METROPOLITAN WASHINGTON
AIRPORTS AUTHORITY

TECHNICAL REPORT
ECONOMIC IMPACT STUDY - 2009




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October 20, 2010

Technical Report

2009 Economic Impact Study

Prepared for:

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Section 1 – Introduction

1.1 Purpose of Report

To better understand its importance in the region's economy and the effect of its investment program, the Metropolitan Washington Airports Authority (Airports Authority) retained The Louis Berger Group, Inc. (LBG) a consulting firm with nationally-recognized expertise in aviation planning and economic impact assessment to provide an evaluation of the full range of economic impacts attributable to Authority operations. These include passenger and freight activity at the airports; visitor spending; operation of the Dulles Toll Road; and the capital expenditures associated with airport improvement programs and the extension of the Metrorail system to Dulles International Airport. The study evaluated both the direct and indirect, and induced multiplier effects of these expenditures. Measures evaluated include the number of jobs, associated labor income, and the personal income, corporate income, and state sales tax revenue effects of the total economic activity attributable to Authority facility and related expenditures.

The total economic impact of the Airports Authority is estimated using input-output modeling techniques and the IMPLAN modeling system. Input-output models make use of estimated linear relationships between the purchase of labor and capital inputs and final demand for output. These relationships yield estimates of the number of jobs created by business operations across various economic sectors and their associated income and tax revenues. The economic impacts are derived for economic activity taking place during calendar year 2009.

With responsibility for the operation of the Dulles Toll Road and the construction of the first phase of the Dulles Metrorail Extension, the Airports Authority has emerged as a true multimodal transportation agency. The Airports Authority is not taxpayer-funded but is self-supporting, using aircraft landing fees, rents and revenues from concessions to fund operating expenses. The Dulles Development Program is funded by bonds issued by the Airports Authority, Federal and State Airport Improvement Program funds, and Passenger Facility Charges. The Dulles Corridor Metrorail Project is funded by the Airports Authority and its project partners in Fairfax and Loudoun Counties, the Commonwealth of Virginia, the Federal Government, and from revenue generated by the Dulles Toll Road. Capital expenditures and ongoing investments in transportation infrastructure create and preserve jobs and generate additional opportunities for regional economic development. In addition to jobs and income created by facilitating this economic activity, public facilities like those managed by the Airports Authority may not exist but for public intervention in the market place. Therefore, the rate of return on investment in the Airports Authority facilities includes all of the economic activity that would not occur but for the presence of those facilities.

The purpose of this report is to provide an estimate of the total economic impact of the Airports Authority facilities on the regional economy. The estimates will assist stakeholders in determining the total regional benefits of spending on the facilities such that informed decisions on policy, management and investment can be made.

1.2 Contribution to the Regional Economy

The importance of Metropolitan Washington Airports Authority in the region's transportation infrastructure is widely recognized. The Airports Authority is responsible for managing and operating three major transportation infrastructure facilities in the Washington, D.C. area and the ongoing construction of a fourth. These facilities are crucial to the regional and State economies. In 2009, there were 20.3 million passenger enplanements[1] and more than 310 million pounds of freight moved through Dulles and Reagan National Airports. [2] The 108.7 million transactions on the Dulles Toll Road in 2009 generated aggregate total of $64.9 million in toll revenue.[5] When complete, the Dulles Corridor Metrorail service will lead to further economic development and enhance connectivity between Dulles International and the major employment hubs of Tysons Corner and Herndon Reston in Virginia and the District of Columbia.

In 2009, the Airports Authority directly employed 1,346 full-time and 28 part-time permanent workers; 653 at Dulles International, 367 at Reagan National, 315 for consolidated functions, 24 at the Dulles Toll Road, and 15 on the Metrorail system.[3] In 2009, the Airports Authority earned $608.3 million in operating and non-operating revenues.[4] These were derived primarily from concessions, tolls, rents, design fees, landing fees, utility sales and passenger fees. Airport facilities provide space for retail tenants, government agencies and other employers that collectively employ about 23,934 persons on site.

The Airports Authority's contribution extends beyond the on-site employment and the airport tenants. In 2009, the Airports Authority's operating and maintenance expenditures and capital expenditures totaled $150.1 million and $681.7 million, respectively. Comprehensive data of expenditures by tenants was not available, but based on the region's average sales per employee for the relevant industries, airport tenants generated an estimated $3.6 billion in sales revenues in 2009. As this spending by the Airports Authority and its airport tenants is re-circulated throughout the regional economy, additional jobs, income and tax revenues is generated. The magnitude of this multiplier effect in terms of jobs and labor income is estimated using input-output modeling techniques and the impacts analysis for planning or IMPLAN modeling system as summarized below in Section 1.3 Overview of Methodology.

[1] Airports Authority 2009 Annual Report.
[2] Ibid.
[5] Airports Authority Statistics provided to LBG.
[4] Airports Authority 2009 Annual Report

As a major operator of the region's transportation infrastructure, the Airports Authority enables local businesses to access markets beyond the local area. Local manufacturing establishments use airports to export their products domestically and overseas. Having access to air transport for the export of goods can make a critical difference in the ability of some firms to compete in the global marketplace. In 2009, the 12.2 million visitors who arrived through Reagan National and Dulles International Airports spent an estimated $10.6 billion at local hotels, restaurants, entertainment facilities, retail outlets and local transportation services. This spending has a significant impact on the Washington, D.C. metro region economies. Similar to the spending by the Airports Authority and its tenants, spending by airport-dependent manufacturers and visitors generates additional multiplier effects.

While the Airports Authority is tax-exempt, operations indirectly generate personal income tax, corporate income tax, and sales tax revenues. Additionally, airports generate federal taxes on the sales of airline tickets and transportation of cargo.

1.3 Overview of Methodology

The total economic impact of spending by the Airports Authority, airport tenants, visitors and airport dependent businesses is estimated using input-output modeling techniques and the IMPLAN modeling system. Input-output models make use of estimated linear relationships between the purchase of labor and capital inputs and final demand for output. These relationships yield estimates of the number of jobs created by business operations across various economic sectors and their associated income and tax revenues.

The report estimates the economic impact of the Airports Authority for four different regions:

(1) Washington, D.C. metropolitan region;
(2) Commonwealth of Virginia;
(3) District of Columbia; and
(4) State of Maryland.

Area-specific multipliers are created for each of these regions using the IMPLAN system to estimate jobs, income, and sales. Tax revenue impacts are estimated outside the IMPLAN system by applying effective tax rates to the total income and sales estimates. Multiregional input-output modeling techniques are used to ensure that the estimate of the statewide impacts incorporates the impact of spending within the metropolitan portion of the states.

The total economic impact includes three distinct but related effects arising from a project, investment, or the operation of a business entity. These impacts are identified as direct, indirect, and induced, and then the multiplier effect.

Direct Impact – The direct impact is defined as the change in economic activity, in the industry under study, resulting from a particular project, investment, or business operation. The impact can be quantified by examining the revenues or expenditures involved, including sales, disbursements to vendors, wages paid, and taxes and fees paid. For this report, the direct economic impact includes the Airports Authority employment and airport tenant employment. In addition, the jobs supported by the export activity at airport dependent firms and the jobs supported by visitor spending are the direct impact of these Airports Authority related activities.

Indirect Impact – The indirect impact is defined as the effect of increased economic activity in those sectors that supply services, materials, and machinery necessary to support the study industry. For example, an increase in orders for auto parts will result in an increased demand for auto parts (direct impact). This increase in demand for auto parts generates additional activity involved in providing raw materials, energy, and transportation for manufacturing parts, which in turn provides stimulus to the industries supplying those industries. This ripple effect stemming from a change in final demand for products and services in the industry under study is multiplied throughout the economy and can account for a significant amount of the total effect. For this report, the indirect effect includes the jobs at the businesses that are supplying the Airports Authority and the directly affected businesses (i.e., other airport employers, airport dependent businesses, and firms serving visitors), and the subsequent rounds of suppliers (i.e., suppliers of suppliers, and so on).

Induced Impact – The induced impact is the effect of increased consumer spending by wage earners in the study industry and other supporting industries. The ripple effect from this spending can also be followed through the economy. For this report, the induced impact is composed of jobs supported by the Airports Authority employees, other airport employees and employees of all the other directly and indirectly affected businesses.

Multiplier Effect (Total) – Together, the direct, indirect and induced impacts constitute the multiplier effect, or the extent to which the direct impact results in other economic activity. Expressed numerically, a multiplier of 3.5 indicates that for every dollar directly generated by the industry under study, an additional $2.50 of ripple effects are felt within the local region, for a total impact of $3.50. Only spending that takes place within the study area will generate a multiplier effect. Spending that takes place at vendors located outside the region is termed “leakage,” and does not generate an effect in the study area. Using the metropolitan statistical area as the regional study area assures that the analysis includes spending throughout the metropolitan area, capturing more economic linkages than if the study area were only a subset of the counties in the MSA.

1.4 Outline of Report

This report is presented in the following sections:

- Section 2 provides an overview of the Airports Authority programs:
  - Reagan National and Dulles International Airports,
  - Dulles Toll Road Operation, and
  - Dulles Corridor Metrorail project.

- Section 3 presents the economic impact in terms of jobs and labor income for Dulles International and Reagan National Airports, the Dulles Toll Road, and the Metrorail project.

- Section 4 presents the tax revenue impacts.

- Section 5 presents an overview of the regional economy.

- Section 6 provides a context for the findings given economic policy.

- Section 7 provides a summary of findings.

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Section 2 – Profile of Airports Authority Programs

2.1 Airports

Washington Dulles International Airport (Dulles International) – Dulles International, named after former U.S. Secretary of State, John Foster Dulles, is located approximately 25 miles west of Ronald Reagan Washington National Airport and the central business district of Washington, D.C. Situated on 12,000 acres of land, the main terminal was designed by Finnish American Architect Eero Saarinen and opened in 1962. Dulles is a major hub for domestic and international air travel with eleven domestic legacy and low fare carriers and 22 international carriers which provide air service throughout the world. Dulles is easily accessible through a 16-mile airport dedicated access road which links the airport to the local highway system. Dulles Development (d^2) is an ongoing capital construction program to promote future growth in passenger traffic and airport operations. The major d^2 projects are designed to improve the traveling experience and accommodate increased use of the airport. These major projects include two new parking garages, a fourth runway, a new concourse, a new Air Traffic Control tower, pedestrian walkways, and an underground airport train system.

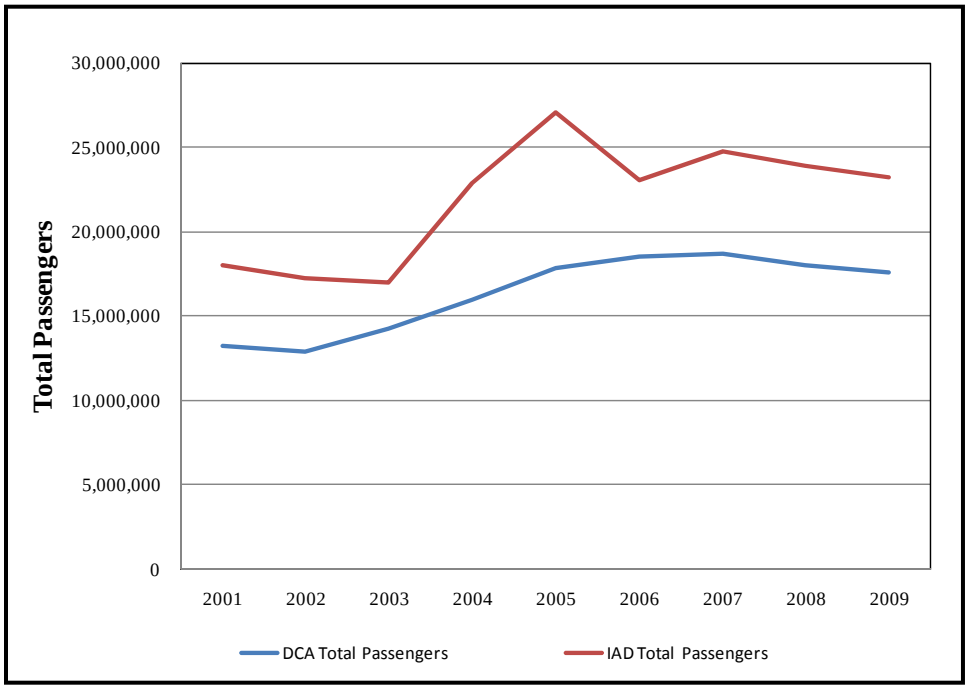
According to Airports Authority statistics, there were 23,213,341 domestic and international passengers traveling through Dulles International Airport in 2009. Since the last economic impact study in 2005, the number of passengers at Dulles has declined by 14.2 percent. The figures and tables at the end of this section show the relationship between the total number of passengers through Reagan National and Dulles International Airports from 2001 to 2009. In contrast to the steady increase in activity at Reagan National, Dulles International experienced a sharp increase in passenger activity of about 60 percent between 2003 and 2005, which far exceeds the FAA's reported national average number of enplanements of 5.6 percent. Although there was a significant decrease the following year, the activity appears to have stabilized, has leveled off and is starting to trend upward. Overall, the national projections being reported by the FAA shows an upward trend moving forward. This trend identified an increase for 2010 between 2.0 percent and 2.8 percent with a total system growth of about 3.1 percent per year through 2024. The FAA is forecasting slight growth in 2010 and from 2011 into the immediate future the number of passengers will increase at a steady rate on a national level.

Growth in domestic and international air freight and mail shipments at Dulles International Airport has exhibited volatility since 2001. In 2005, the growth rate for mail and freight increased by over 30 percent and experienced little to no growth the following year. Since 2008, Dulles International has seen a decline in air freight and mail shipments with 2009 ending down 12 percent. In 2008, the FAA reported domestic cargo declining 9.5 percent and international increasing by 1.7 percent. Comparing 2009 on a national level at Dulles International, both the domestic and international cargo shipments decreased by 11 percent and 12 percent respectively. Currently, cargo is seeing upward trends in activity.

Ronald Reagan Washington National Airport (Reagan National) – Reagan National is situated along the western edge of the Potomac River approximately three miles south of the central business district of Washington, D.C. Reagan National officially opened its doors in what is now Terminal A, on June 16, 1941, making it the largest commercial airport located in the Washington, D.C. area. In addition to holding the distinction as being Washington D.C.'s largest commercial airport, the Airport's Terminal A is listed on the National Register of Historic Places. In 1987, the federal government relinquished control of the airport when President Ronald Reagan signed a bill establishing the Airports Authority and turned over operations of Washington Dulles Airport and Ronald Reagan National Airport to the newly created Metropolitan Washington Airports Authority. The airport's Terminal B/C, designed by Argentine American Architect Cesar Pelli, opened in 1997 and offers an unparalleled view of the monuments in Washington D.C., house quality dining and shopping attractions. In addition to the construction of the two passenger terminals, two parking garages with parking spaces for 8,500 cars were also added. Reagan National has direct access to the Metrorail system which is located adjacent to Terminal A and Terminal B.

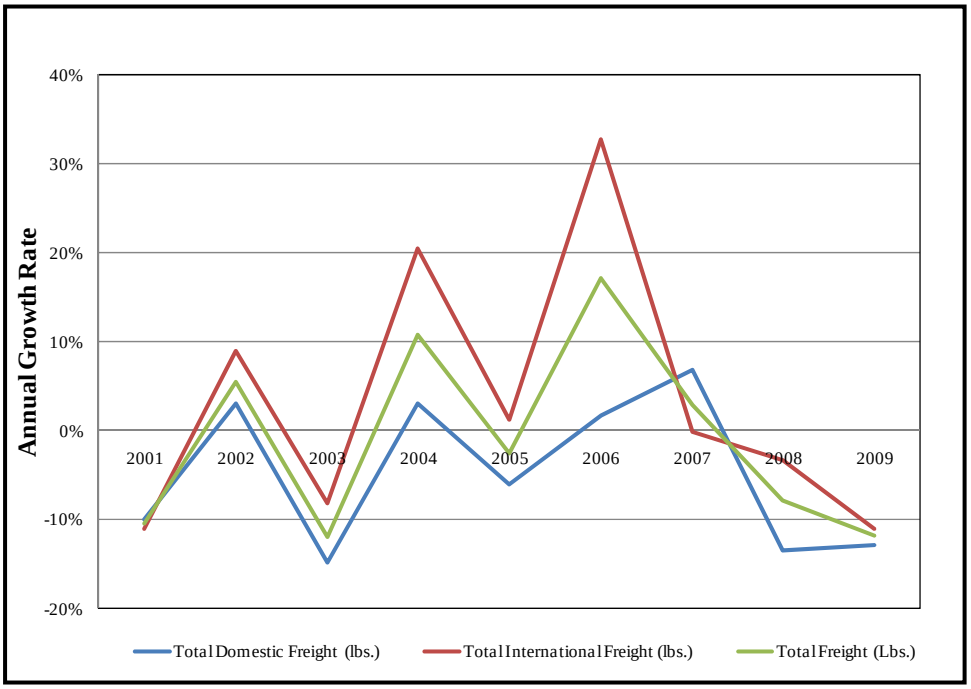
According to Airports Authority statistics, the figures and tables at the end of this section show there were 17,847,884 domestic passengers using Ronald Reagan Washington National Airport in 2005 and 17,577,359 passengers in 2009. This slight decrease in passenger activity represents a 1.5 percent decline from 2005, the last year an economic impact study was conducted. This decline is well below the national average (discussed above). The smooth upward trend in the passenger activity is in stark contrast to the activity at Dulles International, but continues to outperform the national average. This smooth growth leveled off between 2006 and 2007 with a slight increase of four percent during this period. The economic downturn in the U.S. and global economies had an impact on both Dulles International and Reagan National with decreases in passenger activity of three percent at both airports. At the time of this report, activity levels at both airports were trending upward.

Figure 2.1
Total Passengers – Reagan National and Dulles International Airports



Source: Airport Statistics and The Louis Berger Group, Inc.

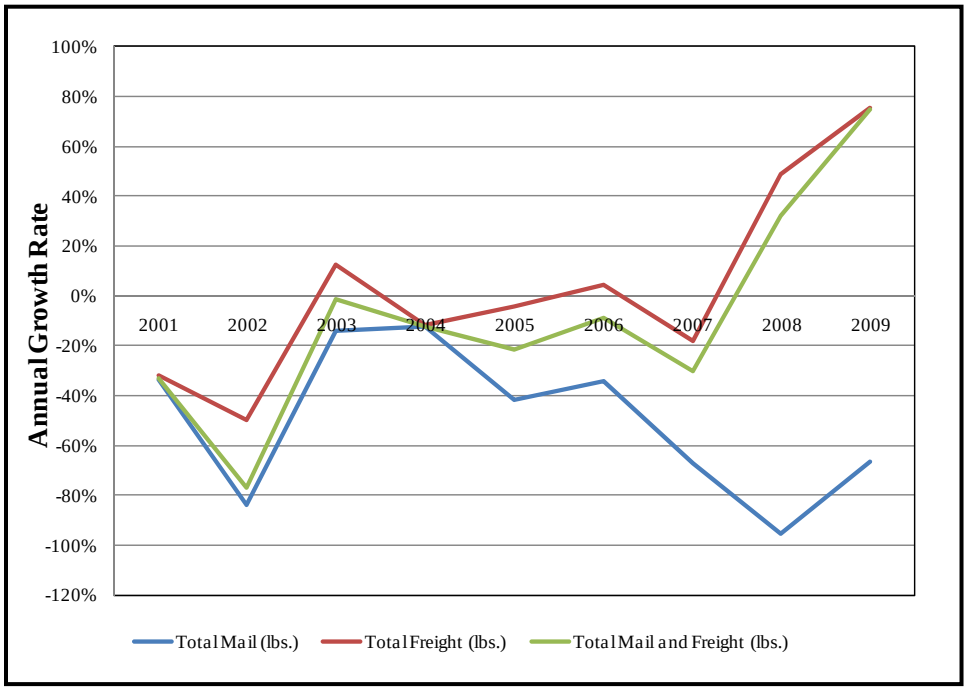
Figure 2.2
Domestic and International Freight Volume – Dulles International Airport



Source: Airport Statistics and The Louis Berger Group, Inc.

Figure 2.3

Mail and Freight Volume – Reagan National Airport



Source: Airport Statistics and The Louis Berger Group, Inc.

Table 2.1

Total Passengers Comparison – 2005-2009

Airport	2009	2005	Difference	Change
Dulles International	23,213,341	27,052,188	-3,838,777	-14.2%
Reagan National	17,577,359	17,847,884	-270,525	-1.5%

Source: Airport Statistics and The Louis Berger Group, Inc.

Table 2.2

Total Freight (000 lbs) Comparison – 2005-2009

Airport	2009	2005	Difference	Change
Dulles International	623,323	636,979	-13,656	-2.1%
Reagan National	12,801	5,718	7,083	123.9%

Source: Airport Statistics and The Louis Berger Group, Inc.

2.2 Dulles Toll Road

The Dulles Toll Road is an eight-lane, controlled access roadway, approximately 13.4 miles in length connecting the I-495 Capital Beltway in Fairfax County to Loudoun County and ultimately to Dulles International Airport. The Toll Road was built in 1984 by the Virginia Department of Transportation (VDOT) to provide local access to interchanges between the Capital Beltway (I-495) and Washington Dulles International Airport. It runs parallel to the Airport Access Highway, a divided four-lane limited access roadway. The Dulles Toll Road accepts both cash and electronic payments that are used for all operations and maintenance costs as well as providing funding to the various reserve and debt service funds. The 108.7 million transactions on the Dulles Toll Road in 2009 generated an aggregate of $64.9 million in toll revenue.[5]

The Airports Authority took over responsibility from Virginia Department of Transportation (VDOT) for Dulles Toll Road operations in October 2009. VDOT primarily used a combination of contractors and VDOT employees to operate the Toll Road. Contractors were used to provide toll attendants, a customer service center, and to perform maintenance on the toll equipment. The Airports Authority is opting instead to rely more on permanent staff to directly manage the various contracts and operations of the Dulles Toll Road. The Airports Authority's Dulles Toll Road staff includes support services such as legal, human resources, financing, accounting, and information technologies.

During the last quarter of 2009, the Airports Authority's operations and maintenance expenditures totaled $14.9 million, payroll totaled $1.3 million, and capital expenditures were $2.6 million. Assuming an equal distribution of spending throughout the year, VDOT spent a total of $36.4 million during the first nine months of the year.

2.3 Dulles Corridor Metrorail Project

The Airports Authority is constructing a 23-mile extension of the existing Metrorail system from East Falls Church to Washington Dulles International Airport west to Ashburn. The Metrorail system will be operated by the Washington Metropolitan Area Transit Authority. The extension will serve two key Virginia employment areas. The first is Tysons Corner which is Virginia's largest employment center, and the second is the Herndon Reston area, the state's second largest employment concentration. Additionally the Metrorail will provide a one-seat ride from Dulles International Airport to downtown Washington, D.C.

The project will include 11 new stations and be constructed in two phases. Phase One will run from East Falls Church to Wiehle Avenue on the eastern edge of Reston and include four stations in Tysons Corner-Tysons East, Tysons Central 123, Tysons Central 7 and Tysons West. Construction began in March of

[5] Ibid.

2009 and is scheduled to be completed in 2013. The total cost of Phase One is estimated at $2.6 billion. In 2009, the Airports Authority spent $362.9 million on the project, supporting jobs in construction and related industries.

Phase Two of the project will run from Wiehle Avenue to Ashburn in eastern Loudoun County. A construction date has not been set for the extension that will serve Reston Town Center, Herndon, Dulles Airport, Route 606 and Ashburn.

The purpose of Dulles Metrorail is to provide high-quality, high-capacity transit service in the Dulles Corridor. New Metrorail service in the corridor will result in travel time savings between the corridor and downtown D.C., expand the reach of the existing regional rail system, offer a viable alternative to automobile travel and support future transit-oriented development along the corridor.

Section 3 – Economic Impact

Economic impacts for the Airports Authority four program areas are discussed in this section. These include the following:

- Airports (Dulles International and Reagan National)
- Dulles Toll Road
- Dulles Corridor Metrorail Project

As discussed in Section 1 of this report, the economic impacts are reported for four different regions:

(1) Washington, D.C. metropolitan region;
(2) Commonwealth of Virginia;
(3) District of Columbia; and
(4) State of Maryland.

The total impacts for all program areas are summarized in Section 7.

3.1 Airports (Dulles International and Reagan National)

The economic impact of aviation facilities is broken down into the following areas:

- Airport Operations;
- Capital Projects;
- Visitor Industry Impacts;
- Air Freight Industry Impacts; and
- Airport Dependent Industries.

Airport Operations – Airports directly employ a diverse array of labor for their freight and passenger operations. These include positions in terminal and airline operations and include the following sub-sectors:

- Passenger Airlines including reservation and ticketing agents, baggage handlers, administrative personnel, equipment maintenance, flight crew, etc.;
- Freight Airlines including stevedoring, flight crew;
- General Aviation and Aviation Services;
- Airport Administration;
- Catering;
- Flight supplies/Fixed Base Operators;

- Facility Maintenance;
- Sky Caps;
- Security;
- Retail Tenants (i.e., newsstands, retail shops, and food concessions);
- Federal Government Agencies (i.e., FAA, TSA, and U.S. Customs);
- Ground transportation (i.e., buses, shuttles); and
- Parking and miscellaneous (i.e. airport hotel).

