



MEMORANDUM

Date: January 20, 2012

To: Chairman and Members
Pima County Bond Advisory Committee

From: C.H. Huckelberry
County Administrator 

Re: **Implications of Aerospace Industry Trends on Pima County**

Attached please find a copy of a white paper titled, *Implications of Aerospace Industry Trends on Pima County* prepared recently by Applied Economics at the request of Tucson Regional Economic Opportunities Inc. (TREO). Research included interviews with local aerospace companies, including Evergreen, Alcoa, Fastening Systems, Sargent Aerospace and AGM Container Controls.

The white paper cites industry support for public funding the development of an aerospace industrial park within the vicinity of Tucson International Airport with efficient highway transportation access, along with the critical need for workforce training. In addition, on Page 11, the paper points out one of the public benefits associated with job growth in the aerospace industry – job diversity. “About 37 percent of the workforce is made up of engineers, managers, and other professionals, an additional 13 percent are administrative and support workers and the remaining 50 percent are skilled and semi-skilled production workers and technicians.” The paper goes on to cite an earlier study by TREO that showed the high level of spin off jobs resulting from job growth in the aerospace industry. For every new 100 jobs in the aerospace industry, another 47 are estimated to be created locally. This is compared to the creation of 18 jobs by 100 new jobs in the retail industry.

The author of this paper, Sarah Murley, is scheduled to be a guest speaker at the January 27 Bond Advisory Committee meeting.

CHH/dr

Attachment

c: The Honorable Chairman and Members, Pima County Board of Supervisors



IMPLICATIONS OF AEROSPACE INDUSTRY TRENDS ON PIMA COUNTY

PREPARED BY:

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DECEMBER 2011

1.0 Introduction

The focus of this analysis is on public improvements that would make the Tucson region more competitive for the aerospace industry. This white paper is to provide background on how county bond funds and other local initiatives could be used to support economic development in Pima County.

The aerospace industry nationally is projecting a major growth period as many of the major airlines are replacing a significant portion of their aging fleets, and as the market for air travel is rapidly expanding in emerging economies in the Asia Pacific region. The increases in demand for new aircraft will not only benefit primary manufacturers like Boeing and Airbus, but also their large network of suppliers in other related manufacturing industries throughout the world. Pima County is home to more than 200 companies in the aerospace industry that will experience increased demand for their products as a result of increased aircraft production. For many companies, this may result in expansion of their production facilities.

While the aerospace industry retains a strong presence in Southern California, Greater Tucson can make a compelling case as a lower cost expansion alternative if the region can demonstrate a strong commitment to this industry and offer some unique assets. For many local suppliers, the impacts of this ramp up in aerospace industry production are imminent and thus timing for any proposed public improvements to support economic development for the aerospace cluster will be critical.

The remainder of this white paper is organized as follows. Chapter 2 provides background on national trends in the aerospace industry and data on projected aircraft deliveries over the next 20 years. Chapter 3 discusses the local implications of these global industry trends and the types of public improvements that could support the retention and expansion of this industry locally. Chapter 4 reviews Greater Tucson's business climate assets and liabilities as they relate to the needs of the aerospace cluster. Chapter 5 demonstrates the economic benefits to the region of expanding the aerospace cluster and its related supplier industries.

The data used in this analysis is based on numerous published documents from aerospace industry sources locally and nationally. The white paper also incorporates results from the Aerospace and Defense Cluster Development Strategy prepared for TREO in March 2011. To supplement this secondary data, interviews were conducted with several local companies in the aerospace industry including Evergreen, Alcoa Fastening Systems, Sargent Aerospace and AGM Container Controls to solicit their input on key business climate factors for their industry, and recommendations on public improvements in Pima County that would be create a viable competitive advantage for the region.

2.0 Global Trends in the Aerospace Industry

Passenger Volume Trends

The aerospace industry is entering a period of unprecedented growth driven both by global increases in passenger volumes as well as the need to replace a significant portion of the existing fleet of commercial aircraft over the next 20 years.

