

# FORWARD CHARLESTON



## Targeted Economic Development and Marketing Strategy

### **Aircraft Cluster Analysis**

April 2005

## Target Industry 2: Aircraft

### Industry Overview

Aircraft is a broad industry that consists of civilian and military aircraft, space vehicles, and missiles. Aircraft suppliers provide parts and machinery for aircraft assembly and maintenance. These parts include engines, interior components, avionics, and aircraft hardware such as landing gear. These suppliers are important for both the assembly and maintenance of aircraft. The aircraft industry's customers include the military, commercial airlines, and general aviation.

The industry has suffered in recent years due to falling orders for new aircraft, but slight growth, as expected, returned in 2004. Aircraft industry employment fell for the fifth consecutive year, shedding over 40,000 jobs in 2003 to end the year with 690,000 employees. A slight rebound in sales of 1% in 2004 brought the civilian and military aircraft total to \$148 billion, according to the Aircraft Industries Association (AIA). The government is the largest customer segment of the aircraft industry (about 60% of all sales), and increased sales to the Pentagon are offsetting declines in the commercial aircraft market.

Despite a general decline in employment nationally, certain areas within the U.S. are expected to see increases. Specifically, the Aircraft Manufacturing sector is expected to demonstrate a gradual shift in geographic location to the southern U.S. like other manufacturing sectors in automotive, and industrial machinery. The aircraft industry increasingly has to squeeze costs to improve its bottom line in the face of a general industry slump and heightened European manufacturing competition.

The aircraft industry currently employs 689,000 workers in the U.S. Despite a dip in employment, the industry's wages have continued to grow. Annual wages are well above the average national wage and are among the highest of any manufacturing sector. In 2003, the average annual wage of an aircraft employee was nearly \$57,000. Annual wages grew by 37% from 1993 to 2003.

The aircraft industry cluster is classified into the end markets served: **Civilian, Military, and Space Vehicle and Missiles**. The industry as a whole is expected to experience 7% revenue

### Aircraft

#### NAICS Definition

- 336411 Aircraft Manufacturing
- 336412 Aircraft Engine and Parts manufacturing
- 336413 Parts and Auxiliary Equip. manufacturing
- 488190 Aircraft maintenance and repair services
- 811219 Precision equipment maintenance
- 811310 Commercial machinery maintenance

#### Industry Employment

- 689,000 employed - US

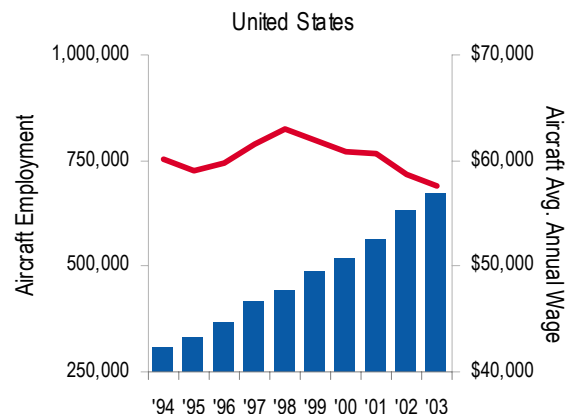
#### Wage Rates

- \$56,900 annual wage in the US

#### Location Criteria

- Large area airport or military base
- Proximity to good technical training institutions
- Manufacturing non-union workforce
- Large affordable tracts of land
- Temperate weather for testing

### Aircraft Industry, 1994 - 2003



Source: AngelouEconomics;BLS

growth through 2006, with each sub sector expanding. The most notable expansion will be in the Civilian Aircraft sector, which will grow by 7% after a 32% decline from 1998-2003. Each aircraft sub sector is discussed below.

	2003 Sales (\$ Billions)	1998-2003 Sales Growth	Projected Growth: 2006
<i>Civilian Aircraft</i>	\$34	-32%	7%
<i>Military Aircraft</i>	\$40	15%	9%
<i>Missiles</i>	\$13	67%	6%
<i>Space</i>	\$35	11%	7%
<b>Total Aircraft</b>	<b>\$148</b>	<b>-1%</b>	<b>7%</b>

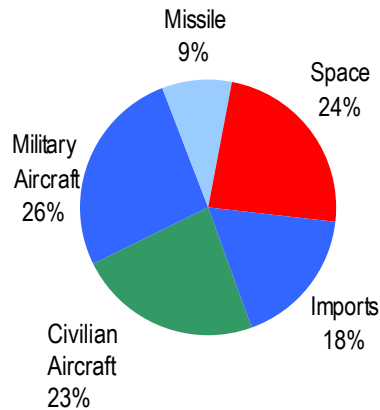
**Civilian Aircraft**

Civilian aircraft sales account for nearly a quarter of the U.S. aircraft industry. The Aerospace Industry Association predicts a recovery of civilian aviation by 2006. Commercial jetliner sales declined \$7 billion last year. The civilian jetliner market is split nearly 50-50 between Boeing and Europe’s Airbus. Both companies expected to deliver a combined 570 aircraft in 2004. Meanwhile, Boeing is introducing its 200-seat **7E7**, its first new airliner in 10 years. The **7E7** is expected to enter service in 2008. The announcement that Charleston would be home to the **7E7** fuselage assembly immediately propels the region into prominence in aircraft manufacturing.

