

**Economic, Demographic and Fiscal Impacts
of Closing Hill Air Force Base:
A Statewide and Regional Analysis**

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Summary and Conclusions

The upcoming round of Defense Base Closure and Realignment (BRAC) is threatening the existence of Hill Air Force Base (Hill AFB). The Department of Defense is aggressively approaching this round of BRAC in its attempt to eliminate 20% to 25% of current capacity. The purpose of this study is to assess the economic, demographic and fiscal impacts of closing Hill AFB on the state of Utah and on the Davis/Weber region. These impacts, which have been generated using the REMI model, project the changes in employment, population, earnings, income and business activity that result from closing Hill AFB.

Hill AFB is located in northern Utah approximately 30 miles north of Salt Lake City and eight miles south of Ogden. The base currently covers almost 6,700 acres and stretches across two counties—Davis and Weber. Hill has had a presence in Utah since 1920 when the War Department established the Ogden Arsenal Army Reserve Depot in the area now occupied by the northwestern portion of Hill AFB. Over time, Hill's missions have changed and expanded. Today, the missions of Hill AFB encompass supply and repair of aircraft and missile parts, including munitions storage and handling. The base is one of three air logistics centers in the USAF Materiel Command, serving as home to the Ogden Air Logistics Center which provides worldwide engineering and logistics management for the F-16, A-10, Minuteman III and Peacekeeper Intercontinental Ballistic Missiles.

Hill AFB has been the largest component of Utah's defense sector, and one of the largest employers in the state for decades. Long established as an engine of economic growth, Hill AFB directly pumps more than \$1.0 billion into Utah's economy each year. The direct operations include a Utah payroll of \$962.2 million, direct employment of about 20,000 workers and local purchases totaling \$152.9 million.¹ In 2003, Utah's defense industry (primarily Hill AFB) was a mainstay that helped steady the Utah economy. Clearly, Hill's economic contributions are substantial and an important source of economic activity in the state of Utah.

The actual probability of the complete closure of Hill AFB is unknown. A partial closure scenario that retains some of the missions on the base while eliminating others is quite possibly a more likely outcome. At the request of the research sponsors, only the full closure of the base has been modeled here.

Key Findings

The information presented here assumes a phased shutdown of Hill AFB that begins in 2006 and is completed in 2008. For most of the analysis, the impacts are presented for 2009 and 2020. The year 2009 was selected to capture the full impact of the base closure after all military personnel and their dependents are realigned but before market adjustments begin. The year 2020 was chosen to show the long-term, permanent impact after markets adjust to the closure of Hill.

Statewide Impacts

(Financial projections are in constant 2001 dollars)

Short-Term Impacts

- In 2009, the impact of closing Hill AFB will be a loss of 47,400 jobs, an annual decline of \$2.35 billion in earnings and \$2.29 billion in personal income. Hill's closure shrinks the state's economy by \$3.58 billion (a decline of 2.6% from the projected baseline). The annual loss of state tax revenue will be \$192.4 million.
- The employment impact, while considerable, does not result in large-scale unemployment. Employment growth statewide will continue as other sectors of the economy create jobs.
- The population impact of closing Hill AFB will be 31,000 fewer people living in the state than if Hill remained in operation. The population impact includes about 7,600 school age children, or about 1.3% of the projected school age population baseline of 578,000. The impact on school age population will moderate but not eliminate the upcoming school age population boom expected to begin in 2005.
- Closing Hill AFB will lower per capita personal income by \$542 in 2009; this means that each person in Utah will have, on average, \$542 less to spend than if Hill AFB remained in operation.

¹ The personnel data include only those individuals that are paid directly by Hill AFB or by the Department of Defense. It does not include the 4,000 to 4,500 employees who may work on base but are employed by private contractors.

- The federal civilian jobs lost are some of the best jobs in Utah. They are high-paying, stable jobs with benefits. To offset the job loss of closing Hill AFB in 2009 almost 48,000 new jobs need to be created. Because the earnings of civilians working at Hill AFB are almost double the state average it will take almost 68,000 new jobs to offset the loss of \$2.35 billion in earnings. On an annual basis Utah has not experienced job growth at this level since the mid-1990s.

Long-Term Impacts

- The long-term statewide impact of closing Hill AFB will be a permanent loss of 41,700 jobs, an annual decline of \$2.50 billion in earnings and \$2.65 billion in personal income. The economy will be \$3.43 billion smaller (a decline of 1.7%). The annual loss of tax revenue will be \$199 million. In robust economic times, the long-term impacts equate to about one to three years of economic growth.
- The resident population in Utah will be 50,400 less than if Hill remained open. The long-term impact includes 15,400 school age children, a change of 2.1% of the projected school age population baseline projection of 743,000.
- To put these losses in perspective, the permanent employment impact represents a change of 2.1% on a projected baseline of 2.0 million. The population impacts represent a change of 1.6% on a projected baseline of 3.3 million.
- Statewide, the losses generated by closing Hill AFB are not trivial, but Utah's economy will expand throughout closure and beyond. The closure of Hill AFB precipitates a change in Utah's growth path but not a significant one. What will change is the structure of the Utah economy brought on by the loss of federal military and civilian jobs.

Davis/Weber Region Impacts

(Financial projections are in constant 2001 dollars)

The Davis/Weber region has an estimated 2003 population of about 462,000 and employment of 235,000. Unlike some regions in the country where military bases are located, the Davis/Weber region is not rural or isolated from other population centers. Geographically (and economically) the region is part of the Greater Wasatch Area comprised of a ten-county

commuter shed including Salt Lake County which has long been the center of employment in the state.

Employment in the region is heavily concentrated in services and government. Together these sectors account for almost half of all employment in the area. Measured by total earnings, government is by far the most important sector, accounting for almost 32% of total earnings in the region. Federal government is the largest segment of the government sector and accounts for 10% of total employment and 20% of total earnings. The disparity between the share of employment and share of earnings attributable to federal employment occurs because the average wage of most civilian employees at Hill AFB is almost double the average wage of all workers in the region.

The presence of the federal government in the area is considerable. Compared to the nation, both counties have a higher-than-average concentration of federal employment. In Weber County, federal employment is three times the national concentration due primarily to the presence of the IRS. In Davis County federal civilian employment is five times the national concentration and military employment is three times the national concentration due entirely to the presence of Hill AFB.

The economic consequences of closing Hill AFB on the Davis/Weber region will be unparalleled since the Great Depression. Each year, Hill AFB directly pumps almost \$1.0 billion into the region. Nine out of ten people who work at the base live, and spend most of their disposable income in the region. The departure of Hill will have enduring, large-scale impacts on the size, structure and composition of the region's economic base leading initially to declining employment, population, earnings and income, and eventually culminating in a regional economy that is permanently smaller.

Short-Term Impacts

- In 2009, when the base is fully closed, the impact on the region will be a loss of almost 35,000 jobs, an annual decline of \$1.81 billion in earnings and \$1.58 billion in personal income. The impact on gross regional product (GRP) is a decline of \$2.54 billion, or 11% of projected GRP. Tax revenue (excluding property tax) will decline by \$7.7 million yearly.
- There will be about 21,400 fewer people living in the region than if Hill remained in operation. The

population impact includes about 5,300 school age children, or about 4.7% of the projected school age population baseline of 110,000.

- An estimated 10,800 homes in the region are owned by Hill AFB employees (1,700 homes owned by military personnel and 9,100 homes owned by civilians). Based on the estimated housing stock in Davis and Weber County in 2003, one in every 14 homes in the region is owned by an employee of the base. Assuming that all military personnel leave the region and half of the civilians who own homes in the region relocate, about 6,200 homes will be on the market over a two- to three-year period.
- The sudden loss of jobs and declining population in the region could significantly impact the real estate market. The experience of other communities that have lost military bases is a decline in residential construction and a drop in real estate values. Assuming the experience in the Davis/Weber region is similar to that in other areas, residential construction will drop off almost immediately and property values will begin to decline. These conditions should start to improve by 2009.

Long-Term Impacts

- The long-term impact on the Davis/Weber region will be a permanent loss of 32,000 jobs, an annual decline of \$2.06 billion in earnings and \$1.89 billion in personal income. The region's economy will be permanently smaller by \$2.54 billion. The loss of tax revenue will be \$8.8 million annually (excluding property tax).

- The population impact of closing Hill will be 33,000. This includes 10,000 school age children, or a decrease of 7.7% from the projected school age population baseline of 130,900.
- Based on annual job growth in the region over the past 10 years, the employment impact equates to a loss of about five years of economic growth. To offset the employment impact of closing Hill AFB the region will need at least 33,000 new jobs. On an annual basis, this has never happened. The last year of strong employment growth in the area was in 1996 with the creation of about 12,600 new jobs.

Impacts on Davis County

The impacts of closing Hill AFB disproportionately affect Davis County. (Figure 1) The closure of Hill represents the loss of an industry that has been the foundation of the Davis County economy for 60 years. Since WWII, not only has Hill been a dominant influence in the county's economic growth, it has also been the defining factor in establishing Davis as one of Utah's most prosperous counties. The impacts of closing Hill AFB on the economy of Davis County will be large-scale and enduring.

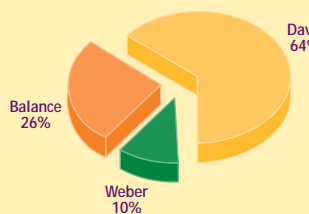
Short-Term Impacts

- During the first year of the three-year phased closing of Hill AFB (in 2006), employment and population in Davis County actually decline. In 2006, the *net* effect on employment is an absolute loss of about 15,400 jobs which increases to 19,000 by 2008.² These losses are so large that employment in Davis County will not return to the 2005 pre-base closure level of 136,000 until 2014.

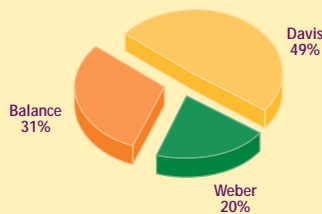
² These are not impact projections. The closure of Hill has such a large-scale effect that total employment in the county will be lower by 15,000 jobs in 2006 than in 2005.

Figure 1a, 1b & 1c

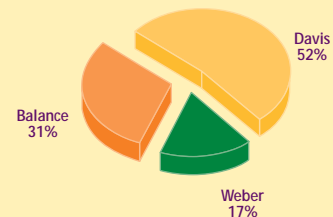
Share of Employment Impact: 2009



Share of Population Impact: 2009



Share of DPI Impact: 2009



Source: Bureau of Economic and Business Research, University of Utah.

- More significant is the 1.4% drop in the county's population (about 3,800) in 2006. While it is not uncommon to see population fluctuations in rural areas with economies dependent on natural resources, rarely do urban counties experience population declines. The decrease in Davis County's population base would be the first time since 1940 that an urban county in Utah has sustained a population loss. Population in the county does not reach its pre-base closure level until 2009, and then is fueled by natural increase (births minus deaths) rather than net in-migration.
- At full base closure in 2009, the employment impact in Davis County is 30,000 (one in five jobs), a yearly decrease of \$1.62 billion in earnings (32% of the projected earnings baseline) and \$1.15 billion in personal income (14% of the projected income baseline). On a per capita basis, the decline in personal income translates to a loss of \$2,629 (per person). The county's economy will be \$2.18 billion smaller (a reduction of 18%). The annual loss of sales and other selected tax revenue will be \$6.3 million.
- By 2009, the population impact is 15,100, which includes 3,800 school age children, or about 6% of the projected school age population baseline of 63,000. The population impact means that there will be about 15,100 fewer people living in the county than if Hill remained open.

- It will be difficult, if not impossible for Davis County to mitigate the employment and earnings losses in less than eight years. To offset the employment loss alone will take 30,000 new jobs. Because the earnings of most civilians working at Hill are about double the county average, it will take more than 47,600 jobs to offset the loss of earnings. Davis County has never experienced annual job growth at these levels. Over the past ten years, job growth in the county has averaged about 3,700 annually. At this rate of growth, it will take eight years to offset the employment loss.

Long-Term Impacts

- The long-term impact on Davis County will be a permanent loss of about 28,000 jobs (15% decline from the projected baseline) an annual decline of \$1.89 billion in earnings (25% decline) and \$1.38 billion in personal income (11% decline). The county's economy will be permanently smaller by 12%, or \$2.21 billion. The annual loss of sales and other selected tax revenue will be \$7.3 million.
- There will be 21,000 fewer people living in the county than if Hill remained in operation. Included in this total are 6,300 school age children or about 8.5% of the projected baseline of 64,400.
- Closing Hill AFB base accelerates the trend of job concentration in lower paying sectors (such as services) creating an employment structure in the county that is substantially different from the present composition.

Table 1

Hill Air Force Base Closure Analysis
 Economic, Demographic and Fiscal Impact Summary: 2009 and 2020
 State of Utah, Davis/Weber Region and Davis County
 (2001 \$)

Variable	State		Davis/Weber Region		Davis County	
	2009	2020	2009	2020	2009	2020
Employment	-47,430	-41,730	-34,996	-32,273	-30,020	-28,150
Earnings (Bil.)	-\$2.35	-\$2.50	-\$1.81	-\$2.06	-\$1.62	-\$1.89
Personal Income (Bil.)	-\$2.29	-\$2.65	-\$1.58	-\$1.89	-\$1.15	-\$1.38
Gross State or Gross Regional Product (Bil.)	-\$3.58	-\$3.43	-\$2.54	-\$2.54	-\$2.18	-\$2.21
Population	-31,000	-50,480	-21,489	-33,130	-15,150	-21,070
School Age Population	-7,555	-15,405	-5,308	-10,011	-3,807	-6,340
Tax Revenue (Mil.) ¹	-\$192.4	-\$199.1	-\$7.7	-\$8.7	-\$6.3	-\$7.3

¹ Includes Sales and other selected tax revenue.
 Source: Bureau of Economic and Business Research, University of Utah.

Table 2

Hill Air Force Base Closure Analysis
Impacts as a Percentage of the Projected Baseline: 2009 and 2020
State of Utah, Davis/Weber Region and Davis County

Variable	State		Davis/Weber Region		Davis County	
	2009	2020	2009	2020	2009	2020
Employment	-2.9%	-2.1%	-12.7%	-9.7%	-19.9%	-15.2%
Earnings	-4.1%	-3.0%	-19.7%	-15.3%	-31.6%	-25.2%
Personal Income	-3.1%	-2.4%	-10.8%	-8.9%	-13.8%	-11.2%
Gross State/Regional Product	-2.6%	-1.7%	-11.1%	-7.5%	-17.8%	-12.1%
Population	-1.2%	-1.6%	-4.2%	-5.5%	-5.4%	-6.2%
School Age Population	-1.3%	-2.1%	-4.7%	-7.7%	-6.0%	-8.5%

Source: Bureau of Economic and Business Research, University of Utah.

- Several factors play a role in determining the fate of the county's economy and its economic recovery. A growing economy is one factor. The presence of other local industries that can soften the impact of losing a large employer is another. Currently, the economy in Davis County is best characterized as stable rather than expanding. Further, Hill is by far the largest employer in the county and the single most important component of the county's economic base. There are simply no other employers of any size in Davis County. While the impact of closing Hill moderates over time, it could take a decade (or longer) for Davis County to recover its economic vitality.

Tables 1 and 2 show the summary impacts on the state of Utah, the Davis/Weber Region and Davis County.

Introduction

The Department of Defense is approaching the 2005 round of BRAC aggressively to eliminate excess capacity and maximize its military capabilities. This restructuring program is threatening the existence of Hill Air Force Base (Hill AFB) as well as other military bases throughout the U.S. With an annual payroll nearing \$1.0 billion and employment of nearly 20,000 workers, Hill is Utah's largest basic employer and a major contributor to the state's economic base. The

loss of this large and important employer will have an immediate and lasting effect on the state's economy.

In anticipation of the upcoming BRAC, the Utah Defense Alliance requested a study to identify the impact of Hill AFB and determine the economic implications associated with a complete shutdown of the base. To this end, short- and long-term impact projections have been developed at both a statewide and regional level to assess the economic, demographic and fiscal implications of closing Hill AFB.

Section I Overview of Hill Air Force Base

History and Current Operations

Hill AFB is the largest component of Utah's defense sector and has, for many decades, been the largest basic employer in the state.³ Long established as an engine of economic growth, Hill AFB pumps more than \$1.0 billion into Utah's economy each year. The direct operations of the base include a payroll of \$962.2 million, employment of almost 20,000 workers and purchases from Utah businesses totaling \$152.9 million. Clearly, Hill's economic contributions are substantial and an important source of economic activity in the state of Utah.

³ A basic employer is a firm in which all, or some portion of its output is sold outside the local economy. As such, a basic employer generates additional financial flows into the local economy thereby creating new incomes and additional spending. In contrast, non-basic employers provide for the needs of the local population. The financial flows from a non-basic employer represent redistribution of existing income.

History

Hill AFB is located in northern Utah, approximately 30 miles north of Salt Lake City and eight miles south of Ogden. It stretches across two counties—Davis and Weber—and covers almost 6,700 acres. Hill has been the location of military activities in Utah since 1920 when the War Department established the Ogden Arsenal Army Reserve Depot on 3,300 acres in the area now occupied by the northwestern portion of Hill Air Force Base. As part of a national policy of dispersing munitions away from the Atlantic Ocean, the Ogden Arsenal's principal function was to store unused ordnance from World War I.

With the onset of World War II (WWII), the Ogden Arsenal was rebuilt and its mission expanded to include manufacturing, loading explosives and stocking and distributing motorized equipment. The U.S. Army Air Corps' Rocky Mountain Air Depot (precursor to the Ogden Air Depot) was established adjacent to the Ogden Arsenal in 1940.

During WWII, the Depot was a major aircraft supply and maintenance and training facility for stations in Utah and the Pacific Northwest. In 1940 and 1941 four runways were constructed and the Ogden Air Depot was activated. In 1948 the Air Depot was renamed Hill Air Force Base. In 1955 the Ogden Arsenal was transferred from the U.S. Army to the U.S. Air Force, essentially doubling the size of the base to approximately 6,700 acres. Since 1955, Hill has been a major center for missile assembly and storage and aircraft maintenance. Through the 1980s, Hill had a lead role in aircraft maintenance and logistics support, and in the assembly, logistics and maintenance of Intercontinental Ballistic Missiles.

Table 3

**Hill Air Force Base
Utah Personnel Statistics: FY 2003
(Current \$)**

Personnel Classification	Employment/ on Base	Share of Total	Payroll	Share of Total
Active Duty Military ¹	5,178	25.8%	\$156,549,143	16.3%
Federal Civilians ²	11,290	56.2%	\$677,400,000	70.4%
Non-Appropriated Fund Civilians	360	1.8%	\$6,329,257	0.6%
Tenants ³	1,841	9.2%	\$110,460,000	11.4%
Reserves				
Utah residents: 1290	1,409	6.4%	\$12,554,000	1.3%
Non-Utah residents: 119				
Contractors	4,344	-	NA	-
Total	24,422	100.0%	\$962,232,300	100.0%

Note: "Share of Total" column only includes groups for which payroll information was available.

1 The payroll for Active Duty Military includes a housing allowance for personnel living off-base.

2 Includes civilian employees serviced by Hill AFB Human Resources.

3 Includes civilians not serviced by Hill AFB Human Resources, but employed by the U.S. Air Force.

Source: Hill Air Force Base Economic, Plans and Programs Directorate. Estimates of housing allowance made by BEBR based on discussion with Hill AFB staff.

Over time, the missions of the base have changed and expanded. Once used solely for storage of unused ordnance, today, Hill's missions encompass supply and repair of aircraft and missile parts, including munitions storage and handling and missile assembly.

The largest tenant at Hill is the Ogden Air Logistics Center - one of three such centers assigned to the Air Force Materiel Command headquartered at Wright-Patterson Air Force Base, Ohio. The center has worldwide logistics management and maintenance support responsibilities for weapons systems and currently manages/maintains the F-16 Fighting Falcon, A-10 Thunderbolt, Minuteman III and Peacekeeper silo-based Intercontinental Ballistic Missiles (ICBMs). In addition, Hill AFB is host to the 388th Fighter Wing, the 419th Fighter Wing and the Air Force Reserve F-16 wing. Other units include the 84th Radar Evaluation Squadron and Defense Enterprise Computing Center Ogden.^{4,5}

Hill AFB is bordered by the communities of Sunset, Clearfield and Roy on the west, Layton on the south, South Weber on the east and Riverdale to the north.

⁴ *Public Health Assessment: Hill Air Force Base*, Federal Facilities Assessment Branch, Division of Health Assessment and Consultation, Agency for Toxic Substances and Disease Registry. Accessed at: <http://www.atsdr.cdc.gov>.

⁵ *Team Hill: Hill Air Force Base Guide*, 2003.

Figure 2

Hill Air Force Base

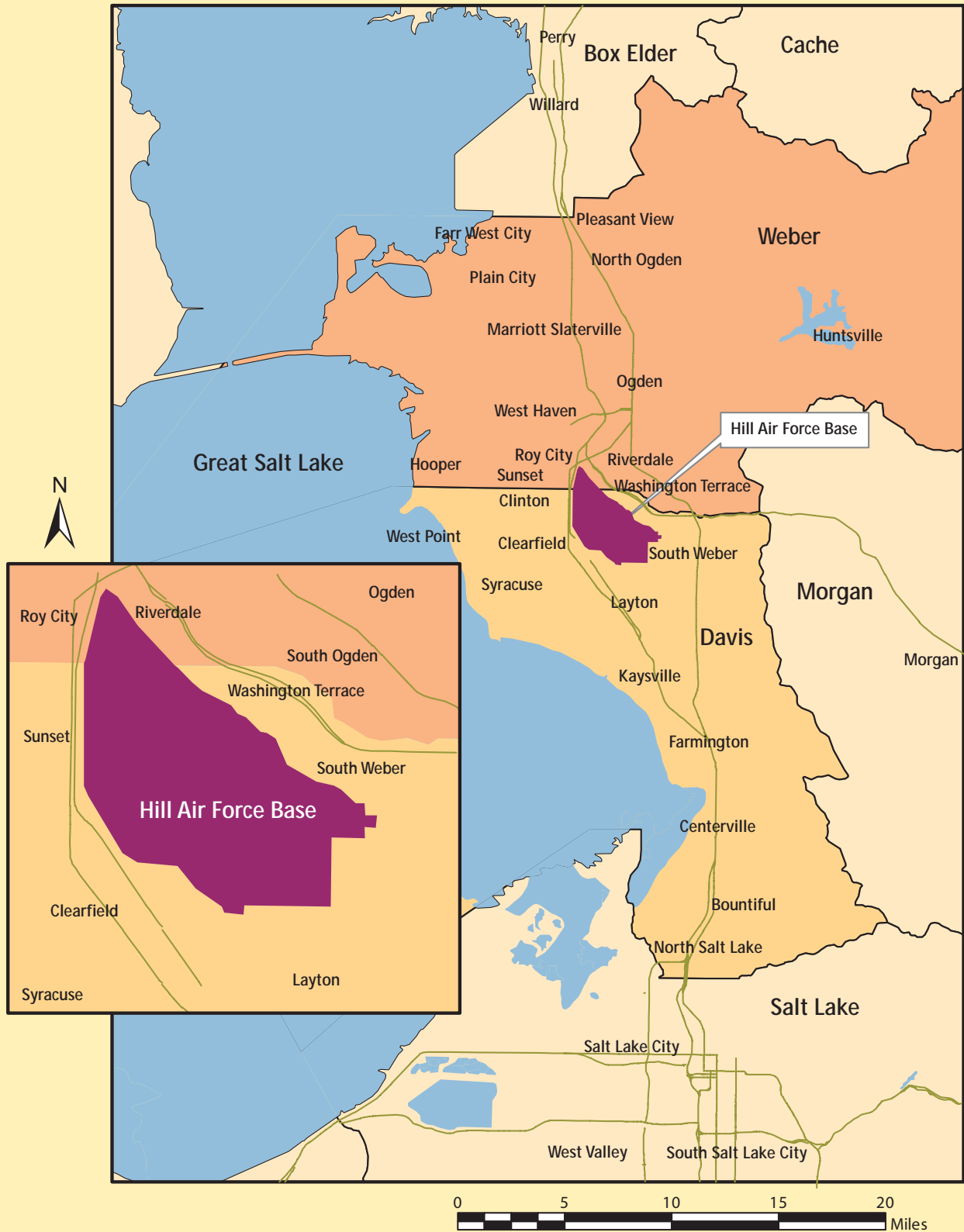


Table 4

Hill Air Force Base Personnel by Location of Residence: FY 2003

Active Duty Military			Federal Civilians ¹			Reserves		
County	#	%	County	#	%	County	#	%
Davis	4,120	79.6%	Davis	6,199	46.0	Weber	436	33.8%
Weber	979	18.9%	Weber	5,774	42.8	Davis	387	30.0%
Region Total	5,099	98.5%	Region	11,973	88.8	Region	823	63.8%
Salt Lake	42	0.8%	Salt Lake	706	5.2	Salt Lake	242	18.8%
Utah	10	0.2%	Box Elder	274	2.0	Utah	80	6.2%
Cache	9	0.2%	Morgan	190	1.4	Cache	47	3.6%
Box Elder	6	0.1%	Utah	102	0.8	Box Elder	22	1.7%
Tooele	6	0.1%	Cache	86	0.6	Tooele	22	1.7%
All Others	6	0.1%	All Other	160	1.2	All Other	54	4.2%
Non-Region Total	79	1.5%	Non-Region	1,518	11.2	Non-Region	467	36.2%
Grand Total	5,178	100.0%	Grand Total	13,491	100.0	Grand Total	1,290	100.0%

1 Includes all federal civilian employees working at Hill AFB.
Source: Calculated by BEBR based on information provided by the Plans and Program Directorate at Hill AFB.

The city of Clinton is west of Sunset, but does not border the base. (Figure 2)

Employment

In FY 2003, the workforce at Hill AFB included 5,178 military personnel and 13,491 civilians all working in Davis County.⁶ The military payroll is \$156.5 million and civilian payroll is \$677.4 million. Another 1,409 Air Force reserves (reservists) visit the base during the course of the year for training. Of these, 1,290 are Utah residents and 119 live in other states. Also located on base are employees of private businesses that provide services to Hill's employees, and civilian contractors that provide services specific to Hill's missions. About 4,300 people work on base during the year but are not directly employed by Hill or the U.S. Air Force. In total, more than 24,000 people travel to, or work at Hill AFB during the course of a year.

Table 3 shows Hill's employment and payroll expenditures in FY 2003.

Where They Live. The "region" referred to in this study is the area that includes Davis and Weber County. Hill AFB employees reside

throughout the Wasatch Front; however, the area with the largest concentration of Hill employees is the Davis/Weber region. More than 91% of Hill AFB employees (17,895) live in the region and most live off-base. In 2003, 1,657 military personnel lived on-base in 1,141 family housing units and dormitories. Of the remaining 3,521 military personnel, 3,453 lived off-base in the region and 79 lived in other counties.

Table 5

Utah's Largest Employers: 2002

Firm Name	Business	Employment Range
Intermountain Health Care	Hospitals and Clinics	20,000†
State of Utah	State Government	20,000†
Hill Air Force Base	Military Installation	15,000-20,000
University of Utah (includes hospital)	Higher Education	15,000-19,000
Brigham Young University	Higher Education	15,000-19,000
Wal-Mart Stores	Department Stores	7,000-9,999
Granite School District	Public Education	7,000-9,999
Jordan School District	Public Education	7,000-9,999
Convergys	Telemarketing	7,000-9,999
Kroger Group	Grocery Stores	5,000-6,999

Note: Hill AFB employment range includes active duty military employment provided by Hill AFB and federal civilian employment published by the Utah Department of Workforce Services.
Source: Utah Department of Workforce Services (with military employment added by BEBR).

⁶ The fiscal year referred in this study is the U.S. Government Fiscal Year (FY) ending September 30. Personnel data include employment and payroll as of September 2003. The financial data (Hill AFB purchases and Prime Contract Awards) include activity during FY 2002.

Table 6

Hill Air Force Base Expenditures
 Payroll: FY 2003, Non-payroll: FY 2002
 (Current \$)

Component of Spending	Amount	Share of Total
Payroll		
Military Personnel and Reservists	\$168,332,143	15.1%
Civilian Personnel	\$794,189,257	71.2%
Procurements	\$66,989,123	6.0%
Construction	\$38,019,933	3.4%
Health Care	\$26,610,108	2.4%
Tuition Assistance	\$1,250,865	0.1%
Other Services and Supply Contracts	\$20,075,636	1.8%
Total	\$1,115,467,056	100.0%

Source: Hill Air Force Base Economic Impact Study 2002 and discussions with Robert McLean, Chief Acquisition Cost Division.

All civilian employees of Hill AFB live off-base and 89% live within the Davis/Weber region. Reservists are least tied by physical location to the base; still, 64% do live in Davis or Weber County. Table 4 shows the breakdown of Hill AFB personnel by classification and location of residence.

With direct employment nearing 20,000, Hill AFB is one of the state's ten largest employers. Civilian employment at Hill accounts for about 1.3% of total nonfarm payroll employment in the state. Only four organizations employ more people and, with the exception of Brigham Young University, these organizations primarily serve the needs of Utah's population. (Table 5)

Components of Spending

Hill's direct spending in Utah totals \$1.11 billion and includes: (1) payroll, (2) purchases of goods and services from Utah businesses and (3) new construction. Payroll in the amount of \$962.2 million is the largest single expenditure. In addition, the Air Force contracts with outside companies for an additional \$67.0 million in goods and services and spends \$90.0 million in other non-recurring expenses including construction, medical care and tuition reimbursements. (Table 6)

Payroll. Approximately 86.3% of Hill's direct spending in Utah is payroll-related. In FY 2003, Hill's payroll totaled \$962.2 million and included \$950.7 million in military and civilian wages and \$11.5 million for Utah reservists.

The federal civilian jobs at Hill AFB are high value-added jobs. Federal civilian wages totaled \$794.2 million, and averaged about \$59,000. This annual wage is almost double the 2003 statewide average payroll wage of \$30,500.⁷ Further, the civilian jobs at Hill AFB are stable jobs with good benefits.

Contract Spending. Contract spending in FY 2002 totaled \$152.9 million and included purchases by the U.S. Air Force to maintain base operations. Goods and services totaling \$67.0 million were purchased locally through procurement arrangements. An additional \$47.9 million was spent by the U.S. Air Force for services to Hill employees and for goods sold at the Base Commissary and Base Exchange. New construction expenditures totaled \$38.0 million.

Prime Contract Awards

Apart from local contracting for operations are the dollars spent by the U.S. Air Force to provide goods and services in support of Hill's missions. In FY 2002, Prime Contracts let to Utah businesses through central procurement at Hill AFB totaled \$790.0 million.⁸ (Table 7)

The largest prime contractor in Utah is Northrop Grumman, which acquired TRW in 2002. TRW's acquired defense units now operate as two sectors (mission systems and space technology) and are referred to as Northrop Grumman Space and Mission Systems Corporation. In FY 2002, Northrop Grumman's facilities received a total of \$769.1 million, or 97.4% of all procurement contracts paid out to Utah firms that year.

Based on interviews with Utah's largest prime contractors, about \$425.0 million of the Prime Contracts awarded to Utah companies remain in the state.

⁷ This comparison includes the average annual wage of civilian employees calculated by BEBR using information provided by Hill AFB. The average wage for all non-farm payroll workers was calculated by BEBR using data from the Utah Department of Workforce Services.

⁸ These contracts include only the value of goods and services provided directly to Hill AFB. They do not include Prime Contracts received by Utah companies to provide goods and services in support of missions at bases other than Hill AFB.

Table 7

**Largest Utah Prime Contractors to Hill Air Force Base: FY 2002
(Current \$)**

Prime Contractor	Total All Contracts	Contractor's Location
Northrop Grumman ¹	\$769,075,211	Davis
ATK Thiokol	\$8,720,721	Box Elder
Aerospace Engineering Spectrum	\$4,662,534	Weber
Valdez Machining	\$4,617,927	Davis
Viranim Technologies	\$1,427,427	Salt Lake
Evans & Sutherland Corporation	\$1,148,267	Salt Lake
Lincoln Environmental	\$470,700	Weber
Camnetics Manufacturing	\$428,949	Davis
Moog Aircraft Group	\$422,049	Salt Lake
Aerospace Engineering and Support	\$327,452	Weber
Xtend, Inc.	\$299,969	Davis
Richard Manufacturing	\$238,295	Weber
Dyno Noble, Inc.	\$216,950	Salt Lake
Icon Consulting Group	\$199,872	Salt Lake
Alpine Industries	\$121,712	Utah
Metalcraft Technologies	\$119,327	Iron
All Others	\$455,472	-
Total	\$789,952,834	-

¹ Includes all contracts performed by all divisions of Northrop Grumman in Utah.
Source: Hill Air Force Base.

Table 8

**Summary of Hill Air Force Base Activity in Utah
Payroll: FY 2003; Non-Payroll: FY 2002
(Current \$)**

Employment		
Military Personnel	5,178	
Civilian Personnel	13,491	
Reserves	1,290	
Total Employment	19,959	
Payroll		
Military Personnel	\$156,549,143	
Civilian Personnel	\$794,189,257	
Utah Reservists	\$11,783,000	
Total Payroll		\$962,521,400
Procurements and Contracts		\$152,945,665
Prime Contract Awards		\$425,000,000
Total Spending		\$1,540,467,065

Source: Hill Air Force Base.

When the direct operations of Hill AFB are combined with the estimated value of Prime Contract Awards performed in Utah in support of Hill's mission, the total spending tied to the base is \$1.5 billion. A summary of Hill AFB activities in Utah is shown in Table 8.

Section II The Role of Hill Air Force Base in the Davis/Weber Region

The impact of Hill AFB is felt throughout the state; however, the two counties most directly affected by Hill's operations are Davis County and Weber County. Located in the northern portion of Utah, Davis and Weber are part of the greater Wasatch Area.

Overview of the Region

The Davis/Weber region has an estimated 2003 population of 462,436 and employment totaling 234,763.^{9,10} Unlike many areas where military bases are located, the Davis/Weber region is not a rural area isolated from other population centers.

Geographically and economically the region is part of the Greater Wasatch Area that includes a ten-county commuter shed.¹¹

Nearly one-half of Davis County residents in the labor force leave Davis County to work. Two-thirds of these Davis out-commuters commute to Salt Lake County. Nearly one-third of Weber County residents in the labor force leave Weber County to work. Most of these out-commuters (62.4%) commute to Davis County and 24.1% commute to Salt Lake County.¹² Based on current commuting patterns it is clear that the region is not isolated but is strongly tied to Salt Lake County, which has long been the center of employment in the state.

For many years, Davis County's economy has been driven by Hill AFB. While the county's economic base has become more diversified, Hill is still the largest

⁹ Population estimate as of July 1, 2003, Utah Population Estimates Committee.

¹⁰ Bureau of Economic Analysis, 2001.

¹¹ Counties include: Box Elder, Davis, Juab, Morgan, Salt Lake, Summit, Tooele, Utah, Wasatch and Weber.

¹² Perlich, Pamela S. "Commuting Patterns in Utah: County Trends for 1980, 1990 and 2000". *Utah Economic and Business Review*, May/June 2003, Vol. 63, Nos. 5 & 6.

Table 9

**Employment and Earnings and Share of Employment: 2000
Davis County and Weber County**

	Davis County				Weber County			
	Jobs	% of Total	Earnings	% of Total	Jobs	% of Total	Earnings	% of Total
Agricultural Services	963	0.8%	\$15,333,000	0.4%	848	0.8%	D	-
Mining	163	0.1%	\$4,112,000	0.1%	45	-	D	-
Construction	9,366	7.8%	\$292,442,000	8.5%	7,274	6.7%	\$222,371,000	7.4%
Manufacturing	10,876	9.0%	\$375,823,000	10.9%	15,464	14.1%	\$641,032,000	21.4%
Transportation, Public Utilities	3,901	3.3%	\$141,780,000	4.0%	3,001	2.8%	\$106,496,000	3.6%
Wholesale Trade	6,556	3.0%	\$108,679,000	4.2%	2,974	2.7%	\$89,046,000	3.0%
Retail Trade	22,948	19.1%	\$369,222,000	10.7%	19,487	17.8%	\$290,164,000	9.7%
Finance, Insurance, Real Estate	10,929	9.1%	\$161,622,000	4.7%	8,200	7.5%	\$144,310,000	4.8%
Services	30,399	25.4%	\$669,701,000	19.5%	31,973	29.3%	\$765,832,000	25.6%
Government	26,788	22.3%	\$1,304,784,000	37.9%	20,032	18.3%	\$724,003,000	24.2%
Federal Civilian	11,232	9.4%	\$750,221,000	21.8%	6,146	5.6%	\$301,375,000	10.1%
Military	5,378	4.4%	\$241,127,000	7.0%	1,033	1.0%	\$15,734,000	0.5%
State Government	774	0.6%	\$29,335,000	0.9%	4,958	4.5%	\$149,865,000	5.0%
Local Government	9,404	7.8%	\$284,101,000	8.3%	7,895	7.2%	\$256,729,000	8.6%
Total	119,889		\$3,443,500,000		109,298		\$2,994,162,000	

D: Not disclosed

Source: Bureau of Economic Analysis, CA25N report, downloaded at: www.bea.doc.gov.

employer and plays a major role in the economic vitality and stability of the area. Weber is impacted by Hill AFB because of the large number of civilians who work at the base and live in the county.

Regional Economy

As Table 9 shows, two industries—services and government—account for almost half of all employment in the region.

As measured by employment, services is the largest sector and accounts for 27.2% of all employment in the area. The earnings of service workers total \$1.4 billion and account for 22.3% of total earnings in the region. A large share of these jobs are in companies providing professional services and health care services.

Government is the second largest sector with nearly 47,000 jobs, about 20% of the region's employment. In Davis County, government employment is concentrated in federal government (primarily Hill AFB). In Weber County, government employment is spread between federal civilian (primarily the IRS), state (Weber State University) and local government (public schools).

The importance of federal workers to the region's economic base is underscored by the share of earnings they provide compared to the share of employment they represent. Federal government jobs account for about 10% of total employment and 20% of total earnings. This disparity occurs because the average earnings of federal civilian employees are much higher than the average earnings of all workers in the region.

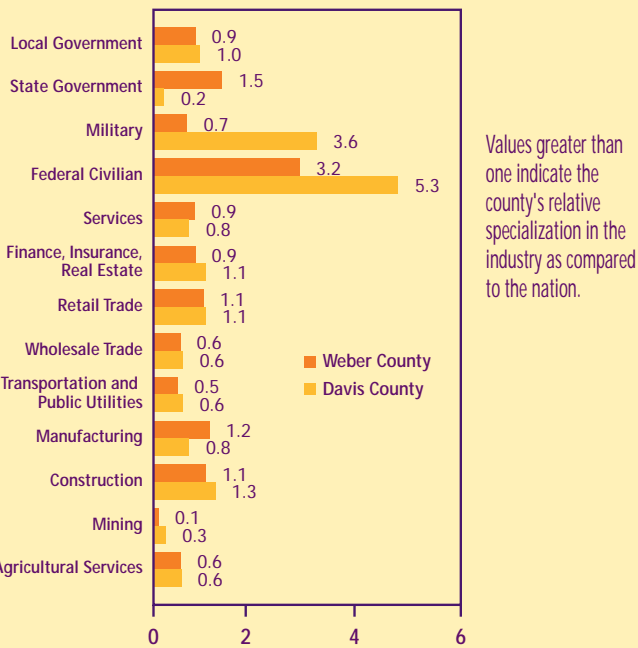
In Davis County, federal government employment accounts for 13.8% of total employment in Davis County but 28.8% of total earnings. In Weber County, federal government employment accounts for 6.6% of total employment and 10.6% of total earnings.

Both counties have a significant retail industry which provides employment for 42,000 workers, or 18.5% of all workers. In comparison, the earnings of workers in the retail sector account for just 10% of total earnings region-wide.

The fourth largest sector in both counties is manufacturing. In Weber County manufacturing provides about 15,400 jobs (14.1% of county employment) and \$641.0 million in earnings (21.4% of

Figure 3

Employment Location Quotients:
Davis and Weber Counties Relative to the Nation



Source: Bureau of Economic and Business Research, University of Utah.

county-wide earnings) Davis County's manufacturing sector is much smaller, with almost 11,000 jobs (9.1% of the county's employment) and \$375.8 million in earnings (11% of county-wide earnings).

A comparison of the economic structure for each county with that of the U.S. is shown in Figure 3. This analysis makes use of location quotients to show the relative importance of each industry to the region.¹³ The larger the regional economy and the broader the industry definition, the more the location quotients will cluster in the average range. In this context, the dependency of Davis and Weber Counties on government employment, especially federal government employment, is striking.

Compared with the nation, Weber County's economy is specialized in manufacturing (1.1), state government (1.5) and federal civilian employment (3.2). Federal civilian employment in the county is three times the national concentration due primarily to the presence of the Internal Revenue Service. Weber State University contributes to the high concentration in state government employment. Two of the county's ten largest employers (Autoliv and Fresenius) are durable equipment manufacturers contributing to the county's above average concentration in manufacturing.

In comparison, employment in four industrial sectors in Weber (agricultural services, mining, transportation and public utilities, and wholesale trade) is well below the national concentration. The employment share in all remaining industries is essentially equal to their share in the national economy.

Davis County exceeds the country in its share of employment in federal government and construction, but is under-represented in almost every other industry. The single most remarkable difference between Davis County and the U.S. is the concentration in federal civilian employment which is five times the national concentration due solely to the presence of Hill AFB. Military employment is three times the national average. The above average concentration in construction is largely the result of millions of dollars in construction spending awarded by Hill AFB to companies located in Davis County.

Table 10

Distribution of Hill Air Force Base Personnel by County of Residence: FY 2003
(Current \$)

	Davis County	Weber County	Region Total	Statewide Total
Active Duty Military¹				
Employment	4,120	979	5,099	5,178
Earnings	\$120,856,455	\$33,027,544	\$153,883,999	\$156,549,143
Federal Civilian				
Employment	6,199	5,774	11,913	13,491
Earnings	\$356,631,907	\$346,416,720	\$703,048,627	\$794,189,257
Reserves				
Employment	387	436	823	1,290
Earnings	\$3,448,170	\$3,884,760	\$7,332,930	\$11,493,900
Totals				
Employment	10,706	7,189	17,895	19,959
Earnings	\$480,936,532	\$383,329,024	\$864,265,556	\$962,232,300

¹ Includes housing allowance estimates made by BEBR.
Source: Hill AFB, Plans and Programs Directorate.

13 A location quotient (LQ) is the ratio of an industry's share of the local economy to an industry's share of the national economy. A location quotient greater than 1 indicates the regional economy is more concentrated in that industry than it is nationally.

The Role of Hill Air Force Base

Hill AFB is the largest employer in the region directly employing almost 20,000 people. If treated as a separate industry only services and retail trade employ more workers.

Hill AFB affects the annual flow of dollars into the region in three ways. First, employees of Hill who reside in the region spend a significant portion of their earnings locally thereby stimulating business sales in the local economy. Second, Hill purchases goods and services from vendors and suppliers located within the region which then supports jobs and generates earnings throughout the region. Lastly, a large share of the Prime Contracts awarded to Utah businesses in support of the missions at Hill have been awarded to businesses located in the region. A portion of this money is also spent locally. These components of Hill's activities are discussed below.

Employment and Earnings

As shown in Table 10, 17,072 employees, or 91% of the civilians and military personnel who work at Hill AFB live in either Davis or Weber County. In addition, during the course of a year 1,290 Utah resident reservists visit Hill AFB for short periods of time to train. Of these, 823 live in the region.

Most of the employees at Hill (67.6%) are civilian employees. This ratio of civilian to military employees is a distinguishing and important feature of Hill AFB, and a contributing factor in the growth and expansion of Davis County. Compared with civilians, military personnel receive a larger share of their total earnings from payments-in-kind for clothing and housing so they allocate a smaller share of their total spending to these items. Military personnel also have access to goods and services at base commissaries and base exchanges. These facilities have a dampening effect on retail sales and services in the communities surrounding a military base.

In contrast, civilians are responsible for their own housing, do not have access to commissaries or exchanges on base and spend a large share of their income in the local economy. This spending increases demand for residential goods and services and drives economic expansion. Because Hill employs such a large number of civilians, its impact on the local community is greater than the impact of a base staffed primarily or predominantly by military personnel.

Table 11

Economic Activity of Hill Air Force Base in the Davis/Weber Region (Current \$)

Employment		
Military Personnel	5,099	
Civilian Personnel	11,973	
Reserves	823	
Total	17,895	
Payroll		
Military Personnel		
Civilian Personnel	\$153,883,999	
Utah Reservists	\$703,048,627	
Total Payroll	\$7,417,282	\$864,449,908
Procurements		\$36,139,220
Contracts		\$43,664,403
Construction		\$38,019,933
Total Spending		\$982,273,464

Note: Employment and Payroll Date: FY 2003, Procurements, Contracts and Construction: FY 2002.

Source: Hill AFB, Plans and Programs Directorate.

Finally, the jobs at Hill AFB are valuable to the region because they are largely unaffected by routine economic cycles. Federal defense spending is not subject to the fluctuations inherent in normal economic and business cycles. They do not contract substantially during times of economic slowdown or recession. Likewise, they do not necessarily increase during economic expansions. The stability of the base adds to its value as force in the region's economy.

Procurement Contracting

While payroll and other benefits are the most important sources of economic input arising from Hill AFB, other spending related to base operations also stimulates regional economic growth. Contracts for construction, services, material equipment and supplies totaling \$117.8 million have been awarded to a mix of companies within the region. Goods and services totaling \$36.1 million are purchased locally through procurement contract arrangements. An additional \$43.6 million in contracting was spent for services used by Hill employees (health and education services) and to procure goods for resale at the base exchange and commissary. Construction of on-base buildings and facilities totaled \$38.0 million. About 90% of the purchases made by Hill AFB in Utah are made from businesses located in Davis County.

Table 11 shows the direct contributions of Hill AFB to the Davis/Weber region.

Housing

Military personnel and their dependents account for an estimated 14,991 people living in the region. Of these, 3,875 live in military housing located on base (1,318 military and 2,557 dependents). As Hill AFB does not maintain any off-base housing, the remaining military personnel (and their dependents) are provided a housing allowance to help offset the cost of renting or purchasing a home.

An estimated 33%, (1,683) of all military personnel own or are purchasing homes in either Davis or Weber County. The remaining 2,098 military either rent or live with friends and/or family.¹⁴ Of this group, BEBR estimates that between 900 and 950 active duty military personnel live in rental units adjacent to, or in close proximity to the base.¹⁵

Civilian employees are responsible for their own housing arrangements. Assuming the rate of home ownership by Hill's civilian employees is identical to that of the region's population, the 11,973 civilians living in the region own or are purchasing 9,129 homes. Therefore, an estimated 10,812 homes in the region are owned by employees of Hill AFB. Based on the 2003 estimated housing stock, one out of every 14 homes in the region is owned by an employee of Hill AFB.¹⁶

Section III Statewide Impact of Closing Hill Air Force Base

The direct economic activity of Hill AFB has led to additional increases in employment and income through the multiplier process, which in turn enhances

Table 12

Hill Air Force Base Closure Analysis: 2009 and 2020
Statewide Economic, Demographic and Fiscal Impact Summary
(2001 \$)

Variable	2009	Change from Baseline	2020	Change from Baseline
Employment	-47,430	-2.9%	-41,730	-2.1%
Earnings (Bil.)	-\$2.35	-4.1%	-\$2.50	-3.0%
Personal Income (Bil.)	-\$2.29	-3.7%	-\$2.65	-2.4%
Disposable Personal Income (Bil.)	-\$2.01	-3.0%	-\$2.31	-2.4%
Gross State Product (Bil.)	-\$3.58	-2.6%	-\$3.43	-1.7%
Population	-31,000	-1.2%	-50,480	-1.6%
School Age Population	-7,555	-1.3%	-15,405	-2.1%
State Tax Revenue				
Individual Income Tax	-\$69,764,633	NA	-\$73,840,274	NA
General Sales Tax	-\$88,791,351	NA	-\$93,978,530	NA
Motor Fuel Sales Tax	-\$14,798,559	NA	-\$11,187,920	NA
Other Taxes	-\$19,026,718	NA	-\$20,138,256	NA
Total	-\$192,381,261	NA	-\$199,144,980	NA

Note: The financial losses shown in 2020 are permanent, annual losses in the economy.

Source: Bureau of Economic and Business Research, University of Utah.

state and local government treasuries. As one of Utah's largest employers, Hill clearly makes a significant contribution to the state and has an even greater impact on those communities in close proximity to the base. The loss of Hill AFB translates to lost jobs and income for Utah workers, reduces the number of households that can be supported and permanently changes the structure and size of the Utah economy. Table 12 shows the statewide economic, demographic and fiscal impacts of closing Hill AFB.

Closure Scenario Description

The results presented here are based on the following assumptions regarding the closure of Hill AFB:

- The scenario assumes the complete closure of Hill AFB. Property will be retained by the Department of Defense (DOD) rather than released into the public domain. Therefore, conversion issues have not been considered in this analysis. It was also assumed that no funds to support economic realignment would be forthcoming.

¹⁴ Estimated using the Census 2000 Public Use Microdata Sample (PUMS), V1-D00-PUMS-US1 Issued December 2003.

¹⁵ This estimate was based on telephone interviews with property managers in 11 complexes located within five miles of the base, including the following: Cherry Creek, Fox Creek, Goldstone, Hidden Cove, Layton Meadows, Pepper Ridge, Pinnacle Mountain View, Quail Cove, Sterling Pointe, Sun Valley, and Wing Pointe.

¹⁶ Estimated using county-level housing tenure rates from the Census 2000, Summary File 3. Upward adjustments to the housing stock were made using BEBR construction permit data to account for new homes permitted since the 2000 Census. This estimate is an "upper bound" since it assumes all individuals at Hill AFB represent individual households. The number of housing units owned by Hill employees will be lower if two individuals working at Hill live in the same household.

- Base closure will occur over a three-year period beginning in 2006 and ending in 2008. The full effects of the military leaving the state will be realized by 2009. We assume there will be no construction activities at Hill after the BRAC notifications in 2005. Sixty percent of the remaining activity (local contracting and employment) will be eliminated the first year. By the second year, 80% of the base's activities will be realigned, with closure completed by the end of year three.
- The closure scenario assumes operations in 2006 are identical to those in FY 2003 with respect to employment and payroll and in those FY 2002 with respect to spending.
- The direct employment reductions include only the active duty military and civilian employees at Hill. No changes were made to reservists as their activities are not tied to the physical location of the base. Further, while there may be a small cadre of military personnel assigned to the base to perform basic maintenance and security, we assumed this at zero.
- This scenario does not include the impact of Prime Contract Awards. An estimated \$425.0 million in prime contracting is performed in Utah under numerous contracts with varying lengths of duration. These contracts may or may not be in place when Hill AFB closes; further, not all prime contracts awarded to Utah companies are tied to the physical location of Hill AFB. To model the impact of losing Prime Contract Awards, information about the phasing and spending of the contracts in 2009 would be needed. Because of these uncertainties Prime Contract Awards were not included in the analysis.
- To provide realistic and accurate comparisons, all financial information is expressed in constant 2001 dollars unless otherwise indicated. Fiscal impacts assume a tax structure identical to that currently in place. Changes in Utah's tax policy would alter future tax revenues.

- The lost earnings of military personnel have not been included in the fiscal impacts because they do not pay taxes to state and local governments in the same ways that civilians do. For example, military personnel at Hill AFB do not pay income taxes to Utah unless their permanent residence is Utah. Further, military personnel do not pay sales tax on purchases made at the Base Exchange and Commissary.
- The impacts of closing Hill AFB have been estimated using an integrated economic and demographic simulation model developed by Regional Economic Models, Inc. (REMI).

The economic, demographic and fiscal impacts on the state are presented in two window years—2009 and 2020. The impacts of closing Hill begin immediately (2006) but most of the effects will not be fully realized until 2009 when military personnel and their dependents are realigned to other military bases. The year 2009 was selected because it shows the first full year of impact on the Utah economy. The initial shock of closing Hill AFB will push markets into disequilibrium. Eventually, the economy will adjust and stabilize on a new growth path. The year 2020 was selected to show how the state's economy will be permanently impacted after these market adjustments occur.

To put the impacts of closing Hill in context, a comparison of two scenarios is provided. The first is a picture of the Utah economy if Hill remains in operation at its current levels. The second is the closure scenario described above. The impact is the difference between these.¹⁷

Impact on Employment and Earnings

(Financial projections are in constant 2001 dollars)

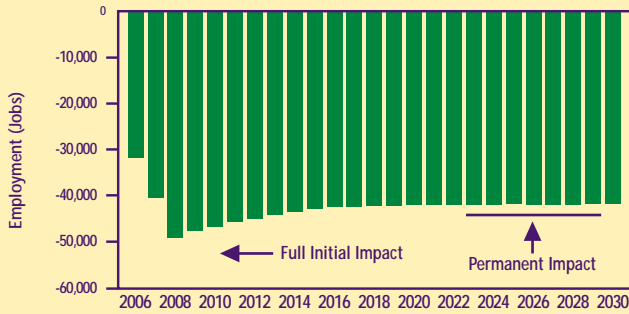
The full impact of closing Hill AFB will occur in 2009 when all military personnel have been realigned to other bases and all civilian jobs eliminated. The most direct and enduring impact will be the loss of 13,490 high-paying, value-added civilian jobs. When additional employment losses are included, the employment impact is a loss of more than 47,400 jobs.

¹⁷ REMI simulates the growth path, structure and characteristics of the economy and population into the future. This is the baseline projection and models the future that is most likely to occur given our current understanding of economic and demographic trends. To calculate the impact of closing Hill AFB, an alternative projection is generated that models the new growth path with the absence of Hill AFB. The results of the alternative projection are compared with the baseline projection. The impacts are the difference between these two projections.

The baseline data presented here have been developed in conjunction with the Governor's Office of Planning and Budget and are not yet official projections.

Figure 4

Statewide Annual Employment Impact: 2006 - 2030



Source: Bureau of Economic and Business Research, University of Utah.

After a sharp decline in 2009, the employment impact becomes less severe as the market adjusts to the closure. By 2020, the employment impact will be a permanent loss of about 41,700 jobs.¹⁸ The annual employment impact through the year 2020 is shown in Figure 4.

Earnings declines correspond to employment losses.¹⁹ The impact on earnings will be a loss of \$2.35 billion in 2009, increasing to \$2.50 billion in 2020. The initial loss includes \$1.15 billion in wages paid to federal civilian and military personnel as well as \$1.2 billion in earnings resulting from the loss of spending by the base. The earnings impact becomes greater over time, driven by the loss of high paying federal civilian jobs. The impact on personal income also increases over time because of the high wages associated with the loss of this particular industry.

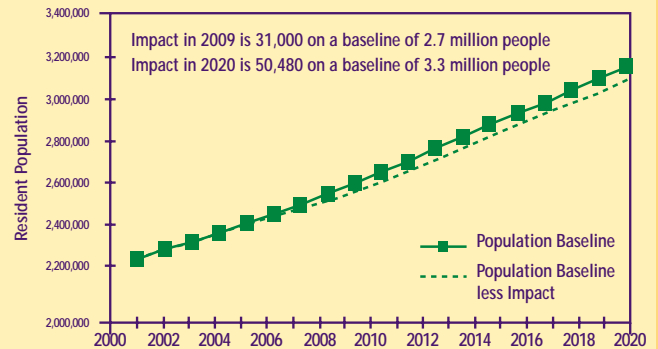
The direct impacts of losing military and civilian personnel working at Hill AFB will not moderate over time because they cannot be offset by population growth or demand for residential services. This industry will be permanently removed from the state's economic base.

Impact on Industrial Sectors

All sectors of Utah's economy will be affected by the closure of Hill. Aside from the obvious decline in federal government employment, services, retail trade,

Figure 5

State of Utah Employment: 2001 - 2020
Baseline and Baseline less Hill AFB Impact



Source: Bureau of Economic and Business Research, University of Utah.

construction and manufacturing all sustain losses. With the exception of government, all industrial sectors are projected to show improvement by 2020; that is, the initial loss in 2009 is greater than the permanent loss 11 years after base closure.

Although the permanent employment loss is large in absolute terms, as a share of the projected employment, it is a small decline. The permanent loss of 41,700 jobs is not trivial, but represents a change of just 2.1% on a projected baseline of almost 2.0 million jobs. (Figure 5)

Services and Retail Trade

The drop in household expenditures (due to the loss of payroll) and the loss of operational spending by Hill AFB will significantly impact the retail trade and services sectors. In 2009, the impact on the services sector will be a loss of 11,010 jobs, or about 2.0% of the projected baseline. The corresponding loss in earnings will be \$390.2 million. As a share of the total employment impact, the loss in the services sector represents 23.0% of all job losses in 2009.

The impact on retail trade will be a loss of about 6,500 jobs, or 2.3% of the baseline projection. In 2009, losses in retail trade will account for almost 14.0% of total jobs lost. The corresponding earnings impact will be \$147.0 million.

¹⁸ This is employment as defined by the Bureau of Economic Analysis and includes full-time, and part-time jobs. Full-time and part-time jobs are counted at equal weight. Employees, sole proprietors and active partners are included in the numbers but unpaid family workers and volunteers are not. Proprietors employment consists of the number of sole proprietorships and the number of partners in partnerships. The employment figures include active duty military and agricultural workers.

¹⁹ This is earnings as defined by the Bureau of Economic Analysis and include wage and salary disbursements, proprietor's income, and other labor income.

Construction

Although the employment impact is greatest in the retail and service sectors, in terms of jobs lost as a share of total sector employment, construction will be one of the hardest hit. Hill AFB spends millions of dollars annually for new construction and construction maintenance. The loss of these dollars translates to a loss of 3,355 construction jobs in 2009, or about 3.3% of the baseline projection.

Manufacturing

The impact on manufacturing will be an initial loss of 1,964 jobs in 2009, decreasing to 1,202 jobs by 2020. The loss in manufacturing is of particular concern. As of January 2003, the manufacturing industry in Utah had experienced six consecutive years of declining payroll employment. With nearly 14,000 jobs lost since 2000, the additional loss of jobs in this sector will likely accelerate the decline in Utah's manufacturing sector.

State and Local Government

The employment impact on state and local government in 2009 is a loss of 1,942 jobs which increases by 2020 to 3,079 jobs. As a share of total projected employment, the initial impact represents 4.1% of the projected baseline but increases to 7.4% of the projected baseline in 2020. This trend is a stark contrast to activity in all

other industrial sectors and is due to changes in the population, particularly in the number of school age children living in Utah. The cost savings from a smaller population will result in lower demand for government services (such as school teachers, fire and police protection).

Over time, federal jobs (and the associated earnings) represent an increasing share of the employment and earnings impact. As shown in Table 13, by 2020 the direct loss of 18,668 federal civilian and military jobs accounts for almost 45% of all jobs lost, up from 40% in 2009. The earnings associated with these jobs accounts for about 62% of the earnings impact in 2020, compared to about 55% in 2009.

Impact on Income and Gross State Product

(Financial projections are in constant 2001 dollars)

Personal income is the major determinant of household spending. Disposable personal income is the portion of personal income that remains after personal taxes are subtracted. It represents the amount of income available for consumption and savings.

Closing Hill reduces total personal income in Utah by \$2.29 billion in 2009. Another way to assess the impact

Table 13

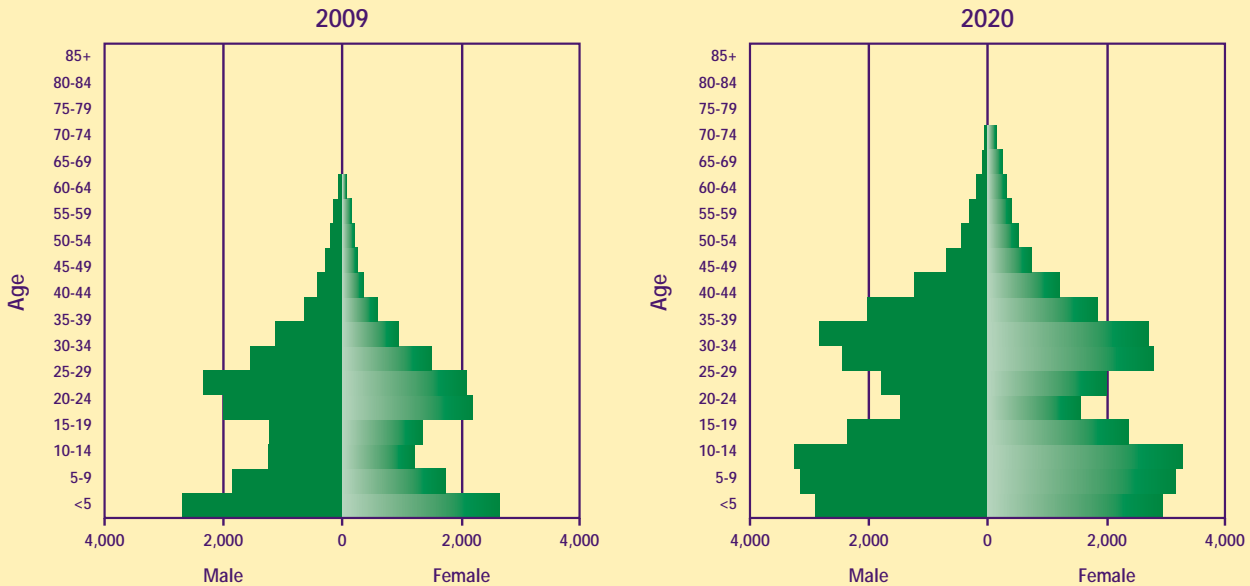
Employment and Earnings Impact and Share of Loss, by Sector: 2009 and 2020
(Millions of 2001 \$)

Sector	Impact in 2009				Impact in 2020			
	Job Impact	Share of Loss	Earnings Impact	Share of Loss	Job Impact	Share of Loss	Earnings Impact	Share of Loss
Manufacturing	-1,964	4.1%	-\$113.1	4.8%	-1,202	2.9%	-\$76.8	3.1%
Mining	-9	0.0%	-\$1.1	0.0%	-5	0.0%	-\$0.5	0.0%
Construction	-3,355	7.1%	-\$146.0	6.2%	-1,832	4.0%	-\$95.1	3.8%
Transportation & Public Utilities	-931	2.0%	-\$56.6	2.4%	-669	1.6%	-\$45.2	1.8%
FIRE	-1,803	3.8%	-\$57.4	2.4%	-1,311	3.1%	-\$46.1	1.8%
Retail Trade	-6,498	13.7%	-\$147.1	6.3%	-5,235	12.5%	-\$136.6	5.5%
Wholesale Trade	-937	2.0%	-\$51.0	2.2%	-544	1.3%	-\$33.3	1.3%
Services	-11,010	23.2%	-\$390.2	16.6%	-8,893	21.3%	-\$360.0	14.4%
Agr, Forestry, & Fish Services	-305	0.6%	-\$6.4	0.3%	-295	0.7%	-\$7.1	0.3%
State and Local Government	-1,942	4.1%	-\$84.2	3.6%	-3,079	7.4%	-\$140.5	5.6%
Federal Civilian	-13,490	28.5%	-\$1,070.0	45.5%	-13,490	32.3%	-\$1,296.2	51.9%
Federal Military	-5,178	10.9%	-\$227.3	9.7%	-5,178	12.4%	-\$261.7	10.5%
Total	-47,424	100.0%	-\$2,351.4	100.0%	-41,733	100.0%	-\$2,499.3	100.0%

Source: Bureau of Economic and Business Research, University of Utah.

Figure 6 & 7

State of Utah Impact Population



Source: Bureau of Economic and Business Research, University of Utah.

of losing \$2.29 billion in personal income is on a per capita basis. Closing Hill will lower per capita income by \$542 in 2009; this means that each person in Utah will have, on average, \$542 less to spend on goods and services than if Hill AFB remained in operation.

The initial decline in personal income (2009) is slightly less than the expected loss in earnings because of transfer payments (particularly welfare and unemployment insurance). While transfer payments offset the earnings impact in the short term, these payments eventually end. This, in combination with the permanent structural change created by the loss of federal civilian jobs, results in a greater loss (\$2.65 billion in 2001\$) in personal income by 2020.

Real disposable personal income (DPI) drops by \$2.01 billion in 2009—3.0% less than the baseline projection. By 2020, the permanent annual loss of DPI increases to \$2.3 billion and represents a decline of 2.4% from the baseline projection. The continued decline in DPI is driven by two things—the loss of

high paying civilian jobs at Hill AFB and an increase in the number of moderate and lower paying jobs in other sectors of the economy. The loss of income that results from the closure of Hill AFB will only be mitigated with an equal number of new high-paying jobs, or the creation of *many* more jobs at lower rates of pay.

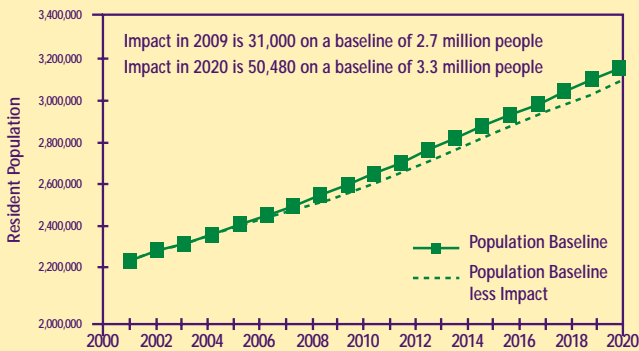
Finally, the single most comprehensive indicator of the state’s economic performance is gross state product (GSP). Similar to gross domestic product for the nation, it is a measure of the total dollar value of all final goods and services produced in the state. In 2009, the impact on Utah’s GSP is a decline of \$3.58 billion, or about 2.6% of the projected baseline GSP of \$139.0 billion. As Utah’s economy expands the decline in GSP accounts for a smaller share of the state’s projected GSP. In 2020, the decline in GSP levels off at a permanent annual loss of \$3.43 billion (in 2001\$) and accounts for 1.7% of the projected GSP.^{20,21}

20 Gross domestic product is the total final value of all the goods and services produced in a given region, in a year. Gross state product is the state counterpart to the national gross domestic product.

21 While GSP measures the value of the state’s economy and is a good measure of overall economic activity, changes in earnings and personal income are preferred measures of economic well-being of the residents in the region.

Figure 8

**State of Utah Population: 2001 - 2020
Baseline and Baseline Less Hill AFB Impact**



Source: Bureau of Economic and Business Research, University of Utah.

Impact on Population

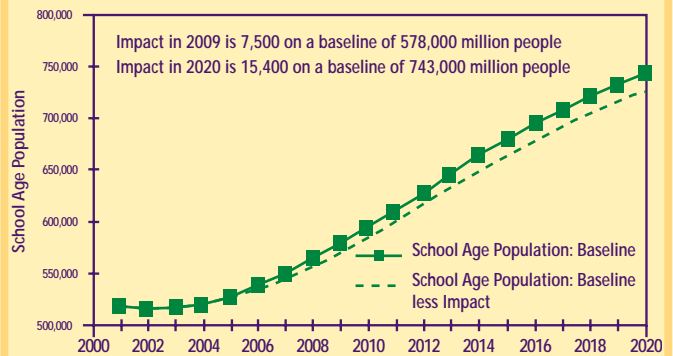
Hill's closure also impacts Utah's population. In 2009, the population impact is 31,000, or about 1.2% of the projected population baseline of 2.6 million. As shown in Figure 6, the impact population is primarily working persons (individuals between the ages of 20 and 30) and their children. This results in fewer taxpayers and fewer school age children living in Utah. By 2020, the impact population increases both in number and in share of the projected baseline. The permanent impact on population will be about 50,400 fewer people living in Utah than if Hill AFB remained in operation, about 1.6% of the projected baseline of almost 3.3 million. Figure 7 shows the population impact in 2020.

The initial impact on the school age population will be a decrease of almost 7,600 children or 1.3% of the projected baseline of 578,031. This impact is small when compared to the expected increase of 10,000 school age children per year projected to begin in 2005 and continuing for at least a decade. By 2020, the impact on the school age population increases to 15,405 and represents 2.1% of the projected baseline of 742,605. Figures 8 and 9 show the impact on population and school age population.

While slower population growth may provide some slight short-term relief for the state's education system in terms

Figure 9

**State of Utah School Age Population: 2001 - 2020
Baseline and Baseline Less Hill Impact**



Source: Bureau of Economic and Business Research, University of Utah.

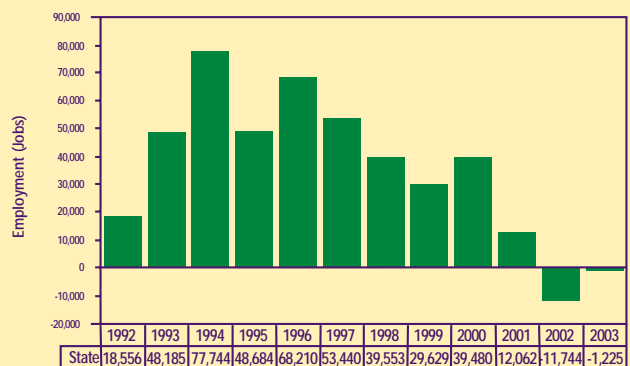
of fewer students, it also reduces the working population which negatively impacts state tax revenue. These fiscal impacts are discussed at more length below.

Fiscal Impacts

The fiscal impact on state tax revenue will be considerable.²² In 2009, the annual impact on state tax revenue will be a loss of \$192.4 million. The largest decline will be the loss of general sales tax which is estimated to decline by \$88.8 million, followed by a decline of \$69.8 million in individual income tax. By

Figure 10

**State of Utah
Annual Changes in Employment Levels : 1992 - 2003**



Source: Bureau of Economic and Business Research, University of Utah.

²² The impact on state tax collections has been estimated using ratios developed by the Governor's Office of Planning and Budget. The tax ratios have not been applied to lost military earnings.

Table 14

**Statewide Economic and Demographic Activity Comparison; 2009 and 2020
With Hill AFB and Without Hill AFB
(2001 \$)**

Variable	2009		2020	
	With Hill AFB	Without Hill AFB	With Hill AFB	Without Hill AFB
Employment	1,638,260	1,590,830	1,999,973	1,958,243
Earnings (Bil.)	\$57.1	\$54.7	\$84.7	\$82.3
Personal Income (Bil.)	\$74.6	\$72.3	\$110.2	\$107.6
DPI (Bil.)	\$66.5	\$64.5	\$97.2	\$94.9
Per capita PI	\$28,115	\$27,574	\$33,803	\$33,509
Gross State Product (Bil.)	\$139.0	\$135.4	\$204.9	\$201.5
Population	2,654,124	2,623,124	3,260,094	3,209,615
School Age Population	578,031	570,476	742,605	727,200

Source: Bureau of Economic and Business Research developed in cooperation with the Utah Governor's Office of Planning and Budget.

to four years to mitigate the employment losses caused by Hill's closure.

Offsetting the impact on earnings will be even more difficult. The federal civilian jobs at Hill AFB are not "average" jobs. They are high-paying, stable jobs with benefits and will be hard to replace. Since the earnings of most civilians working at Hill AFB are almost double the state average it will take almost 68,000 new jobs to offset the loss of \$2.35 billion in earnings. On an

2020, the permanent loss in state tax revenue will be \$199.1 million annually. The largest decline will be in general sales tax (-\$94.0 million) followed by individual income tax (-\$73.8 million).

How Long to Recovery?

The speed at which the state recovers its economic losses is dependent on job growth. To offset the short-term employment impact of closing Hill AFB, the state needs to create almost 48,000 new jobs. In robust economic times, this is equivalent to losing one year to three years of economic growth. In recent historical experience, job growth in this range has not occurred on an annual basis since the economic boom of the mid-1990s. (Figure 10)

As shown in Figure 10, job growth in Utah started to slow in 1996. During the five-year period from 1993 through 1997, employment increased by more than 296,000 jobs, averaging about 59,000 jobs each year. In comparison, from 1998 through 2001, about 121,000 jobs were created; an average of about 30,000 per year. In each of the last two years, employment in Utah has declined.

Currently, Utah is experiencing a "jobless economic recovery." Forecasts show employment growing by 11,000 to 12,000 new jobs annually over the next few years—well under the 48,000 job mark. Given current growth expectations, it could take three

annual basis Utah has not experienced job growth at this level since 1996.

In a sense, Utah never really "recovers" from losing Hill AFB—the economy will always be permanently smaller than if the base remained in operation. However, Utah's economy has demonstrated it can survive dramatic economic events (closure of Geneva Steel, employment losses at Kennecott, the energy bust of the 1980s and substantial declines in defense spending in the 1990s). The question is not whether the Utah economy will begin to expand but when and at what pace. The closure

Table 15

**Hill Air Force Base Closure Analysis
Economic, Demographic and Fiscal Impact Summary: 2009 and 2020
Davis/Weber Region
(2001 \$)**

Variable	Davis/Weber Region			
	2009	Change from Baseline	2020	Change from Baseline
Employment	-34,996	-12.7%	-32,273	-9.7%
Earnings (Bil.)	-\$1.81	-19.7%	-\$2.06	-15.3%
Personal Income (Bil.)	-\$1.58	-10.8%	-\$1.89	-8.9%
Disposable Personal Income (Bil.)	-\$1.38	-10.6%	-\$1.65	-8.8%
Gross State Product (Bil.)	-\$2.54	-11.1%	-\$2.54	-7.5%
Population	-21,489	-4.2%	-33,130	-5.5%
School Age Population	-5,309	-4.7%	-10,013	-7.7%
Fiscal Impact (mil. \$)				
Sales and Gross Receipts	-\$7.7	NA	-\$8.8	NA

NA: Not Available.

Notes: Property tax revenue baseline projections have not been estimated. Projections for 2020 are not included since property values should begin to recover by that time.

Source: Bureau of Economic and Business Research, University of Utah.

Table 16

Hill Air Force Base Closure Analysis
 Economic, Demographic and Fiscal Impact Summary: 2009 and 2020
 Davis County
 (2001 \$)

Variable	Davis County			
	2009	Change from Baseline	2020	Change from Baseline
Employment	-30,020	-19.9%	-28,150	-15.2%
Earnings (Bil.)	-\$1.62	-31.6%	-\$1.89	-25.2%
Personal Income (Bil.)	-\$1.15	-13.8%	-\$1.38	-11.2%
Disposable Personal Income (Bil.)	-\$1.01	-13.6%	-\$1.21	-11.2%
Gross State Product (Bil.)	-\$2.18	-17.8%	-\$2.21	-12.1%
Population	-15,150	-5.4%	-21,070	-6.2%
School Age Population	-3807	-6.0%	-6,300	-8.5%
Fiscal Impact (Mil.) Sales and selected taxes	-\$6.3	NA	\$7.3	NA

NA: Not Available.
 Notes: Property tax revenue baseline projections have not been estimated. Projections for 2020 are not included as property values should begin to recover by that time.
 Source: Bureau of Economic and Business Research, University of Utah.

of Hill AFB will be the equivalent of losing a few years of economic growth. Eventually the economy will stabilize on a new growth path. At a statewide level, this could happen within two or three years of base closure. Table 14 compares the economic and demographic conditions in Utah if Hill AFB closes.

Section IV Regional Impact of Closing Hill Air Force Base

Closing Hill AFB will have economic repercussions on the Davis/Weber region unparalleled since the Great Depression. The departure of such a large employer will have enduring impacts on the size, structure and composition of the regional economic base, leading to a decrease in jobs, population, earnings and income, and a much smaller regional economy.

Tables 15 and 16 show the economic, demographic and fiscal impacts of closing Hill AFB on Davis/Weber Region and Davis County.

Impact on Employment and Earnings

In 2009, the employment impact of closing Hill AFB is a region-wide loss of almost 35,000 jobs and an annual decline in earnings of \$1.81 billion. Included in the employment impact is the direct loss of 18,669 civilian and military jobs and subsequent loss of 16,328 jobs due to the multiplier process as well as other demographic and market adjustments. This job loss represents 12.7% of projected employment in the region, or about one in eight jobs. By 2020, the region-wide impact on employment will be the permanent loss of about 32,000 jobs and \$2.06 billion in earnings.

Davis County bears the brunt of the employment and earnings impacts. The employment impact on Davis begins in 2006 with the direct loss of 11,201 jobs at Hill AFB and subsequent loss of 7,819 jobs. This loss is so large that in 2006, employment actually drops by 15,415 jobs, and continues to decline over the next two years resulting in a *an absolute* decline in employment of about 19,000 by year-end 2008.²³

Table 17

Impact on Employment and Earnings: 2009 and 2020
 Davis/Weber Region
 (2001 \$)

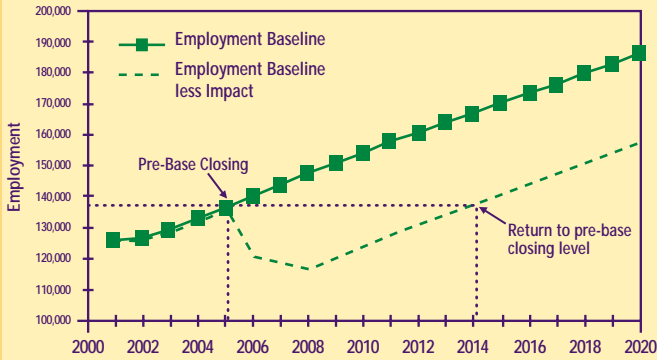
Sector	Davis/Weber Region		Impact in 2009		Impact in 2020	
	Jobs	Earnings	Jobs	Earnings	Jobs	Earnings
Manufacturing	-853	-\$48,439,716	-561	-\$36,189,069		
Construction	-2,177	-\$89,299,645	-1,263	-\$62,998,523		
Transportation & Public Utilities	-320	-\$15,889,184	-243	-\$14,344,165		
FIRE	-867	-\$19,963,652	-555	-\$15,387,740		
Retail Trade	-4,549	-\$94,565,603	-3,848	-\$95,930,576		
Wholesale Trade	-385	-\$15,720,745	-244	-\$12,072,378		
Services	-5,973	-\$181,897,163	-5,128	-\$185,457,903		
Ag., Forestry, & Fish. Services	-187	-\$3,453,014	-192	-\$4,270,310		
State and Local Government	-1,018	-\$44,796,099	-1,568	-\$75,974,889		
Federal Civilian	-13,490	-\$1,067,663,121	-13,490	-\$1,295,466,765		
Federal Military	-5,178	-\$227,304,965	-5,178	-\$261,742,984		
Total	-34,997	-\$1,808,992,908	-32,270	-\$2,059,835,303		

Source: Bureau of Economic and Business Research, University of Utah.

²³ The actual decline in employment is lower than the employment impact because some sectors of the economy continue to grow.

Figure 11

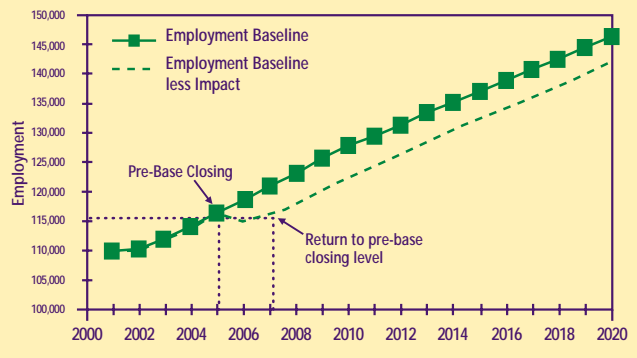
Davis County Employment; 2001-2020
Baseline and Baseline Less Hill Impact



Source: Bureau of Economic and Business Research, University of Utah.

Figure 12

Weber County Employment; 2001-2020
Baseline and Baseline Less Hill Impact



Source: Bureau of Economic and Business Research, University of Utah.

By 2009, the employment impact is about 30,000, or one in five jobs. However, by 2009 other sectors of the economy in Davis County generate enough jobs to stop the net decline and employment starts to trend upward. Nonetheless, the actual job loss incurred during the phase-out period is so large that employment does not return to the pre-base closure level until 2014. (Figure 11) The initial impact on earnings in 2006 will be the loss of \$951.7 million which quickly escalates to \$1.62 billion by 2009—a 32% decline in the baseline projection.

The employment and earnings losses in Davis County are large-scale and enduring. It will take years for Davis County to mitigate the negative effects caused by Hill's closure. To offset the employment impact alone will require the creation of about 31,000 new jobs. To offset the earnings loss will be more difficult. Because the earnings of most civilians working at Hill are about double the average of all workers in the county, it will take about 48,000 new jobs to offset the loss of \$1.62 billion in earnings. Davis County has never had this kind of job growth on an annual basis.

The initial employment impact in 2006 in Weber County will be 3,341, which causes employment to dip slightly (997 jobs) below the pre-base closing level of 116,000. In 2007, given optimistic growth assumptions, the county's economy will produce enough jobs to push employment back to its pre-base closing level. The permanent employment impact in 2020 is the loss of 4,123 jobs. (Figure 12)

Even if Hill AFB remains in operation, over time, employment in the region moves toward a service

Table 18

Impact on Employment and Earnings: 2009 and 2020
Davis County
(2001 \$)

Davis County Sector	Impact in 2009		Impact in 2020	
	Jobs	Earnings	Jobs	Earnings
Manufacturing	-489	-\$21,941,489	-332	-\$20,878,877
Construction	-1,594	-\$64,468,085	-954	-\$47,666,174
Transportation & Public Utilities	-227	-\$10,168,440	-173	-\$9,896,603
FIRE	-603	-\$12,101,064	-370	-\$9,564,254
Retail Trade	-3,345	-\$67,322,695	-2,870	-\$71,979,321
Wholesale Trade	-277	-\$10,363,475	-183	-\$8,825,702
Services	-4,070	-\$112,500,000	-3,627	-\$125,332,349
Ag., Forestry, & Fish. Services	-134	-\$2,597,518	-137	-\$3,323,486
State and Local Government	-620	-\$23,235,816	-835	-\$39,010,340
Federal Civilian	-13,490	-\$1,063,829,787	-13,490	-\$1,293,943,870
Federal Military	-5,178	-\$227,304,965	-5,178	-\$261,742,984
Total	-30,021	-\$1,615,833,333	-28,149	-\$1,892,163,959

Source: Bureau of Economic and Business Research, University of Utah.

economy. The departure of Hill accelerates this trend. With some exceptions service sector jobs tend to be lower paying jobs. Therefore, if employment growth is driven by the creation of jobs in low wage sectors, very high rates of job creation will be necessary to compensate for the loss of earnings caused by Hill's closure.

Impact on Industrial Sectors

All sectors of the region's economy will be affected by the closure of Hill. Aside from the decline in federal government employment, the construction, services, retail trade, and state and local government all sustain job losses in 2009. The least impacted sectors are mining, agriculture services, and transportation and public utilities. Tables 17 and 18 show the number of jobs lost and the earnings associated with those jobs for 2009 and 2020. (Mining is not shown since the impacts on this sector are negligible). Table 19 shows the losses as a share of employment in each industrial sector.

Services and Retail Trade

The drop in household spending due to the loss of payroll and the loss of spending related to Hill's operations have large-scale impacts on employment in services and retail trade. The impact on the services sector will be a loss of 5,963 jobs in 2009 — a decrease of 14% from the baseline projection. Within this sector, job losses are concentrated in food service, healthcare and education.

The impact on retail trade will be a loss of 4,549 jobs—a decrease of 15.5% from the baseline projection. Retail businesses that sustain the largest employment losses include grocery stores (695 workers) furniture and household furnishing stores (230 workers) and general merchandise stores (583 workers).²⁴

Construction

Annually, Hill AFB spends millions of dollars for construction and construction maintenance. Most of these contracts are awarded to companies located in the Davis/Weber region. The loss of these

dollars culminates in the loss of 2,177 construction jobs in the region in 2009. The impact on construction represents about 12% of the projected 2009 construction employment baseline. By 2020, the impact on construction will be a loss of 1,263 jobs.

Job loss in the construction industry could ultimately be larger than the estimates presented here. The construction undertaken for Hill AFB is nonresidential construction. Currently, this segment of Utah's construction industry is not showing significant growth. Instead, construction has been driven by activity in the residential sector. With the employment and population losses projected throughout the region, it is unlikely that residential construction will continue at the unprecedented levels experienced over the last few years. The loss of nonresidential construction at Hill AFB, combined with a likely downturn in residential construction in the region could further escalate employment losses in the construction industry that may continue well into the next decade.

State and Local Government

State and local government will sustain an employment impact of 1,018 fewer jobs in 2009. The impact becomes larger over time to adjust to the size and age distribution of the population

By 2020, the employment impact on state and local government will be a loss of 1,568 jobs, or 4.9% of the total employment impact in that year. While this study

Table 19

**Job Loss by Sector as a Share of Total Sector Employment: 2009
Davis/Weber Region and Davis County**

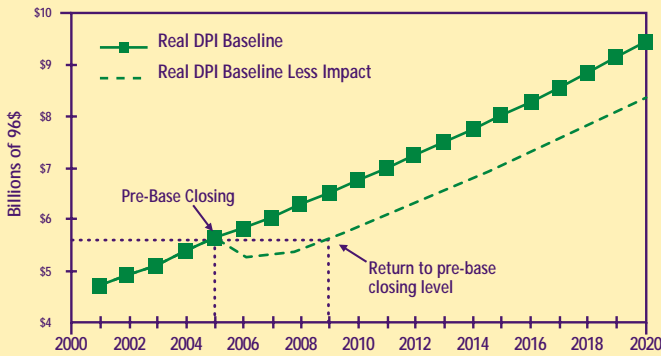
Sector	Davis/Weber Region		Davis County	
	Job Loss	Loss as a Share of Sector	Job Loss	Loss as a Share of Sector
Manufacturing	-853	3.0%	-489	4.1%
Construction	-2,177	11.9%	-1,594	14.6%
Transportation & Public Utilities	-320	4.3%	-227	5.2%
FIRE	-867	4.3%	-603	5.1%
Retail Trade	-4,549	8.8%	-3,345	11.4%
Wholesale Trade	-385	5.7%	-277	7.1%
Services	-5,973	7.1%	-4,070	9.3%
Ag., Forestry, & Fish. Services	-187	6.4%	-134	8.3%
State and Local Government	-1,018	3.9%	-620	5.1%

Source: Bureau of Economic and Business Research, University of Utah.

²⁴ These estimates were generated by BEBR based on consumer spending pattern data contained in the *Consumer Expenditures Survey in 2001* (Table 34); U.S. Department of Labor, Bureau of Labor Statistics (April 2003).

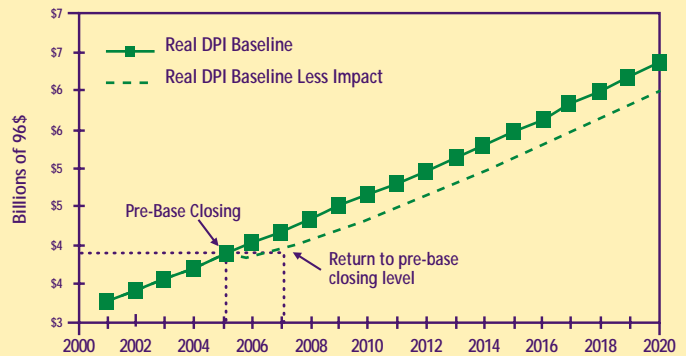
Figure 13 & 14

Davis County Real Disposable Personal Income; 2001-2020
Baseline and Baseline Less Hill AFB Impact



Source: Bureau of Economic and Business Research, University of Utah.

Weber County Real Disposable Personal Income; 2001-2020
Baseline and Baseline Less Hill AFB Impact



Source: Bureau of Economic and Business Research, University of Utah.

does not fully model the fiscal impacts of Hill AFB, the cost savings from a smaller population results in lower demand for government services including 10,000 fewer school age children.

With the exception of the government sector, all other industrial sectors in the region are expected to show improvement by 2020; that is, the impact in 2009 is greater than the impact 11 years after base closure.

Impact on Income and Gross Regional Product

Closing Hill AFB reduces personal income in the region by \$1.58 billion in 2009. Disposable personal income drops by \$1.38 billion—a decrease of almost 11% over the projected baseline. This means residents in the region will have \$1.38 billion less to spend on goods and services.

The single most comprehensive indicator of an area's economic performance is gross regional product (GRP). Similar to GSP for the state, it is a measure of the total dollar value of all final goods and services produced within the region. In 2009, the impact on the region's GRP is a decline of \$2.54 billion—a drop of 11%. As the region's economy expands, the decline in GRP accounts for a smaller share of the region's projected GRP even though, in absolute terms it remains unchanged. In 2020, the permanent, annual decline in GRP will be \$2.53 billion, or about 7.5% of GRP.

Again, Davis County bears most of the impact. In 2009, the impact on real personal income in Davis County is \$1.15 billion—a decline of 13.8%. Another way to view the impact of losing \$1.15 billion in

personal income is on a per capita basis. Closing Hill will lower per capita income in Davis County by \$2,629 in 2009; this means that each person in Davis will have, on average, \$2,629 less to spend on goods and services than if Hill remains in operation. The impact on the county's GRP in 2009 is a loss of \$2.18 billion representing a decrease of almost 18% from the baseline projection. By 2020, the loss of GRP levels off at \$2.2 billion annually, representing a permanent decrease of 12%. (Figures 13 and 14)

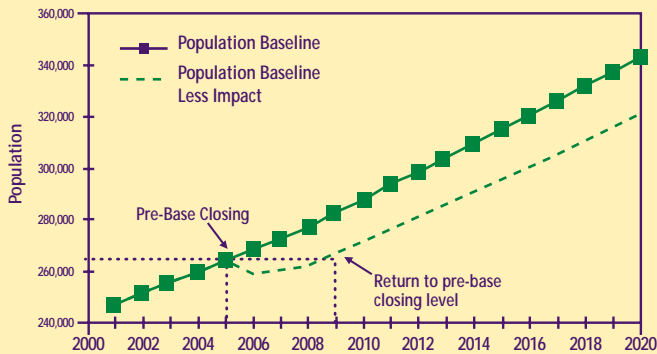
Impact on Population

The closure of Hill AFB impacts the region's resident population immediately as military personnel and their dependents are realigned to other military bases. In 2006, the population impact on the region is 9,741 and results in an absolute population decline of 2,388 people. Natural increase will help offset the population impact and the region's population returns to its pre-base closure level in 2007. By 2009, the population impact increases to about 21,500 people eventually reaching 33,130 people by 2020. This means by 2020 there will be 33,130 fewer people living in the Davis/Weber region than would otherwise be the case.

As shown in Figures 15 and 16, by 2020 the population impact increases in absolute terms and as a share of the baseline projection. In 2009, the population impact represents 4.2% of the baseline projection, increasing to 5.5% of the baseline projection in 2020. Even though the population impact becomes greater with time, at no point after 2009 does the region suffer an absolute loss

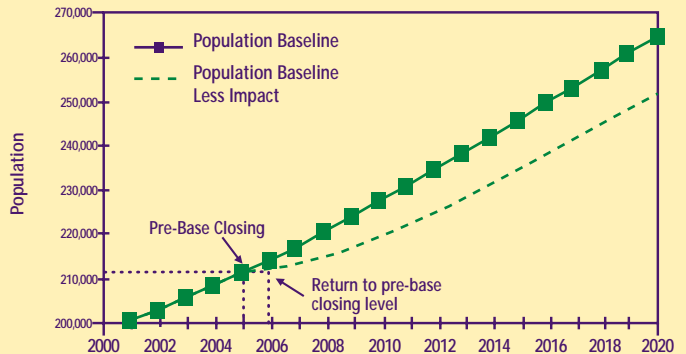
Figure 15 & 16

**Davis County Population; 2001-2020
Baseline and Baseline Less Hill AFB Impact**



Source: Bureau of Economic and Business Research, University of Utah.

**Weber County Population; 2001-2020
Baseline and Baseline Less Hill AFB Impact**



Source: Bureau of Economic and Business Research, University of Utah.

in population. Instead, population growth continues, driven primarily by natural increase.

Most of the impact population occurs in Davis County. In 2006, the population impact in Davis is 8,208 which causes an absolute population decline of almost 3,800 people. This decline is so large that population in the county does not return to its pre-base closing level until 2009. In contrast, population in Weber County actually increases by about 1,400 people in 2006.

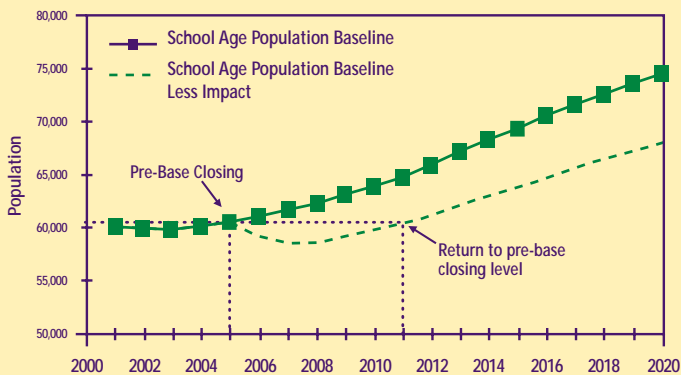
The population decline in Davis County is worth noting. While population fluctuations are common in rural areas highly dependent on natural resources, urban counties rarely experience such changes. The projected decrease in Davis County would be the only time since

the late 1940s that an urban county in Utah has experienced a decline in population.

The impact population in Davis County is largely made up of working age adults (individuals between the ages of 20 and 30) and their children which translates to fewer taxpayers and fewer school age children living in the area. In 2009, the initial regional impact on the school age population will be a decrease of about 5,300 children off a projected baseline of 110,051. This means there will be about 5,300 fewer children in the education system in Davis County than if Hill remained in operation. The districts most affected will be Davis School District and Weber School District.

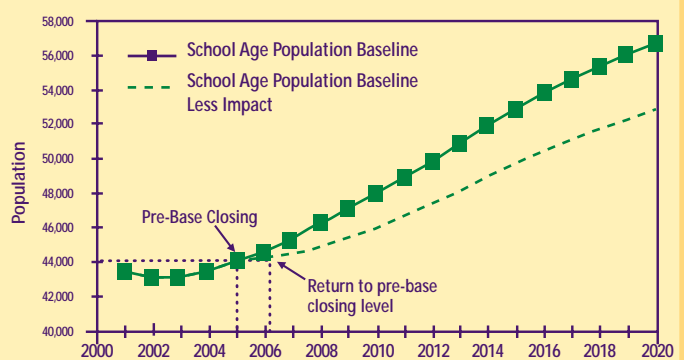
Figure 17 & 18

**Davis County School Age Population; 2001-2020
Baseline and Baseline Less Hill AFB Impact**



Source: Bureau of Economic and Business Research, University of Utah.

**Weber County School Age Population; 2001-2020
Baseline and Baseline Less Hill AFB Impact**



Source: Bureau of Economic and Business Research, University of Utah.

Table 20	
Primary and Other Residential Property Property Tax Impact Scenarios: 2006 (current dollars)	
	2006
Davis County (Based on an estimated taxable value in 2006 of \$6.7 billion)	
5% decline impact	-\$4,100,000
10% decline impact	-\$8,300,000
25% decline impact	-\$20,700,000
Weber County (Based on an estimated taxable value in 2006 of \$5.1 billion)	
5% decline impact	-\$2,900,000
10% decline impact	-\$5,800,000
25% decline impact	-\$14,500,000

Source: Calculated by BEBR using information from the Utah State Tax Commission, Utah Property Tax, 2002 Annual Statistical Report, Tables 2 and 8A.

Initially, most of the school age impact population will be dependents of military personnel who live in Davis County. The school age population impact in Davis County in 2006 is large enough to cause an actual decline of 1,500 school age children living in the county. These declines continue until 2009. The permanent impact on the county’s school age population is 6,300 children—a decrease of 8.5% from the projected baseline. (Figures 17 and 18)

The impact on Weber County is much smaller. As shown in Figure 20, the impact on school age population is about 1,500, but does not cause the number of school age children living in the region to dip below the pre-base closing level. By 2020, the impact in Weber County increases to about 3,700 school age children, or about 6.6% of the baseline projection.

The decline in the school age population in the region will partially ease the pressure of the upcoming student boom; however, it also means a loss of about \$1.2 million in impact aid for Davis and Weber School Districts.²⁵

Impact on Housing

An estimated 33%, or 1,683 military personnel own or are purchasing homes in Davis and Weber County. An estimated 9,129 federal civilians own or are purchasing homes in the region. From these estimates, 10,812 homes in Davis and Weber County are owned by

employees of Hill AFB. That number, based on the area’s estimated 2003 housing stock, represents one in every 14 homes in the region.

The sudden loss of jobs and declining population will impact the real estate market and residential construction in the area. The magnitude and duration of these impacts is difficult, if not impossible, to determine. Many economic and demographic variables affect property values and housing prices. Demand side determinants include job growth, income, favorable demographics (young people creating new households), and interest rates. The closure of Hill AFB negatively impacts every economic and demographic variable in the region resulting in job loss, lower employment growth, declining income, and out-migration of young workers. The question is, what effect will these impacts have on the region’s housing market?

In the short term, demand for housing will drop as base employees leave the area. The pace of new home building in the region should slow as markets adjust to population decline, job and income loss, and increase in the number of homes placed on the market. The net result of these factors is an increase in supply of housing units at the same time that the community is losing people who would most likely be buying homes. Even the most optimistic builders will take pause when faced with these conditions. At a minimum, soft market conditions could slow the rate at which housing in the region appreciates. A worse case would be declining property values.

Weak economic conditions lower demand for housing, which eventually depresses housing prices. This situation would be exacerbated if hundreds of homes are placed on the market at the same time. However, not all employees of Hill will leave the region. Based on conversations with Hill AFB staff, approximately 40% of all federal civilians working at Hill will be eligible for retirement within five years. These individuals may take early retirement, or retire and remain in the region. Of the remaining 60%, only a portion will move from the region to find jobs. Assuming that all military personnel leave the region and half of the civilians who own homes relocate, an additional 6,200 homes could be on the market over a two- to three-year period.

²⁵ Federal Impact Aid payments are provided by the Department of Education to local school districts that educate federally-connected students (military, American Indians and federal public housing). Impact Aid payment information provided by Davis School District and Weber School District.

Table 21

Distribution of Property Tax Impact by Taxing District: 2006
(current dollars)

	County	School Districts	Cities & Towns	Special Districts	Total
Davis County					
5% decline	-\$540,369	-\$2,588,082	-\$585,061	-\$418,481	-\$4,131,993
10% decline	-\$1,080,738	-\$5,176,164	\$1,170,122	-\$836,962	-\$8,263,986
25% decline	-\$2,701,844	-\$12,940,411	-\$2,925,305	-\$2,092,406	-\$20,659,965
Weber County					
5% decline	-\$759,712	-\$1,373,086	-\$498,172	-\$3264,654	-\$2,895,624
10% decline	-\$1,519,424	-\$2,746,172	-\$996,344	-\$529,308	-\$5,791,247
25% decline	-\$3,798,560	-\$6,865,460	-\$2,490,859	-\$1,323,269	-\$14,478,118

Source: Calculated by BEBR using information from the Utah State Tax Commission, Utah Property Tax, 2002 Annual Statistical Report, Tables 2 and 8A.

estimated using data from the Utah State Tax Commission. These estimates are presented in Table 20.²⁷ The distribution of the impacts among various taxing entities in each county for 2006 is shown in Table 21.

As shown in Tables 20 and 21, the impact on property tax collections could be significant. It is unlikely that the taxing districts in the region could continue to operate at acceptable levels even with a 5% decline in property values. It is more likely that taxing districts would implement a property tax rate

increase to compensate for the lost revenue.

The negative impact on sales and other selected tax revenue in the region is estimated to be \$7.7 million in 2009 and \$8.8 million in 2020.²⁸ These estimates include the impact on general sales tax and selected sales taxes. The impact on Davis County will be a drop in tax collections in 2009 of \$6.3 million and \$7.3 million in 2020.

How Long to Recovery?

The regional impacts of closing Hill AFB will be large-scale and enduring. The speed at which the region recovers lost economic activity will be dependent on job growth. To offset the short-term employment impact, the region needs to create almost 35,000 jobs. In robust economic times, this is the equivalent of losing five to seven years of economic growth.

A study undertaken by the U.S. General Accounting Office has addressed the issue of declining housing values and closure of military bases. In two of the communities included in the GAO analysis, new housing construction stopped and real estate values dropped 25 to 30 percent. However, within three years housing starts increased significantly and average home prices began to escalate.

How applicable the experience of other communities is to the Davis/Weber region situation is uncertain, but it does show that housing markets do recover, and in a surprisingly short period of time.²⁶

Fiscal Impacts

At the local level, the two revenue streams that will be most impacted are property tax and sales tax. Property tax and sales tax are important revenue sources for counties, cities and school districts. Neither the decline in property values or the phasing of those declines can be precisely determined; however, the potential impact on property tax collections based on different valuation assumptions was

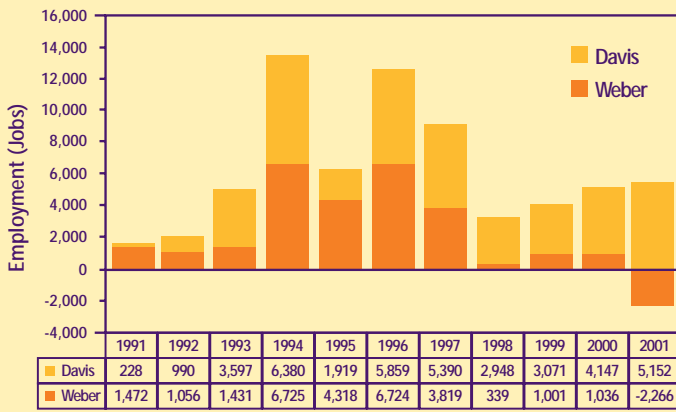
26 *Military Base Closures: Progress in Completing Action from Prior Realignments*, (GAO-02-433) U.S. General Accounting Office. Accessed at: <http://www.gao.gov/newitems/d02433.pdf>

27 These estimates were made using information contained in the *Utah Property Tax, 2002 Annual Statistical Report* (Tables 2 and 8A), published by the Utah State Tax Commission, accessed at: <http://propertytax.utah.gov>. The impact on property tax collections is based on the following baseline assumptions: (1) Residential taxable value of property in Davis County will increase by 5% in 2003 and 2004 and 3% in 2005. The taxable value of residential property in 2006 will remain at the 2005 level. That level is estimated to be \$6.8 billion. Residential taxable value of property in Weber County will increase by 3% annually from 2002 through 2005. The taxable value of residential property in 2006 will remain at the 2005 level. That level is estimated to be \$5.1 billion. (2) With base closure, the impacts assume that the decline in property values will uniformly affect all communities in both counties and that the declines will be immediately reflected in the assessed valuation data. (3) The impacts were generated as follows: [property taxes charged based on the estimated value of residential property in 2006] less [property taxes charged based on the estimated value of residential property in 2006 less the % decrease in value] (4) Property tax collections in 2006 were estimated using the 2001 ratio of property taxes charged to taxable value of residential property. For Davis County that ratio is .0122. For Weber County the ratio is .0113.

28 These estimates were made using information contained in *Utah Taxable Sales: 1998-2020, by County and by Industry*, published by the Utah State Tax Commission, accessed at: <http://www.census.gov/estimate/00allpub.pdf>. To calculate the impacts, BEBR estimated the ratio of taxable sales in Davis and Weber County as a percentage of total personal income in each county. This ratio was then applied to the projected earnings loss (less the military earnings) for the region and for Davis County.

Figure 19

Annual Changes in Employment Levels: 1991 - 2001
Davis and Weber



Source: Bureau of Economic and Business Research, University of Utah.

Currently, the region's economy is characterized by very modest growth. From 1998 through 2002, total employment in the region increased by fewer than 18,000 jobs; or an average of about 3,500 jobs annually. In 2001 and 2002, Weber County actually lost jobs. While the current economic situation should be viewed as an aberration, the closure of Hill AFB will certainly postpone an economic recovery in the region for many years. (Figure 19)

From a broader perspective, losing Hill permanently shrinks the region's economy by \$2.54 billion annually.

The losses will be greatest in Davis County. The closure of Hill AFB is the equivalent of losing an entire industry—a large and important industry that provides the county with thousands of high-paying, high-skilled jobs with benefits. Losing Hill permanently shrinks the economy by \$2.2 billion. It translates to a permanent loss of about 28,000 jobs and \$1.89 billion in earnings annually. To put the significance of the earnings loss in perspective, at the projected county-wide average annual wage rates in 2009, it will

take more than 47,000 jobs to negate the earnings impact. In a robust economy, it is the equivalent of losing nine years of economic growth.

Several factors play a role in determining the fate of the region's economy and its economic recovery. Factors that can soften the impact of the base closure include a growing economy, and presence of other vibrant industries. In addition, releasing the base for alternative uses, or extensive remediation efforts would help offset the effects of closing Hill. Neither of these scenarios have been included in this analysis.

Presently the status of the economy in Davis County is best characterized as stable rather than growing.

Growth in payroll employment is less than 1.0% and unemployment averaged 4.8% in 2003—only slightly lower than the state average of 5.2%. Further, Hill AFB is the single most important component of the county's economic base. Currently, there are no other industries in the county that could offset the loss of Hill. It is possible that Hill's departure could encourage economic growth that would not have otherwise occurred; however, few activities will have the same impact as Hill has on the region. Hill is an export-based business that provides thousands of stable, high-paying jobs. Replicating these economic contributions will be difficult, if not impossible.

Although Weber County's economy is more diversified, almost 27,000 (about 30%) resident workers in Weber leave the county to work—the largest share (62%)

Table 22

Comparison of Economic and Demographic Activity in the Davis/Weber Region; 2009 and 2020 With Hill AFB and Without Hill AFB (2001 \$)

Variable	2009		2020	
	With Hill AFB	Without Hill AFB	With Hill AFB	Without Hill AFB
Employment	275,981	240,985	332,112	299,839
Earnings (Bil.)	\$9.2	\$7.4	\$13.4	\$11.4
Personal Income (Bil.)	\$14.6	\$13.0	\$21.3	\$19.4
DPI (Bil.)	\$13.0	\$11.6	\$18.8	\$17.1
Per capita PI	\$28,240	\$26,272	\$35,008	\$33,736
Gross Regional Product (Bil.)	\$23.0	\$20.4	\$34.0	\$31.5
Population	515,931	494,442	607,006	573,876
School Age Population	110,051	104,742	130,948	120,935

Source: Bureau of Economic and Business Research, University of Utah in cooperation with the Utah Governor's Office of Planning and Budget.

Table 23

Comparison of Economic and Demographic Activity in Davis County; 2009 and 2020 With Hill AFB and Without Hill AFB (2001 \$)

Variable	2009		2020	
	With Hill AFB	Without Hill AFB	With Hill AFB	Without Hill AFB
Employment	150,611	120,591	185,807	157,657
Earnings (Bil.)	\$5.1	\$3.5	\$7.5	\$5.6
Personal Income (Bil.)	\$8.3	\$7.2	\$12.3	\$10.9
DPI (Bil.)	\$7.4	\$6.4	\$10.8	\$9.6
Per capita PI	\$29,531	\$26,902	\$35,843	\$33,900
Gross Regional Product (Bil.)	\$12.3	\$10.1	\$18.2	\$16.0
Population	282,414	567,264	342,605	321,535
School Age Population	63,050	59,243	74,355	68,055

Source: Bureau of Economic and Business Research, University of Utah in cooperation with the Utah Governor's Office of Planning and Budget.

alternative scenarios into the future. The model identifies employment associated with the exports of goods and services as the driving force in regional economic growth. The export (or basic) sector provides employment for residents of the region who in turn buy consumer goods and services, which provides additional employment in the region. The number of persons living in the region is ultimately determined by economic opportunity. The labor force of a region expands as there is adequate employment and income to support

commute to Davis County. Included in the out-commuters are about 5,800 civilians working at Hill AFB. The closure of Hill, and the subsequent contraction of the Davis County economy means fewer economic opportunities for residents in both counties. Displaced civilian employees living in Weber may find it difficult to secure jobs at their former rates of pay anywhere in the region. A likely consequence will be an increase in out-commuting and those commuters will travel longer distances to work.

How long to economic recovery? In the broadest sense, the region's economy never really "recovers". It will always be permanently smaller than if Hill remained in operation. Closing Hill AFB will have devastating short-term effects on Davis County and long-term repercussions for the region that could take decades to overcome.

Table 22 compares the economic and demographic activity in the region if Hill AFB remains in operation with the projected economic and demographic conditions if Hill AFB closes. Table 23 provides this information for Davis County.

Section V Analysis Process

Methodology

The economic, demographic, and fiscal impacts in this report have been generated with the REMI (Regional Economic Models, Inc.) model in combination with various estimation techniques. REMI is a structural equation dynamic simulation model that produces

it. The resident population increases through natural increase (births in excess of deaths) and net in-migration. The primary motivation to migrate is for economic opportunity. In the case of the closure of Hill Air Force Base, the economic base of the state has contracted. Fewer jobs translate into fewer households in the region than would have been supported if the base had continued to operate.

REMI simulates the growth path, structure, and characteristics of the economy and population into the future. The baseline projection models the future that is most likely to occur, given our current understanding of economic and demographic trends. Key exogenous variables include fertility, mortality, labor force participation rates, migration propensities, industry growth rates, productivity growth rates, and structural changes in the economy. The model calculates the baseline growth path of population, production, employment, income, capital stock, and government revenues and expenditures. The relative competitive position of the region as well as changing relative prices (including wages) and agglomeration economies are determinants of this equilibrium growth path.

In order to calculate the impact of a given event, an alternative projection is generated that models the new growth path with the anticipated changes introduced by the particular event. The results of this alternative projection are compared to the baseline projection to evaluate how population, income, employment, production, and other outcomes will differ from the baseline case. In the case of the closure of Hill Air Force

Base, the projected impacts on population, income, employment, and production are negative. This means that all of these will be lower than they would have been if Hill Air Force Base had continued to operate into the future.

Structure of REMI

The REMI model used in this report is a 29-region model that has been customized to represent the demographic and economic characteristics and interrelatedness of Utah's counties as well as the changing competitiveness of the state relative to other regions. This is currently the official economic and demographic projection model for the state of Utah. The essential logic of the REMI model derives from the cohort component, economic base, and input-output sub-models. Market adjustments operate to converge the model to equilibrium when imbalances exist.

The cohort component sub-model accounts for the changing size and composition of the regional population over time. Beginning population (a stock variable) is dimensioned by age, sex, race, and ethnicity. As the model iterates annually, the population is aged and survived (age, sex, race, and ethnicity-specific mortality rates are applied to calculate deaths). Similarly, age-specific fertility rates are applied to the female population to calculate births. These flow variables (births minus deaths) are combined with detailed gross in-migration and gross out-migration flows to calculate the ending population.

Employment-related migration is determined outside the cohort model in the labor market component of REMI. Migration of special populations (college, religious mission, retirement, military, etc.) is separately modeled. The model is iterative—the ending population (dimensioned by age, sex, race, and ethnicity) of one year becomes the beginning population for the next year.

The export base model is the fundamental growth driver of the entire REMI model. Regional exports inject income while regional imports are leakages. Economic growth results from increases in basic industries (export base) and import substitution industries. To the extent that resident demand can be satisfied internally by non-basic industries, the

export-based dollars have additional economic impact in the community. If the goods and services are imported, those dollars leave the regional economy. This is the concept behind the economic base model.

Input-output models capture business-to-business purchases within the region. If an export base industry purchases raw materials, equipment, or other inputs from local producers, this effectively increases the size of the export base of the region. These inter-industry linkages are captured in input-output models. Importantly, if a completely new industry comes into the region, the input-output model (which has been calibrated to current industry structure and inter-industry purchases) will not automatically create the forward- and backward-linked industries. The analyst must exogenously model these.

The REMI model connects these sub-models through labor, capital, and product markets. It simulates the size and composition of the population and economy over time. Impacts are modeled by generating an alternative forecast and comparing it with the baseline projection. For example, if there is an increase in the production of an export base industry in the region, the regional employment and income increase as well. There may not be adequate workers to meet this increased demand for labor, and net in-migration to the region could result. The additional employment and income supports a larger population. Economic migrants tend to be young, bringing children with them and having additional children once they become established. This increasing population adds to the local demand for housing, consumer goods and services, public schools, and so forth. Over time, as this original impact population ages, the children of the original migrants enter the labor force and form households of their own. The end result of an increase in regional export base industries is a larger and younger population, larger labor force, and higher levels of income and spending. The magnitude of these changes and other non-modeled costs and consequences depend on the specific situation and sequence of events. Declines in the economic base (such as the closure of Hill Air Force Base) have the opposite symmetrical effects.

The impacts were calculated using the following information:

1) Direct Employment and Payroll at Hill AFB.

Direct employment is defined as workers employed by

the Department of Defense at Hill AFB including military staff based at Hill and civilian employees working there. The wages paid to these workers constitute the direct income effect. This information was supplied directly by the Plans and Programs Directorate at Hill AFB.

2) Direct Spending by Hill AFB. Hill AFB also purchases goods and services from local vendors to maintain base operations and to provide services for Hill employees. The profile of this spending and the portion of it that is spent in Utah was supplied directly by Bob McClean, Hill AFB.

3) Prime Contract Awards. Prime Contracts are awarded by the Department of Defense through central procurement at Hill AFB to Utah businesses to support the missions of Hill AFB. Prime contracts are generally reported at the location where the work is performed. However, there are exceptions, such as when contract work is performed at various plants or locations, the contract is reported to the location where the largest dollar amount of work will be performed. Interviews with individuals from the largest prime contractors in Utah were conducted to determine (1) how much of the contract is performed in Utah and (2) what effect will the closure of Hill AFB have on prime contracting in general. A list of Prime Contracts awarded to Utah companies in FY 2002 was supplied directly by Bob McClean, Hill AFB.

4) Estimation of Fiscal Impacts. The fiscal impacts have been calculated using information provided by the Governor's Office of Planning and Budget and are based on effective tax rates derived by estimating the share of tax revenue received in a given year to total state personal income in the same year. These tax rates were applied to the earnings impacts generated by closing Hill AFB. No attempt was made to estimate the expenditures incurred due to the presence of Hill; Hill does increase demand for state and local government services and requires state and local governments to expand to provide those services. However, REMI does calculate changes in residentiary employment based on changes in the size and age structure of the population.

