

The Impact of Construction Outlays for the Capital Beltway HOT Lanes on the Economies of Fairfax County, the Washington Metropolitan Area and the Commonwealth of Virginia

Stephen S. Fuller, Ph.D.

The Dwight Schar Faculty Chair and University Professor
Director, Center for Regional Analysis
George Mason University
Fairfax, Virginia

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Executive Summary

The construction and operation of the Capital Beltway HOT Lanes will generate a wide range of economic benefits. In the short term, these economic benefits will be generated by construction outlays in the form of payroll and purchases of construction materials and equipment and the re-spending of these initial expenditures for a wide range of goods and services by businesses and consumers. The magnitudes and significance of these construction benefits is the subject of this report.

With the completion of the Capital Beltway HOT Lanes, a broad range of on-going economic benefits will result. These will include cost and time savings from increased transportation efficiency, increases in the value of land and structures served by the HOT Lanes due to improved transportation services, increased labor resources and other comparative advantages for the corridor serviced by the HOT Lanes and improved safety and associated benefits. Additionally, there will be fiscal benefits resulting from the construction and operation of the HOT Lanes ranging from increased real estate revenues, increased incomes and consumer spending, and reduced maintenance and repair costs for the rebuilt portions of the Beltway. Additionally, this major capital outlay will not impact the State's bonding capacity or debt service requirements due to its private financing. These economic and fiscal benefits will accrue to Fairfax County, the entire Washington metropolitan area and to the Commonwealth of Virginia and will extend over the lift time of the project. The magnitudes and significance of these post-construction benefits will be the subject of companion reports.

The spending associated with the construction of the Capital Beltway HOT Lanes will generate a significant economic impact to the benefit of Fairfax County, the Washington metropolitan area and the Commonwealth of Virginia. These economic impacts will contribute to these jurisdictions' economic growth over the six-year construction period, generate new personal earnings to the benefit of residents of these jurisdictions, and support the expansion of the employment base in these jurisdictions beyond the direct on-site construction jobs. Additionally, this spending will support jobs in the broader national and global economies as a result of the purchases of goods and services directly related to the construction of the HOT Lanes and the re-spending of payroll dollars and the re-cycling of indirect monetary flows through the breadth of the local, regional, and state economies.

The magnitude of this direct spending and its economic impacts is summarized in the table below. The total cost of the Capital Beltway HOT Lanes project is \$1.98 billion. For purposes of economic impact analysis several categories of spending are excluded, as they do not generate local economic impacts. These include: land acquisition, the costs of financing, insurance, and debt service and related reserves. The direct spending of \$1.54 billion for the construction of the Capital Beltway HOT Lanes over the 2008-2013

period was found to contribute a total of \$2.33 billion to the Fairfax County economy (reflecting a multiplier of 1.5144), \$2.67 billion to the Washington metropolitan area economy (reflecting a multiplier of 1.7352), and \$3.46 billion to the Commonwealth of Virginia economy (reflecting a multiplier of 2.253) over the six-year construction period.

Summary of Economic Impact of Construction Spending
For the Capital Beltway HOT Lanes, 2008-2013
(dollars in millions)

Sources	Total Output(1)	Personal Earnings(2)	Jobs Supported(3)
Fairfax County	2,329.83	\$451.778	13,279
Washington Area	2,669.43	\$821.026	31,844
Virginia	\$3,465.89	\$934.089	29,210

Sources: Capital Beltway Express, LLC, GMU Center for Regional Analysis

Additionally, the direct construction spending totaling \$1.54 billion and its re-spending within the local, area and state economies will generate new personal earnings to the benefit of the resident workers of these respective jurisdictions totaling \$451.8 million, \$821.0 million, and \$934.1 million respectively in Fairfax County, the Washington metropolitan area, and the Commonwealth of Virginia. These new personal earnings can be converted to full-time job equivalents to provide further insight regarding the magnitudes of these impacts. These job-equivalents are: 5,650 in Fairfax County; 11,200 in the Washington metropolitan area; and 16,550 in the Commonwealth of Virginia. These new personal earnings also have important fiscal implications including sales and income tax potential.

This construction spending for the HOT Lanes also will support jobs in a broader context, induced by the increase in business activities associated with the re-spending of payroll dollars that extend the economic benefits beyond the Commonwealth of Virginia and the Washington metropolitan area. The totality of these off-site employment effects is apparent from the summary table above.

The significance of these economic benefits will vary depending on the scale of the economies being impacted. Their importance will also vary depending on the health of the economy. While it can be argued that spending that generates impacts in excess of the initial outlay reflects a good business investment (e.g., the 2.25 multiplier in Virginia reflects a net rate-of-return of 125% on the construction outlay), when the economy is on the verge of contracting or struggling to register growth, the injection of a large stream of new capital spending will have even greater positive impacts.

The scale of these impacts can be seen more clearly at the County level, where the indirect and induced job growth supported by the HOT Lanes construction spending may account for ten percent of the County's job growth in 2009 and as much as 20 percent of its gain in gross county product. At the State level, when its total employment base is projected to contract in 2009, the generation and support of new jobs linked directly and indirectly to outlays for HOT Lanes construction take on even greater importance. And, as the Fairfax County, Washington metropolitan area and Commonwealth of Virginia economies re-accelerate in 2010, HOT Lanes construction spending will remain important sources of personal earnings and new jobs through project completion in 2013.

Even though these economic impacts are confined to the construction period, they represent a large infusion of spending that will penetrate the breath of the local, area and state economies and, when completed, this spending will have created a new transportation capacity and comparative economic advantage that will help shape the Fairfax County and regional economies for decades into the future with ongoing and significant economic benefits accruing to a wide range of beneficiaries.

Introduction

The Capital Beltway HOT Lanes project will generate economic benefits during its construction phase that will accrue to Fairfax County, the Washington metropolitan area and the Commonwealth of Virginia. These economic benefits will include both the pre-construction and construction phases extending through the year 2013. With the completion of construction, the full range of benefits will have been realized as reflected in the local and regional economies.

Additional and more wide-ranging economic benefits will be generated during the post-construction period resulting from the operation and use of the HOT lanes and the impacts of additional and more efficient transportation services on the local and regional economies, the highway users, and businesses and property owners served by the HOT Lanes. These post-construction benefits will recur annually for the lifetime of the project. The findings reported herein focus only on the construction phase and the economic benefits that will be generated by the design, construction and project management during the construction phase of the Capital Beltway HOT lanes project

The objectives of this research are to calculate the economic impacts on Fairfax County, the Washington metropolitan area and the Commonwealth of Virginia of the \$1.9 billion in construction outlays to build the HOT lanes on the Capital Beltway extending from the Springfield Mixing Bowl to just north of the Dulles Toll Road over the 2008-2013 period. The economic impact of this construction spending will be measured in terms of its contribution to the gross county product (GCP), gross regional product (GRP) and gross state product (GSP) respectively for Fairfax County, the Washington metropolitan area and the Commonwealth of Virginia.

Additional economic benefits will include the value of new personal earnings generated for the residents of Fairfax County, Washington Metropolitan Area (WMSA) and the Commonwealth of Virginia from the direct and indirect spending effects resulting from this construction spending and the number of jobs supported as a result of this construction spending over the construction period. Construction spending would include both the soft and hard costs associated with the Project but exclude financing fees, reserves, and insurance payments, as these types of payments do not generate local economic benefits or benefits in the current period. The calculation of these economic impacts will be reported for the total six-year construction period as well as distributed by year of spending outlay.

Sources of Direct Economic Impact

The sources of economic impact deriving from the construction phase of the HOT Lanes project include expenditures for the design, planning and engineering of the project, legal and other related professional services, project management, the purchase of construction materials and equipment, on-site and off-site labor directly associated with construction activities, grading and landscaping, and related infrastructure. The design, planning, engineering, management, legal and other related professional services are termed soft

costs where the outlays associated with the construction work are termed hard costs. While soft costs have been incurred prior to the start of construction, these are being treated in this analysis as outlays occurring during the 2008-2013 construction period. There are additional project costs that are not being included in the economic impact analysis, as they do not involve outlays having direct local economic impacts. These include: land acquisition, costs of financing and insurance. Contingency reserves have been apportioned to soft and hard costs based on their intended purposes.