The civilian aircraft market has shown strength in the light jet and civilian helicopters markets, whose sales doubled to \$348 million. These niche markets are expected to continue to grow over the next five years.

Another bright spot in the industry is the maintenance, repair, and overhaul (MRO) segment. The nearly \$40 billion (MRO) landscape is also evolving rapidly and it is expected to grow by \$11 billion over the next 5 years. MRO consists of independent service providers, airline technical services departments, and OEMs. Because of a tightening in the airline industry, large commercial airliners are striving to avoid large capital outlays for new aircraft purchases through improved maintenance and repair of their existing fleet. Civilian carriers and cargo companies are outsourcing their maintenance and repair. Revenues for MRO organizations are expected to grow over 5% per year over the next 3 years.

**U.S. Aerospace Industry**



Source: Aerospace Industries Assn. 2004

**Military Aircraft**

Military aircraft accounts for over one-quarter of the U.S. aerospace industry. The outlook for the sector is good. Defense budgets are expected to rise 4-6% until the end of the decade. Defense contractors should expect roughly the same single-digit growth of recent years. Sales of military aircraft, engines, parts and services increased 4% to \$40 billion in 2003.

The U.S. military is continuing to reduce the size of its units as it transitions to a smaller, more mobile force to combat terrorism and respond globally to small conflicts. Technology is playing an increasingly important role. As the technology improves, **Unmanned Aerial Vehicles (UAVs)** will replace human pilots in dangerous roles in both military and civilian use. This has already been showcased in recent conflicts in Afghanistan and Iraq.

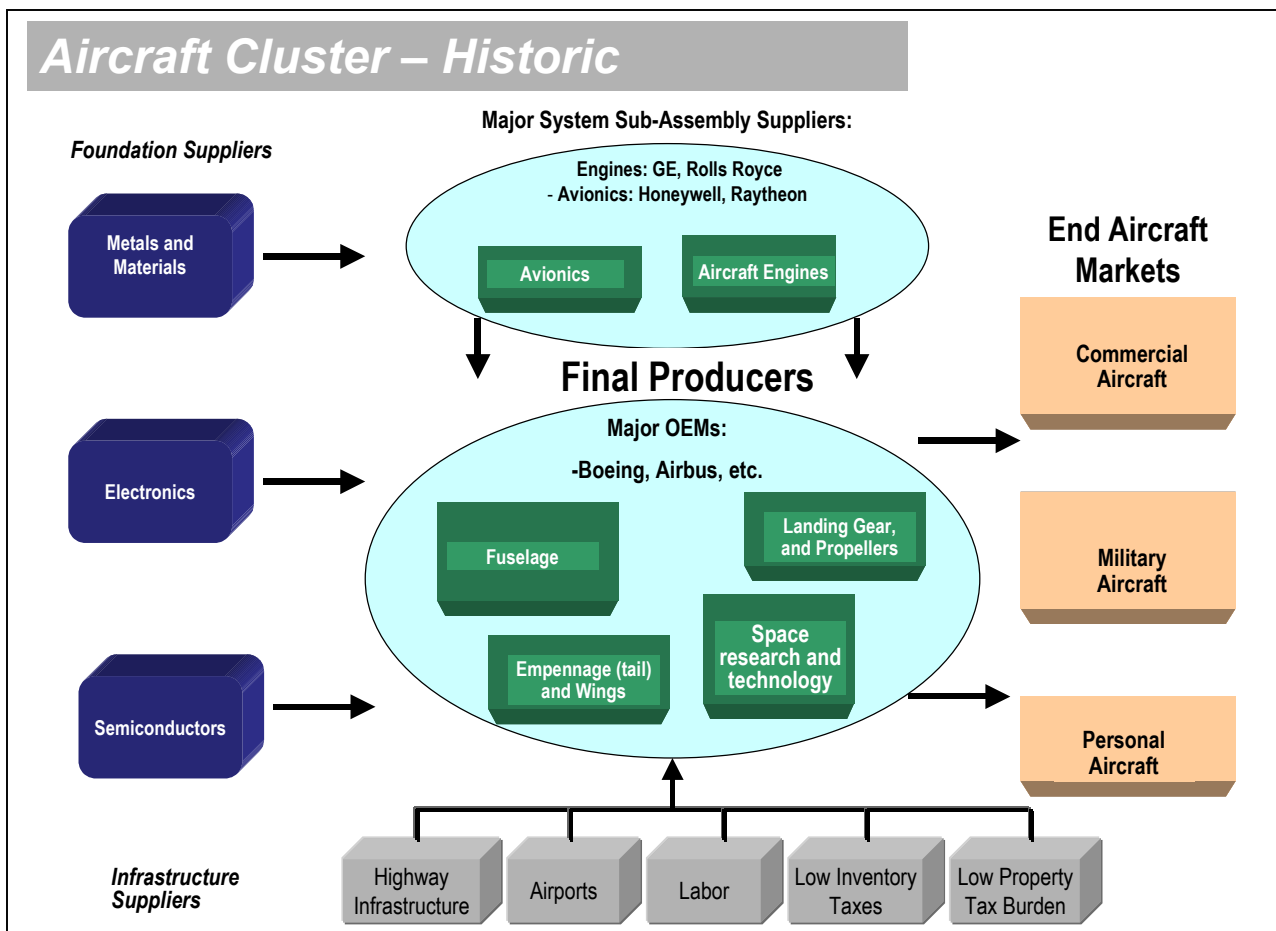
**Space Vehicles and Missiles**

The smallest segment of the aerospace industry includes firms producing guided missiles and spacecraft. Most sales are to the military and government. The chief commercial application of missiles is to launch satellites into orbit.