The majority of passenger volume has historically come from North America, Western Europe and Japan where household income levels afforded consumers the option to travel by air. However, the rapid economic growth occurring in the Asia Pacific region has opened up new markets for air travel where countries like China and India have tripled their aircraft fleets from 2000 to 2010. Also, the spread of low cost carrier model in Latin America, Middle East, Africa and Asia has helped to support increased travel volumes.

Global passenger volumes are up 46 percent since 2000, despite declines in 2008 and 2009. Passenger volumes rose 8 percent in 2010 and are expected to grow by 6 percent in 2011, with long term growth in North America leveling out at about 2 percent per year. Air cargo traffic is expected to grow 5.6 percent per year over next 20 years due to growing world trade and increased demand for time-sensitive commodities.

System capacity is expected to grow 4.5 percent in 2011 with mainline carrier capacity up for the first time in 3 years (up 2.8%) and regional carrier capacity up 3.8 percent in the domestic market. Load factors, which are at an all time high due to strategic reductions in capacity by mainline carriers, are expected to remain high for the next 3 to 5 years. Airlines have reduced capacity to drive up prices by parking older aircraft in large quantities or using them fewer hours per day. The decrease in productivity of older aircraft has been offset by significant increases in fleet load factors. However, over the longer term the need for increased system capacity and increased fuel efficiency will lead to demand for new aircraft.

Demand for New Aircraft

Boeing is projecting demand 30,500 new aircraft from 2010 to 2030. About 37 percent of the new aircraft will go to support growth in emerging markets and the remaining 63 percent will be used to replace approximately 40 percent of the current fleet by 2030. Some aircraft being replaced will be recycled into cargo service and some will be permanently retired. High fuel prices favor new equipment over refurbished equipment from a fuel efficiency perspective.

Of the new deliveries, 22 percent will be to North America with many of these aircraft going to replace current fleet. About 34 percent of the new deliveries will go to Asia Pacific countries and 23 percent will go to Western Europe.

Over time, many of the mainline carriers will replace their wide body and larger narrow body aircraft used in domestic routes with smaller, next-generation narrow body aircraft. Some carriers will also use more, smaller 100-seat aircraft. This allows them to increase flight frequency and improve profitability by more closely matching seats with demand. As a result, about 70 percent of demand over the next 20 years will be for single aisle aircraft. These aircraft will be used to support the rapid expansion of intra-regional air service generated by spread of the low cost carrier model, and to fulfill demand for replacement aircraft in North America. An estimated 87 percent of all routes flown today are flown by single aisle aircraft and these models will continue to make up over 70 percent of the global fleet over the next 20 years.

An additional 22 percent of demand will be for twin aisle planes, with 40 percent of those deliveries going to the Asia Pacific region and 32 percent to North America and Europe. Increased fuel efficiency and better environmental performance on new twin aisle jets will be important features driving demand.

Only about 6 percent of aircraft deliveries over the next 20 years are projected to be regional jets and the remaining 2 percent will be very large aircraft and freighters. Most of these very large aircraft will be used in Asia.

In addition to the commercial airline industry, there will also be additional demand from the defense sector. Demand for unmanned aircraft for military combat, surveillance and reconnaissance could result in new deliveries of 20,000 units by 2030 according to the FAA. This includes unmanned aircraft for military, civil government and commercial uses. There currently 100 US companies working on 300 designs for unmanned aircraft, thus a dominant technology has yet to emerge.

Industry Challenges

There are currently two primary producers of commercial aircraft, Boeing and Airbus. Future plans by these two companies dictate industry trends and create trickle down impacts on the huge network of suppliers worldwide. The way in which commercial and military aircraft are designed, developed, and produced continues to undergo significant change in response to the need to cut costs and deliver products faster. Firms like Boeing and Airbus, as well as their suppliers, are reducing development time drastically through computer-aided design, which allows firms to design and test an entire aircraft, including the individual parts, by computer. The specifications of these parts can be then sent electronically to subcontractors around the world.