The total direct outlays associated with the construction of the Capital Beltway HOT Lanes project are summarized in Table 1. These are divided into soft and hard costs. These outlays over the construction period will determine the magnitude of indirect and induced spending that will occur within the Fairfax County, Washington metropolitan area and Virginia economies as these direct expenditures are re-cycled and re-spent within the local, area and state economies.

Table 1

Sources Of Direct Economic Impact
HOT Lanes Construction, 2008-2013
(in millions of dollars)

Sources	Direct Outlay
Soft Costs*	\$94.8
Hard Costs**	\$1,443.6
Total Outlays	\$1,538.4

Sources: Capital Beltway Express, LLC, GMU Center for Regional Analysis. *includes design, engineering, R&D, And management costs; excludes financing fees and reserves, and insurance. **includes labor, equipment and materials, excludes land purchases.

The economic impacts generated by the construction project will occur over the length of the project reflecting the pace and types of outlays being made. While the total economic impact of the HOT Lanes project will be the sum of these benefits over the length of the project, their pattern will reflect the flow of direct spending as shown in Table 2. This pattern reflects the start-up phase of construction in 2008, accelerating in 2009 through 2012 when 88 percent of the construction spending will occur with completion scheduled for 2013. Actual economic impacts will follow direct spending by as much as a year as the re-spending of payroll and purchases work their way through the local, area and state

economies. For the purposes of this economic impact analysis, the economic impacts are reported in aggregate and not broken down to specific year.

Table 2

Distribution of Construction Outlays by Year, 2008-2013
(dollars in millions)

Year	Construction Outlay*	Percent
2008	\$110.765	7.2
2009	395.369	25.7
2010	363.062	23.6
2011	318.449	20.7
2012	278.450	18.1
2013	72.305	4.7
Totals	\$1,538.4	100.0

Sources: Capital Beltway Express, LLC, GMU Center for Regional Analysis. *From Table 1.

Total Economic Impact of HOT Lane Construction

The economic impact of the Capital Beltway HOT Lanes project result from the recycling of payroll and other outlays associated with the project within the local, area and state economies. As these initial outlays are re-spent they generate additional revenues for a wide range of businesses and support payroll disbursements and additional purchases spanning the entire economy. The accumulated value of these direct and indirect and induced outlays—the value added to the local, area and state economies—can be measured in term of their contributions to the respective jurisdiction’s gross product, the value of all goods and services produced within that economy.

The total value of goods and services generated as a result of spending associated with the Capital Beltway HOT Lanes project can be calculated by applying economic multipliers for the types of work being done—management, legal services, engineering services, highway construction—to the direct outlays associated with that work. The U.S. Department of Commerce’s Bureau of Economic Analysis (BEA) calculates these multipliers (RIMS II) for counties, metropolitan areas and states for all economic activities. The magnitude of these multipliers varies depending on the complexity and size of the jurisdiction’s economy (larger economies retain a greater share of the spending to be re-cycled locally than a smaller economy) and the nature of the work being done (some sectors are more labor intensive than others and labor costs reflect different pay scales—professional, skilled, unskilled).

These multipliers enable the total contribution of direct outlays to the host jurisdictions to be calculated as well as their impacts on personal earnings that would accrue to residents of these jurisdictions. The employment impact of these outlays can also be calculated from the BEA multipliers although where geographic location of these jobs can not be determined; that is, the off-site jobs supported by the direct outlays could be outside of the jurisdiction of study as products being consumed locally are produced elsewhere and imported to the local economy. Still, some measure of local job growth can be inferred from the new personal earnings retained in the host jurisdictions by dividing that value by the average local salary to convert new personal earnings to job equivalents. That will be done in this analysis to provide a frame of reference for the personal earnings impacts associated with the HOT Lanes project.

