



CHAPTER ELEVEN

ECONOMIC DEVELOPMENT

presented to

MADISON COUNTY COMMISSION

by

**CHAMBER OF COMMERCE
OF HUNTSVILLE/MADISON COUNTY**

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TENNESSEE VALLEY REGIONAL GROWTH COORDINATION PLAN

DISCLAIMER

This study was prepared under contract with the Madison County Commission, Alabama, with financial support from the Office of Economic Adjustment, Department of Defense. The content does not necessarily reflect the views of the Office of Economic Adjustment.

This report is intended as an aid to planners, managers, elected officials, and other decision makers in the Tennessee Valley/Redstone Arsenal region. Our aim is not to dictate what should be done, but to assist in ongoing efforts to achieve goals and objectives identified and valued by the residents of the region. The recommendations presented in this report are suggestions for how the region could work towards those goals and objectives, based on best available information and current understandings.

The information, projections, and estimates in this report are based upon publicly available data and have been prepared using generally accepted methodologies and formulas. The projections and needs presented in this report are based upon best estimates using the available data. It is important to note that currently available information and understandings are incomplete and cannot account for the inevitable, but unpredictable, impacts of unexpected global, national, state, and/or local events. Actual results and needs may differ significantly from the projections of this report due to such unforeseen factors and conditions, as well as inaccuracy of available data, and/or factors and conditions not within the scope of this project. Persons using this information to make business and financial decisions are cautioned to examine the available data for themselves and not to rely solely on this report.

Neither the Madison County Commission, the Chamber of Commerce of Huntsville/Madison County, nor its subcontractors guarantee or warrant that the projections set forth in this report will, in fact, occur. The Madison County Commission, the Tennessee Valley Regional Growth Coordination Plan Advisory Committee and Task Forces, and the Chamber of Commerce of Huntsville/Madison County and its subcontractors disclaim any liability for any errors or inaccuracies in the information, projections, and needs analysis, regardless of how the data is used, or any decisions made or actions taken by any person in reliance upon any information and/or data furnished herein.

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EXECUTIVE SUMMARY

The TVRGCP Primary Study Area (PSA, area) has a population of 502,726 that is expected to grow by 32,000 additional residents by 2013 (6.4% versus a U.S. rate of 4.9%) without factoring in the gains expected by BRAC, which are expected to add an additional 26,000 residents in the PSA between 2008 and 2011. This net gain by 2013 (58,000) represents a growth rate of 11% over the current population. Many of these new residents will move to the region because of jobs or will seek them once there.

The PSA is located in north-central Alabama on the Alabama/Tennessee border. It is a regional medical, educational, retail, manufacturing, service and employment center. It is also a major, regional multi-modal transportation hub, and a leading national aerospace and defense complex that includes the U.S. Army's Redstone Arsenal and NASA's Marshall Space Flight Center. As the home of Dr. Werner von Braun's team of scientists, it is the birthplace of the U.S. space program.

The area is blessed with numerous advantages that include: above-average population and labor-force growth; a very well educated, technology-savvy population; a quality workforce; a balanced and diversified, technology-focused economy; two well regarded universities and a community college; two engineering schools; excellent transportation access, including interstate, Class 1 rail, barge service, and freight and passenger air service offering multi-modal transportation services; moderate operating costs, including a low tax burden; the nation's second-largest R&D technology park; above-average incomes; a moderate cost of living; a major U.S. Army facility; a major NASA facility; a strong technology heritage; a positive national name recognition via Huntsville; a strong base of technology companies; responsible, competent, well run, local pro-business governments; very warm and cooperative relationships among and between the area's governments, the private sector, and Redstone and NASA leadership; excellent business leadership; available and affordable housing; good public school systems; and a good-to-excellent utility infrastructure, including cutting-edge telecommunication services.

This combination of enviable assets has given the area an economic prosperity arising from a high concentration of technical talent, a low-cost environment, and good management. As a result, the area has a diverse economy with a comparatively large group of 11 technology and standard-industry-employment clusters. These clusters are:

- Professional Services
- Electronics
- Federal Government
- Transportation Equipment
- Metal Fabrication
- Machinery
- Food Products

-
- Polymers
 - Freight
 - Chemicals
 - Wood Products

However, these blessings are clouded by numerous events and conditions that could significantly challenge both the community's ability to maintain its advantageous position as an expanding technology center and its current vitality. These challenges consist of the following:

1. The PSA has labor shortages in some occupations that are critical for the area's growth. However, the area's current and future high demand for well trained and skilled labor in a broad array of professional, technical, administrative, clerical, health, and education fields offer the spouses of the relocating BRAC personnel ample opportunities for employment.
2. There are periods of congestion on major arterials, access roads, and local roads in the area that projected population and business growth will exacerbate unless transportation improvements are funded and implemented. The City of Madison is particularly affected.
3. Much of the revenue to fund the area's schools comes from retail tax. This base is inadequate to fund the type of public school system needed by a leading technology center, and it will be stretched to meet the needs arising from the area's baseline growth and from the BRAC-generated population growth, particularly in Huntsville City, Madison City, and Madison County. It also encourages retail-directed land development, rather than higher uses, such as office, industrial, and other more intensive land-use activities.
4. For its own long-term economic health, the PSA and its individual counties need to develop greater diversity in their economies, and thereby, the economy of the area. To enter into the next and highest tier of technology centers, and to expand its wealth, the area needs to attract additional private-sector, commercially-focused, applied (rather than original) research and product development.

The Consultant Team recommends six target industries for the PSA. These targets were selected as those best suited to the area's unique mix of strengths and challenges identified in this and the other chapters of this report, and are built upon the area's growing economic clusters.

- Aerospace/Defense
- Distribution and Logistics
- Life Sciences – Biotechnology and Genetics; Pharmaceutical Manufacturing; and Healthcare
- Administrative Office Support Services/Back Offices

- Scientific and Technical Consulting Services: This target is comprised primarily of establishments that provide
- Advanced Manufacturing

These targets particularly:

- Are built upon the PSA's strong technology base (particularly in engineering and IT) and the educational depth of the area's residents, the growing area clusters, and the strengths of the area's workforce, infrastructure, location, and other assets;
- Offer employment opportunities for the spouses of the military and contractor personnel moving to the area because of the BRAC expansion at Redstone Arsenal, based upon the skill sets observed among relocated spouses in other BRAC communities and in the PSA;
- Offer economic diversification to the PSA;
- Offer the opportunity to develop commercial R&D activity;
- Will further enhance the area's already strong technology core, helping to propel the area into the first tier of the nation's technology centers; and
- Offer occupational diversification and mid to high wages.

The Chamber of Commerce of Huntsville/Madison County, the Decatur-Morgan County Chamber of Commerce, Limestone County Economic Development Authority, the Morgan County Economic Development Authority, the Greater Limestone County Chamber of Commerce, and other agencies in the PSA (including the North Alabama Industrial Development Association) active in economic development or workforce development (area agencies) are strongly urged to coordinate their efforts and work cooperatively to address the following recommendations.

1. Maximize the relocation of civilian BRAC-related personnel from northern Virginia and other origins.
2. Conduct an ongoing labor-recruitment effort across the country.
3. Attract the "Talented Young" through quality-of-life enhancements and niche marketing, while continuing to develop and retain local talent.
4. The community is very strongly urged to address a shift in its economy to one that is more diversified. It is recommended that there be a concerted effort to attract more private-sector, commercial-product development and research to the area, by way of existing business attraction programs and other efforts. The targeted industries listed in this chapter offer opportunities for area-wide economic diversification. Leveraging this effort with the area's current employer base should be considered. It also is recommended that UAHuntsville and Alabama A&M University attract more private-sector, commercial-research grants.
5. Promote the use of co-op and internship programs among university students and area employers.

6. Encourage employers to improve their human-resource practices.
7. Promote a greater role by the private sector in workforce training.
8. Provide job counseling to the retired who want to continue working, and to the not-employed who want to re-enter the workforce.
9. Implement an active recruiting effort for skilled individuals who are at or near retirement age.
10. It is recommended that the area's research (UAHuntsville and Alabama A&M University) attract more private-sector, commercial-research grants.
11. Follow the recommendations affecting land use, transportation and utilities, as offered in chapters 3, 6, and 7 of this report.

BACKGROUND

The **Madison County Commission (MCC)** issued a Request for Proposal (RFP) to develop the **Tennessee Valley Regional Growth Coordination Plan (TVRGCP)**. Funding for this study was provided by the **U.S. Department of Defense (DoD), Office of Economic Adjustment (OEA)** to prepare the Tennessee Valley for the impact of **Base Realignment and Closure (BRAC) 2005 at Redstone Arsenal (Arsenal)**.

The **Chamber of Commerce of Huntsville/Madison County (Chamber)** submitted a proposal in response to MCC's nationwide search for a consultant as addressed in RFP P-2007-01. This proposal identified the Chamber as the lead consultant with Wadley-Donovan GrowthTech, LLC (WDG) serving as a subcontractor. After completing a competitive bid process, MCC awarded the contract to the Chamber with a Notice-to-Proceed date of October 29, 2007.

The Tennessee Valley **Study Area** for this project includes thirteen counties in northern Alabama and southern Tennessee within an eighty-mile-radius of the Arsenal. The **Primary Study Area (PSA)** includes the three Alabama counties of Limestone, Madison, and Morgan. The **Broader Impact Region (BIR)** includes the additional six counties in Alabama (Colbert, Cullman, Jackson, Lauderdale, Lawrence, and Marshall) and four counties in Tennessee (Franklin, Giles, Lawrence, and Lincoln). A map of the Study Area is shown in Figure 11-1.

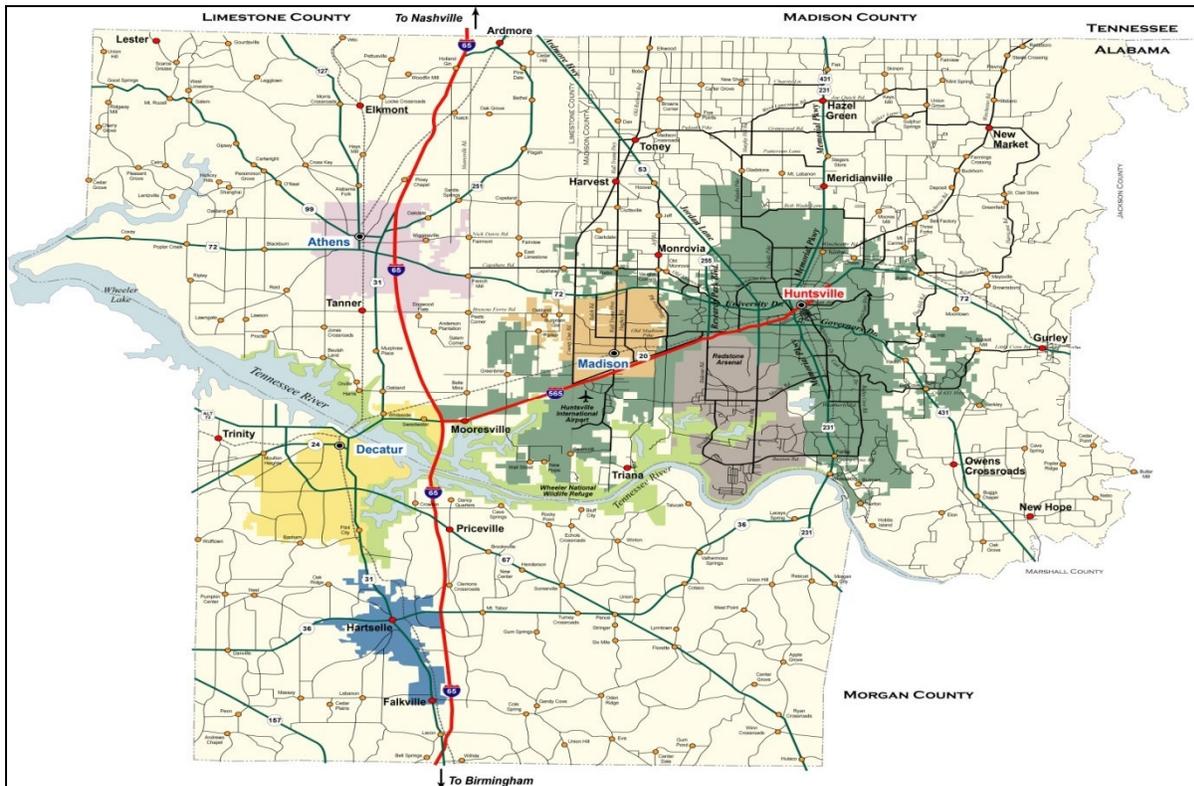
Figure 11-1
Tennessee Valley Regional Growth Coordination Plan Study Area



PRIMARY STUDY AREA

The Primary Study Area (PSA) consists of three counties in Alabama, Limestone, Madison, and Morgan, surrounding Redstone Arsenal (Arsenal). Figure 11-2 shows the relationship of the Arsenal to the three counties and primary cities.

Figure 11-2
Primary Study Area



Source: City of Huntsville Planning Division and the North Central Alabama Regional Council of Governments

The PSA contains numerous incorporated areas, both large and small, as summarized below:

| County | Large Municipalities | Small Municipalities |
|-----------|----------------------|---|
| Madison | Huntsville, Madison | Gurley, New Hope, Owens Cross Roads, Triana |
| Limestone | Athens | Ardmore, Elkmont, Lester, Mooresville |
| Morgan | Decatur | Hartselle, Priceville, Trinity |

The PSA includes a large amount of unincorporated area in all three of its counties. Alabama State Law allows the annexation of portions of a county by a municipality located in an adjacent county. Thus, the Cities of Huntsville, Madison, and Decatur have annexed portions of Limestone County; this is particularly the case along the I-565/Alabama Highway 20 corridor in the vicinity of I-65 (although this is not the only location).

PURPOSE

The purpose of the Economic Development report is threefold. First, it is to identify opportunities for employment of spouses of incoming BRAC personnel. Second, it is to assess the area's economic strengths and weaknesses with an emphasis on the dynamics of the labor market. Third, it is to provide a target industry cluster analysis to complement the area's ongoing workforce development efforts and to diversify the regional economy.

METHODOLOGY

Data from existing and ongoing workforce and economic development studies were used to complete this report. The Consultant Team examined the full resources of the primary study area for manufacturing, R & D/technology, distribution/logistics, office operations and other economic activities. Factors that were evaluated include a labor market assessment and the findings from other tasks including logistics and transportation, utilities, infrastructure, real estate, education, housing, regional land use, operating environment, and visioning. This analysis examines the strengths and weaknesses of the primary study area on these topics.

The labor market assessment portion of this analysis includes the use of information from past and current workforce and economic development studies completed for the area including a full community assessment. The data for the community assessment includes both primary and secondary research from surveys, private and public sector databases, reports and publications.

LABOR FORCE ORIENTATION

- The Primary Study Area (PSA) has a sizable labor force for new and expanding employers. The civilian labor force consisted of 259,064 individuals in 2007, an increase of about 4,500 since 2000. In July 2008 the civilian labor force totaled 263,612. Most of this labor force (64%) resided in Madison County. Morgan County is home to 22% of the PSA's labor force, and Limestone County contains 14% of the workforce.
- Labor force growth rates vary among the counties in the PSA.
 - The PSA resident labor force grew by 7.8% between 2000 and 2007, which is virtually equivalent to the national average of 7.4%.
 - Employment growth jumped 8.3% between 2000 and 2007. Most of this growth occurred since 2004. Between 2000 and 2002, employment actually declined each year. Then from 2002–2004, growth occurred annually between 1% and 2%. Growth accelerated after the start of the BRAC expansion. Between 2000 and 2006 it advanced to 2.8%, and between 2006 and 2007 employment growth was 3.0%. Employment growth was static between January and July 2008. Employment growth may continue to grow annually between 3% and 5% between 2007 and 2011 due to the combined influence of BRAC and non-BRAC economic growth trends. However, this growth rate will be less if the current economic downturn continues or worsens.

- Madison County has a resident labor force of 165,522, which has been increasing in recent years. According to the U.S. Bureau of Labor Statistics, the county's labor force increased by 10.1% between 2000 and 2007
- Morgan County's labor force grew by 0.1% between 2000 and 2007, with both the number and percentage of unemployed residents decreasing slightly (see Table 11-1).
- Limestone County's labor force of 36,651 has grown by 10.4% between 2000 and 2007.

Table 11-1
Labor Force Data

| Area | Labor Force 2007 | Labor Force % Change 2000 – 2007 | Unemployment Rate, 2007 | Unemployment Rate, 2007 | Labor Participation Rate 2008 (Claritas) |
|--------------------|------------------|----------------------------------|-------------------------|-------------------------|--|
| Limestone County | 36,651 | 10.4% | 2.9% | 4.5% | 61.4% |
| Madison County | 165,522 | 10.1% | 2.7% | 4.1% | 68.0% |
| Morgan County | 56,891 | 0.1% | 3.1% | 4.8% | 62.7% |
| Primary Study Area | 259,064 | 7.8% | 2.8% | 4.3% | 65.8% |
| Alabama | 2,182,779 | 1.3% | 3.5% | 5.3% | 60.2% |
| U.S. | 153,124,000 | 7.4% | 4.6% | 6.0% | 64.1% |

Source: U.S. Bureau of Labor Statistics, U.S. Census Bureau, Claritas

- According to the U.S. Census Bureau's *County Business Patterns*, the PSA's top five industry sectors in 2006 (as measured by employment) were manufacturing (39,029), professional, scientific & technical services (32,464), retail trade (27,761), healthcare and social assistance (24,902), and accommodation and food services (18,672). These five industry sectors encompassed nearly 70% of all jobs in the county (see Table 11-2).

Table 11-2
Employment by Industry in the PSA, Alabama, and the U.S. – Two-Digit NAICS Codes

| NAICS | Industry | Limestone County, AL | Madison County, AL | Morgan County, AL | Primary Study Area | Alabama | U.S. |
|--------|---|----------------------|--------------------|-------------------|--------------------|-----------|-------------|
| ---- | Total | 16,423 | 146,536 | 45,179 | 208,138 | 1,713,399 | 119,917,165 |
| 11---- | Forestry, fishing, hunting, and agriculture support | 10 | 60 | 30 | 100 | 6,730 | 165,661 |
| 21---- | Mining | 10 | 60 | 100 | 170 | 7,975 | 554,333 |
| 22---- | Utilities | -- | 10 | 150 | 160 | 14,440 | 614,427 |
| 23---- | Construction | 1,038 | 5,864 | 3,582 | 10,484 | 111,115 | 7,338,799 |
| 31---- | Manufacturing | 5,424 | 21,474 | 12,131 | 39,029 | 291,239 | 13,631,683 |
| 42---- | Wholesale trade | 539 | 4,993 | 2,010 | 7,542 | 79,498 | 6,030,647 |
| 44---- | Retail trade | 2,751 | 18,938 | 6,072 | 27,761 | 247,237 | 15,767,866 |
| 48---- | Transportation & warehousing | 640 | 2,403 | 1,294 | 4,337 | 59,189 | 4,306,405 |
| 51---- | Information | 265 | 4,002 | 396 | 4,663 | 39,400 | 3,396,246 |
| 52---- | Finance & insurance | 346 | 3,215 | 1,659 | 5,220 | 70,709 | 6,647,098 |
| 53---- | Real estate & rental & leasing | 143 | 2,172 | 453 | 2,768 | 25,082 | 2,216,803 |
| 54---- | Professional, scientific & technical services | 536 | 30,035 | 1,893 | 32,464 | 97,540 | 8,054,094 |
| 55---- | Management of companies & enterprises | 60 | 1,207 | 362 | 1,629 | 19,128 | 2,915,644 |
| 56---- | Admin, support, waste mgt, remediation services | 452 | 11,033 | 3,024 | 14,509 | 128,781 | 10,003,626 |
| 61---- | Educational services | 60 | 2,212 | 128 | 2,400 | 26,935 | 2,979,514 |
| 62---- | Health care and social assistance | 1,817 | 17,271 | 5,814 | 24,902 | 233,220 | 16,451,361 |
| 71---- | Arts, entertainment & recreation | 60 | 1,386 | 215 | 1,661 | 17,252 | 1,973,655 |
| 72---- | Accommodation & food services | 1,452 | 13,361 | 3,859 | 18,672 | 152,471 | 11,381,226 |
| 81---- | Other services (except public administration) | 849 | 6,877 | 1,994 | 9,720 | 85,151 | 5,458,558 |
| 99---- | Unclassified establishments | 10 | 10 | 13 | 33 | 307 | 29,519 |

Source: U.S. Census Bureau, County Business Patterns, 2006

- Because of the PSA’s economic mix, a significantly higher percentage of its population is employed in the manufacturing and professional/scientific/technical services compared to the U.S. average. As seen in Table 11-3, the study area’s largest single employment sector by far is manufacturing, totaling 18.8% of industry employment. Professional/scientific/technical services accounts for 15.6% of the area’s total employment. See Exhibits 11-E-3 and 11-E-4 for additional data on employment by industry sector.