In terms of new product development, the market is looking for greater range, fuel efficiency, lower weight, greater passenger comfort and reduced environmental impacts. New materials and innovations in manufacturing processes will be needed to meet these challenges over the next 20 years. The industry is also addressing environmental issues by designing more efficient aircraft, improving operational procedures and developing sustainable bio-fuels for jets to deal with anticipated regulatory constraints.

In addition to the pressure to increase production and deliver aircraft faster, the industry also faces some constraints. These include constraints on raw material supplies, an aging workforce, the need for a larger base of qualified suppliers and a heavily capitalized footprint. It is likely that the industry will expand further into Asia Pacific markets to more efficiently meet the growing demand from those countries. Competition among local suppliers will drive adoption of new technologies with a less mature supplier base in locations less mature to aircraft manufacturing.

3.0 Local Implications

The aerospace cluster is a leading contributor to the local economy in Pima County. It encompasses over 200 local companies including a number of large international corporations with manufacturing facilities in Pima County where they make aircraft parts and equipment, or refurbish existing aircraft.

The next several years, from 2013 to 2016 will be a period of unprecedented growth in aerospace industry. Companies will need to expand, and while some of that expansion may occur overseas to serve rapidly growing markets for air travel in countries like China and India, there will also be expansion domestically. Due to complexity of manufacturing processes and national security concerns, there are advantages to expanding in the United States.

However, there are certain complications related to expansion and relocation for aerospace suppliers. Once a firm is certified by Boeing or Airbus in a particular manufacturing process, they must be re-certified if they change locations, which adds delays and cost to the relocation process that must be outweighed by other cost savings.

Potential for Local Relocation and Expansion of Aerospace Companies

Among the four companies interviewed, only Evergreen currently has expansion plans locally. Evergreen does aircraft maintenance, refurbishing and storage at the Pinal Airpark. However, all of the firms interviewed mentioned the potential to attract relocating and expanding firms from Southern California where operating costs are higher and the regulatory climate is less business friendly. Specifically, there is need locally for more airframe subcontractors, metal heat treating and chrome plating capabilities.

Beyond these specific capabilities, Greater Tucson may have a higher probability of attracting companies that already have some component of their operations in Arizona and are already familiar with the local business climate. Additionally, there is potential to capitalize on the proximity to Mexico and capture firms with existing operations or key suppliers in Northern Mexico.

For example, there is an aerospace industrial park in Guaymas, Sonora where precision machined components for aircraft engines are made. There are about 12 aeronautics companies in Guaymas, including Sargent Aerospace, that provide an important nucleus of capability that can be easily accessed from Greater Tucson. The Mexican government has made significant investment in the education of their manufacturing workforce. Sargent has found that workers at their Guaymas facility that are computer literate, possess an education that is very technical in nature, and have a strong work ethic. Mexico has the potential to become an important player for certain types of processes in the aerospace industry, and Greater Tucson is in a key location to take advantage of this trend.

Public Investments to Support Growth in the Aerospace Industry

The site selection process in the aerospace industry is very competitive and successful locations must go beyond meeting the basic site requirements and be able to offer some unique assets that will provide value to aerospace manufacturers. Among the firms interviewed locally, there would be strong support for the development of an aerospace industrial park adjacent to the Tucson International Airport. Aerospace is an industry that benefits from geographic clustering. This proximity fosters innovation, allows suppliers to bid jointly on contracts, and supports development of a regional pool of skilled labor. These factors make this type of aerospace-focused industrial park attractive to companies considering relocating or expanding who could benefit from the existing aerospace industry cluster in Greater Tucson.

Several models for this type of park include the Cummings Research Park in Huntsville Alabama, the GTR Global Industrial Aerospace Park in Columbus, Mississippi and the Webb Business Park in Wichita, Kansas. Clearly, there are other states that already have these types of parks and Greater Tucson would need to position itself to present capabilities and locational attributes that are unique. Most of these industrial parks are publicly-owned, provide fully developed infrastructure that is appropriately sized to support aerospace manufacturing, have good highway and air transportation access, and have a strong linkages with local universities and community colleges. The education and training component is viewed by local employers as a critical component to the success of this type of industrial park in Greater Tucson.