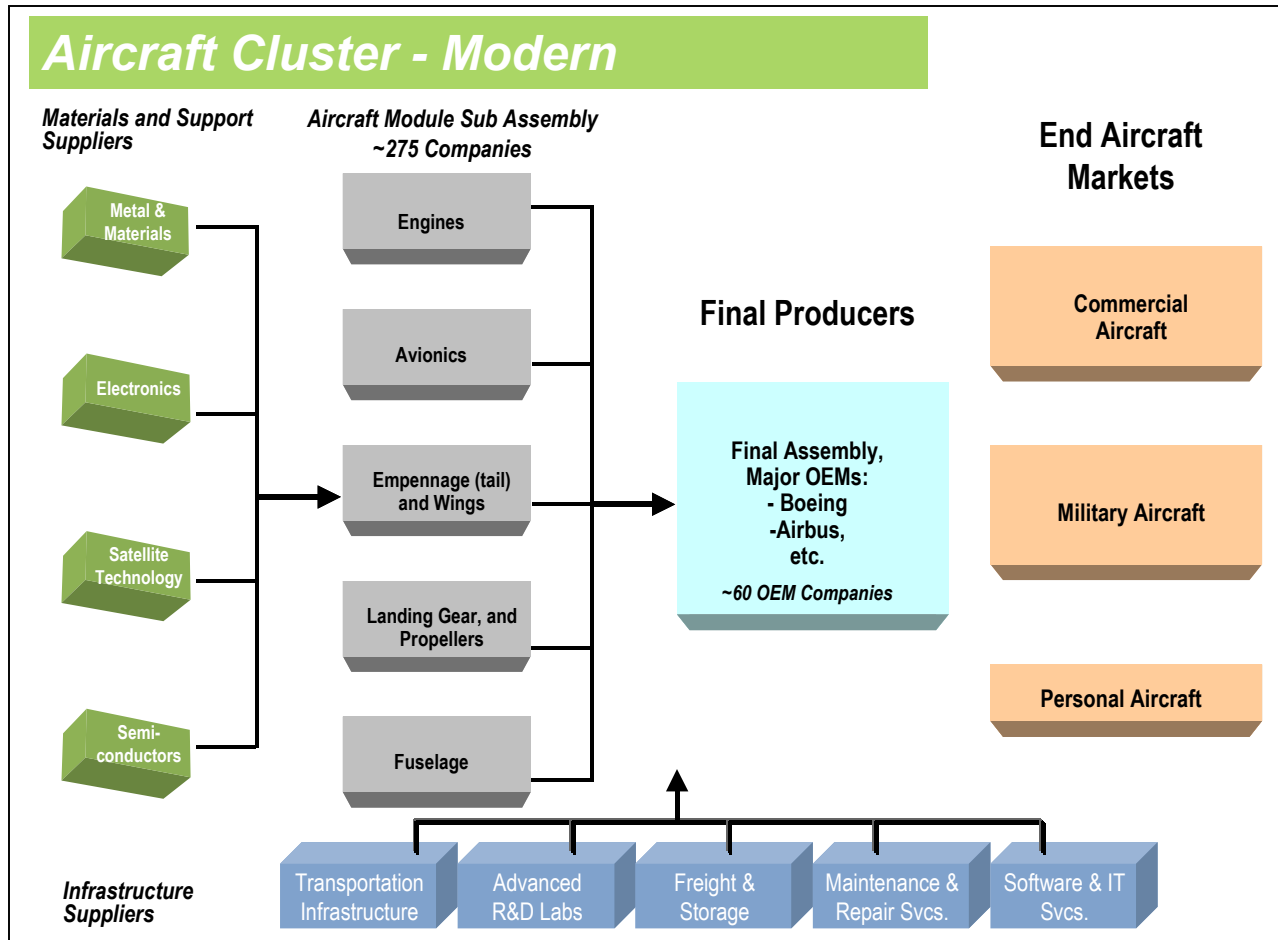
Space sector sales increased to \$35 billion last year. NASA and non-Defense Department federal agencies accounted for most of the increase. Suppliers in the U.S. and Europe dominate the aircraft parts industry, although Asian firms are quickly increasing their competitiveness. Missile sales were up nearly 2% to \$13 billion, the highest level since the end of the Cold War.

Below are two graphical descriptions of the aircraft industry. The first is the historical aircraft manufacturing supply chain. Typically, major OEMs such as Boeing performed the majority of construction and assembly. Only the manufacture of the engine and the advanced avionics (navigational controls, etc.) were outsourced. The industry has shifted, though, to streamline its supply chain much like that of the automotive industry. In this new system, much of the aircraft is built in separate modules by major suppliers all over the country and the world. These modules are all then shipped to the OEM facility for final assembly. This latter process is what is used by Airbus, and what Boeing is employing in the construction of its new 7E7 aircraft.