In 2009, Reagan National and Dulles International had a total of 25,269 on-site full- and part-time employees. Based on data provided by the Airports Authority for the purpose of this study, average employment related to the aviation programs and consolidated functions in 2009 was 1,335 (this is an average as a result of seasonal fluctuations). Based on the Dulles International Airport Employee Population report of April 2009, the Ronald Reagan National Airport Employee Population report of August 2009, the number of full-time and part-time employees at other on-airport businesses and agencies totaled 17,948 for Dulles International, 7,006 for Reagan National, and 315 for consolidated functions (functions serving both airports, as defined in data supplied by the Airports Authority). An airport tenant and airline survey was distributed to all Dulles International and Reagan National tenants in April and May of 2010.

Table 3.1
On-Site Employees

	Dulles	Reagan	Consolidated	Total
Full-time Jobs	15,858	5,374	314	21,546
Part-time Jobs	2,090	1,632	1	3,723
Total Jobs	**17,948**	**7,006**	**315**	**25,269**

Source: Airports Authority (2010), Dulles International Airport Employee Population Report (April 2009); Ronald Reagan National Airport Employee Population Report (August 2009).

Airlines are the single largest employers at the airports, accounting for 20.7 percent of employment at Dulles and 21.2 percent of employment at Reagan. Another large on-airport employer is the federal government including the Transportation Security Administration (TSA), the Federal Aviation Administration (FAA) and the Federal Bureau of Investigation (FBI).

Table 3.2
On-Site Employees by Type

	Dulles		National		Dulles	National
	FT	PT	FT	PT	% of Total	% of Total
Airlines	3,080	632	1,002	486	20.7%	21.2%
Aviation supporting activities	2,853	929	342	12	21.1%	5.1%
Retail and Concessionaries	1,362	157	630	241	8.5%	12.4%
Rental Car	300	70	246	78	2.1%	4.6%
Federal Government	1,320	67	980	184	7.7%	16.6%
Airports Authority	626	27	367	-	3.6%	5.2%
Other	6,317	208	1,807	631	36.4%	34.8%
Total	***15,858***	***2,090***	***5,374***		**100.0%**	**100.0%**
Flight crew	4,541		1,848			

Note: Aviation supporting services at Dulles is defined as aircraft fueling, aircraft support service, cargo/freight, passenger assistance services, fixed base operators.
Source: Airports Authority (2010), Dulles International Airport Employee Population Report (April 2009); Ronald Reagan National Airport Employee Population Report (August 2009).

The number of flight crew based at Dulles totaled to 4,541, while 1,848 crew members were based at Reagan National.

Spending on goods and services and payroll by the Airports Authority and the other airport employers supports additional employment throughout the region. Operations and maintenance expenditures include functions that are required to run and maintain the airport facilities. In 2009, non-payroll operations and maintenance expenditures (data supplied by the Airports Authority) totaled $134.8 million, of which:

- $76.4 million was allocated to Dulles International,
- $29.9 million to Reagan National and
- $28.5 million was used for consolidated functions.

An estimated $62.7 million of these expenditures went to businesses located in the MSA, and a total of $68.8 million was spent in Virginia, D.C., and Maryland, combined. These expenditures support vendors and their employees as well as supporting additional jobs throughout the region as these funds are re-circulated back into the economy by the vendors, their suppliers, and employees.

The Airports Authority payroll related to the aviation and consolidated functions totaled $90.6 million. Employees residing within the MSA, Virginia, D.C. or Maryland, spent part of their income locally at a variety of businesses–to include retail stores, transportation, health care and education providers, and entertainment venues. This spending supports additional jobs in the region.

The payroll of Airports Authority employees residing in the region totaled $84.7 million; of which:

- $57.1 million went to Virginia residents;
- $24.9 million to employees residing in Maryland; and
- $3.3 million to employees in the District of Columbia.

While comprehensive data of expenditures by other airport employers (i.e., airlines, concessionaires, etc.) was not available (See the Technical Appendices report, Appendix E, for results of Airport Surveys conducted by LBG to supplement Dulles International and Reagan National Airport Employee Population Reports), based on the region's average labor income per employee for the relevant industries, labor income paid by the other airport employers was estimated at $1.380 billion in 2009. This does not include the payroll of flight crews based at Dulles International or Reagan National.

The jobs and labor income generated from spending by the Airports Authority and other airport employers in the Washington D.C., MSA, Commonwealth of Virginia, District of Columbia, and the State of Maryland are displayed in Table 3.3 below.

Table 3.3

Impact – Operations Airport Facilities, 2009 (dollars in millions)

Region	Impact Type	Dulles	National	Consolidated	Total
Impact on MSA	**Jobs**				
	Direct	17,948	7,006	315	25,269
	Indirect	3,980	2,476	96	6,552
	Induced	5,542	2,698	133	8,373
	Total	**27,470**	**12,180**	**544**	**40,194**
	Labor Income				
	Direct	$ 993.7	$ 440.2	$ 23.0	$ 1,456.8
	Indirect	241.9	160.0	7.4	409.3
	Induced	271.2	132.0	6.6	409.8
	Total	**$ 1,506.8**	**$ 732.2**	**$ 36.9**	**$ 2,275.9**
Impact on Virginia	**Jobs**				
	Direct	17,948	7,006	315	25,269
	Indirect	3,603	5,871	69	9,543
	Induced	4,461	5,986	77	10,525
	Total	**26,012**	**18,863**	**460**	**45,336**
	Labor Income				
	Direct	$ 993.7	$ 440.2	$ 23.0	$ 1,456.8
	Indirect	209.0	296.9	5.5	511.4
	Induced	200.3	246.3	3.5	450.1
	Total	**$ 1,403.0**	**$ 983.3**	**$ 32.0**	**$ 2,418.4**
Impact on DC	**Jobs**				
	Direct	0	0	0	0
	Indirect	196	192	16	404
	Induced	74	37	12	123
	Total	**270**	**229**	**28**	**527**
	Labor Income				
	Direct	$ 0.0	$ 0.0	$ 0.0	$ 0.0
	Indirect	16.8	11.6	1.0	29.4
	Induced	6.3	3.0	0.7	10.0
	Total	**$ 23.1**	**$ 14.5**	**$ 1.7**	**$ 39.4**
Impact on Maryland	**Jobs**				
	Direct	0	0	0	0
	Indirect	728	316	16	1,060
	Induced	311	181	37	529
	Total	**1,039**	**497**	**53**	**1,589**
	Labor Income				
	Direct	$ 0.0	$ 0.0	$ 0.0	$ 0.0
	Indirect	37.2	18.7	1.0	57.0
	Induced	15.0	8.5	1.7	25.1
	Total	**$ 52.2**	**$ 27.2**	**$ 2.7**	**$ 82.1**

Source: The Louis Berger Group, 2010

Note: Spending within each state as a whole is presented to show the full extent of economic impacts, but does not sum to spending within the metropolitan area because the MSA consists of only a subset of Virginia (15 counties) and Maryland (5 counties) and includes Jefferson County in West Virginia. **The sum of the total impact in Virginia, DC and Maryland does not equal the total impact in the MSA.**

In addition to the 17,948 on-site jobs at Dulles International, the purchase of goods and services by the Airports Authority and other Dulles International employers supported an additional 3,980 jobs in the MSA. Household spending by Dulles International employees and employees of indirectly affected businesses living in the region supported another 5,542 jobs in the region. The total number of jobs in the MSA supported by operations of Dulles International facilities is 27,470 with an associated $1.507 billion in labor income. Operations of the Dulles International facilities supported a total of 26,012 jobs and $1.403 billion of labor income in Virginia; 270 jobs and $23 million of labor income in the District of Columbia; and 1,039 jobs and $52 million of labor income in Maryland.

Spending on goods and services and payroll by the Airports Authority and Reagan National employers supported an additional 5,174 jobs and $292 million in labor income at other businesses in the MSA. Including on-site employment, the total impact of Reagan National operations on the MSA economy amounted to 12,180 jobs and $732.2 million in labor income. In Virginia, Reagan National operations supported a total of 18,863 jobs and $983.3 million in labor income; in the District of Columbia, 229 jobs and $14.5 million in labor income; in Maryland, 497 jobs and $27.2 million in labor income.

Spending by the Airports Authority on goods and services and payroll related to the consolidated functions supported a total of 229 jobs and $36.9 million in labor income in the MSA. The state impacts were 460 jobs and $32 million in labor income in Virginia; 28 jobs and $1.7 million in labor income in the District of Columbia; and 53 jobs and $2.7 million in labor income in Maryland.

Taking into account the multiplier effect, the total impact of operating both Dulles International and Reagan National, including the consolidated functions, amounted to:

- MSA - 40,194 jobs and $2.276 billion in labor income;
- Virginia - 45,336 jobs and $ 2.418 billion in labor income;
- D.C. - 527 jobs and $39.4 million in labor income; and
- Maryland - 1,589 jobs and $82.1 million in labor income.

Capital Projects – Capital expenditures consist of spending on new construction of facilities and structures and spending for rehabilitating existing structures. Dulles International spent $256.5 million in 2009 on the construction of new facilities and structures and rehabilitating existing structures. Construction projects in 2009 included the AeroTrain project, a seven-year project costing an estimated $1.4 billion. This project consisted of constructing an underground dual-track system which carries passengers between the Main Terminal and the A, B, and C-Gates. The stations are located at convenient points along the concourses to minimize walking distances to the airline gates. The Concourse B AeroTrain Station was part of a larger expansion project to Concourse B.

At Reagan National, net capital spending on construction, rehabilitation of structures, architectural and engineering services, and other equipment in 2009 totaled $56.3 million. Projects in 2009 included the construction of the second and third sections of the new, fifth level parking of Garage B/C, which brings a cumulative total of 843 new parking spaces to the Garage. Regional purchases support jobs at regional businesses and generate a multiplier effect as the vendors and their employees re-spent their earnings regionally.

The jobs and labor income generated from capital spending by the Airports Authority in the Washington D.C., MSA, Commonwealth of Virginia, District of Columbia, and the State of Maryland are displayed in Table 3.4 below.

Taking into account the multiplier effect, capital spending at Dulles International in 2009 supported a total of:

- MSA - 2,124 jobs and $139.7 million in labor income;
- Virginia - 832 jobs and $48.0 million in labor income;
- D.C. - 354 jobs and $38.9 in labor income; and
- Maryland - 739 jobs and $44.7 million in labor income.

In 2009, Reagan National capital spending, including the multiplier effect, supported a total of:

- MSA - 420 jobs and $26.8 million in labor income;
- Virginia - 331 jobs and $19.2 million in labor income;
- D.C. - 34 jobs and $3.6 million in labor income; and
- Maryland - 37 jobs and $2.2 million in labor income.

In summary, the total impact, including the multiplier effect, of the Airports Authority capital spending amounts to:

- MSA - 2,544 jobs and $166.5 million in labor income;
- Virginia - 1,162 jobs and $67.2 million in labor income;
- D.C. - 388 jobs and $42.6 million in labor income; and
- Maryland - 776 jobs and $47 million in labor income.

Table 3.4

Impact – Capital Expenditures, Airport Facilities, 2009 (dollars in millions)

Region	Impact Type	Dulles	National	Total
Impact on MSA	**Jobs**			
	Direct	1,207	244	1,451
	Indirect	400	77	478
	Induced	516	99	615
	Total	**2,124**	**420**	**2,544**
	Labor Income			
	Direct	$ 85.3	$ 16.2	$ 101.5
	Indirect	29.2	5.7	34.9
	Induced	25.2	4.8	30.0
	Total	**$ 139.7**	**$ 26.8**	**$ 166.5**
Impact on Virginia	**Jobs**			
	Direct	509	201	710
	Indirect	162	65	227
	Induced	161	65	226
	Total	**832**	**331**	**1,162**
	Labor Income			
	Direct	$ 29.2	$ 11.7	$ 41.0
	Indirect	11.6	4.6	16.2
	Induced	7.2	2.9	10.1
	Total	**$ 48.0**	**$ 19.2**	**$ 67.2**
Impact on DC	**Jobs**			
	Direct	211	21	231
	Indirect	81	8	89
	Induced	62	6	68
	Total	**354**	**34**	**388**
	Labor Income			
	Direct	$ 28.7	$ 2.7	$ 31.4
	Indirect	6.5	0.6	7.1
	Induced	3.7	0.3	4.1
	Total	**$ 38.9**	**$ 3.6**	**$ 42.6**
Impact on Maryland	**Jobs**			
	Direct	452	22	475
	Indirect	135	7	142
	Induced	152	8	159
	Total	**739**	**37**	**776**
	Labor Income			
	Direct	$ 29.2	$ 1.5	$ 30.6
	Indirect	8.9	0.4	9.4
	Induced	6.6	0.3	6.9
	Total	**$ 44.7**	**$ 2.2**	**$ 47.0**

Source: The Louis Berger Group, 2010

Note: Spending within each state as a whole is presented to show the full extent of economic impacts, but does not sum to spending within the metropolitan area because the MSA consists of only a subset of Virginia (15 counties) and Maryland (5 counties) and includes Jefferson County in West Virginia. **The sum of the total impact in Virginia, DC and Maryland does not equal the total impact in the MSA.**

Visitor Industry Impacts – A total of 40.8 million passengers used the two airports in 2009, 12 million of which were visitors to the region. Based on the results of an Airports Authority-commissioned survey, these out-of-town visitors spent an estimated $10.6 billion in the region on food, lodging, entertainment, retail and other purchases. Though the multiplier effect, this spending supports additional jobs at other businesses in the region. The results of the survey are summarized below for each of the domestic and international air passenger market segments.

Domestic Travelers – Dulles International

The Airports Authority survey of passengers in 2009 indicates that of the 16.9 million domestic users (73.1 percent of all passengers) of Dulles International, 26.7 percent were visitors on either business trips (12.6 percent) or for leisure/personal reasons (14.1 percent); the remaining 73.3 percent were residents. Domestic business visitors stayed an average of 1.2 nights in the D.C. area while those traveling for leisure/personal reasons stayed an average of 1.6 nights.[6] Domestic business travelers flying through Dulles are estimated to have spent $613.6 million in 2009 on area lodging, food, car rentals, entertainment, retail goods, duty free goods, taxis, and "other purchases" which include conference fees, metro and bus fares, etc. Domestic leisure travelers flying through Dulles International spent an estimated $2.3 billion in the area. Total expenditures for business and leisure visitors combined totaling an estimated $2.9 billion in 2009.

Domestic Travelers – Reagan National

At Reagan National, survey results reveal that 42.0 percent of the estimated 16.8 million domestic passengers (95.4% of all passengers) could be classified as visitors; 27.7 percent were travelling through the airport on business and 14.2 percent for leisure/personal reasons. The remaining 58 percent were residents. Business visitors stayed on average 1.0 night and those traveling for leisure are estimated to have stayed 3.0 nights on average.[7] Domestic business travelers flying through Reagan National are estimated to have spent $1.3 billion in 2009 on area lodging, food, car rentals, entertainment, retail goods, taxis, and "other purchases" which include conference fees, metro and bus fares, parking fees, gasoline, internet access, personal items, etc.[8] Domestic leisure travelers flying through Reagan National spent an estimated $2.6 billion. Total expenditures for business and leisure visitors combined totaled an estimated $3.9 billion during 2009.

International Travelers – Dulles International

At Dulles International, there were 6.2 million international passengers using the airport in 2009. Of these, the survey indicates that 35.7 percent (2.2 million) could be classified as visitors: 14.3 percent were business travelers and 21.4 percent on leisure/personal travel. The remaining 64.3 percent were

[6] The Airports Authority survey did not ask domestic travelers how long they stayed in the area. Length of stay in the area was taken from estimates provided by Washington.Org.
[7] Ibid.
[8] It should be noted that respondents were also asked about their "duty free" purchases but because these on-airport outlets are covered in the tenant survey we omitted this category to avoid double counting.

residents. The median stay for both business and leisure/personal travelers was 4 nights. International business travelers spent an estimated $1.2 billion in the Washington D.C. area while international leisure/personal travelers using Dulles International spent an estimated $1.0 billion. Total expenditures for international visitors flying through Dulles totaled $2.2 billion in 2009.

International Travelers – Reagan National

Reagan National serves relatively few international visitors. Only 4.6 percent of all passengers using Reagan National can be classified as international. Of the estimated 802,672 international passengers using Reagan, 35.4 percent were traveling on business and 33.8 percent were traveling for leisure or personal reasons. The remaining 30.8 percent were residents. The median stay for both sectors was four nights. Business travelers flying through Reagan National spent an estimated $533.6 million in 2009 and leisure/personal travelers spent an estimated $1.0 billion. Aggregate spending for international travelers flying through Reagan National is estimated to be $1.5 billion.

The expenditure profile for each air passenger segment is presented in Table 3.5 below.

Table 3.5
Estimated Median per Person Expenditure

Expenditure	Domestic Business		Domestic Leisure		International Business		International Leisure	
	Dulles	National	Dulles	National	Dulles	National	Dulles	National
Lodging	$200	$207	$134	$150	$200	$300	$90	$350
Food	50	50	50	50	50	65	50	60
Rent-a-car	60	58	50	50	100	45	80	0
Entertainment	30	25	40	40	20	50	50	50
Retail	25	20	48	30	75	100	100	100
Taxi	20	25	20	25	75	38	40	40
Total Expenditures (in $M)*	$613.6	$1,327.6	$2,295.7	$2,606.9	$1,159.5	$520.0	$1,017.8	$2,026.8

*Total expenditures are estimated by multiplying the median per person expenditures by the number of passengers in each segment. In addition to the expenditure categories listed above, total expenditures include spending classified as "Other" in the survey instrument.
Source: The Louis Berger Group, 2010

The total jobs and labor income impacts generated by visitor spending in the Washington D.C., MSA, Commonwealth of Virginia, District of Columbia, and the State of Maryland are displayed in Table 3.6 below.

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Table 3.6

Impact – Visitor Spending, 2009 (dollars in millions)

Region	Impact Type	Dulles	National	Total
Impact on MSA	**Jobs**			
	Direct	100,556	87,309	187,865
	Indirect	17,333	15,884	33,217
	Induced	20,742	19,026	39,768
	Total	**138,631**	**122,219**	**260,850**
	Labor Income			
	Direct	$ 3,456.9	$ 3,174.4	$ 6,631.3
	Indirect	1,158.9	1,058.6	2,217.5
	Induced	1,013.8	929.9	1,943.8
	Total	**$ 5,629.6**	**$ 5,162.9**	**10,792.5**
Impact on Virginia	**Jobs**			
	Direct	53,625	47,533	101,159
	Indirect	8,776	8,021	16,796
	Induced	8,567	7,797	16,364
	Total	**70,968**	**63,351**	**134,318**
	Labor Income			
	Direct	$ 1,672.4	$ 1,524.6	$ 3,197.0
	Indirect	531.1	481.4	1,012.5
	Induced	384.5	350.0	734.4
	Total	**$ 2,588.0**	**$ 2,356.0**	**$ 4,944.0**
Impact on DC	**Jobs**			
	Direct	32,570	27,906	60,476
	Indirect	4,300	4,001	8,302
	Induced	2,538	2,325	4,862
	Total	**39,408**	**34,232**	**73,639**
	Labor Income			
	Direct	$ 1,286.6	$ 1,184.6	$ 2,471.2
	Indirect	353.8	325.9	679.8
	Induced	151.5	138.8	290.3
	Total	$ 1,791.9	$ 1,649.3	$ 3,441.2
Impact on Maryland	**Jobs**			
	Direct	13,156	11,340	24,496
	Indirect	2,179	1,995	4,174
	Induced	2,188	2,012	4,199
	Total	**17,523**	**15,346**	**32,869**
	Labor Income			
	Direct	$ 431.4	$ 397.3	$ 828.7
	Indirect	122.9	112.4	235.2
	Induced	95.4	87.7	183.1
	Total	**$ 649.7**	**$ 597.3**	**$ 1,247.1**

Source: The Louis Berger Group, Inc.

Note: Spending within each state as a whole is presented to show the full extent of economic impacts, but does not sum to spending within the metropolitan area because the MSA consists of only a subset of Virginia (15 counties) and Maryland (5 counties) and includes Jefferson County in West Virginia. **The sum of the total impact in Virginia, DC and Maryland does not equal the total impact in the MSA.**

Spending by visitors departing from Dulles International in 2009 supported a total of:

- MSA - 138,631 jobs and $5.630 billion in labor income;
- Virginia - 70,968 jobs and $2.588 billion in labor income;
- D.C. - 39,408 jobs and $1.792 billion in labor income; and
- Maryland - 17,523 jobs and $649.7 million in labor income.

Spending by visitors departing from Reagan National in 2009 supported a total of:

- MSA - 122,219 jobs and $5.163 billion in labor income;
- Virginia - 63,351 jobs and $2.356 million in labor income;
- D.C. - 34,232 jobs and $1.649 billion in labor income; and
- Maryland - 15,346 jobs and $597.3 million in labor income.

In summary, the total impact of air passenger visitor spending totals:

- MSA - 260,850 jobs and $10.793 billion in labor income;
- Virginia - 134,318 jobs and $4.944 billion in labor income;
- D.C. - 73,639 jobs and $3.441 billion in labor income; and
- Maryland - 32,869 jobs and $1.247 billion in labor income.

Airport Dependent Industries – Airport contributions extend to industries that are airport-dependent as well, that is industries or firms that would not exist either in the local/regional area or anywhere but for the presence of the airport. For airports, this applies primarily to the export sector. Because of the high-value time-sensitive nature of their shipments these industries find it useful to locate near airports and depend heavily on the services provided. Having access to air transport for the export of goods can make a critical difference in the ability of some firms to compete in the global marketplace. Because only 98.0 percent of the total freight and mail shipped through the Airports Authority Airports is shipped through Dulles International, the airport-dependent industry impacts will be reported for Dulles International only.

According to U.S. Census data arranged by the World Institute for Strategic Economic Research or WISER, total US exports shipped through Dulles International and Reagan National were valued at $5.8 billion in 2009 and 98.0 percent was shipped through Dulles International with only 2.0 percent shipped through Reagan National. Of the total freight, $2.2 billion was sourced from within the states of Virginia, Maryland as well as the District of Columbia. After adjusting for weighted average domestic shipments[9], the tri-state estimate climbs to $5.2 billion worth of goods shipped through the Airports Authority's air facilities and sourced from the tri-state area. Assuming that the share of exports (3.2 percent) within the tri-state area producers of all goods exported through airports is consistent, across all commodity codes, with shippers in the Washington, D.C. MSA, and further that the domestic/international shipment ratios are identical, it is estimated that Washington, D.C. MSA producers shipped $897 million worth of goods both domestically and overseas through Dulles International and Reagan National Airports. Inputting this sum into IMPLAN generates the economic impacts found in Table 3.7.[10]

The total impact of airport dependent industries amounts to:

- MSA - 7,416 jobs and $635.8 million in labor income;
- Virginia - 15,994 jobs and $1.018 billion in labor income;
- D.C. - 279 jobs and $34.9 million in labor income; and
- Maryland - 3,961 jobs and $860.0 million in labor income.

[9] Airports Authority statistics for Dulles reveal an average domestic cargo to international cargo ratio of 2.36.
[10] Please see Technical Appendices report (Appendix B) for an explanation of the methodology applied to derive these estimates.

Table 3.7

Impact – Airport Dependent Activity, 2009 (dollars in millions)

Region	Impact Type	Impact Total
Impact on MSA	**Jobs**	
	Direct	2,314
	Indirect	2,760
	Induced	2,342
	Total	**7,416**
	Labor Income	
	Direct	$ 271.8
	Indirect	249.6
	Induced	114.5
	Total	$ 635.8
Impact on Virginia	**Jobs**	
	Direct	5,463
	Indirect	5,496
	Induced	5,037
	Total	**15,996**
	Labor Income	
	Direct	$ 430.1
	Indirect	387.2
	Induced	200.6
	Total	$ 1,017.9
Impact on DC	**Jobs**	
	Direct	128
	Indirect	102
	Induced	49
	Total	**279**
	Labor Income	
	Direct	$ 20.1
	Indirect	12.0
	Induced	2.9
	Total	$ 34.9
Impact on Maryland	**Jobs**	
	Direct	3,961
	Indirect	4,165
	Induced	3,968
	Total	12,093
	Labor Income	
	Direct	$ 393.2
	Indirect	294.3
	Induced	172.5
	Total	$ 860.0

Source: The Louis Berger Group, 2010

Note: Spending within each state as a whole is presented to show the full extent of economic impacts, but does not sum to spending within the metropolitan area because the MSA consists of only a subset of Virginia (15 counties) and Maryland (5 counties) and includes Jefferson County in West Virginia. **The sum of the total impact in Virginia, DC and Maryland does not equal the total impact in the MSA.**

Air Freight Industry Impacts – As outlined above, air cargo shipments through Dulles International and the producers that depend on these services are a substantial generator of jobs and economic activity in the region. Carriers at Dulles International and Reagan National handled approximately $5.8 billion in air freight destined for foreign markets in 2009. Dulles International accounts for 98 percent of the cargo flow. When the estimated value of domestic air cargo is added to the export market value, air freight handled by carriers at Dulles International has a value of more than $13.4 billion. Producers in the states of Virginia, Maryland, and the District of Columbia account for a large proportion of that value at approximately 40 percent or $5.2 billion.

