

**The Economic and Fiscal Impacts of DoD Spending
on the Commonwealth of Virginia in FY 2008**

Prepared for

The Virginia National Defense Industrial Authority
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By

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Executive Summary

Spending by the Department of Defense in support of its activities—defense installations, uniform and civilian personnel, retirees, and federal contractors—represents a major source of jobs and income within the Commonwealth of Virginia and generates significant direct and indirect economic activities throughout all sectors of the State’s economy. Additionally, DoD spending and the jobs and payroll this spending supported generate a significant surplus of state-level revenues relative to the demands placed on state-funded services. These economic and fiscal impacts are summarized in the following table.

In FY 2008 DoD spending in the Commonwealth of Virginia contributed \$57.4 billion to the State’s economy accounting for 15.6 percent of the total value of the goods and services produced in the State. This DoD spending and its re-spending within the State’s economy supported a total of 902,985 jobs (both directly funded and supported indirectly by the re-spending of DoD funds within the State) representing 18.9 percent of the state’s total job base and generated \$44.4 billion in personal earnings accounting for 17.4 percent of the total personal earnings of all workers residing within the State.

Summary of Economic and Fiscal Impacts
DoD Spending in the Commonwealth of Virginia, FY 2008
(in billions of 2008 \$s)

Source	GSP(1)	Personal Earnings(2)	Jobs(3)
Economic Impacts			
Direct Payroll	\$22.4	\$19.3	339,941
Contracting	33.6	23.9	537,258
Construction	1.4	1.1	25,786
Totals*	\$57.4	\$44.4	902,985

Sources: EMSI, GMU Center for Regional Analysis

*sum of the individual values may not add to the totals due to rounding; \$118 million in DoD grants were not included in this analysis.

(1) Contribution to gross state product; (2) income accruing to workers residing in Virginia; (3) total direct and indirect jobs supported by type of DoD spending in the State;

Fiscal Impact	Revenues	Expenditures	Net Benefit
Per Job (Actual \$s)	\$2,849.22	\$1,000.70	\$1,848.52
Totals (\$s in millions)	\$1,689.38	\$593.34	\$1,096.04

Sources: Urban Analytics, Inc.; GMU Center for Regional Analysis

The fiscal impacts of DoD spending and the workers it supported generated a significant net revenue benefit for the State in FY 2008. On average, for each job associated with DoD spending inclusive of all taxable expenditures associated with DoD-funded activities within the State, the revenues generated exceeded the expenditure demand placed on the State's budget by \$1,848.52; that is, for each \$1 in expenditure demand, \$2.85 in state revenues were collected for each employee (including military retirees) associated with DoD spending inclusive of related business spending. The total fiscal benefit accruing to the State from DoD-supported economic activities in the State in FY 2008 was \$1.1 billion.

DoD spending in the Commonwealth totaled \$54.5 billion in FY 2008 and ranked first among all states on a per capita basis (\$6,713.06) representing a funding advantage of \$4.26 to \$1.00 compared to the U.S. average. This DoD spending is an important source of economic activities, personal earnings, jobs and fiscal benefits for the State. In the absence of this spending, the economy would be 15.6 percent smaller, support 18.9 percent fewer jobs and face a budget gap of \$1.1 billion.

Introduction

Spending by the Department of Defense in support of its activities—defense installations, uniform and civilian personnel, retirees, and federal contractors—represents a major source of jobs and income within the Commonwealth of Virginia and generates significant direct and indirect economic activities throughout all sectors of the State’s economy. These indirect effects result from the re-spending of DoD payroll and the payroll and business purchases of DoD contractors that support other businesses and generate additional jobs and payroll within the State spanning all sectors of the economy. These direct outlays and the indirect and induced economic activities they generate are a major source of net fiscal benefits at the State level. It is the broad objective of the research reported herein to quantify these economic and fiscal benefits that were generated in FY 2008 (all data are on a fiscal year basis) as a result of Department of Defense spending within the Commonwealth of Virginia.

More specifically, the objectives of this research are three fold:

(1) to document the magnitudes of DoD spending in the Commonwealth of Virginia including outlays to operate its 31 military installations in the State, payroll disbursements to DoD military and civilian personnel working in the State, payments made to military retirees, and procurement outlays for the purchases of goods and services from vendors located within the state;

(2) to measure the impacts of this spending on the economy of the Commonwealth including its impact on total output value (the State’s gross state product), the generation of personal earnings that accrue to workers residing within the State, and the support of jobs within the State; and

(3) to calculate the fiscal impact on the State budget from hosting the 31 military installations and other DoD activities including contractors; that is, to calculate the revenues generated to the benefit of the State as a result of DoD functions and activities within the State and the expenditure demand these functions and activities impose on the State’s budget to determine their net fiscal benefit.

A fundamental objective of this research is to provide data, analysis and interpretative support to the Virginia National Defense Industrial Authority and its Board of Directors in order that they can achieve their mission and have the best economic and fiscal impact information available by which to guide the Authority’s decision making and to inform Virginia’s leadership.

The Scope and Magnitude of DoD Spending in the Commonwealth of Virginia

The economic impacts that result from DoD activities located within the Commonwealth of Virginia are generated by the spending of DoD monies within the Commonwealth that would not have been spent in the absence of the DoD’s

presence—its installations, its personnel, its contracting from private sector suppliers. The magnitude of this spending and its purposes—payroll disbursements, capital construction, operations, contracting including its service and product mix—determine the total contribution of DoD’s direct spending as it cycles through the Commonwealth’s economy affecting its total impact on the State’s Gross State Product, job creation and generation of personal earnings. The broad categories of DoD spending within the Commonwealth in 2008 are presented in Table 1.

Table 1
DoD Spending in the Commonwealth of Virginia, FY 2008
(in thousands of 2008 Dollars)

Source	Value of Outlay	Percent of Total
Payroll	\$15,023,666	27.6
Active Duty	4,525,046	8.3
Civilian Personnel	6,479,499	11.9
Reserve and Guard	330,950	0.6
Retired Military	3,688,171	6.8
Contracting*	\$39,384,200	72.2
Supply and Equipment	11,536,897	21.2
R & D	3,330,567	6.1
Services	22,927,974	42.0
Construction**	1,588,762	2.9
Grants	\$118,496	0.2
Total Outlays	\$54,526,362	100.0

Source: Defense Spending Atlas, FY 2008

*The total annual value of DoD contracting varies from U.S. Census Federal Funds reports due to adjustments for rescissions (unspent funds); **includes BRAC Outlays in FY 2008

This spending supports the operation of the 31 bases/installations within the Commonwealth (see Appendix A for listing) and an estimated 186,794 active duty, reserve and guard personnel and DoD civilian employees. Based on this directly funded DoD workforce, the Department of Defense was ranked as the State’s number one employer in FY 2008 (all data are on a fiscal year basis).

In addition to these workers, DoD spending directly supported other jobs in the State as a result of its \$39.4 billion in 2008 contracting for the procurement of goods

and services to support its operations within the State and worldwide. While there is no official accounting for the number of direct contractor jobs supported in the State by the \$39.4 billion in DoD spending, an estimate can be developed based on federal contracting audit data on labor and non-labor costs.

Based on these analyses, DoD's services, construction and R&D contracts in the Commonwealth that totaled \$27.85 billion are estimated to have supported 235,000 full-time equivalent jobs within the State in 2008. The direct jobs supported by DoD contracts for supplies and equipment are more difficult to estimate as these vary considerably based on wage and salary and benefits differentials, the type of goods being supplied and the cost of materials included in these contracts. By applying industry standards, however, an order of magnitude number of direct jobs can be estimated. The \$11.5 billion spent by DoD on the procurement of supplies and equipment in 2008 supported an estimated 33,200 full-time equivalent workers in the State.

In total, these federal contractors supported an estimated 268,187 jobs in Virginia in 2008. The directly supported DoD contractor and civilian DoD personnel combined accounted for 9.5% of the State's civilian work force (full-time) in 2008. In addition to these directly supported DoD civilian and uniform military employees and there were 137,947 military retirees (DoD supported in 9/2008) residing in the State of which one-third were 65 years old or older.

The relative magnitude and importance of DoD contract spending within the Commonwealth is presented in Table 2. Of all federal procurement spending in the State totaling \$53.9 billion, DoD procurement spending (reported by place of performance) accounting for 72.4 percent and totaled \$39.0 billion in FY 2008. This percentage compares to 69.0 percent nationwide.

In addition to being disproportionately important to the State's economy as a source of export income in comparative terms, the magnitude of DoD's contract spending in Virginia ranked second among all other states exceeded only by Texas and followed by California in third place. For each dollar in total DoD contracting worldwide in 2008, businesses located in the Commonwealth captured 10.5 cents.

Even more impressive, on a per capita basis, Virginia ranked number one for DoD contracting with \$5,022.40 in DoD contracting for each resident of the State. This compares to \$1,167.50 per capita nationwide. For all categories of DoD spending in FY 2008, Virginia ranked first in the US on a per capita basis: Virginia @ \$6,713.06 vs. U.S. @ \$1,574.13. This large comparative funding advantage--\$4.26 to \$1.00—underscores the importance of DoD spending to the State's economy.

Table 2

Federal Spending in the US and Virginia, FY 2008
(totals in billions of dollars, p.c. in actual \$s)

Location	Total Federal Spending	Total Federal Procurement	DoD Procurement	
			\$s	% Total
U.S.	\$2,792.6	\$514.1	\$355.0	69.0
Per Capita	\$9,041.5	\$1,619.9	\$1,167.5	
Virginia	\$118.5	\$53.9	\$39.0	72.5
Per Capita	\$15,256.2	\$6,933.7	\$5,022.4	

Source: US Census, Consolidated Federal Funds Report, 2008

Note: The population of the U.S. in 2008 was 304.06 million and the population for Virginia in 2008 was 7.77 million.

The Impact of DoD Spending on the Commonwealth's Economy

In order to calculate the full economic impacts of these direct DoD payroll and procurement outlays in the Commonwealth in 2008, these data have been inputted by type into an Input-Output model (I-O Model) for the State economy that was developed by Economic Modeling Specialists, Inc. (EMSI). This I-O Model was used to calculate: (1) the contribution to the state's gross state product (GSP), (2) the generation of personal earnings for workers residing in the State, and (3) the jobs supported by DoD spending in Virginia. And, finally, to establish the relative importance of these direct and indirect economic benefits, they were compared to the State's historically important sectors: agriculture and manufacturing.

The direct DoD spending inputs into the Virginia economy are shown in Table 3. These direct payroll, contractor and construction outlays in FY 2008 generated indirect and induced economic activity within the State's economy that can be quantified by using an I-O Model. This Model is designed to calculate the inter-industry transactions that result from the direct spending for payroll and purchases of goods and services provided by the State's resident workers and businesses. The ability of the State's economy to furnish the labor requirements and products being demanded determines the economic impact of these direct spending outlays. The I-O Model incorporates these interdependencies among State-based businesses and their non-state based suppliers as well as adjustments for non-local spending by state resident workers, out-of-state workers, and other leakages from the payroll disbursements such as taxes and savings.

Economic Impacts of DoD Spending

The economic impacts of DoD spending in the Commonwealth of Virginia in FY 2008 totaled \$52.2 billion as summarized in Table 3. This total reflects reductions for contract rescissions and \$118 million in DoD-funded grants, 0.2% of all DoD funds have been excluded in this impact analysis. Adjusting for leakages from the State's economy to account for non-resident workers, out-of-state subcontractors and suppliers of intermediate goods and services, and non-local spending of payroll income including local, state and federal taxes, this direct spending contributed a total of \$57.4 billion to the State's \$367.9 billion economy in 2008 representing 15.6 percent of the value of all goods and services produced within the State.

This direct spending and its indirect effects (including induced effects) on the State's economy, as these monies were re-spent for other goods and services across all sectors, supported or created 902,985 jobs within the State inclusive of DoD civilian and military personnel and federal contract workers, accounting for 18.9 percent of the State's job base. These directly and indirectly supported jobs generated \$44.4 billion in personal earnings for the State's economy representing 17.4 percent of the total personal earnings of workers residing within the State. In the absence of this DoD spending in FY 2008, these jobs and the personal earnings they generated would not have been realized.

Table 3

The Economic Impact of DoD Spending on the
Commonwealth of Virginia, FY 2008
(in billions of 2008 \$s)

Type of Spending	Direct Spending(1)	Total Output(2)	Personal Earnings(3)	Jobs Supported(4)
DoD Payroll	\$15.02	\$22.4	\$19.3	339,941
Contracting	35.62	33.6	23.9	537,258
Construction	1.57	1.4	1.1	25,786
Totals*	\$52.22	\$57.4	\$44.4	902,985

Sources: EMSI, GMU Center for Regional Analysis

*sum of the individual values may not add to the totals due to rounding;
\$118 million in DoD grants were not included in this analysis.

(1) direct DoD spending captured to the benefit of the Virginia economy;

(2) contribution to GSP; (3) personal earnings accruing to workers

living in the State; (4) jobs created or supported in Virginia

The distribution of these economic impacts by their direct and indirect sources, as presented in Table 4, illustrates how this spending cycles through the State's economy. A comparison of the direct spending values in Table 3 and the direct impact value in Table 4 shows that the State retained two-thirds of DoD spending in 2009. These \$35.0 billion are monies that can be re-spent within the State's economy in support of its non-DoD related business base. Additionally, direct DoD spending retained within the State's economy supported 546,398 full-time equivalent jobs inclusive of direct DoD active duty and civilian personnel (11.4% of the State's job base) with personal earnings totaling \$29.6 billion.

The re-spending of these direct DoD funds (\$35.0 billion) generated an additional \$22.4 billion within the State's economy, supported 356,587 additional jobs (7.5% of the State's job base). These additional jobs were all non-DoD jobs and benefitted all sectors in the economy. These indirect and induced jobs generated an additional \$14.8 billion in personal earnings to the benefit of workers residing within the State.

Based on this analysis, the total economic multiplier for DoD spending in the Commonwealth of Virginia is 1.64. For each \$1 of DoD spending in 2008 that was retained to be re-spent within the State's economy and recycled through its consumer and business services sectors, the State's economy added an additional \$0.64 for a total economic benefit of \$1.64.

Table 4

The Direct and Indirect Economic Impacts of DoD Spending
on the Commonwealth of Virginia, FY 2008
(in billions of 2008 \$s)

Types of Impacts	GSP(1)	Personal Earnings(2)	Jobs(3)
Direct	\$35.0	\$29.6	546,398
Indirect(4)	22.4	14.8	356,587
Totals	\$57.4	\$44.4	902,985

Sources: EMSI, GMU Center for Regional Analysis
\$118 million in DoD grants were not included in this analysis
(1) contribution to GSP; (2) personal earnings accruing to workers living in the State; (3) jobs created or supported in Virginia
(4) includes induced effects

Similarly, for each \$1 million in direct DoD spending in FY 2008 that was retained to be re-spent within the State's economy 25.8 jobs were supported or created reflecting the combination of 15.6 jobs per \$1 million in direct impacts and 10.2 jobs

per \$1 million in indirect impacts. These jobs had an average annual income of \$44,715 (the average annual salary of all direct jobs was \$54,173 and the average salary for all indirect jobs was \$41,505).

The Relative Importance of DoD Spending

The dollar values and employment impacts of DoD spending within the State’s economy (gross state product or GSP) have been found to represent significant sources of income and jobs. The contribution of DoD spending to the State’s GSP was 15.6 percent in 2008 and DoD directly and indirectly supported jobs in the State accounted for 18.9 percent of its job base. How important is this? If the State’s economy had to function in the total absence of the DoD spending it received and retained within the State’s economy in 2008, its GSP would have totaled \$310.51 billion or would have been 15.6 percent smaller (\$310.5B/\$367.9B) and would have had 902,984 fewer employed residents with \$44.4 billion less personal income. Consumer spending would be down 17.4 percent and the State income tax base would be proportionally smaller.

Comparing DoD spending impacts with other segments of the State’s economy provides another frame of reference. In 2008, all agricultural activities in the State contributed a total of \$5.04 billion to its GSP accounting for 1.4 percent of the total with its total of 101,081 jobs accounting for 2.1 percent of the State’s job base inclusive of 35,772 jobs supported by the re-spending of income generated by agricultural activities within the State. DoD spending in the State supported an estimated 11.4 percent of these agricultural jobs.

Table 5
Comparative Contributions To the Virginia Economy, FY 2008
(in billions of 2008\$s)

Source	Total Output(1)	Personal Earnings(2)	Jobs Supported(3)		Total
			Direct	Indirect	
DoD Spending	\$57.40	\$44.38	454,930	448,054	902,984
Agriculture	5.04	2.63	65,309	35,772	101,081
Manufacturing	59.36	37.00	261,586	418,384	679,970
Total Virginia	\$367.91	\$254.45			4,786,919

Source: EMSI, GMU Center for Regional Analysis
(1) contribution to State’s gross state product; (2) earnings accruing to workers residing in Virginia; (3) jobs generated or supported by the direct, indirect and induced DoD spending in the State.

The State's manufacturing sector is significantly larger than its agricultural sector contributing \$59.4 billion to GSP or 16.1 percent thereby exceeding the contribution of DoD spending to GSP by 0.5 percentage points. Excluding DoD purchases of manufacturing goods totaling \$11.5 billion, the contribution of manufacturing to the State's economy would have been 13.0 percent. While the manufacturing sector (inclusive of DoD purchases) generates a slightly greater contribution to the State's GSP, the manufacturing sector supports less than two-thirds (62%) the number of workers supported by DoD spending in the State. In comparison, DoD supported employment (directly and indirectly) accounted for 18.9 percent of the State's employment base in 2008 while the agricultural and manufacturing sectors, in the absence of DoD spending, accounted respectively for 2.1 percent and 14.2 percent of the State's employment base.

The Impact of DoD Spending on the Commonwealth's Fiscal Base

The objective of this analysis is to calculate the net fiscal benefit of DoD-funded activities in the Commonwealth of Virginia. This analysis involves estimating the revenues generated at the state level from all DoD outlays for contracting and operations including the taxable earnings and spending of DoD employees and the employees of DoD contractors and comparing these revenues to the expenditure demands associated with DoD employees and facilities and federal contractors located in the State. The results of these analyses will be the net fiscal impact of DoD's presence in the State.

Calculating Fiscal Impact

The GMU/Urban Analytics Fiscal Impact Model was employed for the calculation of these revenue and expenditure values based on audited state expenditures and revenues by source, as reported in the State's FY 2008 Comprehensive Annual Financial Report. The sources of revenues and potential demands for state-provided services by type of DoD activity, personnel, and federal contractors have been estimated reflecting assumptions developed from informal discussions with representatives of the Virginia Department of Taxation, published materials, and fiscal impact analysis experience in other Virginia jurisdictions.

This fiscal analysis differs from previous applications of this Model in that it combines an average cost basis, the normal measurement approach, with a marginal cost basis that reflects calculated revenues and potential expenditure demand based on specific income and consumption assumptions relating to DoD active-duty personnel living and working on military bases/installations that distinguish them from regular civilian employees living off base and benefiting more fully from State-provided services. Similar adjustments for the part-time nature of reserve and guard personnel and for retired military with full-time civilian jobs. See Appendix B for additional methodological explanation.

All of these revenue and expenditure calculations, whether they are calculated on an average or marginal basis, divide all revenues and expenditures between those associated with the State's population (services to households) or its employment base, with the later being expressed on a "per job" basis. This approach assigns all the revenues and expenditures associated with the private sector to jobs by dividing the totals by the corresponding employment base. The result is a revenue or expenditure multiplier that can be factored up to the total by multiplying by the total jobs associated with the respective business or, in this case, DoD activities in the State.

In order to calculate the revenue and potential expenditure demand related to the employees of federal contractors, the contract values were used to estimate the full-time jobs equivalents distinguishing between services and research and development and manufacturing (goods-producing) contractors, as described previously on page 5. This calculation resulted in an estimate of 268,187 jobs (full-time, year round equivalents) in the State being supported by the DoD contracting during FY 2008. The average annual taxable payroll for these contract workers was calculated by reducing the total labor cost estimates to account for deferred earnings, employer contributions to retirement and health insurance benefits, and other employer-paid non-taxable labor costs.

All DoD civilian personnel and contract employees were treated in the fiscal analysis similarly to any other job holder residing in the State in terms of tax burdens and exposure and potential expenditure demands (beneficiaries of state programs are not required to have actually used these programs but rather are beneficiaries of their availability if and when they might require or choose to use them).

In all cases where average costs were calculated (in contrast to marginal costs reflecting specific revenue and expenditure calculations), every state resident and resident worker was considered to have equal tax and revenue exposure and equal access, responsibility, or utilization relative to state programs and expenditures. The distribution of these revenue burdens and expenditure demands was shared by residents and job holders on a proportional basis; that is, in proportion to their respective percentage of the combined state's population and employment base.

It was assumed that DoD civilian employees and reserve and guard personnel and DoD contractor employees were residents of the Commonwealth in calculating their revenue and expenditure values. For the 66,324 active-duty military, it was assumed that these personnel resided largely on base/installations/ships and/or were predominantly serviced by on-base facilities and programs and therefore they placed a significantly smaller potential demand on the State's expenditures for services and programs.

Similarly, it was assumed that only a marginal number of these active-duty military personnel were domiciled in the State for tax purposes (the Department of Taxation cannot determine what percentage of uniform personnel assigned to military bases

in the State file state income tax forms). It was also assumed that active-duty personnel made their retail purchases in on-base outlets resulting in a minimal exposure to sales taxes. By excluding any income and sales tax revenue for active-duty personnel from this fiscal analysis, the results will undercount their potential revenue impact with the result that the total net fiscal impact calculated here should be considered conservative.

The Net Fiscal Impact of DoD Spending

The results of this fiscal impact analysis are reported in Table 6. The average revenue generated per worker for all DoD-related activities in the State (DoD military and civilian personnel, base operations and contract outlays including contract workers supported by these outlays) equaled \$2,849.22 per DoD-supported job. The average demand for state-funded services (budgeted expenditures) per DoD-supported worker was calculated at \$1,000.70 per job for a net per worker fiscal benefit of \$1,848.52. Therefore, each DoD-supported worker on average was found to generate \$2.85 in State revenues for each \$1 in State-funded expenditures “demanded” by this worker.

This “return on investment” varies depending on the type of DoD-supported worker. Based on the income and sales tax assumption for active-duty personnel as well as their marginal demands on State-furnished services, their net fiscal impact on the state was found to be negative by \$149.81 per “job.” In contrast, DoD civilian (\$2,862.26) and reserve and guard personnel (\$579.91) were found to generate a significant positive fiscal impact as did retired military personnel (\$1,079.83). The magnitudes of these “per worker” fiscal benefits were similarly significant for federal contractors: \$2,380.89 for R&D and services contractors and \$4,061.89 for suppliers of manufactured products. These fiscal impacts are presented on Table 6.

The total net fiscal impact of DoD spending and the activities this spending support in the State is determined when the “per job” revenue and expenditure values are multiplied by the total number of “worker” in each category of job. In 2008, DoD spending in the State is estimated to have generated \$1.689 billion in total revenues. These \$1.689 billion in State revenues represented 6.0 percent of the revenue base (\$27.9 billion) included in the Fiscal Impact Model.

Off setting these revenues was an estimate for the cost of potential demands placed on the State’s budget for the provision of goods and services to support DoD funded personnel (directly employed and contract workers). These estimated State expenditure demands associated with DoD spending totaled \$593.3 million in 2008. This \$593.3 million in expenditure demand accounted for 1.8 percent of the total expenditures incorporated into the Fiscal Impact Model.

The net of these revenues and expenditures—the fiscal benefit of all DoD-funded activities in the Commonwealth—totaled \$1.096 billion. For all DoD supported activities within the Commonwealth of Virginia in 2008, across all major categories

of personnel (uniform and civilian, reserve and guard, retiree and related contractors), total revenues of \$1.689 billion exceeded their potential expenditure burden on the State budget, totaling \$593.3 million, by \$1.096 billion representing a net fiscal benefit of 184.7 percent. In summary, for each \$1 of state expenditure demand potential represented by DoD-funded employees (direct or contractor), the state collected \$2.85 in revenues for a fiscal profit of \$1.85.

Table 6
Estimated Fiscal Impact Summary
Defense-Related Jobs and Defense Contractor Spending
Commonwealth of Virginia (Fiscal Year 2008)

<u>Categories</u>	<u>Jobs</u>	<u>FYE June 30, 2008</u>	<u>C.M.</u> ¹	<u>Total</u> ²	<u>Per Job</u>
Active-Duty Military	66,324	Revenues Generated		\$ 2,985,420	\$ 45.01
		Expenditures Demanded		\$ 12,921,561	\$ 194.82
		Revenue Surplus (Deficit)		\$ (9,936,141)	\$ (149.81)
Civilian	84,492	Revenues Generated		\$ 363,674,672	\$4,304.25
		Expenditures Demanded		\$ 121,836,571	\$1,441.99
		Revenue Surplus (Deficit)		\$ 241,838,100	\$2,862.26
Reserve and Guard	35,978	Revenues Generated		\$ 27,084,432	\$ 752.81
		Expenditures Demanded		\$ 6,220,400	\$ 172.89
		Revenue Surplus (Deficit)		\$ 20,864,032	\$ 579.91
Retired Military	137,947	Revenues Generated		\$ 214,602,316	\$1,555.69
		Expenditures Demanded		\$ 65,642,978	\$ 475.86
		Revenue Surplus (Deficit)		\$ 148,959,337	\$1,079.83
Contractors: R&D, Services	234,998	Revenues Generated		\$ 898,370,777	\$3,822.88
		Expenditures Demanded		\$ 338,864,934	\$1,441.99
		Revenue Surplus (Deficit)		\$ 559,505,843	\$2,380.89
Contractors: Manufacturing	33,189	Revenues Generated		\$ 182,668,292	\$5,503.88
		Expenditures Demanded		\$ 47,858,216	\$1,441.99
		Revenue Surplus (Deficit)		\$ 134,810,076	\$4,061.89
Grand Total	592,928	Revenues Generated	6.05%	\$ 1,689,385,907	\$2,849.22
		Expenditures Demanded	1.79%	\$ 593,344,660	\$1,000.70
		Revenue Surplus (Deficit)		\$ 1,096,041,247	\$1,848.52

Source:

State of Virginia Comprehensive Annual Financial Report (CAFR) for the FYE June 30, 2008; Center for Regional Analysis, The School of Public Policy, George Mason University; Urban Analytics, Inc.

Note:

¹This is the contribution margin of revenues and expenditures to total revenues and expenditures in the State in FY2008.

²These are the estimated fiscal revenue and expenditure figures generated by all categories as of the end of FY2008. Revenues and expenditures based on the State of Virginia FY2008 CAFR.

Conclusions

DoD spending in the Commonwealth of Virginia is a major source of employment, income and economic activity within the state and this economic activity and the direct payroll and consumer spending it supports generates a significant net fiscal benefit for the State's treasury.

In FY 2008, reported DoD spending totaled \$54.5 billion including \$15 billion for direct payroll and retirement benefits, \$39.4 billion for the purchases of goods and services (federal contracting) from suppliers working within the Commonwealth and \$118 million in grants. For this economic and fiscal impact analysis, this total was reduced to \$52.2 billion to reflect contract rescissions and other marginal funding adjustments. This DoD spending directly supported 186,794 military (active-duty, reserve and guard) and civilian personnel, provided benefits to 137,947 retirees, and funded an estimated 268,200 full-time equivalent employees of federal contractors.

Of this \$52.2 billion in direct DoD spending, \$35 billion was retained in the State to be re-spent across the breadth of its economy. The retained DoD direct spending and its re-spending within the Commonwealth added \$57.4 billion to the State's total economy during FY 2008 accounting for 15.6 percent of the total value of all goods and services produced—Gross State Product. This direct spending by DoD within the Commonwealth and its re-spending within the State's economy supported a total of 902,985 jobs representing 18.9 percent of the State's employment base and generated annual earnings of \$44.4 billion representing 17.4 percent of the total earnings of all workers residing within the State.

These jobs and the new personal earnings they generated were spread across the breadth of the state's economy. DoD spending during FY 2008 and its re-spending were found to support 27.0 percent of the State's manufacturing jobs, 11.4 percent of its agricultural jobs, 10.9 percent of all professional and business services jobs in the Commonwealth, 10.6 percent of the State's accommodations and food services workers, 10.3 percent of retail jobs in Virginia and 10.0 percent of the State's construction jobs.

The fiscal impacts of DoD spending generated a significant surplus of state revenues over state-funded expenditures resulting in a \$1.1 billion net fiscal benefit in FY 2008. DoD employees (uniform and civilian) and retirees generated a net of \$402 million in State revenues while federal contractors and their employees in the State generated a surplus of \$694.3 million in revenues over state-funded expenditures. In total, for each \$1 of state expenditure demand potential represented by DoD-funded employees (direct) and its federal contractors (operations and workers), the State collected \$2.85 in revenues for a fiscal "profit" of \$1.85. In the absence of this fiscal profit, the State's would have had a \$1.1 billion revenue gap.

Appendix A

Military Bases and Installations in Virginia

The Pentagon/Fort Myer/Marine Headquarters
Fort Belvoir - Army
Quantico Marine Corps Base
Warrenton Training Center - Army
National Ground Intelligence Center - Army
Fort A P Hill - Army
Dahlgren Complex - Navy
Surface Combat Systems Center - Navy
Camp Peary - Navy
Cheatham Annex - Navy
Yorktown Weapons Station - Navy
Fort Eustis - Army
Langley Air Force Base
Fort Monroe - Army
Norfolk Naval Base
Little Creek Amphibious Base - Navy
Fort Story - Army
Oceana Naval Air Station
Dam Neck Combat Training Center - Navy
Fentress Auxiliary Landing Field - Navy
NSA Northwest Annex - Navy
St. Julian Creek Annex - Navy
Norfolk Naval Shipyard
Regional Medical Center - Navy
Fort Norfolk - Army Corp of Engineers
United States Joint Forces - Joint
Craney Island Fuel Depot - Navy
Fort Lee - Army
Defense Supply Center Richmond - Army
Fort Pickett - Army
Radford Ammunition Plant - Army

Appendix B

Fiscal Analysis Methodological Notes

Analysis Scope and Methodology

In addition to General Fund revenues and expenditures, the Fiscal Impact Model also incorporates other governmental activities including Non-general Funds. Revenues from Federal Grants and Contracts as well as other intergovernmental transfers from the federal government to the Commonwealth were considered and distributed across fund categories. Of the \$6.57 billion in Federal Grants and Contracts to the Commonwealth of Virginia in FY2008, for example, \$879.9 million were included in the Commonwealth Transportation Fund, \$5.68 billion were included in the Federal Trust Fund, and \$14.25 million were included in the Health and Social Services Fund.

Likewise, offsetting expenditures for public services associated with federal governmental revenues were included in the Model. An allocation analysis was then conducted, allocating federal intergovernmental transfers between people and households (the “residential component” of the Model) and workers, businesses, government, military, and non-profit entities (the “non-residential component” of the Model). Revenues from Federal Grants and Contracts, for example, were allocated 80 percent to the residential component of the Model and 20 percent to the non-residential component of the Model. This approach was taken for each revenue and expenditure line-item category in the Model. These intergovernmental transfers from the federal government were not isolated and listed separately in Table 6 as the number and type of federal aid would be too cumbersome to be listed individually. Instead, these revenues and expenditures were listed in the aggregate.

The five major categories of taxes assumed to be paid by active-duty military personnel in the Commonwealth of Virginia included in the Model were motor fuel taxes, motor vehicle sales and use taxes, alcoholic beverage sales, taxes on tobacco products, and other taxes. The category “other taxes” is a catchall for miscellaneous taxes paid not just by military personnel but also by civilian DoD and contractors as well. The tax exposure for these categories was set at 25% for active-duty military to reflect off-base purchases. Expenditure demands for State-provided services also assumed a 25% exposure for active-duty military personnel.

Average and Marginal Revenue and Cost Calculations

The process of calculating the revenue and expenditure flows generated in the “residential component” and the “non-residential component” of the Model involved formulating a series of equations that estimate the Commonwealth’s operating revenues and expenditures to their direct sources. The basis for this analysis was the State of Virginia Comprehensive Annual Financial Report (CAFR) for fiscal year 2008. The audited revenue and expenditure totals by source, fund type, and agency reported in this document were divided between those generated by (assignable to) residential and non-

residential uses according to percent distributions developed from a detailed examination of the State's actual audited financial report as well as from previous experience analyzing various county and city budgets throughout Virginia. These percent distributions of fiscal revenues and expenditures were scaled (calibrated) to the demographic and economic characteristics of the Commonwealth. The residential share of each category of State revenue and expenditures (that is, the portions generated by people and households as opposed to workers and business activities or which provide services to residents as distinguished from workers and businesses) was converted to a per capita equivalent to facilitate the calculation of fiscal flows associated with residential land uses. The non-residential share of each category of State operating expenditures was converted to a per job equivalent to facilitate the calculation of non-residential fiscal flows from workers, businesses, governments, military, and non-profit entities.

This approach assumes that each person living or working in the Commonwealth has access to the Commonwealth's services and therefore potentially shares from the benefits of these services. This cost or expenditure allocation is not based on the actual utilization of Commonwealth services by specific individuals but rather reflects *equal access to and availability of* these services to all residents and persons working in the Commonwealth. The findings derived in this study are based on an analysis of both average costs and marginal costs (estimated actual). When using average cost and revenue multipliers (where applicable) in this analysis, the actual revenue forecast is likely to be conservative and the actual demand for State services and programs may be overstated.

Average costing is employed when specific data on residents and workers cannot be disaggregated from the total set of available data or when the marginal impact cannot be imputed with a high degree of certainty. The estimation of motor fuel sales tax is an example of when the average costing approach is the preferred methodological approach over the marginal costing approach. Data on the number of vehicles, average miles per gallon per vehicle, the average number of miles driven, the average retail price of gasoline at the pump, and the allocation between when an active-duty military person uses a personal vehicle for business or for pleasure is an example of when the average costing approach is the preferred approach over the marginal approach. In this example, all the variables required for the Model to estimate the amount of motor fuel sales tax generated (and then to have the Model allocate estimated motor fuel tax between personnel driving their personal vehicle on or off base for military business versus on or off base for personal use) are subject to a high degree of error using the marginal costing approach.

Revenue and Expenditure Multipliers by Type of Job

The per-job multiplier for "expenditures demanded" is \$1,441.99 for civilian and federal contractor workers. The per-job multiplier for "expenditures demanded" is \$194.82 for active-duty military, \$172.89 for reserve and guard personnel and \$475.86 for retired military. The per-job multiplier differences for reserve and guard personnel and retired military and their civilian counterparts reflect the Model's objective to *differentiate* and *estimate* the fiscal impact of defense-related jobs from non-defense-related jobs.

The per-job multiplier for reserve and guard personnel is the impact that these workers have on State's public services while they are in uniform or functioning in some other capacity directly related to their reserve and guard service. In other words, the per-job "expenditures demanded" multiplier can be calculated for a full-time regular employee or a less-than-full-time employee: the per-job demand on public services when that person is acting in a civilian capacity and the per-job demand on public services when that person is acting in a reserve and guard capacity.

Similarly, for retired military personnel it was assumed that the 33% who were 65 years old and over were no longer working and therefore their retired status qualified each of them to be counted as a "worker" while the remaining 67% of these retirees were age-eligible to hold a full-time job and, for these retirees, their fiscal impacts resulting from their retired military status established them as less than a full-time "worker."

Thus, of the total per-job "expenditures demanded" multiplier of \$1,441.99, the per-job multiplier is \$172.89 when that person is acting in a reserve and guard capacity, and \$1,269.10 when that person is acting in a civilian capacity ($\$1,441.99 - \$172.89 = \$1,269.10$). For retired military, the difference between full-time civilian employment expenditure demand multiplier (\$1,441.99) and the calculated multiplier of \$475.86 reflects the share of these State-supported services that accrue to retired military personnel for whom their retirement benefits supplement a civilian job.

While it might seem logical to presume that the per-job "expenditures demanded" multiplier for active-duty military should be equal to or lower than the multiplier for reservists and guardsmen, the findings of the Model do not support this presumption. It is important to remember that the cost or expenditure allocation estimated in the Model for each type of State-provided public service is not based on the actual utilization of Commonwealth services by specific individuals but rather reflects *equal access to* and *availability of* these services to all residents and persons working in the Commonwealth. Residents and workers (including active-duty military personnel on base in Virginia) benefit from a well-functioning State government. There are some state-provided public services (such as general government administration, transportation, and administration of justice) that are necessary to maintain a well-functioning State government.

An active-duty military person (regardless of whether he or she is stationed on a base in Virginia or on a ship at sea) may never get arrested for speeding on a state highway and a reservist or guardsman, also working in a civilian occupation, in the State may never get arrested for speeding on a state highway. Both active-duty military and reservists and guardsman benefit from the *availability of* state-provided public safety services but the degree of exposure or benefit is greater for the active-duty military personnel (this is their only job) than for the reservist or guardsman as they generally hold another full-time job that has associated state revenue and expenditure impacts.

The per-job multiplier for a reservist or guardsman is divided between the impact for expenditures demanded by that reservist or guardsman in his or her civilian role (\$1,269.10) and his or her military role (\$172.89). The per-job multiplier for active-duty

military personnel is also bifurcated for expenditures demanded in his or her civilian role (\$0.00) and his or her military role (\$194.82). Thus, the per-job multiplier of \$194.82 is substantially lower than \$1,441.99. The \$21.93 difference in the per-job “expenditures demanded” multiplier (\$194.82 for active-duty versus the \$172.89 for reservists or guardsmen) is a mathematical function reflecting the differential exposure to revenue and expenditure opportunities; that is, the total number and amount of public services assigned to active-duty (@25%) versus reservists and guardsman (@12%), the number of active-duty personnel versus reservists and guardsmen, and the estimated allocation of these public services to each category results in a difference of \$21.93.

On the revenue side, differences between active-duty military and reservists and guardsman reflect similar methodology assumptions; that is, active-duty military personnel do not also have civilian jobs (although this is not always true) and that for reservists and guardsman, their military payroll is a secondary income supplementing a full-time job (although this, too, is not always true). A further assumption about tax burden that differentiates the active-duty military personnel and the reservists and guardsman is income and sales tax. For purposes of this analysis, no state income or sales tax revenues were included in the revenue base associated with active-duty personnel to account for their frequent choice for a state-of-domicile with more favorable income tax treatment than found in Virginia and the availability for PX and Commissary facilities to satisfy their shopping requirements on base. Access to these tax-exempt shopping facilities for reservist and guardsmen was apportioned to their duty times over the annum. For retired military it was assumed that 50% of their retail purchases would take place on base in tax-exempt retail outlets.