**Historical Aircraft Manufacturing Process:**



**Current Aircraft Manufacturing Process:**



**Industry Requirements**

**Economic Conditions.** A sizeable aircraft industry cluster benefits from end-producer demand and a local pool of skilled workers. Technical and trade schools are needed to educate and train workers. Maintenance facilities can draw aircraft across large regions due to relative short flight times.

Aircraft parts manufacturing are large-scale, low margin operations whose profitability is greatly influenced by recurring costs. They are large users of electricity and natural gas and pay large amounts of property taxes. Any location decision will be heavily influenced by tax rates, utility costs, and prevailing wage rates. Due to the number and diversity of employees these operations are fiercely sought after and command large incentive packages. Typical incentives are similar to the automotive industry and have included tax abatements, tax credits, worker-training grants, and infrastructure improvements.

**Structural Assets.** Aircraft and aircraft parts manufacturers are typically medium-to large-scale operations requiring a sizable tract of land. Proximity to a large, international airport is desirable, but small regional airports will still allow for flight service. Manufacturers seek locations with favorable weather so schedules will be met. Air traffic congestion can also be a major detriment

to testing and getting product in and out the door. A land buffer or limits to residential growth nearby helps prevent public complaints of noise that could threaten future operations. Facilities range in size from several hundred thousand to millions of square feet. Any facility will require ample access to electricity, natural gas, water, and wastewater. An excellent transportation system including both interstate and rail access, in addition to a commercial airport, will also be required. Port access sometimes is required to ship large subassemblies such as wings.

*Facility Requirements for an Aircraft Manufacturer:*

<b>Aircraft Manufacturing Facility Typical Requirements</b>		
	<b>Details</b>	<b>Details</b>
Activity	<b>Large Aircraft Manufacturer</b>	<b>Subassembly, Small Aircraft</b>
Size	250,000 to 400,000 sq. ft.	75,000 sq. ft.
Acres	40-75 acres	15 acres minimum
Employees	600 employees	100-200 employees
Water	600,000 gallons / day	250,000 gallons / day
Wastewater	450,000 gallons / day	125,000 gallons / day max
Electricity	26,000 kw Demand 13 mil to 16 mil kwh/month	8,000 kw Demand 4 mil kwh/month
Natural Gas	1 mil Therms a year	30,000 mcf / month average
Telecom	T-1 minimum	T-1 minimum
Investment (\$) (typical U.S. facility)		
Building/Land	\$25 million	\$10 million
Equipment	\$125 million	\$15 million
Other:	- 15 miles of Interstate - Rail is required - International Sea Port a plus - Within 60 miles of commercial airport	- Production workers: 3 shifts, 7 days/wk - Water does not need to be treated - Electricity: dual substations, possibly on separate grids
<b>Source: AngelouEconomics</b>		

**Workforce.** Semi-skilled and skilled workers are required for aircraft parts manufacturing, including many engineers and drafters. Mechanics and aircraft technicians will be needed for any maintenance facility. Skilled machinists are required to make parts that are not mass-produced. As with automotive suppliers, an aircraft manufacturing facility will desire both a four-year engineering university as well as a good technical college. Technical colleges should provide a strong aircraft program with courses in airframe and power plant technology.

The Aircraft Manufacturing industry requires a diverse set of engineers, production workers, and technicians:

## Aircraft Manufacturing

SOC Code	Occupation	Industry Employment	% of Cluster Employment	10-year Growth Forecast	Relative Growth Level	% Jobs Requiring Bachelor's
<b>11-0000</b>	<b>Management occupations</b>	<b>146,450</b>	<b>9.49%</b>	<b>12.1%</b>	–	
11-1021	General and operations managers	25,660	1.66%	18.4%	H	48%
11-9041	Engineering managers	25,140	1.63%	9.2%	L	76%
<b>13-0000</b>	<b>Business and financial</b>	<b>125,400</b>	<b>8.13%</b>	<b>21.3%</b>	–	
<b>15-0000</b>	<b>Computer and mathematical</b>	<b>132,440</b>	<b>8.58%</b>	<b>34.8%</b>	–	
15-1032	Comp. software engineers, sys. software	30,960	2.01%	45.5%	VH	81%
<b>17-0000</b>	<b>Architecture and engineering</b>	<b>283,970</b>	<b>18.41%</b>	<b>8.6%</b>	–	
17-2011	Aerospace engineers	47,050	3.05%	-5.2%	VL	82%
17-2141	Mechanical engineers	31,570	2.05%	4.8%	VL	77%
17-2071	Electrical engineers	23,270	1.51%	2.5%	VL	80%
17-3021	Aerospace eng. and operations techs	7,120	0.46%	1.5%	VL	16%
17-3024	Electro-mechanical technicians	5,060	0.33%	11.5%	L	17%
<b>19-0000</b>	<b>Life, physical, and social science</b>	<b>119,630</b>	<b>7.75%</b>	<b>17.2%</b>	–	
19-2012	Physicists	4,660	0.30%	6.9%	VL	94%
19-2032	Materials scientists	2,180	0.14%	8.6%	VL	91%
<b>51-0000</b>	<b>Production occupations</b>	<b>271,650</b>	<b>17.61%</b>	<b>3.2%</b>	–	
51-2092	Team assemblers	34,200	2.22%	-1.6%	VL	5%
51-2022	Electrical and electronic equip.assemblers	29,930	1.94%	-18.3%	VL	6%
51-4041	Machinists	25,360	1.64%	8.2%	VL	4%
51-9061	Inspectors, testers, sorters, and weighers	24,810	1.61%	4.7%	VL	13%
51-2011	Aircraft structure, rigging, and sys. assemblers	21,960	1.42%	-9.4%	VL	5%
51-2023	Electromechanical equipment assemblers	13,110	0.85%	-8.3%	VL	6%