Although precise information on the sales and location of the shippers handling the air cargo originating in and outside the region is not available because of the proprietary and confidential nature of private firm contracts and pricing, it is clear that this volume of activity supports the presence of a substantial freight forwarding and handling business in the region and particularly in Loudoun and Fairfax counties, serving the needs of customers shipping through Dulles International. The quarterly census of employment and wages shows that in 2009 there were:

- 1,178 jobs and over $88 million in wages in the Freight Transportation Arrangement sector in the MSA as a whole;
- 242 jobs with $31.4 million in wages In Fairfax County; and
- 607 jobs accounting for $36.8 million in wages in Loudoun County.

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Total Impact – Dulles International Airport

Summarizing the total impact, including the multiplier effect, of airport operations and capital projects, visitor spending, freight transportation, and impacts of airport dependent exporters, in 2009 Dulles International supported:

- MSA - 175,640 jobs and $7.912 billion in income;
- Virginia - 113,808 jobs and $5.057 million in labor income;
- D.C. - 40,310 jobs and $1.889 billion labor income; and
- Maryland - 31,395 jobs and $1,607 labor income.

Table 3.8

Total Impact Dulles International Airport, 2009 (dollars in millions)

Region and Type	O&M	Capital	Visitors	Airport Dependent/ Freight	Total
Impact on MSA					
Total Jobs	27,470	2,124	138,631	7,416	175,640
Total Labor Income	$ 1,506.8	$ 139.7	$ 5,629.6	$ 635.8	$ 7,911.9
Impact on Virginia					
Total Jobs	26,012	832	70,968	15,996	113,808
Total Labor Income	$ 1,403.0	$ 48.0	$ 2,588.0	$ 1,017.9	$ 5,056.9
Impact on DC					
Total Jobs	270	354	39,408	279	40,310
Total Labor Income	$ 23.1	$ 38.9	$ 1,791.9	$ 34.9	$ 1,888.9
Impact on Maryland					
Total Jobs	1,039	739	17,523	12,093	31,395
Total Labor Income	$ 52.2	$ 44.7	$ 649.7	$ 860.0	$ 1,606.6

Source: The Louis Berger Group, Inc.

Note: Spending within each state as a whole is presented to show the full extent of economic impacts, but does not sum to spending within the metropolitan area because the MSA consists of only a subset of Virginia (15 counties) and Maryland (5 counties) and includes Jefferson County in West Virginia. **The sum of the total impact in Virginia, DC and Maryland does not equal the total impact in the MSA.**

Total Impact – Reagan National Airport

The total impact of Reagan National Airport includes the impact of airport operations and capital projects, visitor spending, and freight transportation. Including the multiplier effect, in 2009, these activities supported:

- MSA - 134,820 jobs and $5.922 billion in labor income;
- Virginia - 82,544 jobs and $3.359 million in labor income;
- D.C. - 34,495 jobs and $1.667 million in labor income; and
- Maryland - 15,880 jobs and $627 million in labor income.

Table 3.9

Total Impact Reagan National Airport, 2009 (dollars in millions)

Region and Type	O&M	Capital	Visitors	Total
Impact on MSA				
Total Jobs	12,180	420	122,219	134,820
Total Labor Income	$ 732	$ 27	$ 5,163	$ 5,922
Impact on Virginia				
Total Jobs	18,863	331	63,351	82,544
Total Labor Income	$ 983	$ 19	$ 2,356	$ 3,359
Impact on DC				
Total Jobs	229	34	34,232	34,495
Total Labor Income	$ 15	$ 4	$ 1,649	$ 1,667
Impact on Maryland				
Total Jobs	497	37	15,346	15,880
Total Labor Income	$ 27	$ 2	$ 597	$ 627

Source: The Louis Berger Group, Inc.

Note: Spending within each state as a whole is presented to show the full extent of economic impacts, but does not sum to spending within the metropolitan area because the MSA consists of only a subset of Virginia (15 counties) and Maryland (5 counties) and includes Jefferson County in West Virginia. **The sum of the total impact in Virginia, DC and Maryland does not equal the total impact in the MSA.**

3.2 Dulles Toll Road

The Dulles Toll Road is an eight-lane, controlled access roadway, approximately 11.5 miles in length connecting the I-495 Capital Beltway in Fairfax County to Loudoun County and ultimately the Dulles International Airport. The Toll Road was built in 1984 by the Virginia Department of Transportation (VDOT) to provide local access to interchanges between the Capital Beltway (I-495) and Washington Dulles International Airport. It runs parallel with the Airport Access Highway, a divided four-lane limited access roadway. Toll receipts are used to fund operations and maintenance expenses for the road, major capital expenses and debt service, and other infrastructure investments initiated by the Airports Authority.

Operations and Maintenance Impacts – The Airports Authority took over responsibility from Virginia Department of Transportation (VDOT) for Dulles Toll Road operations in October 2009. VDOT primarily used a combination of contractors and VDOT employees to operate the Toll Road. Contractors were used to provide toll attendants, a customer service center, and to perform maintenance on the toll equipment. The Airports Authority is opting instead to rely more on a permanent staff of 25 to directly manage the various contracts and operations of the Dulles Toll Road. The Airports Authority's Dulles Toll Road staff includes support services such as legal, human resources, financing, accounting, and information technologies.

Non-payroll operations and maintenance expenditures for the Dulles Toll Road in 2009 totaled an estimated $14.9 million, including VDOT expenditures during the first nine months of the year. Payroll expenditures totaled an estimated $1.3 million in that same year.

Capital Expenditure Impact – Capital expenditures are scheduled to meet a long-term plan for the efficient upkeep and operation of the roadway. In 2009, these expenditures amounted to $2.6 million.

Given the location of the road and the vendors undertaking the work, this spending was largely concentrated within Virginia, generating a total of 29 jobs and $1.6 million in labor income within the Commonwealth, as noted in Table 3.10.

Table 3.10

Impact of Dulles Toll Road Capital Expenditures, 2009 (dollars in millions).

Region	Type	Total
Impact on Virginia	**Jobs**	
	Direct	15
	Indirect	6
	Induced	8
	Total	**29**
	Labor Income	
	Direct	$ 1.0
	Indirect	0.3
	Induced	0.3
	Total	**$ 1.6**

Source: The Louis Berger Group, Inc.

Taking into account the multiplier effect, operation and maintenance spending related to the Dulles Toll Road generated a total of:

- MSA - 486 jobs and $32.1 million in labor income;
- Virginia - 498 jobs and $25.6 million in labor income;
- D.C. - 6 jobs and $0.2 million in labor income; and
- Maryland - 61 jobs and $2.4 million in labor income.

Table 3.11
Dulles Toll Road O&M Impact, 2009 (dollars in millions)

Region	Impact Type	Total
Impact on MSA	**Jobs**	
	Direct	25
	Indirect	342
	Induced	119
	Total	486
	Labor Income	
	Direct	$ 2.7
	Indirect	23.6
	Induced	5.8
	Total	$ 32.1
Impact on Virginia	**Jobs**	
	Direct	25
	Indirect	361
	Induced	112
	Total	498
	Labor Income	
	Direct	$ 2.7
	Indirect	18.3
	Induced	4.6
	Total	$ 25.6
Impact on DC	**Jobs**	
	Direct	0
	Indirect	6
	Induced	0
	Total	6
	Labor Income	
	Direct	$ -
	Indirect	0.2
	Induced	0.0
	Total	$ 0.2
Impact on Maryland	**Jobs**	
	Direct	0
	Indirect	53
	Induced	8
	Total	61
	Labor Income	
	Direct	$ -
	Indirect	2.0
	Induced	0.4
	Total	$ 2.4

Source: The Louis Berger Group, Inc.

Note: Spending within each state as a whole is presented to show the full extent of economic impacts, but does not sum to spending within the metropolitan area because the MSA consists of only a subset of Virginia (15 counties) and Maryland (5 counties) and includes Jefferson County in West Virginia. **The sum of the total impact in Virginia, DC and Maryland does not equal the total impact in the MSA.**

3.3 Dulles Corridor Metrorail Construction

In March 2009, the Airports Authority commenced construction on a 23-mile extension of the existing Metrorail system from East Falls Church to Washington Dulles International Airport west to Ashburn. This first phase includes four new stations linking East Falls Church and Wiehle Avenue on the eastern edge of Reston. Revenue service on this link is anticipated to begin in 2013. Phase II completes the project with seven new stations and will be placed into service in 2016.

In 2009, the Airports Authority spent $362.9 million on construction of the Metrorail project. According to Dulles Transit Partners, LLC, project employment totaled 200 construction workers and 300 other workers (non-manual) in 2009. The Airports Authority spent an additional $1.9 million on payroll for 15 staff members who are assigned to the Dulles Corridor Metrorail project.

Including the multiplier effect, the total economic impact of the Metrorail extension spending by the Airports Authority totals:

- MSA - 1,481 jobs and $95.9 million in labor income;
- Virginia - 1,926 jobs and $105.4 million in labor income;
- D.C. - 73 jobs and $5.2 million in labor income, and
- Maryland – 5 jobs and $0.3 million in labor income.

The results are presented in Table 3.12 below.

Table 3.12

Impact of Dulles Corridor Metrorail Construction, 2009 (dollars in millions)

Region	Type	Total
Impact on MSA	**Jobs**	
	Direct	515
	Indirect	612
	Induced	354
	Total	**1,481**
	Labor Income	
	Direct	$ 31.9
	Indirect	46.7
	Induced	17.3
	Total	**$ 95.9**
Impact on Virginia	**Jobs**	
	Direct	515
	Indirect	880
	Induced	531
	Total	**1,926**
	Labor Income	
	Direct	$ 33.3
	Indirect	50.9
	Induced	21.1
	Total	**$ 105.3**
Impact on DC	**Jobs**	
	Direct	0
	Indirect	65
	Induced	8
	Total	**73**
	Labor Income	
	Direct	$ 0
	Indirect	4.7
	Induced	0.4
	Total	**$ 5.1**
Impact on Maryland	**Jobs**	
	Direct	0
	Indirect	3
	Induced	2
	Total	**5**
	Labor Income	
	Direct	$ 0
	Indirect	0.2
	Induced	0.1
	Total	**$ 0.3**

Source: The Louis Berger Group, Inc.

Note: Spending within each state as a whole is presented to show the full extent of economic impacts, but does not sum to spending within the metropolitan area because the MSA consists of only a subset of Virginia (15 counties) and Maryland (5 counties) and includes Jefferson County in West Virginia. **The sum of the total impact in Virginia, DC and Maryland does not equal the total impact in the MSA.**

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Section 4 – Tax Revenues

4.1 Airports

While the Airports Authority is tax exempt, the airports indirectly generate federal, state and local tax revenues. The following section presents estimates of the federal taxes on sales of airline tickets and transportation of cargo. State tax impacts assessed in this report include personal income tax, sales tax, and corporate income tax impacts.

Federal Taxes – Total federal aviation taxes collected at Dulles International and Reagan National in 2009 totaled $355 million at Dulles and $263 million at Reagan.

Table 4.1

Federal Passenger and Cargo Taxes, 2009 (in thousands)

Type	Dulles	Reagan
Cargo Taxes	$50,645	$1,040
Domestic Passenger Tax	216,085	255,941
International Arrivals Tax	50,519	2,984
International Departure Tax	38,731	2,823
Total Federal Aviation Taxes	**$355,980**	**$262,788**

Source: The Louis Berger Group, Inc.

State Taxes – State taxes included in this economic impact assessment are personal income tax, sales tax and corporate income tax.

Personal Income Tax – The aviation program (airport operations, capital program, visitor spending and airport dependent exporters) generated an estimated $251.5 million in personal income tax in Virginia, $45.9 million in D.C. and $103.5 million in Maryland. This includes the personal income tax paid by Airports Authority employees as well as other airport employees residing in Virginia, D.C. and Maryland. The tax is estimated by multiplying the effective personal income tax rate for each state and the District with the total labor income (direct, indirect, and induced) as estimated with the state specific input-output model.

Sales Tax – Taking into account direct, indirect, and induced effects of airport operations and capital programs, visitor spending and airport dependent exporters, the aviation program generates $464.4 million of state sales tax revenue in Virginia, $163.3 million in D.C. and $198.3 million in Maryland.

Corporate Tax – The total corporate tax revenue generated by the aviation program totals $464.4 million in Virginia, $163.3 million in D.C. and $198.3 million in Maryland.

A detailed breakdown of D.C., Maryland, and Virginia personal income, sales and corporate tax revenues generated by the aviation program is presented in Table 4.2 below.

Table 4.2

State and Local Tax Impact of Aviation, 2009 (dollars in millions)

		Personal Income Tax	Sales Tax	Corporate Income Tax	Total Tax
DC	Dulles	$ 22.5	$ 80.9	$ 25.5	$ 128.9
DC	National	$ 23.4	$ 82.4	$ 26.0	$ 131.8
DC	**Total Aviation**	**$ 45.9**	**$ 163.3**	**$ 51.5**	**$ 260.7**
MD	Dulles	$ 72.0	$ 148.3	$ 21.2	$ 241.5
MD	National	$ 31.4	$ 49.9	$ 7.1	$ 88.4
MD	**Total Aviation**	**$ 103.4**	**$ 198.2**	**$ 28.3**	**$ 329.9**
VA	Dulles	$ 143.6	$ 261.1	$ 30.4	$ 435.1
VA	National	$ 106.9	$ 202.7	$ 24.0	$ 333.6
VA	**Total Aviation**	**$ 250.5**	**$ 463.8**	**$ 54.4**	**$ 768.7**
TOTAL	**Total Aviation**	$ 399.8	$ 825.3	$ 134.2	$ 1,359.3

Source: The Louis Berger Group, Inc.

The distribution of total state and local tax impacts attributable to the direct, indirect, and induced aviation activity by jurisdiction is presented in Table 4.2.1. The distribution represents an estimate of where these taxes are generated based on the location of employee households, and airport vendors identified during the course of the study. State and Local taxes included in this economic impact assessment are personal income tax, sales tax and corporate income tax where they are created either through purchases made by MWAA or by payrolls paid to employees living in the counties. Some counties collect their own taxes directly. Virginia counties collect 1% of the sales tax rate across the state while counties in Maryland collect various percentages on personal income taxes. Although the nominal tax rates for the jurisdictions are available, the total economic impact estimates generated in this study are not detailed enough with respect to industry and location to calculate accurate effective tax receipts. For this analysis it is assumed that a proportion of the taxes collected by the state is returned to the local jurisdiction in the form of either services or dedicated funding allocations. Therefore the state and local taxes are combined to display the total taxation impacts attributable to local jurisdictions.

Table 4.2.1
State and Local Tax Impact of Aviation
by Local Jurisdiction, 2009 (dollars in millions)

Jurisdiction	National	Dulles	Total
Virginia			
Alexandria city, VA	$ 3.2	$ 3.2	$ 6.4
Arlington county, VA	$ 74.8	$ 42.4	$ 117.2
Fairfax county, VA	$ 148.8	$ 186.0	$ 334.8
Loudoun county, VA	$ 40.2	$ 33.0	$ 73.2
Prince William, county, VA	$ 12.7	$ 35.6	$ 48.3
Fauquier, county, VA	$ 9.2	$ 11.2	$ 20.4
Other Virginia	$ 44.6	$ 123.8	$ 168.4
Maryland			
Montgomery county, MD	$ 15.3	$ 115.6	$ 130.9
Prince Georges county, MD	$ 25.2	$ 55.2	$ 80.4
Other Maryland	$ 48.0	$ 70.6	$ 118.6
DC			
District of Columbia	$ 131.8	$ 128.9	$ 260.7
Total Aviation	**$ 553.7**	**$ 805.5**	**$ 1,359.3**

Source: The Louis Berger Group, Inc.

4.2 Dulles Toll Road

Personal Income Tax – The total personal income tax generated by Dulles Toll Road totals $0.8 million in Virginia, less than $0.01 million in D.C. and $0.11 million in Maryland. This estimate is based on the personal income tax associated with the direct, indirect, and induced labor income effects of the Airports Authority operation and maintenance and capital expenditures.

Sales Tax – Total sales tax impact of Dulles Toll Road amounts to $1.06 million in Virginia, less than $0.01 million in D.C. and $0.13 million in Maryland. This estimate is based on the sales tax associated with the indirect and induced effects of the Airports Authority operation and maintenance and capital expenditures.

Corporate Income Tax – Total corporate income tax revenue of Dulles Toll Road amounts to $0.02 million in Virginia, less than $0.01 million in DC and $0.02 million in Maryland. This estimate is based on the corporate income tax associated with the indirect and induced effects of the Airports Authority operation and maintenance and capital expenditures.

A detailed breakdown of DC, Maryland and Virginia personal income, sales and corporate tax revenues generated by the Dulles Toll Road is presented in Table 4.3 below.

Table 4.3

Tax Impact Dulles Toll Road (dollars in millions)

	Personal Income Tax	Sales Tax	Corporate Income Tax	Total Tax
DC	$ 0.00	$ 0.01	$ 0.00	$ 0.02
MD	$ 0.11	$ 0.13	$ 0.02	$ 0.26
VA	$ 0.81	$ 1.06	$ 0.12	$ 1.99

Source: The Louis Berger Group, Inc.

4.3 Dulles Corridor Metrorail

Personal Income Tax – The total personal income tax generated by Dulles Corridor Metrorail is $3.13 million in Virginia, $0.23 million in D.C. and $0.02 million in Maryland. This estimate is based on the direct, indirect, induced labor income generated by the Metrorail capital expenditures.

Sales Tax – Total sales tax revenue generated by the Metrorail project amounts to $9.83 million in Virginia, $0.23 million in D.C. and $0.02 million in Maryland. This estimate is based on the sales tax associated with the indirect and induced effects of the Airports Authority capital expenditures.

Corporate Income Tax – Total corporate income tax revenue generated by the Metrorail project amounts to $1.09 million in Virginia, $0.07 million in D.C. and less than $0.01 million in Maryland. This estimate is based on the corporate income tax associated with the indirect and induced effects of the Airports Authority operation and maintenance and capital expenditures.

A detailed breakdown of DC, Maryland and Virginia personal income, sales and corporate tax revenues generated by the Dulles Corridor Metrorail is presented in Table 4.4 below.

Table 4.4
Tax Impact Dulles Corridor Metrorail (dollars in millions)

	Personal Income Tax	Sales Tax	Corporate Income Tax	Total Tax
DC	$ 0.07	$ 0.23	$ 0.07	$ 0.37
MD	$ 0.01	$ 0.02	$ 0.00	$ 0.04
VA	$ 3.13	$ 9.83	$ 1.09	$ 14.06

Source: The Louis Berger Group, Inc.

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Section 5 – Regional Economy Overview

The operations of the Airports Authority and the direct, indirect, and induced economic effect they produce represent a small but important proportion of the region's overall economic activity. As noted throughout this evaluation, however, the importance of the Airports Authority's facilities to the region extends beyond the immediately measurable sales, employment, earnings, and tax effects they produce.

Air passenger travel and the movement of goods by air support the operations of a wide variety of industries. It is also crucial to the vibrant array of activities supporting the visitation of domestic and international tourists to the Nation's capital and surrounding attractions. The Dulles Toll Road is a vital transportation link within the region providing airport access and travel to other destination. The Dulles Corridor Metrorail will play a vital role in accommodating the region's growth and demand for transportation, moving air travelers and commuters to their destinations rapidly and efficiently, and reducing dependency on single occupant auto use.

The MSA's economy had a total output, gross domestic product, of 395.7 billion dollars in 2008 according to the Bureau of Economic Analysis, or 2.8% of the nation's output. The MSA has exhibited tremendous growth from 2001 with a 25% increase in output until 2008, 8% above the nation's output growth. The private sector, which comprises 79% of the total 2008 MSA output, grew by 29%, nearly 10% more than the nation's private sector growth. However, the MSA's private sector in terms of proportion to the total output is 8.7% below the nation average. This is no surprise as the MSA covers the nation's capital and a significant amount of federal institutions' headquarters.

Residents of the MSA saw their per capita income increase from 2001 to 2008 by 32.5%, compared to the national income growth of only 19%. But, in inflation adjusted terms, the MSA's income growth was 3.4% below the nation's growth. The inflation rate, for cost of living, for the MSA compared to the rest of the nation was significantly higher, 7.2%, from 2001 to 2008. As the population increased and the economy grew, goods and services were able to charge more, pushing up the cost of living in the area. Also, the high cost of housing in the area, which can be up to 33% of the total consumer price index, rose rapidly during this period.

In 2009, the MSA employed 2.2% of the total nation's payroll employees. From 2001 to 2009 total employment growth in the MSA was 6.4% while the nation's was a negative .01%. The MSA labor market peaked in 2008 with nearly 3 million payroll employees. That number has dropped by 2% in 2009. The growth in the MSA was led by the private sector whose payroll employment grew 4.4% while the private sector for the nation dropped by 2%. Private sector employment peaked for both the MSA and national economy in 2007 then fell by 3% and 6% respectively.

The payroll employment in the air transportation industry from 2001 to 2009 in the MSA fell by 24%. This roughly equates to one in four air transportation payroll employees from 2001 lost a job. This trend is also seen in the national air transportation employment with 25% job losses, has been continuous since 2001, and is more directly attributable to industry consolidation and changes in the patterns of travel by domestic and foreign travelers, not to the current business cycle.

Section 6 – Economic Policy

The Airports Authority's portfolio of facilities figures prominently in every municipal county and regional agency's response to accommodate future growth and development. The Airport Authority's airports, toll road and Metrorail extension are also important to these agencies' plans for economic development in terms of tourism, goods movement and reducing the reliance on single occupancy vehicles. With major real estate development occurring around the Dulles region there is no doubt that more businesses and residents will locate there in the future.

The Airport's Authority ability to bring much needed revenues through its toll road and airport facilities will enhance the MSA's appeal as a business, residential and tourist destination in the future. More detailed information on Economic Policy and Development is provided in the Technical Appendices report, Appendix H.

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Section 7 – Summary

In aggregate, the total economic impact of the Airports Authority in 2009 includes:

- MSA - 312,970 jobs and $13.999 billion in labor income;
- Virginia - 199,265 jobs and $8.580 billion in labor income, and $785.1 million in tax revenues;
- D.C. - 74,912 jobs, $3.563 billion in labor income, and $261.4 million in tax revenues; and
- Maryland - 47,394 jobs, $2.239 billion in labor income and $329.3 million in tax revenues.

Table 7.1

Aggregate Economic Impacts (dollars in millions)

Region	Impact Type	Toll Road	Metrorail	Aviation	Total
MSA	Jobs	486	1,481	311,003	312,970
	Labor Income	$ 32.1	$ 95.9	$ 13,870.7	$ 13,998.7
VA	Jobs	527	1,926	196,812	199,265
	Labor Income	$ 27.2	$ 105.4	$ 8,447.9	$ 8,580.5
DC	Jobs	6	73	74,833	74,912
	Labor Income	$ 0.2	$ 5.2	$ 3,557.6	$ 3,563.0
MD	Jobs	61	5	47,328	47,394
	Labor Income	$ 2.4	$ 0.3	$ 2,236.3	$ 2,239.0

Note: Spending within each state as a whole is presented to show the full extent of economic impacts, but does not sum to spending within the metropolitan area because the MSA consists of only a subset of Virginia (15 counties) and Maryland (5 counties) and includes Jefferson County in West Virginia. **The sum of the total impact in Virginia, DC and Maryland does not equal the total impact in the MSA.**

The operations of the Airports Authority and the direct, indirect, and induced economic effect they produce are important to the region's overall economy, which is driven by the activities of the federal government and a vibrant mix of private industries. The importance of the Airports Authority's facilities to the region extends beyond the immediately measurable sales, employment, earnings, and tax effects they produce, however.

Air passenger travel and the movement of goods by air are crucial to the operations of government and the goods and service producing industries throughout the region. Investing and maintaining an adequate air transportation system is crucial to the extensive array of activities supporting the visitation of domestic and international tourists to the Nation's capital and surrounding attractions, while the addition of the Dulles Toll Road and Metrorail projects to the Airports Authority's portfolio of facilities highlights the importance of multimodal transportation to the region. The Dulles Toll Road is a vital transportation link within the region providing airport access and travel to other destinations. Dulles Corridor Metrorail will play a vital role in accommodating the region's growth and demand for transportation, moving air travelers and commuters to their destinations rapidly and efficiently, and expanding travel opportunities beyond single occupant auto use.

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METROPOLITAN WASHINGTON
AIRPORTS AUTHORITY

TECHNICAL APPENDIX
ECONOMIC IMPACT STUDY - 2009




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October 20, 2010

Technical Appendices

2009 Economic Impact Study

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Appendix A – Economic Impact Methodology

This Appendix presents the methodology for estimating the economic contribution of the Metropolitan Washington Airports Authority (the Airports Authority) facilities including Washington Dulles and Reagan National Airports, the Dulles Toll Road operation, and the construction activity associated with the Dulles Corridor Metrorail project to the regional and state economies in 2009.

The economic impact of the airports is triggered by six activities:

1) Airports Authority operation and maintenance expenditures;
2) Airports Authority capital expenditures;
3) Expenditures by airlines and other on-airport tenants and employers;
4) Spending by air passengers visiting the region;
5) Spending on freight transportation to and from the airport; and
6) Spending by businesses that utilize the airports to ship their products.

As this spending is circulated throughout the regional economy, additional jobs, income, sales and tax revenues will be generated. These additional impacts will be estimated using input-output modeling techniques and the IMPLAN modeling system. What follows is an overview of input-output modeling and the IMPLAN system, the delineation of the study areas, a description of data collection efforts, and a separate methodology section for each Airports Authority program and a methodology to estimate tax revenues is presented.

Input-output Modeling

The total economic impact includes three distinct but related effects arising from a project, investment, or the operation of a business entity. These impacts are identified as direct, indirect, and induced.

