Report One:

DEFENSE INDUSTRY DEMAND ANALYSIS

"Funded, in part, by a grant from the Nevada Commission on Economic Development."

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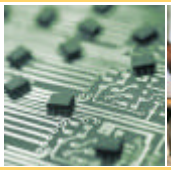

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Presented to:

CHURCHILL COUNTY ECONOMIC DEVELOPMENT AUTHORITY

AND

MINERAL COUNTY ECONOMIC DEVELOPMENT AUTHORITY

June 2007

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Defense Industry Demand Analysis

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Introduction

This report, Defense Industry Demand Analysis, presents a broad look at the future of the defense industry – how the security environment is changing for the United States, how the military is adapting, and how future military procurement will grow. The report also concludes with a look at defense procurement in the 7-County Northern Nevada region. The 7-County region is defined as the counties of Carson City, Churchill, Douglas, Lyon, Mineral, Pershing, and Storey.

Much has changed since President Bush provided the first indication of his vision for a reorganized military in February 2001. U.S. military requirements continue to follow a path of transformation toward a mobile and stealthy force capable of projecting power over long distances. Power is increasingly defined not by size, but by mobility and swiftness, and military advantage increasingly comes from information. Today, the majority of procurement is still focused on large-scale equipment, but rapidly advancing technology and the changing face of the enemy are forcing the military to divert new resources to new product development and supplies.

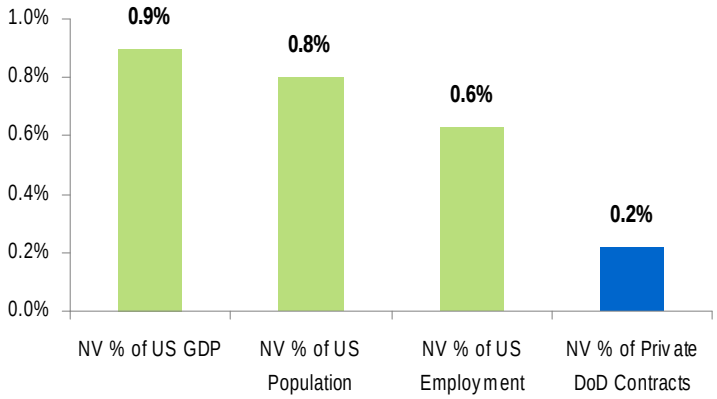
Nevada is now home to over 9,100 military personnel and total defense procurement dollars captured by the state reached $750 million in 2006. While the state's procurement dollars are growing faster than the nation, its share still lags when compared to its share of other factors such as population, GDP, and employment. The chart at right shows that while Nevada represents 0.9% of GDP, 0.8% of population, and 0.6% of employment, it only captures 0.2% of all DoD contracts.

This fact presents an opportunity for the state to actively target the national defense sector, which will bring economic benefits in all of its regions. If Nevada were to increase its share of Department of Defense (DoD) procurement to match its share of national GDP, **this would result in $1.6 billion additional dollars flowing to the Nevada economy.** This increased economic activity would result in thousands of good paying jobs.

Nevada's total (DoD) procurement is captured in three areas in the state. Clark County, in southern

DOD CONTRACTING COMPARISON

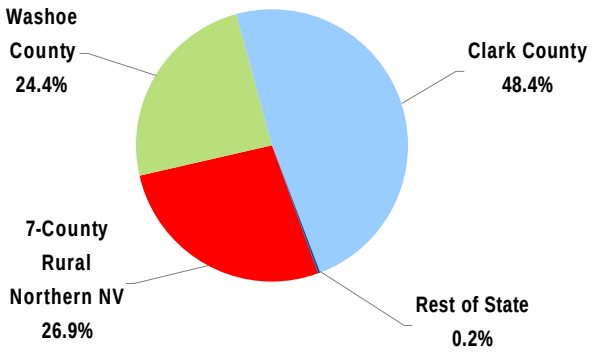
State of Nevada compared to U.S.



Source: DOD; AngelouEconomics

NEVADA DOD CONTRACTING

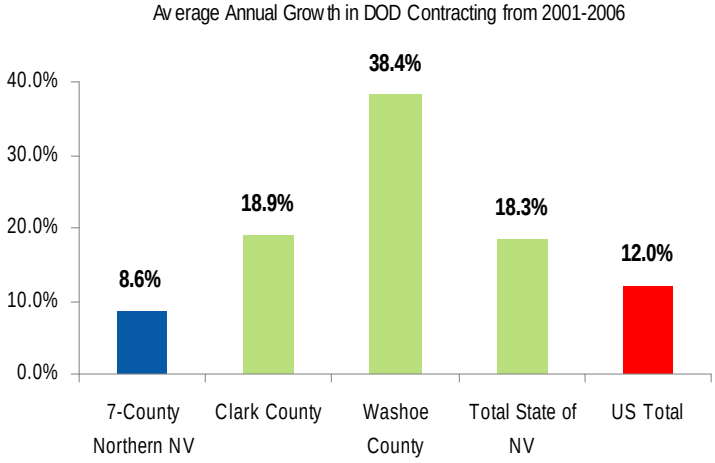
DOD CONTRACT SPENDING BY VALUE OF CONTRACTS: FY 2006



Source: DoD, AngelouEconomics

Nevada (home to Nellis AFB) received $364 million, the majority (48%) of DoD contracts in 2006. The 7-County rural Nevada region (home to both NAS Fallon and the Hawthorne Army Depot) received the second most Pentagon dollars, totaling $202 million in 2006. Finally, Washoe County (representing the urban northern Nevada area) received the remainder, or $183 million in 2006.

DOD CONTRACTING COMPARISON



Source: DOD; AngelouEconomics

While the rural 7-County region receives the 2nd largest amount of DoD procurement dollars in the state, data show that the region is not expanding as quickly as the nation or the state. From 2001-2006, DoD spending increased by 12%, yet the 7-County region only increased by 8.6% over this time period. While the 7-County region is trailing behind, the rest of the state is exceeding the nation's growth rate. The state has expanded by 18%, Clark County by 19%, and Washoe County has surged by a tremendous 38% (over triple the rate of the nation).

This study aims to bridge the gap between Northern Nevada's defense procurement capture rate and the growing national defense industry.

The Study Process

This report is part of a broader study, the *Northern Nevada Military Business & Resource Gap Analysis*. The goal of this study is: ***to leverage military business opportunities to promote economic development and quality of life in Northern Nevada.***

Specifically, the study is designed to result in the:

1. Identification of **specific sectors of the defense industry that are expected to experience the highest demand and business growth** in the next 5-10 years.
2. Assessment of Northern Nevada's **capacity to support new military-related businesses and future product demands.**
3. Identification of **specific industry niche sectors that should be targeted for recruitment and expansion to Northern Nevada** to fill "gaps" or take advantage of current procurement opportunities.
4. Creation of an **action plan containing strategic priorities and marketing strategies** aimed at increasing the expansion of companies that could supply the region's military installations and the national Department of Defense (now or in the future).

Study Process:

TASK ONE:
Project Set Up

TASK TWO:
Analyze national and regional defense industry

Report 1: Defense Industry Demand Analysis

TASK THREE:
Identify target audiences for marketing

TASK FOUR:
Create a defense industry growth strategy

Report 2: Defense Industry Growth Strategy

Two reports will be prepared for this project:

1. **Defense Industry Demand Analysis**
2. **Business Recruitment Strategy**

A clear distinction is made in this study between the "Military" (base assets) and the "Defense Industry" (private companies). Northern Nevada is strong in its military assets (i.e. Bases), but few companies are large suppliers to the military, particularly for national procurement. For the purpose of this study, we define the "Defense Industry" as *the private sector companies or research organizations that sell goods to or perform a service for the U.S. military.*

While this study's primary goal is to promote new ways to recruit defense companies to Northern Nevada, our research has naturally identified existing industries in the region and the state that can be expanded through more sales to the military.

Our goal is clear: ***to bring more jobs and revenue to Northern Nevada tied to the defense industry.***

In Report 1, "Defense Industry Demand Analysis," we provide an overview of U.S. defense trends and a look at Northern Nevada's participation in the defense industry.

The intent of this report is to not only frame the national defense procurement industry and to highlight where the 7-County Northern Nevada region stands, but to also provide a discussion of the industry in general. The initial sections of this report will attempt to frame this discussion.

This report will highlight current military operations, trends in military structure, and current defense weapon platforms. The intention of this discussion is to begin to familiarize local economic development leaders and other constituents with the defense and military sectors. If the defense industry is to be a true target for Northern Nevada, then the leaders that will help to grow this industry should be as knowledgeable as possible. The discussion here is not intended to be comprehensive, but rather to highlight items of particular importance.

A Security Shift

The events of September 11th continue to produce the most significant changes in military and foreign policies since the end of the Cold War. President Bush's new strategic doctrine for the U.S., first revealed in June 2002 and formalized in a National Security Strategy (NSS) document published three months later, signaled an end to the Cold War doctrine of deterrence and a shift toward pre-emptive action against rogue states believed to be harboring terrorists (most notably Al-Qaida) or those developing weapons of mass destruction (WMD). The recently released Quadrennial Defense Review (2006) reinforced this philosophy and reiterated the need to continue to transform U.S. forces to be "more agile and expeditionary."

The Administration's doctrine based on eliminating the threat posed by WMD in the hands of regimes opposed to the U.S. has been a clear priority for the Bush administration during both of his terms in office.

The changes in the global theatre have placed the U.S. on almost permanent war footing. The new realities of the "Global War on Terrorism" (GWOT) mean that the Cold War military strategy of stationary forces in static defense bases is no longer optimal. Instead, force transformation that is underway places emphasis on the ability to quickly surge troops to different trouble areas across the globe. Keeping wars quick and focused on well-defined goals is not possible when an organization such as Al-Qaida is estimated to have cells in as many as 60 countries.

These implications mean that force transformation will continue in order to develop increasingly flexible force structures designed to counter emerging threats such as terrorism and WMD.

Four key priorities have been identified in the Quadrennial Defense Review, released by the Secretary of Defense in 2006:

- ✓ Defeating terrorist networks.
- ✓ Defending the homeland in depth.
- ✓ Shaping the choices of countries at strategic crossroads.
- ✓ Preventing hostile states and non-state actors from acquiring or using WMD.

In addition to force transformation toward high mobility, the Department of Defense continues to press the need for a "joint force" – emphasizing the need for all branches to continue to move toward becoming horizontally integrated with efficient interoperability. This "jointness" and the development of Department of Defense's "Total Force" concept will streamline operations, remove redundancy and create a stronger portfolio of capabilities to confront challenges on a global stage.

U.S. military operations today are defined by two new "fronts": rogue states and terrorism. The current actions in Iraq **(Operation Iraqi Freedom - OIF)** and Afghanistan **(Operation Enduring Freedom - OEF)** have done much to shape the U.S.'s approach to wartime tactics. Examining these two conflicts provides some insight into the changing focus and needs of the defense sector.

However, Department of Defense and current Administration parlance in regard to military involvement has shifted from strictly the two operations in Iraq and Afghanistan to a broader mission termed the **"Global War on Terrorism" (GWOT).** From the Bush Administration, to the Secretary of Defense, to the branches of the military, the strategic mindset is one of being able and prepared militarily to deploy quickly when needed to many parts of the world in

order to combat threats posed by rogue states and terror cells. This broader Global War on Terrorism will shape the structure of the military and funding of DOD initiatives for years to come.

1. Recent Combat Operations: A recap of Operation Iraqi Freedom and Operation Enduring Freedom

The new post-Cold War doctrine was put to the test by Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF). The military operations in both arenas successfully met initial objectives and helped to reinforce the DOD's new military tactics.

In Afghanistan, U.S. and allied forces entered the country within weeks of the September 11th attacks and used central intelligence to identify and partner with Afghani forces opposed to Taliban rule. Combining these forces on the ground with strong joint air strikes allowed the Taliban to be quickly defeated.

The War in Afghanistan, also referred to as Operation Enduring Freedom, demonstrated the ability of the U.S. military to seamlessly integrate air, land, and water into a joint force that responded quickly, was adaptable, and able to integrate with local forces.

> ***"Since 2001, U.S. forces have helped to establish the Afghan National Army, to support their first free election in a generation, and to set security conditions for enduring freedom in Afghanistan."***
> (source: Quadrennial Defense Review, 2006)

The War in Iraq, also referred to as Operation Iraqi Freedom, demonstrated similar success in the early stages of the conflict. The military campaign took just over three weeks. Despite delays and problems in the early days of the conflict, the rapid advance of U.S. forces on Baghdad was virtually unchecked and provided a stark warning to any other country that might provoke the U.S. into military action.

As in Afghanistan, speed of operation was key. The coalition "got inside the decision loop" and the Iraqi commanders were unable to react in time to events. For example, it was asked repeatedly as the coalition forces advanced why the Iraqis had not blown up bridges. U.S forces arrived at crucial bridges over the Euphrates and Tigris so much sooner than expected that the local commander did not have time to get permission to detonate the charges. As a result, nothing was done and the bridges were captured intact although many had explosive charges in place.

The war provided a showcase for the Air Force and the Army to prove their technical capability and, even without the massive preparatory aerial bombardment that most analysts expected, the ground war was conducted successfully with limited casualties. The campaign showed heavy armor could be both flexible and fast, yet still provide the necessary punch to rapidly occupy and hold territory.

Technology has also moved to keep pace with modern demands on the war fighter. The air-tasking order, for example, that used to have to be flown out to aircraft carriers is now web-based. During Iraqi Freedom, the USAF was always ready to switch from attacking fixed-point targets to supporting ground forces and working with the Army to wear down those enemy forces that are far ahead of the Army, rather than having them in a set artillery battle.

The level of "jointness"--the degree to which all the branches of the armed forces worked well together--emerged as a major plus point of the war. Knowledge about the battlefield enabled the U.S. military to do more with less. Ground combat was made more effective by improved communications that expedited the

pace at which decisions were made and action was taken. Technology allowed commanders to talk via satellite communications and other means across a battlefield space of hundreds of miles.

2. Global War on Terrorism

While the initial combat phases of OEF and OIF were deemed successful, U.S. Forces have faced a stiffer resistance in the years that have followed. This is particularly the case regarding U.S. involvement in Iraq. Among Bush Administration officials, this broader struggle has gradually shifted to be referred to as the Global War on Terror (GWOT). The President has asserted that this is a struggle that America will be involved in for many years and in many locations across the globe and that continuing conflicts in Iraq and Afghanistan (to a lesser degree) represent the current battlegrounds in which the GWOT is being fought.

U.S. foreign policy has indeed been consumed by the "war on terrorism" since the September 11th attacks. There is considerable concern in the U.S. government that Al-Qaida could use chemical, biological, radiological, and nuclear (CBRN) weapons in future attacks and there are differing assessments as to the capability of the group in acquiring and deploying such weapons. Al-Qaida has made attempts, with the assistance of renegade Pakistani scientists, to acquire nuclear weapons.

Billions of dollars are being put into means to prepare for and respond to an attack on domestic U.S. soil. The introduction of Northern Command, which has responsibility for the security of North America and troops on homeland security missions, was the first big change in the military command structure since the Second World War.

The GWOT involves a multi-front effort. It will require continued effort in the current battlefronts: Iraq and Afghanistan, but it will also require the ability to surge troops to pending trouble spots throughout the world, and finally to ensure that homeland security is vigilant. The DOD has recently identified several new initiatives:

- ✓ To strengthen forces to defeat terrorist networks, the Department will increase Special Operations Forces by 15% and increase the number of Special Forces Battalions by one-third. U.S. Special Operations Command (U.S.SOCOM) will establish the Marine Corps Special Operations Command. The Air Force will establish an Unmanned Aerial Vehicle Squadron under U.S.SOCOM. The Navy will support a U.S. SOCOM increase in SEAL Team manning and will develop a riverine warfare capability.[1]

- ✓ To strengthen homeland defense and homeland security, the Department will fund a $1.5 billion initiative over the next five years to develop broad-spectrum medical countermeasures against the threat of genetically engineered bio-terror agents. Additional initiatives will include developing advanced detection and deterrent technologies and facilitating full-scale civil-military exercises to improve interagency planning for complex homeland security contingencies.[2]

While the initial combat phases of the Iraq and Afghanistan campaign were military successes and reinforced the efforts of transformation into a fast and flexible force dependent on precision weapons and a

[1] (source: Quadrennial Defense Review, 2006)
[2] (source: Quadrennial Defense Review, 2006)

high-technology network-centric approach, new challenges posed by non-state terrorist networks will cause additional alterations in future military structures and tactics. The positives from the initial combat operations emphasize the use of Special Forces, air power, and high technology with the aim of winning conflicts more rapidly and with fewer troops. Enormous importance is placed on strategic air power to attack hundreds of targets simultaneously and on computer communications. High technology in smart bombs and battlefield intelligence gathering is of paramount importance, as is flexible decision-making that allows field forces to react quickly to changes in the battle.

However, it is important to maintain an understanding that America's current enemies (terror networks) are not conventional military forces located in a specific nation-state or defined geography. This will not necessarily alter the tools used in war, but most certainly will alter the tactics by which future conflicts are waged.

Operational Changes

Two operational changes have affected the current military structure: **Base Reconfiguration** and **Army Restructuring**.

1. Base Reconfiguration

Changes in basing have resulted from reassessment of strategic needs following the end of the Cold War and projected requirements of future needs. The aim is to spread forces to reduce America's dependence in war planning on a handful of major regional allies who cannot always be relied on. The U.S. military also intends to adjust its forward presence throughout the world by replacing its garrison-style basing in developed, democratized areas like Western Europe with a system of smaller, sometimes temporary bases in other regions. Under this concept, U.S. troops would rotate overseas as a unit on a periodic basis rather than be permanently stationed in Europe. The long-awaited decision in early-2004 to remove 60,000 to 70,000 troops from bases in Europe and place them in the continental U.S. involves making rapid-reaction type units and forces rotating through overseas bases in swift response to global engagements.

The U.S. base in Okinawa, Japan, and Camp Bondsteel in Kosovo are examples of forward-positioned hubs where essential equipment is housed, but troops are rotated for short-term deployments rather than permanently stationed. Plans to change basing commitments have been accelerated by recent military operations in Iraq and Afghanistan, which involved several independent examples of operational maneuvering from strategic distances or from the sea.

2. Army Restructuring

The U.S. Army is undergoing a significant restructuring that will increase the number of combat brigades from 33 (pre 9/11) to as many as 48, creating smaller, adjustable units believed to be more flexible and responsive to its varying missions. This will shift the Army from a division-based force to a brigade-based force that is smaller and more adaptive and reactive. Capabilities like reconnaissance, artillery, and army aviation may be added to the brigades so that they are capable of independent action. Divisions consisting of three traditional brigades will be bumped up to four of the more flexible brigade combat teams. More light infantry, military police, and civil affairs units will become available.

While the Army has been involved in numerous deployments since 1990, in many instances its main role has been mopping up after aerial bombardment and post-conflict operations including peacekeeping and humanitarian operations.

The successful deployment of around 150,000 U.S. Army personnel in the invasion of Iraq made some progress toward redefining ground troops' role in modern conflict, particularly as part of a joint force that involves air strikes and a shared picture of the battlefield. The continued insurgency in Iraq has underscored the necessity for the use of the Army's expertise and troops on the ground.

Base reconfiguration and the Army's restructuring will benefit leading military installations and could hasten the closure of weaker military facilities. Both programs offer an opportunity for strong military installations to increase troop strength.

Future Weapons Procurement

The military has laid out a plan for significant changes in the weapons it uses, the systems that support the military, and its commitment to using new information technologies.

We examine five major systems that will change the way the military engages in battle:

- **Network-Centric Communications Systems** – Network-Centric Warfare embodies the DoD's transformation to an Information Age fighting force. The program is designed to provide information superiority to military generals and war-fighters on the ground. Superior information will enable the U.S. military to win future conflicts with smaller forces.

- **Unmanned Aerial Vehicles** – The success of unmanned aerial vehicles during the conflicts in Iraq and Afghanistan accelerated the DoD's procurement timeline. UAVs are designed for reconnaissance, troop and convoy protection, and even attack functions.

- **Space Systems** – Military space systems are focused on advanced communication systems, ballistic missile defense, and the possible weaponization of space.

- **Future Combat Systems** – The Army's Future Combat Systems program will transform the Army into a more mobile and lethal fighting force. The program includes research and procurement for unmanned vehicles, advanced communication systems, and new weapon platforms.

- **Land Warrior System** – The Land Warrior System will equip the U.S. solider with the protection, information, and weapons needed to fight future conflicts. The program includes communications systems, clothes, armor, and new weapons.

We profile each system individually below.

1. Network-Centric Communications Systems

The idea that communications, information technologies, and sensor systems can be used to significantly improve the speed of response, precision and effectiveness of a given level of military force is certainly not a new one. For a number of years the concept was dubbed the "force multiplier." Today, the more fashionable terms are Network Enabled Capability (NEC), Network-Based Defense (NBD) and Network-Centric Warfare (NCW). The basic proposition remains unchanged: if you can exploit the appropriate technologies to learn more about an enemy's assets, disposition, and likely intentions, and then marshal your own assets in an intelligent, prioritized fashion, you can do much more with far fewer people, machines, and weapon systems on the ground, in the air, or afloat. The sharing of information across all levels of command is fundamental to this strategy.

While the theory of this may be well established, the actual implementation of network-based warfare previously has been honored more in the breach than in the observance. Today, this seems to be changing. The U.S. is making huge investments to make NEC a reality. One Boeing estimate is that the U.S. market for network-centric battle management capabilities, communications satellites and information-gathering systems is

expected to generate sales approaching $200 billion over the next decade. In September 2004, Boeing and IBM formed a strategic 10-year alliance to address this market.

A new program seeks to make full network-centric capability a reality for the Department of Defense: **C4ISR**. C4ISR is an interactive and coordinated command, control, communications, computers, intelligence, surveillance, and reconnaissance system. The C4ISR system is a central tenant of the DoD transformation program and the Army's Future Combat Systems. The need for effective knowledge management, situational battlefield awareness, and intelligence demands, coupled with the shift to a mobile military force, is increasing the growth of investment into the C4ISR market. Despite a fiscally conservative push in the current DoD budget request, funding for C4ISR technologies remains a top priority.

A key driver for the C4ISR market is the ongoing U.S. operations against terrorism. With tactical military operations being conducted in multiple foreign countries against a host of non-traditional targets, the Defense Department's need for improved C4ISR capabilities grows more acute in the short-term, and current DoD C4ISR demands are marginally met at this time.

Overlapping military campaigns in Afghanistan and Iraq have reinforced the vision of Network-Centric Warfare (NCW) and provided a strong impetus for accelerated integration of C4ISR technologies. The underpinnings of NCW is a military operations model based on a conceptual "systems-of-systems." Real-time connectivity between multiple C4ISR systems (i.e. satellite surveillance, ground sensors, unmanned platforms, the individual soldier, etc.) provides unprecedented information superiority.

The invasion of Iraq, from the C4ISR point of view, demonstrated how the digitization process would work in a major campaign with a coalition force. This was the first real test of warfare in the network-centric era. Operations in Afghanistan had already demonstrated what had been achieved in bringing the sensor and the shooter together, in empowering both the man on the ground with control over weaponry and the commander many miles away with the ability to see what was going on. This was the first real test of war-fighting in the digital age in a joint and combined environment and it proved successful.

2. Unmanned Aerial Vehicles (UAV)

The push toward network-centric warfare, a desire for real-time intelligence, shifting threat paradigms, and the successes of the Iraq and Afghanistan campaigns have accelerated the demand for increased use of unmanned autonomous and semi-autonomous platforms.

With multiple autonomous land and air systems in service and numerous land, sea and air systems in development, the U.S. is currently at the forefront of autonomous systems design and technology. The U.S. is one of the few countries that has laid out a consistent plan for the development and improvement of autonomous systems. The U.S. is also one of the few countries that have consistently used such systems to good effect on the battlefield. Operations during the first Gulf War, Bosnia, Afghanistan, and the second Gulf War have all provided the opportunity to test and improve these systems.

The Predator UAV is an excellent example of a system that has been improved and developed based on lessons learned in theatre. A number of systems have also been developed in this fashion. Global Hawk and the SUGV land system are two other examples that represent but a few of the many systems being produced and improved through operational testing. In many cases, contractors will deploy with military forces to provide

support and take valuable information back with them as they continue to research and develop their designs. As a result of these efforts, the U.S. is rapidly approaching an autonomous weapons delivery platform capable of attack on its own without the aid or instruction of an operator.

The U.S. Army intends to equip each of its brigade-sized Units of Action organized under FCS with 200 unmanned aerial vehicles. This program represents in excess of 6500 UAVs and is independent of ground-based autonomous systems procurement in support of FCS as well as the close air support systems. The total procurement of autonomous and remote systems for FCS alone could be well over 8,000. This funding in addition to current UAV programs such as J-UCAS, Predator, Global Hawk, Firescout, and others could push the number of autonomous systems procured by the U.S. alone to exceed the 10,000 mark.

Today, the unmanned systems market is estimated to be in excess of $2 billion with a forecasted annual growth rate of 18% through 2011. Looking at UAVs specifically, the U.S. will account for 90% of the worldwide research and development spending on component technology over the next decade, and about 70% of the procurement. These numbers increase across the board when the overall unmanned platform market includes sea and land systems, areas in which the U.S. is the sole market force.

3. Military Space Systems

An important driver for the space-based systems market is the U.S. goal to effectively manage a global force deployed in multiple theaters. This brings the discussion of space systems back to that of C4ISR and network-centric warfare. First, secure global communications are dependent on communication satellites (SATCOM). Once largely the domain of the super-powers, satellite communications are now at the core of many national defense capabilities and continue to move down from strategic to tactical applications.

Even so, the U.S. military is still the largest user of SATCOM bandwidth by some margin and its consumption continues to increase. Given the levels of demand, a significant percentage of capacity has to be sourced from commercial spacecraft. It is calculated that this usage was between 60% and 80% during Operation Iraqi Freedom supportive operations. Although it is unlikely that the U.S. military would ever seek to reduce its use of commercial SATCOM capacity to zero, there is a desire to reduce this dependence both to save money and increase availability.

One objective of the Bush administration is not only to ensure the U.S.'s ability to exploit space for military purposes, but also to deny potential adversaries the opportunity to do so. A key theme of the U.S. plans to take control of space is “negation”--the denial of the use of space for military intelligence or other purposes without U.S. endorsement. The National Reconnaissance Office, the intelligence agency responsible for U.S. surveillance satellites, is set to develop a strategy that ensures Washington's enemies, and even allies, never gain access to the same space resources without prior sanction from the U.S. Recent proposals circulating at Space Command suggest that access to “near-earth space” may be refused to other nations. All GPS satellites are located within near-earth space, which covers the orbital distance from Earth to the Moon.

Dominance in space correlates directly to another principle market driver: protection. Not protection in the sense of protecting troops or civilians, but rather protection in the sense of maintaining U.S. dominance in the arena.

U.S. law, signed by President Clinton in 1999, mandates a ballistic missile defense shield "as soon as it is technologically possible." The Missile Defense Agency (MDA) funding has stayed relatively constant over the

past few years. The DoD spent $8.8 billion on ballistic missile defense in 2006, $9.4 billion in 2007, and is projected to spend $8.9 billion in the FY2008 budget recently released. Missile Defense continues to receive more funding than any other weapons program in the Pentagon budget.

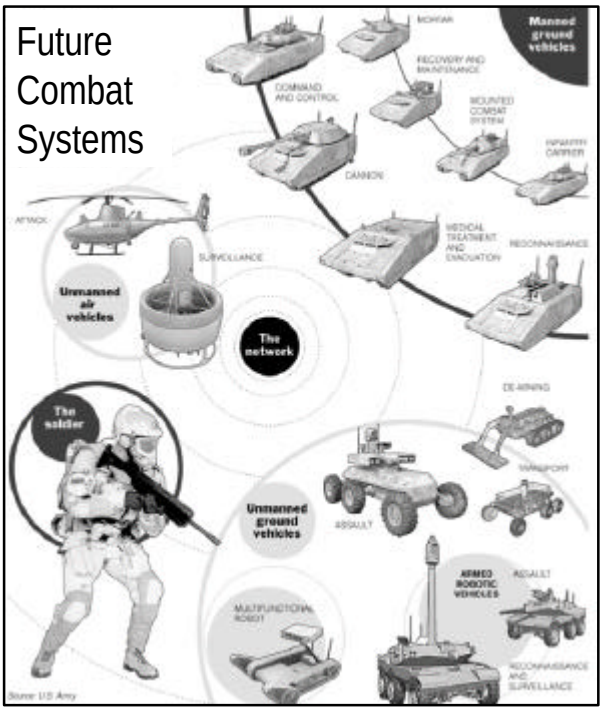
4. Future Combat Systems

The U.S. Army's Future Combat Systems (FCS) is a program that was initiated in 2000. This was, and could still be, the Pentagon's second largest development project after the Joint Strike Fighter. Spending could easily top $100 billion over the next 15 years. However, the program has recently met with substantial current technical and funding challenges.

The FCS is a major modernization effort, designed in part to develop and purchase lighter more adaptive vehicles to replace existing vehicles used now in support of heavy forces. The goal is to enable brigade-sized units to reach any battlefield in 96 hours and utilize superior information to defeat heavier and more numerous foes. FCS is made up of eighteen new systems of manned and unmanned ground vehicles, air vehicles, sensors, and munitions networked with the soldier to act as the ground element of a joint combat force.

FCS is grouped into seven key areas:

1. Soldier
2. Network
3. Manned Systems
4. Unmanned Aerial Vehicles
5. Unmanned Ground Vehicles
6. Unattended Munitions
7. Logistics and Training
8. Related Systems



The Army's FCS Increment 1 acquisition schedule has three concurrent phases: Technology Development, System Development and Demonstration, and Production. The design readiness review is scheduled for mid 2006, the prototype delivery and initial production decision in late 2008. However, this schedule has faced many challenges and current time lines show that initial delivery will take place in 2014 at the earliest, six years later than the previous schedule.

Due to the funding challenges and schedule delays, many doubt that the FCS program will be completed in its current form. Many different alternatives have been proposed by the Congressional Budget Office (CBO) that involve separate scaling down of many FCS components as they are currently outlined.

5. Land Warrior System

The Land Warrior System, currently under development, is a system of systems and includes everything the individual soldier wears, carries, and consumes from unit radios to crew served weapons and unit specific equipment.

The goal is to integrate the soldier into the FCS communications network, reduce his load to 40 pounds or less, and give him 24 hours of battery power. The subsystems, utilizing both commercial off-the-shelf and new technologies developed in research labs, include a weapon, helmet display, computer, communications, navigation, protective clothing, and individual equipment.

Land Warrior will increase soldier lethality by developing more powerful weapons that have enhanced sights, range finders, and target designators. Lighter, more effective body armor to increase survivability, and experimental robotic powered systems with pistons to give him increased strength and mobility are also planned. Helmet-mounted infrared sensors and image intensifiers will help soldiers find the enemy. Situational awareness will be improved through integrated voice, visual, and text data communications that allow seamless contact with all echelons. Lightweight cameras, computers, and batteries will allow every soldier to pass on what he sees to his comrades.

Land Warrior is a separate and distinct program for funding purposes and the funding outlined in this segment is not included in the FCS funding data. The total value of the Land Warrior program with all options exercised has an estimated potential value of $791 million for research, development, testing, and evaluation, and $1,940 million for procurement of 45,000 sets of equipment. The United States Marine Corps and Air Force, as well as many foreign countries are also interested in the project and are potential customers. The DoD and research labs are looking out to 2015 and beyond for promising technology to mature. The United States Army Research Office has allocated $50 million to establish the Institute for Soldier Nanotechnologies at the Massachusetts Institute of Technology.

The research, design, and manufacture of these new systems will generate billions of dollars of new contracts to U.S. businesses over the next 10 to 20 years.

Before identifying future growth opportunities in defense for Northern Nevada, we examine today's spending on defense by the United States.

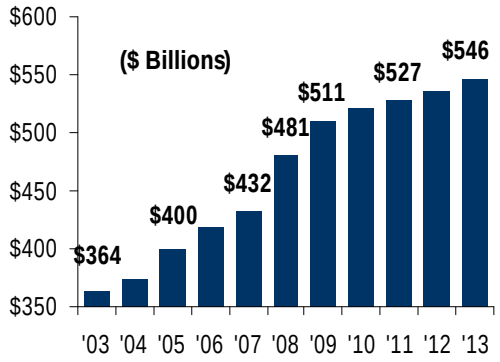
Defense Budget Today

U.S. defense spending continues to rise with continuing military action abroad and an acceleration of planned research and procurement. The recently released White House budget request for FY2008 includes $481.4 billion for the Department of Defense (DoD), which does not include an additional $141.7 billion to pay for the Global War on Terror (GWOT) in FY2008. The $481.4 billion total DoD budget request also does not include a $93.4 billion emergency supplemental funding request to cover the cost of ongoing operations in the GWOT for the remainder of FY2007 (this last request is currently before Congress and is the subject of current disagreement).

The 2008 budget represents a $49 billion increase (or 11.3% increase) in funding from the previous FY2007 budget. Since 2003, the DoD budget has experienced a 32% increase, and a 65% increase since the 2001 pre-9/11 DoD budget. Defense spending growth will continue through at least 2013 when the DoD budget is expected to reach $546 billion. From 2003 to 2013 the annual growth rate for DoD budgets is expected to be 4.1%, which does not include supplemental defense spending to fund ongoing wars. Even without this additional funding factored in, DoD spending is growing at a rate faster than the growth rate of the overall economy.

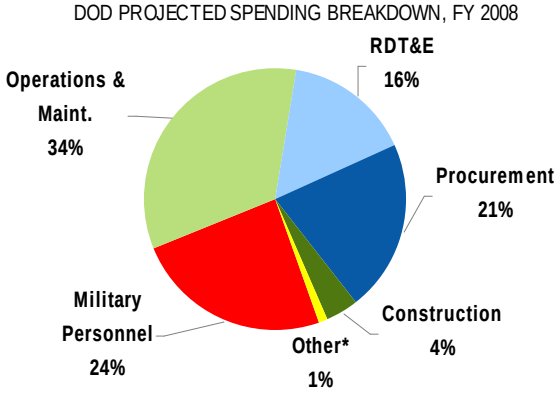
The Administration's 2008 defense budget represents a continuation of the previously established priorities. Large funding categories include:

DOD BUDGET TRENDS



Source: OMB, DOD; AngelouEconomics

DOD SPENDING BREAKDOWN



Other includes: Family Housing and Working Capital funds
RDT&E is Research, Design, Testing and Evaluation
Source: DoD

- ✓ Missile Defense: $8.9 billion for the Missile Defense Agency to fund Ballistic Missile Defense.
- ✓ Shipbuilding: Approximately $10.5 billion which includes, one Aircraft Carrier - $3.1 billion, the DDG-1000 Destroyer program - $3.5 billion, the Littoral Combat Ship - $1.2 billion for three vessels, one Virginia class nuclear attack sub - $2.7 billion.
- ✓ Aircraft: Approximately $15.9 billion including $2.4 billion for 24 Navy FA-18E/F Super Hornets, $2.6 billion for 26 V-22 Osprey tilt-rotor aircraft, $6.1 billion for 12 F-35 Joint Strike Fighters, and $4.6 billion for 20 F-22A Raptor Fighters.

DoD Procurement:

The Defense Department spends over 60% of its budget (not including supplementals) with outside private sector contractors. This amounted to $292.5 billion in FY2006. The DoD contracts with outside vendors for a wide variety of goods and services, with weapons procurement accounting for roughly 40%. DoD is a heavy purchaser of manufactured goods, purchasing $121 billion worth in 2006. Spending in this industry is dominated by large-scale weapon platforms, but the DoD spent over $17 billion on 12 non-weapon manufacturing sub-sectors, including everything from textiles and apparel to food and furniture manufacturing.

Professional, scientific, and technical services is the second largest industry recipients of DoD contracting, with $72.3 billion spent in 2006.

Administration services, which include many base support services, accounted for $20 billion. Military bases act as small cities and require janitorial services, non-DoD security, food services, and other various facility support services.

Nearly $19 billion was spent on construction in 2006. The majority of construction funding is directed toward improving soldiers' quality of life with new housing facilities and improved training facilities across the nation.

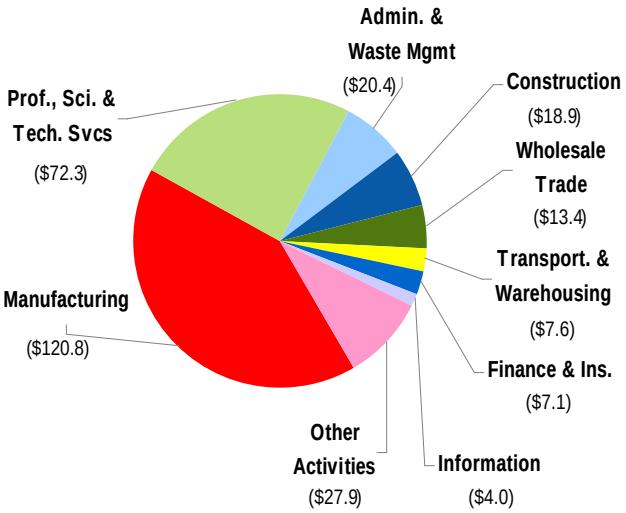
Contracting by the Defense Department represents one of the largest industries in the United States, and in 2006 equaled 1.31% of all private sector output. Defense contracting in manufacturing, professional services, administrative services, and construction accounted for even larger shares of industry output.

DoD spending on professional, scientific, and technical services equaled 5.32% of that industry's total output. This includes military contracting for research and development, making the DoD the nation's largest recipient of contracted research.

Military facilities, which require support services similar to a small city, account for the DoD's large share of administrative support services nationwide. The push for

DOD PROCUREMENT BY INDUSTRY

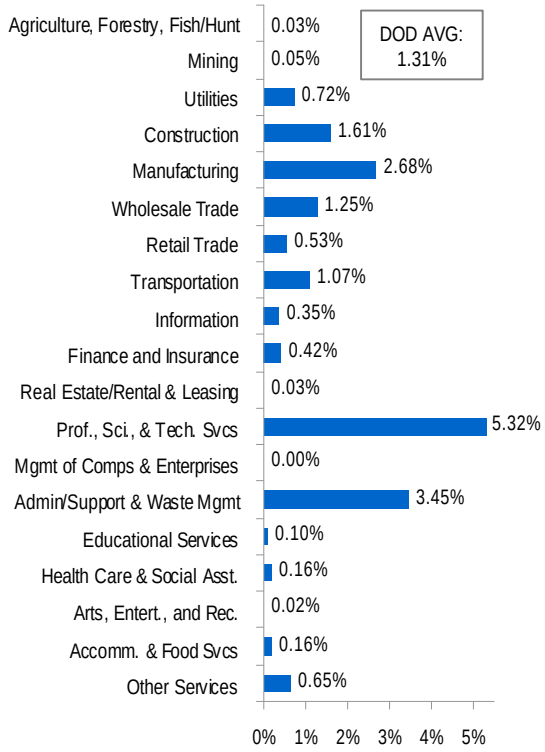
DOD SPENDING TODAY, FY 2006 ($ Billions)



Source: OMB, DOD; AngelouEconomics

DEFENSE SHARE OF ECONOMY

DOD PROCUREMENT'S SHARE OF PRIVATE INDUSTRIES, 2006

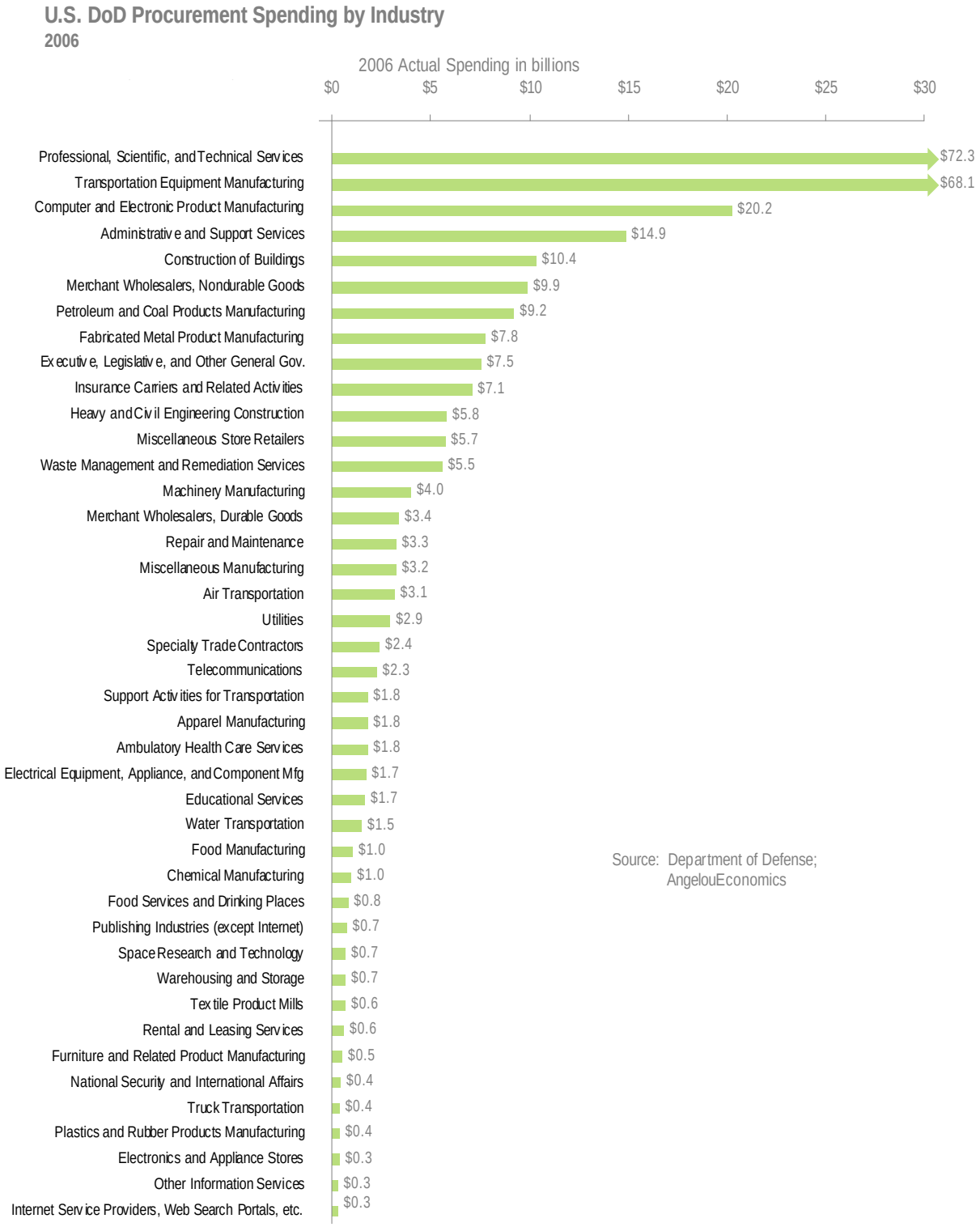


Source: AngelouEconomics

further privatization of non-core functions within the DoD will raise this percentage in the future.

Manufacturing is the nation's single largest major industry with output of nearly $4.5 trillion in 2006. The DoD spent $121 billion in 2006, equivalent to 2.68% of America's total manufacturing output. More than half of Defense spending is concentrated in armored vehicles, shipbuilding, aircraft manufacturing, and related products. The other half is distributed across more commercial manufacturing sectors.

Defense contracting is concentrated in manufacturing tied to large weapon platforms, facility support services, and technical services including research and development. Over $72 billion was spent on technical services and $68 billion on transportation equipment manufacturing in 2006, accounting for 48% of all DoD contracting last year.

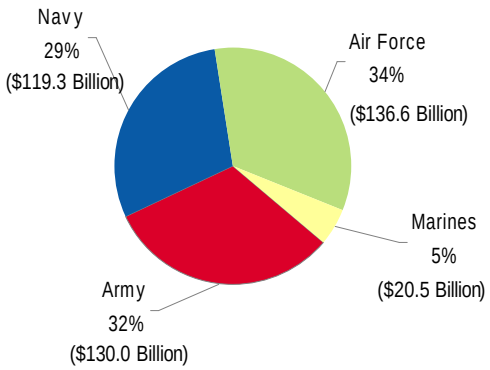


Service Budgets

We examine the recently requested FY2008 budgets of each of the four armed services: Army, Air Force, Navy, and Marines.

DEFENSE BUDGETS BY BRANCH

DOD FY 2008 BUDGET BY BRANCH OF SERVICE



Source: DoD, AngelouEconomics

Army

The U.S. Army budget request for FY 2008 is $130.0 billion for 2008, a $20.4 billion (27%) increase from the previous year. This budget does not include an additional supplemental request of $83.4 billion to fund the continuing GWOT. The budget for FY 2009 calls for an additional $10.7 billion increase to $140.7 billion. The Army continues its priorities of:

- ✓ Accelerating future force modernization
- ✓ Building readiness to face "today and tomorrow's challenges"
- ✓ Re-stationing forces in line with DoD priorities

To accomplish these, the Army announced the addition of 65,000 active forces and 9,000 reserve forces by 2013. The current FY2007 Army end strength is 482,400 Active Army, 350,000 Army National Guard, and 200,000 Army Reserve.

At $130 billion, the Army has a 32% share of DoD budgets compared to the other branches. This is historically higher than usual and is representative of being stretched thin by operations in Iraq and elsewhere.

ARMY R&D AND PROCUREMENT SUMMARY		
Budget Request ($M)		
	FY 2008	**FY 2009**
Aircraft	$4,180	$5,173
Missiles	$1,645	$1,695
Ammunition	$2,191	$2,405
Weapons and Tracked Combat Vehic.	$3,090	$3,486
Tactical and Support Vehic.	$6,874	$7,203
Communications and Electronics	$5,773	$6,231
RDT&E	$10,590	$9,794
Totals	$34,343	$35,987

Air Force

The U.S. Air Force has requested $136.6 billion in 2008, about $7.8 billion (6%) above the 2007 appropriated budget. Of this total, the largest spending category, $38.9 billion (35%)will occur in R&D and Procurement. Like all branches, this budget does not include a request for $17.3 billion in supplemental funds to continue the fight in the GWOT.

The Air Force is projecting total military end strength of 502,800. Unlike the increases in the Army, this represents a decrease of 13,300. This personnel reduction is on par with the Air Force's plan to reduce personnel levels by 65,000 between 2004 and 2009.

The Air Force has been especially challenged by increasing costs of operations. Specifically, fuel costs have increased by 9% over the past year.

At $136.6 billion, the Air Force has a 34% share of DoD budgets compared to the other branches the largest share of any military branch. This is typical due to the high cost of equipment and technology procurement, and the substantial amount dedicated to R&D.

AIR FORCE R&D AND PROCUREMENT SUMMARY		
Budget Request ($M)		
	FY 2008	**FY 2009**
Aircraft	$11,600	$12,400
Missiles	$3,200	$4,000
Equipment	$2,800	$3,200
Ammunition	$1,100	$900
RDT&E	$17,900	$18,400
Totals	$36,600	$38,900

Navy & Marines

The U.S. Navy's portion of the FY2008 budget is $119.3 billion, a $9.0 billion increase (8.1%) over 2007 appropriations. The FY2008 budget for the Marines is $20.5 billion, a $4.3 billion (26.5%) increase over the 2007 budget. The Marine Corp experienced the largest growth in appropriated budget from 2007-2008, due in large part to the ongoing conflict in Iraq and the need for more troops on the ground. This budget does not include a combined additional $20 billion supplemental request to fund the continued GWOT.

At $119.3 billion, the Navy has a 29% share of DoD budgets compared to the other branches while the Marines (the nation's smallest branch) commands a 5% share at $20.5 billion.

The budget outlined a continued Navy strategy of reducing the number of personnel through the use of technology and other efficiencies and applying the savings and other resources to additional research, development, and acquisition accounts. The strength of the uniformed Navy has dropped to 344,093 from 365,900 in 2005. Currently the Navy has 93 ships deployed representing 34% of the total fleet.

Conversely, the Marines has a current active strength of 179,695, and expects the force to grow to 202,000 by 2011 to meet the needs of the GWOT.

Among the Navy highlights is growth in shipbuilding, which was a previous challenge. The current budget indicates construction funding of $14.7 billion for the construction of 7 ships in 2008. This comes after allocation for funding of 7 ships in 2007, and future projected funding of 11 ships in 2009. The Aircraft procurement budget is also strong for FY2008, with $12.7 billion allocated for 188 aircraft.

Of the service branches, the Navy and Marines combine to spend the most on Procurement and R&D.

NAVY AND MARINES R&D AND PROCUREMENT SUMMARY

Budget Request ($M)

	FY 2008*
Ships	$14,700
Aircraft	$12,700
Other Procurement	$5,500
Weapons	$3,100
Marine Corps Procurement	$3,800
RDT&E	$17,100
Totals	$56,900

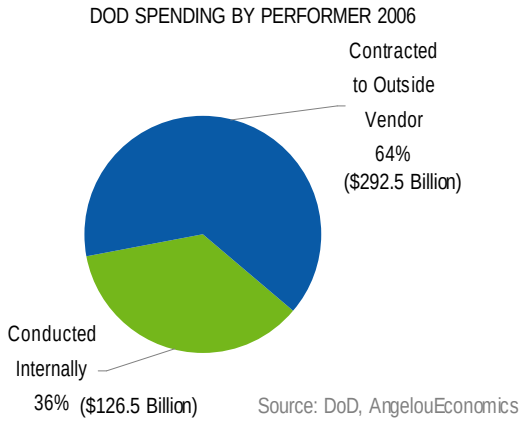
** FY2009 figures not released by Navy*

Defense Contracts

Contract spending by the DoD, including procurement, research and development, and operational services contracts, is growing faster than overall DoD spending.

AngelouEconomics examined millions of Department of Defense contracts, which totaled $292 billion in total spending in 2006 alone. The majority of information came directly from Defense Department databases, although classified information was redacted for security purposes. This section of the report is focused on trends within defense procurement, not simply overall defense spending.

DEFENSE SPENDING

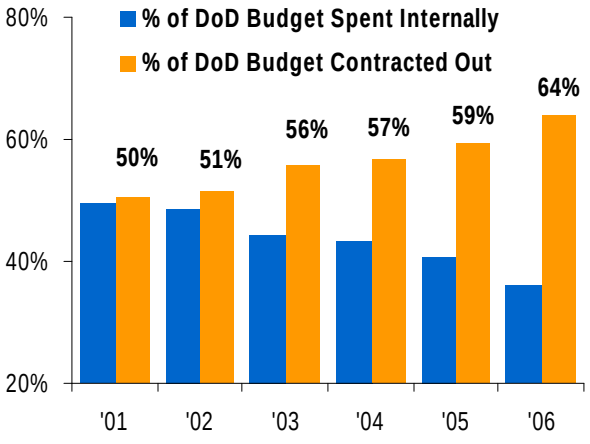


Source: DoD, AngelouEconomics

As was discussed in the previous section, defense spending has risen rapidly. As important is the concurrent increase in private sector contracting and outsourcing at the Pentagon. In 2001, DoD spending that was kept internal versus contracted out was roughly one to one. For every dollar DoD spent on outside contractors, it spent a dollar internally. Quite rapidly, the trend has shifted increasingly toward spending more of the budget on outside contractors. In 2006, the DoD contracted out 64% of its total budget to outside contractors. This means that in 2006, the value of contracted work was nearly $96 billion more than internal DoD spending.

The value of goods and services procured by the Pentagon is growing at twice the rate of internal spending growth. In 2006, the DoD contracted for $293 billion compared to $127 billion in internal spending.

DOD CONTRACTING



Source: DOD; AngelouEconomics

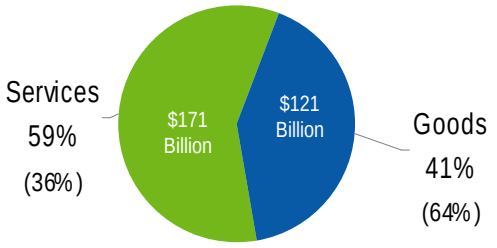
The military is now choosing to outsource non-core functions to private sector firms. Ongoing military operations in Iraq and Afghanistan, as well as intensified operations worldwide against terrorist networks, stress the military's manpower. During 2001 and 2002, the rapid change from declining military expenditures and size, and a move towards fighting rather than peacekeeping sapped available reserves. The Defense Department needed to deploy an ever-increasing number of soldiers abroad, more than were available. The solution came in transitioning an increasing number of soldiers in support operations to the field and outsourcing their jobs to private contractors.

At the same time the DoD looked to the private sector for assistance in providing additional services, thus

defense procurement and investment continued to rise. **The nation is currently in the middle of the longest sustained growth in DoD investment spending in U.S. history.**

The Pentagon purchases an ever-increasing variety of goods and services, including traditional items such as food and military-specific weapons systems such as aircraft carriers. Aircraft, ships, tanks, missiles, and other weapons systems are the building blocks of a modern military, but they're only the beginning of the Pentagon's procurement needs. Two decades ago, nearly two-thirds of the Defense Department's procurement budget purchased manufactured goods, with services accounting for roughly one-third of purchases. Today, that breakdown has nearly reversed as services now account for the majority of spending. The transition came in the early 1990s as large-scale weapons systems experienced cutbacks. In 2006, 59% of the U.S. military's contracting dollars went for services, a number that increases an average of 1% annually.

FY 2006 PURCHASES

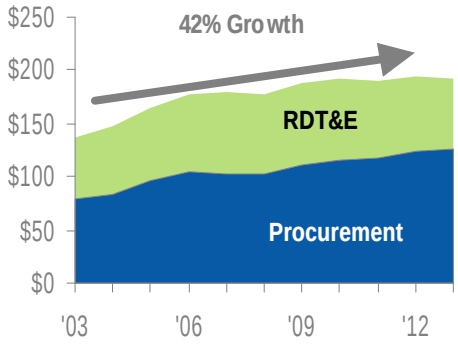


Source: DoD, AngelouEconomics

The Pentagon continues to place a heavy emphasis on what it terms “Modernization Spending.” These activities are those that ensure that the fleet remains agile and adaptive while making certain that the war fighter is equipped with any and all advantages on the battlefield. Next to Operations and Maintenance, expenditures on RDT&E and Procurement represent the largest annual expenditures by the DoD and it is projected to grow by 42% from 2003-2013. RDT&E refers to Research, Design, Testing and Evaluation.

Expenditures in these categories are important to track because of the implications they have on private sector defense procurement. It is in this category that the bulk of private sector purchasing will occur.

DOD MODERNIZATION SPENDING



Source: DoD, AngelouEconomics

Competitive Bidding

A significant factor in pursuing new DoD contracts is whether or not the industry is subject to adequate competition. "Set-asides" (contracts earmarked for a specific performer) and negotiated sole-sourcing may limit Northern Nevada firms from getting new contracts.

The extent of competitive contracting varies depending on whether you look at the data based on the total number of contracts or by the underlying dollar value of contracts.

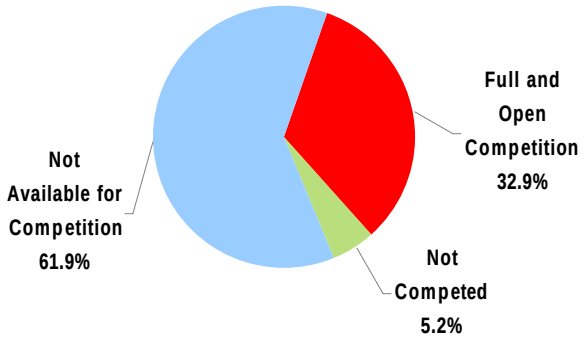
In Exhibit One to the right, only 33% of Defense Department contracts in 2006 were awarded under full and open competition, while roughly 67% were awarded through means other than open competition. Of the 67% of contracts awarded under other than full and open competition, the majority (62%) was not available for competition. In 2006, the DoD awarded 3,681,301 contracts. Of these, 1,208,124 were awarded through full and open competition. Sole source contracts are awarded if the Pentagon determines that there is only one firm that can provide the good or service desired by the military.

However, while the number of contracts tends to be less open to competition, the majority of contracts by value are awarded through full and open competition. Exhibit Two shows that 64% of all dollars awarded by the DoD came as the result of a full and open competition process. This equates to over $184 billion in 2006. However, it still means that one-third of Pentagon contracting, over $110 billion in 2006, was not competitively awarded. Understanding the industries and companies that operate without competitive pressures is important in determining which industries Northern Nevada can effectively develop internally, and which should be recruited from outside the state.

Manufactured goods account for the largest majority of the non-competitive contracts awarded, even though services now account for a majority of Defense Department procurement. The more advanced the good or service procured, the greater the chance it will be awarded without competition. The majority are large-scale weapons platforms. Aircraft manufacturing, missile systems, and space

EXHIBIT ONE:
COMPETITIVE CONTRACTING?

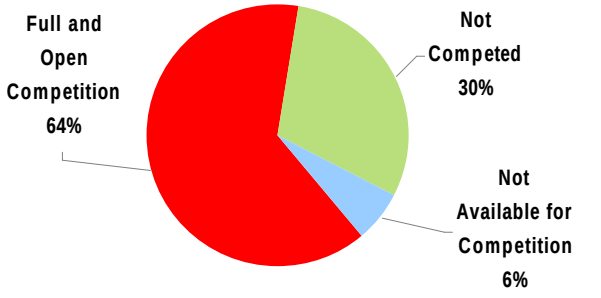
BY NUMBER OF CONTRACTS: FY 2006



Source: DoD, AngelouEconomics

EXHIBIT TWO:
COMPETITIVE CONTRACTING?

BY CONTRACT VALUE: FY 2006



Source: DoD, AngelouEconomics

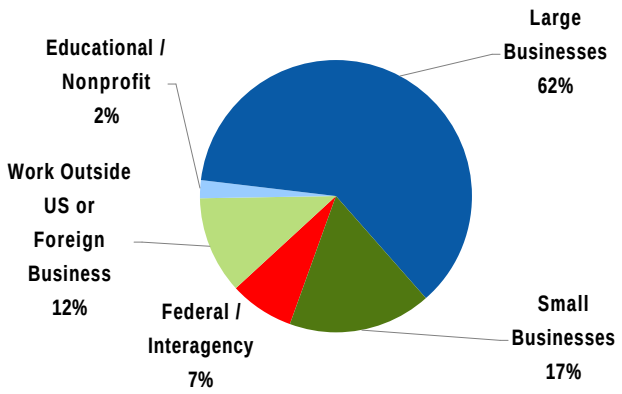
vehicle manufacturing are all non-competitive industries with more than three-quarters of Defense Department procurement awarded without competition.

Military-specific products are less likely to face competition due to a lack of commercial products and consolidation in the defense industry. The Pentagon's largest contractors face much less competition than small businesses or commercial product producers. Among contracts awarded to small businesses, 74% resulted from full and open competition versus just 56% for large businesses.

Due to the nature of large, non-competitive contracts for weapons, **large businesses received nearly 62% of Defense Department procurement spending in 2006.** Much of this is again tied directly to large-scale weapons platforms and service contracts that dominate defense procurement, as all of these contracts are directed to the largest defense suppliers. In fact, the fifty largest pentagon suppliers receive, on average, over half of Defense Department procurement spending annually.

DOD CONTRACTING BY TYPE

DOD CONTRACT SPENDING BY VALUE OF CONTRACTS: FY 2006



Source: DoD, AngelouEconomics

Small businesses accounted for 17% of Defense Department procurement in 2006, which equaled $50 billion. Educational institutions and other nonprofits only received 2% of defense contracts in 2006. This figure understates the importance that these institutions play in the defense procurement process. As universities and think tanks never pursue contracts for manufactured goods or base services, their available procurement universe is actually much smaller. These institutions account for much larger percentages of procurement in certain areas, such as research and development.

Despite some the non-competitive nature of some contracts, the overwhelming majority of products or services classified as commercially available are bid competitively, 100% in most cases.

Products and services commercially available are almost always competitively bid. The majority of instances in which contracts are not competitively bid are when a company becomes a preferred supplier to the Pentagon. Computer manufacturer Dell is an excellent example. Dell provides a competitively priced and reliable product, and Pentagon contracting officers can purchase goods from Dell without a competitive bid process.

Opportunities exist in many non-commercial areas as well, particularly when multiple private competitors are available. The Defense Department is one of the largest purchasers of IT services in the world and these services are competitively bid.

"Best Value" Contracting

DoD purchasing officers are no longer required to award contracts to the lowest cost bid. The department's stated goal is to award the contract to the firm that provides the "best value." The best value process is confusing as the factors used to determine the best value can change with every contract. Best value contracting may take the following into consideration:

- Cost
- Past performance
- Special feature of the good or service required for effective program performance
- Trade-in considerations
- Probable life of the item
- Warranty considerations
- Maintenance availability
- Environmental and energy efficiency considerations
- Delivery terms

Confusion is derived from the ambiguous nature of the above criteria and lack of a uniform scoring methodology. The Federal Acquisition Regulations (FAR) defines "best value" as the acquisition that provides the greatest overall benefit in relation to the government's requirement. Different agencies and purchasing officers can define best value as they see fit as long as the higher priced proposal would provide a greater value to the government and that this greater value is worth the extra cost. Evaluation criteria and importance must be clearly stated in the Request for Proposal (RFP), but the criteria can be different for each RFP.

The majority of contracts are awarded on a lowest cost basis, but best value awards account for a sizable percentage of awarded contracts. In 1999, the Government Accounting Office (GAO) conducted an investigation on best value contract awards. The agency reviewed 250 awarded contracts whose solicitations stated the department was willing to consider offers other than the lowest bid. Of the 250 contracts reviewed, 53 were awarded to firms that did not submit the lowest bid. The 53 contracts totaled $5.3 billion and a total premium of $370 million was paid above the lowest bids offered for the contracts.

While the FAR does not specify the goods and services for which best value can be utilized, the majority of contracts reviewed by the GAO were for very sophisticated goods and services.

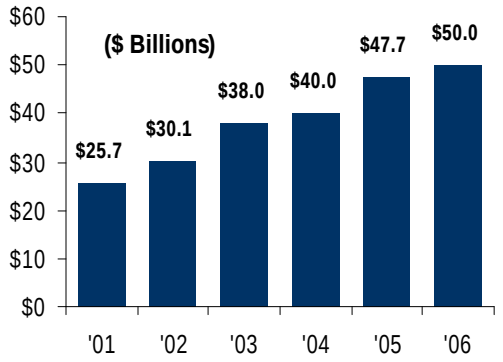
Small Business Opportunities

Small business contracting and subcontracting is growing faster than the overall DoD market.

Small businesses were awarded $50 billion in prime contracts from the Defense Department in 2006. Small business procurement is growing in lockstep with overall defense procurement, increasing 94% from 2001 to 2006, slightly above the total defense procurement growth rate. Small businesses were awarded 17% of prime contracts in 2006, a number that has remained stable for the last four years.

Small businesses win an equal percentage of awards in the goods producing and service industries, and have success in both technology-intensive and labor-intensive industries.

SMALL BUSINESS CONTRACTING



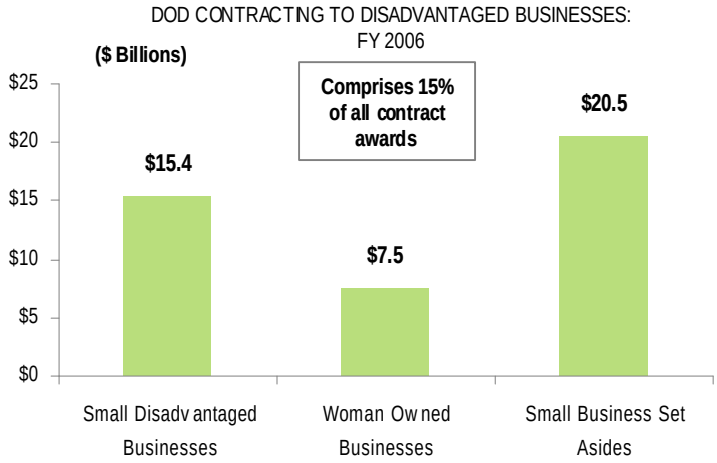
Source: DOD; AngelouEconomics

For decades the federal government has given preferential treatment to small businesses attempting to sell goods and services into the vast federal purchasing market. Under an informal quota system set by Congress, federal agencies are encouraged, though not legally required, to direct 23% of procurement spending to small businesses.

What constitutes a small business varies widely according to purchasing agency and industry classification. Companies wholesaling goods to the Pentagon must have fewer than 500 employees. Other industries, such as small arms manufacturers, may have as many as 1,500 employees and still be classified as a small business. Firms operating in other industries are designated small businesses based on their annual revenues. Companies owned by certain disadvantaged groups can remain classified as a small business no matter how large they grow. In fact, many of the Pentagon's largest contractors receive significant amounts of contract dollars classified as going to small businesses.

Part of the problem is reporting and bidding requirements for federal contracting. Many large companies acquire small businesses that have existing contracts and small business status with the federal government. The company can retain its small business status throughout the life of any contracts, which can skew statistics. Since some government contracts may last as long as 20 years, critics have complained that this loophole is actually helping companies it wasn't meant to help, and that more frequent reappraisals of a company's small business status should be required.

DOD CONTRACTING



Source: DOD; AngelouEconomics

Despite this, the DoD has made a strong push to involve small businesses as well as other disadvantaged businesses in the contracting process. The chart above demonstrates the strong opportunity that exists for small businesses, disadvantaged businesses and woman owned businesses. Together these groups accounted for 15% of all DoD contract awards, $43.4 billion in 2006.

Outsource Opportunities

The DoD is aggressively pushing forward with outsourcing non-core functions, contributing to the growth in services procurement.

The executive branch encourages federal agencies to obtain commercially available goods and services from the private sector when possible. The Office of Management and Budget (OMB) formalized the policy in 1966 with the publication of the Circular A-76. The A-76 Circular establishes federal policy for determining whether commercial activities should be provided through contracts with commercial sources, use of in-house government personnel, or through inter-service agreements with other federal agencies. Viewed by the government as a competition-based program to reduce costs, outsourcing only happens when the private sector successfully outbids the competing government entity for the job.

According to the OMB, nearly half of all federal employees perform tasks that are readily available in the commercial marketplace. Costs are typically reduced 20% to 50% when competitive bidding on jobs is allowed.

Only non-core functions are subject to competition, and defining tasks as core or non-core remains broad and subjective. DoD designates all military and civilian essential positions required for military and national security reasons as core. According to the Quadrennial Defense Review, the test to determine core functions is whether a function is directly necessary in fighting warfare.

The OMB has analyzed more than 100,000 DoD non-core positions to date, with a stated goal to study at least 226,000 commercial positions by 2008. The recent need to reassign military personnel overseas has accelerated this process. While government employee unions continue to fight these efforts, growth in DoD outsourcing is expected to continue.

Northern Nevada Procurement Trends

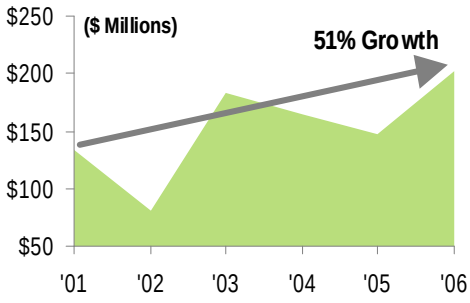
Northern Nevada military contracting has grown with the overall increase in spending by the Defense Department, however, at a slower pace. Contracting in the 7-County Northern Nevada region expanded from $133.5 million in 2001 to $201.9 million in 2006, for an overall increase of 51%. During this time period, national procurement expanded by 76%. So, while positive, the rural 7-County region is trailing overall DoD procurement growth.

When compared to the State of Nevada, the rural 7-County region's procurement growth rate trailed further. From 2001-2006, Nevada experienced 132% growth in DoD procurement, increasing from $323.6 million in 2001 to $750.4 million in 2006.

This growth came largely from expansions in Clark and Washoe counties (see chart below for annual average growth rates from 2001-2006). Clark County expanded by $211 million (19%), from its 2001 base of $153 million. Washoe County, however, experienced the greatest percentage growth from 2001-2006. Washoe increased its DoD procurement by $147 million; representing 38% growth per year from its 2001 base of $36 million.

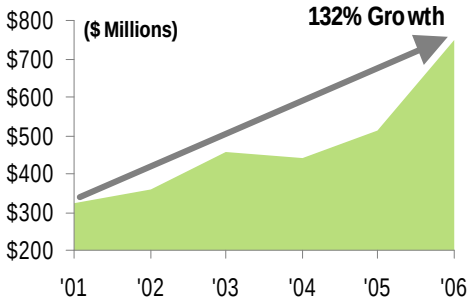
Despite comparatively slow growth in the state, the 7-County region still captured nearly 30% of all DoD spending in the state in 2006. This represents a total of $201.9 million. This places the region second only to Clark County in southern Nevada.

DOD PROCUREMENT:
7-COUNTY* NORTHERN NEVADA REGION



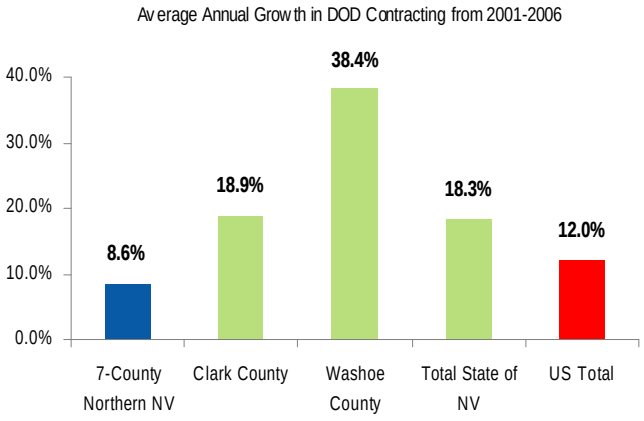
Source: AngelouEconomics; DoD
*7-County region includes: Carson City, Churchill, Douglas, Lyon, Mineral, Pershing, and Storey Counties

DOD PROCUREMENT:
STATE OF NEVADA



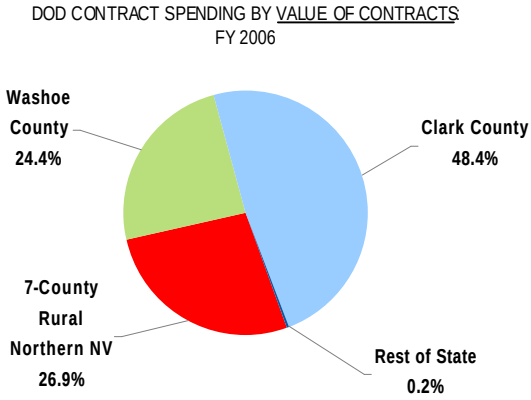
Source: AngelouEconomics; DoD
*7-County region includes: Carson City, Churchill, Douglas, Lyon, Mineral, Pershing, and Storey Counties

DOD CONTRACTING COMPARISON



Source: DOD; AngelouEconomics

NEVADA DOD CONTRACTING



Source: DoD, AngelouEconomics

Currently, the top industry supplying the DoD in Northern Nevada is Administration and Support Services at $71 million in 2006. This is not surprising as this sector comprises much of the base level support for its ongoing Operations and Maintenance.

The region is also strong in many attractive industry sectors. Namely, the Professional, Scientific, and Technical services industry captured $69 million in 2006. This industry represents a growing sector that supply above average wages. Manufacturing, Transportation, and Construction were also strong industry sectors for Northern Nevada. Of the top ten industry clusters, three were manufacturing related representing $21 million. Construction and contracting accounted for more than $11 million, while transportation and warehousing accounted for an additional $21 million.

These industries are also sectors in which the Northern Nevada region has particular strength. In our 2nd report, we will examine the industry clusters in more detail and compare them to the needs of the national defense industry to identify select defense industries that should be the target of growing the 7-County region's defense industry.

NORTHERN NEVADA TOP INDUSTRIES *(Detailed):*

NAICS	NAICS Description	NN total
561	Administrative and Support Services	$71,011,401
541	Professional, Scientific, and Technical Services	$69,191,087
488	Support Activities for Transportation	$19,994,822
336	Transportation Equipment Manufacturing	$15,003,779
237	Heavy and Civil Engineering Construction	$7,355,294
238	Specialty Trade Contractors	$4,190,107
332	Fabricated Metal Product Manufacturing	$3,606,077
722	Food Services and Drinking Places	$2,428,660
335	Electrical Equip., Appliance, and Component MFG	$2,402,603
493	Warehousing and Storage	$1,269,933

Procurement Trends by County

As mentioned above, the 7-County Northern Nevada region has experienced 51% growth in DoD procurement from 2001-2006. As would be expected due to the presence of the bases, both Churchill and Mineral counties lead the way in total dollars spent over this time period. In 2006, Churchill County had $108 million in contracting representing 34 % growth from 2001-2006. Mineral County had nearly $62 million in total contracting, representing 85% growth from 2001-2006.

Other counties in the region that have experienced tremendous population gains over the past five years, have also experienced strong growth in DoD contracting. Douglas County grew DoD contracting by $7.2 million (496%), Storey grew its DoD work by $261 K (827%), while Lyon County (among the fastest growing counties in the state) had the largest growth in DoD contracting, expanding by $8.5 million (3351% growth). The increases in these counties can be attributed to their general expansion in popualtion and respective business base. As these counties grow and add more businesses, these new companies are increasingly looking for opportunities to do business with the local bases and the DoD.

Carson City was the only area in the region that experienced a contraction in DoD spending. From 2001-2006, DoD contracting decreased by $3.7 million (-21%). Still, Carson City has the 3rd largest amount of DoD contracting of the seven rural Northern Nevada counties.

NORTHERN NEVADA CONTRACTING BY COUNTY

			2001 - 2006	
	2001	**2006**	Dollar Growth	% Growth
Carson City	$17,741,950	$14,009,010	$3,732,940	-21%
Churchill	$80,534,923	$108,154,008	$27,619,085	34%
Douglas	$1,459,513	$8,692,128	$7,232,615	496%
Lyon	$252,450	$8,711,794	$8,459,344	3351%
Mineral	$33,430,472	$61,785,158	$28,354,686	85%
Pershing	$0	$285,445	$285,445	NA
Storey	$31,503	$292,058	$260,555	827%
Total	**$133,450,811**	**$201,929,601**	$68,478,790	51%

County Procurement Trends by Industry

Carson City:

Carson City's total DoD contracting in 2006 was $14 million, representing a decline of $3.7 million since 2001. Despite this decline, Carson is still the 3rd largest DoD contract recipient of the seven counties.

Carson City has particular strength in Transportation Equipment Manufacturing and the Professional, Scientific, and Technical Services industries. Both of the industries are strong DoD growth sectors that pay above average wages.

The table below shows procurement across all major industies. It also shows Carson City's employment cluster ratio in these industries. A cluster ratio above 1.00 means that the county has above average strength in that industry. By examining where the county has strength and comparing this to its procurement in those industries, we can identify where possible opportunities lie. We label the sector an opportunity for areas in which the county has employment cluster strength yet not a strong amount of DoD procurement or areas in which the county already excels in attracting procurement dollars.

CARSON CITY TOP 5 INDUSTRIES *(Detailed):*

NAICS	NAICS Description	2006 DOD Procurement
336	Transportation Equipment Manufacturing	$9,136,453
541	Professional, Scientific, and Technical Services	$2,981,681
332	Fabricated Metal Product Manufacturing	$482,660
334	Computer and Electronic Product Manufacturing	$464,848
333	Machinery Manufacturing	$414,145

CARSON CITY PROCUREMENT BY INDUSTRY

NAICS Industry	NAICS Description	DoD Contracting	Employment Cluster	Opportunity for Additional Contracting?
11	Agriculture, Forestry, Fishing and Hunting	$0	0.00	
21	Mining	$0	0.00	
22	Utilities	$0	0.00	
23	Construction	$18,121	0.00	
31-33	Manufacturing	$10,626,593	1.19	YES
42	Wholesale Trade	$65,067	0.48	
44-45	Retail Trade	$18,391	1.21	YES
48-49	Transportation	$68,306	0.00	
51	Information	$54,651	0.52	YES
52	Finance and Insurance	$0	0.97	YES
53	Real Estate and Rental and Leasing	$0	1.08	
54	Professional, Scientific, and Technical Services	$2,981,681	0.74	
55	Management of Companies and Enterprises	$0	0.30	
56	Administrative and Support and Waste Management	$23,940	0.80	
61	Educational Services	$0	0.16	
62	Health Care and Social Assistance	$82,000	0.79	
71	Arts, Entertainment, and Recreation	$0	4.28	YES
72	Accommodation and Food Services	$0	1.14	YES

Churchill County:

Churchill County's total DoD contracting in 2006 was $108 million, representing an increase of $27.6 million since 2001. Home to NAS Fallon, Churchill County is the largest recipient of DoD contracts in the 7-County region.

Churchill County has particular strength in the Professional, Scientific, and Technical Services industry, which is a strong growth sector and pays above average wages. Churchill also (as expected) is strong in the Administration and Support Services industry, which primarily serves the O&M needs of NAS Fallon.

CHURCHILL TOP 5 INDUSTRIES *(Detailed):*

NAICS	NAICS Description	2006 DOD Procurement
541	Professional, Scientific, and Technical Services	$46,037,196
561	Administrative and Support Services	$24,669,467
488	Support Activities for Transportation	$19,994,822
237	Heavy and Civil Engineering Construction	$7,355,294
238	Specialty Trade Contractors	$4,180,896

The table below shows procurement across all major industies. It also shows Churchill's employment cluster ratio in these industries. A cluster ratio above 1.00 means that the county has above average strength in that industry. By examining where the county has strength and comparing this to its procurement in those industries, we can identify where possible opportunities lie. We label the sector an opportunity for areas in which the county has employment cluster strength yet not a strong amount of DoD procurement or areas in which the county already excels in attracting procurement dollars.

CHURCHILL COUNTY PROCUREMENT BY INDUSTRY

NAICS Industry	NAICS Description	DoD Contracting	Employment Cluster	Opportunity for Additional Contracting?
11	Agriculture, Forestry, Fishing and Hunting	$0	0.00	
21	Mining	$0	0.00	
22	Utilities	$0	2.59	YES
23	Construction	$12,044,478	1.56	YES
31-33	Manufacturing	$1,778,666	0.57	YES
42	Wholesale Trade	$8,115	0.56	
44-45	Retail Trade	$10,703	1.29	YES
48-49	Transportation	$19,994,822	1.62	YES
51	Information	$689,741	0.65	YES
52	Finance and Insurance	$0	0.49	
53	Real Estate and Rental and Leasing	$68,500	1.15	
54	Professional, Scientific, and Technical Services	$46,037,196	0.00	YES
55	Management of Companies and Enterprises	$0	0.00	
56	Administrative and Support and Waste Management an	$25,013,966	1.49	YES
61	Educational Services	$0	0.00	
62	Health Care and Social Assistance	$81,566	0.00	
71	Arts, Entertainment, and Recreation	$0	3.36	YES
72	Accommodation and Food Services	$2,420,255	0.99	

Douglas County:

Douglas County's total DoD contracting in 2006 was $8.7 million, representing an increase of $7.2 million since 2001. This 496% total growth rate far outpaced the region, state and nation and is primarily due to strong countywide growth in the business base.

Douglas County has particular strength in the Professional, Scientific, and Technical Services industries, a high paying, high growth sector. This industry, largely service based, also fits well with the desired economic development projection that Douglas County officials wish to take. This industry typically employs white collar workers in office or light industrial settings, which is the types of businesses that Douglas County aims to attract.

DOUGLAS TOP 5 INDUSTRIES *(Detailed):*

NAICS	NAICS Description	2006 DOD Procurement
541	Professional, Scientific, and Technical Services	$7,560,970
333	Machinery Manufacturing	$428,052
336	Transportation Equipment Manufacturing	$294,082
335	Electrical Equip., Appliance, and Component MFG	$194,722
334	Computer and Electronic Product Manufacturing	$144,983

The table below shows procurement across all major industies. It also shows Douglas County's employment cluster ratio in these industries. A cluster ratio above 1.00 means that the county has above average strength in that industry. By examining where the county has strength and comparing this to its procurement in those industries, we can identify where possible opportunities lie. We label the sector an opportunity for areas in which the county has employment cluster strength yet not a strong amount of DoD procurement or areas in which the county already excels in attracting procurement dollars.

DOUGLAS COUNTY PROCUREMENT BY INDUSTRY

NAICS Industry	NAICS Description	DoD Contracting	Employment Cluster	Opportunity for Additional Contracting?
11	Agriculture, Forestry, Fishing and Hunting	$0	0.00	
21	Mining	$0	0.00	
22	Utilities	$0	0.46	
23	Construction	$0	1.56	YES
31-33	Manufacturing	$1,109,339	0.72	YES
42	Wholesale Trade	$17,579	0.20	
44-45	Retail Trade	$4,240	0.91	YES
48-49	Transportation	$0	0.19	
51	Information	$0	0.44	
52	Finance and Insurance	$0	0.35	
53	Real Estate and Rental and Leasing	$0	1.16	
54	Professional, Scientific, and Technical Services	$7,560,970	0.60	YES
55	Management of Companies and Enterprises	$0	0.38	
56	Administrative and Support and Waste Management an	$0	0.54	
61	Educational Services	$0	0.18	
62	Health Care and Social Assistance	$0	0.41	
71	Arts, Entertainment, and Recreation	$0	1.82	YES
72	Accommodation and Food Services	$0	4.08	YES

Lyon County:

Lyon County's total DoD contracting in 2006 was $8.7 million, representing an increase of $8.5 million since 2001. Lyon County experienced the largest growth in DoD contracts of all seven counties from '01-'06. The county increased from a level of nearly non-existent contracting to become the 4th largest recipient of DoD contracts in the 7-County region. This growth is helped by across the board growth in Lyon County – the county's growth in its population and business base is among the strongest in the state.

Lyon County has particular strength in Transportation Equipment Manufacturing, Professional, Scientific, and Technical Services, and the Electrical Equipment and Component Manufacturing industries. All of these industries are strong DoD growth sectors that pay above average wages.

LYON TOP 5 INDUSTRIES *(Detailed):*

NAICS	NAICS Description	2006 DOD Procurement
336	Transportation Equipment Manufacturing	$4,121,500
541	Professional, Scientific, and Technical Services	$2,248,362
335	Electrical Equip., Appliance, and Component MFG	$2,113,193
424	Merchant Wholesalers, Nondurable Goods	$194,688
334	Computer and Electronic Product Manufacturing	$32,912

The table below shows procurement across all major industies. It also shows Lyon County's employment cluster ratio in these industries. A cluster ratio above 1.00 means that the county has above average strength in that industry. By examining where the county has strength and comparing this to its procurement in those industries, we can identify where possible opportunities lie. We label the sector an opportunity for areas in which the county has employment cluster strength yet not a strong amount of DoD procurement or areas in which the county already excels in attracting procurement dollars.

LYON COUNTY PROCUREMENT BY INDUSTRY

NAICS Industry	NAICS Description	DoD Contracting	Employment Cluster	Opportunity for Additional Contracting?
11	Agriculture, Forestry, Fishing and Hunting	$0	5.26	YES
21	Mining	$0	2.59	YES
22	Utilities	$0	1.27	YES
23	Construction	$970	1.97	YES
31-33	Manufacturing	$6,270,562	1.76	YES
42	Wholesale Trade	$201,748	1.05	
44-45	Retail Trade	$0	1.20	YES
48-49	Transportation	$0	0.46	
51	Information	$0	0.08	
52	Finance and Insurance	$0	0.20	
53	Real Estate and Rental and Leasing	$0	0.70	
54	Professional, Scientific, and Technical Services	$2,248,362	0.44	YES
55	Management of Companies and Enterprises	$0	0.27	
56	Administrative and Support and Waste Management an	$0	0.44	
61	Educational Services	$0	0.13	
62	Health Care and Social Assistance	$0	0.45	
71	Arts, Entertainment, and Recreation	$0	4.67	YES
72	Accommodation and Food Services	$0	0.68	

Mineral County:

Mineral County's total DoD contracting in 2006 was $61.8 million, representing an increase of $28.4 million since 2001. Home to the Hawthorne Army Depot, Mineral County is the 2nd largest recipient of DoD contracts in the 7-County region. However, Mineral County's procurement growth has outpaced Churchill, growing by 84% since 2001.

Mineral County has particular strength in the Administrative and Support Services and the Professional, Scientific, and Technical Services industries. Much like Churchill county, strength in the Admin. and Support Services industry is typical as much of this is directed at serving the O&M needs of the base. However, Mineral's strenth in the Professional, Scientific, and Technical Services represents a strong DoD growth sector that pay above average wages.

MINERAL TOP 5 INDUSTRIES *(Detailed):*

NAICS	NAICS Description	2006 DOD Procurement
561	Administrative and Support Services	$46,317,994
541	Professional, Scientific, and Technical Services	$10,362,878
332	Fabricated Metal Product Manufacturing	$3,062,102
493	Warehousing and Storage	$1,269,933
562	Waste Management and Remediation Services	$424,267

The table below shows procurement across all major industies. It also shows Mineral County's employment cluster ratio in these industries. A cluster ratio above 1.00 means that the county has above average strength in that industry. By examining where the county has strength and comparing this to its procurement in those industries, we can identify where possible opportunities lie. We label the sector an opportunity for areas in which the county has employment cluster strength yet not a strong amount of DoD procurement or areas in which the county already excels in attracting procurement dollars.

MINERAL COUNTY PROCUREMENT BY INDUSTRY

NAICS Industry	NAICS Description	DoD Contracting	Employment Cluster	Opportunity for Additional Contracting?
11	Agriculture, Forestry, Fishing and Hunting	$0	0.00	
21	Mining	$0	0.00	
22	Utilities	$0	0.00	
23	Construction	$0	0.00	
31-33	Manufacturing	$3,067,810	0.00	YES
42	Wholesale Trade	$0	0.34	
44-45	Retail Trade	$15,291	0.78	YES
48-49	Transportation	$1,269,933	0.00	YES
51	Information	$0	0.00	
52	Finance and Insurance	$0	0.51	
53	Real Estate and Rental and Leasing	$0	0.24	
54	Professional, Scientific, and Technical Services	$10,362,878	0.34	YES
55	Management of Companies and Enterprises	$0	0.00	
56	Administrative and Support and Waste Management an	$46,742,261	0.00	YES
61	Educational Services	$118,920	0.00	
62	Health Care and Social Assistance	$0	0.00	
71	Arts, Entertainment, and Recreation	$0	0.00	
72	Accommodation and Food Services	$8,405	0.00	

Pershing County:

Pershing County's total DoD contracting in 2006 was $285,000, representing an increase from $0 in DoD contracting in 2001.

Pershing County has particular strength in various manufacturing industries. The county can also parlay its strengths in Agriculture, Mining, and its position on the I-80 Interstate to increase its attractiveness to DoD purchasers.

PERSHING TOP INDUSTRIES *(Detailed):*

NAICS	NAICS Description	2006 DOD Procurement
339	Miscellaneous Manufacturing	$196,402
314	Textile Product Mills	$89,043

The table below shows procurement across all major industies. It also shows Pershing County's employment cluster ratio in these industries. A cluster ratio above 1.00 means that the county has above average strength in that industry. By examining where the county has strength and comparing this to its procurement in those industries, we can identify where possible opportunities lie. We label the sector an opportunity for areas in which the county has employment cluster strength yet not a strong amount of DoD procurement or areas in which the county already excels in attracting procurement dollars.

PERSHING COUNTY PROCUREMENT BY INDUSTRY

NAICS Industry	NAICS Description	DoD Contracting	Employment Cluster	Opportunity for Additional Contracting?
11	Agriculture, Forestry, Fishing and Hunting	$0	9.93	YES
21	Mining	$0	68.11	YES
22	Utilities	$0	0.00	
23	Construction	$0	0.37	
31-33	Manufacturing	$285,445	0.30	YES
42	Wholesale Trade	$0	0.26	
44-45	Retail Trade	$0	1.08	YES
48-49	Transportation	$0	0.00	
51	Information	$0	0.30	
52	Finance and Insurance	$0	0.24	
53	Real Estate and Rental and Leasing	$0	0.60	
54	Professional, Scientific, and Technical Services	$0	0.18	
55	Management of Companies and Enterprises	$0	0.00	
56	Administrative and Support and Waste Management an	$0	0.00	
61	Educational Services	$0	0.00	
62	Health Care and Social Assistance	$0	0.00	
71	Arts, Entertainment, and Recreation	$0	0.00	
72	Accommodation and Food Services	$0	0.00	

Storey County:

Storey County's total DoD contracting in 2006 was $292,000, representing an increase of $260,000 since 2001. Depsite its small size, Storey County has expanded its DoD contracting tremendously since 2001.

Storey County has seen particular strength in the Construction of Buildings. This industry is a strong DoD sector with the changes in military housing and pays above average wages. Additional opportunities exist for Storey County to leverage the Tahoe Reno Industrial Center to attract defense manufacturers.

STOREY TOP INDUSTRIES *(Detailed)*:

NAICS	NAICS Description	2006 DOD Procurement
236	Construction of Buildings	$228,893
562	Waste Management and Remediation Services	$54,865
423	Merchant Wholesalers, Durable Goods	$8,300

The table below shows procurement across all major industies. It also shows Storey County's employment cluster ratio in these industries. A cluster ratio above 1.00 means that the county has above average strength in that industry. By examining where the county has strength and comparing this to its procurement in those industries, we can identify where possible opportunities lie. We label the sector an opportunity for areas in which the county has employment cluster strength yet not a strong amount of DoD procurement or areas in which the county already excels in attracting procurement dollars.

STOREY COUNTY PROCUREMENT BY INDUSTRY

NAICS Industry	NAICS Description	DoD Contracting	Employment Cluster	Opportunity for Additional Contracting?
11	Agriculture, Forestry, Fishing and Hunting	$0	0.00	
21	Mining	$0	6.48	YES
22	Utilities	$0	0.00	
23	Construction	$228,893	0.99	YES
31-33	Manufacturing	$0	1.42	YES
42	Wholesale Trade	$8,300	0.00	
44-45	Retail Trade	$0	0.24	
48-49	Transportation	$0	9.67	YES
51	Information	$0	0.00	
52	Finance and Insurance	$0	0.00	
53	Real Estate and Rental and Leasing	$0	0.00	
54	Professional, Scientific, and Technical Services	$0	0.30	
55	Management of Companies and Enterprises	$0	0.00	
56	Administrative and Support and Waste Management an	$54,865	0.27	
61	Educational Services	$0	0.00	
62	Health Care and Social Assistance	$0	0.00	
71	Arts, Entertainment, and Recreation	$0	1.64	YES
72	Accommodation and Food Services	$0	0.54	

CONCLUSION

This report, *Defense Industry Demand Analysis*, presents a compelling case for viewing the U.S. military as a high growth industry, one that brings new opportunities to the state of Nevada and particular opportunities for the 7-County rural Northern Nevada region. While the state's comparative DoD contracting lags slightly behind when comparing its total population and gross state product to the U.S., the good news is that Nevada and the rural 7-County region has successfully expanded its defense sector over the last five years.

A strategy to capture these new opportunities will require well-planned collaboration among not only the local economic developers represented in the rural 7-County region, but also involvement from the state's many economic development stakeholders:

- Nevada Commission on Economic Development
- Regional Economic Development groups (NNDA, EDAWN, NDA)
- Rural Economic Development Authorities (like the Churchill County Economic Development Authority and the Mineral County Economic Development Authority that have sponsored this study)
- Nevada Community College System
- Nevada Universities (UNR and UNLV)
- Industry Associations
- Chambers of Commerce
- Small Business Technology Development Centers
- Utilities
- Others

These stakeholders must engage Nevada's business community and direct a new attention toward the U.S. defense industry. Success will yield real results: thousands of new jobs for Nevada workers.

If the state of Nevada sets it as a goal to increase its DoD contracting just to a level that its representative share were on par with its share of U.S. GDP, this would mean **$1.6 billion additional dollars flowing to the Nevada economy.** Achieving this growth will require new thinking, new partnerships, and new initiatives.

The subsequent final report from this study will offer new intelligence and ideas to guide this initiative.

Report 2, *Business Recruitment Strategy*, will hone in on how to develop the Defense industry as a true target industry for the 7-County Northern Nevada region. AE will identify a list of potential target industry sectors within defense for the region to promote. The list will contain those industries that are expected to experience high future demand and can be supported by the region's current industry base, economic strengths, and research assets. AngelouEconomics will then present s*trategic recommendations*, to offer specific recommendations for recruiting and expanding the targets in the 7-County region. Recommendations will focus on two areas: external-marketing efforts toward the industry that will yield the best results, and internal action that can improve the competitiveness of the region for defense companies.