Source: BLS; AngelouEconomics

**Research & Development.** R&D activity in the aircraft manufacturing industry abounds, though it generally focuses on product development rather than later-staged manufacturing processes. Major funding sources for underlying aircraft technologies come from the Department of Defense and NASA. The majority of industry research is conducted in-house at private research and design facilities.

A new thrust of R&D in the aircraft industry is in constructing aircraft from advanced composite materials. These materials are preferred because of their extremely lightweight, yet high strength properties. The new 7E7 fuselage section that will be built in Charleston will employ cutting-edge advanced composite materials and a new manufacturing process. This presents a good opportunity for the Charleston region to build an expertise in this area. Charleston can attract Clemson's Composite Manufacturing Technology Center (CMTC) to establish a satellite advanced degree program to be headquartered at the Low Country Graduate Center. These students could work with the new Alenia / Vought facility, while earning an advanced engineering degree.

## **Charleston's Assets and Constraints in Aircraft**

### **Assets.**

- **Alenia / Vought Supplier Announcement.** This high profile aircraft manufacturer decision to build Boeing's most high profile plane immediately puts Charleston on the map in aircraft manufacturing and makes it a viable location for other companies. Immediately, it has the effect of drawing potential suppliers to the area.
- **A new statewide push for Aircraft.** There is now a **statewide push** to grow the aircraft manufacturing industry. Having state support and funds will make it easier to land targets in Charleston.
- **Port of Charleston.** Boeing's 7E7 is a good example of the manufacture of an aircraft in the modern day: parts of the aircraft are being manufactured all over the country and the world, with final assembly of the finished plane occurring in Boeing's main facility in Washington state. This global manufacturing process requires the shipment and receipt of parts and materials that will be used in each process. The presence of the Port of Charleston makes this international import and export easier and cuts down on transportation costs and time delays.
- **Low cost manufacturing environment.** Charleston's low cost manufacturing environment is a critical asset for the region in attracting all types of manufacturing; air manufacturers are no different. Actually, with the increased competition and reduced profitability in the overall airline industry, the need to minimize costs is becoming even more important for aircraft manufacturers. Charleston's relatively low labor costs, including low wages, low unemployment and workers' compensation costs, and low rate of labor unionization are all strong plusses for the region.
- **The Composites Manufacturing Technology Center (CMTC) at Clemson University.** The CMTC develops improved manufacturing processes for advanced composite materials and facilitates the commercialization of advanced composite technology. Advanced composites, because of their lightweight and impressive strength capabilities, are becoming critical to the aircraft industry. The new Alenia / Vought manufacturing facility will employ cutting edge advanced composite manufacturing processes. The CMTC is an asset that could be leveraged to attract existing composite material companies or as a source of commercialization opportunities for entrepreneurial ventures. Advanced composites are not only being used in aircraft, they are also increasingly being used in applications for the automotive and industrial machinery sectors.
- **Trident Technical College – the Center for Accelerated Technology Training (CATT).** The availability of skilled technicians is important for the Aircraft industry. Because, aircraft manufacturing utilizes specific skill sets, it is critical for these manufacturers to have access to customizable technical training for their employees. The Center for Accelerated Technology Training is one of the oldest and most comprehensive training programs in the U.S. It has been recognized in national press and is ranked the number one workforce-training program in the country by *Expansion Magazine*.

### **Constraints.**

- **Lack of strong local presence of advanced engineering degree programs.** Bringing in Clemson as a partner with the Low Country Graduate Center to offer a materials science engineering graduate degree program could mitigate this void.

- **The region currently lacks a strong cluster in aircraft manufacturing.** Although, as mentioned before, the high profile aspect of the Alenia / Vought announcement immediately puts Charleston on the map for any potential expansions or relocations.

## **Final Niche Targets**

### **1. Commercial Aircraft Parts Manufacturers and Suppliers**

**Definition:** Manufacturers of input parts or raw materials to higher tier or OEM aircraft manufacturers.

**Why a fit?** The presence of the Alenia / Vought facility in Charleston, which will be a major manufacturer of the fuselage component of the new Boeing 7E7, will be a major draw for suppliers to that facility. Additionally, these supplier firms will benefit from the presence of the Port of Charleston for input of raw materials. Like the automotive industry, these suppliers will prefer to be in close proximity to the final manufacturing facility they supply.