Direct Impact – The direct impact is defined as the change in economic activity, in the industry under study, resulting from a particular project, investment, or business operation. The impact can be quantified by examining the revenues or expenditures involved, including sales, disbursements to vendors, wages, taxes, and fees paid.

For this report, the direct economic impact includes the Airports Authority's employment and airport tenant employment. Additionally, the jobs supported by the export activity at airport dependent firms and by visitor spending are the direct impact of these Airports Authority related activities.

Indirect Impact – The indirect impact is defined as the effect of increased economic activity in those sectors that supply services, materials, and machinery necessary to support the study industry. For example, an increase in orders for autoparts will result in an increased demand for auto parts (direct impact). This increase in demand for auto parts generates additional activity involved in providing raw

materials, energy, and transportation for manufacturing parts, which in turn provides stimulus to the industries supplying those industries. This ripple effect stemming from a change in final demand for products and services in the industry under study is multiplied throughout the economy and can account for a significant amount of the total effect. For this report, the indirect effect includes the jobs at the businesses that are supplying the Airports Authority and the directly affected businesses (i.e., other airport employers, airport dependent businesses, and firms serving visitors), and the subsequent rounds of suppliers (i.e., suppliers of suppliers, and so on).

Induced Impact – The induced impact is the effect of increased consumer spending by wage earners in the study industry and other supporting industries. The ripple effect from this spending can also be followed through the economy. For this report, the induced impact is composed of jobs supported by the Airports Authority's employees, other airport employees and employees of all the other directly and indirectly affected businesses.

Multiplier Effect (Total) – Together, the direct, indirect and induced impacts constitute the multiplier effect, to the extent to which the direct impact results in other economic activity. Expressed numerically, a multiplier of 3.5 indicates that for every dollar directly generated by the industry under study, an additional $2.50 of ripple effects are felt within the local region, for a total impact of $3.50.

Study Area – The regional economic impact is defined for the following study areas:

1) Washington DC-VA-MD-WV Metropolitan Statistical Area (MSA);
2) District of Columbia;
3) Commonwealth of Virginia; and
4) State of Maryland

The Washington, D.C., VA-MD-WV metropolitan statistical area as defined by the U.S. Office of Management and Budget includes the following counties and unincorporated cities.

Table AA1
Washington MSA Counties

Washington-Arlington-Alexandria, DC-VA-MD-WV Metropolitan Statistical Area	
Frederick County, MD	Prince William County, VA
Montgomery County, MD	Spotsylvania County, VA
District of Columbia, DC	Stafford County, VA
Calvert County, MD	Warren County, VA
Charles County, MD	Alexandria City, VA
Prince George's County, MD	Fairfax City, VA
Arlington County, VA	Falls Church City, VA
Clarke County, VA	Fredericksburg City, VA
Fairfax County, VA	Manassas City, VA
Fauquier County, VA	Manassas Park City, VA
Loudoun County, VA	Jefferson County, WV

Because the MSA consists of only a subset of Virginia (15 counties) and Maryland (5 counties) and includes Jefferson County in West Virginia, spending within each state as a whole does not sum to spending within the metropolitan area. The sum of the impact on Virginia, DC and Maryland does not equal the total impact in the MSA.

Only spending that takes place within the study area will generate a multiplier effect. Spending that takes place at vendors located outside the region is termed "leakage," and does not generate an effect in the study area. Using the metropolitan statistical area as the regional study area assures that the analysis includes spending throughout the metropolitan area, capturing more economic linkages than if the study area were only a subset of the counties in the MSA.

Data Collection

Data received from the Airports Authority - At the start of the project, LBG provided the Airports Authority with a detailed data request. In response to this request, the Airports Authority supplied LBG with detailed information about the Airports Authority's operations for each of its programs including:

1) Dulles International Airport;
2) Reagan National Airport;
3) Other aviation;
4) Dulles Toll Road; and
5) MetroRail.

Data items associated with the above programs include:

- *Airports Authority Employees* - a count of full- and part-time employees by ZIP code of residence for each of the programs;
- *Airports Authority Payroll* – salaries by employee ZIP code of residence for each of the programs; and
- *Airports Authority Purchasing* - all Airports Authority operation and maintenance expenditures in 2009 and all capital expenditures in 2009. The purchasing data includes the name of the vendor, the vendor zip code, expenditure amount and a description of the good or service.

The Airports Authority also provided LBG with a list of tenants at Dulles International and Reagan National Airports, as well as the number of full-time and part-time employees at these on-airport businesses. The Dulles International Airport Employee Population Report dated April 2009 and the Ronald Reagan National Airport Employee Population Report dated August 2009 provide the number of full-time and part-time employees for on-airport businesses as well as the number of aircraft crews based at the two airports.

Airport Tenant Survey – To supplement the Airports Authority tenant data, a survey of airlines and non-airline tenants was conducted at both Dulles International and Reagan National Airports. The primary purpose of the surveys was to obtain more detailed information about the residential location of the airport employees. The purpose of the airline survey was conducted to obtain a better understanding of the residential location of the flight crews based at Dulles and National as well as the time spent in the metropolitan area by flight crews who do not reside locally. Additionally, the non-airline tenant survey was used to gain a better understanding of the specific characteristics of on-airport businesses in terms of revenues, payroll, and employment relative to the average business in the same industries to accurately model the economic impact of the airports.

LBG identified the airport tenants using the airport tenant directories and mailed a survey to each tenant. The mail surveys included the following items:

(1) A letter from the Airports Authority explaining the purpose of the survey, a request to participate in the survey, assurance of confidentiality, identification of due date, and providing contact information in cases where there may be questions. LBG drafted the letter and provided a copy to the Airports Authority for review. An LBG employee served as the contact person for all questions.
(2) The airport tenant survey, which included questions about number of jobs, payroll, sales revenues, tax payments and employee residential location with additional questions about flight crews for airlines.
(3) A self-addressed stamped envelope.

Using a list of email addresses of contact persons for airlines provided by the Airports Authority, an electronic airline survey was distributed by email. The invitation email included a hyperlink to the

survey instrument hosted by KeySurvey, a firm providing online survey software. The content of the survey instrument and invitation was identical to surveys distributed by mail. Airlines for which no email address is available, received a paper copy of the survey in the mail.

- *Airport User Survey* - In March 2010, LBG received the results of a year-long passenger survey conducted at Reagan National and Dulles International Airports for the Airports Authority by WB&A Market Research. The information was used to describe off-airport spending by departing passengers who visited the Washington metro area to estimate the economic impact of visitor spending. The impact of visitor spending includes spending on lodging, food and beverage, other retail, transportation, and entertainment.

- *Freight Data* – LBG purchased data on the value of goods exported from the District of Columbia, Virginia and Maryland from WISERTrade. The data includes foreign exports and is disaggregated by mode of transport, port, and commodity type. This data was the basis for estimates of the economic impact of firms that use the airports to export goods. The overwhelming majority of freight activity is at Dulles International Airport.

Methodology by Program

Aviation - The economic impact of the airports is triggered by six activities:

1) Airports Authority operation and maintenance expenditures;
2) Airports Authority capital expenditures;
3) Expenditures by airlines and other on-airport tenants and employers;
4) Spending by air passengers visiting the region;
5) Transportation of freight to and from the airport; and
6) Spending by businesses that utilize the airports to ship their products.

- *Airports Authority Operations* - To estimate the economic impact of the Airports Authority's airport operations, LBG used purchasing, payroll and employment data. Direct operating and maintenance expenditures were evaluated using an expenditure approach, also known as a "bill-of-goods" or "second-round" approach that seeks to disaggregate project expenditures into key component activities, where appropriate. These activities can subsequently be mapped separately to the corresponding industry in IMPLAN for estimation of the multiplier effects. Under this approach, payroll can be analyzed separately from purchasing data. The availability of vendor ZIP code location and employee place of residence by ZIP code allows identification of the first round of spending that occurs within the study area and drives the indirect and induced economic impact estimates. The jobs at the Airports Authority were added to results of the economic impact estimates generated with IMPLAN.

- *Airports Authority Capital Expenditures* - The economic impact of capital expenditures by the Airports Authority was also estimated using the bill of goods approach. The data consisted of capital expenditures provided by the Airports Authority and the total economic impact of the sector was estimated using the IMPLAN modeling system.

- *Airlines and Other Airport Employers* – To estimate the economic impact of the airlines and other airport tenants and on-airport employers, LBG used the airport tenant employee counts from the Dulles International Airport Employee Population report of April 2009 and the Ronald Reagan National Airport Employee Population report of August 2009 as well as the results from the Airport Tenant survey. The survey response rate was inadequate for a rigorous representation of the airport labor sheds. Therefore, the commuting assumptions incorporated in the IMPLAN model were used. The total economic impact of the sector was estimated using the IMPLAN modeling system and included the direct, indirect, and induced effects.

- *Jobs supported by Visitor Spending* – To estimate the economic impact of visitor spending, LBG utilized the expenditure data obtained from the Airport User Survey. The expenditure categories were mapped to IMPLAN codes and then used to estimate the indirect and induced economic impacts associated with spending by visitors who traveled to the region by air. Due to the fact many visitors reserve accommodations in the D.C. suburbs but spend much of their time in D.C., this approach may prove to be biased with regards to the results. Therefore, a summary of spending patterns under varying assumptions on the specific location of the spending is provided as well.

- *Airport Dependent Jobs* – Finally, LBG estimated the economic impact of the manufacturers that utilize the airports for shipping. A detailed methodology for airport-related business impacts is in Appendix C.

Toll Road Operation

To estimate the economic impact of toll road operations, LBG used the Airports Authority purchasing, payroll, and employment data. Direct operating and maintenance expenditures were evaluated using an expenditure approach, also known as a "bill-of-goods" or "second-round". This approach disaggregates project expenditures into key component activities where appropriate so these activities can be mapped separately to the corresponding industry in IMPLAN for estimation of the multiplier effects. Under this approach, payroll was analyzed separately from purchasing data. The availability of vendor ZIP code locations and employee place of residence by ZIP code allow LBG to identify the first round of spending that occurs within the study area and will also drive the indirect and induced economic impact estimates. The jobs at the Airports Authority were added to results of the economic impact estimates generated with IMPLAN. To obtain a full estimate of the impact of the toll road operations in 2009, the Airports Authority expenditure data will be supplemented with VDOT expenditure and employment data related to the operation of the toll road prior to October 2009.

Metrorail Project Construction

To estimate the economic impact of Metrorail Construction, LBG used the Airports Authority purchasing, payroll, and employment data. Direct operating and maintenance expenditures will be evaluated using an expenditure approach, also known as a "bill-of-goods" or "second-round". This approach disaggregates project expenditures into key component activities where appropriate, so these activities can be mapped separately to the corresponding industry in IMPLAN for estimation of the multiplier effects. Under this approach, payroll was analyzed separately from purchasing data. The availability of vendor ZIP code locations and employee place of residence by ZIP code allowed LBG to identify the first round of spending that occurs within the study area and will also drive the indirect and induced economic impact estimates. The jobs at the Airports Authority were added to the economic impact estimates generated with IMPLAN.

Appendix B – Detailed Visitor Sector Methodology and Analysis

Services to the visitor sector, including ground transportation, lodging, restaurants, tourism, entertainment venues, and retailers can be classified as at least partially dependent on airport operations. Data on visitors to the region is predominantly taken from the Airports Authority-commissioned intercept surveys of Dulles International and Reagan National passengers and augmented by Airports Authority statistics and the Washington.org organization. The intercept surveys are intended to help gauge the origin, destination, spending profiles, and satisfaction of airport users with various airport services and amenities. The surveys were conducted over the course of the year to eliminate potential seasonality biases. The total number of respondents in the 2009 surveys totaled 3,038 persons. Some relevant statistics from the 2009 survey are provided below.

According to Airports Authority statistics, there were 23,213,341 domestic and international passengers using Dulles International Airport in 2009 and 17,577,359 domestic and international passengers flying through Reagan National. The total of 40.8 million passengers is a 9.2% decline from 2005, the last year an economic impact study was conducted.

In the aggregate, the survey data indicates that of the total 40.8 million passengers flying through the two airports, 12.2 million (30.0%) of which could be classified as visitors which are defined as passengers using the airports who do not reside in the Washington, D.C. MSA. This is a 0.8 percent increase over the 12.1 million visitors counted in 2006.[1] These 12.2 million visitors spent $10.6 billion in the visitor industries within the regional economy.

Domestic Travelers – Dulles International

Of the 2009 passengers, the Airports Authority survey results indicate that of the 16.9 million domestic users (73.1% of all passengers) of Dulles International Airport, 26.7 percent were visitors on either business trips (12.6%) or for leisure/personal reasons (14.1%). Domestic business visitors stayed on average for 1.2 nights in the D.C. area while those traveling for leisure/personal reasons stayed on average for 1.6 nights.[2] Domestic business travelers flying through Dulles are estimated to have spent $613.6 million in 2009 on area lodging, food, car rentals, entertainment, retail goods, duty free goods, taxis, and "Other purchases" which include conference fees, metro and bus fares, etc. Domestic leisure travelers flying through Dulles spent an estimated $2.3 billion in the area. Total expenditures for business and leisure visitors combined total an estimated $2.9 billion in 2009.

[1] See Martin Associates
[2] The Airports Authority survey did not ask domestic travelers how long they stayed in the area. Length of stay in the area was taken from estimates provided by Washington.Org.

Domestic Travelers – Reagan National

At Reagan National, survey results indicate that 42.0 percent of the 16.8 million estimated domestic passengers (95.4% of all passengers) could be classified as visitors, 27.7 percent were travelling through the airport on business and 14.2 percent for leisure/personal reasons. Business visitors stayed on average 1.0 night and those traveling for leisure are estimated to have stayed 3.0 nights on average.[3] Domestic business travelers flying through Reagan National are estimated to have spent $1.3 billion in 2009 on area lodging, food, car rentals, entertainment, retail goods, taxis, and "other purchases" which include conference fees, metro and bus fares, parking fees, gasoline, internet access, personal items, etc.[4] Domestic leisure travelers flying through Reagan National spent an estimated $2.6 billion. Total expenditures for business and leisure visitors combined amount to an estimated $3.9 billion during 2009.

International Travelers – Dulles International

At Dulles International, there were 6.2 million international passengers using the airport in 2009. Of these, the survey indicates that 35.7 percent (2,231,588) could be classified as visitors; 14.3 percent business and 21.4 percent leisure/personal. The median stay for both business and leisure/personal travelers was four nights. International business travelers spent an estimated $1.2 billion in the Washington DC area while international leisure/personal travelers using Dulles International spent an estimated $1.0 billion. Total expenditure for international visitors flying through Dulles International amounted to $2.2 billion in 2009.

International Travelers – Reagan National

Reagan National serves relatively few international visitors. Only 4.6 percent of all passengers using Reagan National can be classified as international. Of the estimated 802,672 international passengers using Reagan, 35.4 percent were traveling on business and 33.8 percent were traveling for leisure or personal reasons. The median stay for both sectors was four nights. Business travelers flying through Reagan National spent an estimated $533.6 million in 2009 and leisure/personal travelers spent an estimated $1.0 billion. Aggregate spending for international travelers flying through Reagan National is estimated to be $1.5 billion.

The expenditure profile of domestic business visitors to the region is provided below. Because the distribution of expenditures was skewed to the left, Berger uses the median as the measure of central tendency in the data.

[3] Ibid.
[4] It should be noted that respondents were also asked about their "duty free" purchases but because these on-airport outlets are covered in the tenant survey we omitted this category to avoid double counting.

Table AB1
Domestic Business Visitor Expenditure Profile

Expenditure	Estimated Median Expenditures		Total Estimated Expenditures		
	Dulles Median/Person	National Median/Person	Dulles	National	Total
Lodging	$200	$207	$407,274,488	$926,265,162	$1,333,539,651
Food	$50	$50	$111,439,279	$243,517,043	$354,956,322
Rent-a-car	$60	$58	$52,913,615	$39,221,933	$92,135,547
Entertainment	$30	$25	$13,468,920	$20,463,617	$33,932,537
Retail	$25	$20	$12,426,682	$34,651,725	$47,078,407
Taxi	$20	$25	$14,110,297	$56,957,067	$71,067,365
Total*			$613,557,413	$1,327,570,335	$1,941,127,748

*Total expenditures include those classified as "Other" in the survey instrument.

The estimated spending profile of domestic visitors traveling to the region for leisure or personal reasons is provided in Table AB2.

Table AB2
Domestic Leisure/Personal Visitors Expenditure Profile

Expenditure	Estimated Median Expenditures		Total Estimated Expenditures		
	Dulles Median/Person	National Median/Person	Dulles	National	Total
Lodging	$134	$150	$902,038,761	$1,154,616,820	$2,056,655,581
Food	$50	$50	$658,092,435	$729,467,215	$1,387,559,651
Rent-a-car	$50	$50	$185,873,436	$67,128,885	$253,002,321
Entertainment	$40	$40	$208,982,025	$247,034,296	$456,016,322
Retail	$48	$30	$276,800,711	$241,663,985	$518,464,697
Taxi	$20	$25	$54,254,949	$140,970,658	$195,225,607
Total*			$2,295,687,642	$2,606,927,867	$4,902,615,509

*Total expenditures include those classified as "Other" in the survey instrument.

The spending profile and total estimated expenditures of international visitors to the area are given in Tables AB3 and AB4.

Table AB3

International Business Visitor Expenditure Profile

Expenditure	Estimated Median Expenditures		Total Estimated Expenditures		
	Dulles Median/Person	National Median/Person	Dulles	Reagan National	Total
Lodging	$200	$300	$563,769,564	$327,718,256	$891,487,820
Food	$50	$65	$199,668,387	$73,845,847	$273,514,234
Rent-a-car	$100	$45	$93,961,594	$2,434,478	$96,396,072
Entertainment	$20	$50	$18,792,319	$24,344,785	$43,137,104
Retail	$75	$100	$176,177,989	$48,689,570	$224,867,558
Taxi	$75	$38	$105,706,793	$20,287,321	$125,994,114
Total*			$1,159,486,070	$520,042,056	$1,679,528,126

*Total expenditures include those classified as "Other" in the survey instrument.

Table AB4

International Leisure/Personal Visitor Expenditure Profile

Expenditure	Estimated Median Expenditures		Total Estimated Expenditures		
	Dulles Median/Person	National Median/Person	Dulles	National	Total
Lodging	$90	$350	$189,366,170	$427,886,054	$617,252,223
Food	$50	$60	$219,970,803	$275,069,606	$495,040,409
Rent-a-car	$80	$0	$15,302,317	$0	$15,302,317
Entertainment	$50	$50	$143,459,219	$106,971,513	$250,430,733
Retail	$100	$100	$286,918,439	$183,379,737	$470,298,176
Taxi	$40	$40	$68,860,425	$24,450,632	$93,311,057
Total*			$1,008,996,510	$1,017,757,542	$2,026,754,052

*Total expenditures include those classified as "Other" in the survey instrument.

Appendix C – Airport Dependent Industries Methodology

The Louis Berger Group's (LBG) approach toward estimating the impact of airport-dependent industries follows an approach developed and applied in an economic impact study of air freight in Atlanta, GA.[5] This approach is heavily reliant on inferences made through revealed preferences contained in trade data and absent a more thorough and expensive data collection process, makes two major simplifying assumptions. The following explains the process:

Due to confidentiality restrictions, it is not possible to obtain state-level export data by specific commodities from the U.S. Census Bureau. However, it is possible to get separate data sets for state-level exports (direction of trade, tonnage, value and mode of transport) and for ports (both airports and seaports, direction of trade, tonnage, value and commodities at the harmonized 6-10 digit code.). The data sets cannot be combined but estimates of commodities moving domestically and internationally through any port can be estimated. Drilling down the trade activity to the county level will be left to IMPLAN. An example of this procedure is outlined below. The Atlanta study mentioned above relies on two data sets:

- State exports by port of exit by country, value and weights by method of transportation and,
- US exports/imports by port of exit/entry by 6-digit HS commodity by country.

Both of these data sets are available for purchase through WISER (World Institute for Strategic Economic Research) located in Holyoke, MA. Alternatively, they are also available directly from the U.S. Census Bureau. The advantage of WISER is that the data is available interactively and online.

To derive county or MSA-level tonnage/value, requires estimates and two very strong assumptions. The basic equation required to derive estimates of the value of export trade through the port by MSA and commodity is:

Wiser Data | Wiser Data | Port Data | IMPLAN

$$X_{MSA} = \left[\frac{StateTrade_{Port}}{TotUSTrade_{Port}}\right]\left[TotalUSTrade^{Port}_{Com\,mod\,ity}\right]\left[AdjForDomC\ \arg o\right]\left[\frac{MSA\ \mathrm{Re}\,v_{Com\,mod\,ity}}{TotState\ \mathrm{Re}\,v_{Com\,mod\,ity}}\right]$$

The first term derives the share of the relevant State's trade of all trade that is exported through the port. Multiplying by the second term provides the total volume exported by the State by commodity through the port. The third term makes an adjustment for domestic cargo. This is a constant ratio to be

[5] See Hartsfield - Jackson Atlanta International Airport 2005 Economic Impacts. Available at http://www.edrgroup.com/library/aviation/regional-economic-impact-of-atlanta-hartsfield-international-airport.html

applied to all commodities. The final term makes use of the mapping between the Harmonized codes and the IMPLAN sectors and in turn derives a revenue share between the MSA and the State by sector. It is these revenues that will generate the jobs, income, and tax impacts.

Step 1) Assemble Cargo Data

The approach requires aggregating selected airport export tonnage and value by state of origin first. Then, the ratio of the relevant state(s) tonnage moving to international destinations through the port to all tonnage moving through the port to international destinations is calculated. This calculation will provide the basis for allocating total export cargo through the port to the relevant market area defined by State.

Step 2) Domestic vs. International Cargo

In this step, the ratio of domestic shipments to total (domestic + international) shipments is calculated. This constant ratio will be used to adjust all shipments by commodity. The assumption is that this ratio does not change by commodity. Obviously, this is a strong assumption and unlikely to be fully supported should more granular data become available. Therefore, it should be a noted that this simplifying assumption was made because there is no other practical recourse. For this reason, it is better to lean towards a more conservative estimate of domestic cargo movements.

Step 3) Application of IMPLAN

Step (3) is the process of assigning traded commodities to IMPLAN industrial sectors and then letting IMPLAN generate the impacts.

The above methodology relies on strong assumptions regarding the amount of domestic and international cargo by commodities and the share of exports by commodity. Concerning the latter, the assumption is that the share of exports for the total state trade is the same across all commodities. Nevertheless, this methodology is considered appropriate as a rough estimate of off-airport impacts.

Appendix D – Tax Estimation Method

One of the benefits of successful transportation facilities such as airports, rail, and roads are the added tax revenues accruing to state and local governments. To consider the tax effects of the Airports Authority facilities, four specific taxes were considered. At the federal level, airport passenger and cargo taxes were estimated, at the state level personal income, sales tax receipts, corporate income tax were estimated, and the derivation of each estimated tax receipt increase is outlined below.

Personal Income Tax Estimation

Personal income tax revenues are estimated for Virginia, the District of Columbia, and Maryland. Because each state has their own tax policies such as income brackets, rebates and exemptions, this study estimated personal income tax impact using the effective tax rate for each state. The state-specific effective tax rates estimate a relationship between earnings by place of work and tax receipts.

The effective tax rate is estimated using Bureau of Economic Analysis (BEA) data on personal income and earnings by place of work from 1997 to 2007 for Virginia, DC and Maryland and on tax revenue data from the U.S. Census Bureau data, State and Local Government Finance.

Below is a summary of the figures used in the three step equation:

- Personal Income (PI) = Net earnings by place of residence
  - (Earnings by Place of Work (EPOW) less personal contribution for social insurance plus adjustment for residence)
  - Plus dividends, interests and rents
  - Plus transfer payments
- PI = p*EPOW
  - p = ratio of PI to EPOW
- IIT (Individual Income Tax) = t*PI
  - t = effective income tax rate (for state and local jurisdictions)
- IIT = t*p*EPOW

Table AD1 summarizes the estimations of each equation for the states within the MSA using data from the Bureau of Economic Analysis's State and Local Area Personal Income (1997-2007).

Table AD1 State Income Tax Calculations

Parameters for Income Tax Estimation for the District of Columbia

Parameter	1997	2000	2004	2007	AVE
PI:EPOW	0.32	0.33	0.35	0.37	0.34
IIT/PI (%) t	4.00%	4.74%	3.94%	3.50%	4.02%
IIT/EPOW (%) (t*p)	1.29%	1.56%	1.38%	1.30%	1.38%

Parameters for Income Tax Estimation for the State of Maryland

Parameter	1997	2000	2004	2007	AVE
PI:EPOW	1.15	1.17	1.15	1.14	1.15
IIT/PI (%) t	4.17%	3.97%	3.80%	4.05%	3.98%
IIT/EPOW (%) (t*p)	4.80%	4.63%	4.37%	4.60%	4.58%

Parameters for Income Tax Estimation for the State of Virginia

Parameter	1997	2000	2004	2007	AVE
PI:EPOW	1.32	1.23	1.20	1.22	1.24
IIT/PI (%) t	2.76%	3.22%	2.81%	3.12%	2.95%
IIT/EPOW (%) (t*p)	3.65%	3.96%	3.37%	3.81%	3.66%

Sales Tax Estimation

The states of Maryland and Virginia, and the District of Columbia impose a sales tax on the purchase of goods and services within the state boundaries. The general sales taxes for each state are listed below:

Maryland sales taxes

- Maryland's state sales tax is six percent.
- There are no general local sales taxes in Maryland.

District of Columbia sales taxes

- The general consumer sales tax in the District of Columbia increased on October 1, 2009, to six percent.[6]

Virginia sales taxes

- Virginia's state sales and use tax rate is four percent.
- There is an additional 1 percent local tax, for a total of a five percent combined sales tax on most Virginia purchases.

[6] DC Code Citation: Title 47, Chapters 20 and 22 which can be found at http://cfo.dc.gov/cfo/cwp/view,a,1324,q,612629.asp

The estimation of sales taxes involves building a relationship between sales taxes (ST) and estimated sales revenues because sales data are not readily available. Sales were estimated using the following formula:

- $Sales_i = Earnings_i/CVA_i$

Where index $_i$ represents industry $_i$; earnings data for an industry is available from the BEA, and CVA is the technical coefficient for value added (the share of labor costs and other value added in total input), which are available in the U.S. I-O table.[7] Then, the relationship between sales taxes and estimated sales can be described using the equation:

- $STR^8 = s*$(Estimated Sales) therefore s= STR / (Estimated Sales)

Where STR is the sales tax receipts collected by the state and *s* is a percentage representing the sales tax rate.

Table AD2 illustrates the total estimated sales for each state along with their respective sales tax receipts and total effective sales tax rate. The effective sales tax rate shown below accounts for all sales taxes made by consumers and includes hotel/motel stays, entertainment tickets, restaurant purchases, retail and wholesale, and any other sales tax that may be created through a purchase of a good or service through the state's economy.

Table AD2
Calculation for Total Effective Sales Tax Rate (in $1,000)

	District of Columbia	Maryland	Virginia
Total sales	74,967,273	240,843,393	322,972,997
Total Sales Tax Receipts	1,427,686	6,796,650	5,943,983
Effective Sales Tax Rate	1.9%	2.8%	1.8%

[7] A portion of "other value added" reflects income received from sources other than those comprised in the Earnings by Place of Employment (EPOW) used to estimate income tax rates. Specifically, other proprietor's income is included in both EPOW and other value added. Therefore, the actually tax rates for all industries may be slightly larger because a portion of CVA is attributable to these other income streams.

[8] Sales tax receipts are collected from the U.S. Census State and Local Government Finance Data found at http://www.census.gov/govs/www/financegen.html Sales Tax Includes taxes applicable with only specified exceptions (e.g., food and prescribed medicines) to sales of all types of goods and services or to all gross receipts, whether at a single rate or at classified rates; and sales use taxes. Also includes taxes on specific commodities, businesses, or services not reported separately above (e.g., on contractors, hotel/motel, lubricating oil, fuels other than motor fuel, motor vehicles, meals, soft drinks, margarine, etc.). For state governments, includes sales or use taxes based on sales price, where the authorizing legislation is separate from the state's general sales and use tax law.

Corporate Income Tax Estimation

In addition to personal taxes, states in MSA region levy a corporate income tax on all corporate entities maintaining an appropriate nexus of business activity within the MSA. This encompasses those entities incorporated in the state, as well as those conducting substantial business activities within the state boundaries. This tax only impacts companies that are incorporated in the state and thereby does not capture businesses that are owned in a proprietor relationship. This tax is included in the personal income tax.

Table AD3 provides a derivation of the relationship between total industry sales for each state and corporate tax receipts and corporate income tax receipts.

Table AD3
Estimates Total Sales and Effective Corporate Income Tax Rate (in $1,000)

	District of Columbia	Maryland	Virginia
Total Sales	$74,967,273	$240,843,393	$322,972,997
Total Corporate Tax Receipts[9]	446,849	874,537	729,050
Tax Corporate Rate	0.6%	0.4%	0.2%

Federal Passenger and Cargo Tax Estimations

In addition to state and local taxes, the Airports Authority airport facilities generate federal taxes based on sales of airline tickets and transportation of cargo. Some of the taxes are flat taxes or taxes that do not depend on the price of the airline ticket, while others are a percentage of the total ticket price.

Taxes that return to the facility such as the passenger facility charge and security fees are not calculated in the following analysis. Taxes on fuel sales are also not calculated.

The overall calculation of federal taxes on passengers assumes a transfer rate of 23% for Dulles International and 5% for Reagan National. This means that some of the passengers use the airport as a transfer hub and board another aircraft and an Airports Authority airport is not their final destination but a layover stop instead.

[9] Corporate Income tax receipts are collected from the U.S. Census State and Local Government Finance Data found at http://www.census.gov/govs/www/financegen.html. The Corporate tax includes taxes on corporations and unincorporated businesses (when taxed separately from individual income), measured by net income, whether on corporations in general or on specific kinds of corporations, such as financial institutions and franchise license taxes; organization, filing and entrance fees; taxes on property measured by amount of corporate stock, debt, or other basis besides assessed value of property; and other licenses applicable with few, specified exceptions to all corporations. The tax does not include income taxes on gross income or receipts of corporations and combined corporation and individual income taxes not separable by type.

Passenger Taxes

Federal taxes and fees that are charged by airlines to passengers can equate to $0.13 per revenue (paying) passenger flown mile[10]. Table 2 lists historical and current taxes and fees[11] that are applied to tickets sold within the Dulles and Reagan airports.

Table AD4
Federally Levied Passenger Taxes and Fees

Airport and Airway Trust Fund (FAA)			
Special Aviation Tax or Fee	**1972**	**1992**	**2009**
Passenger Ticket Tax (domestic)	8.00%	10.00%	7.50%
Flight Segment Tax (domestic)	---	---	$3.60
International Departure Tax[12]	$3.00	$6.00	$16.10
International Arrival Tax[9]	---	---	$16.10
Immigration and Naturalization Fee		$6.00	$7.00

Source: Air Transport Association of America, National Business Aviation Association

These taxes are periodically reauthorized by Congress and at times have expired without reauthorization. The segment tax is legislated to increase annually with the Consumer Price Index (CPI) effective January 1, rounded up to the nearest dime[13]. Table AD5 shows the historical domestic taxes levied on passengers.

[10] Effective Tax rate of airline passengers provided by Air Transport Association of America and can be found at: http://www.airlines.org/economics/finance/MoPaYield.htm
[11] The taxes and fees reviewed do not include security surcharges, passenger facility charges, or fuel tax.
[12] Does not apply to those transiting the United States between two foreign points;
[13] Historical aviation taxes can be found the Air Transport Association Website at: http://www.airlines.org/economics/taxes/excisetaxes.htm

Table AD5

Historical Federal Passenger Tax Rates

EFFECTIVE DATE	EXCISE TAX (%)	SEGMENT TAX ($)
1941	5.00	-----
1942	10.00	-----
1943	15.00	-----
1955	10.00	-----
1956	5.00	-----
July-70	8.00	-----
July-80	5.00	-----
September-82	8.00	-----
December-90	10.00	-----
October-97	9.00	$1.00
October-98	8.00	$2.00
October-99	7.50	$2.25
January-00	" "	$2.50
January-01	" "	$2.75
January-02	" "	$3.00
January-03	" "	$3.00
January-04	" "	$3.10
January-05	" "	$3.20
January-06	" "	$3.30
January-07	" "	$3.40
January-08	" "	$3.50
Januray-09	" "	$3.60

Source: Air Transportation Association, National Business Aviation Association

The taxes are broken down by domestic and foreign passenger types. The domestic tax has a flat tax amount, flight segment tax, a rate based tax, and a passenger ticket tax. The calculation of the flight segment tax is calculated by multiplying the total number of passenger landings and takeoffs at an airport for 2009. Each landing and takeoff is counted as a flight segment and does not discriminate between transferring passengers or any other arrival or departing passengers.

Table 3 shows the calculation of both Dulles and Reagan's tax impact from this type of tax. Since the total number of passengers includes transfers as well as passengers originating from these airports or have these airports as their final destination, all of them can be counted as either taking off or landing at the airport. For this reason the $3.70 is applied to the total domestic passenger count for both airports.

Table AD6
Domestic Aviation Operations Tax Estimates

	Dulles	Reagan[14]
Number of Domestic Passengers	16,964,895	17,208,234
Flight Segment Tax[15]	$3.60	
Total Flight Segment Tax	$61,073,622	$61,949,644
Non Transferring Passengers[16]	13,062,969	16,347,823
Round Trip Passengers	6,531,485	8,173,911
Average Domestic Fare Price[17]	$316.44	
Total Ticket Sales	$2,066,822,979	$2,586,552,514
Passenger Ticket Tax Rate	7.5%	
Passenger Ticket Tax	$155,011,723	$193,991,439
Total Domestic Ticket Tax	$216,085,345	$255,941,083

Other than the flat flight segment tax, additional taxes that are levied on domestic passengers are based on the total price of the fare. Currently, the passenger ticket tax is 7.5 percent of the total fare price. Table AD7 provides an estimate for the total number of round trip tickets sold. This is accomplished by removing the percentage of passengers who may be transferring to another flight in the airports. The remaining passengers are assumed to be round trip passengers who are using one of the Airports Authority airports as a major origin or destination point. The average ticket price for U.S. domestic tickets was $316.44 according to the Bureau of Transportation Statistics. The passenger ticket rate is applied to the average rate and multiplied by the number of round trip tickets being purchased with an Airports Authority airport as its main origin or destination.

[14] Assumes 2.1% of total Reagan National passengers are passengers on Air Canada. % of international passengers is the average of Air Canada operations as a % of total Reagan National Operations by carrier in 2009
[15] Flight Segment equates to a landing and take off
[16] Assumes that 23% of passengers are transfer passengers at Dulles and 5% for Reagan. Provided by Airports Authority
[17] Source: Bureau of Transportation Statistics. Average ticket price is the four quarter average from 2008 Q4 to 2009 Q3 for national domestic tickets

Table AD7

Historical Departure and Arrival Tax for International Passengers

EFFECTIVE DATE	DEPARTURE TAX ($)	ARRIVAL TAX ($)
July-70	$3.00	-----
July-80	$0.00	-----
September-82	$3.00	-----
January-90	$6.00	-----
October-97	$12.00	$12.00
January-99	$12.20	$12.20
January-00	$12.40	$12.40
January-01	$12.80	$12.80
January-02	$13.20	$13.20
January-03	$13.40	$13.40
January-04	$13.70	$13.70
January-05	$14.10	$14.10
January-06	$14.50	$14.50
January-07	$15.10	$15.10
January-08	$15.40	$15.40
January-09	$16.10	$16.10

Source: Air Transportation Association, National Business Aviation Association

The federal government also collects an Immigration and Naturalization Fee for each international arrival. The fee charges over time are presented in Table AD8.

Table AD8

Historical INS Fees for Arriving International Passengers

EFFECTIVE DATE	PASSENGER FEE ($)
1-Dec-86	$5.00
1-Jan-94	$6.00
1-May-02	$7.00

Source: Air Transportation Association

The International Passenger Federal Taxes and Fees calculation is a presented in Table AD9.

Table AD9
International Passenger Federal Taxes and Fees Tax

	Dulles	Reagan
Number of International Passengers	6,248,446	369,125
Non-Transferring International Passengers	4,811,303	350,668
Arriving (Non-Transferring) Passengers	2,405,652	175,334
International Arrival Tax	$16.10	$16.10
INS Fee	$7.00	
Total Arrival Tax	$55,570,555	$4,050,219
Number of International Passengers	6,248,446	369,125
Non-Transferring International Passengers	4,811,303	350,668
Departing (Non-Transferring) Passengers	2,405,652	175,334
International Departure Tax	$16.10	$16.10
Total Departure Tax	$38,730,993	$2,822,880
Total International Passenger Tax	$94,301,547	$6,873,099

Cargo Taxes

The Federal Excise Tax (FET) for U.S. domestic shipments as regulated by the Internal Revenue Service (IRS) is based on the chargeable weight of the shipment, the valuation charges declared on the air waybill, and the following fees:

- Fuel Surcharge;
- Security Surcharge;
- Dry Ice (Dangerous Goods) Fee; and

FET is calculated at 6.25% on shipments sent by air.

Table AD10
International Passenger Federal Taxes and Fees Tax

	Dulles	Reagan
Cargo (in 1,000 of lbs)	623,323	12,801
Estimated Cargo Fare per lbs	$2.60	$2.60
Total Cargo Fare (in 000,$)	$810,320	$16,641
Way Bill Tax Rate	6.25%	
Estimated Waybill Tax Collections (in 000,$)	$50,645.0	$1,040.1

Source: Airport and Airway Trust Fund Receipts as of 2007, U.S. Department of Transportation Statistics (RITA) U.S. Air Carrier Traffic Statistics 2009

Appendix E – Airport Surveys

To supplement the Airports Authority tenant data, The Louis Berger Group, Inc. (LBG) conducted a survey of airlines and non-airline tenants at both Dulles International and Reagan National Airports. The objectives of the surveys were as follows:

- To obtain more detailed information about where airport employees reside;
- To obtain a better understanding of where flight crews based at Dulles or Reagan National reside and the amount of time spent in the metropolitan area by flight crew who do not reside locally;
- To obtain a better understanding of the specific characteristics of on-airport businesses in terms of revenues, payroll and employment relative to the average business in the same industries to accurately model the economic impact of the airports; and
- To obtain information about tax payments made by on-airport businesses.

In April 2010, LBG distributed a total of 267 surveys. The non-airline tenant survey was sent to 100 businesses at Dulles International Airport and 114 businesses at Reagan National Airport. The airline survey was sent to 35 airlines at Dulles and 18 airlines at National. A copy of the surveys is attached.

The Dulles International Airport's airline survey was designed as a web survey due to the availability of email addresses for the survey participants. Airlines were sent an invitation by e-mail with a link to the web survey. The airport tenant surveys were sent by mail as was the Reagan National airline survey. The invitation letter and email explained the purpose of the survey, assured confidentiality, indicated the due date, and provided contact information. The mail version was printed on the Airports Authority letterhead and signed by the study's coordinator. The email version was mailed from a Berger email account named Surveys@louisberger.com. A copy of the invitation letter is attached.

Non-respondents to the web survey received a follow up e-mail three weeks after first email invitation. Non-respondents to the mail survey were followed up on by Airports Authority staff through announcements on meetings and emails when available.

By June 2010, LBG had received a total of 68 surveys, including 15 non-airline tenant surveys from Dulles, 42 surveys from non-airline tenants at Reagan, six surveys from Dulles airline tenants and five surveys from Reagan airline tenants. The number of responses and response rates are presented in Table AE1 below.

Table AE1
Airline and Non-Airline Tenant Surveys

	Number of Surveys Distributed	Number of Responses Received	Response Rate
Dulles non-airlines	100	15	15%
National non-airlines	114	42	37%
Dulles airlines	35	6	17%
National airlines	18	5	28%
Total	**267**	**68**	**25%**

Source: The Louis Berger Group, Inc.

Non-Airline Tenant Surveys

A total of 57 non-airline tenants responded to the airport tenant survey, 15 were located at Dulles, 42 were located at Reagan. The respondents collectively reported 2,182 permanent employees at Dulles International and 518 permanent employees at Reagan National.

Table AE2 summarizes the participating tenants by industry. About 28 percent of respondents self classified as Food Services and Drinking Places and an additional 26 percent classified as retail trade.

Table AE2
Airport Tenants and Airport Tenant Employees by Industry

Purpose of Business	Dulles		National		Total	
	# of Jobs	# of Businesses	# of Jobs	# of Businesses	# of Jobs	# of Businesses
Food Services & Drinking Places	404	11	175	5	579	16
Retail Trade	221	12	104	3	325	15
Passenger Ground Transportation	43	2	63	2	106	4
Rental Car	93	2	104	2	197	4
Other Aviation-specific	639	9	67	2	706	11
Other	782	6	5	1	787	7
Grand Total	**2,182**	**42**	**518**	**15**	**5,400**	**114**

Source: The Louis Berger Group, Inc.

Average payroll for the 16 participants in the food services and drinking places sector was $22,000 per employee; average sales revenue was $78,000 per employee. Average payroll and average sales revenue for the 14 retail respondents was $19,143 and $140,612, respectively. The MSA-wide averages included in the IMPLAN system are $23,218 for employee compensation and $64,694 for sales revenues for food services and $16,775 in employee compensation and $89,050 in sales for miscellaneous retail. Because the number of survey results was limited, LBG conservatively used the MSA wide averages.

Table AE3
Comparison of Survey Results to IMPLAN MSA-wide averages

	Payroll per Employee		Sales per Employee	
	Survey	**IMPLAN**	**Survey**	**IMPLAN**
Food Services	$22,000	$23,218	$78,000	$64,694
Retail	$19,143	$16,775	$169,200	$140,612

Source: The Louis Berger Group, Inc.

Several respondents did not provide tax payment information. The 26 Reagan tenants who reported state government tax payments paid a total of $6.3 million to the Commonwealth of Virginia. Retail and food service tenants who reported local government tax payments paid an average of $61,700 in state taxes. The 13 Dulles International tenants collectively paid $5.0 million in taxes to the Commonwealth of Virginia. The combined local tax payment made by the 21 Reagan tenants who responded to this question in 2009 was $1.4 million. Retail and food service tenants paid an average of $12,500 in local taxes. While not all respondents provided information about the locality to which the payments were made, the limited results show that payments were made to Loudoun and Arlington County in VA. Information on local government tax payments by Dulles International tenants was very limited.

As expected, the majority of airport tenant employees reside within the Washington D.C. MSA - a total of 98.5 percent of Dulles International and 98.4 percent of Reagan National tenants. Table AE4 presents a breakdown of employees by residential location.

Table AE4
Residential Location of Airport Tenant Employees

Place of Residence	Dulles	Reagan
MSA within VA	63.9%	80.5%
MSA within MD	19.5%	9.5%
DC	15.1%	7.4%
MSA within WV	0.0%	1.0%
MSA Subtotal	**98.5%**	**98.4%**
Non-MSA - Other VA and MD	0.9%	0.3%
Rest of the World Total	0.6%	1.3%
Total	**100.0%**	**100.0%**

Source: The Louis Berger Group, Inc.

Airline Surveys

Out of the nine airline surveys received, seven provided both passenger and freight transportation, and two provided only passenger transportation.

Eight airlines reported the number of employees, ranging from 2 to 114. Only four respondents provided information about the residential location of their employees. Consistent with expected commuting patterns, at least 90 percent of each airline's employees live within the Washington D.C., MSA and at least 99 percent live within the states that are part of the MSA (i.e., Virginia, D.C., Maryland, and West Virginia).

As most airlines did not report local revenue and payroll information, average sales and payroll per employee could not be determined based on the survey.

None of the airlines reported local and state tax payments.

METROPOLITAN WASHINGTON AIRPORTS AUTHORITY

March 31, 2010

Dear Airline Tenant:

The Metropolitan Washington Airports Authority (MWAA) is conducting an Economic Impact Study to quantify the economic impacts generated by passenger, freight and Capital Development activity at Ronald Reagan Washington National and Washington Dulles International Airports. Additionally, the study will quantify the jobs and tax impacts for the MWAA Toll Road and for construction activity associated with the MetroRail Project.

The economic impact of the airports to the surrounding communities is significant. Quantification of the impact provides valuable information to the MWAA, to residents, area governments and businesses. In an effort to capture this economic information, part of the economic study is to reach out and collect data from the Airline/Airport Sector, Passenger Ground Transportation, Freight Transportation, Construction and Consulting, and Visitor industry through a survey. The data will be analyzed and used to prepare a comprehensive economic analysis.

Enclosed with this cover letter is a survey with specific questions concerning your business. Please take a moment to fill out the survey and return it to our consultants within two weeks of receiving this letter in the enclosed prepaid-postage envelope.

If you have specific questions about this survey or believe that this survey should be forwarded to another individual within your organization, please contact Jeremy Martelle at (202) 331-7775 (ext. 9311) or at jmartelle@louisberger.com.

Your assistance is greatly appreciated.

Sincerely,

Marc C. Champigny
Project Manager, MWAA Economic Impact Study

Reagan National Airport Airline Tenant Survey
Metropolitan Washington Airports Authority

This survey has been prepared on behalf of the Metropolitan Washington Airports Authority to estimate the economic impacts of passenger and air freight activity at Ronald Reagan Washington (National) Airport on the Washington D.C. metropolitan region.

Your firm's operating experience will be of invaluable assistance in our effort to collect accurate information for the year 2009 – the subject year for this study. All information provided by your firm will be treated with strict confidentiality. Your firm's responses will be organized and reported in a summary format only.

Please take a few minutes to complete and return this survey with the stamped, self-addressed envelope that was provided. You may need assistance from your payroll department for some of the questions *If you have specific questions about this survey, please contact Jeremy Martelle* at *(202) 331-7775 (ext. 9311)*

Name of Business _____

On-Airport Building Location_____

Contact Person _____

Title _____

Telephone/Email _____

1. Which of the following best describes your airline operations at Reagan National Airport? *Please select one.*

Airline Operations

☐ Passenger Only
☐ All-Cargo/Freight Only
☐ Passenger and Freight/Cargo
☐ General Aviation
☐ Other

2. In December 2009, how many employees of your airline reported to work at Reagan National Airport?

Employment	Total
On-Airport Employees - Full-Time	
On-Airport Employees - Part-time	
Reagan Airport Based Flight Crew	
Total Number of Airport Employees	

3. In 2009, what was your airline's total gross payroll for employees at Reagan National Airport? *If possible, please list payroll for on-airport employees separately from payroll for flight crew.*

Categories	Total Payroll
On-Airport Employees	
Flight Crew	
Airport Employees and Flight Crew – Combined	

4. During 2009, what were the total revenues of your airline that were due to operations at Reagan National Airport?

$_____

If you cannot provide the exact figure, please check the range that best applies:

- ☐ $10 million or less
- ☐ $10 million to $25 million
- ☐ $25 million to $50 million
- ☐ $50 million to $100 million
- ☐ $100 million to $250 million
- ☐ $250 million to $500 million
- ☐ More than $500 million
- ☐ Other _____

5. During 2009, what were the amount of taxes paid directly to governments for your operations at Reagan National Airport?

Local Government	$_____
District of Columbia	$_____
State of Virginia	$_____
State of Maryland	$_____

Please identify the name(s) of the local government(s) for which taxes were paid. If you paid taxes to more than one local government, please provide the amount for each.

6. What percentage of your Reagan National Airport-based flight crew resides locally?
Please provide a rough estimate of the percent of flight crew who live in each of the areas listed below. The map at end of this survey may help you with this question.

Regions	Percentage
Virginia Counties and Cities: Virginia Counties and Cities-Arlington, Clarke, Fairfax, Fauquier, Loudoun, Prince William County, Spotsylvania, Stafford, Warren County, Alexandria city, Fairfax city, Falls Church, Fredericksburg City, Manassas City, Manassas Park City	_____ %
Maryland Counties: Frederick, Montgomery, Calvert, Charles, Prince George	_____ %
West Virginia County - Jefferson	_____ %
District of Columbia	_____ %
Elsewhere in Virginia	_____ %
Elsewhere in Maryland	_____ %
None of the above	_____ %
Total	100 %

Additional Comments:

7. For those flight crew based at Reagan National who do NOT reside within the Washington DC Metropolitan Region, about how many nights a month do they stay in the area?

Average number of nights per month _____

Additional Comments:

8. What proportion of your employees who report to work at Reagan National Airport reside locally? (NOT including flight crew)
Please provide a rough estimate of the percent of employees who live in each of the areas listed below. The map at the end of this survey may help you with this question.

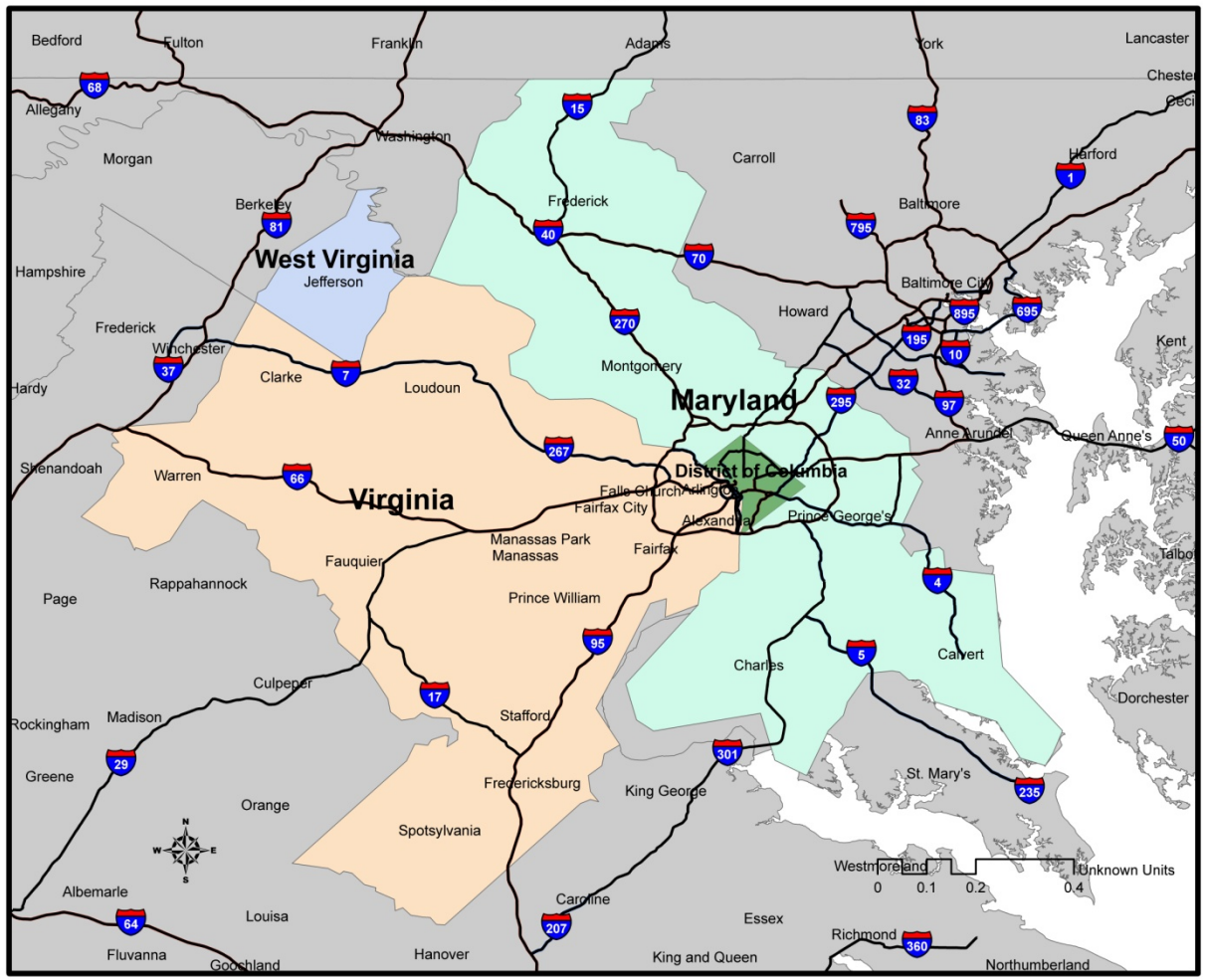
Regions	Percentage
Virginia Counties and Cities: Virginia Counties and Cities-Arlington, Clarke, Fairfax, Fauquier, Loudoun, Prince William County, Spotsylvania, Stafford, Warren County, Alexandria city, Fairfax city, Falls Church, Fredericksburg City, Manassas City, Manassas Park City	_____ %
Maryland Counties: Frederick, Montgomery, Calvert, Charles, Prince George	_____ %
West Virginia County - Jefferson	_____ %
District of Columbia	_____ %
Elsewhere in Virginia	_____ %
Elsewhere in Maryland	_____ %
None of the above	_____ %
Total	100 %

Additional Comments:

Thank you for your participation. Please return the survey in the stamped, self-addressed envelope provided or mail to:

Airline Tenant Survey
Attn: Jeremy Martelle
The Louis Berger Group, Inc.
2445 M Street, NW
Washington, D.C. 20037-1435
(202) 331-7775 (ext. 9311)

Metropolitan Region By State and Counties



METROPOLITAN WASHINGTON AIRPORTS AUTHORITY

April 5, 2010

Dear Airport Tenant :

The Metropolitan Washington Airports Authority (MWAA) is conducting an Economic Impact Study to quantify the economic impacts generated by passenger, freight and Capital Development activity at Ronald Reagan Washington National and Washington Dulles International Airports. Additionally, the study will quantify the jobs and tax impacts for the MWAA Toll Road and for construction activity associated with the MetroRail Project.

The economic impact of the airports to the surrounding communities is significant. Quantification of the impact provides valuable information to the MWAA, to residents, area governments and businesses. In an effort to capture this economic information, part of the economic study is to reach out and collect data from the Airline/Airport Sector, Passenger Ground Transportation, Freight Transportation, Construction and Consulting, and Visitor industry through a survey. The data will be analyzed and used to prepare a comprehensive economic analysis.

Enclosed with this cover letter is a survey with specific questions concerning your business. Please take a moment to fill out the survey and return it to our consultants within two weeks of receiving this letter in the enclosed prepaid-postage envelope.

If you have specific questions about this survey or believe that this survey should be forwarded to another individual within your organization, please contact Jeremy Martelle at (202) 331-7775 (ext. 9311) or at jmartelle@louisberger.com.

Your assistance is greatly appreciated.

Sincerely,

Marc C. Champigny
Project Manager, MWAA Economic Impact Study

Airport Tenant Survey
Washington Dulles International Airport
Metropolitan Washington Airports Authority

This survey has been prepared on behalf of the Metropolitan Washington Airports Authority to support a study of the regional economic impacts of Ronald Reagan Washington (National) and Washington Dulles International (Dulles) Airports.

Your firm's operating experience will be of invaluable assistance in our effort to collect accurate information for the year 2009 – the subject year for this study. All information provided by your firm will be treated with strict confidentiality. Your firm's responses will be organized and reported in a summary format only.

Please take a few minutes to complete and return this survey with the stamped, self-addressed envelope that was provided. *If you have specific questions about this survey, please contact Jeremy Martelle at (202) 331-7775 (ext. 9311) or by email at jmartelle@louisberger.com.*

Name of Business _____

On-Airport Building Location _____

Contact Person _____

Title _____

Telephone and Email _____

1. What is the primary purpose of your business/establishment at Dulles International Airport?

Please select from the list below and check the business type that most closely resembles your own.

Airline Operations
- ☐ Passenger
- ☐ All-Cargo/Freight
- ☐ General Aviation
- ☐ Aircraft Fueling / Aircraft Support
- ☐ Fixed Base Operator
- ☐ In-Flight Kitchen / In-Flight Entertainment

Airport Support Services
- ☐ Custodial Services & Maintenance
- ☐ Passenger Assistance Services
- ☐ Security Company
- ☐ Telecommunications
- ☐ Facility Management

Ground Transportation
- ☐ Taxi / Limousine
- ☐ Rental Car
- ☐ Buses & Transit
- ☐ Auto Service

Freight Services
- ☐ Courier
- ☐ Delivery
- ☐ Customs Broker
- ☐ Trucking

Retail & Other Services
- ☐ Retail Trade
- ☐ Food Services & Drinking Places
- ☐ Business Support
- ☐ Hotel

Public Government and Volunteer Agencies
- ☐ Metropolitan Washington Airports Authority
- ☐ T.S.A.
- ☐ Other U.S. Govt.
- ☐ Other State and Local

2. In December 2009, how many full - time and part - time employees were employed at Dulles International Airport by your establishment?

Please separately consider "permanent" employees and "temporary or seasonal" employees.

Employment	Full Time	Part-Time	Total
Permanent			
Temporary or Seasonal			

3. During 2009, what was the total gross payroll at your airport establishment? *(i.e., "gross payroll" includes employer contributions and before any employee deductions)*

$_____

4. During 2009, what were the total revenues of your airport establishment?

$_____

If you cannot provide the exact figure, please check the range that best applies:

- ☐ $100,000 or less
- ☐ $100,000 to $500,000
- ☐ $500,000 to $1,000,000
- ☐ $1,000,000 to $1,500,000
- ☐ $1,500,000 to $2,500,000
- ☐ $2,500,000 to $5,000,000
- ☐ $5,000,000 to $7,500,000
- ☐ $7,500,000 to $10,000,000
- ☐ $10,000,000 to $15,000,000
- ☐ More than $15,000,000

5. During 2009, what were the amount of taxes paid directly by your airport establishment to your local government, the District of Columbia, and the States of Virginia and Maryland?

Local Government $_____

District of Columbia $_____

State of Virginia $_____

State of Maryland $_____

Please identify the name(s) of the local government(s) for which taxes were paid. If you paid taxes to more than one local government, please provide the amount for each.

_____

_____

_____

_____

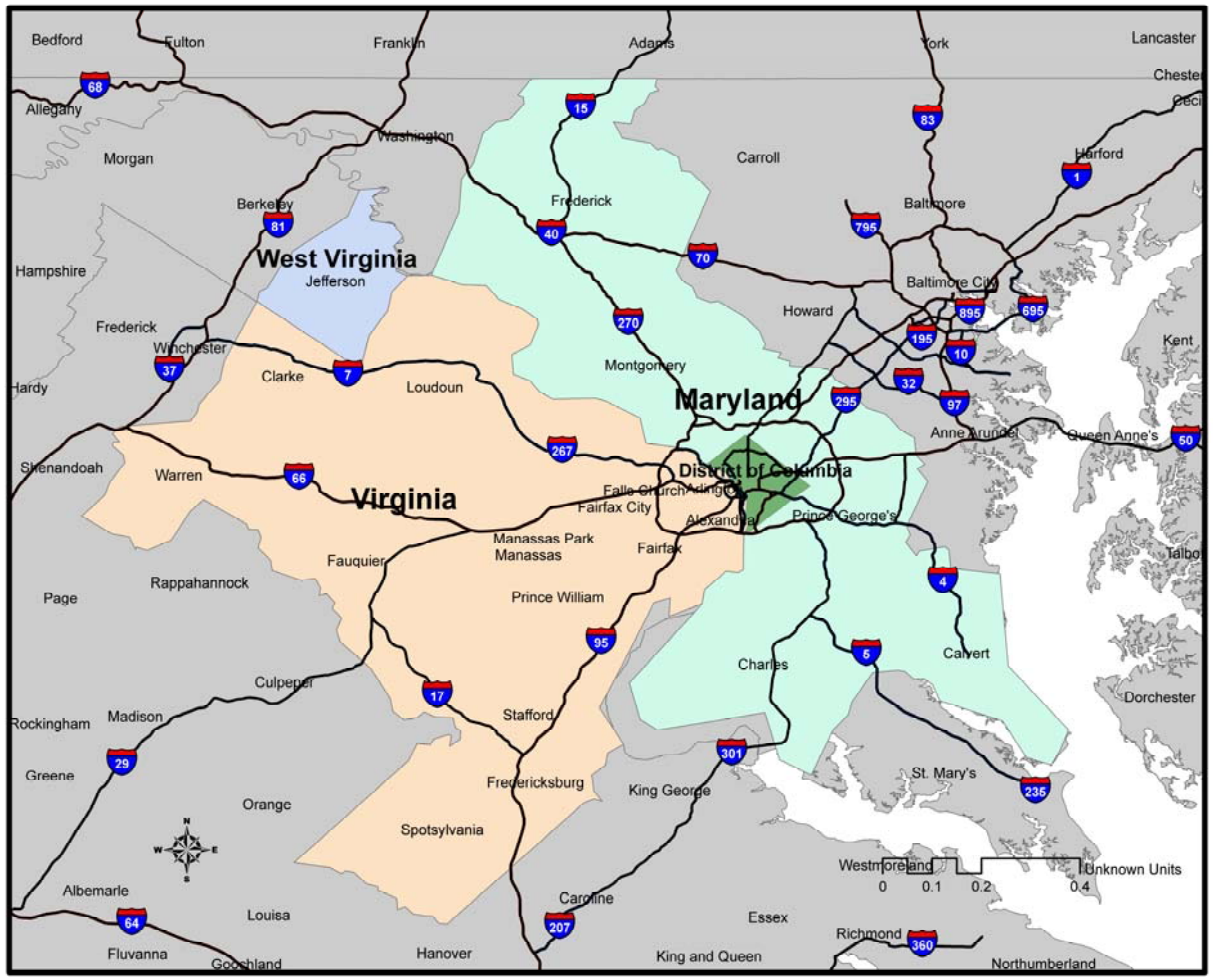
5. Where do your employees live? (*Please estimate where your employees live who report to work at your Airport-establishment. A map of the counties is attached.)*

Regions	Percentage
Virginia Counties and Cities: Arlington, Clarke, Fairfax, Fauquier, Loudoun, Prince William County, Spotsylvania, Stafford, Warren County, Alexandria city, Fairfax city, Falls Church, Fredericksburg city, Manassas city, Manassas Park city	_____ %
Maryland Counties: Frederick, Montgomery, Calvert, Charles, Prince George	_____ %
District of Columbia	_____ %
West Virginia County: Jefferson	_____ %
Other Virginia Counties	_____ %
Other Maryland Counties	_____ %
Rest of the World	_____ %
Total	100 %

Thank you for your participation. Please return the survey in the stamped, self-addressed envelope provided or mail to:

Airport Tenant Survey
Attn: Jeremy Martelle
The Louis Berger Group, Inc.
2445 M Street, NW
Washington, D.C. 20037-1435
(202) 331-7775 (ext. 9311)

Metropolitan Region By State and Counties



Appendix F – Comparison with 2005 Economic Impact

The Airports Authority commissioned an economic impact study of Dulles International and Reagan National Airports in 2005. This Appendix compares the aviation program economic impact in 2009 with the results of the 2005 economic impact study.

As expected based on national economic trends, the Airports Authority aviation program generated a considerable lower economic impact in 2009 than in 2005. Nationally, the number of jobs decreased by 2.1 percent between 2005 and 2009, with air transportation jobs decreasing by 7.7 percent[18]. Following national aviation trends, passenger volumes at both airports decreased. Passenger levels at Dulles International decreased by 14 percent while Reagan National passenger levels were more stable, experiencing only a 2 percent decrease, see Table AF1. Freight volume slightly decreased from 642 million pounds in 2005 to 636 million pounds in 2009, see Table AF2. With decreasing flight activity, the number of jobs at airlines and supporting businesses also experienced a decline.

Table AF1
Passenger Traffic

Airport	2009	2005	Change
Dulles International	23,213,341	27,052,118	-14.2%
Reagan National	17,577,359	17,847,884	-1.5%
Total	40,790,700	44,900,002	-9.2%

Table AF2
Freight (in 000s lbs)

Airport	2009	2005	Change
Dulles International	623,323	636,979	-2.1%
Reagan National	12,801	5,718	123.9%
Total	636,124	642,697	-2.0%

After adjusting for inflation, the Airports Authority's operating expenditures (not including depreciation and lease to the U.S. government) experienced a 1.3 percent increase between 2005 and 2009.[19] Based on detailed vendor records provided by the Airports Authority, aviation program capital expenditures totaled $313 million in 2009, a 35.1 percent decrease from 2005. Detailed vendor and payroll records

[18] Bureau of Labor Statistics
[19] Metropolitan Washington Airports Authority, Comprehensive Annual Financial Report, Year ended December 31, 2005; Metropolitan Washington Airports Authority, 2009 Comprehensive Annual Financial Report

showed a total of $225.4 million in operation and maintenance expenditures in 2009. Because the Airports Authority's operational expenditures were not reported in the 2005 economic impact study, a comparison between the two studies cannot be made.

While the number of visitors to Washington DC arriving at one of the two airports remained stable, average spending per visitor decreased from $970 in 2005 to $880 in 2009. Consequently, spending by out-of-town air passengers was reduced from $11.7 million to $10.6 million, a 9.4 percent decrease.

The overall economic impact of the aviation program, including the aviation, freight transportation, ground transportation, construction and consulting, and visitor sectors, in 2009 includes 310,460 jobs, a 15.7 percent decrease compared to 2005, see Table AF3. As expected by the changes in passenger traffic, the decrease is concentrated at Dulles International.

Table AF3
Comparison Total Employment Impact, 2009 and 2005

Airport	2009	2005	Change
Dulles International	175,640	230,404	-23.8%
Reagan National	134,820	137,894	-2.2%
Total	310,460	368,298	-15.7%

Source: The Louis Berger Group

Because the methodology and assumptions used for the 2005 economic impact study were not available to LBG, sectors for which the 2009 economic impacts are reported are not comparable to those for which the 2005 economic impacts are reported and a complete sector by sector comparison cannot be provided. A limited sector level comparison between the two studies can be made for the employment impacts. The employment impacts of the aviation program presented in the 2009 study include the Airports Authority employment, airport tenant employment, employment generated by operations and maintenance spending of the Airports Authority and the airport tenants, and employment generated by the Airports Authority's capital expenditures. Taking into account the multiplier effect, these employment impacts amounted to 42,614 jobs in 2009, which is a 17.0 percent decrease from the 51,347 jobs in 2005. The employment impact of off-airport spending by out-of-town air passengers experienced a similar decrease of 17.7 percent, from 316,950 jobs in 2005 to 260,850 jobs in 2009.

Total federal aviation taxes collected at Dulles International and Reagan National in 2009 totaled to $618 million, an increase of 13 percent compared to 2005. State personal and corporate income taxes and sales taxes reported in the 2009 report amount to $260.7 million for DC, $330.2 million of Maryland, and $770.4 million for Virginia, which amounts to $1.3 billion total. In the 2005 study, state and local tax revenues totaled to $1.0 billion.

Appendix G – Regional Economic Profile

Demographic and Economic Conditions

Current and Historical Demographics

From 2006 to 2008, Washington-Arlington-Alexandria, DC-VA-MD-WV Metropolitan Area had a total population of 5.3 million and 88 percent of the population of the MSA resides within Virginia or Maryland.

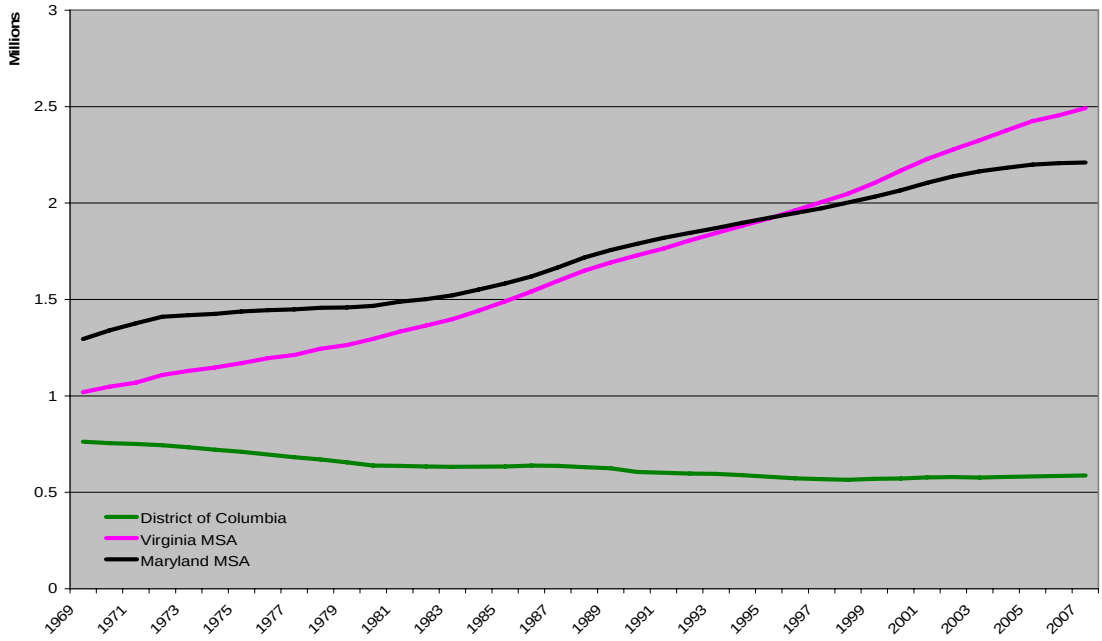
Table AG1
Washington MSA as Percent of Population by State

	D.C.	Maryland	Virginia	W. Virginia
Total population	11.1%	41.8%	46.1%	1.0%
Male	10.7%	41.4%	46.9%	1.0%
Female	11.4%	42.3%	45.4%	0.9%

Source: U.S. Census Bureau, 2006-2008 American Community Survey

The MSA has greater growth than the national average as a rapidly expanding housing market pushed suburban boundaries outward. The most significant population growth took place in Virginian counties in the MSA. Figure AG1 shows the historical population growth in the MSA's counties for each state. The figure highlights the expansion of Virginia counties' populations to overtake Maryland population as a portion of the MSA. The figure also illustrates the decline in the District of Columbia's population.

Figure AG1
1969-2007 MSA Population by State



Source: Bureau of Economic Analysis, U.S. Census

The demand for new homes in the MSA began in 1992 and did not abate until 2007 as the national housing market began to deflate. Figure AG2 shows a moving annual average of housing permits authorized in the MSA from 1989 to March 2010. The new housing market in the MSA accelerated in 1992 and again in 1998 with a sustained high plateau occurring from 1999 to 2006, the bulk of the housing market boom in the nation.

Figure AG2
New Private Housing Units Authorized By Building Permit
for Washington-Arlington-Alexandria, DC-VA-MD-WV
12 Month Average

Source: Federal Reserve Bank of St. Louis. U.S. Census

The age composition of the MSA has become older, the category of 65 and above increased by 3.0 percent, while the younger age group, 19 and younger, decreased by 3.7 percent.

Table AG2
MSA Population by Age as Percent of Total Population

Ages	1990	2000	2008
19 and Below	25.2%	26.4%	21.5%
Age 20 - 34	27.1%	21.3%	25.6%
Age 35 - 59	31.2%	35.6%	31.5%
Age 60 - 64	8.3%	8.0%	10.2%
65 and Above	8.2%	8.6%	11.2%

Source: U.S. Bureau of the Census, 2000 Census of Population and Housing. ESRI converted 1990 Census data into 2000 geography, U.S. Census Bureau, 2006-2008 American Community Survey

The MSA's population has become wealthier. The trend illustrated in Table AG3 shows an increase in household incomes where the percentage of households with income above $100,000 has increased four-fold since 1990. The median income for the MSA increase from $46,361 in 1990 to $62,971 in 2000 then jumped to 101,710 in 2008. The 2009 Forbes Magazine's Top 25 Wealthiest counties included 10 counties that fall within the MSA region.

Table AG3
MSA Household Income Distribution
as Percentage of Total Population

Household Income Base	1990	2000	2008
<$15,000	10.7%	8.3%	6.4%
$15,000 - $24,999	11.0%	6.9%	4.8%
$25,000 - $34,999	13.2%	9.0%	5.9%
$35,000 - $49,999	19.4%	14.0%	10.2%
$50,000 - $74,999	23.5%	21.1%	16.4%
$75,000 - $99,999	11.8%	15.1%	14.3%
$100,000 - $149,999	7.3%	15.4%	20.0%
$150,000+	3.2%	10.2%	21.9%

Source: U.S. Bureau of the Census, 2000 Census of Population and Housing. ESRI converted 1990 Census data into 2000 geography, U.S. Census Bureau, 2006-2008 American Community Survey

In addition to becoming an older and wealthier area, the MSA has become more diverse. Table AG4 presents the changes in racial composition from 1990 to 2008. The population of the MSA has become less white (by 6.3%) and more Asian (by 4.4%) and African-American (by 1.6%).

Table AG4
MSA Population by Race as Percentage of Total Population)

Race	1990	2000	2008
White Alone	65.7%	59.4%	59.4%
Black or African American Alone	25.4%	26.5%	27.0%
American Indian or Alaskan Native Alone	0.3%	0.3%	0.8%
Asian Alone	4.9%	6.9%	9.3%
Pacific Islander Alone	0.1%	0.1%	0.1%
Some Other Race Alone	3.7%	6.9%	6.0%

Source: U.S. Bureau of the Census, 2000 Census of Population and Housing. ESRI converted 1990 Census data into 2000 geography, U.S. Census Bureau, 2006-2008 American Community Survey

The Airports Authority study area is one of the fastest growing areas of the US. The area's population was estimated to be 5.5 million in 2010, up from 4.8 million in 2000, a 14.8% growth compared to a 10.6% growth in the U.S. A significant amount of growth occurred in Loudoun, Prince William, Fauquier, and Stafford counties.

Table AG5
MSA County and U.S. Population Growth

County	2000 Census Population	2010 Estimate	Growth Rate	Growth Rate Difference From US Total
Arlington, VA	189,453	215,842	13.9%	3.3%
Alexandria City, VA	128,283	145,210	13.2%	2.6%
Loudoun, VA	169,599	308,819	82.1%	71.5%
Fairfax, VA	969,749	1,041,236	7.4%	-3.2%
Prince William, VA	280,813	387,988	38.2%	27.6%
Clarke, VA	12,652	14,695	16.1%	5.6%
Fauquier, VA	55,139	68,698	24.6%	14.0%
Stafford, VA	92,446	128,257	38.7%	28.2%
Other VA	269,623	342,635	27.1%	16.5%
Prince George's, MD	801,515	830,765	3.6%	-6.9%
Montgomery, MD	873,341	963,092	10.3%	-0.3%
Other MD	390,386	471,634	20.8%	10.2%
District of Columbia	572,059	600,671	5.0%	-5.6%
US Total Population	281,421,906	311,212,863	10.6%	

Labor Market/Employment

Despite the recent recession, the MSA has maintained a more stable economy in part to its dependence on federal government jobs and high paying professional service occupations. This has caused the MSA's unemployment rate to diverge from the national rate with the MSA losing fewer jobs than the national average as a whole.

The MSA also continues to draw in a more educated workforce. The increasing educational attainment of its workforce has translated into higher wages for its labor force. Table AG6 illustrates the average annual wage and regional inflation growth from 2001 to 2008 for both the MSA and the U.S.

Table AG6
MSA and National Inflation and Wage Growth from 2001 to 2008

	DC MSA Average	U.S. Average	Difference
Average Annual Wages	30.9%	25.8%	5.1%
Inflation	23.1%	19.2%	4.0%
Real Annual Wage Growth	*7.8%*	*6.6%*	*1.1%*

Source: Bureau of Labor Statistics

The MSA labor market has a higher dependence on federal government operations than other regional economies. Due to this higher dependence, the MSA tends to weather business cycles better than other regions. Table AG6 illustrates the industrial composition of the MSA's employment[20]. The MSA has a significantly higher percentage of its workforce in the public administration industry compared to the national average. The MSA also has a higher percentage of professional and technical employees than the national average.

Table AG7
MSA Industrial Employment of Residents as Percent of Total Employed

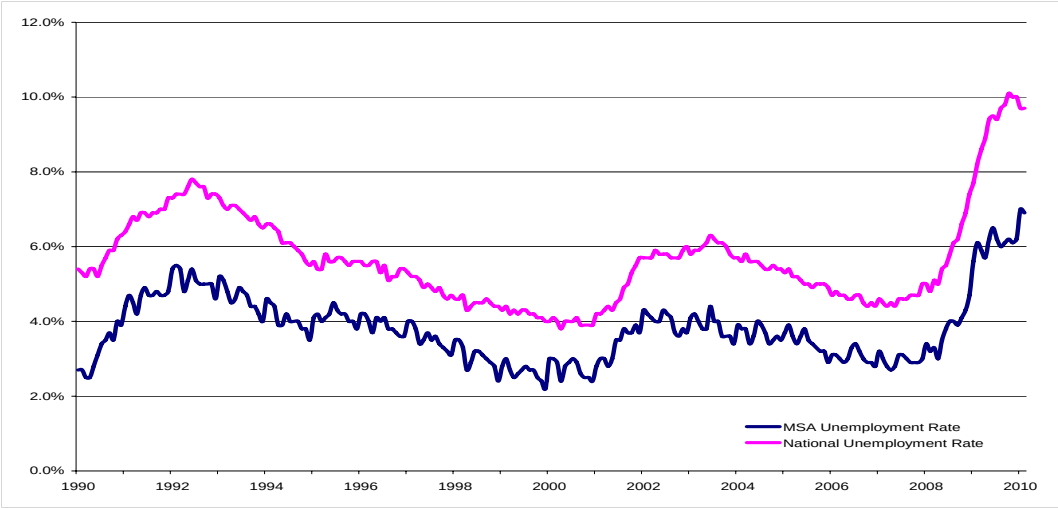
Industry	MSA 2000	MSA 2008	National 2008
Agriculture, forestry, fishing and hunting, and mining	0.4%	0.4%	1.8%
Construction	6.5%	7.1%	7.7%
Manufacturing	4.3%	3.2%	11.3%
Wholesale trade	1.8%	1.5%	3.2%
Retail trade	9.2%	8.4%	11.5%
Transportation and warehousing, and utilities	4.3%	3.8%	5.1%
Information	5.8%	3.7%	2.5%
Finance and insurance, and real estate and rental and leasing	6.9%	6.8%	7.1%
Professional, scientific, and management, and administrative and waste management services	17.3%	20.3%	10.3%
Educational services, and health care and social assistance	17.1%	18.1%	21.3%
Arts, entertainment, and recreation, and accommodation, and food services	7.0%	7.5%	8.7%
Other services, except public administration	6.6%	6.2%	4.8%
Public administration	12.7%	13.1%	4.7%

Source: U.S. Bureau of the Census, 2000 Census of Population and Housing. ESRI converted 1990 Census data into 2000 geography, U.S. Census Bureau, 2006-2008 American Community Survey

From 1990 to February 2010 the unemployment rate for the MSA has been below the national average by 1.9 percent on average. The recent recession has caused this spread to expand to nearly 2.9 percent since as of July of 2008.

[20] Industries are broken down by using the North American Industrial Code Systems (NAICS) provided by the Census.

Figure AG3
Washington MSA and National Unemployment Rate



Source: U.S. Bureau of Labor Statistics, 2010

Education/Skills

The labor force in the MSA is well educated and exceeds the national averages for population with degrees. Table AG8 shows that in 2008 the MSA had 52.5 percent of its population attaining a college degree compared to only 35 percent of the national population. The starkest difference between the education attainment between the nation and the MSA was between the population holding a Bachelor degree or higher. The difference in attainment of a Master's or higher was over 11.0 percent in the MSA compared to the National average.

Table AG8
MSA Education Attainment as a Percentage of Population 25 Years or Older

Total	Washington MSA			National
	1990	2000	2008	2008
Less than 9th Grade	5.6%	5.0%	4.8%	*6.4%*
9th - 12th Grade, No Diploma	9.7%	8.1%	5.8%	*9.1%*
High School Graduate	22.5%	20.2%	20.2%	*29.6%*
Some College, No Degree	19.3%	19.2%	16.8%	*20.1%*
Associate Degree	5.4%	5.0%	5.7%	*7.4%*
Bachelor's Degree	21.5%	23.3%	24.9%	*17.3%*
Master's/Professional/Doctorate Degree	16.0%	19.1%	21.9%	*10.1%*

Source: U.S. Bureau of the Census, 2000 Census of Population and Housing. ESRI converted 1990 Census data into 2000 geography, U.S. Census Bureau, 2006-2008 American Community Survey

Industrial Composition

The MSA's industrial composition is weighted toward facilitating and servicing the federal government. Table AG9 provides a summation of the Virginia, Maryland, and District of Columbia counties that fall within the Washington MSA. The table also provides a breakout of the payroll data by owner of establishments and their respective industries.

Table AG9
Payroll Employment in Select Counties for 2008 by Owner and Industry

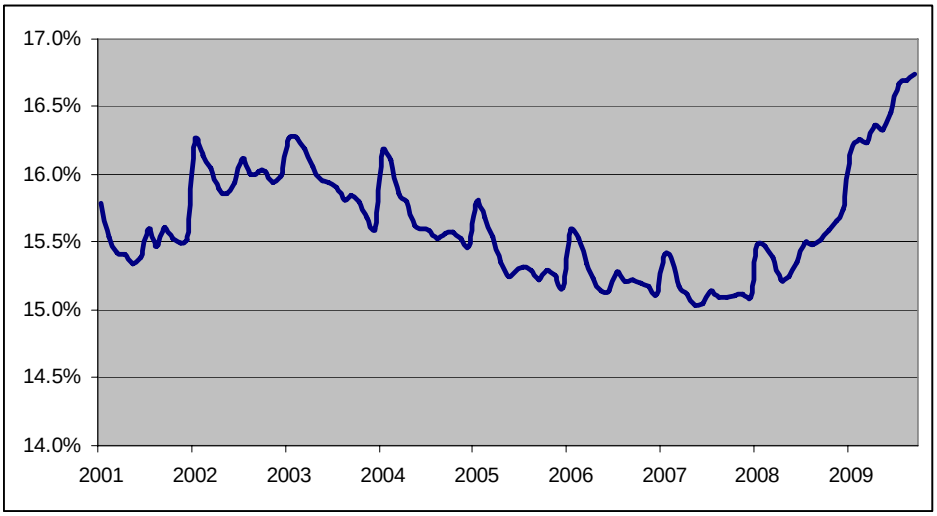
Industry	Government					
	Federal	**State**	**Local**	**Private**	**Total**	**Percent of Total**
Total, all industries	347,599	153,751	140,431	2,240,796	2,882,577	
Goods-Producing	3,942		252	231,196	235,390	8.2%
Service-Providing	343,658	140,201	115,202	2,009,602	2,608,663	90.5%
Natural Resources and Mining	0	0	0	3,690	3,690	0.1%
Construction	0	0	252	163,391	163,643	5.7%
Manufacturing	3,942	0	N/A	55,414	59,356	2.1%
Trade, Transportation, and Utilities	22,528	N/A	7,654	383,150	413,332	14.3%
Information	3,868	74	N/A	89,494	93,436	3.2%
Financial Activities	2,743	N/A	N/A	146,838	149,581	5.2%
Professional and Business Services	9,960	747	716	655,334	666,757	23.1%
Education and Health Services	9,091	81,942	51,777	316,438	459,248	15.9%
Leisure and Hospitality	9,355	N/A	3,578	257,834	270,767	9.4%
Other Services	48	270	N/A	155,634	155,952	5.4%
Public Administration	286,071	49,452	24,001	0	359,524	12.5%
Unclassified	0	0	0	4,846	4,846	0.2%

Totals may add or equal 100% due to data suppression and privacy issues. N/A equals suppressed data
Source: Bureau of Labor Statistics Quarterly Census of Wages, *Employment County Level Aggregation for Virginia, Maryland and DC counties within the MSA

As the private sector sheds jobs in reaction to the downward trend of the business cycle the federal government takes on a higher percentage of the overall MSA's employment. Figure AG4 illustrates the increase in federal government employment as a percentage of the total MSA employment.

Figure AG4

Federal Government Employment as a Percentage of Total Employment



Source: U.S. Bureau of Labor Statistics

With a highly trained and educated workforce the MSA has also become a draw for a variety of companies that do not depend directly on the Federal government for business. Table AG10 lists some of the Fortune 500 companies that have their headquarters in the MSA.

Table AG10

Fortune 500 Companies with Headquarters in MSA

Washington, D.C.
Danaher Corporation
Fannie Mae
Pepco Holdings
Maryland
Coventry Health Care
Host Hotels & Resorts
Lockheed Martin
Marriott International
Virginia
AES Corporation
Capital One
Computer Sciences Corporation
Freddie Mac
Gannett Company
General Dynamics
NVR Incorporated
Science Applications International Corporation
SLM Corporation (Reston) "Sallie Mae"

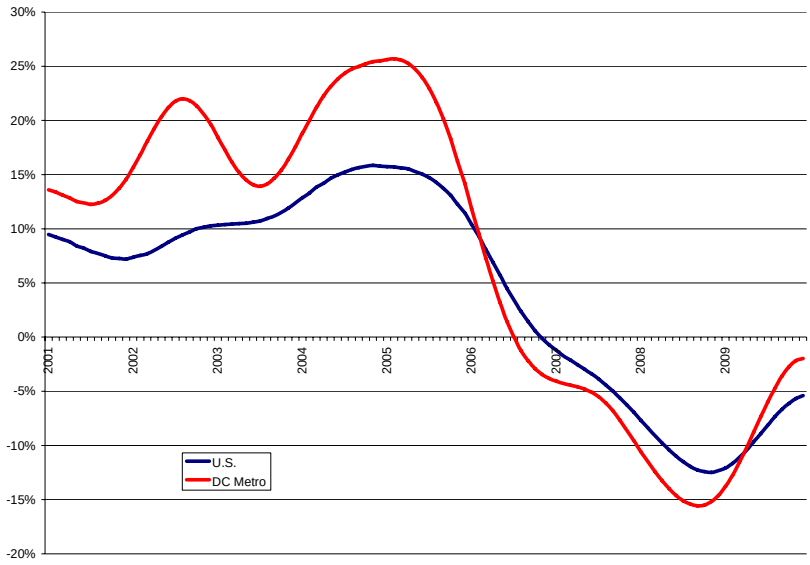
In addition to major corporations, many smaller biotech companies have also chosen to locate their business in the MSA. The area is known as a high tech corridor and contains many biotech industry leaders. The region ranks number one in the world for government research and development spending per capita, beating out Beijing, China, Shanghai, China, and Berlin, Germany, as well as all other major metropolitan areas in the U.S.

The MSA also has more federal laboratories than any other region in the U.S., with more than 50 labs and institutes throughout the region focusing on many of the country's leading disciplines, including advanced engineering, biotechnology and life sciences, and information and communication technology.[21]

Real Estate Market

The recent collapse in the housing market took a particularly sever toll on the Washington, D.C. MSA with prices dropping below the national average. However, the MSA has had a quicker recovery due to a healthier labor market and growth in its overall economy. Figure AG5 illustrates the average home price changes beginning in 2001 and ending in March 2010 using Zillow.com's housing price estimates, or *zestimate*.

Figure AG5
Zillow.com Home Value Index Year/Year Change

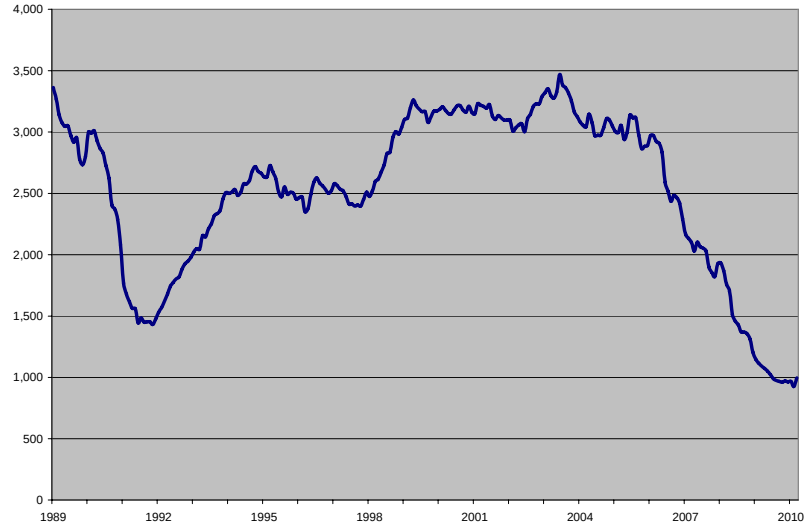


Source: Zillow.com

[21] http://www.greaterwashington.org/regional-data/research-and-development.aspx

The MSA has had a significant housing construction boom beginning in 1992 that continued until 2007 with a high plateau of new construction stretching from 2000 to 2007 as seen in Figure AG6.

Figure AG6
New Private Housing Units Authorized By Building Permit
for Washington-Arlington-Alexandria, DC-VA-MD-WV
12 Month Average



Source: Federal Reserve Bank of St. Louis, U.S. Census

Table AG11 provides April 2010 real estate data for select counties in the MSA shows that the average median home prices in several counties in the MSA are still decreasing compared to last year's prices. Prince Georges County, Arlington, and the District of Columbia exhibit changes in the median housing price. The table also provides housing inventory numbers in each county, which is the main driver of prices. In most cases the greater the inventory, the lower the prices due to excess supply in the housing market. The inventories are expressed in months of inventory, which indicate the number of months there would be housing supply that would be for sale at the current sales rate. Again, Prince Georges County had the greatest number of days inventory.

Table AG11
Select MSA County Housing Data April 2010

Select MSA Counties As of April 2010	Median Sold Price		Inventory		Average Days on Market					
	$	*YoY, %*	*Units*	*MOI*, 3M MA*	*Days*	*30*	*31 - 61*	*61 - 90*	*91 - 120*	*Over 120*
Washington D.C.	$384,000	-1.5%	3,349	6	64	56	12	8	6	17
Montgomery County, MD	$345,000	2.1%	5,194	6	63	58	13	8	5	16
Prince Georges County, MD	$190,000	-17.4%	5,741	8.3	96	41	15	10	9	26
Alexandria City, VA	$429,900	3.8%	935	5.7	56	59	15	7	3	16
Arlington County, VA	$446,000	-0.9%	1,099	4.7	52	64	14	4	4	15
Fairfax County, VA	$379,000	11.5%	6,116	5.1	42	72	11	5	3	9
Loudoun County, VA	$336,250	6.7%	2,434	6.1	44	70	11	7	3	9
Prince William County, VA	$240,000	37.1%	2,740	5	41	66	14	8	4	8
Stafford County, VA	$240,975	9.6%	887	7.1	78	53	12	10	3	23

Source: recharts.com *Months of Inventory and 3 month moving average

Migration

Migration in the MSA for the latest years reported by the Internal Revenue Service's tax filing data shows that nearly 10% of filers currently living in the MSA filed from a different area or were from somewhere outside of the United States. Table AG12 shows the in migration of tax filers in the counties within the MSA by state and the MSA as a whole.

Tax filers that moved to the counties inside the MSA from a different state are artificially high since the District of Columbia qualifies as a state with no county level locations. The total foreign in migration is also high as a percentage of tax filers in the District of Columbia possibly due to its size and its amount of foreign service workers that deal with the national government.

Table AG12
2007/2008 MSA and State Counties within the MSA In Migration by Origin

	Total MSA	Virginia	Maryland	District of Columbia
Total Non-Migrants	90.1%	88.2%	92.8%	88.5%
Total Different State	5.4%	5.3%	4.2%	10.8%
Total –Foreign	0.4%	0.4%	0.3%	0.7%
Total Same State Different County	4.0%	6.0%	2.7%	N/A

Source: Internal Revenue Service

Out migration patterns for the MSA exhibit similar patterns as the in migration for the region. However, less filers are moving out of the MSA to foreign destinations. Table AG13 illustrates out migration patterns for the total MSA as well as counties in the MSA by their respective state.

Table AG13

2007/2008 MSA and State Counties within the MSA Out Migration by Origin

	Total MSA	Virginia	Maryland	District of Columbia
Total Non-Migrants	90.1%	88.6%	92.2%	89.2%
Total Different State	5.4%	5.0%	4.5%	10.5%
Total –Foreign	0.2%	0.2%	0.2%	0.3%
Total Same State Different County	4.3%	6.1%	3.2%	N/A

Source: Internal Revenue Service

It is anticipated that a significant number of in and out migrations will be occurring in the MSA and around the region as military facilities and Department of Defense facilities complete their assigned 2005 Base Realignment and Closure (BRAC) process. Although the BRAC process was assigned in 2005, some facilities have yet to complete the process in transferring personnel to or from their facility. Table AG14 shows the estimated BRAC impact in population changes.

Table AG14
BRAC Installations in and Around the MSA

State	Installation	Action	Mil Civ Net Gain/(Loss)		Net Mission Contractor	Total Direct
			Mil	Civ		
D.C.	Leased Space – DC	Close/Realign	-103	11	0	-92
	Bolling Air Force Base	Realign	-96	-242	-61	-399
	Naval District Washington	Realign	-80	-323	40	-363
	Potomac Annex	Realign	-4	-5	-3	-12
	Walter Reed Army Medical Center District of Columbia	Close	-2,651	-2,357	-622	-5,630
Maryland	Navy Reserve Center Adelphi	Close	-17	0	0	-17
	PFC Flair U.S. Army Reserve Center, Frederick	Close	-20	-2	0	-22
	Aberdeen Proving Ground	Gain	-3,411	5,371	216	2,176
	Andrews Air Force Base	Gain	191	300	-91	400
	Fort Detrick	Gain	76	43	-15	104
	Fort Meade	Gain	682	2,915	1,764	5,361
	National Naval Medical Center Bethesda	Gain	982	936	-29	1,889
	Naval Surface Weapons Station Carderock	Gain	0	6	0	6
	Army Research Laboratory, Adelphi	Realign	0	-43	0	-43
	Bethesda/Chevy Chase	Realign	-5	-2	0	-7
	Fort Lewis	Realign	0	-164	0	-164
	Martin State Airport Air Guard Station	Realign	-17	-106	0	-123
	Naval Air Facility Washington	Realign	-9	-9	0	-18
	Naval Surface Warfare Center Indian Head	RealignTotal	0	-95	0	-95
Virginia	Fort Belvoir	Gain	4,071	5,729	2,058	11,858
	Arlington Service Center	Realign	211	-110	-383	-282
	Center for Naval Research	Realign	-25	-313	0	-338
TOTAL for MSA Area			-225	11,540	2,874	14,189

Source: Department of Defense BRAC 2005 Closure and Realignment Impacts by State

Projected Condition

Labor Market/Employment

Employment in the Washington Metropolitan Statistical Area is projected to increase by 439,200, or 1.26 percent per year from 2006 to 2016. This is roughly 44,000 jobs per year, slightly below the 45,000 annual average growth from 1990 through 2006. Employment stood at 3,280,200 jobs in 2006 and is projected to reach 3,719,300 jobs by 2016. These figures include wage and salary workers as well as the self-employed, who make up about 10 percent of the total.

As mentioned previously the Washington MSA labor market is heavily influenced by the presence of the federal government, which provided nearly 11 percent of area jobs in 2006, and is also important indirectly through its contracting activities. For many years Federal Employment has been either stable or declining in Washington. Since 2000, the population began growing and saw another significant

increase again, probably a consequence of the terrorist attack on September 11, 2001. This growth is projected to continue as a result of the recession and the expansionary policies of the new Administration and Congress.

The Service Sector in the MSA is the most dominant sector, encompassing over 82 percent of total payroll employment. Government, one of those service industries, and the professional and business services cluster will lead the way in job growth in the coming decade. The fastest growing service industry is health care and social assistance with jobs in the Washington area projected to grow even faster than in the nation as a whole. This may be as a result of an increasingly aging population in the MSA. Also the leisure and hospitality services will also be a significant source of jobs in the decade ahead.

Goods providing industries in the Washington MSA is only half of the national average. Only two goods producing industries are significant in Washington: manufacturing with a two percent job share which is declining, and construction with nearly six percent. Because Washington is a growing metropolitan area, construction, though currently under duress because of the housing crisis, will regain strength and add jobs at about the same rate as the area in its entirety in the decade to 2016.

Table AG15
MSA Forecasted Employment by Industry

INDUSTRY	2006	2016	*2006 share*	*2016 share*	Growth Rate
Total, All Industries	3,280,154	3,719,306	*100%*	*100%*	1.26%
Goods Providing Industries	255,148	275,804	*7.78%*	*7.42%*	0.78%
Services Providing Industries	2,711,327	3,110,021	*82.66%*	*83.62%*	1.38%
Agriculture, Forestry, Fishing, & Hunting	2,613	2,639	*0.08%*	*0.07%*	0.10%
Mining	1,266	1,098	*0.04%*	*0.03%*	-1.41%
Construction	187,613	212,449	*5.72%*	*5.71%*	1.25%
Manufacturing	63,656	59,618	*1.94%*	*1.60%*	-0.65%
Wholesale Trade	70,125	73,985	*2.14%*	*1.99%*	0.54%
Retail Trade	270,169	272,959	*8.24%*	*7.34%*	0.10%
Transportation and Warehousing	59,381	65,114	*1.81%*	*1.75%*	0.93%
Information	96,926	91,047	*2.95%*	*2.45%*	-0.62%
Finance and Insurance	105,775	108,684	*3.22%*	*2.92%*	0.27%
Real Estate and Rental Leasing	55,725	58,736	*1.70%*	*1.58%*	0.53%
Professional and Business Services	664,533	829,207	*20.26%*	*22.29%*	2.24%
Professional, Scientific and Technical Services	435,242	545,895	*13.27%*	*14.68%*	2.29%
Management of Companies and Enterprises	39,283	42,836	*1.20%*	*1.15%*	0.87%
Administrative Support & Waste Mgmt. Services	190,008	240,476	*5.79%*	*6.47%*	2.38%
Educational Services (including state & local government education)	212,111	234,199	*6.47%*	*6.30%*	1.00%
Health Care and Social Assistance	232,141	300,487	*7.08%*	*8.08%*	2.61%
Leisure and Hospitality	249,417	288,293	*7.60%*	*7.75%*	1.46%
Arts, Entertainment & Recreation	35,792	44,512	*1.09%*	*1.20%*	2.20%
Accommodation and Food Services	213,625	243,781	*6.51%*	*6.55%*	1.33%
Other Services	176,733	219,121	*5.39%*	*5.89%*	2.17%
Utilities	8,827	7,944	*0.27%*	*0.21%*	-1.05%
Government (excl. State & Local Education)	509,464	560,245	*15.53%*	*15.06%*	0.95%
Self Employed/Unpaid Family Workers	313,679	333,481	*9.56%*	*8.97%*	0.61%

Source: Government of the District of Columbia, Department of Employment Services Metropolitan Statistical Area Employment Projections by Industry & Occupation 2006-2016

Professional and related occupations are 26.6 percent of Washington area jobs, compared to the national average of 19.9 percent. Jobs in this group are growing at an average rate of 1.7 percent per year. The composition of this occupational sector is lead by Computer and Mathematical Occupations which constitutes nearly 2.5% of the sector. Although these occupations are starting at a higher point than others in the sector, they are also expected to grow at a faster rate than other occupations in the sector.

Service occupations are the second largest occupation by percent share of and the second occupational group with a growth rate above the metropolitan average. It is also the fastest growing of the

occupational groups with a growth rate of 1.9 percent per year. This sector has two occupations with the highest growth rates. These occupations are health care and protective services. Table AG16 provides the current and forecasted ten year growth projections for the major occupational sectors.

Table AG16
MSA Forecasted Occupational Growth Projections

OCCUPATION	2006	2016	Growth	Growth Rate
Total, All Occupations	**3,280,154**	**3,719,306**	**439,152**	**1.26%**
Management, Business and Financial	**535,565**	**597,458**	**61,893**	**1.10%**
Management Occupations	248,306	269,936	21,630	0.84%
Business and Financial Occupations	287,259	327,522	40,263	1.32%
Professional & Related Occupations	**870,932**	**1,026,495**	**155,563**	**1.66%**
Computer and Mathematical Occupations	216,411	270,086	53,675	2.24%
Architecture and Engineering Occupations	77,509	87,045	9,536	1.17%
Life, Physical, and Social Science Occupations	72,694	83,490	10,796	1.39%
Counselors Social Workers & Social Service Specialists	37,030	47,533	10,503	2.53%
Legal Occupations	90,671	102,024	11,353	1.19%
Education, Training, & Library Occupations	157,246	179,506	22,260	1.33%
Arts, Design, Entertainment, Sports, and Media Occupations	95,666	108,278	12,612	1.25%
Healthcare Practitioners & Technical Occupations	123,705	148,533	24,828	1.85%
Service Occupations	**583,638**	**705,072**	**121,434**	**1.91%**
Healthcare Support Occupations	49,042	65,319	16,277	2.91%
Protective Service Occupations	92,829	115,180	22,351	2.18%
Food Preparation and Serving Related Occupations	202,127	235,165	33,038	1.53%
Building & Grounds Cleaning & Maintenance Occupations	136,073	163,781	27,708	1.87%
Personal Care & Service Occupations	103,567	125,627	22,060	1.95%
Sales & Related Occupations	312,312	325,270	12,958	0.41%
Office and Administrative Support	488,378	528,137	39,759	0.79%
Farming, Fishing, and Forestry	3,173	3,405	232	0.71%
Construction and Extraction	177,897	201,172	23,275	1.24%
Installation, Maintenance, and Repair	108,669	121,181	12,512	1.10%
Production	67,341	69,030	1,689	0.25%
Transportation and Material Moving	132,249	142,086	9,837	0.72%

Source: Government of the District of Columbia, Department of Employment Services Metropolitan Statistical Area Employment Projections by Industry & Occupation 2006-2016

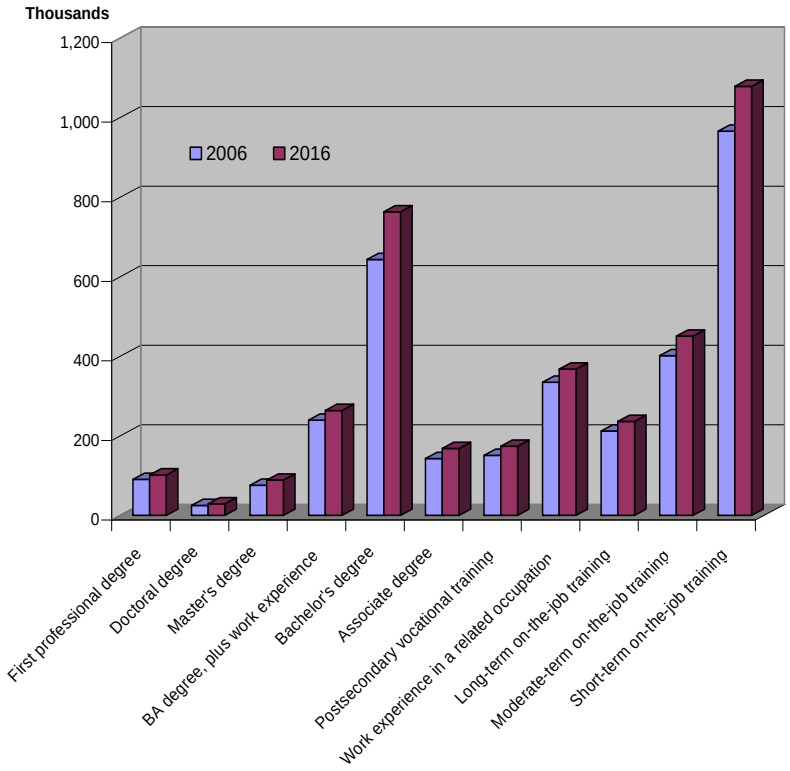
Education/Skills

The Bureau of Labor Statistics' O*Net has developed a skills classification system that defines the training and qualifications associated with labor data reported within its occupational categories. Figure 4 illustrates the skill mix for MSA for both 2006 and the projected skills mix in 2016. The skills mix is

created with using the anticipated growth of specific occupations that require certain levels of skills and training.

The MSA job mix has 32.7 percent of its employment in the first five skill categories, which are the categories requiring at least a Bachelor of Art degree, but often an advanced degree, or professional degree. Jobs requiring college degree training make up only 20 to 22 percent of jobs in the national economy.

Figure AG7
Forecasted Education Requirements for Employment



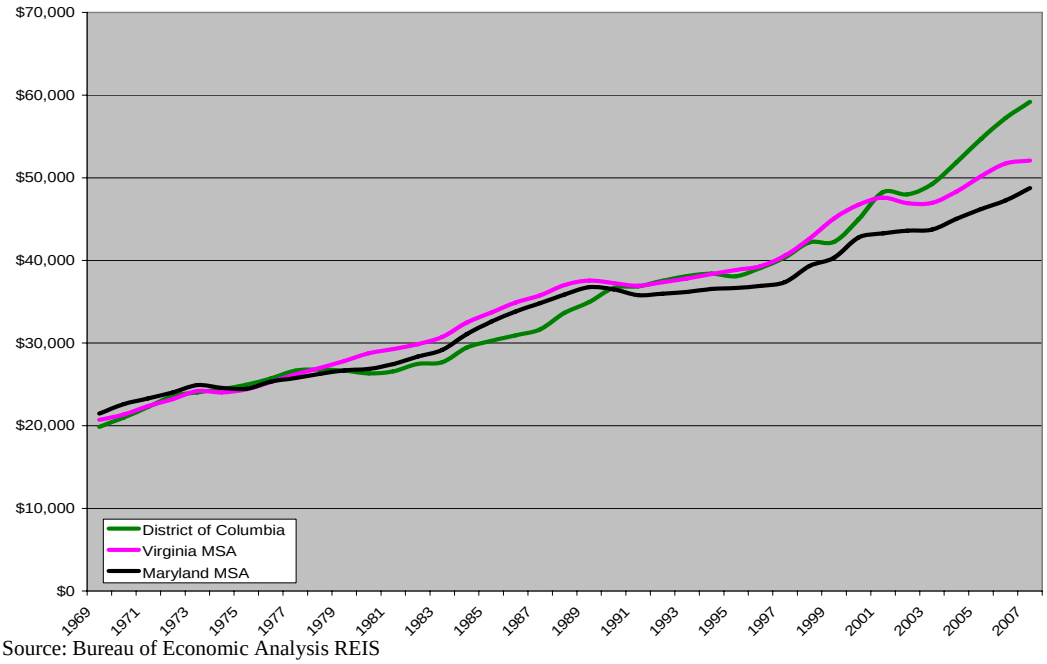
Source: Government of the District of Columbia, Department of Employment Services Metropolitan Statistical Area Employment Projections by Industry & Occupation 2006-2016

Despite the relatively high percentage of jobs requiring college level education, the jobs that are growing at faster rate than the metropolitan average are jobs in technical areas that require an associate's degree training. Many of these positions are nursing, medical records and health information technicians, and therapy in allied health. There are however some computer support positions and legal services occupations.

Jobs requiring post-secondary training are even more numerous, but slightly lower growth than jobs requiring AA (associate degree) degree skills. Post secondary jobs with the highest projected growth are nurses' aides and licensed practical nurse. Among those projected to have a large high number of new jobs are preschool teachers, hair stylists, automotive service technicians, legal secretaries, fitness

instructors, and aerobics instructors. Because the MSA supports physical and life science research, it has many assistant and technician positions that require an Associate's degree and other technical training.

Figure AG8
MSA Per Capita Income by State



Source: Bureau of Economic Analysis REIS

Appendix H – Economic Policy

The MSA will most likely see significant development over the next decade. A large amount of the development will take place in Northern Virginia. One major project being planned in Northern Virginia is the Kincora Village Center project. If approved by Loudoun's Board of Supervisors, this project would someday have 2.7 million square feet of office space, 400,000 square feet of retail, two hotels and 1,400 apartment-style homes, including 228 to be sold as affordable units to moderate-income families. A facility for concerts, exhibits and plays has also been proposed.

As part of its proposal, developer NA Dulles Real Estate Investor has pledged to build a fire and rescue station as well as make about $25 million in local road improvements, including finishing Pacific Boulevard and extending Gloucester Parkway to the Nokes Boulevard/Route 28 Interchange. The community would sit on nearly 400 acres at the Routes 7 and 28 interchange.

In 2009, supervisors approved plans to build a 5,500-seat ballpark for a team from the Atlantic League of Professional Baseball on the same site. The league hopes to start playing in Loudoun next spring. Construction of the ballpark plans, though, would likely be delayed if supervisors ultimately decide to reject the zoning request for the homes and commercial space.

In addition to the Kincora Village Center project, Real Estate Bisnow Washington reports that Comstock Partners planned to build two TOD projects, Reston Station and Loudoun station, both slated along Dulles metrorail corridor. Comstock plan to build Reston Station on top of the 2,300 parking garage over at Wiehle Ave. stop. They've received the development rights but still have to secure rezoning and get site plan approval sometime in 2011.

The second project, Loudoun Station is a-50 acre mixed-use project at the Silver line last stop, at route 722, connecting Dulles International Airport and Loudoun County. This one has been rezoned and approved for 3.5M SF that will have 1,500 apartments, 320,000 SF retails, entertainment, a hotel and offices.

This growth will add to the areas appeal and expand the domain of the Dulles Technology Corridor which is located in Northern Virginia near Washington Dulles International Airport. The Dulles Technology Corridor was dubbed the "Netplex" in 1993 by *Fortune* magazine, and according to D.C. Dotcom the corridor contains the "vital electronic pathways that carry more than half of all traffic on the Internet. The region is home to more telecom and satellite companies than any other place on earth."

The corridor generally follows Virginia State Route 267, the Dulles Access Road, between Loudoun and Fairfax counties, which are the highest and second-highest income counties in the U.S. as of 2006, coinciding with the national technology and local internet boom of the 1990s and local technology

spending after the September 11, 2001 attacks. The region contains the Internet Society, and used to contain the mainframe that houses the master list of all Internet domain names.

It is no accident that one of the largest technology corridors resides next to a sizable international airport. Table AH1 shows the types of goods that are shipped by air in the MSA. A significant amount of the shipped goods are considered high-tech due to the

Table AH1
Top 20 Exports by Air Shipment (by Value and Weight)

Export Product Industry	% of Total Value	% of Total Weight
Pharmaceutical preparation manufacturing	27.2%	6.3%
Aircraft engine and engine parts manufacturing	8.6%	3.0%
Biological product (except diagnostic) manufacturing	6.5%	1.0%
Other aircraft parts and auxiliary equipment manufacturing	5.8%	0.9%
Analytical laboratory instrument manufacturing	3.4%	1.2%
Surgical and medical instrument, laboratory and medical instrument manufacturing	3.0%	2.2%
Printed circuit assembly (electronic assembly) manufacturing	2.6%	1.1%
Semiconductor and related device manufacturing	2.3%	0.5%
Motor vehicle parts manufacturing	2.0%	5.9%
Medicinal and botanical manufacturing	1.9%	0.9%
Broadcast and wireless communications equipment manufacturing	1.7%	1.1%
Watch, clock, and other measuring and controlling device manufacturing	1.7%	0.9%
Telephone apparatus manufacturing	1.6%	0.8%
Surgical appliance and supplies manufacturing	1.5%	1.3%
Search, detection, and navigation instruments manufacturing	1.4%	0.2%
Ophthalmic goods manufacturing	1.3%	1.1%
Computer terminals and other computer peripheral equipment manufacturing	1.3%	1.4%
Other general purpose machinery manufacturing	1.2%	2.3%
Guided missile and space vehicle manufacturing	1.1%	0.0%
All other miscellaneous manufacturing	1.1%	1.3%

Source: U.S. Census Bureau WISER data

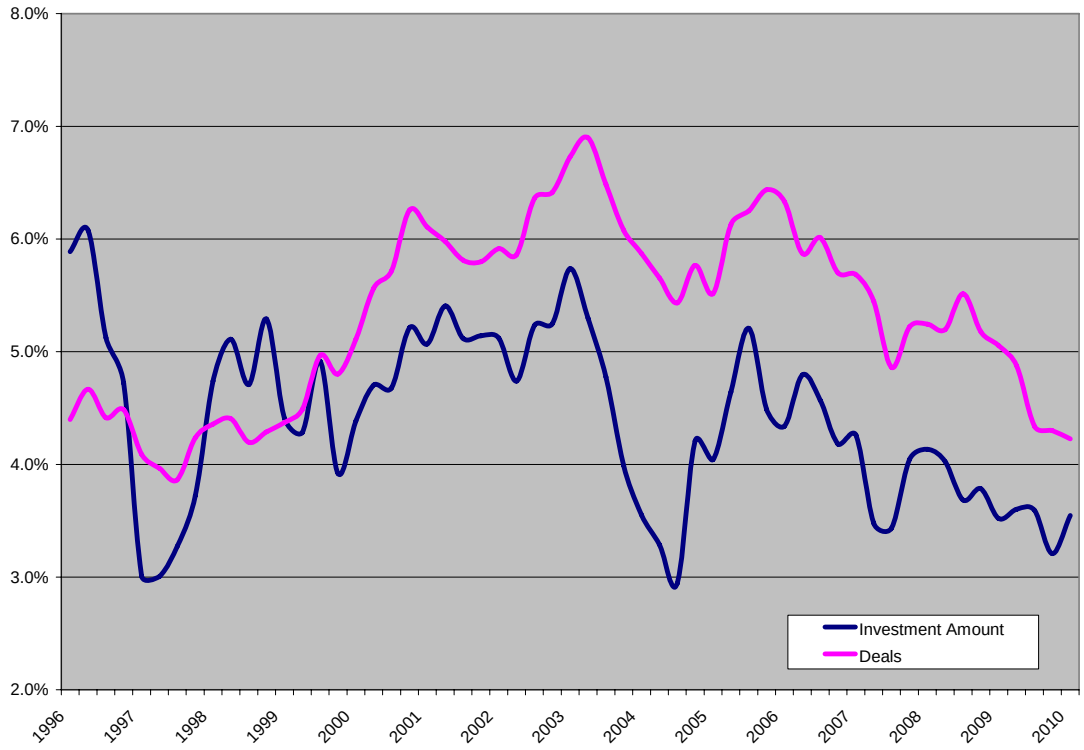
One of the major growth sectors in the MSA is technology, several economic development organizations have specific programs and initiatives to assist technology and research and development companies locating in the area. Recently the National Cancer Institute announced it is planning to build its consolidated headquarters in Montgomery County as part of the Shady Grove Life Sciences Center. The $200 million, 2,100-employee development will consist of a 575,000 square foot complex devoted to education and research and development (private, academic, and federal).

In 2009, venture capital firms invested nearly $200 million into ICT companies. Although the area has a significant amount of private investment in technology it captures only 5 to 3 % of the total U.S. venture capital investments. Proximity to major airports is often cited by venture capital experts as a key advantage to gaining financing since it allows investors easy access to their investments. Despite the

significant amount of venture capital however, a significant portion of investment comes from the public sector, for instance in 2005 the Departments of Defense and Homeland Security's combined research expenditures in Maryland, Virginia, and the District of Columbia totaled $11.8 billion. This investment provides a key input into the area's ability to produce cutting edge technology products. For instance, in 2008 aerospace and defense exports in Greater Washington topped $1.2 billion, an increase of nearly 75 percent during the previous five years.

Figure AH1

DC Metro Area Venture Capital as a % of Total U.S. (4 quarter avg.)



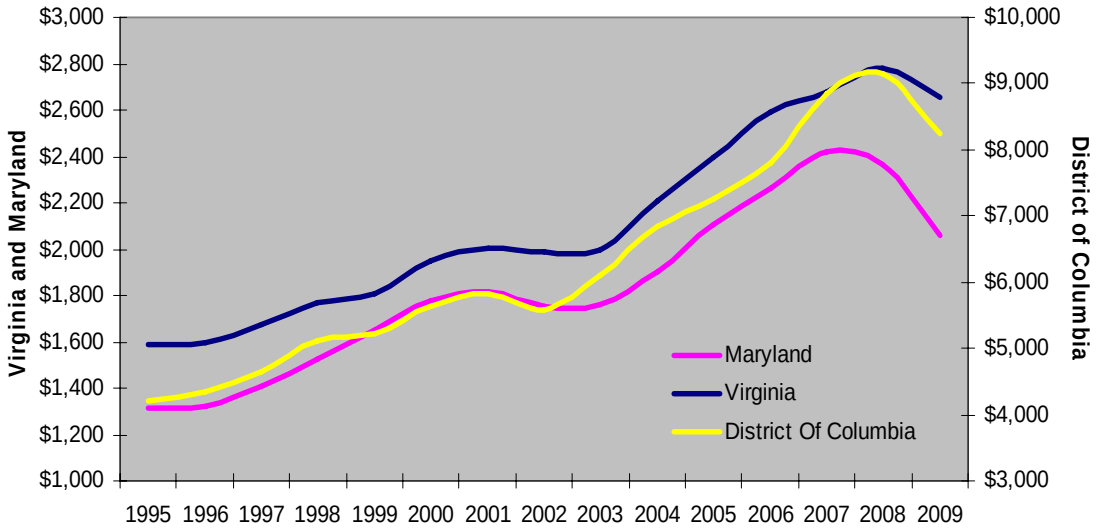
Source: Pricewater Cooper Money Tree

With these strong economic development trends many of the residents of the area feel confident about their area's growth potential. According to the Greater Washington Board of Trade Consumer Confidence Survey taken in June 1st-8th consumers in the Greater Washington region have a much more positive view of the local economy than of the national economy. Of those regional consumers surveyed, 51% have a positive view of the local economy. Only 19% of the respondents had a positive view of the national economy.

Despite the strong feeling of area residents same survey found that more than 80% adults in the Greater Washington region have some level of worry that state and local government budget problems could hurt the -region's economic competitiveness and quality of life. The outlook is worse in Suburban Maryland and Northern Virginia than in Washington, DC. Figure 6.2 illustrates the drop in tax revenues from 2007 to 2008. These declines come after steep increases in tax collections over the past several years.

Figure AH2

Tax Revenues Per Capita for States and District of Columbia *(in thousands)*

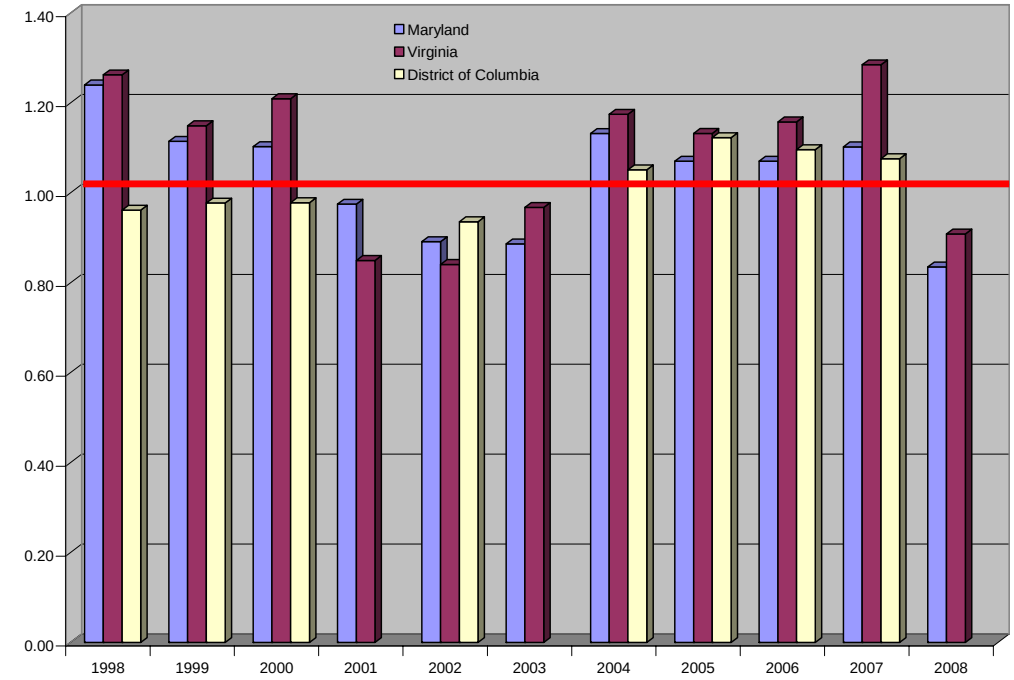


Source: U.S. Census, Bureau of Economic Analysis

Figure AH3 shows the ratio between the revenues and expenditures for Maryland, Virginia, and the District of Columbia's government for their respective fiscal years. Anything under a ratio of 1 is considered a deficit.

Figure AH3

Revenue to Expenditure Ratio



Source: U.S. Census Bureau (District of Columbia unavailable for 2001, 2003 and 2008)

With the reduction in tax revenues the possibility of reduced spending on transportation infrastructure is possible. Transportation issues are a major concern for businesses as well as the local workforce. This concern with transportation issues and local and state deficits shows itself in the Consumer Confidence Survey where 44% of adults believe that regional transportation projects should be speeded up, despite state and local budget problems. While there is some sentiment to delay projects, there is very little appetite to cancel these projects. 34% believe the projects should be delayed while only 5% believe that transportation projects should be cancelled all together. Some of these survey results concerning transportation upgrades stem from local residents responses concerning their commute which some respondents state are now taking longer (31%) than those who say they are taking less time (12%) than they did 2 years ago.

As Table AH2 shows, the amount of registered vehicles in the two states that comprise the MSA area have risen dramatically since 1998 to 2008 (Virginia had a 12.2% increase, Maryland a 20.2% increase) The District of Columbia, however, had a 2.1% decline. There is no doubt the area has become more congested as the number of cars have increased.

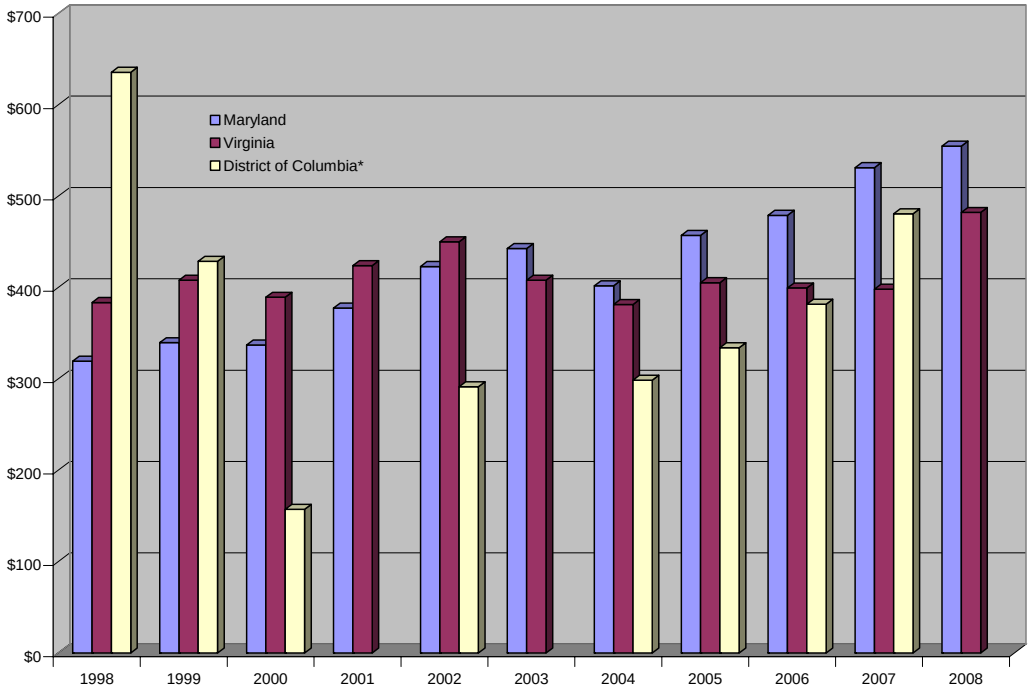
Table AH2

Vehicle Registration by State

	2002	2003	2004	2005	2006	2007	2008
Maryland	3,883,925	3,876,610	4,119,664	4,321,813	4,488,397	4,510,464	4,525,233
% Change	*-1.4%*	*-0.2%*	*6.3%*	*4.9%*	*3.9%*	*0.5%*	*0.3%*
Virginia	6,272,836	6,346,009	6,497,426	6,591,497	6,635,976	6,613,781	6,525,948
% Change	*1.6%*	*1.2%*	*2.4%*	*1.4%*	*0.7%*	*-0.3%*	*-1.3%*
District of Columbia	237,549	228,351	238,802	237,281	219,105	217,521	223,799
% Change	*-4.5%*	*-3.9%*	*4.6%*	*-0.6%*	*-7.7%*	*-0.7%*	*2.9%*

Source: Federal Highway Administration

Figure AH4
State Spending on Highways



Source: Census Bureau, 2001, 2003, and 2008 not available for D.C.

As the growth of the population and driving community has grown, so have the expenditures to expand, construct, and maintain the roadway system. Figure AH4 illustrates the states' highway expenditures per registered vehicle. Removing vehicles from the roadways allows less maintenance costs in the future and less congestion. It is for this reason that many advocate more mass transit.

To alleviate congestion on the highway system transportation officials in Northern Virginia obtained a full funding grant agreement from the Federal Transit Administration for the first phase of the Silver Line metro rail extension project. Local and state monetary commitments for that stage of the project are entirely guaranteed. But the second phase of the line, which would bring rail service to Dulles International for the first time, lacks $330 million in local property tax revenues required for the construction of three stations in Fairfax County.

The 12-mile first phase of the Silver Line extends west from the existing Orange Line at East Falls Church into the depths of suburban Fairfax County, which houses over a million people. At the other end, it will run alongside the Orange Line through Arlington and the District of Columbia to Stadium-Armory, where it will terminate. Five new stations will be constructed, four of which will be closely spaced in the core of Tysons Corner.

Unlike phase one which was completed by the WMATA, the second phase will be completed by the Airports Authority, which runs the project in addition to Dulles International. The Airports Authority has

proposed a special tax district in the areas along the line's route. Local property owners would agree to pay extra in order to benefit from future metro. This strategy follows what has occurred in the first phase of the project. The communities in the tax district are willing to pay for the new service because they see the value of having a mass transit system in their neighborhood.

With major real estate development occurring around the Dulles region there is no doubt that more businesses and residents will locate there in the future. The burgeoning high tech corridor, dependent on Dulles International's logistical advantage, will also attract new companies to the area. This type of economic development will bring more traffic and therefore more congestion to the area unless mass transit systems like the Airports Authority's Silver Line is constructed. The Airports Authority's ability to bring much needed revenues through its toll road and airport facilities will enhance the MSA's appeal as a business, residential, and tourist destination in the future.