

Arizona's  
Aerospace &  
Defense  
Commission  
Annual Report

December 31

2010

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*The Arizona Aerospace and Defense Commission is the State's sole coordinator of all aerospace and defense related commercial partnerships. The Commission was established pursuant to A.R.S. §§41-1561, 41-1562, 41-1563 & 41-1564. The Commission is tasked with developing an aerospace and defense strategic plan that builds synergy between government, industry and education. The Commission shall submit a report of its findings to the Governor, the President of the Senate, the Speaker of the House of Representatives, the Secretary of State and the Director of the Arizona State Library, Archives and Public Records on or before December 31 of each year.*

**A.R.S. §41-1564**



# ***Arizona Aerospace and Defense Commission Strategic Plan Recommendations***

## ***Overview***

*In 2010, the Commission membership included the same appointees as in 2009 with nine active members. The Commission includes members from both public and private sectors in accordance with A.R.S. §41-1562. The Commission held eleven meetings during the calendar year of 2010. The Commission members worked in subcommittees to focus on the four strategies presented at the end of 2009: 1) Improve Business Environment, 2) Create Robust Pipeline of Business & Entrepreneurial Opportunities to Fuel Growth, 3) Build Arizona's Research Competitiveness, and 4) Attract, Educate, Retain and Retrain Arizona's Skilled Workforce.*

*Key goals for 2010 were:*

- *Identify the Arizona State Aerospace and Defense (A&D) Value Proposition to position the State for economic growth*
- *Develop prioritized implementation plans with specific recommendations for external communications, legislative actions, and private-public partnerships*
- *Champion an A&D Industry Economic Impact Study*

## ***Commission Process, Data Collection and Analysis***

*The Commission continued to receive input from industry and community leaders, participated in industrial forums, conducted focus groups to determine core A&D strengths and issues, and worked with an external marketing research firm to strengthen overall external communications.*

*The Commission, working in partnership with the Arizona Department of Commerce, championed the completion of an Industry Economic Impact Study for Arizona. The L. William Seidman Research Institute, W.P. Carey School of Business at Arizona State University was selected to complete the study. The Study was commissioned in May 2010 and completed in August.*

*The Commission also championed an effort to identify the Arizona State A&D Value Proposition working with Commerce and RIESTER, an external marketing firm. The process included conducting four focus groups (Tucson, East Valley, Phoenix-Central, and West Valley) with industry and community leaders. The process was developed to identify key A&D strengths, issues and concerns. In addition, several one-on-one interviews with senior A&D industry executives were also conducted. The results identified an overarching A&D Value Proposition that will be the focus for go-forward communications and marketing efforts.*

*An industry-specific website, currently in design phase, will reflect the identified Value Proposition, an internal statement meant to reflect Arizona's key advantage:*

*“Arizona has always attracted a certain type of person – the pathfinder, the builder, the explorer. That is why industries that depend on innovation to survive, like A&D, have prospered in Arizona. World class universities, large prime contractors and low operating costs are only part of the story. Find out more about Arizona.”*

*The purpose of the website is to highlight Arizona’s A&D industry strengths, promote the Commission strategic focus areas, and enhance economic development in the A&D industry growth sector.*

*On June 29, 2010, Governor Jan Brewer issued an executive order establishing the Arizona Commerce Authority, the Governor appointed Dr. Vicki Panhuse, Commission Chair, to the newly formed Arizona Commerce Authority (ACA) Board and the ACA A&D Growth Sector Chair.*

### ***Subcommittee Activity***

*Each subcommittee met regularly and worked on the specific recommendations to drive the four Commission strategies. Some key activities completed for each of the subcommittees are:*

#### ***Improve Business Environment:***

- 1. Completed A&D Economic Impact Study*
- 2. Developed A&D Value Proposition*
- 3. Partnered with Dark Skies Initiative to collaborate on state-wide regulations to preserve natural resources*
- 4. Collaborated with Commerce Board A&D Growth Sector Committee and identified key legislative incentives to help with retention of A&D industries in Arizona*

#### ***Create Robust Pipeline of Business & Entrepreneurial Opportunities to Fuel Growth:***

- 1. Identified business points of contacts and included them on the Commission distribution to increase awareness of Commission activities*
- 2. Attended meetings, engaged with, and gathered information from professional organizations such as National Defense Industrial Association (NDIA), International Council of Systems Engineers (INCOSE), Arizona Technology Council (ATC) Arizona Manufacturers Extension Partnership (Arizona MEP), Air Force Association (AFA), Association of U.S Army (AUSA), Arizona Center of Excellence (ACE) and briefed Commission initiatives added representatives to Commission distribution*
- 3. Spearheaded teaming relationships with Arizona companies on Army proposal at Ft Huachuca. Developed strategy with prime contractor to incorporate Letters of Non-Financial Support from Commerce and ASU for inclusion in Army proposal*

#### ***Build Arizona’s Research Competitiveness:***

- 1. Established use of social media to promote communication and increase stakeholder awareness*
- 2. Identified and cataloged Universities Centers of Excellence and Research Assets relative to A&D*  
[\*http://www.esacorp.com/subcomm/Subcommittee2.htm\*](http://www.esacorp.com/subcomm/Subcommittee2.htm)