**Type of Target:** *Recruitment*

**Organization responsible:** *Charleston Regional Development Alliance*

**Timeline:** *Immediate (6-12 months)*

### **2. Civilian / Personal Aircraft OEM Manufacturer**

**Definition:** Final manufacturer (OEM) of finished personal aircraft. These aircraft are smaller in size and occupy less than roughly 25 passengers.

**Why a fit?** The decision of Alenia / Vought to locate in Charleston sends a clear message to other smaller manufacturers that the region is an optimal choice for aircraft manufacturing. This can be an important marketing and sales draw for recruitment efforts. In addition, as the cluster develops a new OEM will be able to leverage the suppliers, workforce, and technical training programs that will be pioneered by Alenia / Vought.

**Type of Target:** *Recruitment*

**Organization responsible:** *Charleston Regional Development Alliance*

**Timeline:** *Immediate (6-12 months)*

### **3. Precision Industrial Machinery**

**Definition:** A supplier and manufacturer of industrial machinery to be used in the production of aircraft parts and components.

**Why a fit?** As production at Alenia / Vought begins to scale up, there will be a need for industrial machinery to support the manufacturing process. The proximity of these companies to a major aircraft manufacturer such as

Alenia / Vought would be advantageous to reduce the cost of providing service and support for the machinery used in the manufacturing process.

<b>Type of Target:</b>	<i>Recruitment</i>
<b>Organization responsible:</b>	<i>Charleston Regional Development Alliance</i>
<b>Timeline:</b>	<i>Intermediate (1-3 years)</i>

#### **4. Advanced Composite Materials R&D, Suppliers**

**Definition:** Advanced composite materials is the scientific process of combining different materials based on their characteristics to create a more optimal combined material. These composite materials are created to have greater tensile strength properties while maintaining lower density (weight) characteristics. The use of composites has wide applications, but is being utilized increasingly by the aircraft manufacturing industry.

**Why a fit?** The use of composites has wide applications, but is being utilized increasingly by the aircraft manufacturing industry. In fact, the Alenia / Vought manufacturing process will be the first of its kind to utilize composite materials to a high degree. Clemson University has a cutting edge program in advanced composite materials, housed at the Composites Manufacturing Technology Center (CMTC). The presence of the Alenia / Vought manufacturing facility could entice Clemson to extend its advanced composite degree program to the Low Country Graduate Center.

<b>Type of Target:</b>	<i>Entrepreneurship &amp; Recruitment / Retention</i>
<b>Organization responsible:</b>	<i>Entrepreneurship will drive the development of this niche (organization unknown, perhaps the formation of a new Advanced Materials Industry Organization can be the umbrella group)</i>  <i>CRDA for minimal recruiting</i>  <i>Three Counties and Chambers of Commerce for retention efforts of companies present in the region</i>
<b>Timeline:</b>	<i>Long-term (3-5 years or beyond)</i>

## **Aircraft Specific Recommendations**

### **1. *Develop a regional land use and transportation plan to expand roadways.***

One of the aircraft industry's top site selection requirements is good transportation access and easy access to customers and suppliers. While the Port is a strong selling point for the region, Charleston must invest in improving its road infrastructure before it can sell the region to aircraft manufacturers.

A land use plan will reassure the region that future growth is directed and a high quality of life continues for all residents. Each county has a natural role to play in the region's development. Dorchester County, for example, is ideal for office buildings and to provide a place for small-to medium-sized businesses to flourish. Charleston County, with its historic core, is suited for service businesses, research, and entrepreneurial enterprises. Berkeley County, with its ample utility capacity and sites, can serve the region for industrial and manufacturing operations. Together, the three counties offer sites that can appeal to a wide range of businesses.

A land use plan will shape future growth patterns so that the region as a whole offers a healthy mix of business and residential sites. A transportation plan should then be developed to facilitate the land use vision.

- **Ensure that the region's roadways align with its land use plan. Expand highways to facilitate the flow of forecasted commercial and residential traffic.** Expand the CHAT group within the Council of Governments to include leaders from the private sector and local interest groups. The expanded group should be charged with the responsibility of forming a regional vision for land use. Each county should buy into the regional land use plan. As the plan is being developed, also begin to study the current transportation problem. Once the land use plan is complete, agree to a transportation plan that supports smart land use decisions. **Let the land use plan determine the expansion and creation of roadways.**
- **Improve the region's mass transit system to service areas with high growth. Integrate mass transit into the regional land and transportation plan.** In 2004, the region passed a ½ cent sales tax to help pay for transportation improvements. Over the next 25 years, the sales tax will generate an estimated \$1.3 billion to be spent in major part on improvements to local roads and bridges. A small portion of this will be used to fund public transportation, such as a park and ride service and smaller buses to service residential areas. Ensure that expenditures for improvements and public transportation are connected with the goals set forth in the regional land use and transportation plan.

### **2. *Support legislation to make the Port cost competitive.***

In September 2004, the Port Authority announced a 13% growth in the amount of cargo moved through the Port over the past year. In the past five years, \$150 million has been invested in Port improvements, including the widening and deepening of the harbor and new equipment that allows for higher stacking of cargo containers. Last year, BMW renewed a 10-year contract to use the Port's facilities.