Fairfax County

The economic impacts of spending associated with construction of the HOT Lanes accruing to Fairfax County are shown in Table 3. The direct outlay of \$1.54 billion over the six-year construction period will add \$2.33 billion to the County's economy—gross county product (GCP). In 2008, the County's GCP is estimated to total \$90.9 billion. One measure of the importance of this one project can be provided by annualizing the HOT Lane's economic impacts (\$2.4 billion/6 years) and comparing to the totality of the County's GCP: $\$388 \text{ million}/\$90.9 \text{ billion} = 0.43\%$. While this is an important contribution to the County's overall economy, as a contribution to one year's projected increase in GCP, the HOT Lanes spending takes on an much greater significance. With 25% of the HOT Lanes spending occurring in 2009, the total economic impact of this one-year outlay and its related impact could account for as much as 20 percent of the County's increase in GCP.

In addition to contributing \$2.33 billion to the County's economy over the 6-year construction period, these direct outlays for soft and hard costs will generate a total of \$452 million in new personal earnings that will accrue to workers residing in the County. These are wages and salaries earned by County residents that would not have been earned in the absence of these construction outlays and they accrue from business activities generated within all sector of the County's economy largely from the re-spending of payroll and other business income within the county.

This increase in personal earnings represents a full-time job equivalent of approximately 5,650 jobs (on average 950 new jobs per year for 6 years) assuming the jobs supported reflect the average income of all jobs in the County in 2008. The addition of these new jobs during the slowdown in the local economy is significant. In 2008 and 2009, these new HOT Lanes-related jobs could account for as much as 10% of all new job growth in the County. While in subsequent years this percentage will move lower towards 5% as the County economy recovers, it remains a significant source of new job growth.

In addition to the new personal earnings (and the County job equivalent) that will be generated by the construction outlays for the HOT Lanes project, the direct outlay of

\$1.54 billion will support 13,279 jobs in total throughout the local, area, State, national and global economies. These jobs include those related to the manufacture and transport of products used in the construction of the HOT Lanes project as well as all the indirect and induced jobs that are generated as the direct outlays are re-cycled through the larger economies beyond Fairfax County.

Table 3

The Impact of HOT Lanes Construction Spending on
The Fairfax County Economy, 2008-2013
(dollars in millions)

Sources	Direct Outlays	Total Output(1)	Personal Earnings(2)	Jobs Supported(3)
Soft Costs	\$94.8	\$148.55	\$39.342	821
Hard Costs	1,443.6	2,181.28	412.436	12,458
Fairfax County	\$1,538.4	\$2,329.83	\$451.778	13,279

Sources: Capital Beltway Express, LLC, GMU Center for Regional Analysis
(1) the direct and indirect impact on the respective area's economy as a result of construction spending; (2) the additional personal earnings generated to the benefit of each respective jurisdiction's residents; (3) the off-site job supported in the jurisdiction and elsewhere in the national economy due to the spending and re-spending of the direct outlays associated with HOT Lanes construction.

Washington Metropolitan Area

The direct spending of \$1.54 billion for the construction of the Capital Beltway HOT Lanes project over the 2008-2013 period will have economic impacts that extend well beyond Fairfax County as the impacts of this spending flow out of Fairfax County with the flow of payroll dollars and outlays for the purchases of services, materials or equipment to other jurisdictions within the Washington metropolitan area. Even though the Fairfax County is the largest single economy within the metropolitan area, all of the economies of the region are significantly interrelated. These interdependences are reflected in a larger multiplier for each regional sector and in the larger capture rates of jobs and personal earnings. The total economic impacts accruing to the Washington area economy (gross regional product—GRP) is shown in Table 4.

The Washington metropolitan area economy will experience a total economic impact of \$2.7 billion over the six-year construction period as a result of the direct construction outlay of \$1.54 billion. This direct spending for the construction of the HOT Lanes will

generate \$821 million in new personal earnings to the benefit of resident workers within the Washington area (MSA). These new personal earnings can be equated with a job equivalent (assuming an average income for the metropolitan area) of approximately 11,200. These earnings (and job equivalent) would span the full economy and have impacts in all of the region’s constituent cities and counties.