Table 11-3
Percentage Employment by Industry for the PSA, Alabama, and U.S. (2006)

| Industry | Limestone County, AL | Madison County, AL | Morgan County, AL | Primary Study Area | Alabama | U.S. |
|--|----------------------|--------------------|-------------------|--------------------|---------|-------|
| Total | 100% | 100% | 100% | 100% | 100% | 100% |
| <i>PSA Industry Sectors that Match or Exceed National Ratios in Employment</i> | | | | | | |
| Manufacturing | 33.0% | 14.7% | 26.9% | 18.8% | 17.0% | 11.4% |
| Retail trade | 16.8% | 12.9% | 13.4% | 13.3% | 14.4% | 13.1% |
| Professional, scientific & technical services | 3.3% | 20.5% | 4.2% | 15.6% | 5.7% | 6.7% |
| Other services (except public administration) | 5.2% | 4.7% | 4.4% | 4.7% | 5.0% | 4.6% |
| Unclassified establishments | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| <i>PSA Industry Sectors that Lag National Ratios in Employment</i> | | | | | | |
| Forestry, fishing, hunting, and agriculture support | 0.1% | 0.0% | 0.1% | 0.0% | 0.4% | 0.1% |
| Mining | 0.1% | 0.0% | 0.2% | 0.1% | 0.5% | 0.5% |
| Utilities | -- | 0.0% | 0.3% | 0.1% | 0.8% | 0.5% |
| Construction | 6.3% | 4.0% | 7.9% | 5.0% | 6.5% | 6.1% |
| Wholesale trade | 3.3% | 3.4% | 4.4% | 3.6% | 4.6% | 5.0% |
| <i>PSA Industry Sectors that Lag National Ratios in Employment, continued</i> | | | | | | |
| Transportation & warehousing | 3.9% | 1.6% | 2.9% | 2.1% | 3.5% | 3.6% |
| Information | 1.6% | 2.7% | 0.9% | 2.2% | 2.3% | 2.8% |
| Finance & insurance | 2.1% | 2.2% | 3.7% | 2.5% | 4.1% | 5.5% |
| Real estate & rental & leasing | 0.9% | 1.5% | 1.0% | 1.3% | 1.5% | 1.8% |
| Management of companies & enterprises | 0.4% | 0.8% | 0.8% | 0.8% | 1.1% | 2.4% |
| Admin, support, waste mgt, remediation services | 2.8% | 7.5% | 6.7% | 7.0% | 7.5% | 8.3% |
| Educational services | 0.4% | 1.5% | 0.3% | 1.2% | 1.6% | 2.5% |
| Health care and social assistance | 11.1% | 11.8% | 12.9% | 12.0% | 13.6% | 13.7% |
| Arts, entertainment & recreation | 0.4% | 0.9% | 0.5% | 0.8% | 1.0% | 1.6% |
| Accommodation & food services | 8.8% | 9.1% | 8.5% | 9.0% | 8.9% | 9.5% |

Source: U.S. Census Bureau, County Business Patterns, 2006

- Madison County accounts for the majority of the PSA employment in professional, scientific & technical services. Madison County, and the City of Huntsville in particular, have a diverse and thriving economy with several key industry sectors, the largest of which is aerospace and defense. Redstone Arsenal, located in Huntsville, plays a vital role in U.S. Army programs for missiles and aviation. NASA’s Marshall Space Flight Center, also located at Redstone Arsenal (Arsenal), is a primary component of the nation’s space propulsion and scientific missions programs. More than 32,000 people work at the Arsenal, and an additional 4,700 personnel will be added as a result of BRAC. In addition to the U.S. Army and NASA, other Arsenal tenants include the Defense Intelligence Agency, the Department of Justice, the Missile Defense Agency, and representatives of every branch of the Armed Services. Meanwhile, nearly every major U.S. aerospace corporation has a presence in the PSA, which amounts to 250 companies that employ more than 27,000 people. Growth at the Arsenal due to the Base Realignment and Closure Commission (BRAC) decision announced in November 2005 will be significant.

- As evidenced by the county’s industry and employer profile, the PSA has a strong technology-based economy with more than 300 companies involved in government, commercial, and university research. The military and federal government presence in the PSA has greatly contributed to the industry and occupational profile of the area.
- The PSA has been widely recognized for its technology and research operations. Accolades include:
 - Greater Huntsville ranks in *Popular Science’s* list of America’s Top 50 Technology Hotspots (March 2005, *Popular Science Magazine*)
 - Greater Huntsville ranks #14 on *Forbes* List of Best Places for Business (May 2006, *Forbes Magazine*)
 - Greater Huntsville ranks #5 in the country for software-related employment (November 2004, Software & Information Industry Association)
 - The University of Alabama in Huntsville’s graduate engineering management program ranked best in U.S. (January 2005, American Society for Engineering Management)
- The PSA’s employment ratio by occupation exceeds state and national averages in key knowledge-based occupations. As seen in Table 11-4, the PSA employment in four key knowledge-based occupations (architecture/engineering, computer and mathematical, education/training/library, and life/physical/social science) exceeds national averages.
- Limestone and Morgan Counties lag behind Madison County and the nation in most knowledge-based occupations. Madison County exceeds the nation in six of the ten knowledge-based occupations.
- See Exhibits 11-E-5 (2000 Census) and 11-E-6 (2006 estimates) for additional occupational information.

Table 11-4
Percentage Employment within Occupational Groups for the County, Alabama, and U.S. 2008

| Occupation | Limestone County, AL | Madison County, AL | Morgan County, AL | PSA | Alabama | U.S. |
|---|----------------------|--------------------|-------------------|-------|---------|------|
| <i>County Occupational Groups that Match or Exceed National Employment Ratios</i> | | | | | | |
| Architecture/Engineering* | 3.4% | 7.6% | 3.8% | 6.1% | 2.2% | 2.1% |
| Business operations specialists | 1.8% | 2.9% | 1.3% | 2.4% | 1.6% | 2.1% |
| Computer and Mathematical* | 2.5% | 6.4% | 1.5% | 4.7% | 1.8% | 2.5% |
| Education/Training/Library* | 5.3% | 5.9% | 5.1% | 5.6% | 5.6% | 5.6% |
| Life/Physical/Social Science* | 0.7% | 1.3% | 0.6% | 1.0% | 0.7% | 0.9% |
| Production | 16.4% | 8.0% | 17.6% | 11.3% | 11.5% | 8.3% |
| <i>County Occupational Groups that Lag National Employment Ratios</i> | | | | | | |
| Arts/Design/Entert/Sports/Media* | 0.8% | 1.9% | 1.0% | 1.5% | 1.3% | 1.9% |
| Building/Grounds Cleaning/Maint | 3.0% | 2.6% | 3.2% | 2.8% | 3.3% | 3.2% |
| Financial specialists* | 1.4% | 2.2% | 1.5% | 1.9% | 1.8% | 2.2% |
| Community/Social Services | 1.2% | 1.3% | 1.3% | 1.3% | 1.4% | 1.5% |
| Construction/Extraction | 8.0% | 4.0% | 6.8% | 5.2% | 6.4% | 5.5% |
| Farming/Fishing/Forestry | 0.8% | 0.2% | 0.6% | 0.4% | 0.8% | 0.7% |
| Food Preparation/Serving Related | 3.7% | 4.1% | 4.2% | 4.1% | 4.0% | 4.7% |
| Healthcare Practitioner/Technician* | 3.4% | 4.3% | 3.9% | 4.1% | 5.0% | 4.6% |
| Healthcare Support | 1.6% | 1.2% | 1.4% | 1.3% | 1.8% | 1.9% |
| Installation/Maintenance/Repair* | 5.2% | 3.3% | 4.7% | 3.8% | 4.9% | 4.0% |

TABLE CONTINUES NEXT PAGE

Table 11-4, continued
Percentage Employment within Occupational Groups for the County, Alabama, and U.S. 2008

| Occupation | Limestone County, AL | Madison County, AL | Morgan County, AL | PSA | Alabama | U.S. |
|---|----------------------|--------------------|-------------------|--------------|--------------|--------------|
| <i>County Occupational Groups that Lag National Employment Ratios (continued)</i> | | | | | | |
| Legal* | 0.3% | 0.7% | 0.5% | 0.6% | 0.8% | 1.1% |
| Management incl Farmers/Farm Mgrs* | 7.0% | 10.1% | 7.2% | 9.0% | 8.0% | 9.4% |
| Office/Administrative Support | 12.1% | 13.0% | 12.9% | 12.9% | 14.4% | 15.4% |
| Personal Care/Service | 2.1% | 2.2% | 2.2% | 2.2% | 2.3% | 2.8% |
| Protective Service | 1.7% | 1.7% | 1.3% | 1.6% | 1.8% | 2.0% |
| Sales/Related | 10.1% | 10.6% | 10.8% | 10.6% | 11.5% | 11.3% |
| Transportation/Material Moving | 7.3% | 4.4% | 6.7% | 5.3% | 7.1% | 6.1% |
| Total | 30.0% | 43.6% | 29.8% | 38.6% | 32.1% | 34.4% |

Source: Claritas

* Key Knowledge-based occupations

- The key strength of the PSA’s labor market is its concentration of technical talent. As shown in Table 11-5, the PSA has a concentration of engineers that is 376% of the national norm, while its concentration of computer skills is more than double the national average. These skill sets are magnets for the growth and development of technology companies, which explains the success the PSA has enjoyed in technology development.
- The other skill groups in which the PSA has employment ratios above the national average are in production occupations and in business and financial operations.

Table 11-5
Occupational Groups in the PSA

| CODE | Occupational Group | PSA Jobs | PSA (%) | US (%) | Concentration |
|---------|--|----------|---------|--------|---------------|
| 00-0000 | All Occupations | 255,510 | 100% | 100% | 100% |
| 43-0000 | Office and administrative support occupations | 34,280 | 13% | 17% | 77% |
| 51-0000 | Production occupations | 31,230 | 12% | 8% | 162% |
| 41-0000 | Sales and related occupations | 27,090 | 11% | 11% | 99% |
| 35-0000 | Food preparation and serving related occupations | 19,170 | 8% | 8% | 89% |
| 17-0000 | Architecture and engineering occupations | 17,780 | 7% | 2% | 376% |
| 53-0000 | Transportation and material moving occupations. | 15,430 | 6% | 7% | 84% |
| 13-0000 | Business and financial operations occupations | 13,940 | 5% | 4% | 122% |
| 15-0000 | Computer and mathematical occupations | 12,680 | 5% | 2% | 209% |
| 25-0000 | Education, training, and library occupations | 12,060 | 5% | 6% | 76% |
| 29-0000 | Healthcare practitioners and tech. occupations | 12,040 | 5% | 5% | 92% |
| 49-0000 | Installation, maintenance., and repair occupations | 11,190 | 4% | 4% | 109% |
| 11-0000 | Management occupations | 11,110 | 4% | 4% | 97% |
| 47-0000 | Construction and extraction occupations | 8,960 | 4% | 5% | 70% |
| 37-0000 | Building and grounds cleaning and maintenance. occupations | 7,220 | 3% | 3% | 86% |
| 31-0000 | Healthcare support occupations | 5,280 | 2% | 3% | 77% |
| 33-0000 | Protective service occupations | 5,040 | 2% | 2% | 86% |
| 39-0000 | Personal care and service occupations | 3,890 | 2% | 2% | 61% |
| 27-0000 | Arts, design, ent., sports, media occupations | 2,500 | 1% | 1% | 75% |
| 21-0000 | Community and social services occupations | 1,780 | 1% | 1% | 52% |
| 19-0000 | Life, physical, and social science occupations | 1,510 | 1% | 1% | 63% |
| 23-0000 | Legal occupations | 960 | 0% | 1% | 51% |

Source: ES-202 Implan

- About 90 of the 400 detailed occupations in the PSA labor markets are strategic because they are far more concentrated in the local economy than in the national labor market (see Exhibit 11-F-13 in the Appendix). These skill sets are an asset for growth and development of targeted industries because of the shortage of trained and educated

labor in the U.S. economy. The graying of the U.S. workforce, particularly in technical fields, is forcing companies to choose locations with high concentrations of these skills for their facilities.

- The most apparent occupational skill sets in the PSA are in technical fields. The concentrations are high in aerospace engineering (18 times the national concentration), logisticians (943% of the national concentration), physics, and in computer-electronics fields. The concentration of information technology (IT) talent is significant at 550% of the national norm (see Exhibit 11-F-13 in the Appendix). The concentration of chemical plant operators is another skill set with value for industrial development.

POPULATION AND DEMOGRAPHICS OVERVIEW

1. According to estimates provided by Claritas, the PSA’s population is projected to grow more quickly than the state or U.S. averages. Over the next five years, it is estimated that the area will grow by 6.4%, compared to 2.8% in Alabama and 4.9% nationwide. Most of the growth is expected to occur in Madison and Limestone Counties. Full demographic information is provided in Exhibit 11-E-1, including population estimates and projections for the counties in the PSA, state, and U.S. (see Table 11-6 for a summary). Claritas estimates and forecasts are higher than those of the Centers for Business and Economic Research (CBERs) at the University of Alabama and the University of Tennessee, as reported in Chapter One of the TVRGCP. Claritas forecasts are used in this chapter because the CBERs do not have national forecasts that can be used to benchmark the area’s growth rate. The Claritas estimates for 2013 do not include the additional residents expected in the PSA due to the BRAC expansion (see Table 1-21 in Chapter One of the TVRGCP).

Table 11-6
Population of Counties, Primary Study Area, State, and U.S.

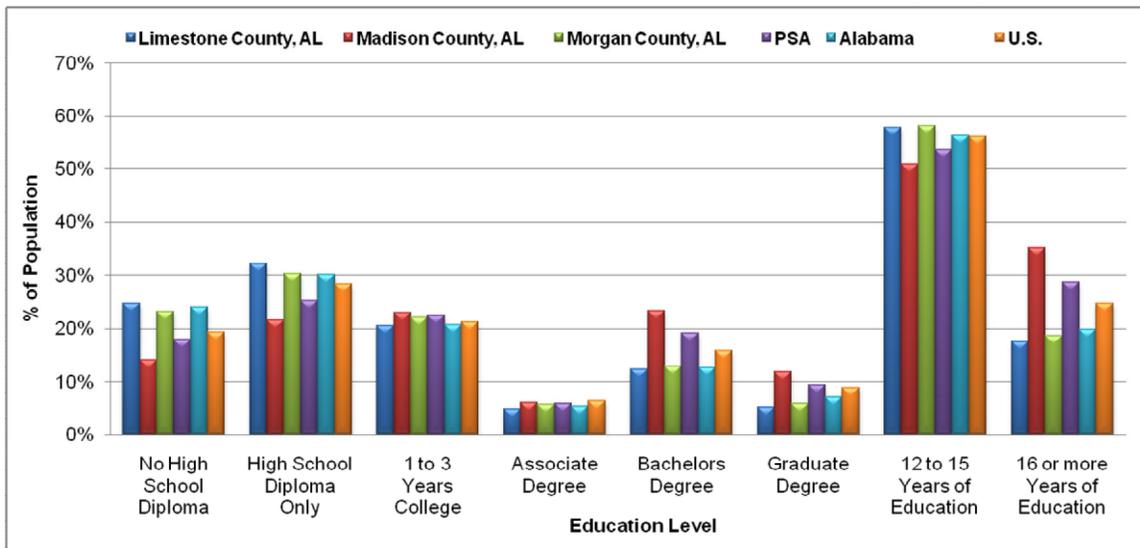
| Area | 1990 Census | 2000 Census | 2008 | 2013 | % Change | | | |
|---------------------------|----------------|----------------|----------------|----------------|--------------|--------------|--------------|-------------|
| | | | | | 1990 – 2000 | 2000 – 2008 | 1990 - 2008 | 2008 – 2013 |
| Limestone County | 54,135 | 65,676 | 74,498 | 80,425 | 21.3% | 13.4% | 37.6% | 8.0% |
| Madison County | 238,912 | 276,700 | 311,575 | 333,933 | 15.8% | 12.6% | 30.4% | 7.2% |
| Morgan County | 100,043 | 111,064 | 116,653 | 120,411 | 11.0% | 5.0% | 16.6% | 3.2% |
| Primary Study Area | 393,090 | 453,440 | 502,726 | 534,769 | 15.4% | 10.9% | 27.9% | 6.4% |
| Alabama | 4,040,587 | 4,447,100 | 4,647,719 | 4,779,097 | 10.1% | 4.5% | 15.0% | 2.8% |
| U.S. | 248,709,873 | 281,421,906 | 304,141,549 | 319,161,431 | 13.2% | 8.1% | 22.3% | 4.9% |

Source: U.S. Census Bureau, Claritas

2. Madison and Morgan Counties have an older population relative to the state and nation. In 2008, according to Claritas, the median ages in Madison County (37.9) and Morgan County (38.9) were higher than the state (37.5) and national (36.7) medians. Limestone has a younger population, with a median age of 37.4. The PSA median is 38.1. Some companies prefer to locate operations in areas with a median age that approximates or is below the national norm for optimum access to younger talent. Younger employees typically offer a higher energy level and technical awareness; learn faster; are more creative, agile and flexible; and typically require lower healthcare costs and salaries than older employees do.

3. The PSA's residents are well educated. In 2008, according to Claritas, 82.2% of the PSA's population had at least a high school diploma. This is higher than the state (75.9%) or national average (80.6%). Madison County has the highest education levels in the PSA, with 85.9% of the population having at least a high school diploma. The percentage of residents in Madison County with a bachelor's degree or higher (35.1%) is also considerably greater than the state (19.8%) or national (24.6%) averages. The educational attainment levels of Huntsville City residents are even higher. The percentage in the PSA is 28.6% (see Figure 11-3 and Exhibit 11-E-1).
 - The high educational levels are a reflection of the Madison County's many technically-focused employers that employ high-skilled, well-educated employees, such as the Redstone Arsenal and its contractors, Boeing, Marshall Space Flight Center, Cinram, Toyota Motor Company, and Continental AG. The University of Alabama-Huntsville, Alabama A&M University, Drake State Technical College, Calhoun Community College, Athens State University, Oakwood College, and other area colleges and universities also contribute to the presence of the area's highly-educated, high-skilled residents. A list of major employers is provided in Exhibit 11-E-18.

Figure 11-3
Educational Attainment for the Counties, PSA, Alabama, and U.S.



Source: Claritas 2008

4. Household incomes are highest in Madison County. In 2008, the median household income in the PSA is estimated at \$48,778. Madison County (\$53,329) was about 22% higher than the Alabama average (\$41,113) and 6% higher than the national median (\$50,170). Limestone and Morgan Counties both have median household incomes above the state but below the national median. Refer to Table 11-7.
 - Incomes in Madison County show a relatively even distribution, with approximately one-third of households each earning less than \$35,000, between \$35,000 and \$75,000, and greater than \$35,000.

- According to Claritas, 42.8% of the households in the Morgan County area and 40% in Limestone County earn less than \$35,000 annually, compared to 43.5% in Alabama and 34.4% nationally. This higher-than-average distribution could be an advantage, since WDG frequently finds that the higher the percentage of households earning less than \$35,000, the more likely it is to have residents interested in upgrading their jobs and career advancement, working second jobs, or working as second-income earners.

Table 11-7
Household Incomes for the County, Alabama, and U.S., 2008

| Area | Median Household Income | % of Households Earning | | |
|---------------------------|-------------------------|-------------------------|-------------------------------|-----------------------|
| | | Less than \$35,000 | Between \$35,000 and \$75,000 | Greater than \$75,000 |
| Limestone County | \$44,624 | 40.0% | 34.3% | 25.7% |
| Madison County | \$53,329 | 32.7% | 34.0% | 33.3% |
| Morgan County | \$41,700 | 42.8% | 35.9% | 21.3% |
| Primary Study Area | \$48,778 | 36.1% | 34.5% | 29.4% |
| Alabama | \$41,113 | 43.5% | 34.1% | 22.4% |
| U.S. | \$50,170 | 34.4% | 35.0% | 30.6% |

Source: Claritas 2008

- The PSA is projected to see a key labor-force component – the 18-34-year-old residents – grow at a faster rate compared to the state. The proportion of residents between the ages of 18 and 34 is projected by Claritas to increase by 6.1%: 5.1% in Limestone County, 7.7% in Madison County, and 2.4% in Morgan County between 2008 and 2013. Alabama is projected to see an increase of 1.7% in this age bracket, while the nation will see an increase of 2.6%. See Table 11-8 and Exhibit 11-E-1.
- The 25-35-year-old subset of this group (sometimes it is presented as a broader subset that covers the 22-35-year-old cohort) is highly favored by technology, design, media, finance and other knowledge-based companies. This cohort forms the core of the “Young and Talented” that has received much media attention recently. Studies have shown that a high percentage of entrepreneurs (including serial entrepreneurs) are in this age group. This group is the career-developing component of an area’s labor force and represents its future. It also frequently is the heart of employee creativity and technical knowledge.

Table 11-8
Change in Age Distribution for the County, Alabama, and U.S., 2008-2013

| Area | Median Age | Projected % Change in Age Distribution, 2008-2013 | | | | | |
|---------------------------|-------------|---|-------------|--------------|--------------|--------------|--------------|
| | | 0-17 | 18-34 | 35-54 | 55-64 | 65-74 | 75 and over |
| Limestone County | 37.4 | 2.6% | 5.1% | 4.4% | 18.0% | 23.9% | 21.3% |
| Madison County | 37.9 | 2.3% | 7.7% | -0.4% | 21.2% | 19.3% | 23.3% |
| Morgan County | 38.9 | 0.6% | 2.4% | -3.5% | 12.9% | 16.7% | 12.3% |
| Primary Study Area | 38.1 | 1.9% | 6.1% | -0.4% | 18.7% | 19.3% | 20.1% |
| Alabama | 37.5 | 0.2% | 1.7% | -2.9% | 12.3% | 17.1% | 8.0% |
| U.S. | 36.7 | 2.6% | 2.6% | -0.4% | 17.5% | 22.0% | 7.3% |

Source: Claritas 2008

LABOR AVAILABILITY

1. The PSA has a low unemployment rate. In 2007 the average annual rate was 2.8% compared to a national average of 4.6%. In July of this year, the rate was higher at 4.3%, but still below the national average (6.0%). The unemployment rates are fairly close among the three counties. See Table 11-1.
2. The Primary Study Area has an above-average labor participation rate. The area's average labor participation rate in 2008 was 65.8%, slightly higher than the national average of 64.1%. See Table 11-1.
3. According to PSA employers, there is good availability of some skills. The Wadley-Donovan Group (WDG) conducted two surveys of employers with 20 or more employees in Madison County in 2006 and in Morgan County in 2008 as part of separate workforce assessments of both those counties under separate contracts. (Although no similar separate workforce assessment has been performed by WDG for Limestone County, the employers in that county are within the same labor markets as the employers of Morgan and Madison Counties, and therefore, their experiences would be the same.) These surveys provide a snapshot of the labor availability in the PSA. In those two surveys, Madison County employers reported that 21 occupations can be recruited satisfactorily, or 38% of all the occupations included in WDG's survey for which adequate data was received. (See Exhibit 11-A-10 in the Appendix.) Labor availability in Morgan County was reported stronger. Employers reported that 27 occupations (49%) can be recruited satisfactorily or better. See Tables 11-9 and 11-10 below and Exhibit 11-B-12 in the Appendix. Among those occupations that can be recruited satisfactorily are a number of general business and office support and technical and professional and computer/information systems skills.