Pima Community College (PCC) has been an important partner to the aerospace industry in Greater Tucson and is perceived very positively by local firms. PCC has well developed programs in mechanical engineering, aviation technology and avionics. However, there is still a shortage locally of skilled machine operators, equipment mechanics and aircraft mechanics. The proposed aerospace industrial park could include an on-site dedicated PCC branch that would specialize in training programs for aerospace occupations, including customized training for both new and incumbent workers, to generate the type of pipeline that is needed to support expansion and even retain existing firms. Additionally, if PCC could offer additional programs to support advanced processes like metal heat treating this could provide a compelling reason for specialized suppliers to relocate to the Tucson region from Southern California. Training and placement services at other aerospace parks have been a key factor in making those developments successful.

It is important to recognize that while a partnership with Pima Community College would create a win-win situation for both the county and local businesses, these types of training programs are costly because they require significant on-going investment in manufacturing equipment for students to practice what they are learning. However, many local firms would be willing to donate used machines to PCC for training in exchange for some sort of tax credit or similar incentive.

Another component that would give the proposed industrial park a competitive advantage would be a program to offer local training grants for PCC services for new and expanding aerospace companies to supplement existing state job training incentives. Training and placement are costly and time-consuming and tools to reduce those costs for companies that are undergoing relocation and expansion would be very valuable.

4.0 Greater Tucson's Business Climate for Aerospace Manufacturing

Industry Importance Factors

The table below shows a representation of the relative importance of various business climate factors to the aerospace industry. These are factors that have an influence on business investment decisions. Different factors are more or less important for different industries. Because Greater Tucson has a well developed aerospace industry cluster, the region is clearly able to meet the basic business climate needs of this industry although there is continued pressure among competitive locations to enhance local business climate conditions. Availability of skilled labor is one of the most important locally controlled factors as well as having the training resources to continue to expand the pool of qualified workers. Other key issues are primarily those that directly relate to operating costs such as facility costs, transportation costs, utilities and taxes.

INDUSTRY IMPORTANCE FACTORS - AEROSPACE MANUFACTURING

Site Factors	Importance
Access to Markets	
Geographic Proximity	Medium
Transportation Svcs Cost-Goods	Medium
Transportation Svcs Avail-Rail	Low
Transportation Svcs Avail-Truck	Low
Transportation Svcs Avail-Water	Low
Transportation Svcs Avail-Air	Medium
Telecommunications Services	Low
Access to Resources	
Energy Dependability	High
Energy Cost	Low
Water Availability/Cost	Low
Raw Materials	Low
Intermediate Mfg Products	High
Business/Prof/Tech Svcs	Medium
Work Force	
Executive, Administrative & Managerial	Medium
Professional Specialty	High
Technical	High
Sales	Low
Administrative Support	Medium
Service	Low
Farming, Forestry & Fishing	Low
Precision Production & Repair	High
Operators & Assemblers	High
Transportation & Material Moving	Medium
Handlers, Equipment Cleaners & Laborers	Medium
Effective Cost of Skilled Labor	High
Effective Cost of Unskilled Labor	High
Reliability	High

INDUSTRY IMPORTANCE FACTORS - AEROSPACE MANUFACTURING (continued)

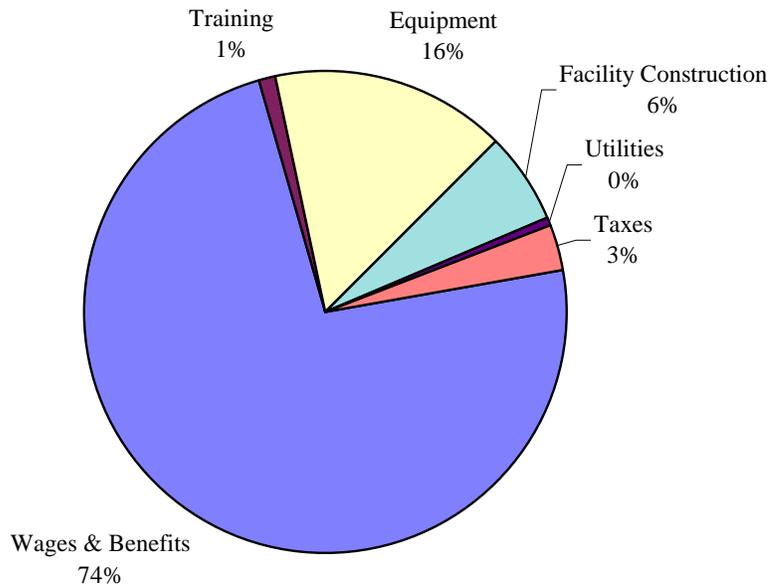
Site Factors	Importance
Space	
Land Availability	Low
Land Cost	Medium
Built Space Availability	High
Built Space Cost	High
Construction Costs	Medium
Financial Capital	
Seed	Low
Debt	Medium
Venture	Medium
Public Sector Impacts-Investment	
S/L Government Quality	Medium
Secondary Education Quality	High
Higher Education Quality	High
Local Transport/Commuting	Medium
Water/Wastewater Systems	Low
Business Incentives	High
Public Sector Impacts-Costs	
Regulatory Policies	High
Worker Compensation Costs	High
Unemployment Insurance Costs	Medium
Business Taxes	Medium
Quality of Life	
Cost of Living (ex Housing)	Low
Housing Costs	Low
Personal/Property Security	Medium
Climate/Physical Environment	Medium
Recreational/Cultural Opportunities	Low
Area Image	Medium

Local Business Climate Strengths

In our interviews, local aerospace companies were asked what they viewed as the business climate strengths and weaknesses in Greater Tucson. Many of the comments, both positive and negative, were related to labor market issues. Local business climate strengths included the following:

- **Competitive wage costs**, particularly relative to Southern California. Labor is a huge component of overall operating costs in this industry and therefore wage costs, as well as training costs, are critically important. Because of the dominance of labor costs as a component of overall operating costs, it is very difficult to overcome inherent labor costs differences through incentives. While Greater Tucson is attractive to firms from Southern California from a cost perspective, wage costs are not a competitive advantage for the region relative to locations in the Southern United States. The figure below shows an example of the breakdown of costs for aerospace manufacturing illustrating the relative importance of wage costs.

**OPERATING COSTS BY TYPE
AEROSPACE MANUFACTURING**



- **High quality, engaged workforce** with low turnover compared to other domestic and foreign aerospace manufacturing facilities. It can take up to two years to become proficient with many machine processes in aerospace manufacturing, so low turnover is an important cost factor. High turnover rates in foreign locations like Mexico and China create hidden costs that offset lower wage rates.
- **Well developed local supplier base** that is attractive for just-in-time manufacturing and joint bidding.
- **Strong engineering programs at U of A** to support the aerospace industry and generate an adequate supply of local engineering talent.
- **Well developed training programs through Pima Community College** for aerospace manufacturing workers. The College has been an important partner to the aerospace industry in Greater Tucson and is perceived positively by local firms.
- **Seamless connection to Mexico** for less complex processes and low cost components. Mexico is faster, cheaper and easier culturally to work with than subcontractors in China. Greater Tucson is an ideal location for related design/R&D and certified special processes.
- **Reasonable cost of electricity** compared to Southern California and **high degree of reliability** which are very important in precision machining.
- **Manageable facility costs** and good inventory of leasable space for aerospace manufacturing.
- **Attractive climate** for aircraft storage. There will be increasing demand for storage facilities with many commercial aircraft leases coming due in the next several years. The region's dry

climate is excellent because there is no corrosion risk. Pinal Air Park currently offers largest aircraft storage facility in the world.

- **Overall cost of living** is a significant advantage over Southern California in terms of attracting workers.

Local Business Climate Weaknesses

Although the region generally provides a competitive business climate for aerospace manufacturing, there were also some concerns about labor and education issues among local employers.

- **Shortage of skilled manufacturing workers**, particularly machine operators and mechanics. While this situation may not be unique to Greater Tucson, developing a pipeline of skilled labor for the aerospace industry and related supplier industries is a key competitive issue that will need to be addressed if the region is to take full advantage of expansion in this industry. Although PCC has good programs in place for aerospace workers, they are not producing enough workers for the local market.
- **Perceptions about poor quality K-12 education.** Secondary education quality is a problem statewide, although quality varies substantially from district to district. Nonetheless, it is an issue in attracting engineers and other professionals to the region from out of state.
- **Ability to attract and retain young professionals.** This is not an issue that is unique to the aerospace industry, but Greater Tucson's image is not necessarily appealing as a location for younger workers from out of state. However, local firms revealed that in many cases it is not an issue of a negative perception, but rather limited familiarity with lifestyle and amenities in Greater Tucson.
- **Limited incentives**, while not an issue for existing firms, could be an issue in terms of attracting new aerospace companies. California has an even more limited toolbox than Arizona so this is less of an issue in terms of attracting aerospace firms from Southern California. However, both states pale in comparison to the incentive programs available in many southern states including payroll-based cash incentives, large training grants and generous property tax abatement programs.

5.0 Regional Economic Benefits of the Aerospace Industry

Since the county is considering an investment of public funds to support the aerospace cluster, it is important to understand what the public benefits would be of growing that cluster. One factor to consider is the diversity of jobs provided by aerospace manufacturing in Greater Tucson. While these companies hire engineers and other professionals, they also support a wide range of skilled production jobs such as machine operators, mechanics, assemblers and technicians. The figure below illustrates the typical occupational mix for aerospace manufacturing. About 37 percent of the workforce is made up of engineers, managers and other professionals, an additional 13 percent are administrative and support workers and the remaining 50 percent are skilled and semi-skilled production workers and technicians.

PRIMARY OCCUPATIONS IN AEROSPACE MANUFACTURING

SOC Code	Description	Occupational Mix
17-2011	Aerospace engineers	10%
51-2011	Aircraft structure, surfaces, rigging, and systems assemblers	5%
49-3011	Aircraft mechanics and service technicians	5%
51-4041	Machinists	4%
51-9061	Inspectors, testers, sorters, samplers, and weighers	4%
17-2112	Industrial engineers	3%
15-1031	Computer software engineers, applications	3%
17-2141	Mechanical engineers	2%
11-9041	Engineering managers	2%
13-1023	Purchasing agents	2%
51-1011	First-line supervisors/managers of production and operating workers	2%
13-1199	Business operation specialists, all other	2%
13-1111	Management analysts	2%
17-2199	Engineers, all other	2%
43-5061	Production, planning, and expediting clerks	2%
17-3026	Industrial engineering technicians	2%
51-2092	Team assemblers	2%
43-6011	Executive secretaries and administrative assistants	1%
15-1032	Computer software engineers, systems software	1%
51-4011	Computer-controlled machine tool operators	1%
17-3029	Engineering technicians, except drafters, all other	1%
11-3051	Industrial production managers	1%
43-5081	Stock clerks and order fillers	1%
13-2011	Accountants and auditors	1%
49-2091	Avionics technicians	1%
43-5071	Shipping, receiving, and traffic clerks	1%
47-2211	Sheet metal workers	1%
17-3021	Aerospace engineering and operations technicians	1%
51-4121	Welders, cutters, solderers, and brazers	1%
51-4081	Multiple machine tool setters, operators, and tenders	1%
51-2022	Electrical and electronic equipment assemblers	1%
51-4111	Tool and die makers	1%
17-2071	Electrical engineers	1%
51-4033	Grinding, lapping, polishing, and buffing machine tool setters, operators	1%
51-4034	Lathe and turning machine tool setters, operators, and tenders	1%
17-3023	Electrical and electronic engineering technicians	1%
51-4199	Metal workers and plastic workers, all other	1%
51-2031	Engine and other machine assemblers	1%
51-4032	Drilling and boring machine tool setters, operators, and tenders	1%
51-9022	Grinding and polishing workers, hand	1%
51-2041	Structural metal fabricators and fitters	1%
	All other occupations	20%

Another way to understand the value of supporting this industry is to look at the local economic impacts. Economic impacts measure the effects of increased demand or expenditures in the local economy. All industries have some kind of economic impact in the rest of the economy, but the magnitude of impacts varies significantly depending on the type of industry. Economic impacts include direct and indirect jobs, personal income, and economic activity, or output. Direct impacts in this case would include jobs and payroll at local aerospace firms. Indirect and induced impacts are the result of the multiplier effect and capture supported supplier and consumer businesses, and their employees, throughout Pima County that could result from expansion of the local aerospace cluster. Multiplier effects are a way of representing the larger economic effects on the local economy. In essence, the multiplier effect represents the recycling of local spending. This recycling process creates new business opportunities across a broad range of industries.

So, for example, we can compare the economic impacts of 100 jobs in the aerospace industry to 100 jobs in the retail industry in Pima County. Based on economic multipliers specific to Pima County, 100 new jobs in the aerospace industry would support an additional 47 jobs at other local businesses and a total increase in local economic activity of \$27.9 million. The additional 47 jobs include local suppliers to the aerospace industry as well as consumer businesses where aerospace employees and their families shop. The indirect or supplier impacts in the aerospace industry are higher in Pima County due to the well developed local supplier base that supports this cluster. Similarly, because this industry has above average wages, employees have more disposable income and support greater induced impacts in local consumer industries. The average wage for the aerospace industry locally is approximately \$55,000, which is substantially higher than the current all-industry average for Pima County of \$40,500.

ECONOMIC IMPACTS OF AEROSPACE INDUSTRY JOBS ON PIMA COUNTY

	Direct Impacts			Total Impacts		
	Jobs	Income	Output	Jobs	Income	Output
Aerospace Manufacturing	100	\$5,475,000	\$22,083,923	147	\$7,471,021	\$27,942,863
Retail General Merchandise	100	\$2,110,000	\$4,836,633	118	\$2,774,349	\$6,844,481

By comparison, 100 new jobs in the retail industry only support an additional 18 jobs at other local businesses and a total economic impact of \$6.8 million. This is because most of the products being sold are manufactured elsewhere and there is limited demand for local suppliers. Also, the retail industry supports lower wage jobs that create less of an impact in terms of consumer spending.

In addition to supporting additional jobs and output at other local industries, the aerospace industry also produces significant local revenue impacts. It is a highly capital-intensive industry and therefore generates significant real and personal property tax revenues to local governments. To the extent that local aerospace businesses are leasing space, they also generate sales tax revenues. Additionally, there are indirect property and sales tax revenues generated by employees through their property ownership and household spending. These indirect (employee-generated) revenues are higher for the aerospace industry than they would be for many other industries due to above average wage levels.

6.0 Conclusions

The aerospace cluster represents a key component of Pima County's base of export industries. It creates high quality jobs for both degreed professionals and skilled production workers. The aerospace industry also supports a wide range of local suppliers in other related industries.

As this industry expands globally, the region is at a critical juncture in terms of being able to capture a portion of that growth and build on its existing strengths in this industry. However, there are a number of regions across the country that are also positioning themselves to capture expansions and relocations of aerospace manufacturers. Greater Tucson must present a business environment that is unique among its competitors. This includes providing an adequate supply of trained manufacturing workers and the ability to produce a long term pipeline with training that is responsive to the changing needs of this industry. In addition, the county can demonstrate its strong support for this industry by providing a dedicated industrial park that is specifically designed to meet the facility and infrastructure needs of aerospace manufacturers and foster the inherent benefits of geographic clustering between related industries in this sector.