In addition to the regional impacts on the Area’s economy and income base, the direct outlays for HOT Lanes construction will support a total of 31,844 jobs within the Washington metropolitan area, its constituent states, the national and global economies. As the re-spending of payroll dollars flowing from the direct outlays associated with HOT Lanes construction and all other purchases of goods and services largely end in the retail sector as this spending rolls through the economy and retail services have a large job generation impact (due to lower wages—more jobs per \$1 million dollars), the total number of jobs supported in the Washington area is significantly larger than at the County level.

Table 4

The Impact of HOT Lanes Construction Spending on
The Washington Area Economy, 2008-2013
(dollars in millions)

Sources	Direct Outlays	Total Output(1)	Personal Earnings(2)	Jobs Supported(3)
Soft Costs	\$94.8	\$164.50	\$69.488	1,962
Hard Costs	1,443.6	2,504.93	\$751.538	29,882
Washington*	\$1,538.4	2,669.43	\$821.026	31,844

Sources: Capital Beltway Express, LLC, GMU Center for Regional Analysis
(1) the direct and indirect impact on the respective area’s economy as a result of construction spending; (2) the additional personal earnings generated to the benefit of each respective jurisdiction’s residents; (3) the off-site job supported in the jurisdiction and elsewhere in the national economy due to the spending and re-spending of the direct outlays associated with HOT Lanes construction.

*Washington metropolitan area (MSA)

Interestingly, the job impacts within the Washington area also are larger than for the Virginia economy (see Table 5). These differences relate more to the types of jobs being supported locally versus national and whether these are more likely to be local or non-local; that is, are they related to personal consumption for services and necessity goods or spending for goods and services produced within the larger economies (national and global). The Washington area economy is the fourth largest among metropolitan areas in

the U.S. and retains a significant portion of residential and business service spending and spending for necessity goods and therefore realizes a significant income and employment impact from the direct outlays for HOT Lanes construction.

Commonwealth of Virginia

Direct spending on the construction of the Capital Beltway HOT Lanes totaling \$1.54 billion over the 2008-2013 period will contribute a total of \$3.5 billion to the economy of the Commonwealth of Virginia. This economic impact is inclusive of the economic impacts flowing to the Fairfax County economy and reflects the larger capture rate that the State's business base and labor force represents and the degree to which the economic benefits flowing from the HOT Lanes construction project spill over to the broader Virginia economy.

The magnitude and importance of these spillover effects is further seen in the new personal earnings that will be generated as a result of HOT Lanes construction outlays. A total of \$934 million of new personal earnings will be generated within the State economy; that is \$482 million more than the \$452 million flowing to Fairfax County residents. This new income (realized over the 6-year construction period) will be re-spent numerous times generating sales and income taxes for the state and other revenue flows. The job equivalent of these new personal earnings, assuming the state average salary for all jobs, would be approximately 16,550 jobs or 2,760 jobs per year for six years. These are jobs beyond those directly generated on-site by the HOT Lanes construction project.

Additionally, the direct outlays of HOT Lanes construction would support a total 29,210 jobs worldwide. While a significant portion of the jobs generated or supported by the re-spending of the direct outlays associated with the HOT Lanes construction are captured locally, regionally, and within the State, others are supported throughout the national economy and some will be supported globally reflecting the globalization of our economy and diverse sources of construction materials and equipment and the goods consumed by businesses and individuals. Still, the large majority of economic benefits flowing from the direct outlays for HOT Lanes construction are retained within the local, area and state economies as shown in Tables 3, 4 and 5.

The interdependences among the activities involved in designing and building the Capital Beltway HOT Lanes are illustrated in the 2.25 aggregate multiplier for these outlays. For each \$1 in direct spending for HOT Lanes construction (soft and hard costs combined), the Virginia economy will realize a total additional benefit of \$1.25 for a total economic impact—contribution to the State's gross state product—of \$2.25. In terms of economic return on investment, HOT Lanes construction spending over the 2008-2013 period will reflect a 125% return to the State's economy and, in doing so, generates new personal income within the State—to the benefit of State residents—totaling \$934 million reflecting the equivalent of 16,550 jobs within the State over this period.