Table 11-9
Select Occupations with Satisfactory-to-Good Availability, as Reported by Madison County Employers

| Occupations with Satisfactory-to-good Availability | Responses | <i>5=plentiful; 1=unavailable</i> | |
|--|-----------|-----------------------------------|--------------|
| | | Average Score | Median Score |
| General Office and Business Support | | | |
| Administrative assistants | 89 | 4.0 | 4.0 |
| Accounting clerks/bookkeepers | 78 | 3.8 | 4.0 |
| Office clerks | 41 | 3.8 | 4.0 |
| Clerical workers with advanced computer skills | 49 | 3.5 | 4.0 |
| Customer service representatives | 33 | 3.1 | 3.0 |
| Call center agents/representatives | 28 | 3.1 | 3.0 |
| Management and Supervisory | | | |
| Management, experienced | 68 | 3.1 | 3.0 |
| Management trainees | 37 | 3.1 | 3.0 |
| Technical and Professional | | | |
| Accountants | 46 | 3.5 | 4.0 |
| Engineers | 35 | 3.2 | 3.0 |
| Financial analysts | 21 | 3.0 | 3.0 |
| Associate engineers (2-year degree) | 17 | 3.0 | 3.0 |
| Scientists (general) | 15 | 3.1 | 3.0 |
| Computer and Information Systems | | | |
| Computer operators | 17 | 3.2 | 4.0 |
| Computer support specialists, technicians | 28 | 3.4 | 3.5 |
| Network technicians | 20 | 3.3 | 3.0 |
| Network systems administrators | 20 | 3.2 | 3.0 |
| Programmer/analysts | 32 | 3.2 | 3.0 |

TABLE CONTINUES NEXT PAGE

Table 11-9, continued

Select Occupations with Satisfactory-to-Good Availability, as Reported by Madison County Employers

| Occupations with Satisfactory-to-good Availability | Responses | 5=plentiful; 1=unavailable | |
|--|-----------|----------------------------|--------------|
| | | Average Score | Median Score |
| Computer and Information Systems | | | |
| Systems analysts | 26 | 3.2 | 3.0 |
| Internet development specialists | 16 | 3.1 | 3.0 |
| Production, maintenance and Distribution | | | |
| Unskilled laborers (manufacturing, repair) | 27 | 3.1 | 3.0 |

Source: WDG Employer Survey, Fall 2006

Table 11-10

Select Occupations with Satisfactory or Better Availability, as Reported by Morgan County Employers

| Occupational Group/Occupation | Responses | 5=plentiful; 1=unavailable | |
|--|-----------|----------------------------|--------------|
| | | Average Score | Median Score |
| Engineering and Related | | | |
| Engineer, chemical | 3 | 3.3 | 4.0 |
| Engineer, industrial | 2 | 3.5 | 3.5 |
| Quality control technician | 2 | 3.0 | 3.0 |
| Business and Financial Professionals | | | |
| Supervisor – accounting | 3 | 3.0 | 3.0 |
| Accountant | 3 | 3.3 | 3.0 |
| Computer and Mathematical | | | |
| Network and computer systems administrators | 1 | 4.0 | 4.0 |
| Healthcare Practitioners and Technical | | | |
| Licensed practical and licensed vocational nurse | 1 | 5.0 | 5.0 |
| Medical and clinical laboratory technician | 1 | 4.0 | 4.0 |
| Medical records and health information technician | 1 | 5.0 | 5.0 |
| Registered nurse | 1 | 4.0 | 4.0 |
| Healthcare Support | | | |
| Nursing aides, orderlies, and attendants | 2 | 4.5 | 4.5 |
| Installation, Maintenance and Repair | | | |
| Electrical and control mechanic | 6 | 3.0 | 3.0 |
| Management | | | |
| Administrative service/accounting manager | 2 | 3.5 | 3.5 |
| Computer and information systems manager | 1 | 4.0 | 4.0 |
| Transportation, warehouse and distribution manager | 2 | 3.0 | 3.0 |
| Office and Administrative Support | | | |
| Administrative assistant | 5 | 3.6 | 4.0 |
| Bookkeeping, accounting and audit clerk | 4 | 3.8 | 4.0 |
| Buyer | 1 | 3.0 | 3.0 |
| Customer service representative | 5 | 3.6 | 3.0 |
| Office clerk | 5 | 4.4 | 5.0 |
| Receptionist/telephone operator | 4 | 3.8 | 4.0 |
| Secretary | 2 | 3.0 | 3.0 |
| Production | | | |
| Assemblers and fabricators | 5 | 3.4 | 4.0 |
| Chemical worker | 2 | 4.0 | 4.0 |
| General laborer | 6 | 3.7 | 4.0 |
| Inventory control/material planner | 2 | 3.5 | 3.5 |
| Semi-skilled worker (NOC) | 3 | 3.3 | 4.0 |
| Supervisors of production and operating worker | 3 | 3.3 | 4.0 |

Source: WDG Employer Survey, Spring 2008

- Some occupations can be recruited with slightly more difficulty in both counties. Tables 11-11 and 11-12 show those occupations employers rated as having borderline availability. 25% of occupations in Madison County and 16% in Morgan County were so rated.

Table 11-11
Select occupations with Borderline Availability,
as reported by Madison County employers

| Occupations with Borderline Availability | Responses | 5=plentiful; 1=unavailable | |
|---|-----------|----------------------------|--------------|
| | | Average Score | Median Score |
| Management and Supervisory | | | |
| Production supervisors | 27 | 2.5 | 3.0 |
| General Business and Office Support | | | |
| Claims processing clerks | 20 | 2.9 | 3.0 |
| Technical and Professional | | | |
| Engineers, electrical and electronic | 20 | 2.9 | 3.0 |
| Technicians (general) | 24 | 2.8 | 3.0 |
| Engineering technicians, electronic | 20 | 2.8 | 3.0 |
| Engineers, mechanical | 20 | 2.8 | 3.0 |
| Engineering technicians, mechanical | 22 | 2.5 | 3.0 |
| CAD drafters | 15 | 2.3 | 3.0 |
| Nurses, registered | 16 | 2.7 | 2.5 |
| Computer and Information Systems | | | |
| Database administrators | 24 | 2.9 | 3.0 |
| Webmaster | 13 | 2.9 | 3.0 |
| Multimedia specialists | 18 | 2.6 | 3.0 |
| Computer security specialists | 20 | 2.7 | 2.5 |
| Production, Maintenance and Distribution | | | |
| Maintenance mechanics | 19 | 2.9 | 3.0 |
| Machine operators, no setup | 11 | 2.6 | 3.0 |
| Electricians | 10 | 2.4 | 3.0 |

Source: WDG Employer Survey, Fall 2006

Table 11-12
Select Occupations with Borderline to Somewhat Unsatisfactory Availability,
as Reported by Morgan County Employers

| Occupational Group/Occupation | Responses | 5=Plentiful; 1=Unavailable | |
|---|-----------|----------------------------|--------------|
| | | Average Score | Median Score |
| Engineering and Related | | | |
| Associate engineer (2-year degree) | 3 | 2.7 | 3.0 |
| Installation, Maintenance and Repair | | | |
| Industrial machinery mechanic | 9 | 2.9 | 3.0 |
| Maintenance workers, machinery | 6 | 2.7 | 3.0 |
| Supervisor of mechanics, installers and repairers | 4 | 2.8 | 2.5 |
| Management | | | |
| Maintenance manager | 2 | 2.5 | 2.5 |
| Production | | | |
| Machinist | 4 | 2.8 | 2.5 |
| Sales and Related | | | |
| Sales representative | 8 | 2.9 | 3.0 |
| Transportation and Material Moving | | | |
| Shipping and receiving clerk | 6 | 3.0 | 2.5 |
| Truck driver, heavy and tractor trailer | 4 | 2.8 | 2.5 |

Source: WDG Employer Survey, Spring 2008

- There are occupations in both counties that surveyed employers reported as difficult or very difficult to recruit. These include a number of professional and technical and production, maintenance, and distribution occupations. Many of these occupations have medians of 1.0, meaning that at least half of the responding employers find those occupations are “unavailable” in the area (see Tables 11-13 and 11-14). 36% of Madison County occupations and 29% of occupations in Morgan County were so rated. Limestone County employers would be expected to fall into this range.

- Most of the production, maintenance, and distribution occupations are in this category.
- Half of the technical and professional occupations are in this category.

Table 11-13
Select Occupations with Tight or Very Limited Availability,
as Reported by Madison County Employers

| Occupational Group/Occupation | Responses | <i>5=plentiful; 1=unavailable</i> | |
|---|-----------|-----------------------------------|--------------|
| | | Average Score | Median Score |
| Technical and Professional | | | |
| Pharmacy technicians | 9 | 2.7 | 2.0 |
| Sales representatives | 21 | 2.4 | 2.0 |
| Lab technicians | 11 | 2.3 | 2.0 |
| Radiological technologies | 8 | 2.1 | 1.5 |
| Biomedical engineering technicians | 9 | 2.0 | 1.0 |
| Physicians | 8 | 2.0 | 1.0 |
| Biologists | 9 | 1.9 | 1.0 |
| Avionics technician | 6 | 1.8 | 1.0 |
| Physical therapists | 7 | 1.6 | 1.0 |
| Semiconductor equipment operators | 5 | 1.4 | 1.0 |
| Semiconductor equipment technicians | 5 | 1.4 | 1.0 |
| Production, Maintenance and Distribution | | | |
| Bench assemblers | 8 | 2.6 | 2.0 |
| Machinists/manufacturing mechanic | 15 | 2.5 | 2.0 |
| Electrical and electronic repairer | 9 | 2.3 | 2.0 |
| Heavy equipment operators | 9 | 2.1 | 2.0 |
| Skilled machine trades (general) | 10 | 2.2 | 1.5 |
| Welders | 9 | 1.9 | 1.0 |
| CNC machine operators | 9 | 1.8 | 1.0 |
| Aircraft mechanics | 5 | 1.4 | 1.0 |
| Computer and information Systems | | | |
| Electronic commerce specialists | 9 | 2.3 | 2.0 |

Source: WDG Employer Survey, Fall 2006

Table 11-14
Select Occupations with Tight or Very Tight Availability,
as Reported by Morgan County Employers

| Occupational Group/Occupation | Responses | <i>5=Plentiful; 1=Unavailable</i> | |
|---|-----------|-----------------------------------|--------------|
| | | Average Score | Median Score |
| Engineering and Related | | | |
| Drafter | 3 | 2.3 | 2.0 |
| Engineer | 7 | 2.7 | 2.0 |
| Computer and Mathematical | | | |
| Computer support specialist, technician | 2 | 2.0 | 2.0 |
| Database analyst | 1 | 2.0 | 2.0 |
| Construction and Extraction | | | |
| Construction and building trade | 2 | 2.0 | 2.0 |
| Electrician | 1 | 2.0 | 2.0 |
| Healthcare Practitioners and Technical | | | |
| Physician assistant | 1 | 2.0 | 2.0 |
| Management | | | |
| Engineering manager | 1 | 2.0 | 2.0 |
| Industrial production manager | 1 | 2.0 | 2.0 |
| Office and Administrative Support | | | |
| Human resource assistant | 3 | 2.7 | 2.0 |
| Human resource specialist | 1 | 2.0 | 2.0 |
| Training coordinator | 1 | 2.0 | 2.0 |

TABLE CONTINUES NEXT PAGE

Table 11-14, continued
Select Occupations with Tight or Very Tight Availability,
as Reported by Morgan County Employers

| Occupational Group/Occupation | Responses | 5=Plentiful; 1=Unavailable | |
|---|-----------|----------------------------|--------------|
| | | Average Score | Median Score |
| Production | | | |
| Skilled worker (NOC) | 3 | 2.0 | 2.0 |
| Supervisor – quality assurance | 1 | 2.0 | 2.0 |
| Welder | 3 | 2.3 | 2.0 |
| Transportation and Material Moving | | | |
| Crane operator | 1 | 2.0 | 2.0 |

Source: WDG Employer Survey, Spring 2008

4. Four (7%) of the 57 occupations for which sufficient data was received from Morgan County employers were considered extremely difficult to recruit, with few to no available candidates. The only occupational groups in which employers report limited or no availability are engineering and related, and production. (Refer to Table 11-15.) Madison County employers did not report such low ratings for any occupations.

Table 11-15
Select Occupations that are Unavailable in Morgan County,
as Reported by Area Employers

| Occupational Group/Occupation | Responses | 5=Plentiful; 1=Unavailable | |
|-------------------------------------|-----------|----------------------------|--------------|
| | | Average Score | Median Score |
| Engineering and Related | | | |
| Engineering technician, electronic | 2 | 1.0 | 1.0 |
| Engineer, electrical and electronic | 1 | 1.0 | 1.0 |
| Production | | | |
| CNC operator | 1 | 1.0 | 1.0 |
| Tool and die maker | 1 | 1.0 | 1.0 |

Source: WDG Employer Survey, Spring 2008

5. Employers in the PSA are generally able to recruit managers and professional talent from outside the region. Surveyed employers in Madison County report an average score of 3.3 and a median score of 3.0 (on a scale where 1=unable to recruit and 5=easily recruited) on their ability to relocate talent from outside the region. Employers in Morgan County, meanwhile, report a median score of 4.0 and an average score of 3.3 on their ability to relocate talent from outside the commuting area. Employers in Limestone would fall into this range. See Exhibit 11-B-1 in the Appendix.
- In Madison County, employers report satisfactory employment opportunities for “trailing” spouses. They provide an average score of 3.3 and a median score of 3.0 on the availability of jobs for spouses who relocate with their husbands/wives. Meanwhile, Morgan County employers report average employment opportunities for “trailing” spouses. Employers provide a median score of 3.0 and an average score of 3.2 on the availability of jobs for spouses who relocate with their wives/husbands/partners/significant others.
 - The area’s quality of life as perceived by job candidates is an asset when recruiting employees. Employers in Madison County report an average score of 4.0 and a median score of 3.8 on the quality of life as perceived by job candidates from outside the area. The quality of life in Morgan County as perceived by job candidates is rated

as above satisfactory (median score of 4.0 and an average score of 3.6), and does not serve as deterrent to job acceptance.

6. A majority of responding employers in Madison County report that less than 15% of their workforce will be eligible for retirement over the next five years.
 - On average, employers respond that 14.4% of their employees will be eligible for retirement over the next five years. This equates to 23,000 employees. The number of retirement-ready employees will accelerate in following years, following the aging demographics of the Baby Boomers. As seen in Table 11-16, the highest numbers of employees that will be eligible for retirement are in management occupations. The actual number of employees that retire when eligible depends on the financial ability and willingness of those employees to retire.

**Table 11-16
Most Common Occupations Projected for Retirement and
Employers' Confidence in Their Ability to Fill These Positions**

| Occupation Category | Total | Confidence Level for Finding Replacements | | | | | |
|---------------------------------------|------------|---|-----------|------------|----------------|--------------|--------------|
| | | Number of Responses | | | % of Responses | | |
| | | No | Not Sure | Yes | No | Not Sure | Yes |
| Management | 65 | 3 | 10 | 52 | 4.6% | 15.4% | 80.0% |
| Engineers | 55 | 8 | 9 | 38 | 14.5% | 16.4% | 69.1% |
| Technical/professional | 46 | 5 | 11 | 30 | 10.9% | 23.9% | 65.2% |
| Administration/clerical | 35 | - | 1 | 33 | - | 2.9% | 97.1% |
| Financial/Accounting/Real Estate | 24 | - | 5 | 19 | - | 20.8% | 79.2% |
| Production | 19 | 2 | - | 17 | 10.5% | - | 89.5% |
| Medical | 14 | - | 1 | 13 | - | 7.1% | 92.9% |
| I.T. | 12 | - | 2 | 10 | - | 16.7% | 83.3% |
| Skilled production | 10 | 6 | 1 | 3 | 60.0% | 10.0% | 30.0% |
| Distribution/Logistics/Transportation | 10 | - | - | 9 | - | - | 100% |
| Building trades/Construction | 8 | 3 | - | 5 | 37.5% | - | 62.5% |
| Education/Training | 7 | - | 2 | 5 | - | 28.6% | 71.4% |
| Safety & Security | 6 | - | 1 | 5 | - | 16.7% | 83.3% |
| Sales | 6 | - | - | 6 | - | - | 100% |
| Unskilled | 6 | 1 | - | 5 | 16.7% | - | 83.3% |
| Aviation | 5 | - | 2 | 3 | - | 40.0% | 60.0% |
| Military services | 4 | - | 2 | 2 | - | 50.0% | 50.0% |
| Customer service | 3 | - | - | 3 | - | - | 100% |
| Food services | 2 | - | - | 2 | - | - | 100% |
| Maintenance | 2 | - | - | 2 | - | - | 100% |
| unknown | 1 | - | - | 1 | - | - | 100% |
| Grand Total | 340 | 28 | 47 | 263 | 8.3% | 13.9% | 77.8% |

Source: WDG Employer Survey, Fall 2006

7. Data from the Morgan County employer survey indicates that, on average, 13.5% of currently employed workers are presently eligible for retirement, or will become eligible for retirement over the next five years. This equates to approximately 7,680 employees eligible to retire over the next five years, based on Morgan County's employment of 56,891 workers (2007 annual average). Limestone employers would be expected to fall into the range reported by the employers in Morgan and Madison Counties.
8. The area's large military presence provides employers with a labor resource. There are roughly 1,864 active military personnel and 4,660 family members at Redstone Arsenal. The region also contains 72,900 military retirees with 109,350 family members. The

National Guard/Reserve includes 16,287 personnel that use the Arsenal facilities and services. The BRAC expansion will add 362 more active-duty personnel between 2008 and 2011, and an estimated 690 additional family members.

- Approximately 32% of responding surveyed companies employ military spouses. Among those companies, an average of 7.1% of the workforce is military spouses.
- 39.7% of responding surveyed companies employ retired military personnel. These companies employ an average of 16 retired military workers in full-time positions and an average of five retired military workers in part-time positions. Nearly 97% of employers report that their experience with this component of the workforce has been or is satisfactory. Less than 1% use AIDT for recruiting.
 - The positions held by retired military personnel are diverse, and include engineers, management, research scientists, clerical, nursing, production workers, and accountants. For a complete list of jobs held by retired military personnel, see Exhibit 11-B-10 in the Appendix.

LABOR DEMAND

1. At the time the Madison County employer survey was taken, the occupation in greatest demand by local employers was registered nurses, as shown in Table 11-17. This is followed by unskilled laborers, engineers, administrative assistants, experienced management, and general technicians.
 - Comparing the current demand for workers against the current availability ratings assigned by employers responding to the WDG survey indicates there is a high demand but low supply for the following occupations: *registered nurses; sales representatives; CNC machine operators; aircraft mechanics; and welders.*
 - There is also an imbalance, although of less severity, for the following occupations: *electrical and electronic engineers; general technicians; electronic engineering technicians; mechanical engineers; mechanical engineering technicians; electricians; machinists/manufacturing mechanics; and lab technicians.*

Table 11-17
Top Occupations/Positions Currently in Demand by
Responding Surveyed Local Employers in Madison County

| Current Labor Demand | Employer Demand | | Employer Availability Rating (5=plentiful; 1=unavailable) | | |
|---|--------------------|--------------------------|--|--------------|-----------|
| | Employer Responses | # of Required Applicants | Average Score | Median Score | Imbalance |
| General Business and Office Support | | | | | |
| Administrative assistants | 23 | 30 | 4.0 | 4.0 | - |
| Customer service representatives | 8 | 21 | 3.1 | 3.0 | - |
| Accounting clerks/bookkeepers | 14 | 17 | 3.8 | 4.0 | - |
| Clerical workers with advanced computer skills | 6 | 15 | 3.5 | 4.0 | - |
| Call center agents/representatives | 5 | 8 | 3.1 | 3.0 | - |
| Office clerks | 3 | 4 | 3.8 | 4.0 | - |
| Claims processing clerks | 4 | 4 | 2.9 | 3.0 | - |
| Management and Supervisory | | | | | |
| Management, experienced | 18 | 27 | 3.1 | 3.0 | - |
| Management trainees | 7 | 24 | 3.1 | 3.0 | - |
| Production supervisors | 5 | 5 | 2.5 | 3.0 | - |
| Technical and Professional | | | | | |
| Engineers, electrical and electronic | 9 | 36 | 2.9 | 3.0 | X |
| Engineers | 13 | 47 | 3.2 | 3.0 | X |
| Nurses, registered | 6 | 213 | 2.7 | 2.5 | XXX |
| Sales representatives | 9 | 23 | 2.4 | 2.0 | XXX |
| Engineers, mechanical | 6 | 14 | 2.8 | 3.0 | X |
| Engineering technicians, mechanical | 6 | 12 | 2.5 | 3.0 | X-XX |
| Engineering technicians, electronic | 7 | 15 | 2.8 | 3.0 | X |
| Technicians (general) | 10 | 25 | 2.8 | 3.0 | XX |
| Technical and Professional, continued | | | | | |
| Lab technicians | 2 | 5 | 2.3 | 2.0 | XX |
| Radiological technologies | 1 | 2 | 2.1 | 1.5 | X |
| Biologists | 1 | 2 | 1.9 | 1.0 | X |
| Biomedical engineering technicians | 1 | 1 | 2.1 | 1.0 | X |
| Physical therapists | 2 | 4 | 1.6 | 1.0 | X |
| Physicians | 1 | 2 | 2.0 | 1.0 | X |
| Pharmacy technicians | 1 | 1 | 2.7 | 2.0 | X |
| Accountants | 7 | 7 | 3.5 | 4.0 | - |
| Scientists (general) | 3 | 7 | 3.1 | 3.0 | - |
| CAD drafters | 3 | 4 | 2.3 | 3.0 | - |
| Associate engineers (2-year degree) | 1 | 1 | 3.0 | 3.0 | - |
| Financial analysts | 1 | 1 | 3.0 | 3.0 | - |
| Production, maintenance and Distribution | | | | | |
| CNC machine operators | 3 | 11 | 1.8 | 1.0 | XXX |
| Aircraft mechanics | 1 | 8 | 1.4 | 1.0 | XXX |
| Welders | 2 | 7 | 1.9 | 1.0 | XXX |
| Unskilled laborers (manufacturing, repair) | 13 | 59 | 3.1 | 3.0 | X |
| Electricians | 1 | 10 | 2.4 | 3.0 | XX |
| Machinists/manufacturing mechanic | 5 | 9 | 2.5 | 2.0 | XX |
| Avionics technician | 1 | 4 | 1.8 | 1.0 | X |
| Skilled machine trades (general) | 2 | 2 | 2.2 | 1.5 | X |
| Maintenance mechanics | 1 | 4 | 2.9 | 3.0 | - |
| Machine operators, no setup | 4 | 5 | 2.6 | 3.0 | - |
| Computer and Information Systems | | | | | |
| Programmer/analysts | 6 | 15 | 3.2 | 3.0 | - |
| Systems analysts | 3 | 9 | 3.2 | 3.0 | - |
| Computer support specialists, technicians | 5 | 8 | 3.4 | 3.5 | - |
| Network systems administrators | 2 | 5 | 3.2 | 3.0 | - |
| Computer security specialists | 1 | 4 | 2.7 | 2.5 | - |
| Database administrators | 2 | 3 | 2.9 | 3.0 | - |
| Network technicians | 1 | 3 | 3.3 | 3.0 | - |
| Computer operators | 1 | 1 | 3.2 | 4.0 | - |
| Multimedia specialists | 1 | 1 | 2.6 | 3.0 | - |

Source: WDG Employer Survey, Fall 2006

(X=modest imbalance; XX=imbalance; XXX=high imbalance)

2. In one year from the time the Madison County survey was conducted, the demand for occupations is similar to what employers were demanding at the time the survey was taken. The occupations projected to be in highest demand include registered nurses, engineers and unskilled laborers. See Table 11-18.