The Port is cited as Charleston's number one business asset. During industry focus groups conducted for this strategy, every industry, including bioscience and software, gave compelling reasons about how the Port has impacted their decision to operate in Charleston. Although only around 20% of distribution jobs pay above average wages, the

#### **Priority**

**Charleston's leaders must take active steps to keep the Port cost competitive.**

resulting jobs created in part because of the Port's presence often pay much higher salaries. Therefore, while warehousing and distribution may not be a primary industry recommended for the CRDA's external marketing efforts, it is a local business function that must be kept competitive.

- **Work with State Legislators to pass legislation that incentivizes companies that increase shipments through the Port.** Ensure that South Carolina's Port incentives are of equal or greater value than those offered in Georgia and other competitor states. (See business climate recommendations.)
- **Continue to work with Port officials to educate the local population of the Port's connection to the region's economic success.** There is some debate about whether warehousing and distribution should be one of the CRDA's target industries. Consider warehousing and distribution as a business function rather than a stand-alone industry. The ability of the region to accommodate these operations is critical to its ability to recruit the target industries recommended in this strategy, especially aircraft, automotive, and advanced security. Make infrastructure and business climate improvements that support the Port, while marketing to those businesses that will view these investments as a competitive advantage for locating in Charleston.

**3. Recruit Clemson's material science engineering graduate degree program to the LCGC.**

While the region is home to excellent colleges and universities, the shortage of graduate level programs in science and engineering is a top concern of local employers. During focus groups with the target industries, companies across all industries emphasized the need for graduate degreed scientists and computer engineers. The presence of these individuals is not only important in filling current positions, but graduate programs are also a recruitment advantage because many technology workers move to places that allow them the chance to advance their education.

- **Expand the Low Country Graduate Center so that it can accommodate more students and offer a wider variety of degree programs.** Every business, from every sector, emphasized the need for engineering talent in the region and desire for local leaders to help the Center grow and increase enrollment. Ask Clemson University to start offering degree programs at the Center, particularly those in target industry-related fields such as advanced materials science.

**4. Trident Technical College should place an emphasis on expanding the curriculum for its aircraft technician degree.**

Trident Technical College should begin to develop the curriculum and training to support an aircraft technician vocational program that spans beyond simply aircraft maintenance. Aircraft manufacturers need skilled technicians in production and manufacturing processes, which require a different skill set than the aircraft maintenance technician program currently being offered at Trident Technical College. As suppliers to the Alenia / Vought facility begin to choose locations, they will be more apt to locate in the Charleston region if there is an established technical training program to provide them with the skilled workforce that they need.

**5. Conduct marketing missions to Albuquerque and Savannah.**

Up to 10 leaders from Charleston should attend marketing missions to Albuquerque and Savannah. During the trips, Charleston representatives should meet with local aircraft companies, tour the region, and learn about the economic development advantages the cities offer companies in this industry.

**6. Lobby for targeted aircraft incentives.**

The aircraft manufacturing industry, much like the automotive industry, is highly reliant on the presence of incentives packages in making location decisions. The State of South Carolina should look at adopting a standard suite of incentives targeted specifically at the aircraft industry. The incentives developed by the State of New Mexico to attract the aircraft manufacturing industry could be used as a model.

# Albuquerque

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## Aircraft Benchmarks

### 1. *Albuquerque, NM.*

Albuquerque (and the State of New Mexico) are increasingly focused on recruiting the aviation and high tech sectors to the area, and have developed several key incentives to help, including a state venture capital fund and the Technology Research Collaborative that is currently petitioning the legislature for \$42 million to build "centers of technical excellence" in fields ranging from fuel cells to digital media. On the aircraft front, Albuquerque has developed the Aerospace Technology Park near the city's Double Eagle II Airport. The development of this park has helped the region attract multiple aircraft-related companies including Eclipse Aviation and Aviation Technology Group, both small personal jet manufacturers.

The region's lead economic development organization is **Albuquerque Economic Development**, [www.abq.org](http://www.abq.org).

## Overview of E.D. Activities

Established in 1960, Albuquerque Economic Development (AED) is a private, non-profit membership organization whose mission is to recruit businesses to a three county area of New Mexico. Both the private and public sectors fund the organization. Private sector funders fall into one of six funding categories, ranging from \$30,000 per year membership to \$1,250.

The AED offers the following services:

- Site-Selection Assistance
- Labor Market Analysis
- Business Incentive Analysis
- Workforce Recruitment and Job-Training Assistance
- Coordination of State and Local Assistance

The AED's ten person staff includes the AED president, two vice presidents, two researchers, two investor relations managers, two corporate affairs managers, and one executive assistant.

Direct selling is one of the AED's major marketing tools. In 2004, the AED attended CoreNet, the Forbes CEO Forum, the National Business Aviation Association (NBAA) annual convention, NanoBusiness, the Financial Executives International conference, and IAMC.

## Aircraft Initiatives

To strengthen the region's push toward attracting the aircraft industry, the State has earmarked aggressive incentive packages for aircraft companies, while the city has developed move-in ready sites at the Aerospace Technology Park. In addition, AED staff regularly attends aircraft-related conferences. Recently, AED staff attended the NBAA in Las Vegas to promote the metro area to new and expanding aviation-related companies. Albuquerque has become a hotbed for avionics and aircraft manufacturers, which was evident by the number of attendees interested in speaking to AED staff at the conference.