Table 5

The Impact of HOT Lanes Construction Spending on
The Virginia Economy, 2008-2013
(dollars in millions)

Sources	Direct Outlays	Total Output(1)	Personal Earnings(2)	Jobs Supported(3)
Soft Costs	\$94.8	\$198.01	\$70.816	1,782
Hard Costs	1,443.6	3,267.88	863.273	27,428
Total Virginia	\$1,538.4	\$3,465.89	\$934.089	29,210

Sources: Capital Beltway Express, LLC, GMU Center for Regional Analysis
(1) the direct and indirect impact on the respective area’s economy as a result of construction spending; (2) the additional personal earnings generated to the benefit of each respective jurisdiction’s residents; (3) the off-site job supported in the jurisdiction and elsewhere in the national economy due to the spending and re-spending of the direct outlays associated with HOT Lanes construction.

Economic Impacts on Small, Women-Owned Business and Disadvantaged Business Enterprises from HOT Lanes Construction

The distribution of the economic impacts identified in Tables 3, 4 and 5 within the economies of Fairfax County, the Washington metropolitan area and the Commonwealth of Virginia, respectively, affects all sectors of the economy as the payroll dollars and purchases of goods and services to support HOT Lanes construction are re-cycled through these economies. In order to assure that these economic benefits have the broadest impact on the local, area and state economies, goals have been accepted for the participation of Disadvantaged Business Enterprise (DBE) and Small, Women-Owned and Minority Business (SWaM) in the construction phase of the Project. These goals provide for 15% DBE participation and 25% SWaM participation of the Design-Build Contract over the construction period.

Summary of Economic Impacts

The economic impacts flowing from the construction of the Capital Beltway HOT Lanes over the 2008-2013 construction period have been showed to be significant at the local, metropolitan area and state levels, as summarized in Table 6. The direct spending for the design, engineering, management, and construction of the HOT Lanes project will total \$1.98 billion with \$1.54 billion of this spending having direct economic impacts as these

monies are spent, re-spent and re-cycled numerous times through the local economy until they have leaked out to non-local economies where they will generate additional benefits over a lengthy period.

The direct and indirect (and induced) spending that will accrue to the Fairfax County economy are estimated to total \$2.4 billion over the construction period generating \$452 million in new personal earnings for County residents. Both the contribution to the County’s GCP and its employment base represent significant benefits with their importance being magnified further by the general slowdown in the national, state and local economies that is likely to continue through a portion of the construction period.

Table 6

Summary of Economic Impact of Construction Spending
For the Capital Beltway HOT Lanes, 2008-2013
(dollars in millions)

Sources	Total Output(1)	Personal Earnings(2)	Jobs Supported(3)
Fairfax County	2,329.83	\$451.778	13,279
Washington Area	2,669.43	\$821.026	31,844
Virginia	\$3,465.89	\$934.089	29,210

Sources: Capital Beltway Express, LLC, GMU Center for Regional Analysis
(1) the direct and indirect impact on the respective area’s economy as a result of construction spending; (2) the additional personal earnings generated to the benefit of each respective jurisdiction’s residents; (3) the off-site job supported in the jurisdiction and elsewhere in the national economy due to the spending and re-spending of the direct outlays associated with HOT Lanes construction.

At each level of analysis—Fairfax County, Washington metropolitan area and Commonwealth of Virginia—the economic impacts of spending \$1.54 billion for HOT Lanes construction were found to be large. This increasing magnitude of benefits reflects the complexity of the regional and state economies, their large geographic scales, and the interdependencies of their constituent economies. These are particularly evident in the distribution of payroll-related impacts and the capture rates of this spending and re-spending within the regional economy. The magnitude and significance of these economic impacts underscores the importance of the HOT Lanes project as a positive influence on the local, area and state economies during these challenging economic times.