

Virginia's Urban Crescent

September 4, 2012

Congestion Costs of a 'Do Nothing' Approach in Virginia's Urban Crescent

Increasing demands on transportation infrastructure coupled with an evaporating revenue stream for new construction put the future of the Commonwealth's economy at risk. Virginia recently lost its top ranking in the *CNBC Best State for Business* survey due primarily to inadequate transportation infrastructure.

When analyzing the impact of congestion, it is clear that there are multiple costs that accrue to a geographic area due to a lack of transportation infrastructure. Measuring the impact of these congestion costs can be broken down into two subgroups:

- Systems and users (travel times costs and gasoline/diesel usage)
- Business and resident location (labor mobility, land values, and business investment)

Most studies which estimate the cost of congestion focus simply on the impacts on systems and users, paying specific attention to the value of time lost in traffic and excess motor fuel burned during delays.

Employing analysis conducted by the *Texas Transportation Institute* for the three metropolitan areas for which there is data, the analysis reveals that the total congestion cost over the 28-year period from 2013 to 2040 will cost commuters and businesses in the Urban Crescent approximately **\$77 billion**, resulting from **5.6 billion hours of delay**.

2013-2040 Total Congestion Costs		
PDC	Total Hours Delay	Net Present Value
Crater	NA	NA
George Washington	NA	NA
Hampton Roads	1.3 billion	\$17.1 billion
Northern Virginia	3.7 billion	\$52.7 billion
Richmond Regional	0.6 billion	\$7.2 billion
Total	5.6 billion*	\$77 billion*

2010 Cost Per Person		
PDC	Congestion Cost	Total Hours Delay
Crater	NA	NA
George Washington	NA	NA
Hampton Roads	\$446.8	23.6
Northern Virginia	\$848.5	41.6
Richmond Regional	\$270.9	14.3

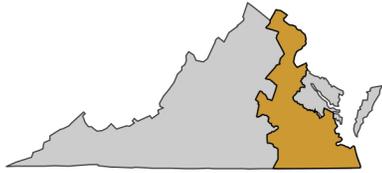
NA – the data is not provided for these areas by the Texas Transportation Institute.

*This figure does not include the Crater and George Washington planning district commissions, which represent an estimated 507,000 residents and 240,000 jobs.

This conservative analysis understates future costs in several important ways. Most importantly, this analysis does not account for the impact on land values or business location decisions. Also, this analysis assumes that congestion will increase at a constant rate per person, while evidence suggests that congestion costs increase exponentially for systems that have exceeded capacity. Forecasters also expect both the value of time and the cost of fuel will increase in real terms, while this analysis uses the 2010 prices for both time and fuel.

Methodology

Texas Transportation Institute produces data on the cost of congestion in the 101 largest MSAs in the United States. This analysis employs the cost estimates for Richmond, Hampton Roads, and the Virginia portion of the Washington, DC region. Using *Woods and Poole* population projections for Virginia cities and counties and the cost of congestion per person in these regions, the cost of congestion for each year from 2013 to 2040 can be estimated (in 2010 \$s). Using a discount rate based on the current 30-year US Treasury yield of 2.52% allows for a final estimate of the Net Present Value of costs resulting from a 'Do Nothing' approach for each region and the Urban Crescent as a geographic unit.



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Revenue Generation Capabilities

The following table is a summary of the revenue generated from a variety of taxes and fees, some of which were included in HB 3202 (2007).

Revenue Source	(\$ millions)						
	Crater	George Washington	Hampton Roads	Northern Virginia	Richmond Regional	Urban Crescent	Statewide
Local income tax of 1% ¹	\$19.8	\$63.8	\$251.2	\$735.1	\$202.7	\$1,272.6	\$1,639.5
Local sales tax of 1% (levied according to existing local option) ²	\$18.7	\$38.8	\$194.8	\$358.2	\$147.3	\$757.8	\$1,027.9
Tax increase of 10¢-per-gallon on motor vehicle fuels ³	\$8.7	\$16.6	\$83.6	\$114.1	\$50.7	\$273.7	\$404.8
Property tax of 1¢ per \$100 of assessed value ⁴	\$1.3	\$3.5	\$17.3	\$37.7	\$10.9	\$70.7	\$97.1
*5% tax on automobile repairs ⁵	\$2.7	\$5.2	\$25.9	\$35.3	\$15.7	\$84.8	\$125.4
*Grantors tax of 40¢ per \$100 of assessed value ⁶	\$0.8	\$4.1	\$15.2	\$46.2	\$10.4	\$76.7	\$95.1
*Motor vehicle rental tax of 2% ⁷	\$0.2	\$0.4	\$3.7	\$8.6	\$2.5	\$15.4	\$16.7
*One-time vehicle registration fee of 1% ⁸	\$3.3	\$8.4	\$35.1	\$60.6	\$21.4	\$128.8	\$182.6
*Annual registration/inspection fee of \$10 per vehicle ⁹	\$1.7	\$3.3	\$14.7	\$18.4	\$9.7	\$47.9	\$76.4
*2% retail tax on motor fuel sales ¹⁰	\$6.0	\$11.4	\$57.3	\$78.1	\$34.7	\$187.5	\$227.1

*Denotes revenue streams included in HB 3202.

¹Income tax revenue based on data from taxable year 2009. Source: Department of Taxation.

²Sales tax revenue based on 1% local option data for 2011. Source: Department of Taxation.

³Fuel usage based on per capita fuel consumption estimates of 500 gallons per year. Sources: US Energy Information Administration and the Weldon Cooper Center.

⁴Property values based on the fair market value of real estate for tax year 2010. Source: Department of Taxation.

⁵Automobile repair expenditure estimates based on the Consumer Expenditure Survey Data for Households. Sources: Bureau of Labor Statistics, US Census Bureau, and the Weldon Cooper Center.

⁶Grantor's Tax based on deeds of conveyance for FY 2012. Source: Virginia Department of Accounts.

⁷Vehicle rentals based on rental tax receipts from July 2011 through June 2012. Source: Department of Motor Vehicles.

⁸Vehicle registration revenues on motor vehicles sales/use tax collections from July 2011 through June 2012. Source: Department of Motor Vehicles.

⁹Registration/inspections revenue based on vehicle registrations as of June 2011. Source: Department of Motor Vehicles.

¹⁰Motor fuels revenue based on Virginia's average fuel consumption and average price for calendar year 2012. Sources: US Energy Information Administration, the Weldon Cooper Center, and AAA Fuel Gauge Report.