Since its inception AED has recruited 200 companies and more than 25,000 jobs to the Albuquerque metro area. AED was ranked as one of the ten best economic development groups in the U.S. by *Site Selection* Magazine in 2000. Some of the aircraft-related companies that have selected the Albuquerque metro area are: Aviation Technology Group, Eclipse Aviation, Goodrich Aerospace, Honeywell Defense Avionics Systems, and Intel Corporation (which provides support to the aircraft cluster).

Albuquerque recently ranked 7<sup>th</sup> on *Expansion Management* Magazine's List of America's 50 Hottest Cities for Business Expansion. The city has ranked in the Top 50 List in previous years. To obtain the rankings, *Expansion Management* polled more than 80 professional site selection consultants, asking them to take into account such factors as business climate, workforce quality, operating costs, and incentive programs.

## 2. Savannah, GA.

Savannah was chosen as an Aircraft benchmark location not necessarily because of the presence of a well-developed cluster in aircraft manufacturing, but because of its capability in developing one. The region, much like Charleston, is in the southeast U.S. and is home to an international port, which is quickly catching up to the Port of Charleston in East Coast market share. The trend in aircraft manufacturing is expected to follow a manufacturing shift to the Southeastern U.S. similar to what is occurring in the automotive industry. That trend, coupled with Savannah's presence as a base for Gulfstream's light corporate jet manufacturing facility, will make Savannah a head-to-head competitor for future aircraft manufacturing.



The region's lead economic development organization is the **Savannah Economic Development Authority**, [www.seda.org](http://www.seda.org).

### Overview of E.D. Activities

The Savannah Economic Development Authority (SEDA) is a privately funded organization whose mission is "to improve the standard of living for all persons living in Chatham County, Georgia by stimulating economic growth through the attraction of new investment, the creation of new jobs and the support of established businesses already in the area." Its staff is comprised of a president and senior vice president, a project manager, three directors, and two assistants.

The SEDA has been named one of the best development groups in the country two times. Savannah has been ranked by *Expansion Management* as number one in the nation in workforce training and one of the nation's top 50 cities for manufacturing expansion and relocation. In addition, the Milken Institute named it 2003's "Fastest Climbing Metro."

### Aircraft Initiatives

Savannah has a long history of success in manufacturing, from paper to chemicals, food products to corporate jets, due in large part to the availability of all modes of transportation. Savannah's 246 manufacturers employ more than 13,000 in the area and pump out \$700 million in payroll. Two of the leading manufacturers located in Savannah are JBC Inc., a manufacturer of construction and agricultural equipment, and Gulfstream Aerospace, builder of corporate jets. Gulfstream Aerospace, a wholly owned subsidiary of General Dynamics Company, alone employs 4,300 at far above average wages.

But while manufacturing is still an important sector of Savannah's economy, it has declined in the last 15 years and the SEDA is building Savannah's future on creative and technical businesses through its newly formed organization, The Creative Coast. This new initiative is a public/private partnership marketing Savannah's talented workforce, cutting-edge technologies, and superior quality of life to stimulate the location and expansion of "entrepreneurial, creative, and technical businesses" in the area.

**Benchmark Data Comparison:**

Aircraft Benchmarks	Charleston MSA	Albuquerque, NM	Savannah, GA
Total Population, 2004	578,667	759,178	307,995
Total Population, 2000	548,986	712,725	293,000
Total Population, 1990	506,837	589,130	258,060
Population Growth:			
1990 - 2004	14.2%	28.9%	19.4%
2000 - 2004	5.4%	6.5%	5.1%
Total Civilian Labor Force 16+	316,795	380,719	150,689
Unemployment rate	4.5%	5.9%	5.4%
Average Wage 2003	\$31,186	\$34,500	\$31,870
Average Wage 2001	\$28,887	\$31,667	\$30,176
Wage growth: '01-'03	8.0%	8.9%	5.6%
Gross Metro Product(GMP )-\$Bn	\$17.0	\$26.9	\$10.9
Growth in GMP, '00-'03	12.3%	9.3%	15.1%
Median Age	35	36	35
% Age 25-44	30.0%	28.4%	28.8%
% without HS diploma	18.8%	16.3%	20.2%
% with bachelor's degree or higher	24.9%	28.3%	22.9%
Median Household Income	\$42,708	\$42,409	\$42,845
Average Cost of Living	98.4	102.6	98.0
Average Rent	\$722	\$786	\$694
Average Home Price	\$233,846	\$260,499	\$248,804
Total R&D State Rank*	29	17	21
Venture Capital Funds, '00-'04 (\$M)	\$17.8	\$100.1	\$1.2
Top Personal Income Tax Rate	7.00	6.80	6.00
Top Corporate Tax Rate	5.00	7.60	6.00
Property Tax Rate	2.96	1.64	2.70
Sales, Gross Rec., Excise Tax	2.88	4.61	3.55
Workers Compensation rate	1.82	2.01	2.32
Unemployment Tax rate	1.42	3.08	1.67

\* Total R&D funds from Industry, Academia, and Federal Government; Source: NSF