- Comparing the twelve-month demand for workers against the current availability ratings assigned by employers responding to the WDG survey indicates future critical labor shortages for the following occupations: *CNC machine operators; registered nurses; electrical and electronic engineers; sales representatives; engineers, radiological technologies; aircraft mechanics; and welders*. Also indicated is a general imbalance between labor demand and supply for the following occupations: *machinists/manufacturing mechanics; electronic engineering technicians; electricians; machine operators (no setup); computer security specialists; mechanical engineering technicians; production supervisors; CAD drafters; lab technicians; heavy equipment operators; and skilled machine trades*.

Table 11-18
Anticipated Demand for Workers in One Year by
Responding Surveyed Local Employers in Madison County

| Labor Demand (In one year) | Employer Demand | | Employer Availability Rating (5=plentiful; 1=unavailable) | | | Most Significant Source of Post-secondary Education or Training |
|--|--------------------|--------------------------|--|--------------|-----------|---|
| | Employer Responses | # of Required Applicants | Average Score | Median Score | Imbalance | |
| General Business and Office Support | | | | | | |
| Administrative assistants | 36 | 57 | 4.0 | 4.0 | - | Moderate on-the-job training |
| Accounting clerks/bookkeepers | 32 | 41 | 3.8 | 4.0 | - | Moderate on-the-job training |
| Call center agents/representatives | 7 | 26 | 3.1 | 3.0 | - | N/A |
| Customer service representatives | 9 | 24 | 3.1 | 3.0 | - | Moderate on-the-job training |
| Clerical workers with advanced computer skills | 13 | 21 | 3.5 | 4.0 | - | N/A |
| Office clerks | 3 | 4 | 3.8 | 4.0 | - | Short on-the-job training |
| Claims processing clerks | 3 | 3 | 2.9 | 3.0 | - | Moderate on-the-job training |
| Management and Supervisory | | | | | | |
| Management, experienced | 32 | 78 | 3.1 | 3.0 | X | N/A |
| Management trainees | 13 | 70 | 3.1 | 3.0 | X | N/A |
| Production supervisors | 8 | 11 | 2.5 | 3.0 | XX | Work exp. In related occupation |
| Technical and Professional | | | | | | |
| Nurses, registered | 6 | 164 | 2.7 | 2.5 | XXX | Associate degree |
| Engineers | 18 | 161 | 3.2 | 3.0 | XXX | Bachelors degree |
| Radiological technologies | 1 | 19 | 2.1 | 1.5 | XXX | Associate degree |
| Engineers, electrical and electronic | 9 | 58 | 2.9 | 3.0 | X-XX | Bachelors degree |
| Sales representatives | 9 | 54 | 2.4 | 2.0 | XX-XXX | Moderate on-the-job training |
| Technicians (general) | 8 | 22 | 2.8 | 3.0 | X-XX | N/A |
| Engineers, mechanical | 8 | 21 | 2.8 | 3.0 | X-XX | Bachelors degree |
| Engineering technicians, electronic | 6 | 17 | 2.8 | 3.0 | X-XX | Associate degree |
| Engineering technicians, mechanical | 5 | 12 | 2.5 | 3.0 | XX | Associate degree |
| CAD drafters | 4 | 8 | 2.3 | 3.0 | XX | Postsecondary vocational award |
| Lab technicians | 1 | 7 | 2.3 | 2.0 | XX | Associate degree |
| Pharmacy technicians | 2 | 5 | 2.7 | 2.0 | X | Moderate on-the-job training |
| Biologists | 2 | 4 | 1.9 | 1.0 | XX | Bachelors degree |
| Biomedical engineering technicians | 1 | 3 | 2.0 | 1.0 | XX | Associate degree |
| Accountants | 13 | 18 | 3.5 | 4.0 | - | Bachelors degree |
| Associate engineers (2-year degree) | 4 | 12 | 3.0 | 3.0 | - | N/A |
| Scientists (general) | 4 | 12 | 3.1 | 3.0 | - | Bachelors degree |
| Financial analysts | 4 | 7 | 3.0 | 3.0 | - | Bachelors degree |

TABLE CONTINUES NEXT PAGE

Table 11-18, continued
Anticipated Demand for Workers in One Year by
Responding Surveyed Local Employers in Madison County

| Labor Demand (In one year) | Employer Demand | | Employer Availability Rating (5=plentiful; 1=unavailable) | | | Most Significant Source of Post-secondary Education or Training |
|---|--------------------|--------------------------|--|--------------|-----------|---|
| | Employer Responses | # of Required Applicants | Average Score | Median Score | Imbalance | |
| Production, maintenance and Distribution | | | | | | |
| Unskilled laborers (manufacturing, repair) | 17 | 126 | 3.1 | 3.0 | XX | Short on-the-job training |
| CNC machine operators | 4 | 23 | 1.8 | 1.0 | XXX | Moderate on-the-job training |
| Aircraft mechanics | 1 | 8 | 1.4 | 1.0 | XXX | Postsecondary vocational award |
| Welders | 2 | 8 | 1.9 | 1.0 | XXX | Long on-the-job training |
| Machinists/manufacturing mechanic | 7 | 41 | 2.5 | 2.0 | XX | Long on-the-job training |
| Electricians | 2 | 17 | 2.4 | 3.0 | XX | Long on-the-job training |
| Machine operators, no setup | 4 | 14 | 2.6 | 3.0 | XX | N/A |
| Heavy equipment operators | 2 | 7 | 2.1 | 2.0 | XX | N/A |
| Skilled machine trades (general) | 3 | 6 | 2.2 | 1.5 | XX | N/A |
| Maintenance mechanics | 7 | 26 | 2.9 | 3.0 | X | N/A |
| Bench assemblers | 1 | 1 | 2.6 | 2.0 | - | Short on-the-job training |
| Computer and Information Systems | | | | | | |
| Programmer/analysts | 13 | 78 | 3.2 | 3.0 | X-XX | Bachelors degree |
| Computer security specialists | 7 | 13 | 2.7 | 2.5 | XX | Associate degree |
| Database administrators | 7 | 15 | 2.9 | 3.0 | X | Bachelors degree |
| Systems analysts | 9 | 53 | 3.2 | 3.0 | - | Bachelors degree |
| Computer support specialists, technicians | 11 | 30 | 3.4 | 3.5 | - | Associate degree |
| Network systems administrators | 7 | 15 | 3.2 | 3.0 | - | Bachelors degree |
| Network technicians | 3 | 9 | 3.3 | 3.0 | - | N/A |
| Computer operators | 3 | 6 | 3.2 | 4.0 | - | Moderate on-the-job training |
| Multi-media specialists | 3 | 6 | 2.6 | 3.0 | - | N/A |
| Internet development specialists | 3 | 3 | 3.1 | 3.0 | - | N/A |

Source: WDG Employer Survey, Fall 2006, US Bureau of Labor Statistics
(X=modest imbalance; XX=imbalance; XXX=high imbalance)
N/A: Data not available

3. In Madison County, employer survey results showed the demand for workers will increase substantially in one year. Among companies responding to WDG’s employer survey, 41.8% plan on expanding their workforce by 5% or more—a relatively high number based upon WDG’s experience—while 30.0% anticipate increases of less than 2%. 27.4% plan on increasing their employment by 2% to 5%, while only 0.8% of companies responding to the survey project layoffs during the next year. See Exhibit 11-A-1 in the Appendix.
4. At the time of the survey, the occupation in greatest demand by Morgan County employers was the assembler and fabricator position, in which 41 workers are required in four responding firms. This occupation is followed by: registered nurses (34), construction and building trades (25), engineers (22), and heavy and tractor-trailer truck drivers (22).
 - Table 11-19 compares the occupations in greatest demand to their availability. A level of imbalance between availability and demand is shown for each occupation, as is the level of education or training needed for each occupation.
 - Comparing the current demand for workers against the current availability ratings indicates there are **critical labor shortages** for engineers and construction and building trades.

- Additionally, there is a **modest imbalance** for the following occupations: drafters; engineering technicians (electronic); electrical and electronic engineers; industrial machinery mechanics; CNC operators; machinists; tool and die makers; welders; sales representatives; and truck drivers (heavy and tractor trailer).

Table 11-19
Top Occupations/Positions Currently in Demand by
Responding Surveyed Local Employers in Morgan County

| Current Labor Demand | Employer Demand | | Employer Availability Rating (5=plentiful; 1=unavailable) | | | Level of Education or Training Needed (2) |
|---|------------------------|--------------------------|--|--------------|------------|--|
| | Employer Responses (1) | # of Required Applicants | Average Score | Median Score | Imbalance* | |
| Engineering and Related | | | | | | |
| Associate engineer (2-year degree) | - | - | 2.7 | 3.0 | - | Associates Degree |
| Drafter | 1 | 1 | 2.3 | 2.0 | X | Postsecondary vocational award |
| Engineering technician, electronic | - | - | 1.0 | 1.0 | X | Associates Degree |
| Engineer | 6 | 22 | 2.7 | 2.0 | XXX | Bachelors Degree |
| Engineer, electrical and electronic | 1 | 1 | 1.0 | 1.0 | X | Bachelors Degree |
| Engineer, chemical | 3 | 6 | 3.3 | 4.0 | - | Bachelors Degree |
| Engineer, industrial | - | - | 3.5 | 3.5 | - | Bachelors Degree |
| Quality control technician | 2 | 5 | 3.0 | 3.0 | - | N/A |
| Business and Financial Professionals | | | | | | |
| Supervisor – accounting | - | - | 3.0 | 3.0 | - | N/A |
| Accountant | 1 | 2 | 3.3 | 3.0 | - | Bachelors Degree |
| Computer and Mathematical | | | | | | |
| Computer support specialist, technician | - | - | 2.0 | 2.0 | - | Associates Degree |
| Database analyst | - | - | 2.0 | 2.0 | - | Bachelors Degree |
| Network and computer systems administrator | - | - | 4.0 | 4.0 | - | Bachelors Degree |
| Construction and Extraction | | | | | | |
| Construction and building trades | 2 | 25 | 2.0 | 2.0 | XXX | N/A |
| Electrician | - | - | 2.0 | 2.0 | - | Long on-the-job training |
| Supervisor of construction trade | 1 | 1 | - | - | X | Work experience in related occupation |
| Healthcare Practitioners and Technical | | | | | | |
| Licensed practical and licensed vocational nurse | 1 | 2 | 5.0 | 5.0 | - | Postsecondary vocational award |
| Medical and clinical laboratory technician | 1 | 1 | 4.0 | 4.0 | - | Bachelors Degree |
| Medical records and health information technician | - | - | 5.0 | 5.0 | - | Associates Degree |
| Physician assistant | - | - | 2.0 | 2.0 | - | Bachelors Degree |
| Registered nurse | 1 | 34 | 4.0 | 4.0 | - | Associates Degree |
| Healthcare Support | | | | | | |
| Nursing aides, orderlies, and attendants | 2 | 4 | 4.5 | 4.5 | - | Postsecondary vocational award |
| Installation, Maintenance and Repair | | | | | | |
| Electrical and control mechanic | 3 | 5 | 3.0 | 3.0 | - | N/A |
| Industrial machinery mechanic | 5 | 15 | 2.9 | 3.0 | X | Long on-the-job training |
| Maintenance workers, machinery | 2 | 4 | 2.7 | 3.0 | - | Short on-the-job training |
| Supervisor of mechanics, installers and repairers | 2 | 2 | 2.8 | 2.5 | - | Work experience in related occupation |
| Management | | | | | | |
| Administrative service/accounting manager | 1 | 1 | 3.5 | 3.5 | - | Bachelors plus experience |
| Computer and information systems manager | - | - | 4.0 | 4.0 | - | Bachelors plus experience |
| Engineering manager | - | - | 2.0 | 2.0 | - | Bachelors plus experience |
| Industrial production manager | - | - | 2.0 | 2.0 | - | Work experience in related occupation |
| Maintenance manager | 2 | 2 | 2.5 | 2.5 | - | N/A |
| Transportation, warehouse and distribution mgr | 2 | 2 | 3.0 | 3.0 | - | Work experience in related occupation |
| Office and Administrative Support | | | | | | |
| Administrative assistant | - | - | 3.6 | 4.0 | - | Moderate on-the-job training |
| Bookkeeping, accounting and auditing clerk | 1 | 1 | 3.8 | 4.0 | - | Moderate on-the-job training |
| Buyer | - | - | 3.0 | 3.0 | - | N/A |
| Customer service representative | 2 | 3 | 3.6 | 3.0 | - | Moderate on-the-job training |
| Human resource assistant | - | - | 2.7 | 2.0 | - | Short on-the-job training |
| Human resource specialist | - | - | 2.0 | 2.0 | - | N/A |
| Office clerk | 1 | 3 | 4.4 | 5.0 | - | Short on-the-job training |
| Receptionist/telephone operator | 1 | 1 | 3.8 | 4.0 | - | Short on-the-job training |

TABLE CONTINUES NEXT PAGE

Table 11-19, continued
Top Occupations/Positions Currently in Demand by
Responding Surveyed Local Employers in Morgan County

| Current Labor Demand | Employer Demand | | Employer Availability Rating (5=plentiful; 1=unavailable) | | | Level of Education or Training Needed (2) |
|---|------------------------|--------------------------|--|--------------|------------|---|
| | Employer Responses (1) | # of Required Applicants | Average Score | Median Score | Imbalance* | |
| Office and Administrative Support, continued | | | | | | |
| Secretary | - | - | 3.0 | 3.0 | - | Moderate on-the-job training |
| Training coordinator | - | - | 2.0 | 2.0 | - | N/A |
| Production | | | | | | |
| Assemblers and fabricator | 4 | 41 | 3.4 | 4.0 | - | N/A |
| Chemical worker | 2 | 10 | 4.0 | 4.0 | - | N/A |
| CNC operator | 1 | 2 | 1.0 | 1.0 | - | Long on-the-job training |
| General laborer | 2 | 6 | 3.7 | 4.0 | - | Short on-the-job training |
| Inventory control/material planner | 1 | 1 | 3.5 | 3.5 | - | N/A |
| Machinist | 2 | 7 | 2.8 | 2.5 | X | Long on-the-job training |
| Semi-skilled worker (NOC) | 2 | 11 | 3.3 | 4.0 | - | N/A |
| Skilled worker (NOC) | 1 | 2 | 2.0 | 2.0 | - | N/A |
| Supervisor – quality assurance | 1 | 1 | 2.0 | 2.0 | - | N/A |
| Supervisors of production and operator worker | 1 | 1 | 3.3 | 4.0 | - | Work experience in related occupation |
| Tool and die maker | 1 | 1 | 1.0 | 1.0 | - | Long on-the-job training |
| Welder | 2 | 2 | 2.3 | 2.0 | - | Long on-the-job training |
| Sales and Related | | | | | | |
| Sales representative | 4 | 15 | 2.9 | 3.0 | X | Moderate on-the-job training |
| Transportation and Material Moving | | | | | | |
| Crane operator | 1 | 1 | 2.0 | 2.0 | - | Long on-the-job training |
| Shipping and receiving clerk | 2 | 6 | 3.0 | 2.5 | - | N/A |
| Truck driver, heavy and tractor trailer | 3 | 22 | 2.8 | 2.5 | X | Moderate on-the-job training |

Source: WDG Employer Survey, Summer/Fall 2007

(X=modest imbalance; XX=imbalance; XXX=high imbalance)

(1) Among survey responding employees. The actual total number needed would be higher.

(2)Source: U.S. Bureau of Labor Statistics

| *Degree of Imbalance | Applicants Required | Average Score | Median Score |
|----------------------|---------------------|---------------|--------------|
| X = Modest Imbalance | 100+ | 3.5-4.0 | 3.5-4.0 |
| | 30-99 | 3.0-3.4 | 3.0-3.5 |
| | 10-29 | 2.5-2.9 | 2.5-3.0 |
| | 3-9 | 2.4 or less | 2.5 or less |
| XX = Imbalance | 100+ | 3.0-3.4 | 3.0-3.5 |
| | 30-99 | 2.6-2.9 | 2.5-3.0 |
| | 10-29 | 2.1-2.4 | 2.0-2.5 |
| XXX = High Imbalance | 100+ | 2.9 or less | 3.0 or less |
| | 30-99 | 2.5 or less | 2.5 or less |
| | 10-29 | 2.0 or less | 2.0 or less |

5. In Chapter One of the TVRGCP, the Consultant Team listed the most common occupations in the Contractor and Spin-off sectors. These and other occupations will have to be filled mostly by new residents to the area (see Table 11-20 below and Table 1-9 in Chapter One of the TVRGCP).

Table 11-20
Redstone Arsenal BRAC
Most Common Occupations in Contractor and Spin-off Sectors

| Code | Occupational Title | Estimated Employed | % of Total |
|---------|--|--------------------|------------|
| 43-9061 | Office clerks, general | 326 | 2.8% |
| 19-0000 | Life, physical, and social science occupations | 304 | 2.6% |
| 23-1011 | Lawyers | 299 | 2.5% |
| 13-2011 | Accountants and auditors | 291 | 2.5% |
| 41-2031 | Retail salespersons | 246 | 2.1% |
| 43-3031 | Bookkeeping, accounting, and auditing clerks | 232 | 2.0% |

TABLE CONTINUES NEXT PAGE

Table 11-20, continued
Redstone Arsenal BRAC
Most Common Occupations in Contractor and Spin-off Sectors

| Code | Occupational Title | Estimated Employed | % of Total |
|---------|--|--------------------|------------|
| 43-6014 | Secretaries, except legal, medical, and executive | 219 | 1.9% |
| 31-0000 | Healthcare support occupations | 211 | 1.8% |
| 43-6011 | Executive secretaries and administrative assistants | 209 | 1.8% |
| 43-4051 | Customer service representatives | 197 | 1.7% |
| 41-2011 | Cashiers | 195 | 1.7% |
| 43-6012 | Legal secretaries | 188 | 1.6% |
| 11-1021 | General and operations managers | 187 | 1.6% |
| 15-1031 | Computer software engineers, applications | 172 | 1.5% |
| 47-0000 | Construction and extraction occupations | 163 | 1.4% |
| 35-3021 | Combined food preparation and serving workers, including fast food | 161 | 1.4% |
| 37-2011 | Janitors and cleaners, except maids and housekeeping cleaners | 161 | 1.4% |
| 13-1111 | Management analysts | 155 | 1.3% |
| 35-3031 | Waiters and waitresses | 154 | 1.3% |
| 43-4171 | Receptionists and information clerks | 150 | 1.3% |
| 15-1021 | Computer programmers | 142 | 1.2% |
| 53-7062 | Laborers and freight, stock, and material movers, hand | 139 | 1.2% |
| 23-2011 | Paralegals and legal assistants | 138 | 1.2% |
| 43-1011 | First-line supervisors/managers of office and admin. support workers | 131 | 1.1% |
| 15-1051 | Computer systems analysts | 128 | 1.1% |
| 15-1041 | Computer support specialists | 118 | 1.0% |
| 15-1032 | Computer software engineers, systems software | 117 | 1.0% |
| 29-1111 | Registered nurses | 115 | 1.0% |
| 17-2051 | Civil engineers | 105 | 0.9% |
| 33-0000 | Protective service occupations | 103 | 0.9% |
| 13-1199 | Business operations specialists, all other | 100 | 0.8% |
| 25-2021 | Elementary school teachers, except special education | 95 | 0.8% |

Source: ES-202 Implan

LABOR QUALITY

- In Madison County, employers report that the level of basic skills seen among job applicants is satisfactory to good. As shown in Table 11-21, the median score (on a five-point scale where 1=poor and 5=excellent) for all basic skills was a 3.0 (i.e., satisfactory), while the average score was 3.4. *Team and cooperative skills* received the highest ratings, with a median score of 4.0 and an average score of 3.5.
- Approximately 37.2% of surveyed employers report a deficiency in basic skills among job applicants. The most commonly cited deficiencies are presented in Exhibit 11-A-3 in the Appendix.

Table 11-21
Madison County Employers' Ratings on Labor-Quality Measures

| Basic Skills of Job Applicants | 5=Excellent, 1=Poor | |
|--|---------------------|---------------|
| | Average Rating | Median Rating |
| Overall basic skills of all applicants | 3.4 | 3.0 |
| Written communication | 3.1 | 3.0 |
| Reading comprehension | 3.3 | 3.0 |
| Arithmetic/math | 3.3 | 3.0 |
| Thinking and judgment | 3.3 | 3.0 |
| Verbal communication/comprehension | 3.3 | 3.0 |
| Team and cooperative skills | 3.5 | 4.0 |

Source: WDG Employer Survey, Summer/Fall 2007

2. In Morgan County, employers report that the level of basic skills seen among job applicants ranges between satisfactory to good, depending upon the skill. Experiences of Limestone employers are expected to match those of Morgan and Madison Counties. As shown in Table 11-22, the median score (on a five-point scale where 1=poor and 5=excellent) for all six basic skills included in the WDG employer survey was 3.0 or 4.0 (i.e., satisfactory, above-satisfactory).
- The *average* ratings also indicate that employers in the county view all of the skills as satisfactory to good (average score of 3.0 to 3.7).
 - Surveyed employers report a good to very good work ethic and productivity among their employees. Workforce-quality ratings were rated as above satisfactory in all areas. Willingness to work overtime received the highest rating (median score of 4.0 and average score of 4.3). (See Table 11-22.)

Table 11-22
Morgan County Employer Ratings on Labor-Quality Measures

| Basic Skills of Job Applicants | 5=Excellent, 1=Poor | |
|--|---------------------|----------------|
| | Average Rating | Average Rating |
| Overall basic skills of all applicants | 3.7 | 4.0 |
| Written communication | 3.1 | 3.0 |
| Reading comprehension | 3.3 | 3.0 |
| Math | 3.0 | 3.0 |
| Thinking and judgment/problem solving | 3.3 | 3.0 |
| Verbal communication/comprehension | 3.6 | 4.0 |
| Team and cooperative skills | 3.6 | 4.0 |

Source: WDG Employer Survey, Spring 2008

3. Surveyed Madison County employers report a good to very good work ethic and a high level of productivity among their employees. Work ethic and productivity received median scores of 4.0 and average scores of 3.7. Productivity was rated as high (a median score of 4.0 and average score of 3.8) compared to other sites among companies who have more than one location. See Table 11-23.

Table 11-23
Madison County Employer Ratings on Productivity Measures

| Productivity and Work Ethic of Employees | 5=Excellent, 1=Poor | |
|--|---------------------|----------------|
| | Average Rating | Average Rating |
| Work ethic | 3.7 | 4.0 |
| Productivity | 3.7 | 4.0 |
| Productivity compared to that of company's other sites | 3.8 | 4.0 |
| Willingness to work overtime | 3.8 | 4.0 |
| Punctuality | 3.5 | 4.0 |
| Overall employer/employee relations | 3.9 | 4.0 |

Source: WDG Employer Survey, Fall 2006

4. Surveyed Morgan County employers report a good to very good work ethic and productivity among their employees. Workforce quality ratings were rated as above satisfactory in all areas. Willingness to work overtime received the highest rating (median score of 4.0 and average score of 4.3). Experiences of Limestone employers are expected to match those of Morgan and Madison Counties. (See Table 11-24.)

Table 11-24
Employer Ratings on Productivity Measures

| Productivity and Work Ethic of Employees | 5=Excellent, 1=Poor | |
|--|---------------------|----------------|
| | Average Rating | Average Rating |
| Work ethic | 4.0 | 4.0 |
| Productivity | 4.1 | 4.0 |
| Productivity compared to that of company's other sites | 4.0 | 4.0 |
| Willingness to work overtime | 4.3 | 4.0 |
| Punctuality | 3.8 | 4.0 |
| Overall employer/employee relations | 4.2 | 4.0 |

Source: WDG Employer Survey, Spring 2008

- Turnover and absenteeism is modest among Madison County employers. More than 57% of responding companies report an average annual turnover rate of less than 5%, and 79% report employee turnover of less than 10% after the first year of employment. A majority of employers, 76.4%, report that average daily absenteeism is less than 5%.
- In Morgan County, turnover rates for newly hired workers and for employees after the first year are at parity with rates typically seen by WDG in similarly sized communities. The employer-reported average turnover rate for new hires ranges from 10% to 20%, and the average turnover rate for workers after the first year of employment is between 0% and 5%. The average daily absenteeism rate for responding employers also is between 0% and 5%. See Exhibit 11-B-1 in the Appendix.

LABOR COST

- Average private-sector-industry earnings vary among the PSA counties. Average overall private-sector-employee earnings in the PSA are 91% of the national average. Madison County's are higher than state averages, and virtually equal to the U.S. average. Meanwhile Morgan and Limestone Counties' average earnings are below state and national averages. See Table 11-25.

Table 11-25
Average Annual Earnings, 2006

| Area | Average Annual Earnings * | Index U.S.=100 |
|---------------------------|---------------------------|----------------|
| Limestone County | \$29,690 | 74.3 |
| Madison County | \$38,835 | 97.2 |
| Morgan County | \$31,613 | 79.1 |
| Primary Study Area | \$36,546 | 91.4 |
| Alabama | \$32,650 | 82.3 |
| U.S. | \$39,965 | 100 |

Source: U.S. Department of Commerce County Business Patterns

* Includes straight time and overtime

- Table 11-26 shows that wages for specific benchmark occupations in Madison County tend to be higher than wages in Morgan and Limestone Counties. Median wages in Huntsville (benchmark for Madison County) are higher than wages in Athens (Limestone County benchmark) for all benchmark occupations and higher than all but three benchmark occupations in Decatur (benchmark for Morgan County).

Table 11-26
Median Annual Earnings by Selected Benchmark Occupations, 2008

| Occupation Description | Median Annual Earnings | | | Index (Huntsville = 100) | | |
|---------------------------------|---------------------------------|-------------------------------|-----------------------------------|---------------------------------|-------------------------------|-----------------------------------|
| | Athens (Limestone County) | Decatur (Morgan County) | Huntsville (Madison County) | Athens (Limestone County) | Decatur (Morgan County) | Huntsville (Madison County) |
| Accounting Clerk | \$29,286 | \$29,450 | \$30,135 | 97 | 98 | 100 |
| Administrative Assistant | \$36,490 | \$36,832 | \$37,455 | 97 | 98 | 100 |
| Assembler | \$24,236 | \$24,931 | \$25,484 | 95 | 98 | 100 |
| CAD Drafter | \$39,322 | \$39,801 | \$40,437 | 97 | 98 | 100 |
| Civil Engineer | \$60,213 | \$63,897 | \$63,543 | 95 | 101 | 100 |
| Computer Programmer | \$49,812 | \$52,337 | \$52,566 | 95 | 100 | 100 |
| Customer Service Representative | \$30,462 | \$30,624 | \$31,337 | 97 | 98 | 100 |
| Electronics Technician | \$36,761 | \$36,858 | \$37,556 | 98 | 98 | 100 |
| Engineering Technician | \$40,875 | \$41,944 | \$42,437 | 96 | 99 | 100 |
| Lab Technologist | \$34,318 | \$34,232 | \$34,935 | 98 | 98 | 100 |
| Machinist - Journey | \$36,269 | \$36,678 | \$37,278 | 97 | 98 | 100 |
| Maintenance Specialist | \$34,731 | \$34,873 | \$35,528 | 98 | 98 | 100 |
| Nurse, Licensed Practical | \$32,437 | \$32,318 | \$33,036 | 98 | 98 | 100 |
| Nursing, Certified Assistant | \$23,667 | \$24,508 | \$25,064 | 94 | 98 | 100 |
| PC Support Specialist | \$51,269 | \$53,383 | \$53,757 | 95 | 99 | 100 |
| Secretary, Executive | \$40,905 | \$42,039 | \$42,514 | 96 | 99 | 100 |
| Systems Analyst | \$66,869 | \$70,880 | \$70,368 | 95 | 101 | 100 |
| Tool & Die Maker | \$43,499 | \$45,468 | \$45,743 | 95 | 99 | 100 |

Source: SalarySource.com

EDUCATION AND TRAINING

1. The PSA has a rich base of post-secondary educational institutions graduating roughly 4,300 students annually in a variety of disciplines. Enrollment at the area's two-year institutions is approximately 9,811 annually. The region's four-year institutions enroll roughly 18,727 students annually. See Table 11-27.

Table 11-27
Graduation and Enrollment figures for Local Post-Secondary Schools

| Less-than-Four-Year Institutions | Location | Total Fall Enrollment (2007) | Total Graduates (2007) |
|--|------------|------------------------------|------------------------|
| Faulkner University | Huntsville | N/A | N/A |
| JF Drake State Technical College | Huntsville | 694 | 225 |
| John C Calhoun State Community College | Tanner | 9,117 | 832 |
| Sub-total | | 9,811 | 1,057 |
| More-than-Four-Year Institutions | Location | Total Fall Enrollment (2007) | Total Graduates (2007) |
| Athens State University | Athens | 3,072 | 814 |
| Oakwood College | Huntsville | 1,824 | 270 |
| University of Alabama in Huntsville | Huntsville | 7,264 | 1,189 |
| Virginia College | Huntsville | 861 | 100 |
| Alabama A&M University | Normal | 5,706 | 859 |
| Sub-Total | | 18,727 | 3,232 |
| Grand Total | | 28,538 | 4,289 |

Source: U.S. Department of Education, IPEDS

2. According to WDG's employer surveys, Madison and Morgan County employers—and by extension, those in Limestone County—see a need for improvement among the area's high schools and post-secondary institutions. Even though the employers are happy with the quality of the area's schools, they do see a need for some improvements.

- Improvements needed in the high schools include better development of student work ethic, job interview skills, basic skills, and life skills.
 - Improvements needed among the area’s two-year institutions include improved student critical thinking and communication/speaking skills, and student work ethic.
 - Improvements needed at the area’s four-year institutions include teaching critical thinking and job preparedness skills.
3. Employers in Madison County are generally pleased with the quality of graduates from regional post-secondary institutions. As shown in Table 11-28, surveyed employers report that the overall quality of graduates and programs offered by local training and educational institutions is satisfactory to above satisfactory. The University of Alabama in Huntsville received the highest ratings—a median score of 4.0 and an average score of 4.1—which are very good.

Table 11-28
Madison County Employer Ratings of the Quality of Graduates and Programs
from Regional Educational Institutions

| Institution | Responses | 5=Excellent, 1=Poor | | No Experience |
|---|-----------|---------------------|--------------|---------------|
| | | Average Score | Median Score | |
| Area High Schools | 145 | 3.4 | 3.0 | 55 |
| Alabama A&M University | 141 | 2.8 | 3.0 | 56 |
| Athens State University | 121 | 3.4 | 3.0 | 78 |
| Calhoun Community College | 127 | 3.2 | 3.0 | 70 |
| Defense Acquisition University South | 65 | 3.3 | 3.0 | 125 |
| J.F. Drake State Technical College | 95 | 3.0 | 3.0 | 100 |
| Faulkner University Huntsville | 77 | 3.1 | 3.0 | 117 |
| Florida Institute of Technology- Redstone Graduate Center | 77 | 3.3 | 3.0 | 115 |
| Oakwood College | 117 | 3.3 | 3.0 | 78 |
| University of Alabama in Huntsville | 155 | 4.1 | 4.0 | 46 |
| Virginia College at Huntsville | 92 | 2.9 | 3.0 | 107 |
| Private vendors | 76 | 3.1 | 3.0 | 112 |

Source: WDG Employer Survey, Fall 2006

4. Morgan County employers responding to WDG’s survey with knowledge of the graduates from and programs at the region’s educational institutions report above-satisfactory quality ratings. The quality ratings are presented below in Table 11-29. The University of Alabama in Huntsville is the highest-rated institution in the region, with a median score of 5.0 and an average score of 4.7, which are very-good-to-excellent scores. Employers also rate the quality of the other remaining educational institutions as satisfactory or above satisfactory. Employers did indicate that the region’s high schools, community colleges, and four-year colleges and universities need some minor improvement. Program improvements are needed in communication/speaking skills, critical thinking, job interview skills, life skills, and work ethic, among others. The needed improvements are listed in Exhibit 11-B-1 in the Appendix.

Table 11-29
Morgan County Employers' Ratings of the Quality of Graduates and Programs
from Regional Educational Institutions

| Institution | Responses | <i>(1=Poor; 5=Excellent)</i> | |
|--|-----------|------------------------------|--------------|
| | | Average Score | Median Score |
| Area high schools | 14 | 3.4 | 3.0 |
| Calhoun Community College | 13 | 3.9 | 4.0 |
| Alabama A&M University | 13 | 3.9 | 4.0 |
| University of Alabama in Huntsville | 13 | 4.7 | 5.0 |
| Athens State University | 13 | 4.1 | 4.0 |
| University of North Alabama (UNA) | 13 | 4.1 | 4.0 |
| Wallace State College | 13 | 4.0 | 4.0 |
| Private vendors (e.g., training and development consultants) | 13 | 3.5 | 4.0 |

Source: WDG Employer Survey, Spring 2008

- Madison County employers have very limited experience working with the region's educational institutions for general and customized training programs. The reason for this may be that the training providers do not offer programs that meet employers' needs, or employers may not be aware of what programs local institutions offer. See Table 11-30.

Table 11-30
Madison County Employers' Ratings of Utilization Frequency of Training Programs
from Regional Training Providers

| Institution | Responses | <i>5=Continuously, 1=Never</i> | |
|---|-----------|--------------------------------|--------------|
| | | Average Score | Median Score |
| Alabama A&M University | 200 | 1.8 | 1.0 |
| Alabama Industrial Development Training (AIDT) | 199 | 1.3 | 1.0 |
| Athens State University | 198 | 1.4 | 1.0 |
| Calhoun Community College | 200 | 1.5 | 1.0 |
| Defense Acquisition University South | 197 | 1.2 | 1.0 |
| J.F. Drake State Technical College | 199 | 1.4 | 1.0 |
| Faulkner University Huntsville | 197 | 1.2 | 1.0 |
| Florida Institute of Technology- Redstone Graduate Center | 198 | 1.1 | 1.0 |
| Oakwood College | 198 | 1.5 | 1.0 |
| University of Alabama in Huntsville | 201 | 2.1 | 1.0 |
| Virginia College at Huntsville | 199 | 1.2 | 1.0 |
| Private vendors | 198 | 1.6 | 1.0 |

Source: WDG Employer Survey, Fall 2006

- Responding Morgan County employers report that they occasionally work with Calhoun Community College, Athens State University, Alabama A&M University, Wallace State College and the University of Alabama-Huntsville for training programs, apprenticeships, co-ops, or other programs. Athens State University, University of North Alabama, Wallace State College, area high schools, and private vendors are infrequently utilized. (Refer to Table 11-31.)
 - Of survey respondents, 19.0% report that their training needs are not met locally. Skills training is not locally met for the following occupations or skills: corporate training; EEO/OFCCP compliance; non-destructive test programs; and short-term welding and pipefitter training.

Table 11-31
Employer Ratings of Utilization Frequency of Training Programs
from Regional Training Providers

| Institution | Responses | <i>(1=Never; 5=Continuously)</i> | |
|--|-----------|----------------------------------|--------------|
| | | Average Score | Median Score |
| Area high schools | 10 | 1.9 | 1.0 |
| Calhoun Community College | 10 | 2.6 | 3.0 |
| Alabama A&M University | 10 | 2.2 | 3.0 |
| University of Alabama in Huntsville | 11 | 2.6 | 3.0 |
| Athens State University | 10 | 2.1 | 2.0 |
| University of North Alabama (UNA) | 10 | 1.6 | 2.0 |
| Wallace State College | 10 | 2.1 | 1.0 |
| Private vendors (e.g., training and development consultants) | 10 | 2.0 | 2.0 |

Source: WDG Employer Survey, Spring 2008

- If the area is to maintain and strengthen its position as a technology center, it must be able to provide the technical skills needed by its existing employers and those needed by technology sectors through education of its residents, college students, and recruitment. The U.S. Bureau of Labor Statistics identified the technology-based skills that will be in the greatest demand in the country between 2004 and 2014 (see Table 11-32). If the PSA is to gain in its attractiveness for technology operations, many of these occupations will need to be provided by the local labor force and be recruited from outside the area.

Table 11-32
Top Technical Occupations by Rate of Projected Growth in the U.S. 2004-2014

| Occupation | Change 2000-2014 | | Most Significant Source of Post-Secondary Education or Training |
|--|------------------|-------|---|
| | Number (000's) | % | |
| Network systems & data communications analysis | 126 | 54.6% | Bachelor's degree |
| Computer software engineers, applications | 222 | 48.4% | Bachelor's degree |
| Computer software engineers, systems software | 146 | 43.0% | Bachelor's degree |
| Network & computer systems administrators | 107 | 38.4% | Bachelor's degree |
| Database administrators | 40 | 38.2% | Bachelor's degree |
| Computer systems analysts | 153 | 31.4% | Bachelor's degree |
| Biomedical engineers | 3 | 30.7% | Bachelor's degree |
| Environmental engineers | 15 | 30.0% | Bachelor's degree |
| Personal financial advisors | 41 | 25.9% | Bachelor's degree |
| Actuaries | 4 | 23.2% | Bachelor's degree or higher, plus work experience |
| Accountants and auditors | 264 | 22.4% | Bachelor's degree |
| Financial analysts | 34 | 17.3% | Bachelor's degree |
| Engineers, all | 195 | 13.4% | Bachelor's degree or higher |
| Engineering managers | 25 | 13.0% | Bachelor's degree or higher, plus work experience |
| Architects & engineers | 315 | 12.5% | Bachelor's degree or higher |
| Electrical engineers | 18 | 11.8% | Bachelor's degree |
| Computer hardware engineers | 8 | 10.1% | Bachelor's degree |
| Electronics engineers, except computer | 14 | 9.7% | Bachelor's degree |

Source: US Bureau of Labor Statistics; Institute of Electrical and Electronic Engineers

OPERATING ENVIRONMENT

- The labor-related operating environment in Alabama is favorable for business. A review of existing labor legislation reveals many advantages for employers. See Table 11-33 below and Exhibit 11-E-14 in the Appendix.

- There are no current statewide restrictions that are stronger than federal ones in terms of plant closings, ADA legislation, EEO standards, sexual harassment law, or mandated parental leave.
- Alabama has laws concerning employment-at-will, meaning that an employee is hired at will, and employment can be terminated at the will of either the employer or employee.
- There are no restrictions on employee drug testing.

Table 11-33
Labor Legislation in Alabama

| Labor Legislation | |
|--|----------------------|
| Employment at will? | Yes |
| If yes, significant restrictions (from employers standpoint) | No |
| Restrictions on employee drug testing | No |
| Telephone monitoring restrictions for regulation of productivity (or customer service) | Yes: 1-party consent |
| Plant Closing Law stricter than Federal? | No |
| ADA legislation stricter than Federal? | No |
| Ban on hiring replacement workers during a strike? | No |
| Striking workers entitled to unemployment insurance? | No |
| Relatively difficult for an employer to contest and win a workers' comp. claim? | No |
| Relatively difficult for an employer to contest and win an unemployment ins. claim? | No |
| Right to Work law in effect? | Yes |
| EEO hiring standards more restrictive than Federal? | No |
| Sexual harassment laws more restrictive than Federal? | No |
| Mandated parental leave legislation more generous than Federal? | No |
| Onerous provisions for wrongful discharge | No |

Source: WDG Database

2. According to data published in 2007, Alabama Workers' Compensation insurance rates are higher than the U.S. average. In 2007, average Workers' Compensation costs were 4.6% higher than the national average, according to the annual analysis of workers' compensation costs by Actuarial & Technical Solutions of Ronkonkoma, New York. According to Actuarial & Technical Solutions, Alabama ranked 26th among 45 states evaluated in 2007 (with 45 being the most expensive). In Table 11-34, the index indicates the percentage above or below the U.S. average for workers' compensation rates.

Table 11-34
Workers' Compensation Comparative Costs, 2007

| State | Index* | Rank** | State | Index* | Rank** | State | Index* | Rank** |
|----------------|--------|--------|----------------|--------------|-----------|-------------|--------|--------|
| Arizona | 0.489 | 1 | New Mexico | 0.852 | 16 | Illinois | 1.097 | 31 |
| Indiana | 0.501 | 2 | Colorado | 0.869 | 17 | Oklahoma | 1.102 | 32 |
| Utah | 0.547 | 3 | South Carolina | 0.886 | 18 | Tennessee | 1.114 | 33 |
| Oregon | 0.555 | 4 | Nevada | 0.893 | 19 | Missouri | 1.141 | 34 |
| Arkansas | 0.577 | 5 | Georgia | 0.898 | 20 | Florida | 1.141 | 35 |
| Virginia | 0.601 | 6 | Mississippi | 0.898 | 20 | New Jersey | 1.153 | 36 |
| Massachusetts | 0.672 | 7 | Nebraska | 0.959 | 22 | Connecticut | 1.197 | 37 |
| South Dakota | 0.742 | 8 | Rhode Island | 0.961 | 23 | Hawaii | 1.224 | 38 |
| Maryland | 0.749 | 9 | Pennsylvania | 1.010 | 24 | Texas | 1.299 | 39 |
| North Carolina | 0.754 | 10 | Minnesota | 1.015 | 25 | Montana | 1.314 | 40 |
| Idaho | 0.783 | 11 | Alabama | 1.046 | 26 | New York | 1.387 | 41 |
| Wisconsin | 0.810 | 12 | Louisiana | 1.049 | 27 | Delaware | 1.635 | 42 |
| Iowa | 0.825 | 13 | Kentucky | 1.073 | 27 | Alaska | 1.754 | 43 |
| Michigan | 0.825 | 14 | Maine | 1.080 | 29 | California | 1.759 | 44 |
| Kansas | 0.842 | 15 | New Hampshire | 1.088 | 30 | Vermont | 1.818 | 45 |

Source: Actuarial & Technical Solutions

*Index: U.S. Average=1

** Ranked from lowest to highest: Five states are self-insured and not reported in this index

3. Surveyed Madison and Morgan County employers view healthcare costs as the least satisfactory business-environment factor. As shown in Table 11-35, employers responding to the WDG surveys rated all other key business environment factors as satisfactory. Healthcare costs, which are a national issue, received a borderline satisfactory rating from surveyed employers.

Table 11-35
Employer Ratings on Key Business-Environment Factors in Madison County

| Factor | <i>5=Excellent, 1=Poor</i> | | | |
|--|----------------------------|--------|---------------|--------|
| | Madison County | | Morgan County | |
| | Average | Median | Average | Median |
| Local government regulations | 3.5 | 3.0 | 3.4 | 3.5 |
| Workers' compensation costs | 3.1 | 3.0 | 3.3 | 3.0 |
| Fairness of workers' compensation enforcement | 3.2 | 3.0 | 3.4 | 3.5 |
| Unemployment insurance costs | 3.1 | 3.0 | 3.3 | 3.0 |
| Fairness of unemployment insurance enforcement | 3.2 | 3.0 | 3.4 | 3.0 |
| State training programs | 3.0 | 3.0 | 3.1 | 3.0 |
| Health care costs | 2.5 | 3.0 | 2.5 | 2.5 |
| Overall cost of doing business | 3.3 | 3.0 | 3.1 | 3.0 |
| Local taxes (including property) | 3.3 | 3.0 | 3.3 | 3.0 |
| Local permitting | 3.2 | 3.0 | 3.2 | 3.0 |

Source: WDG Employer Survey, Fall 2006 and Spring 2008

4. The Alabama sales/use tax rate varies by use category, notably: 1.5% for manufacturing and farm machinery; 2% for automotive vehicles; 3% for food sold through vending machines; and 4% for all other items. Local governments may also impose a sales and/or use tax. The average state and local combined general tax rate is approximately 8%, and the average state and local combined manufacturing tax rate is approximately 2.75%. Examples of common items that are exempt from sales/use tax include: gasoline, pollution control equipment, wholesale sales, and sales to governmental entities.

- Table 11-36 shows the types of activities subject to state sales/use taxes, as follows:

Table 11-36
Subject to Sales/Use Tax in Alabama

| Factor | |
|--|--------------------|
| Production Machinery and Equipment | Yes |
| Non-production Machinery and Equipment | Yes |
| Pollution Control Equipment | No |
| Office FF&E | Yes |
| Telecommunications Equipment | Yes |
| Computer Hardware | Yes |
| Computer Software – Customized | Yes |
| Computer Software – Standard | Yes |
| Raw Materials | Yes |
| Electric Power | Yes-AL utility tax |
| Natural Gas | Yes-AL utility tax |
| Water | Yes-AL utility tax |
| Sewer | Yes |
| Hazardous Waste Disposal | Yes |
| Telephone – Local | Yes |
| Telephone – Intra-State | Yes |
| Telephone – Inter-State | Yes |
| Telephone – 1-800 – Intra-State | Yes |
| Telephone – 1-800 – Inter-State | No |
| Telephone – WATS – Intra-State | Yes |
| Telephone – WATS – Inter-State | No |

TABLE CONTINUES NEXT PAGE

Table 11-36, continued
Subject to Sales/Use Tax in Alabama

| Factor | |
|---|-----|
| Professional Services | No |
| Building Construction Materials, Office | Yes |
| Building Construction Materials, Industrial | Yes |

Source: WDG proprietary data

5. Alabama taxes most categories of personal property tax. As shown in Table 11-37, nearly all categories of personal property are subject to taxation at state and local levels. Pollution control equipment and inventory—including raw materials, work in progress, and finished goods—are exempt from property tax. Alabama also has a Freeport Exemption if goods are moving out of or through the state.
 - Real and personal business property is taxed on 20% of its fair market value. The state constitution limits the state millage rate on both real and personal property to 6.5 mills. Counties and cities may levy millage rates in addition to the state’s 6.5 mills.

Table 11-37
Subject to State Personal Property Tax in Alabama

| Factor | |
|--|---------------------------------|
| Production Machinery and Equipment | Yes |
| Non-production Machinery and Equipment | Yes |
| Pollution Control Equipment | No |
| Computer Hardware | Yes |
| Computer Software – Customized | Yes |
| Computer Software – Standard | Yes |
| Telecommunications Equipment | Yes |
| Office FF&E | Yes |
| Office Supplies | Yes |
| Inventory-Raw Materials | No |
| Inventory-Work in Progress | No |
| Inventory-Finished Goods | No |
| Freeport Exemption—Type | Exempt if moving out or through |

Source: WDG proprietary data

QUALITY OF LIFE

1. Madison and Morgan County employers report a very good quality of life. As shown in Table 11-38, those quality-of-life factors receiving the highest scores include both private and public education (K-12), availability of affordable homes, availability of homes for transferred or relocating personnel, healthcare services, and safety from crime.
 - The quality-of-life factors receiving the lowest ratings are availability of childcare, traffic/road congestion, and personal income tax. However, these factors still received satisfactory-to-good ratings.

Table 11-38
Quality-of-Life Ratings

| Category | 5=Excellent; 1=Poor | | | |
|---|---------------------|--------------|---------------|--------------|
| | Madison County | | Morgan County | |
| | Average Score | Median Score | Average Score | Median Score |
| Private education (K-12) | 4.0 | 4.0 | 4.0 | 4.0 |
| Availability of homes for transferred or relocating personnel | 4.0 | 4.0 | 3.9 | 4.0 |
| Availability of affordable homes | 4.0 | 4.0 | 3.9 | 4.0 |
| Quality of Health care services | 3.9 | 4.0 | 3.6 | 4.0 |
| Safety from crime | 3.9 | 4.0 | 3.6 | 4.0 |
| Public education (K-12) | 3.7 | 4.0 | 3.6 | 4.0 |
| Availability of childcare | 3.5 | 3.0 | 3.5 | 4.0 |
| Traffic/road congestion | 3.2 | 3.0 | 3.2 | 3.0 |

Source: WDG Employer Surveys, Fall 2006 and Spring 2008,

ACCESSIBILITY

As noted in Chapter Seven of the TVRGCP, adequacy of transportation—particularly road safety and ease of travel—is one of the most common elements in the evaluation of a location’s business-operating environment. Highway accessibility consistently ranks in the top three factors of *Area Development* magazine’s annual survey of business executives on various factors important in selecting or remaining in a location. This section contains the summary of findings from that chapter because of the direct relationship with economic development in the PSA.

A section of this overall study was dedicated to the development of a long-range vision (see Chapter Two of the TVRGCP) of what the residents of the region would like it to look and feel like in the future. One of the top five components of that vision, coming from numerous individuals in multiple group meetings, is: “The regional highway system is improved to meet the needs of increased intra-regional traffic flow as well as connectivity with the rest of the Southeast and nation.” Clearly, road transportation is on the minds of the residents of the region.

Transportation needs for the PSA are well planned by a system of integrated Metropolitan Planning Organizations (MPOs) and allied agencies. Adequate resources must be provided in the future to support the continuation of necessary planning. This planning team has been—and will continue to be—grappling with two interrelated transportation issues.

Normal growth trends in the PSA, which have been substantial and are expected to continue, create a continuing need for transportation improvements – in particular, new or upgraded roads.

On top of this “natural growth”, the influx of people to the region resulting from BRAC will significantly exacerbate road congestion and require roadway improvements sooner than would otherwise be needed.

Eighty-nine roadway-improvement projects related to BRAC growth have been identified in the PSA. While most of these projects are not needed solely because of BRAC-related growth in the region, this growth is causing either a need to increase the scope of many projects or to undertake them sooner than they would otherwise be needed. These 89 projects have a combined total cost of more than \$3.5 billion, of which more than \$1 billion is

attributable to BRAC-related growth. A very small portion of these projects is already funded, leaving a gap of more than \$3.3 billion for completely or partially unfunded projects. Of this gap, nearly \$954 million is a result of BRAC-related growth.

The single largest obstacle to implementing necessary roadway improvements is funding. The region must be prepared to fund a significant portion of necessary improvements while continuing to aggressively pursue funding from all appropriate departments of the State of Alabama and U.S. government and special appropriations from the Alabama Legislature and U.S. Congress.

However, it is impossible for the counties and municipalities in the region to pay for these improvements in the timeframe in which they are necessary. Substantial amounts of federal and state funding are necessary. Regional officials must continue cooperative and coordinated efforts to secure federal and state funding as rapidly as possible.

Funding will require use of less-traditional methods such as the creation of toll-roads or other user fees (e.g., Vehicle-Miles-Traveled Fees), user-benefit fees such as impact fees or special tax districts, use of Special Purpose Local Option Taxes (SPLOT), private ownership and development of new roads, use of Federal Credit Assistance, and similar tools.

Selection of these alternative funding methods must be based on careful study to identify both positive and negative factors and assess the true feasibility and revenue potential of each approach considered. This will likely require the hiring of specialty consultants with expertise in such areas. The MPOs serving the area should consider the establishment of a shared office similar to the Oregon Department of Transportation's Office of Innovative Partnerships and Alternative Funding to oversee this topic. Additional research is necessary to identify a recommended structure and budget for this office.

In the past, public transportation in the region has been a relatively low priority, due in large measure to low demand except by special groups with limited mobility. Increased traffic congestion in the region, coupled with rising motor fuel costs, should cause an increase in interest in the use of public transportation, necessitating an increase in services. This, in turn, will require more funding for public transportation equipment and services.

Portions of the east/west Norfolk-Southern rail line between Huntsville/Decatur and Memphis are already at or above capacity, and without improvements to this corridor, the entire Norfolk-Southern corridor from Memphis to Chattanooga will be above capacity by 2035. Without investment in improving east/west freight service, the PSA – and possibly Redstone Arsenal – will see a continuing decline in rail-freight-service quality as the rail corridor becomes more congested and freight shipment takes longer. Rather than encouraging the use of rail freight as an alternative to highway shipment, this situation may encourage the use of roads for more freight shipment, leading to increased congestion on highways in the PSA.

Huntsville International Airport is a high-quality small airport with significant growth potential. It is well-positioned to meet the air-travel needs of increased personnel working at the Arsenal and the air freight needs of companies in the PSA and the surrounding area.

As this report is being written, the nation is in the midst of a significant economic downturn with an accompanying credit crisis. The inability of communities to finance infrastructure construction projects at reasonable costs – if at all – has become a national problem. Finding

effective means of financing the transportation improvement projects caused by or related to BRAC-related growth is a primary challenge for the region.

UTILITIES

Chapter Six of the TVRGCP contains a full assessment of the PSA's public utilities and infrastructure. This section contains the summary of findings from that chapter because of the direct relationship with economic development in the PSA.

The utility needs of the PSA, which includes Limestone, Madison, and Morgan Counties in Alabama, are met by a network of county, municipal, and private utility agencies and the Tennessee Valley Authority (TVA), a federal corporation. At the time this analysis was prepared, utility services in the PSA were evaluated as follows:

- Available water and sewer capacity is adequate to accommodate short-term growth in all areas, but significant capacity increases are necessary to keep pace with anticipated growth, particularly in some areas where BRAC-related growth will occur.
- TVA is currently a power exporter from northern Alabama because of a surplus of power. This will not impact TVA's ability to meet future electric needs in the PSA.
- Natural gas capacity appears adequate to support anticipated growth.
- Telecommunications services are strong.

Because of the ongoing growth trends in the PSA, these utility providers are continually planning for extended or improved utility services to meet the needs of a growing population and economy. Therefore, the addition of 4,700 new jobs at the Arsenal and the BRAC buildup to the area will occur within the context of larger and longer-term growth trends. From the perspective of utility planning, the inclusion of additional population and economic growth resulting from BRAC is more of an adjustment in projections rather than a sudden challenge to accommodate major unanticipated growth.

The BRAC-related growth will result in funding needs for utility expansion (both capacity and distribution) occurring more rapidly than planned before the BRAC announcement, and at a higher cost. Planning to meet utility needs is always less expensive than paying for the needed improvements. Of the total \$185,490,000 in utility needs identified as part of this study, \$56,937,200 is directly attributable to BRAC. The vast majority of both the total utility needs and the portion attributable to BRAC are currently unfunded.

ECONOMIC CLUSTERS

This section identifies the economic base and major employment clusters in the three-county PSA. In this section the dynamics and composition of each cluster are analyzed, the influence that technical talent has on the health and vitality of these clusters is discussed, and a list of “strategic” occupations is presented. These strategic occupations are concentrated in the PSA’s economy, and therefore, are of great importance for industry recruitment and development.

Definition

An industry cluster is a group of industries that are tied to one another through such relationships as vendors, suppliers, users/industrial customers, and a dependence on similar local support functions (e.g., marketing, financing, trade shows, business relationships, training).

Clusters offer many strategic benefits to their members, including:

- An enhanced, trained, skilled and available labor pool
- An improved access to venture capital
- Access to educational training facilities and resources
- Proximity to entrepreneurs and innovation activity
- A supportive business climate.

Clusters in the Primary Study Area

There are 11 clusters in the PSA that drive 90% of the PSA economy, based upon the latest data available. These clusters are identified in Table 11-39. Every job in each of these clusters, on average, supports 2.43 jobs in the PSA economy. Therefore, about 40% of the jobs in the PSA are within or related to these clusters. A summary profile of each cluster and of the non-clustered economic base of the PSA is shown in Table 11-39, and a more detailed profile of each is provided in Exhibits 11-F-1 through 11-F-12 in the Appendix.

Table 11-39

| Base | Employment | | % of Economic Base | | Emp. Growth 2000-2006 (%) | Location Quotients | |
|----------------------------------|------------|--------|--------------------|-------|------------------------------|--------------------|------|
| | 2006 | 2000 | 2006 | 2000 | | 2006 | 2000 |
| Cluster Base | | | | | | | |
| Professional Services | 27,015 | 18,202 | 30.6% | 22.3% | 48% | 2.92 | 2.5 |
| Electronics | 12,139 | 9,938 | 13.7% | 12.2% | 22% | 4.34 | 3.1 |
| Federal Government | 11,768 | 11,844 | 13.3% | 14.5% | -1% | 12.1 | 11.9 |
| Transportation Equipment | 10,451 | 10,484 | 11.8% | 12.8% | 0% | 4.46 | 4.5 |
| Metal Fabrication | 4,256 | 5,840 | 4.8% | 7.2% | -27% | 1.41 | 1.9 |
| Machinery | 3,198 | 4,543 | 3.6% | 5.6% | -30% | 1.58 | 2.0 |
| Food Products | 2,991 | 2,835 | 3.4% | 3.5% | 6% | 1.80 | 1.9 |
| Polymers | 2,775 | 2,674 | 3.1% | 3.3% | 4% | 1.90 | 7.8 |
| Freight | 1,926 | 1,368 | 2.2% | 1.7% | 41% | 0.74 | 0.6 |
| Chemicals | 1,496 | 2,618 | 1.7% | 3.2% | -43% | 0.93 | 1.9 |
| Wood Products | 1,138 | 2,285 | 1.3% | 2.8% | -50% | 0.59 | 1.0 |
| Non-Cluster Economic Base | 9,173 | 8,965 | 10.4% | 11.0% | 2% | 1.45 | 1.46 |

The relative change in cluster concentrations over time is an indicator of development strengths and weaknesses. Three of the 11 clusters (professional services, electronics and

freight) have grown rapidly over the last six years. Five have declined in employment and three have remained static or have grown modestly. The location quotients (an employment concentration ratio of national cluster employment in the PSA) of three clusters have grown significantly since 2000. These top gainers are the Electronics, Freight, and Professional Services.

Meanwhile, seven of the clusters are less concentrated in the PSA in 2006 than in 2000, indicating an erosion of comparative advantage for these industries. The clusters with the greatest declines are chemicals, metal fabrication, wood products, machinery and polymers (see Table 11-39). Eight of the 11 basic industries not in a cluster also have declined during the six-year period as shown in Exhibit 11-F-12 in the Appendix. Additional detail about the composition and trends in each cluster are discussed in their respective sections that follow. The text description is presented from largest to smallest in terms of overall employment.

Professional Services

The PSA professional services cluster consists of 39 companies in six industries, with an employment of 27,000 workers (see Exhibit 11-F-1 in the Appendix). Principal output of the cluster consists of software, engineering-design and management consulting. This cluster involves many of the Redstone Arsenal and NASA contractors. (Employees of these facilities are considered federal government employees and are not counted in this cluster.)

This cluster has grown dramatically in employment (48%) and in concentration since 2000 within the PSA. All but one of the cluster industries is witnessing growth, and some are seeing dramatic employment gains. With BRAC expansions, employment in this cluster is likely to continue to grow rapidly over the next decade. The Professional Services cluster now generates more than 25% of PSA jobs.

Electronics

This cluster contains 37 companies in eight industries employing 12,000 workers. The electronics cluster includes corporate headquarters of Flextronics, a Huntsville founded company that is one of the world's leading contract electronics manufacturers. Much of the employment in this cluster stems from computer peripherals, semiconductors and communications equipment.

The PSA electronics cluster, unlike its national counterpart, has witnessed dramatic growth in employment and concentration since 2000 (see Exhibit 11-F-2 in the Appendix). Employment has grown by 22% since 2000 and the cluster's concentration has strengthened considerably, indicating the PSA has significant comparative advantages for electronics production.

Federal Government

This cluster involves federal civilian operations at Redstone Arsenal and Marshall Space Flight Center. Employment is divided into two North American Industrial Classification System (NAICS) industries: space research and technology, and national security and international affairs (see Exhibit 11-F-3 in the Appendix). PSA employment has been stable

since 2000 as has its share of the national employment. About an eighth of the economic base of the PSA is attributable to economic activity in this cluster.

Transportation Equipment

This cluster consists of eighteen companies in three industries, employing 10,500 workers (see Exhibit 11-F-4 in the Appendix). The cluster has two distinct main industries: aerospace products and motor vehicle products, which consists of motor vehicle body and trailer manufacturing and motor vehicle parts manufacturing. The transportation cluster as a whole has been stable in terms of employment and concentration in the PSA since 2000. Downsizings and off-shoring in auto parts manufacturing has been offset by the location of new transplant operations, such as Toyota, however, there was a loss of 2,100 jobs in motor vehicle parts manufacturing.

Metal Fabrication

Metalworking is a classic cluster in terms of its composition. The cluster consists of 10 industries with a series of vertical producers, from raw metal through finished products (see Exhibit 11-F-5 in the Appendix). The common ingredient that drives the health of this cluster is a concentration of metalworking skills in the PSA, river transportation for materials assembly and favorable outbound logistics because of geographic proximity to customers. A significant number of buyer-supplier relationships also exist in metalworking. Total employment in this cluster was 4,200 in 2006, but declined since 2000 by 1,600 (27%), and the industry's employment concentration has declined modestly as well.

Machinery

The machinery cluster consists of 40 companies producing commercial machinery, specialized industrial machinery, HVAC equipment and household appliances (see Exhibit 11-F-6 in the Appendix). The machinery cluster involves a collection of manufacturing skills in metalworking, electrical and mechanical assembly, motors and plastics. The cluster employs about 3,000 workers in the PSA, which has declined significantly since 2000. The PSA employment decline was by 30%, or 1,345 employees). Local declines reflect national trends in globalization of production and increasing productivity in this cluster. The PSA's comparative strength, as measured by the location quotient, has not changed significantly since 2000.

Food Products

The Food Products cluster consists of 15 companies producing a series of food products for human and animal consumption (see Exhibit 11-F-7 in the Appendix). The cluster employs about 3,000 workers in the PSA, a slight gain of 156 employees, or 6% since 2000. The PSA's comparative advantage, as measured by the location quotient in the industry, has not changed significantly since 2000.

Polymers

The PSA plastics and polymer cluster includes 23 companies with 2,800 employees (see Exhibit 11-F-8 in the Appendix). The largest two component of the PSA cluster consists of

plastics products manufacturing and resin, rubber and artificial fibers manufacturing. A significant share of the cluster is involved with the production of plastics products through injection molding or extruding operations. The overall cluster has gained somewhat in employment (101 employees or 4 %), but it has declined significantly in terms of its employee concentration.

Freight

About 2,000 PSA jobs are involved with freight transportation (see Exhibit 11-F-9 in the Appendix). Components of this cluster include trucking, bus transportation and support for water transportation (stevedoring and freight handling at terminals on the Tennessee River). The PSA's employment grew briskly between 2000 and 2006 (41%, or 558 employees), while the PSA's concentration gained moderately, suggesting a modestly improving competitive advantage for this cluster.

Chemicals

The PSA produces a range of basic chemicals and pharmaceuticals. Thirty-two companies in the three counties employ about 1,500 workers in this cluster (see Exhibit 11-F-10 in the Appendix). Some of the chemical operations are tied to water sites on the Tennessee River. TVA power rates have historically pulled chemical processing to the PSA. The industry continues as a major employer although overall employment and industry concentration have dropped dramatically since 2000. The total number of cluster employees declined by 1,122 between 2000 and 2006, for a 43% loss.

Wood Products

The Wood Products cluster is a natural resource based cluster. The cluster is driven by the health of the raw materials industry. The PSA wood products cluster has declined significantly since 2000 and now it is far less concentrated than in the national labor market (see Exhibit 11-F-11 in the Appendix). The cluster in the PSA consists of four industries. The cluster is not likely to expand significantly in the future.

TARGET INDUSTRIES

The Target Industry Identification Process

The Consultant Team used two methods to identify six target industries for the PSA. One method used industry growth patterns and dynamics nationally, regionally, and locally. The Consultant Team used a sophisticated, multiple-step process to determine target industries for the PSA using the following steps:

1. Ranked nearly 800 four-digit NAICS industries according to rate of change in employment and number of establishments using the time period from 2003 to 2006 (from both D&B and U.S. Bureau of Labor Statistics databases).
2. Eliminated those industries that have been declining or static in the three-state region (Alabama, Georgia, and Tennessee) since 2003.

3. Narrowed the list of possibilities down to 28 industries for detailed analysis.
4. Eliminated industries that lacked sales and export growth in 2008 or that saw employment declines or plant closures in 2007.
5. Eliminated industries whose prevailing wages were below the average for the PSA and its counties or those that were marginally better than the prevailing wage in the PSA or its counties.

In the second approach, the Consultant Team identified activities that are best suited to the PSA's unique mix of strengths and challenges that were identified in this and the other chapters of this report, including the cluster analysis. These activities particularly:

- Are built upon the PSA's strong technology base (particularly in engineering and IT) and the educational depth of the area's residents;
- Offer employment opportunities for the spouses of the military personnel and contractor employees moving to the area because of the BRAC expansion at Redstone Arsenal, based upon the skill sets observed among relocated spouses in other BRAC communities and in the PSA.
- Offer economic diversification to the PSA;
- Offer the opportunity to develop commercial R&D activity;
- Will further enhance the area's already strong technology core, helping to propel the area into the first tier of the nation's technology centers; and
- Offer occupational diversification and mid to high wages.

The six target industries identified by the Consultant Team are:

1. Aerospace/Defense
2. Distribution and Logistics
3. Life Sciences – Biotechnology and Genetics; Pharmaceutical Manufacturing; and Healthcare
4. Administrative Office Support Services, including Back Offices
 - Administrative Service Centers
 - Teleservice Centers
5. Scientific and Technical Consulting Services
6. Advanced Manufacturing
 - Turbine and Power Transmission Equipment
 - Construction Machinery
 - Surgical Appliance and Supplies Manufacturing
 - Metal Tank Manufacturing

Aerospace/Defense

Definition

The *aerospace/defense* industry consists of several component activities, including manufacturers of aircraft and aircraft parts, weapons and intelligence systems, tactical and other communication systems, satellites, and launch vehicles. Products are used for military, scientific, and commercial purposes. This industry is capital-intensive, and designing complicated new products and systems requires long lead times. Production requires a high degree of coordination of capital, manufacturing equipment, skilled personnel, materials, and parts. Much of the pre-assembly work is provided by subcontractors.

Companies in the aerospace/defense industry mostly sell their products to the U.S. government, although private-sector markets do exist. Demand is volatile for manufacturers of military aircraft, weapons, and intelligence systems, due to complexities in long-range national defense and budget formulation, the political climate of the U.S. Congress, and a highly competitive international market.

The PSA, particularly in Huntsville and Madison County, has a large and concentrated aerospace/defense cluster, which consists of twelve separate industries. The area has been a major international center for space vehicles since the end of World War II, when the Redstone Arsenal assumed a rocketry mission. Over 31,000 workers in 331 establishments in the region are connected to this cluster. The area's aerospace cluster has grown significantly in the number of establishments since 1993, but employment has been static, reflecting trends in the national aerospace market. Huntsville has a concentration of aerospace employment that is 15 times the national norm.

The aerospace/defense industry includes twelve industry subsectors, which are aggregated into three groups: aerospace products and parts manufacturing, other aerospace-related parts and equipment manufacturing, and aerospace/defense-related services and support activities. Definitions of and activities within these subsectors are detailed in Table 11-40.

Table 11-40
Aerospace/Defense: NAICS Codes

| Description | NAICS Code |
|---|------------|
| <i>Aerospace Products and Parts Manufacturing</i> | |
| Guided Missile and Space Vehicle Manufacturing | 336414 |
| Radio and Television Broadcast and Wireless Communications Equipment - cross referenced under NAICS 336414 | 334220 |
| Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing | 336415 |
| Other Guided Missile Space Vehicle Parts Auxiliary Equipment Manufacturing | 336419 |
| <i>Other Aerospace-Related Parts and Equipment Manufacturing</i> | |
| Other Motor Vehicle Electrical and Electronic Equipment Manufacturing | 336322 |
| Fluid Power Valve and Hose Fitting Manufacturing | 332912 |
| Glass Product Manufacturing Made of Purchased Glass | 327215 |
| <i>Aerospace/Defense-Related Services and Support</i> | |
| Research and Development in the Physical, Engineering and Life Sciences | 541710 |
| Space Research and Technology | 927110 |
| Computer Facilities Management Services | 541513 |
| Engineering Services | 541330 |
| National Security | 928110 |

Rationale for Selection

- Aerospace/Defense is the largest and most concentrated industry cluster in the Primary Study Area. It includes the professional services, electronics, federal government and transportation sub-clusters identified in the clusters section of this chapter.
- Huntsville has a strong history and national recognition in this industry, which must be maintained and enhanced.
- More than 44,000 workers are directly involved in the local aerospace and defense industry. Over 32,000 people work at the Redstone Arsenal. Additionally, nearly every major U.S. aerospace corporation has a presence in the Huntsville area, which amounts to 250 companies that employ more than 27,000 workers.
- The local employment in Aerospace/Defense is 15 times the national norm.
- This is a high-wage cluster, averaging around \$75,000/year per employee in the Huntsville.
- Redstone Arsenal and Marshall Space Flight Center comprise the core of this industry, and Redstone will be growing from the November 2005 BRAC expansion decision.
- The target employs significant numbers of scientists and engineers with advanced degrees. The concentrations of engineering, computer and mathematical, and life, physical and social science occupations exceed state and national concentrations.
- The target supports a very strong corporate presence in Madison County. Cummings Research Park is the second-largest science and technology park in the U.S., and tenants include Fortune 500 companies; local, national, and international high-tech enterprises; U.S. aerospace and defense agencies; a business-technology incubator; and higher-educational institutions.
- The PSA has a rich base of post-secondary educational institutions, including UAHuntsville, Alabama A&M University, Calhoun Community College, J. F. Drake, State Technical College, and Oakwood College.
- The PSA offers a wide variety of academic research facilities supporting the aerospace/defense industry in the region, including:
 - University of Alabama at Huntsville:
 - Aerophysics Research Center
 - UAHuntsville Center for Applied Optics
 - UAHuntsville Center for Microgravity and Materials Research
 - Center for Space Plasma and Aeronomic Research
 - Center for Management & Economic Research
 - Center for the Management of Science and Technology
 - Earth System Science Center
 - Information Technology and Systems Center
 - Laboratory for Materials and Surface Sciences
 - Laboratory for Structural Biology
 - Nano and Micro Devices Center

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- Propulsion Research Center
 - Research Institute
 - Rotorcraft Systems Engineering and Simulation Center
 - Alabama A&M University
 - Alabama A&M University Research Institute (AAMURI)
 - Georgia Tech Research Institute (GTRI) at Redstone
 - Huntsville Research Laboratory (HRL)
 - Research facilities are provided by the private sector, including:
 - Hudson-Alpha Institute for Biotechnology
 - Alion Science and Technology Corporation
 - The federal government maintains research facilities at the Redstone Arsenal, including:
 - Aviation and Missile Research, Development, and Engineering Center (AMRDEC)
 - Ground-Based Midcourse Defense Joint Project Office (GNDJPO)
 - Marshall Space Flight Center (MSFC)
 - Program Executive Office-Missiles and Space
 - Program Executive Office-Aviation
 - Redstone Technical Test Center (RTTC)
 - U.S. Army Aviation and Missile Command (AMCOM)
 - U.S. Army Space and Missile Defense Command (SMDC)
 - DIA Missile and Space Intelligence Center
 - Southwest Research Institute (SWRI)
 - The federal government supports research facilities within Cummings Research Park, including:
 - Alabama Supercomputer Center
 - MIT Lincoln Laboratory (Huntsville Office)
 - National Space Science and Research Center
 - University Space Research Association
 - The PSA has a significant number of start-up companies in the technology economy involved with communications equipment, computers and peripherals, and instruments, that are most likely to expand based upon the issuance of new patents. Some of these activities will support the aerospace/defense industry target.
 - The PSA has technology connections to an array of companies in about a third of the nation's cities. Huntsville should interest a wide variety of companies as a location for contract research or corporate labs.
 - The PSA has excellent transportation infrastructure, including interstate highway access, and Class A rail, air, and barge service. Rail cargo infrastructure is substantial.
 - The existing Huntsville/Madison County Airport Authority operates the Huntsville/Madison County International Airport, Foreign Trade Zone No. 83, and the Huntsville International Intermodal Center. The International Airport has room for substantial expansion.

- The area has U.S. Customs protection 24 hours a day.
- The Huntsville Regional Economic Growth Initiative (HREGI), under the stewardship of the Chamber of Commerce of Huntsville/Madison County, is committed to positioning Huntsville as a center for technology in the South, and one of the leading economic growth centers in the Southeast. Expanding the defense and space industry is one of the Chamber’s key investment goals.

Distribution and Logistics

Definition

The *distribution and logistics* industry is large and encompasses activities in transporting freight (via truck, rail, air, and water), in storing freight, and in organizing, controlling, and monitoring the movement of freight. Firms in the trucking and warehousing industry provide a link between manufacturers and consumers. Businesses (and occasionally individuals) contract with distribution and logistics companies to pick up, store, and deliver a variety of goods. Goods are carried across the U.S. and the world using one or a combination of transportation types. Intermodal transportation encompasses any mixture of truck, train, plane, or ship; whatever methods are necessary to deliver the product quickly, safely, and/or at the lowest possible cost.

This target is divided into five general industry subsectors, including air transportation, rail transportation, truck transportation, warehousing, and transportation support activities. The distribution and logistics subsectors are shown in Table 11-41, with the definitions of and activities within these subsectors detailed.

Table 11-41
Distribution and Logistics: NAICS Codes

| Description | NAICS Code |
|---|------------|
| <i>Air Transportation – Freight</i> | |
| Scheduled Freight Air Transportation | 481112 |
| Nonscheduled Chartered Freight Air Transportation | 481212 |
| <i>Rail Transportation – Freight</i> | |
| Line-Haul Railroads | 482111 |
| Short Line Railroads | 482112 |
| <i>Truck Transportation</i> | |
| General Freight Trucking, Local | 484110 |
| General Freight Trucking, Long-Distance, Truckload | 484121 |
| General Freight Trucking, Long-Distance, Less-Than-Truckload | 484122 |
| Specialized Freight (Except Used Goods) Trucking, Local | 484220 |
| Specialized Freight (Except Used Goods) Trucking, Long Distance | 484230 |
| <i>Warehousing</i> | |
| General Warehousing and Storage | 493110 |
| Refrigerated Warehousing and Storage | 493120 |
| Other Warehousing and Storage | 493190 |
| Freight Transportation Arrangement | 488510 |
| Process, Physical Distribution, and Logistics Consulting Services | 541614 |

Rationale for Selection

- This target includes the freight cluster already existing in the region.
- The presence of the International Intermodal Center in Huntsville is a key asset. The facility is located adjacent to the Huntsville International Airport and functions as an inland port of entry for shipping containers arriving by rail and international air cargo

flights. The facility serves as a key logistics hub for receiving, transferring, storing, and distributing international and domestic freight by rail, highways, and air. Huntsville has a solid foundation in the distribution and logistics industry, and there is good potential for expansion and development.

- The Tennessee River passes through the PSA, providing a waterborne shipping route for commodities moving between the Tennessee Tombigbee Waterway in Mississippi and eastern Tennessee. The largest northern Alabama ports on the Tennessee River are Florence, Decatur, and Guntersville. Manufacturers are presently able to ship large products by barge to domestic and international locations. The Year 2030 Transportation Plan indicates that studies were conducted in 2000 to identify future sites for Tennessee River port facilities within the Huntsville area.
- Trucking, air, and rail service providers are abundant. The region contains nearly 100 trucking companies (including motor freight, heavy hauling, brokers, and dump trucks), six international air cargo carriers, nine freight-forwarding companies, and six customs brokers.
- The PSA has excellent transportation infrastructure, including interstate highway access, and Class A rail, air, and barge service. Rail cargo infrastructure is substantial.
- The existing Huntsville/Madison County Airport Authority operates the Huntsville International Airport, Foreign Trade Zone No. 83, and the Huntsville International Intermodal Center.
- Alabama A&M University offers bachelor's degree programs in logistics and transportation safety. Additionally, the University of Alabama in Huntsville is currently developing programs in logistics research. Science Applications International Corporation (SAIC) has helped UAHuntsville establish an Executive Fellow position in logistics research and management. In August 2006, the U.S. Senate Appropriations Committee announced that the Department of Transportation's Federal Transit Administration will release \$482,130 to UAHuntsville for Transportation Infrastructure and Logistics research and development.
- The Huntsville International Airport has property available for expansion, and the property could be used in the future as shipping demands potentially increase.
- The area has U.S. Customs and border protection 24 hours a day.
- Redstone Arsenal's Logistics Support Activity (LOGSA) adds to the area's distribution and logistics cluster.
- Alabama exempts inventory (including raw materials, work in progress, and finished goods) from property tax. Alabama also has a Freeport Exemption if goods are moving out or through the state.

Life Sciences: Biotechnology and Genetics; Pharmaceutical Manufacturing; and Healthcare

Definition

Life Sciences refers to the scientific study of the living world as a whole. It is a synthesis of several traditional scientific disciplines, including biology, zoology, and botany, and newer, more specialized areas of study such as biophysics, sociobiology, biotechnology, biopharmaceuticals, tissue engineering, biostatistics, and bioinformatics. Life sciences include any study or research discipline that contributes to the understanding of life processes.

The life sciences industry sector encompasses companies in the fields of biotechnology, pharmaceuticals, biomedical technologies, life systems technologies, nutraceuticals, cosmeceuticals, food processing, environmental, biomedical devices, and organizations and institutions that devote the majority of their efforts to the various stages of research, development, technology transfer, and commercialization.

This target is divided into three recommended general industry subsectors for the PSA targeting efforts: biotechnology and genetics, pharmaceutical manufacturing, and healthcare, as shown in Tables 11-42 and 11-43.

**Table 11-42
Life Sciences: NAICS Codes**

| Description | NAICS Code |
|------------------------------|--------------------------------|
| Biotechnology and genetics | 541710, 541711 |
| Pharmaceutical manufacturing | 325411, 325412, 325413, 325414 |
| Healthcare | See Table 11-43 |

**Table 11-43
Healthcare: NAICS Codes**

| Description | NAICS Code |
|---|------------|
| Offices of Physicians (except Mental Health Specialists) | 621111 |
| Offices of Dentists | 621210 |
| Offices of Chiropractors | 621310 |
| Offices of Optometrists | 621320 |
| Offices of Mental Health Practitioners (except Physicians) | 621330 |
| Offices of Physical, Occupational and Speech Therapists, and Audiologists | 621340 |
| Offices of Podiatrists | 621391 |
| Offices of All Other Miscellaneous Health Practitioners | 621399 |
| Outpatient Mental Health and Substance Abuse Centers | 621420 |
| HMO Medical Centers | 621491 |
| Kidney Dialysis Centers | 621492 |
| Freestanding Ambulatory Surgical and Emergency Centers | 621493 |
| All Other Outpatient Care Centers | 621498 |
| Medical Laboratories | 621511 |
| Diagnostic Imaging Centers | 621512 |
| Home Healthcare Services | 621610 |
| Ambulance Services | 621910 |
| Blood and Organ Banks | 621991 |
| All Other Miscellaneous Ambulatory Healthcare Services | 621999 |
| General Medical and Surgical Hospitals | 622110 |
| Psychiatric and Substance Abuse Hospitals | 622210 |
| Specialty (except Psychiatric and Substance Abuse) Hospitals | 622310 |
| Nursing Care Facilities | 623110 |
| Residential Mental Retardation Facilities | 623210 |
| Residential Mental Health and Substance Abuse Facilities | 623220 |
| Continuing Care Retirement Communities | 623311 |
| Homes for the Elderly | 623312 |
| Other Residential Care Facilities | 623990 |

Rationale for Selection

- This target includes some elements of the professional services cluster identified in the economic cluster section of this chapter.
- This target would utilize the skill sets of many relocated spouses with professional, and technical degrees, experience or skills.
- According to the Biotechnology Association of Alabama, in 2006 Alabama had a total of 90 companies in bio-related industries. These companies employed approximately 2,400 employees.
- According to the North Alabama Industrial Association, there are already 12 or more firms doing life-science work in north Alabama. Combined, they employ more than 1,000 people in the fields of pharmaceutical manufacturing, biotechnology research, diagnostics, and medical device production. The Partnership for Biotechnology Research is a non-profit industry group connecting the local biotech community.
- Alabama's bio-related companies had a total of \$622 million in sales, reports the Biotechnology Association of Alabama.
- Alabama's research institutions received a 24% increase in National Institute of Health funding between 2002 and 2004.
- In 2003, Alabama universities spent 70% of R&D expenditures, more than \$394 million, for life-sciences research.
- There is available venture capital. The Southeastern Technology Fund founded in Huntsville totals \$115 million in capital, and seven other venture capital firms operate in Alabama, providing more than \$400 million for biotech investment.
- The PSA has a rich base of post-secondary educational institutions, including University of Alabama-Huntsville (UAHuntsville), Alabama A&M University, J. F. Drake State Technical College, Calhoun Community College, Athens State University, and Oakwood College.
- Research and development taking place at UAHuntsville is helping to drive biotechnology's growth in the community. The Laboratory for Structural Biology is already supplementing a developing infrastructure. The lab is dedicated to x-ray structure determination of biomedically important proteins, and structure-based drug design and drug discovery. UAHuntsville also offers resources to companies through its association with the Alabama Structural Biology Consortium. Additionally, lab space is available at BizTech, a technology-oriented business incubator.
- The target employs significant numbers of scientists and engineers with advanced degrees. The metro area concentrations of engineering, computer and mathematical, and life, physical, and social science occupations exceed state and national concentrations.
- Biotechnology and genetics
 - The Hudson-Alpha Institute (HAI) offers a critical advantage for life-science companies interested in locating in north Alabama, and is the driving factor in the selection of this target. The mission of the Institute is for researchers to collaborate with local companies to speed the delivery of new, life-altering

medicines and technologies to market through research and commercialization of research in biotechnology. HAI attracted eight established biotech companies on the CRP Biotech campus; it will be the nation's second-largest biotechnology institute, located in the second-largest biotechnology campus in the nation. Construction is to be completed in 2007. Announced initial employment is 500 to 600, and it is projected to employ 1,600 within 10 years. Private investment contributed \$80 million to the Hudson-Alpha Institute.

- Pharmaceutical manufacturing
 - This is an emerging cluster in the PSA, particularly in Madison County.
 - Concentration of industry employment is now double the national norm.
 - There are four companies and 520 workers in the area.
 - Pharmaceuticals offer a high-wage-growth opportunity.
- Healthcare
 - Huntsville is a regional medical center, employing 5,500 workers in about 500 companies.
 - The healthcare sector has gained market share in the area since 1993, and now is more concentrated than its national counterpart.
- The PSA has excellent transportation infrastructure, including interstate highway access, and Class A rail, air, and barge service. Rail cargo infrastructure is substantial.

Administrative Office Support Services/Back Offices

Definition

Administrative Office Support operations are back-office facilities. There are two standard types of functions: administrative service centers and inbound teleservice centers designed to provide ready access to customer support for products and services or support for company operations. This sector is diverse, but the facilities within this target share the common element of being white-collar operations with well-educated employees. The sector's workforce is typically dominated by individuals with a two- or four-year college degree and high levels of administrative, clerical, accounting, professional, or technical skills. The types of industries that use those centers include retail, hospitality, financial services and insurance, manufacturing, transportation, software, utilities, and business sectors.

In general, the back-office sector cannot be classified within a single NAICS code because it cuts across many classifications. Much of the recent activity in back offices has occurred in NAICS 56111, office administrative functions. Back offices generated nearly 23,000 new jobs nationally in 2007 versus an overall decline in manufacturing employment.

Forecasts suggest that the opportunity to attract office operations will continue in the future. The back-office sector generated around 2000 new facilities per year over the last half decade, and this trend accelerated slightly in 2007. Office projects are labor-intensive, generating an average employment of 63 persons per location. The Bureau of Labor Statistics estimates that employment will grow by 2.5% per year over the next decade in office activities, adding 500,000 jobs nationally.

Administrative service centers are facilities where administrative workers engage in corporate office support operations, such as processing orders, billings, claims, accounts receivable and payable, and similar tasks. Almost all business sectors have functions that could be characterized as administrative and operation support centers. Functions with the most administrative service centers nationwide include: insurance claims processing; back-office check processing; credit card processing and servicing; mortgage servicing; retail service operations; and data processing.

Teleservice centers (call centers, customer support centers, and technical support centers) include operations where customer service representatives (CSR's) receive telephone calls (and/or e-mail inquiries) regarding consumer complaints; concerns about a product or service; car, hotel or airline reservations; and inquiries about a product's or service's specifications, availability, and pricing. They may also receive questions regarding billing, fraud, or losses (e.g., credit or debit cards). These centers typically assist callers seeking:

- User support of a product or service
- To enroll in or discontinue a membership or similar service
- To alter the provisions of a membership or similar service
- For authorization to proceed with the provision of a service, policy, or product
- To purchase a product or service
- To acquire warranty, technical, policy, financial, or service information

Almost all industries have functions that could be described as customer service, but those with the largest customer service operations include:

- Consumer-goods manufacturers (e.g., cosmetics, health and beauty aids, computer hardware, electric and electronic gear, appliances, automotive products)
- Software firms
- Insurance companies and HMOs
- Banking and financial services
- Credit card services
- Telecommunications-related companies
- Travel and hospitality firms (including airlines, hotels, and car rental companies)
- Transportation and related companies
- Publishing firms
- Mail-order fulfillment centers
- On-line services
- Major retailers
- Express delivery companies

Rationale for Selection

Industry call centers account for a large share of new administrative offices over the last 15 years. Call center publications estimate that the sector nationally consists of 90 million

square feet of office space and employs roughly 900,000 individuals. Although the industry operated near 100% of capacity during the 1990s, economic conditions since 2000 have driven work to offshore locations in India, the Philippines, the Caribbean, and Canada. As manpower costs represent half of operating costs, many telemarketing, help desk, and customer service centers have moved to offshore contract operations where companies can hire college-educated workers at a fraction of the cost for a high-school-educated worker in the U.S. Estimates suggest that up to 100,000 jobs have left the U.S. since the peak year of 2000. Even so, many of the smaller administrative offices and call centers need close contact with headquarters, and therefore are not likely to move to offshore locations with significant time zone differences. Recent announcements of technical support call centers in U.S. cities, rather than India, suggest that call center offshoring has reached its limits.

Call centers and administrative offices look for vacant, air-conditioned space with lots of employee parking. A quality talent pool of office workers at moderate costs is another location factor, plus broadband Internet access for network operations. Combined with the PSA's office labor force, which is sufficiently large and moderately priced, the region has the resources needed to attract administrative offices. Real estate options in the region are presently limited for administrative offices and shared service centers, which typically use less space than call centers.

- This target is included in all of the clusters identified in the economic cluster section of this chapter.
- This target would utilize the skill sets of many relocated spouses with administrative, professional, and technical degrees, experience, or skills.
- This target would add balance to the local economy and provide job diversification.
- This target embraces virtually all industry sectors, including finance and banking services, medical and healthcare, all manufacturing sectors, transportation, communication, and utility services.
- The target's office workforce is usually dominated by individuals with a two- or four-year college degree and a high level of administrative, clerical, accounting, professional, or technical skills. The Primary Study Area has strong availability in these occupational fields.
- Office operations within this target opportunity share the common element of being professional operations with well-educated employees.
- There is a satisfactory-to-good availability of general office and business support occupations, including: administrative assistants, accounting and office clerks, clerical workers with advanced computer skills, customer service representatives, and call center representatives. Surveyed employers also report satisfactory-or-better availability of several computer and information systems occupations, including computer operators, computer support specialists, network technicians, network systems administrators, programmer/analysts, systems analysts, and internet development specialists.
- Employers report a good-to-very-good work ethic, a high level of productivity, and favorable team and cooperative skills among their employees, attributes which are supportive of customer service and support operations.

- There is a strong existing presence of examples of this target, including the Verizon Wireless state headquarters and customer support operation, several telemarketing and customer service-related operations, including Direct TV, West Corporation, Delta Airlines reservations, and LG Electronics. Large financial services-related employers include Redstone Federal Credit Union, Region's Financial, and Wachovia.
- The PSA has a strong telecommunications infrastructure. For example, telephone service in the areas provided by BellSouth. Huntsville, meanwhile, has three cable providers (e.g., Comcast Cable, Knology, and Mediacom – in the outlying areas), which is considered high for a city its size. Huntsville's Tier 1 network solutions providers include AT&T, Sprint, Level (3), and UUNET. In addition to the Tier 1 providers, extensive fiberoptic networks have been developed through the Huntsville area by ICI/WorldCom, KMC, Knology, Comcast, BellSouth, HiWAAY, and API Digital.
- The area offers lower operating costs than “headquarters cities” such as Atlanta; therefore, it offers an opportunity for companies to migrate their back-office operations to Huntsville from these higher-cost locations.
- Utilities (e.g., electric power, natural gas, public water, and sewer) are considered reliable and competitively priced. Services would be adequate to support small supportive office (back office) operations.
- The area offers a geographical backup location for security-minded operations.

Scientific and Technical Consulting Services

Definition

The scientific and technical consulting sector is comprised primarily of establishments that provide advice and assistance to organizations on scientific and technical issues, and provide managerial and technical consulting and related services through data processing, engineering, research and testing, energy, environment, computer systems analysis, and software consulting. The number of establishments increased nationally by 3,500 in 2007, and employment grew by almost 20,000. Average salaries in 2007 were \$1,300/week in 2007. Employment projections nationwide indicate that employment in this industry could nearly double over the next decade. This target is included within several NAICS classifications, but NAICS 541690 is a major component.

Rationale for Selection

Much of the contractor employment that will follow the 2005 BRAC moves into Redstone Arsenal is in this industry. The impact model discussed in Chapter One of the TVRGCP suggests that this industry could grow regionally by about 6,500 jobs over the next five years.

This target is included in the professional services identified in the cluster section of this chapter, and it would utilize the skill sets of many relocated spouses with professional and technical degrees, experience, or skills.

This sector is attracted by upscale office space that is accessible to commuters and customers. Companies in this sector tend to lease rather than build space. Users tend to require smaller building footprints for their operations. The average facility has between 5-10 employees and requires 1,000-2,000 square feet of space.

Advanced Manufacturing

Definition

Advanced manufacturing consists of the sectors shown in Table 11-44.

Table 11-44
Advanced Manufacturing: NAICS Codes

| Description | NAICS Code |
|---|------------|
| Turbine and Power Transmission Equipment | 3336 |
| Construction Machinery | 3331 |
| Oil & Gas Machinery | 3331 |
| Surgical Appliance and Supplies Manufacturing | 339113 |
| Metal Tank Manufacturing | 33242 |

Turbine and Power Transmission Equipment

A rapid growth in sales in this industry is being driven by the construction of alternative energy facilities. After years of declining sales and shrinking workforce, the sector is growing once again. Year-to-date shipments are up 15% since 2007 and were expected to exceed \$46 billion in 2008. The sector added 27 new plants in 2007 and expanded by nearly 700 workers nationally. Export sales, in addition to alternative fuels, are also driving the resurgence in this industry. Export sales in this sector are forecast to exceed \$22 billion in 2008.

The average wage in this industry is \$1,200/week, almost double the prevailing wage in the area. The high prevailing wage is an indicator of the breadth and depth of skilled blue-collar positions prevailing in this industry.

Rationale for selection

The PSA's rail and waterway infrastructure are competitive advantages for the development of this industry, as are the training programs at Calhoun Community College and the large mechanical engineering talent pool at UAHuntsville and Alabama A&M University. This target is a long-term growth industry once fuel prices regain their levels prior to the current economic downturn.

Construction Machinery

Sales in this industry grew by 10% in 2008 over 2007 levels. Total shipments now exceed \$29 billion per year. Industry exports have more than doubled since 2004 and now exceed \$20 billion per year, one of the highest ratios in U.S. manufacturing. Brisk business has created a need for new plants and added to employees. During 2007, the industry added 18 new production plants and grew its payrolls by about 2,000 jobs.

Rationale for selection: The PSA's port and rail facilities are important location assets for the industry. The industry has similar skill requirements to other machinery-manufacturing operations already present in Northern Alabama.

Oil and Gas Machinery

The high oil prices seen prior to the start of the current economic downturn were driving an expansion in hydrocarbon exploration and production equipment. New gas technologies, such as drilling in shale formations, are still driving the need for production rigs, pipelines, valves, compressors, and a host of specialized manufacturing products. Sales of oil and gas machinery have been brisk over the last five years and continue to grow in 2008. Sales in the first six months of this year are up 7% over 2007 levels. The sustained drilling and production activity has generated a brisk growth in jobs and new plants. The industry added 67 new plants in 2007, and employment grew by 8000 jobs, about an 8% annual growth rate. Wages have surged in this sector in recent years because of the brisk growth in industry shipment. The average wage now is about \$1,400/week.

Rationale for selection: Because of a severe shortage of skilled blue-collar workers in the major oil-manufacturing centers, investors are evaluating plant sites farther removed from Houston and Tulsa. The workforce skills and training facilities in Morgan County are assets of interest to investors in this industry. This target is within the machinery cluster identified in the cluster section of this chapter.

Surgical Appliance and Supplies Manufacturing

The value of shipments in this industry in 2006 exceeded \$31 billion, continuing a growth trend started in the late 1990s. The aging U.S. population led to increased levels of joint-replacement surgery, while advances in surgical techniques provided incentives for more, and younger, Americans to undergo knee and hip replacement. There were 1,879 establishments in this industry in 2006. Surgical appliances and supplies manufacturing is the largest division of the medical device industry, accounting for about 40% of sales in the mid-2000s. In 1989 surgical appliance and supplies producers exported less than 10% of their output, but then the rapid growth of foreign markets and the demand for high-tech implanted devices led a surge of export growth. Since 2004, exports have grown by nearly 15% per year to an estimated \$22 billion in 2008.

Surgical, orthopedic, and therapeutic appliances and supplies accounted for more than 88% of industry output in the mid-2000s, with orthopedic and prosthetic appliances comprising the largest share. *Orthopedic equipment* refers to devices used in the preservation, restoration, and development of the form and function of the extremities and spine. The term "prosthetic appliances" in this industry refers to devices related to artificial limbs and joints. Popular hip- and knee-replacement devices, for instance, reduce pain and allow patients to regain mobility.

Rapid advances in medical technology caused a shift in orthopedic treatment during the twentieth century from the use of braces, splints, and other mechanical devices, to surgical procedures. Such procedures incorporated implants and devices that helped surgeons perform such advanced operations as spinal reconstruction, skin grafts, tendon transplants, limb lengthening, restoration of shattered bones and joints, and bone grafts.

Many manufacturers of such high-tech products were even more concerned with a slowdown in the FDA's new-product approvals. New stringent approval requirements kept some new products out of the market and diminished outside investment in new-product development. FDA restrictions were expected to loosen, however, as a result of Congressional pressures to quicken the FDA's new medical product review process.

Rationale for selection: The depth of skills in metalworking and industrial engineering are important assets for attracting this industry. Air cargo service through Huntsville International Airport is also an advantage of the region for this industry. The presence of several regional universities with engineering programs is another advantage that has attracted, and will continue to attract, companies in this industry. This target is included in the metal fabrication cluster identified in the economic cluster section of this chapter, and it is linked to the life sciences target.

Metal Tank Manufacturing

Metal tanks are an important part of the chemical processing infrastructure. The industry is growing due to expansion in oil and gas production and refining capacity, and the construction of alternative-energy plants. With the current shortage of capacity in U.S. refining, this industry is a good target for future growth.

These industries shipped \$9.1 billion of product in 2005, and exports have grown from just over \$500 million in 2004 to nearly \$1 billion in 2008 (annualized). The number of establishments has grown by about 27 per year since the industry bottomed in 2004. Employment growth over the past two years has averaged about 5% per year, which is above the average for all manufacturing.

Rationale for selection: Metal tank manufacturing is a good match to the area in terms of skill sets. About two-thirds of workers are engaged in production occupations, and about a fourth of those workers are trained welders. Meanwhile, the presence of a large chemical-processing industry is among the region's advantages for this industry. The nearby Gulf Coast Industrial Market, which runs from Mobile to Corpus Christi, is one of the world's largest customers for this type of fabrication, and operations in the PSA can ship finished vessels by barge to refining and chemical construction sites.

The production of synfuels will stimulate the tank and heavy fabrication industry. Synfuels rely on a branch of chemistry called the *Fischer Tropsch* process. This process was developed in Germany during World War II to replace fuel refined from crude oil. The Fischer Tropsch process uses massive pressure vessels for gasification and liquefaction. Typical vessel sizes are 90 to 100 feet in diameter and 250 feet tall. Just a few fabrication yards in the world have the ability to manufacture these vessels, which are akin to ships in terms of their size and complexity of development. Sites on the Tennessee River have the logistics advantage of allowing barge transportation of sections to their erection sites. This type of manufacturing also will create a demand for docks that can accommodate heavy lift project cargoes. All of these factors favor those portions of the PSA served by the Tennessee River for vessel design and fabrication.

This target is within the metal fabrication cluster identified in the economic cluster section of this chapter.

CONCLUSIONS

1. The Primary Study Area is a very pleasant, growing location with widely recognized companies. It is a nationally known aerospace and defense and manufacturing center; it has a quality workforce, attractive quality of life, and strong economy. Over the years, it has become a significant and important second-tier technology location. Its success has made the area a prime engine for the state's and the Tennessee Valley area's growth, and its multiple assets attract continued private-sector and federal-government investment.
2. The PSA has been able to attract and retain world-class technical talent while maintaining a low-cost location for manufacturing and technology companies. As a result, the PSA has a diverse economy with 11 employment clusters, an unusually large number for a region of 500,000 residents.
3. However, the area is a victim of its own success. It is currently receiving a major investment from the Department of Defense at its Redstone Arsenal and the parallel investment from the contractors serving the Redstone expansion, and a major, recent, Life-Sciences investment. These new developments, plus the natural expansion of its growing and successful companies, are putting enormous pressure onto the area's workforce, educational system, and infrastructure to meet the demands generated by sharply increased growth. On their own, these sudden pressures are a substantial load for the community to handle. However, they are compounded by a graying workforce that could be retiring in large numbers within the next five years.
4. The combined squeeze on the area's workforce from these expansion and demographic conditions presents the area with a formidable challenge to increase its workforce by more than a third, while diversifying its economy, developing additional real estate for long-term investment, improving its educational system, attracting and keeping more residents in their twenties and thirties, improving its transportation and utility infrastructure, and expanding its tax base to non-retail sources.
5. The priority for action by the community in the short-to-long term should be on workforce expansion and development. Action must accelerate quickly. If this challenge is not met quickly and effectively, the area's economy could be threatened and its growth curtailed.
6. Although the identified challenges could be lessened if the national economy continues to weaken, if fewer people retire than expected, or if there is reduced future defense-related spending, the community is urged to act. It has the wherewithal to meet the current situation head-on. Its motivated governmental, community, and business leaders are coordinated and well orchestrated as a team. Such teamwork is an essential element in the foundation necessary to develop the appropriate strategies and to implement the needed actions.
7. Sustaining the competitive position of the PSA will depend, in large part, on its ability to train area residents in the skilled manufacturing and maintenance trades, health and education, engineering, computer science, and other technology-based occupations, and

to recruit these skills from other parts of the country and world. World-class training programs and more liberal immigration policies are significant needs for maintaining a technical talent pool that is growing by 3-4% per year. Governments in the PSA should place a high priority on meeting this challenge. Future growth, far more so than in the past, will be determined by the area's ability to create and sustain technical and skilled craft talent.

RECOMMENDATIONS

Labor-force recruitment and workforce development should receive urgent attention using all of the resources available in the community. The Chamber of Commerce of Huntsville/Madison County, the Decatur-Morgan County Chamber of Commerce, the Morgan County Economic Development Authority, the Greater Limestone County Chamber of Commerce and other agencies in or serving the PSA (including the North Alabama Industrial Development Association) active in economic development or workforce development (area agencies), are strongly urged to coordinate their efforts and work cooperatively to address the following recommendations. Such an approach will leverage resources.

1. The efforts underway by some area stakeholders to encourage as many current BRAC and contractor employees as possible to move to the area should continue. These efforts, however, should be expanded to include more of the area's economic development and university/college-related stakeholders to ensure a coordinated area-wide effort. To meet this challenge, and to encourage more people to accept relocation, the following is recommended:
 - Obtain a profile of the individuals being offered relocation. From these profiles, the area's economic and workforce development agencies would be able to create a variety of classifications (e.g., single, Young & Talented, early retirement, young with children, married no children, etc.) and then develop customized marketing material for each that addresses their concerns. For the early retirees, for example, make the move to Huntsville as part of a retirement strategy, where they can now sell their northern Virginia homes and move to the lower-cost Tennessee Valley Region until they retire, then remain in the region after retirement.

The Tennessee Valley BRAC Committee in conjunction with the Chamber of Commerce of Huntsville/Madison County is working directly with the incoming BRAC commands still in the process of moving (AMC and MDA). Efforts include a relocation fair to provide specific and general information to those employees whose jobs are moving, focus groups to discover the major issues for those who are considering moving and for those who have already moved, and solicitation of information from transferees who have made the move to provide information to potential transferees.

2. The efforts being conducted by the Chamber of Commerce of Huntsville/Madison County to recruit labor to the area from across the country should continue. These efforts should be expanded to include more of the area's economic development and university/college-related stakeholders to ensure a coordinated area-wide effort. Labor

recruitment should be directed at all working-age groups. Special marketing messages for each group should be developed that address their key issues. One area entity should serve as the facilitator and coordinator of special recruitment efforts for area employers, including the new BRAC-related contractors.

Special marketing messages for each group should be developed that address their key issues. These issues can be developed through a variety of focus groups, and the marketing material then created from the findings of those focus groups. The messages can be crafted into special sections on the local websites, used in hard-copy material, and in special direct-mail solicitations. *In the interests of efficiency, one area entity should serve as the facilitator and coordinator of special recruitment efforts for area employers, including the new BRAC-related contractors.* Efforts could include job fairs, purchasing of membership lists of key professional organizations, such as the Institute of Electrical and Electronic Engineers (IEEE) and the American Society of Mechanical Engineers (ASME), and establishing linkages with local chapters of these associations. Part of its coordination effort would be assurance that duplicative recruitment efforts are not being made. Target audiences for recruitment would include:

- Fresh-out college graduates in engineering from all engineering schools in the country. Contacts could be established using engineers in the region with school ties. These engineers can be identified through the cooperation of area company human resource agencies. Direct-mail recruiting efforts to juniors and seniors can be made. Development of co-op programs with engineering schools around the country should be considered (as well as with UAHuntsville and Alabama A&M University), with the Chamber acting as the facilitator and coordinator among the area employers, and providing guidelines and best practices.
- Experienced engineers, government-contracts personnel, technicians, and other required skilled personnel. The central agency can assist local companies to identify prospective employees in high-cost areas around the country with concentrations of required skills (California, northern Virginia, the Northeast, etc.), and in areas with depressed economies (e.g., parts of Michigan, parts of western New York, and Ohio).
 - Membership lists provided by appropriate professional organizations, such as the IEEE and ASME, or purchased from sophisticated direct-mail services that can identify specific individuals based on occupation, age, and other factors;
 - Software that scans for individual websites posted on the internet using key words;
 - Coordination of recruitment activity by area companies, providing quality-of-life and other marketing material;
 - Orchestrating job fairs at selected locations in other parts of the country and locally;
 - Maintain a jobs list for the spouses of transferring personnel, or see that such a service is available and up-to-date; A local jobs list could also be linked to the Chamber website, and area companies with recruitment postings on their websites should also have this link.

- The participating agencies can also assist in the recruitment of individuals by sharing best recruiting practices of the region with area employers, by enhancing its quality-of-life image through public relations campaigns and placement of ads in national publications of engineering associations (such as the IEEE's Spectrum), and by coordinating or assisting quality-of-life actions in the area (such as housing development and public school improvements).
 - It is recommended that literature with a PSA-wide focus be developed to promote area jobs across the country and for publicity for any job fair events or workshops that are held in other communities across the country. Area agencies can contribute to the cost of printing and dissemination.
 - The above recommendations should build on the strong foundation created by the TV BRAC Committee and The Chamber of Commerce of Huntsville-Madison County. The Committee's and Chamber's efforts should include participation by the PSA's other area agencies for cost and revenue sharing efficiencies. The Chamber is the lead organization for implementation of BRAC at Redstone Arsenal and has been very active in recruiting workers from outside the region. It launched a recruitment website in 2007 based on its recruitment theme, "A Smart Place to live, work and play." It is updating and expanding its free job board open to all TVRGCP communities, and it has conducted extensive national recruiting among several target audiences. It also has held recruitment events in target cities/campuses based on a strategy developed by a consultant to reach engineering, IT and advanced manufacturing audiences. It provides Smart Place brochures featuring "live, work and play" information to members at no cost, and it supports many requests each year for tours, speaking engagements and meetings where we promote quality of life throughout the region. In 2009 it will be conducting a year-long ad campaign with GI Jobs magazine featuring 11 top employers, and it has applied for grant funding through the Department of Labor to conduct other awareness efforts with dislocated workers.
3. It is recommended that the area's economic development community make a very concerted effort to attract more residents and support the development of local talent in their 20's and 30's in order to strengthen the area's demographic depth in this cohort that is sought by firms in all industry groups, particularly those in the technology sectors.

The living environment attractive to these people needs to be expanded in the area. It is urged that focus groups be conducted with local residents in the 22-to-35-year age range to determine what they want. Conditions in Austin, Atlanta, Richmond, Portland, and other locations cannot be replicated locally and be expected to succeed. Successful developments will be slow and created by a blend of actions by the public and private sectors. The public-sector role will be in regulatory, incentive, or facility-development efforts. Local development may contain elements used in other locations, but what happens in the PSA must be based upon existing resources, conditions, and needs. PSA wide focus groups could be developed with the help of Huntsville Young Professionals, the EmYerge Council, the *Huntsville Times* website, and others. When recruiting the Talented Young, the area should not try to compete head-to-head with larger locations that are also vying for and attracting this population on their terms (e.g., Atlanta, Nashville, Atlanta, Raleigh, Austin). Rather, the effort should be addressed toward those

points where it has an advantage: more livable scale, less congestion, closer “in-town” living opportunities in Huntsville and Decatur, lower cost of living, better (and less crowded) recreational opportunities, better opportunities to be recognized, be a “big fish in a little pond”, etc.

- The Chamber of Commerce of Huntsville/Madison County’s EmYrge Council is a forum/focus group of young professional (YP) organizations that helps identify effective messages and promote the benefits of being a YP in Huntsville. This chamber hosts the EmYrge website and has placed “Get Smart” ads targeting young professionals in age-appropriate publications. The chamber also run the Bridges program, a “Huntsville/Madison County 101” course targeting co-ops/interns/recent college grads to increase retention in the community. Consideration should be made to expand these efforts into Morgan and Limestone Counties with the help of the economic development agencies serving those counties.
4. The region’s economic development related agencies, including the Port of Huntsville, should continue their efforts to attract company facilities within their targeted industries, including those listed in this chapter, to continue and expand the area’s economic strength and diversity. It is particularly recommended that a concerted effort be taken to attract more private-sector, commercial-product development and research to the area. Leveraging this effort with the area’s current employer base should be considered.
 5. Area economic development agencies should promote the use of co-op and internship programs among university students and area employers. It is recommended that these agencies work with area employers to develop programs in a variety of technical fields. It is recommended that these agencies, in a coordinated and cooperative fashion work, with area employers to develop co-op and internship programs with Alabama A&M University and UAHuntsville in a variety of technical fields needed by the BRAC contractors and the commands at the Arsenal. Similar programs are also important with universities throughout the Southeast and the nation. Such programs can enhance recruiting of students by employers upon graduation, and can build up an experienced “fresh-out” workforce. The area agencies can help employers by providing program coordination at universities, making contacts, searching out best practices, and coordinating low- or moderate-cost housing for summer interns from outside the region (such as the dormitories of local colleges and universities).
- The Chamber of Commerce of Huntsville/Madison County is hosting the Southeastern Regional Cooperative Education Conference in 2009 to bring together local employers and cooperative education placement professionals from more than 50 regional universities. This chamber also holds a “meet and greet” for the 100+ NASA summer students (co-ops included) and local employers interested in hiring college graduates in technical fields. In 2009 it will also host 100 college seniors from regional universities for a “technology tour” and employer reception. The chamber is also supportive of the efforts of UAHuntsville to increase the number of entry-level workers charged to government contracts. It is recommended that the Chamber consider inviting the area’s other economic development and workforce development agencies to join in this effort.

6. The area's economic development agencies are urged to promote improved human-resource practices among area employers to encourage maximum employee retention and attraction potentials and decrease employee turnover. Examples include: use of a career-laddering model; providing flexibility in work hours and use of vacation time in partial-day increments; flexible work scheduling; and expanded training on company time. Given the labor shortage in the area, employers will have to accommodate more to the needs of employees than vice versa. Helping employers adapt to the scheduling needs of employees of typical retirement age (such as shorter workweeks or workdays) is recommended as part of this effort. The central agency programs could include after-hours or breakfast seminars and webinars, and field teams could be used. The special needs of small employers will have to be considered.
 - In 2009 the Chamber of Commerce of Huntsville/Madison County is partnering with the regional affiliate of the Society for Human Resource Management (SHRM) to promote best practices. It has conducted parallel programs and conferences for the past two years and recognized that its membership overlapped considerably. Other area agencies are urged to implement similar programs in their areas.
7. Because conditions are changing, employers need to recognize that workforce development is no longer the sole responsibility of educators and workforce-development professionals: employers must now be an integral part of the process. Therefore, the area's economic development agencies should act as coordinators to encourage employers' participation as stakeholders in their programs. Examples in which they can participate include: formalized programs in mentoring (by trained employees); job shadowing with educators, principals and guidance counselors; and one-on-one mentoring between employees and students on personal development, job skills, and life skills (similar to the Big Brother and Big Sister programs). A broader use of the *Junior Achievement Program* or concept is urged within the educational system. The central agency can act as the coordinator and developer of such programs. The Chamber of Commerce of Huntsville/Madison County is active in these kinds of programs and serves as an example for efforts by other area agencies. The chamber's efforts might serve as a foundation for a unified area wide effort by coordinated action by the area agencies.
 - The Chamber of Commerce of Huntsville/Madison County partners with Junior Achievement and has been instrumental in the expansion of its programs (including job shadowing and high school career expo) across north Alabama. The chamber also serves on the state's regional workforce council to guide the post-secondary (2-year) and federally funded workforce investment programs to better meeting employers needs. The Chamber's Workforce Coalition brings together stakeholders throughout the community to align K-12/post-secondary/higher education programs particularly around science, technology, engineering and math education. The chamber is very involved in the WIRED effort to promote high-tech careers. Specifically it is partnering with the regional high school engineering academies and a pilot program to draw non-commissioned officers who are leaving the military into an engineering co-op program in support of the Arsenal. It also support the national/state/local partnership promoting AP courses in local high schools. A new initiative for 2009 is a professional development course for K-12 educators on the local economy – what

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- jobs are going to be in demand for their students and what their students need to know to be able to pursue them.
8. Provide job counseling to the retired who want to continue working, and to the not-employed who want to re-enter the workforce. These individuals could use a variety of training programs, including career-changing opportunities and challenges; available educational resources for training and skills enhancement; skills testing; career counseling; and résumé writing. Such programs could be offered by the WIB at various venues across the region to maximize access and availability.
 9. The area's economic development and workforce development stakeholders should see that job-counseling programs are widely available to the area's retired residents, and those nearing retirement who want to continue working, and to the not-employed who want to re-enter the workforce. It is urged that a recruitment effort be directed at well educated and skilled residents from other parts of the country. It would be hoped that these new residents would add to the area's workforce (even if for five to ten years), bring in more spending capital for retail and restaurants, and add to the support base for more arts and cultural activities. It is recommended, however, that such recruitment be paced with the attraction of younger residents. Otherwise, the area's median age will increase even faster than it is—which is not recommended.
 10. It is recommended that the area's research universities (UAHuntsville and Alabama A&M University) attract more private-sector, commercial-research grants. Such diversification is important for long-term economic health and the development of an entrepreneurial ethic.

In addition to the labor issues described above, the PSA leadership is urged to address the land-use, utility, and transportation recommendations listed in Chapters 3, 6, and 7 of this report.