3. *Commerce coordinated a statewide collaborative proposal for SBA contract*
4. *Connected with SBIR State Directors to determine the cost/opportunity to host a SBIR Forum in the near future*

*Attract, Educate, Retain and Retrain Arizona's Skilled Workforce:*

1. *Completed an asset inventory linking Skilled Workforce recommendations to available talent, resources, and initiatives*
2. *Developed the concept of an A&D Resource Portal for employers, employees, students and faculty to help stakeholders access and exchange information on careers, education, training, internships, tutoring, mentoring and lifelong learning opportunities*
3. *Identified a potential provider and sought funding for deployment of the Arizona Aerospace Academy (school-within-a-school) model*
4. *Championed preservation of merit-based scholarships in Arizona, as well as other initiatives that will serve to entice promising students/graduates with A&D-related skills/education to remain in the State*

## **2010 Economic Impact Study Report Executive Summary ([Link to the Complete Report](#))**

*The purpose of this report is to measure the impact of A&D companies on employment and income in Arizona. Estimated impacts include both the direct effects of the operations of A&D firms and their first-tier suppliers and the so-called multiplier effects that arise when employees spend a portion of their incomes and governments spend new tax revenues. The report also provides estimates of the contributions A&D companies and their employees make to Arizona state and local tax revenues.*

*The primary data used in the study were collected in a survey of local A&D firms. An initial list of 37 companies was compiled using contact files from Commerce with additional input from industry representatives. Completed surveys were obtained from 19 of these companies, including all of the very large employers. Based on initial estimates of company employment, the completed surveys appear to cover approximately 90 percent of total A&D employment in the state.*

*The survey was administered jointly by Commerce and the L. William Seidman Research Institute in the W. P. Carey School of Business at Arizona State University. By targeting known A&D firms in a special survey, one can obtain a more precise measure of the size of the industry than is possible from government statistics. The survey also provides information not available from other sources, such as purchases by A&D firms from Arizona vendors and state and local taxes paid by A&D firms.*

*The survey collected data for 2008 and 2009 on economic statistics important for conducting an economic impact analysis of the industry. Averaging the two years, the surveyed firms collectively employed 36,100 Arizona workers with a total annual payroll of \$3.9 billion. Arizona A&D firms annually purchased \$2.1 billion worth of goods and services from local suppliers.*

*One of the most important indicators of an industry's economic and fiscal impact is employee compensation per worker. As measured in the survey, compensation per employee in the Arizona A&D industry is approximately \$109,000. This is 2.3 times the statewide average for all employed individuals.*

*Estimates of economic impacts were made with the aid of an Arizona-specific version of IMPLAN, an input-output model used widely by researchers throughout the United States. In measuring the impact of supplier linkages, IMPLAN was used to specify the detailed commodity requirements of each A&D industry. The survey data were used, however, to estimate the percent of total supplier purchases that are made from Arizona producers. IMPLAN also was used to measure the multiplier effects relating to consumer spending and spending by state and local governments out of new tax revenues.*

*In the interest of gaining a more complete sense of the industry's impact on the local economy, the survey numbers and their corresponding impacts were rescaled to adjust for aerospace-defense firms that did not complete the survey but for which employment could be estimated from other sources. This adjustment served to increase the size of the economic impacts by about 11 percent.*

*Including multiplier effects, and citing results for 2009, the Arizona A&D industry can account for a total of 93,800 jobs, labor income of \$6.9 billion, and gross state product of \$8.8 billion. The A&D companies themselves employ 39,400 individuals with a total payroll of \$4.3 billion. Purchases of goods and services by A&D companies from Arizona suppliers generate 17,000 jobs and labor income of \$1.1 billion. The most important multiplier effect derives from the local consumer spending of employees of A&D companies and their suppliers. These effects are responsible for 30,000 jobs and labor income of \$1.2 billion.*

*This report also estimates the direct contributions of A&D companies and their employees to Arizona state and local taxes. Information on business taxes paid by A&D companies is taken directly from the survey. Individual income, sales and residential property taxes paid by A&D employees are estimated. The results suggest that the industry directly contributes approximately \$300 million each year to Arizona state and local tax revenues.*

*An important public policy issue that arises in connection with the presence of an industry in a local economy is whether the industry generates enough in state and local tax revenues to cover the cost of public services delivered to the firms, their employees and families. Because public services at the state and local level are driven primarily by population, it is possible to assess the net fiscal impact of an industry by comparing taxes generated per industry employee with the statewide ratio of total taxes to total employment. Because of the high earnings of its employees, total A&D taxes per worker are about 10 percent above the statewide average. Specifically, total taxes per employee are \$7,450 in the industry as compared with an average across the state of \$6,691 per worker. These results suggest that the aerospace-defense industry in Arizona has a net positive fiscal impact, generating a surplus in tax revenues that may be used to subsidize public services for other households and businesses.*

**Exhibit 1-List of Survey Participants**

Alliant TechSystems, Inc  
 Applied Energetics  
 BAE Systems  
 Boeing Company, The  
 Bombardier Aircraft Services  
 Engineering Science Analysis

General Dynamics C-4 Systems  
 Goodrich Interiors  
 Honeywell Aerospace  
 Hamilton Sunstrand Aerospace  
 Kutta Technologies  
 L-3 Electro-Optical Systems  
 Nammo Tally, Inc.

Orbital Sciences Corp.  
 Paragon Space Development Corp.  
 Planetary Science Institute  
 Qwaltec, Inc.  
 Raytheon Missile Systems  
 Universal Avionics Systems Corp

**Exhibit 2 Summary of Primary Data from the Arizona A&D Survey**

|  | <b>2008</b> | <b>2009</b> |
|--|-------------|-------------|
| Total Number of Employees                            | 36,548      | 35,559      |
| Total wages and Salaries (in millions)               | \$2,946.8   | \$2,863.7   |
| Total Employee Compensation (in millions)            | \$3,948.7   | \$3,894.60  |
| Total Purchases from Arizona Suppliers (in millions) | \$2,376.7   | \$1,864.10  |
| Compensation per employee                            | \$108,000   | \$109,500   |
| Supplier purchases per employee                      | \$65,000    | \$54,400    |

**Exhibit 3 Economic Impact of the Arizona A&D Industry, 2008**

|   | <b>Gross State Product<br/>(\$ millions)</b> | <b>Labor Income<br/>(\$ millions)</b> | <b>Employment</b> |
|---|--|---------------------------------------|-------------------|
| Direct Impact from A&D Company Operations   | \$4,965.7                                    | \$4,371.2                             | 40,474            |
| Direct Impact from Arizona Suppliers purchases  | \$1,830.6                                    | \$1,349.1                             | 21,849            |
| Indirect impacts from consumer spending by A&D employees and employees of A&D suppliers | \$2,172.4                                    | \$1,250.3                             | 32,014            |
| Indirect impacts from spending of new state and local government tax revenues           | \$402.2                                      | \$326.8                               | 7,387             |
| <b>Total Economic Impact</b>  | <b>\$9,370.9</b>                             | <b>\$7,297.4</b>                      | <b>101,724</b>    |

**Exhibit 4- Economic Impact of the Arizona A&D Industry, 2009**

|   | <b>Gross State Product<br/>(\$ millions)</b> | <b>Labor Income<br/>(\$ millions)</b> | <b>Employment</b> |
|---|--|---------------------------------------|-------------------|
| Direct Impact from A&D Company Operations   | \$4,897.6                                    | \$4,311.3                             | 39,389            |
| Direct Impact from Arizona Suppliers purchases  | \$1,433.4                                    | \$1,054.9                             | 17,059            |
| Indirect impacts from consumer spending by A&D employees and employees of A&D suppliers | \$2,036.7                                    | \$1,172.1                             | 30,014            |
| Indirect impacts from spending of new state and local government tax revenues           | \$401.7                                      | \$326.7                               | 7,377             |
| <b>Total Economic Impact</b>  | <b>\$8,769.4</b>                             | <b>\$6,865.0</b>                      | <b>93,839</b>     |

## **A&D Industry News and Facts**

- Annually Arizona receives over \$13 billion in federal contracts. ([FedSpending.org - 2008](#))
- Annually Arizona Aerospace Exports were \$2.037 billion ([AZ Commerce-international website](#))
- Governor Jan Brewer allocated \$1.3 million to boost the state's A&D industry and help the state become more globally competitive in this growing and fast-paced sector. ([Governor Brewer- Oct 2010](#))
- Arizona is ranked 5th in the nation for Defense Electronic jobs, employing 8,661. ([TechAmerica Cyberstates 2010 Report](#))
- Boeing announced \$247 million in new A&D business in Arizona. The company will begin initial production of the U.S. Army's AH-64D Apache Block III helicopter, the most advanced multi-role combat helicopter in the world. ([BizJournal-Oct 2010](#))
- Tucson and Phoenix are two of the "Top 10 metro areas for aerospace/defense manufacturing" ([Business Facilities Magazine 2010](#))
- Sargent Aerospace & Defense, a leading supplier of precision engineered components and aftermarket services, and an operating company within Dover Corporation's Industrial Products Segment, announced that it has chosen the Tucson region to expand and upgrade its operations in support of current and projected business growth. ([Sargent Controls Website](#))
- Yuma Proving Grounds hosts the testing of Zephyr, a solar-powered unmanned aerial vehicle (UAV), attracted international attention for the two-week duration of its test flight. ([Aviation Week](#))
- NASA Gears up For Exploration Exercise, Planetary rovers, a portable habitat, charging stations and geological tools will be tested in Arizona. ([Aviation Week](#))
- U.S. News & World Report Ranks Aerospace Engineering Program at Embry-Riddle Best in Nation for 11th Straight Year, Embry-Riddle's Prescott campus ranked 3<sup>rd</sup> in America's Best Colleges for Master degrees in Aerospace/Aeronautical/Astronautical Engineering Programs. ([U.S. News & World Report](#))
- Arizona hosted the annual Aviation Week A&D Programs Conference, 2010 Intelligence Surveillance & Reconnaissance (ISR) Requirements Day, Homeland Security Expo in Phoenix, Empire Challenge 10 at Fort Huachuca.
- Boeing moved production of its A160 Hummingbird unmanned helicopter from California, to Boeing military rotorcraft hub in Mesa, Arizona ([FlightGlobal-March 2010](#))
- The University of Arizona and Honeywell have signed a "memorandum of understanding" to collaborate new research projects. The primary purpose of the research agreement is to eliminate much of the red tape inherent in any joint research project between industry and academia. ([University of Arizona-November 2010](#))
- Arizona was awarded 583 Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Phase 1 and Phase 2 from 2000-2009 in the amount of \$173 million.

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- FAA has qualified CAE to offer pilot training ground school for the Eurocopter AS350 through its Simfinity e-learning program. Students are able to complete a pre-simulator review and qualification exam online before training with the CAE 3000 Series helicopter mission simulator in Phoenix, Ariz. ([AviationToday- Nov 2010](#))
- Orbital Sciences is to acquire the spacecraft development and manufacturing business of General Dynamics' GD Advanced Information Systems subsidiary for an undisclosed sum. The business, in Gilbert, Arizona, is close to Orbital's 1,300-employee launch vehicle engineering and manufacturing facilities in Chandler and will add about 325 new employees to Orbital. ([Orbital Science- March 2010](#))
- Paragon Space Development Corp. was named a Space Pioneer by NASA and awarded one of the first five Commercial Crew Development Space Act Agreements with NASA. Under the agreement Paragon successfully tested its new spacecraft life support system, the first such test in over 30 years. Paragon was also named the fastest growing private aerospace engineering firm in America by Inc. Magazine. ([Paragon Space Development Corp.- August 2010](#))
- Arizona Economic Impact Study reported that compensation per employee in the Arizona A&D industry is approximately \$109,000. This is 2.3 times the statewide average for all employed individuals. The Study also report on the multiplier effects, and citing results for 2009, the Arizona A&D industry can account for a total of 93,800 jobs, labor income of \$6.9 billion, and gross state product of \$8.8 billion. ([Arizona Economic Impact Study 2010](#))

## **Notable Companies, Universities, and Colleges that support A&D**

BAE Systems Inc, The Boeing Company, Embraer Execute Jet Services, Evergreen Maintenance Center Inc., General Dynamic Corporation, Goodrich Corporation, Hamilton Aerospace Technology, Honeywell Aerospace, Lockheed Martin Corporation, MD Helicopters Inc., Raytheon Missile Systems, Standard Aero Holdings Inc., Timken Aerospace, Triumph Engineered Solutions, and Universal Avionics Systems Corporation.

University of Arizona (UA), Arizona State University (ASU), Northern Arizona University (NAU), Embry Riddle Aeronautical University, Maricopa Community Colleges, and Pima Community Colleges.

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"Note: This table identifies the key Duties of the Arizona Aerospace & Defense Commission (left column) in accordance with A.R.S 41-1564. The four columns to the right identify the compliance matrix for the Commission's Strategic Plan to these duties.

|  |   | <b>Aerospace and Defense Commission Strategies</b> |  |   |   |
|--|---|--|--|---|---|
|  |   | <b>Improve Arizona's Business Environment</b>      | <b>Create a Robust Pipeline of Business and Entrepreneurial Opportunities to Fuel Growth</b> | <b>Build Arizona's Research Competitiveness</b> | <b>Attract, Educate, Retain and Retrain Arizona's Skilled Workforce</b> |
| <b>A.R.S §41-1564 A&amp;D strategic plan; requirements; report</b>   |   |  |  |   |   |
| <i>A. The Commission shall develop, use and maintain an aerospace and defense strategic plan that builds synergy between government, industry and education. The strategic plan shall:</i> |   |  |  |   |   |
| 1.0  | <i>Establish external communications &amp; public information linkage to address and inform citizens and decision makers about aerospace and enterprises in this state.</i>   | <b>X</b>   | <b>X</b>   | <b>X</b>  | <b>X</b>  |
| 2.0  | <i>Broaden and strengthen the communication and cooperation between the various key elements within the enterprises of commercial aviation, general aviation, defense, education, space, manufacturing, service and support and research and development.</i> | <b>X</b>   | <b>X</b>   | <b>X</b>  | <b>X</b>  |
| 3.0  | <i>Research and analyze economic, employment, competitive, capability, capacity and technology statistics to substantiate the health of the various enterprises.</i>  | <b>X</b>   | <b>X</b>   | <b>X</b>  | <b>X</b>  |
| 4.0  | <i>Foster and leverage public or private partnerships to retain and promote aerospace, defense industries, related industry sectors and strategic zones of importance to the various enterprises.</i>   | <b>X</b>   | <b>X</b>   | <b>X</b>  |   |
| 5.0  | <i>Facilitate growth of existing industrial assets and new business opportunities for the A&amp;D enterprise supplier base.</i>   | <b>X</b>   | <b>X</b>   |   |   |
| 6.0  | <i>Provide procedures to liaison with other state and federal entities with related economic, educational, developmental and defense responsibilities or interests to support marketing of this state's unique A&amp;D capabilities and assets.</i>           | <b>X</b>   | <b>X</b>   | <b>X</b>  | <b>X</b>  |
| 7.0  | <i>Provide leadership and administrative support for targeted programs and incentives that promote A&amp;D industry retention and development in this state.</i>  | <b>X</b>   | <b>X</b>   | <b>X</b>  | <b>X</b>  |
| 8.0  | <i>Work to assure the workforce in this state is well trained, motivated and highly skilled in the areas important to A&amp;D enterprises.</i>  |  |  | <b>X</b>  | <b>X</b>  |
| 9.0  | <i>Work with educational institutions to encourage innovation and help attract A&amp;D related research and development to this state.</i>  |  | <b>X</b>   | <b>X</b>  | <b>X</b>  |

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## **Improve Arizona's Business Environment - 2011 Recommendations**

*Evaluate the current business environment and the effectiveness of current Arizona policies to provide a foundation for advancing the industry. Develop and implement a market strategy to restore Arizona to a leading position and define Arizona's value proposition for the A&D Industry.*

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- *Create a "sense and respond" mechanism focused on A&D at the State level to proactively monitor and adapt to an ever-changing business and regulatory climate.*
  - *Focus business development on retention, expansion and attraction of the industry in Arizona by evaluating the business climate and incentives with regard to domestic and international competitors and ensure the Commerce has the tools to compete.*
  - *Collaborate with the new Commerce's A&D Growth Sector to champion 21<sup>st</sup> century economic development programs that build Arizona's knowledge and innovation based economy.*
  - *Inventory and globally market Arizona's A&D capabilities and potential to include logistical and military assets including airports, roadways, rail, light rail and government installations.*
  - *Collaborate with local jurisdictions, the Arizona Military Affairs Commission, and other Stakeholders to review and mitigate impacts by demands on land use surrounding civilian and Department of Defense (DOD) airports.*
  - *Champion natural resources through such programs as the Dark Skies Initiative, as required to retain A&D related activities.*

### **2010 Report on Improving Arizona's Business Environment**

*The A&D industry remains a critical component of the Arizona economy. Arizona continued to face a challenging budget and economic environment in 2010, as did the nation. Below are measures of progress taken regarding improvement of Arizona's business environment with respect to the A&D industry.*

#### **Arizona Department of Commerce/Arizona Commerce Authority**

- *On June 29, 2010, Governor Jan Brewer issued an Executive Order establishing the ACA. Pending creation of the ACA in statute, this measure addresses the first three of the recommendations proposed in this Strategy.*
- *As the U.S. defense market is anticipated to decrease, the competition among states will continue to increase. Arizona A&D firms from large prime contractors to second and third tier suppliers, will benefit if the ACA is able to: monitor and respond to the competitive environment; employ incentives relative to the competitive environment; and focus on the growth direction of the industry in the 21<sup>st</sup> century.*

#### **Inventory and Globally Market Arizona's Aerospace and Defense Capabilities**

- *With input from the Commission, Commerce has undertaken a new branding and marketing effort for Arizona aerospace and defense. Commerce held a series of four public listening sessions across the state to hear from stakeholders on the strengths and weaknesses of support of the industry.*
- *Commerce has identified the following A&D value proposition:  
Arizona has always attracted a certain type of person – the pathfinder, the builder, the explorer. That is why industries that depend on innovation to survive, like Aerospace and Defense, have prospered in Arizona. World class universities, large prime contractors and low operating costs are only part of the story. Find out more about Arizona.*

#### **ASU Economic Impact Study**

- *In September, L. William Seidman Research Institute at ASU completed an economic impact study on the industry in Arizona.*
- *The study noted the average compensation for industry employees is 2.3 times the statewide average for all employed individuals reflecting the high level of skills (e.g., engineering skills) required.*
- *Of an area for future focus, the study noted unexpectedly low numbers reported by industry purchases of intermediate goods and services from Arizona suppliers.*

#### **Dark Skies Initiative – Next Steps**

- *The Commission met with key members of Arizona's Dark Skies Initiative on August 27, 2010. The Commission subsequently endorsed the University of Arizona's proposal to retain the National Solar Observatory and also, sent white papers to the Governor's office to establish a working group to analyze the requirements to improve the State's Dark Skies.*

#### **2011 Focus for Improving Arizona's Business Environment**

- *Make recommendations on draft legislation for establishment of Commerce in statute.*
- *Analyze tools of new Commerce relative to competitor states.*
- *Identify opportunities for federal, state, and local government officials to collaborate in support of the Arizona A&D.*

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## **Create a Robust Pipeline of Business and Entrepreneurial Opportunities to Fuel Growth - 2011 Recommendations-**

*Create and expand Arizona's pipeline of business opportunities throughout the State's industrial value chain to strengthen and exploit current assets within the entire State. Maximize Arizona's value generated from the State's industry by providing key technology linkages to new A&D requirements. Market the key State programs that enhance the entrepreneurial opportunities within the industry.*

- *Develop and implement Arizona Remote Pilot Vehicle (RPV)/ Unmanned Aircraft Systems (UAS) and Intelligence Surveillance & Reconnaissance (ISR) framework. Stakeholders include: ATC, Science Foundation Arizona (SFAz), ACE, and existing state industry partners along with UA and ASU.*
  1. *Organize working group and develop requirements*
  2. *Build System, Operational and Technical Views of State RPV/ UAS Framework*
  3. *Coordinate with stakeholders, military installations, ACA, State Military Affairs Committee, Congressional delegation staff.*
  4. *Identify opportunities develop capability statements and advertise Arizona capabilities nationally.*
- *Establish an Aerospace and Defense SBIR/STTR Collaborative. Stakeholder includes: ASU, UA, SkySong, UA Technology Park, Industry, Small Businesses, Regional Economic Development Teams, ATC and SFAz.*
  1. *Organize Industry/Academic/Small Business teams at SkySong and UA Tech Park*
  2. *Target 11-02 and 11-03 SBIR/STTR Solicitations*
  3. *Select topics, recruit participants, engage with topic author*
  4. *Double the number of proposals submitted from 11-02 to 11-03 Solicitation and increase smaller AZ community participation*
- *Promote business participation in the SFAz Arizona Aerospace and Initiative (AZADI). Promote business participation and develop a core competence in Modeling and Simulation.*

### **2010 Report on Creating a Robust Pipeline**

*This subcommittee focused on promoting robust communication throughout the A&D industry, as well as identifying mechanisms to confer a competitive advantage to Arizona A&D companies. Emphasis was on web presence and outreach to industry partners to foster collaboration, opportunities and programs like the refundable Research and Development (R&D) tax credits. Extensive progress made by the Commerce, ATC and SFAz have a significant positive effect on Arizona's competitiveness in attracting, growing, and retaining A&D and technology companies. A major accomplishment in 2010 was the development of a template for a dedicated aerospace and defense website.*

#### **Improved linkages**

- *Engaged with professional associations such as the ATC, NDIA, Arizona MEP, ACE, the Armed Forces Communications Electronics Association, and the Southwest Defense Alliance.*
- *Participated in Aviation Week's A&D Conference.*
- *Established communications with Military Legislative Officers and the Arizona Congressional Delegation.*

#### **UAS testing ground/facility in Arizona**

- *Led a proposal for a Small Business Administration (SBA) RPV/UAS-ISR contract that, though unsuccessful, established a statewide collaboration of 15 organizations to be engaged for future opportunities.*
- *Collected valuable source data at the AUVSI Unmanned Systems 2010 conference.*
- *Contacted organizations such as ACEs who are working to create a dedicated UAS test facility, however little progress has been made as compared to other states, such as New Mexico.*

#### **AZFAST program and SBIR/STTR Outreach**

- *The loss of funding for the AZFAST program combined with the presence of such support programs in other states reduces the overall competitiveness of Arizona small businesses. Commerce seeks to reinstate the program in the first quarter of 2011.*
- *The Commission strongly encourages creation of a SBIR/STTR Matching Fund Program similar to Kentucky, North Carolina, Oklahoma, Michigan, etc. that have proven results improving federal contract win rates in the state.*

#### **Smaller Arizona Communities**

- *Through the Governor's recent commitment of \$2M to rural Arizona, smaller communities will leverage regional assets and attract companies to cluster around available infrastructure.*
- *Programs such as the Job Training Fund, with portions earmarked for rural Arizona, are important in smaller communities as they help maintain a competitive workforce.*

#### **2011 Focus for Creating a Robust Pipeline of Business and Entrepreneurial Opportunities to Fuel Growth**

- *Establishment of an SBIR/STTR Matching Fund Program similar to Kentucky, North Carolina, Oklahoma, Michigan, etc. that have proven results increasing win rates for federal research contracts in the state. Facilitate collaboration among SBIR/STTR participants (industry, small business, and academia) to fuel small business innovative research.*
- *Work with industrial, science and technology organizations such as SFAz and ATC to develop and retain key capabilities such as modeling and simulation, cyberspace and micro technologies; as well as programs that confer a competitive advantage to the Arizona A&D Industry. These include the Job Training Fund, Creation of an SBIR/STTR Matching Fund Program, Angel Investment Tax Credit, and the Refundable R&D Tax Credit.*
- *Work with stakeholders to develop an RPV/UAS framework for Arizona. Identify system, operational and technical aspects that make Arizona competitive in the RPV/UAS environment. Market Arizona advantage and target opportunities. Develop pursuit teams and celebrate victories.*

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## Build Arizona's Research Competitiveness - 2011 Recommendations

*Position Arizona at the cutting edge of the research agenda in A&D specific sectors by strengthening and marketing existing programs, seeking new opportunities in growth areas that align with national and global research and development objectives, and complementing industry and academic core competencies in Arizona.*

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- Foster and leverage public or private partnership/organizations as they seek to retain and promote aerospace, defense, and related industries.
- Strengthen communication and cooperation within the various key elements of A&D; and encourage innovation and attraction of A&D-related research to the State.
- Support and promote academic centers of excellence in aviation, aerospace, homeland security and border security.
- Assure that Arizona industry and government understand and align, as able, with the US aerospace research agenda, as partially revealed in the National Aeronautical R&D Policy, the Office of Space Commercialization Strategy, UAS Roadmap, and the US Defense Modernization Roadmap.
- Evaluate and identify untapped or growth opportunities in UAS, ISR and Next Generation Air Transportation System (NextGen) research and education, and encourage growth of related research activities and academic partnerships with industry.
- Better leverage and market the State's Astronomy, Planetary Sciences, and Space Sciences (APSSS) assets including Arizona Federally Funded Research Development Centers (FFRDCs).
- Promote and quantify fiscal and employment impact for the Arizona Research Tax Incentive.

### **2010 Report on Building Arizona's Research Competitiveness**

#### **Foster and Leverage Public or Private Partnership/Organizations**

Three new organizations have been identified as follows:

- Arizona State University Security & Defense Systems Initiative (SDSI) - attached <http://www.azcentral.com/business/articles/2010/11/03/20101103biz-defenseinstitute1103.html#comments#ixzz14Kbg9oxl>
- SFAZ Aerospace & Defense Initiative (AZADI) - <http://www.sfaz.org/live/collection/press/10996?subid=112214>
- SFAZ seeded the ASU-led Aerospace & Defense Collaboratory - <http://www.sfaz.org/live/collection/press/10996?subid=112217>

#### **Support & Promote Academic Centers of Excellence (COEs)**

Contacted Universities to identify COEs & Champions; catalogued resources on subcommittee website <http://www.esacorp.com/subcomm/Subcommittee2.htm> to support and promote COEs and to facilitate collaboration between centers and industry.

#### **Assure Arizona Industry Alignment**

Arizona Commerce internet linkage to government and industry reports were updated.

#### **Evaluate and Identify Growth Opportunities**

ISR technologies were identified as potential growth opportunities for Arizona. These complimentary technologies appear to be promising economic engines in R&D relating to sensor/optics, communication, data fusion, cognitive recognition, and energy/endurance of A&D platforms.

#### **Better Leverage & Market APSS Assets**

- Engaged leadership of National Optical Astronomy Observatory (NOAO) and National Solar Observatory (NSO) to understand the impact of these FFRDCs on Arizona's economy.
- Submitted a letter of support to retain NSO in Arizona.

#### **2011 Focus for Building Arizona's Research Competitiveness**

- Work with public/private partnership in collaboration with SFAZ.
- Promote collaboration between industry and Arizona COEs through use of Arizona A&D website (in development) and the Arizona Innovation website ([innovationaz.com](http://innovationaz.com))
- Continue to identify and disseminate information on federal funding opportunities, Defense and technology roadmaps, and economic development best practices that support R&D in Arizona.
- Identify NEXTGEN stakeholders in Arizona to discover untapped growth opportunities
- Promote APSSS, including the NOAO and NSO, in collaboration with SFAZ

## Attract, Educate, Retain and Retrain Arizona's Skilled Workforce – 2011 Recommendations

Position Arizona as a first-tier destination for A&D knowledge-based industries by investing in and emphasizing education and training, facilitating school-to-work initiatives, and promoting Arizona programs that will generate national and global recognition. Recommendations that support this strategy are presented below, in three major areas (1) Attract, (2) Educate and (3) Retain and Retrain.

### Attract

- Inventory and leverage social networks, industry-relevant websites, and employers to engage youth and promote inspiration, mentoring and exploration of A&D careers.

### Educate

- Support initiatives related to training and education with targeted investment in K-12 Science, Technology, Engineering & Mathematics (STEM) education, in line with the Governor's P20 Council recommendations and via Aerospace Academies (dedicated locations and school-within-a-school model).
- Support and promote Arizona-based aeronautical engineering, aviation (e.g., aeronautical science/flight, maintenance, business, and technology), space studies, math and defense (e.g. military science, intelligence/security) programs at public and private academic institutions.
- Facilitate A&D oriented curriculum alignment and credit transfer between secondary and post-secondary academic institutions in Arizona.
- Encourage A&D-related collaborations, including industry involvement in teaching/learning, faculty development, school-to-work transition (internship/co-ops and mentoring), and lifelong learning for those in industry and academia.

### Retain and Retrain

- Support programs in initial and adaptive workforce training (including adult worker transition) required for high quality technical and trade positions, to include supporting union-certified training.
- Create opportunities/pathways for interested professionals into academia (such as current or retired industry) and for sharing expertise between different segments of academia.
- Promote awareness and support training for small business owners in key areas such as ISO/AS Certification and Federal program assessments (e.g., technology, business and manufacturing readiness levels) so that small businesses are better prepared to compete.
- Support Arizona high school-to-college initiatives and post-secondary incentives (scholarships and fellowships) and transition-to-work programs that encourage promising students to remain in the State for college and/or career.

## 2010 Report on Skilled Workforce

Via numerous interviews, meetings, literature review, and data collection, the Skilled Workforce subcommittee identified community and industry stakeholders and activities that compliment AADC goals for this strategy. This "asset inventory" linked 2009 Skilled Workforce Recommendations with available talent, resources and initiatives, including:

- Statewide initiatives that support the development of PK-20 pathways and faculty development.
- National industry-based skills training and certification supported by Arizona institutions of higher education.
- Regional skills competitions that provide youth with exposure to technology careers and the importance of STEM education.
- Federal and/or state funding for programs which supports the development of curriculum and fosters the smooth transition of students along the k-16 pipeline.
- System modeling tools and data sets for evaluating the effect of possible changes in the education system.
- Statewide and regional workforce studies and surveys that provide current information on workforce demand and skill requirements.
- Federal workforce development dollars that can be used for training/retraining of Arizona's workforce.
- Regional industry sponsored extracurricular activities that engage youth and young adults in technology areas.
- National and local resources to inspire, attract, educate, and employ individual in the aerospace and other high tech industry segments.
- Industry associations and organization linkages at the national and local level to promote sharing of best practices and lessons learned.

Creation of this asset inventory confirmed progress in eight of the twelve former Skilled Workforce recommendation areas, including identification of a "champion" and/or synergistic programs, activities, or initiatives. However, there is ample room for additional progress in the Commission's efforts to attract, educate, retrain and retain Arizona's skilled workforce, particularly in light of fiscal challenges in Arizona that threatened to slow or reverse progress.

Thus, for the 2010 Annual Report, the number of Skilled Workforce recommendations has been reaffirmed, but narrowed to nine, via the actions noted below:

- Recommendation Consolidation - (Last year's #3 & 6, #5 & 7, and #8 & 10), as it was determined there is opportunity for synergy between those stakeholders/activities jointly, that may not be realized (or funded) separately.
- Recommendation Retention - (Last year's #2, #4, #9, #11, #12), as limited progress was achieved.
- Recommendation Retirement - (Last year's #1), now covered as a "Business Environment" goal.

### 2011 Focus for Attracting, Educating, Retaining and Retraining Arizona's Skilled Workforce

In support of the 2011 recommendations, the Commission will seek opportunities for further collaboration between academia, industry and A&D associations where the joint assets, capabilities and resources can serve to support or accomplish our goals. Accordingly, the Commission will seek "champions" and/or resources to support the following prioritized initiatives:

- Development of an A&D Resource Portal for employers, employees, students and faculty which will allow these stakeholders to access information on careers, education, training, internships, tutoring, mentoring, lifelong learning opportunities, etc.
- Funding and deployment of the Arizona Aerospace Academy (school-within-a-school) model.
- Promotion of merit based scholarships or other initiatives that will serve to entice promising students/graduates with A&D-related skills/education to remain in the State.

## **A&D Commission References**

(All Resources are Located on <http://www.azcommerce.com/Councils/Arizona+Aerospace+and+Defense+Commission.htm>)

### **Industry Reports**

- [\*Aerospace and Defense 2010 Economic Impact Study\*](#)
- [\*Arizona Value Proposition Focus Group Research-Final Report An Initial Assessment – Creating an Arizona Aerospace Institute\*](#)
- [\*Advancing Arizona's Innovation Economy\*](#)
- [\*Astronomy, Planetary Sciences, and Space Sciences Research Opportunities to Advance Arizona's Economic Growth Presentation\*](#)
- [\*AZ Aerospace, Defense, and Avionics Industries Study\*](#)
- [\*Department of Defense Quadrennial Defense Review and Science and Technology\*](#)
- [\*Economic Impact Analysis Information - Airport Cooperative Research Program\*](#)
- [\*Economic Impact Analysis Information, The Boeing Company\*](#)
- [\*Economic Impact of the Ground-Based Midcourse Defense Program in the State of Arizona\*](#)
- [\*Economic Impact Study - Aerospace and Defense 2010\*](#)
- [\*Federal Spending\*](#)
  - [\*Contracts Performed in Arizona FY2006\*](#)
  - [\*Contracts Performed in Arizona FY2007\*](#)
  - [\*Contracts Performed in Arizona FY2008\*](#)
- [\*National Aeronautics Research and Development Policy\*](#)
- [\*Office of Space Commercialization Strategic Plan, U.S. Department of Commerce/National Oceanic and Atmospheric Administration\*](#)
- [\*Report of the Interagency Aerospace Revitalization Task Force\*](#)
- [\*Unmanned Aircraft Systems Roadmap 2005-2030\*](#)
- [\*U.S. Aerospace Industry: Progress in Implementing Aerospace Commission Recommendations, and Remaining Challenges\*](#)
- [\*U.S. Defense Modernization Readiness for Now and for the Future\*](#)

### **Aerospace and Defense Commission's Annual Reports**

- [\*2009 Commission Report\*](#)
- [\*2008 Commission Report\*](#)
- [\*2006 Commission Report\*](#)
- [\*2005 Commission Report\*](#)

### **Issue Forms Submitted to the Aerospace and Defense Commission:**

- [\*Preserving our Resource of Dark Skies for Arizona's APSS Sector\*](#)
- [\*Science Foundation Arizona Support for Collaborative Development of Arizona APSS Enterprises\*](#)
- [\*A Physical Science Complex at the University of Arizona\*](#)
- [\*Arizona Center of Excellence\*](#)

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