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MEMORANDUM

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To: Lynne Porfiri, Acting Assistant Director, Dept. of Environmental Services, Arlington County

From: HR&A Advisors, Inc.

Date: July 16, 2014

Re: Estimated Revenue Impacts to the Commonwealth of Virginia

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*Executive Summary*

Arlington County’s Department of Environmental Services requested that HR&A provide an estimate of the additional Commonwealth of Virginia tax revenues that would be generated by an investment in either streetcar or enhanced bus services along the Columbia Pike Corridor, building on the “Comparative Return on Investment (ROI) Study” prepared by HR&A earlier this year. This memorandum describes our methodology for estimating potential incremental State revenues over a 30-year investment return period consistent with the assumptions in the ROI study. The estimated tax revenue impacts described in this memorandum are subject to the general and limiting conditions presented on page 2 of HR&A’s “Columbia Pike Transit Initiative: Comparative Return on Investment Study.” The key findings are:

- **Annual Incremental Revenues:** HR&A projects that in 2027 (10 years after the beginning of streetcar construction), economic activity associated with a streetcar investment would generate a total of \$14.9 million in additional Commonwealth of Virginia tax revenues relative to the baseline (no-build) scenario, while enhanced bus would generate \$4.1 million relative to the baseline.
- **Total 30-year Revenues:** Over a 30-year period, streetcar service will generate \$425 million in incremental tax revenues for the Commonwealth compared with the baseline scenario, and \$305 million more than would an investment in enhanced bus.
- **Discounted 30-year Revenues:** Using a range of discount rates for this 30-year period, HR&A estimates that the streetcar investment would generate between \$125 million and \$250 million in tax revenues compared with baseline conditions, and \$90 million to \$180 million more in additional tax revenues to the Commonwealth than would be generated by an investment in enhanced bus.

*Background*

HR&A’s report “Columbia Pike Transit Initiative: Comparative Return on Investment Study,” released in March 2014, compared the economic and fiscal benefits projected to be generated by an investment in enhanced bus or streetcar service along the Columbia Pike corridor. Based on a thorough review of national precedents and local market conditions, and in consideration of the characteristics of each transit

mode as defined by Arlington County and its transportation consultants, HR&A developed a comprehensive economic and fiscal impact model that estimated real estate value appreciation and the quantity and pace of new development in the study area over a 30-year period under baseline conditions, with investment in enhanced bus, and with investment in streetcar service.

HR&A found that over 30 years, streetcar will confer between \$2.2 billion and \$3.0 billion more in net incremental benefits (defined as real estate value generated less capital and O/M costs) over and above enhanced bus, and between \$3.2 billion and \$4.4 billion more in net incremental benefits over and above baseline conditions. These benefits are presented in **Figure 1**.

**Figure 1: Net Incremental Benefits (Return on Investment) of Enhanced Bus and Streetcar Service**

Impact Type	0% Discount Rate		3% Discount Rate		7% Discount Rate	
	TSM 2	Streetcar	TSM 2	Streetcar	TSM 2	Streetcar
Real Estate Value Generated (\$M)	\$2,140	\$6,280	\$1,560	\$4,790	\$1,100	\$3,510
Capital Investment Cost (\$M)	\$70	\$280	\$60	\$260	\$50	\$220
Operations and Maintenance Cost (\$M)	\$140	\$230	\$90	\$140	\$50	\$80
Net Benefits - Return on Investment (\$M)	<b>\$1,930</b>	<b>\$5,770</b>	<b>\$1,410</b>	<b>\$4,390</b>	<b>\$1,000</b>	<b>\$3,210</b>

Source: HR&A Advisors, Inc. analysis; Note: All dollar amounts are in millions of \$2014, rounded to nearest \$10 million.

The mobility and amenity benefits offered by transit investment will position the corridor to be more competitive in attracting demand in the regional market. As shown in **Figure 2**, HR&A estimated that streetcar would generate 4,000 more housing units, 110,000 more square feet of retail, and 560,000 more square feet of office than would be achieved under baseline growth conditions, and enhanced bus service would generate 1,200 more housing units, 40,000 more square feet of retail, and 200,000 more square feet of office than under baseline growth conditions.

**Figure 2: Total Net 30-Year Real Estate Delivery**

Total New Development	Baseline	TSM 2	Streetcar
Residential (units)	11,400	12,600	15,400
Retail (square feet)	260,000	300,000	370,000
Office (square feet)	3,410,000	3,610,000	3,970,000

Source: HR&A Advisors, Inc. analysis

The incremental development catalyzed by new transit infrastructure on the Columbia Pike corridor will generate significant tax revenues for the Commonwealth of Virginia. The analysis described below estimated this revenue impact on the Commonwealth.

HR&A estimated the net Commonwealth of Virginia tax revenue associated with the implementation of enhanced bus service and streetcar service. According to estimates prepared by Arlington County's Department of Management and Finance, in Fiscal Year 2012 Arlington County provided over \$699 million in State tax revenues to the Commonwealth, and 97% of these revenues resulted from two taxes – individual income tax and sales tax.

### *Individual Income Tax*

Virginia's individual income tax is a progressive tax on the incomes of Virginia residents and a small percentage of those working in Virginia but residing in other states. In Fiscal Year 2013, individual income tax accounted for 72% of general fund revenues to the Commonwealth. Further, in that same year, Arlington and Fairfax Counties combined to account for 29% of all individual income tax liabilities in the Commonwealth.

In this analysis, HR&A translates the values of new residential development projected in the "Comparative Return on Investment Study" into average household incomes of the residents that occupy the development, based on the assumption that, on average, households spend 30% of income on housing.<sup>1</sup> These household incomes are converted to taxable income by assuming deductions valued at 20% of aggregate gross income (the approximate average for households in these income brackets in Virginia according to the Commonwealth's Annual Report for Fiscal Year 2013). The tax liability for these households is assumed to be \$720 plus 5.75% of the portion of taxable incomes greater than \$17,000 (the top tax bracket in Virginia). Finally, these per-household tax liabilities are multiplied by the cumulative net new housing units to estimate the overall revenue impact to the Commonwealth.

For instance, as outlined in **Figure 3**, ten years after the beginning of streetcar construction (2027), we project that 3,300 net new housing units will have been developed in the Columbia Pike Corridor, even in the absence of a new transit investment. However, the implementation of a streetcar will result in an additional 5,800 housing units developed, while an enhanced bus would result in the development of 1,600 more housing units than the baseline. Under the streetcar scenario, the households in these additional homes will generate an estimated \$28 million, annually, in individual income tax revenue to the Commonwealth; under the enhanced bus scenario, additional households would generate an estimated \$7 million, annually, in individual income tax revenue.

However, it is likely that some development that will occur on the Columbia Pike corridor would take place elsewhere in the Commonwealth absent the investment in transit, and would thus not generate net new tax revenues. In order to project the portion of new income tax receipts that is net new to the Commonwealth of Virginia, HR&A relies on migration data from the US Census Bureau. Census data indicates that 54% of households changing their residence to or within Arlington County move from a residence somewhere in Virginia; 64% of households changing their residence to or within Fairfax County move from somewhere in-state. HR&A therefore assumes that 46% of new units in Arlington County and 36% of new units in Fairfax County attract net new residents to the Commonwealth, and adjusts the projected income tax

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<sup>1</sup> Representing a blend of residents of both market rate and affordable housing, household incomes in the initial year of analysis were estimated to range from an average of \$75,000 in Bailey's Crossroads to \$78,000 on Columbia Pike and \$92,000 in Pentagon City. These incomes are equivalent to 77%, 80%, and 95%, respectively, of the US Department of Housing and Urban Development's official Area Median Income for a family of three in the Washington metro area of \$97,000.

revenue impact accordingly.<sup>2</sup> As shown in **Figure 3**, HR&A projects the estimated net impact of streetcar on annual Virginia individual income tax revenues to be \$13 million in 2027 and the impact of enhanced bus to be \$3 million.

**Figure 3: Annual Individual Income Tax Revenue by Scenario, 2027**

	Baseline	TSM 2	Streetcar
Net New Housing Units Built	3,300	4,900	9,100
New Housing, Net of Baseline	-	<b>1,600</b>	<b>5,800</b>
Estimated Average Housing Values (varying by sub-area)	\$370,000- \$450,000	\$390,000- \$470,000	\$410,000- \$500,000
Estimated Average Household Incomes (varying by sub-area)	\$89,000- \$109,000	\$93,000- \$114,000	\$99,000- \$121,000
Estimated Average Household State Income Tax Liability (varying by sub-area)	\$3,800- \$4,800	\$4,000- \$5,000	\$4,300- \$5,300
Aggregate State Income Tax Revenue from New Housing	\$14 Million	\$21 Million	\$42 Million
Aggregate State Income Tax Revenue, Net of Baseline	-	\$7 Million	\$28 Million
Net New State Income Tax Revenue, Net of Baseline	-	<b>\$3 Million</b>	<b>\$13 Million</b>

Source: HR&A Advisors, Inc. analysis

HR&A's model estimated the cumulative impact on individual income tax revenues to the Commonwealth over a 30-year period, with fiscal benefits reported under a three percent and seven percent discount rate. HR&A projects that over this entire period, an investment in streetcar and the resulting real estate impacts will generate \$75 million to \$145 million more in individual income tax revenues to the Commonwealth than would be generated by enhanced bus (**Figure 4**).

**Figure 4: Cumulative Net New Individual Income Tax Revenue Due to Enhanced Bus and Streetcar Service**

	0% Discount Rate		3% Discount Rate		7% Discount Rate	
	TSM 2	Streetcar	TSM 2	Streetcar	TSM 2	Streetcar
Individual Income Tax	\$105	\$370	\$60	\$215	\$30	\$105

Source: HR&A Advisors, Inc. analysis

Note: All dollar amounts are in millions of \$2014, rounded to nearest \$5 million.

<sup>2</sup> Given that additional households may be moving from outside Virginia to fill the homes vacated by Virginia households moving to the Columbia Pike Corridor, this assumption may underestimate the net new income tax revenue to the Commonwealth.

## Sales Tax

The Commonwealth collects a state-wide tax of 5.3% of general sales, plus a 0.7% regional transportation sales tax applied in Northern Virginia on general sales. For unprepared foods (e.g. groceries), a reduced statewide tax rate of 2.5% applies. Of these tax rates on retail sales, 1% is returned to the localities; for the purposes of this analysis, only the portion of the sales tax retained by the Commonwealth (5% for general sales, 1.5% for unprepared foods) is considered. In Fiscal Year 2013, sales tax revenue accounted for 20% of the Commonwealth's general fund revenue in addition to \$520 million set aside for the Commonwealth's Transportation Trust Fund.<sup>3</sup> Combined, Arlington and Fairfax Counties accounted for approximately 20% of sales tax collected in the Commonwealth.

HR&A applied this tax rate to the projected future retail and restaurant revenues generated by net new retail development associated with enhanced bus or streetcar. As with estimates of local sales tax conducted for the "Comparative Return on Investment Study," HR&A assumed this new development generates \$330 in annual sales per square foot, (as a weighted average for both retail and restaurant space), in line with national averages for tenants in urban locations.

All sales tax is projected to be "net new," given that the retail spending potential of new households far exceeds the amount needed to support the quantity of retail space projected, even after assuming that 46% of new units in Arlington County and 36% of new units in Fairfax County are net new to the Commonwealth.<sup>4</sup>

In the tenth year after streetcar construction (2027), HR&A projects that the streetcar would generate an additional \$2.3 million in annual sales tax revenue to the Commonwealth, relative to the baseline scenario, while the enhanced bus would generate \$0.7 million in new sales tax revenue over the baseline (**Figure 5**).

**Figure 5: Annual Sales Tax Revenue by Scenario, 2027**

	Baseline	TSM 2	Streetcar
Net New Retail Space	76,000	118,000	220,000
New Retail Space, Net of Baseline	-	42,000	144,000
Estimated Total Sales Volume (\$330/SF)	\$25 Million	\$39 Million	\$73 Million
Estimated Total Sales Tax Generated	\$1.2 Million	\$1.9 Million	\$3.5 Million
Estimated Sales Tax Generated, Net of Baseline	-	<b>\$0.7 Million</b>	<b>\$2.3 Million</b>

Source: HR&A Advisors, Inc. analysis

<sup>3</sup> These data precede the state-wide increase on sales tax from 4% to 4.3%. As a part of this increase, sales tax reserved for the Transportation Trust Fund is scheduled to rise 0.5% to 0.675%, with an additional 0.125% set aside for public education. However, for the purpose of this analysis, the revenue impact on these funds is undifferentiated, each contributing to the overall resources available to the Commonwealth.

<sup>4</sup> HR&A estimates that, under the streetcar scenario, the aggregate income of households in new housing units will be \$2.3 billion in year 30, resulting in approximately \$644 million in new retail spending. A high percentage of this will be spent in Virginia, if not on Columbia Pike. In contrast, HR&A estimates that only \$120 million in retail spending is necessary to support the 370,000 square feet of new retail space projected in that scenario. