

FEBRUARY 2013

The State of Greater Phoenix's Aerospace and Defense Industry

A Pre-Sequestration Analysis



Greater Phoenix
ECONOMIC COUNCIL

FINDINGS FROM GPEC'S AEROSPACE AND DEFENSE MARKET INTELLIGENCE PROGRAM



PREFACE

This report represents a snapshot of the Greater Phoenix region's aerospace and defense industry for a specific period of time, from May through December 2012. During this time period, sequestration was considered more of a threat and less of a reality.

As such, this assessment does not include any actions taken by the region's aerospace and defense companies as a result of sequestration or in anticipation of it – or sequestration's effects on our communities.

However, with sequestration just days from being implemented, today it should serve as a warning to Greater Phoenix's entire community about the importance of deliberate and collective action to support not just our aerospace and defense industries, but also the workforce talent and innovation assets they contain.



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EXECUTIVE SUMMARY

Arizona is a top-ranked defense state with much at stake in the forthcoming sequestration and budget cuts associated with the 2011 Budget Control Act – an estimated \$1 trillion over 10 years. According to the Pew Center on the States, 5.2 percent of the state's GDP is dependent on federal defense funding, making it the 10th most vulnerable state in the nation. Indeed, a recent analysis by Wells Fargo Economic Group also classified Arizona as a “high risk” state in terms of vulnerability.

In anticipation of these massive cuts, the Greater Phoenix Economic Council (GPEC) – along with its Economic Development Directors Team and the Greater Phoenix Chamber of Commerce – last year undertook a major market intelligence initiative to determine the existing strengths and weaknesses of Arizona's aerospace and defense industries. Based on this data snapshot, the analysis also sought to understand the potential impact of sequestration on our local companies, communities, workforce and innovation base.

The program consisted of two main components. The first developed an in-depth profile and analysis of 114 local companies identified by GPEC using data from the Office of Management and Budget. The second was an extensive door-to-door outreach effort to these companies conducted by mayors, local chambers of commerce, GPEC Ambassadors (volunteers from GPEC's member companies) and municipal economic development directors and their teams.

ARIZONA A&D BY THE NUMBERS

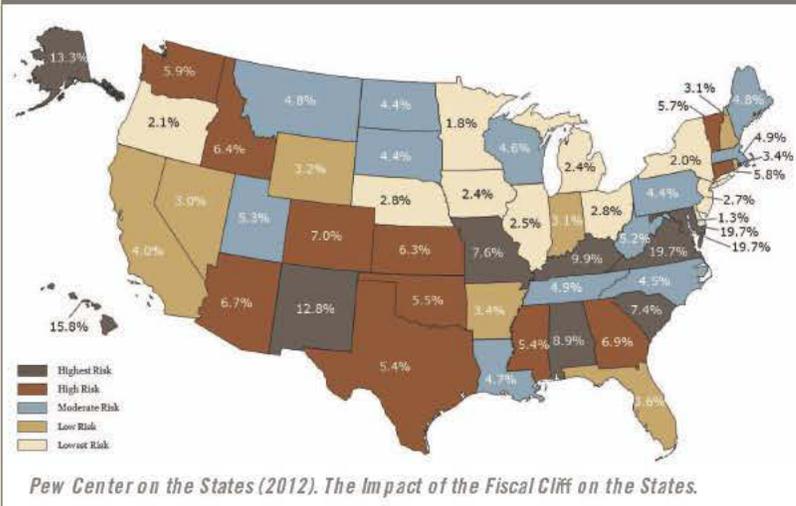
\$13	Billion in Department of Defense contracts awarded in FY 2012
2,000	Companies/institutions that received those contracts
43,000	Direct employment in A&D industry
153,000	Direct + indirect + induced employment in A&D industry
\$84,000	Average annual wages
\$1.4	Billion in research and development awards by Department of Defense in FY 2012
\$2.1	Billion in total exports
\$15	Billion Total revenue

Source: Deloitte (March 2012 impact study); USAspending.gov

“[Sequester] cuts will happen without regard to a program's merit or efficacy. Some of the most severe cuts will hit defense programs.”

– U.S. Sen. Richard Shelby, R-Alabama, Feb. 14, 2013

FEDERAL SPENDING AS A PERCENTAGE OF STATE GDP



To echo the preface, it's important to note that the forthcoming report is already dated due to the time it takes for data collection, analysis and interpretation. March 1, when sequestration goes into effect, will be a game-changer for the Greater Phoenix community in that these companies must be revisited and interviewed again in the wake of such devastating cuts to ensure they have the support they need.

Tier 1 companies

The program found that for most Tier 1 companies, like Boeing, Honeywell and other industry anchors, the short-term outlook is stable. Most have identified readiness adjustments in anticipation of sequestration, even though their severity to each company is yet unknown. Some of them are even anticipating expansion activity away from defense-related contracts as international sales and commercial aerospace applications have increased.

TOP 10 STATES WITH EXPOSURE TO DEFENSE CUTS

State	Federal Defense Spending as a % of 2010 GDP	Total Federal Spending as a % of 2010 GDP
Hawaii	14.6	15.8
Alaska	10.5	13.3
District of Columbia	9.8	19.8
Maryland	9.8	19.8
Virginia	9.8	19.8
Kentucky	8.0	9.9
Alabama	7.0	8.9
Missouri	5.9	7.6
Connecticut	5.3	5.8
Arizona	5.2	6.6

Source: Pew Center on the States and Wells Fargo Securities, LLC

In addition, the Greater Phoenix region has a favorable business climate, lower operating costs and available technical talent – factors that positively influence the competitive position of the region's aerospace and defense businesses. However, as reflected in the recommendations, several companies indicated that more federal-level support would be valuable to help shore up and strengthen operations in the region.

Tier 2 companies

The region's second tier companies are less likely to withstand the cuts due to their reliance on Tier 1 companies for contracts and subcontracts. These small- and medium-sized companies are capital-intensive enterprises that are also technologically sophisticated in terms of their research and development and manufacturing capabilities. However, without new direct contracts from Department of Defense (DoD) or subcontracts from other prime contractors, some of these companies have neither the access to capital necessary to grow capacity nor the working capital available to wait it out – meaning they could be forced to lay off workers or cease operations. Such instability could result in the loss of innovation, workforce talent, available production infrastructure and disruption to the Tier 1 supply chain across multiple states – from California to Texas and Virginia – particularly with regards to large and ongoing DoD modernization programs.

Also of note is the community's exposure to deep cuts in Arizona's research and development expenditures. Up to 75 percent (\$5.2 billion) is housed entirely within the state's corporate infrastructure¹ – and much of it in our aerospace and defense companies like Honeywell, Boeing and Raytheon, in addition to smaller companies like Renaissance Sciences Corporation and Stara Technologies.

POST-SEQUESTER OPPORTUNITY

In order to preserve the quality innovation and workforce talent currently held in these companies and programs, our business and community leaders must work to maintain these assets and seek ways to competitively integrate them into the global commercial economy, which is becoming more and more driven by knowledge and innovation.

GPEC identified the Rochester and Albany metro regions in New York as two of many examples of effective economic growth strategies.

Thanks to a \$400 million public investment to support the College of Nanoscale Science and Engineering at the University of Albany (CSNE), the region was able to secure a \$4.4 billion investment from market leaders including IBM, Samsung, Intel, Global Foundries and TSMC over competing proposals in Europe and Asia.

Rochester

Similar to how Motorola drastically reduced its workforce in Greater Phoenix, in the Rochester, N.Y. area, Kodak reduced its jobs footprint from 61,000 to fewer than 7,000 over the course of several decades. Despite such drastic job losses, Rochester continued to grow in part due to the efforts by University of Rochester, the Rochester Institute of Technology and local medical complexes to capture and redeploy Kodak's legacy employees in areas like photonics, medical technology, optics, imaging, or to small startups and other entrepreneurial opportunities. Today, Rochester is New York's largest upstate exporter area and the region has seen employment grow by more than 95,000 jobs between 1982 and 2012.

Other major public investments include:

- New York Battery and Energy Storage Technology Consortium (NY-BEST)
- High Tech Rochester Business Accelerator
- University of Rochester - IBM Health Science Center for Computational Innovation

Albany

The Albany-Schenectady-Troy region is quickly becoming a market leader in nanotechnologies with an economy that has grown 45 percent since 2011 to \$41 billion in GDP.

Thanks to a \$400 million public investment to support the College of Nanoscale Science and Engineering at the University of Albany (CSNE), the region was able to secure a \$4.4 billion investment from market leaders including IBM, Samsung, Intel, Global Foundries and TSMC over competing proposals in Europe and Asia. This science and technology effort forged the university's corporate collaborative research relationship to develop 22nm and 14nm chip technologies, the latter of which is similar to the technology being developed by Intel in Chandler. This public-private partnership is expected to create 6,900 jobs while also making the state a leader in next-generation computer chip technology. The collaboration also attracted more than 300 global corporate partners to the consortium of companies making Albany the most advanced university research complex in the world.

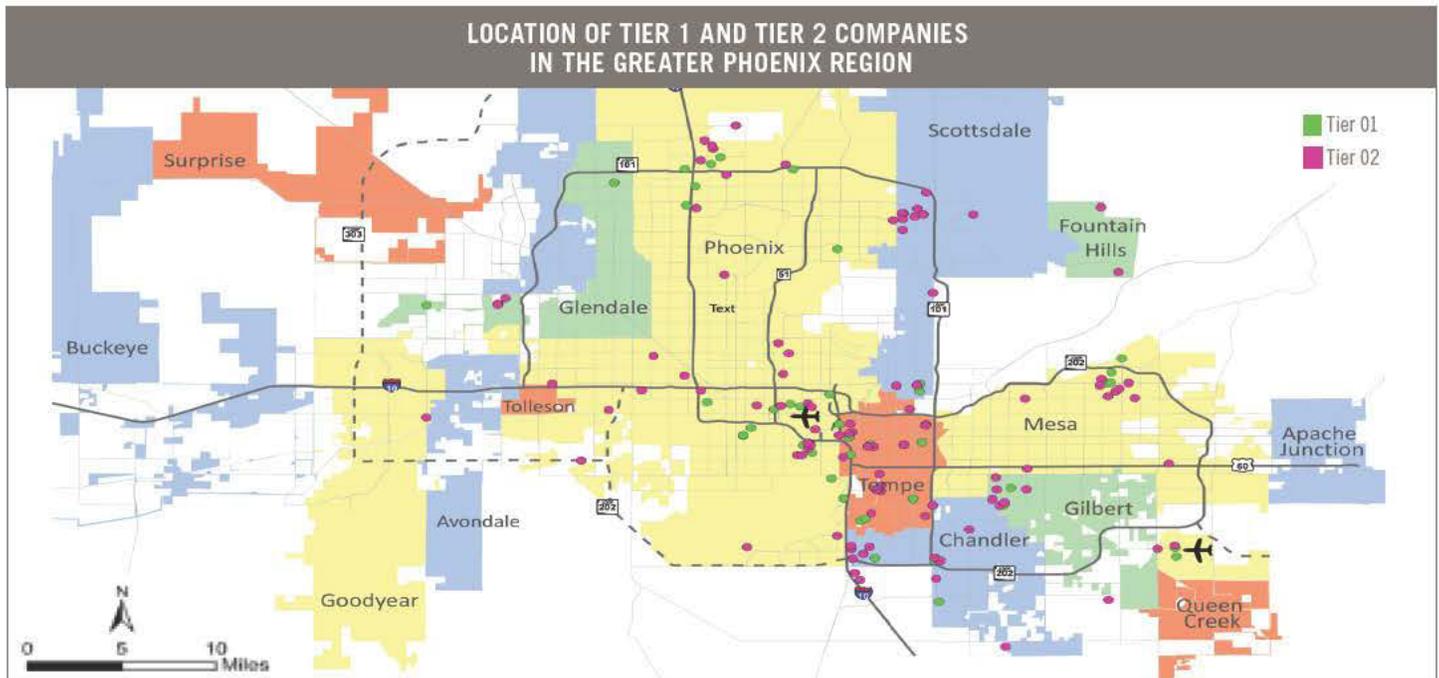
Today's engineering graduates are being recruited by some of the world's most innovative companies, creating a talent war. To work on cutting-edge 14nm chip and 3D technology, the choice is between Albany's "Tech Valley" – where billions of dollars are being invested across a diverse group of companies and public entities – and Greater Phoenix.

NEXT STEPS

Our communities and business leadership must work together to create the "Digital Desert" by similarly harnessing public-private partnerships that elevate Arizona's core private-sector research leaders, like Intel, Honeywell, Raytheon and Boeing, and support infrastructure investments at our universities for trailblazing research. Ultimately, this type of move would lead to fast-track commercialization opportunities that benefit growth industries, turn ASU, U of A and NAU into engineering powerhouses and increase our prospects for exports.



Despite drastic job losses from Kodak, Rochester continued to grow in part due to efforts by the University of Rochester, the Rochester Institute of Technology and local medical complexes to capture and redeploy Kodak's legacy employees



RECOMMENDATIONS

As part of its in-depth research and interview process, GPEC has identified the following strategies as community-wide responsibilities. The region's corporate, science, civic and government partners must work together not only to mitigate job loss but also to support and protect our physical assets, workforce talent and innovation from being moved out of the market.

1. Federal Support

Many of the interviewed companies indicated a need for collective and tangible support from Arizona's congressional leadership. They must convene to develop a federal-level strategy to either fully reverse sequestration or to provide a "go forward" strategy to ensure that Arizona's aerospace and defense assets, including R&D and skilled workforce, are retained and redeployed.

Defense-heavy states like Alabama, Virginia and North Carolina have benefited from the reassurance and partnership that comes from a united federal delegation. For instance, Virginia's bipartisan congressional delegation recently co-signed a letter to President Barack Obama, House Speaker John Boehner and Senate Majority Leader Harry Reid voicing concern for their aerospace and defense industry and their unified commitment to averting sequestration-related cuts due to their disproportional effect on Virginia.

In April, GPEC will convene a delegation of community leaders and CEOs in Washington, D.C. to increase awareness of and advocate for key economic development issues affecting Arizona and Greater Phoenix, like sequestration. Among other objectives, one of the primary missions for the delegation will be to promote collective support and promotion of Arizona's aerospace and defense companies at the federal level while also focusing on existing efforts to advance and support these industries.

2. Unmanned Aircraft Systems

Arizona's business and community leaders should support Governor Brewer and the Arizona Commerce Authority on their concentrated effort to secure an FAA-designated test site for unmanned aircraft systems (UAS).

Already, Arizona is a recognized national leader in UAS testing, training and operation. The abundance of qualified assets, like military ranges and more than 350 days per year of perfect flight weather, allows Arizona to provide one of the nation's largest and most diverse airspace area, which is necessary for continuous UAS testing and training operations.

Furthermore, Arizona's broad range of academic aerospace and engineering research facilities, longtime relationships with top aerospace and defense companies like Raytheon, Boeing, Honeywell, and vast supply chain make it a prime candidate for an FAA-designated unmanned aircraft systems test site.

In a similar signal of support for the aerospace and defense industries, Arizona's congressional delegation should also publicly and bilaterally support this initiative.

3. Major Commitment to Science and Technology

The region's business and community leadership must commit to public-private collaboration and investment to ensure the aerospace and defense industry's existing knowledge and technology assets are leveraged to generate new and higher-value economic growth opportunities, similar to the Rochester, N.Y. example detailed in the executive summary.

GPEC is working with the Brookings Institute and Maricopa Association of Governments to develop a science and technology strategy that injects new life into our economy. This effort seeks to make our region a center for next-generation innovation, creating opportunities for our existing workforce talent while also attracting new, skilled workers to Greater Phoenix.

4. Increase Regional Export Opportunities

State and regional leaders must support opportunities to increase the number of export-based investments. Export industries are critical to safeguarding and retaining the aerospace and defense industry's engineering base because they generally require high-skilled workers. In addition, export-focused companies also tend to be capital-intensive operations that pay higher-than average wages and generally offer benefits like health insurance.

Competitor states in the Mountain West region, like Texas and Utah, have turnkey economic development programs to attract new export-oriented companies. While Arizona has dramatically improved its competitiveness for export-based investments with recent policies like HB 2001 and HB 2815, a property tax reclassification policy would increase the state's regional competitiveness ranking from fourth to first.

In a recent analysis, the Tax Foundation reported that "Arizona ranks 40th for the new capital-intensive manufacturing operations with a total effective tax rate of 16.3 percent. For labor-intensive manufacturing, Arizona ranks 39th with a TETR of 13.2 percent. Property taxes are, by far, the largest tax cost for these firms, a tax burden nearly twice the national average. Arizona is one of only a handful of states that don't offer property tax abatements."

In addition, Arizona should look to advance export industry opportunities with investments in STEM education and an infrastructure program for local communities that is similar in scale to Albany, N.Y.'s nanotechnology strategy.

5. Ongoing Commitment to Business Retention and Expansion

As stated earlier, this report represents a pre-sequestration snapshot look at the Greater Phoenix region's aerospace and defense industries. The days that follow March 1, when sequestration is scheduled to go into effect, represent a can't-miss opportunity for the region's business, community and municipal leadership to determine the short- and long-term consequences and chart a decisive course of action for Greater Phoenix.

To that end, GPEC recommends a continued coordinated business retention and expansion (BRE) program to constantly monitor, assess and share relevant market intelligence with regards to sequestration's impacts. This can be accomplished by the creation of a regional response team and protocols to engage industry executives with regards to workforce and asset redeployment in the event of a business contraction or expansion outside the market.

It's critical to note that in order to hold on to the region's engineering and innovation base, the aerospace and defense companies that participated in this analysis report must be treated as valuable and unique assets by the region's cities and economic development teams, as well as local, state and federal public officials.

“As a bipartisan delegation... we write to show unified support for immediate action to avert the devastating impacts of sequestration... These reductions, while harmful to the entire U.S. economy, will be particularly devastating to Virginia... nearly [10] percent of the 2.1 million jobs that would be lost as a result of sequestration will come from Virginia.”

– Excerpt from bipartisan letter to President Barack Obama, Senate Majority Leader Harry Reid and House Speaker John Boehner from Virginia's U.S. Senators and its congressional delegation, Feb. 15, 2013

**TABLE 2 –
DISTRIBUTION OF JOBS BY TIER**

State	Jobs	Share
Tier 1	31,485	87%
Tier 2	4,693	13%
Total	36,178	100%

Source: Maricopa Association of Government 2011 Employers Survey; GPEC. Raytheon employment is not included.

**TABLE 3-
DISTRIBUTION OF COMPANIES
BY TYPE AND PRODUCTS AND SERVICES⁴**

Products and Services	# of Companies ⁵	Examples
Avionics & Sensor Technology Development and Manufacturing	36	L3 Communication
Airframe & Components Manufacturing	41	The Boeing Company
Power Systems Development and Manufacturing	26	Honeywell Aerospace
Weapon & Armor Systems Development and Manufacturing	24	General Dynamics
UAVs, and Related Technologies Development and Manufacturing	4	Kutta Technologies
Information Systems & Cyber Technology Development	33	Lockheed Martin
Space Technologies and Satellites Development and Manufacturing	6	Orbital Sciences
Communications Systems Development and Manufacturing	28	General Dynamics
Aerospace Parts Manufacturing	56	The Timken Company

Source: GPEC analysis

A. BACKGROUND AND PURPOSE

Identifying a new regional economic development framework requires close attention to the region's existing business base, the identification of new business opportunities and threats to local industry health. Since 2009, GPEC has paid close attention to developments within the aerospace and defense industries on behalf of its 20 member communities. In particular, as the civil aviation and commercial aerospace sector contracted due to a prolonged worldwide economic recession, it became evident that the region's industrial base could experience an additional contraction due to anticipated decreases in military spending following the drawdown from the Iraq and Afghanistan wars.

Furthermore, aggressive competition for the industry's investments from some southern states, mounting federal fiscal pressures aggravated by the 2011 Budget Control Act and impending sequestration pose a very real threat to aerospace- and defense-related jobs in the region. In response, GPEC saw the need for a regional and collaborative approach to develop an innovative and effective program that tracks and monitors the health of the region's aerospace and defense companies.

B. PROGRAM OBJECTIVE

In May 2012, GPEC partnered with the region's municipal economic development directors and the Greater Phoenix Chamber of Commerce to officially launch the Aerospace and Defense Market Intelligence Program.

The program consisted of two main components. The first component was an in-depth business profile of 114 aerospace- and defense-related companies categorized by size. The second was an extensive outreach effort conducted by community economic development directors, mayors, local chambers of commerce and GPEC Ambassadors. The objective was to meet with each of the 114 companies to determine the risk and impact of the DoD budget cuts associated with the 2011 Budget Control Act and the impending sequestration.

The findings from this outreach effort are summarized in this report, which aims to inform Arizona's federal congressional delegation, state leaders, mayors and business leaders of the immediate threats and opportunities facing the industry.

C. AEROSPACE AND DEFENSE INDUSTRY: REGIONAL PROFILE

During the 2012 fiscal year, more than 2,000 businesses and institutions in Arizona were awarded the sixth largest share of defense contracts in the country. The total value of these contracts was around \$13 billion. These Arizona companies provide a variety of products and services to DoD. Approximately 75 percent of Arizona's defense contracts were held by Raytheon Company, Boeing Company, Honeywell and General Dynamics.¹ The remainder was awarded to small, medium and large businesses in varying industries across the state.

More than 800 of these businesses and institutions are located in the Greater Phoenix region. Together they receive nearly \$7 billion of the state's total defense contracts. These businesses specialize in research & development and manufacturing of aircrafts, guided missiles, weapons, hardware, systems integration and other related systems, as well as general supplies and maintenance. These 800-plus businesses directly and indirectly support thousands of jobs as well as suppliers and other small businesses in the region, in other parts of the state, and in other states. With the exception of companies that exclusively provide weapons systems, the majority of these companies serve both commercial and military markets.²

¹ USASpending.gov – Excluding Healthcare

² There are 861 aerospace related companies in Maricopa County according to the Aerospace and Defense Supply Chain Study (2011) by Arizona Manufacturing Extension Partnership and Arizona State University.

³ Excluding 2.6 billion in health care services in 2011.

RELATIONSHIP BETWEEN DEPENDENCE ON DEFENSE CONTRACTS AND CURRENT OPERATIONAL STATUS

	Dependence on Defense Contracts	Expanding	Stable	Contracting	Closing
More than 80%	20	3	9	6	2
More than 65%, Less than 80%	7	4	1	1	1
Under 65%	27	4	20	3	0
Undisclosed	9	4	3	1	1
Total	63	15	33	11	4

SUMMARY STATUS OF AEROSPACE AND DEFENSE COMPANIES AT VARIOUS SITES

Current Status	Overall	T1	T2
Contracting	24%	19%	26%
Stable	52%	48%	55%
Expanding	24%	33%	19%

The region's aerospace and defense companies support more than 50 major defense programs and military platforms. In 2012, the largest contracts (excluding healthcare-related services) were related to aircraft rotary wings, representing about 21 percent of the total purchases by DoD in Maricopa County³. The most notable programs were The Boeing Company's Apache Advanced Attack Helicopter (AH-64A), the Longbow Apache Block II & III as well as the Sikorsky Black Hawk (UH-60A/L). Another significant specialization in the region is related to advanced communication equipment. The larger contracts in this category were awarded to General Dynamics. Another notable program in this category is the Joint Tactical Radio System (JTRS).

D. GPEC MARKET INTELLIGENCE SPECIFICS

GPEC's outreach effort targeted 114 aerospace and defense companies in the region⁶. The companies were organized into two tiers: Tier 1 (larger prime contractors and OEMs) and Tier 2 (larger suppliers, downstream companies in various steps of the supply chain, and smaller companies focused on R&D, software development, cyber-security, and unmanned aerial system payload). Notable companies included: ATK Gun Systems Company LLC; BAE Aerospace; The Barnes Group; BE Aerospace; General Dynamics; C4 Systems Inc.; Goodrich Corp. and Hamilton Sundstrand (now UTC Aerospace); Honeywell; L3 Communication; Lockheed Martin Corporation; MD Helicopters Inc.; Talley Defense Systems Inc.; Orbital Sciences Corp.; Ratheon Corp.; SAIC; and the Boeing Company.

Collectively, these companies employed about 36,000 workers in 2011 and operated 157 physical facilities across the region. The majority of the jobs and the largest share of contracts are concentrated in the larger Tier 1 companies. The Tier 2 companies largely depend on sub-contracts from the Tier 1 companies.

These companies are engaged in a wide variety of research and development activities and product manufacturing.

E. OUTREACH SUMMARY

The region's municipal economic development teams, GPEC Ambassadors and GPEC staff met with more than 62 percent of the 114 targeted companies. These companies employ more than 30,000 workers in the region and about 85 percent of the total jobs in the initial target list. About 38 percent declined or were not available due to security issues.

F. FINDINGS FROM THE AEROSPACE AND DEFENSE MARKET INTELLIGENCE PROGRAM

Based on these interviews, 76 percent of companies reported to be either stable or expanding. Specifically, 52 percent indicated that they are stable and about 24 percent are implementing expansion plans. The remaining 26 percent of the companies reported that their business was contracting as a result of the current federal spending cuts. These are primarily companies/operations where DoD contracts represent the largest share of their revenue base.

However, several companies with operations in multiple states indicated that the level of support offered by federal delegations in other states – like Alabama, Tennessee, North Carolina and Virginia – weighed heavily in their investment decisions regarding where to consolidate facilities or downsize operations. As such, local companies are seeking stronger and more aggressive support from Arizona's federal delegation, as outlined in the recommendations.

⁴ Some companies provide multiple services.

⁵ Number of profiled companies with operation in the listed activity and product manufacturing categories. Companies in the region may be involved in more than one type of activity and product manufacturing.

⁶ The businesses were identified by reviewing prime award information shown in the USAspending.gov a database created and maintained by the Office of Management and Budget (OMB). The companies were selected using a specific set industry codes defined by the North American Industry Classification System.

⁷ Raytheon employment is not included.

FINDINGS FROM MEETINGS WITH TIER 1 COMPANIES

- **All Tier 1 companies in the region have been contacted**

Meetings were held at one of the facilities, at least, operated by a Tier 1 company.

- **48% of all Tier 1 sites reported that their business is stable**

Most of the large Tier 1 companies reported that their short-term outlook is stable. They had already made adjustments in the last 12 months in anticipation of the DoD budget cuts.

- **33% of all Tier 1 sites reported they will expand in the near future**

These companies generally had a more positive outlook and reported expansion plans due to a strong pipeline of commercial contracts and a strategic direction targeting DoD growth areas like intelligence, surveillance and reconnaissance programs, cyber technology, space technologies, homeland missile defense capability, and counterterrorism capabilities.

- **19% of all Tier 1 sites reported that their business was contracting**

Contractions were reported at sites that are almost exclusively dependent on DoD contract work. Some sites were contracting due to consolidation.

- **Timing and uncertainty around the implementation of the DoD budget cuts present challenges to businesses**

With the U.S. Congress still poised to impose steep cuts to the DoD procurement budget, the region's Tier 1 aerospace and defense companies are echoing many of the same concerns voiced across the country. Whether large or small, aerospace and defense companies do not yet know how sequestration will impact them. The prolonged timing and uncertainty about the allocation of budget cuts across the programs is the most critical factor hindering their ability to execute business plans.

- **Focusing on technology rather than products**

Large companies in the region, like Honeywell and Boeing, have become considerably less capital intensive and more diversified. They focus on technology rather than products and minimize risk by not being overly dependent on any specific platform. For example, Lockheed Martin in Goodyear is focusing more on integrated technologies. Together with engineers from two California operations, they developed the Lockheed Martin Mission Cloud. This system integrates the elements of the IS&GS NexGen Cyber Innovation and Technology with existing mission-specific IT systems. Another example of diversification is in Unmanned Aerial Systems. Twenty-seven of the companies interviewed were either currently developing or interested in developing UAS technologies.

- **The sector is consolidating**

Larger technology companies and prime contractors are acquiring smaller companies with expertise and competencies in existing platforms and companies that have received SBIR funds to fill gaps in their current products and services and to capture new technology opportunities. This statement is supported by a recent analysis of M&A activity. For example, UTC purchased Goodrich Corp's assets and merged them with Hamilton Sundstrand creating UTC Aerospace.

- **Businesses are seeking market diversification by expanding international sales**

Companies are seeking market diversification by moving into international markets. However, expanding international markets sales is difficult because they have to comply with strict federal regulations, bureaucratic requirements, and licenses and fees. This issue is particularly acute for smaller companies, which lack the necessary resources or know-how. Companies suggested that the region's defense contractors could benefit from additional support at the congressional level for implementing changes in regulations that would simplify the transfer of military technologies to commercial markets and advocating for overhauling International Traffic in Arms Regulations export rules.

“We will have to make cutbacks and delays in virtually every investment and program in the department, more than 2,500 of them.”

– Under Secretary of Defense Robert Hale,
February 20, 2013

FINDINGS FROM MEETINGS WITH TIER 2 COMPANIES

- **About 42% of all Tier 2 sites responded to the outreach program**

- **Of these, about 55% reported they are currently stable at their site**

- **About 26% reported that business was contracting at their site**

Decline was mostly attributed to the reduction and/or suspension in subcontracting activities.

- **About 19% reported that business was expanding at their site**

Similar to what Tier 1 companies have reported, the companies with more positive outlook and expansion plans have stronger pipeline of commercial contracts and are geared toward DoD growth areas. The weakening of the defense market is motivating aerospace companies to pursue contracts in the commercial sector, which has been rebounding since the recession. Demand for commercial aerospace products and services are projected to grow at about a 3 percent annual rate over the long term. Boeing's Current Market Outlook 2011–2030 forecasts total commercial jet deliveries of 33,500 aircraft worldwide from 2011 to 2030, with an estimated total value of \$4.1 trillion. Businesses are also trying to innovate and diversify their technology and product offerings by moving into adjacent sectors with commercial applications such as renewable energy, alternative fuels and communication technologies.

- **Tier 2 companies are the most vulnerable**

Several companies have stated that the damage has already been done. Due to uncertainty, large aerospace firms have slowed the pace of awarding subcontracts. Without new direct contracts from DoD or subcontracts from other prime contractors, small businesses have neither the capital to grow capacity nor the cash flow to wait it out. In the short term, this could force companies to lay off workers or cease operations, emphasizing the need for a science and technology strategy – as outlined in

the recommendations – that captures these assets and prevents them from being redeployed or finding alternative employment in other markets.

• Instability in Tier 2 companies could result in loss of available production infrastructure and disruption in the supply chain

In particular, it was noted that at times the local supplier base is insufficient to satisfy longer production runs as larger companies take up a larger share of local manufacturing resources. Smaller companies are also worried about the indirect cuts. For example, if the Air Force reduces flying time, this will reduce demand for aircraft overhaul services, spare parts and other maintenance services. Many local aerospace businesses providing these types of services depend on the operations of older aircraft platforms.

• The supplier relationships are changing

Small businesses primarily depend on Tier 1 and larger Tier 2 companies for subcontracts. However, smaller Tier 2 companies are having difficulty securing contacts with Tier 1 companies because larger companies have suspended subcontracting activities due to uncertainty associated with the budget cuts. As budget cuts are implemented, Tier 1 companies will increasingly depend on their supply chain companies to assume more risk and the larger share of the R&D work. Their goal is to focus more on systems integration rather than manufacturing components, thus

shifting a larger share of components design and manufacturing onto Tier 2 companies and fully integrating them in their own supply chain, and inventory management systems. However, this poses strains on smaller companies.

• Tier 2 companies have been targeted by private equity groups

Diminished federal resources and high growth in the commercial sector have motivated several companies to consider mergers and acquisitions as a way to diversify their portfolios, including private equity groups. The Transdigm Group recently purchased Amsafe and Court Square purchased Aero Design & Manufacturing from Platte River Ventures.

ACKNOWLEDGEMENTS

The Aerospace and Defense Market Intelligence Program was spearheaded by the Greater Phoenix Economic Council in collaboration with GPEC’s Economic Development Directors Team and Greater Phoenix Chamber of Commerce

GPEC Member Communities:

Maricopa County	Gilbert	Queen Creek
Apache Junction	Glendale	Scottsdale
Avondale	Goodyear	Surprise
Buckeye	Maricopa	Tempe
Casa Grande	Mesa	Tolleson
Chandler	Peoria	Wickenburg
Fountain Hills	Phoenix	
Gila Bend		





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