment with relatively modest levels of education and training. Aircraft Mechanics & Service Technicians (SOC 49-3011) is one example, with median hourly wage rates above $27 per hour and educational requirements that can be as minimal as a postsecondary award that is not part of a degree program.

FIGURE 16. TOP NORTHWEST FLORIDA OCCUPATIONS: AEROSPACE AND DEFENSE
BASED ON SHARE OF TOTAL EMPLOYMENT IN THE INDUSTRY CLUSTER IN THE REGION

SOC CODE	OCCUPATION	% OF CLUSTER EMPL.	2015 JOBS IN REGION	LQ (US=1.00)	MEDIAN HOURLY EARNINGS	MINIMUM EDUCATION REQUIRED
51-2011	Aircraft Systems Assemblers	8.7%	189	**1.48**	**$21.78**	Moderate-term OJT
49-3011	Aircraft Mechanics & Service Technicians	7.7%	1,158	**3.02**	**$27.19**	Non-degree award
17-2112	Industrial Engineers	4.9%	489	0.68	**$31.93**	Bachelor's degree
51-2092	Team Assemblers	3.6%	1,720	0.54	$14.22	Moderate-term OJT
17-2011	Aerospace Engineers	2.9%	198	1.00	**$42.55**	Bachelor's degree
51-2022	Electrical & Electronic Equip. Assemblers	2.8%	243	0.38	$16.15	Moderate-term OJT
51-9061	Inspectors, Testers, Sorters, Samplers, & Weighers	2.7%	611	0.42	**$18.94**	Moderate-term OJT
13-1081	Logisticians	2.5%	551	**1.35**	**$37.03**	Bachelor's degree
15-1133	Software Developers, Systems Software	2.3%	553	0.48	**$48.40**	Bachelor's degree
13-1023	Purchasing Agents, Exc, Whls., Retail, & Farm	2.3%	852	0.97	**$32.13**	Bachelor's degree
17-2199	Engineers, All Other	2.1%	788	**1.89**	**$49.99**	Bachelor's degree
49-2091	Avionics Technicians	2.0%	163	**3.08**	**$27.26**	Associate's degree
51-1011	1st-Line Supvsr., Production & Operating Workers	1.9%	1,116	0.63	**$24.21**	Related experience
13-1199	Business Operations Specialists, All Other	1.9%	4,137	**1.48**	**$30.51**	Bachelor's degree

Source: EMSI 2016.4 – QCEW Employees, Non-QCEW Employees, and Self-Employed
Note: Location quotients (LQs) of 1.25 or greater suggest a specialization in the occupation relative to the US and are **highlighted**. Median hourly wages above the regional rate of $17.27 are **highlighted**.

RESOURCES & NETWORKING

AEROSPACE		
TRADE ASSOCIATIONS		
Aerospace Industries Association		www.aia-aerospace.org
Aerospace & Defense Forum		aerospacedefenseforum.org
Aircraft Electronics Association		www.aea.net
American Institute of Aeronautics and Astronautics		www.aiaa.org
Aviation Suppliers Association		www.aviationsuppliers.org
Aviation Distributors and Manufacturers Association		www.adma.org
General Aviation Manufacturers Association		www.gama.aero
Aeronautical Repair Station Association		www.arsa.org
Helicopter Association International		www.rotor.com
International Coordinating Council of Aerospace Industries Associations		www.iccaia.org
National Aeronautics Association		www.naa.aero
National Business Aviation Association		www.nbaa.org
Professional Aviation Maintenance Association		www.pama.org
Regional Airline Association		www.raa.org
SAE International		www.sia.org
Satellite Industry Association		www.sia.org
Space Enterprise Council		www.uschamber.com/space/default
Space Foundation		www.spacefoundation.org
Space Transportation Association		www.spacetransportation.us
RELEVANT CONFERENCES/EVENTS		
Space Tech Expo		
23-25 May 2017	*Pasadena, CA*	www.spacetechexpo.com/
Aerospace & Defense Supplier Summit		
26-18 March 2018	*Seattle, WA*	www.bciaerospace.com/seattle/
AeroDef 2017		
6-9 March 2017	*Fort Worth, TX*	www.aerodefevent.com/
TRADE PUBLICATIONS		
PwC Aerospace & Defense team publications		http://www.pwc.com/us/en/industrial-products/aerospace-defense.html
Aerospace America		www.aerospaceamerica.org/
Aerospace & Defense Technology		www.techbriefsmediagroup.com/magazines/adt
Aerospace Manufacturing and Design		www.onlineamd.com/magazine/
AIAA Journal		www.arc.aiaa.org/loi/aiaaj
Aircraft Engineering and Aerospace Technology		www.emeraldgrouppublishing.com/aeat.htm
Journal of Aircraft		www.arc.aiaa.org/loi/ja
Journal of Air Transport Management		www.journals.elsevier.com/journal-of-air-transport-management/

AEROSPACE	
Journal of Spacecraft and Rockets	www.arc.aiaa.org/loi/jsr
Journal of Propulsion and Power	www.arc.aiaa.org/loi/jpp
Journal of Guidance, Control, and Dynamics	www.arc.aiaa.org/loi/jgcd
Journal of Aerospace Information Systems	www.arc.aiaa.org/loi/jais
NASA Tech Briefs	www.techbriefsmediagroup.com/magazines/ntb
PwC Aerospace & Defense team publications	http://www.pwc.com/us/en/industrial-products/aerospace-defense.html

Source: TIP Strategies research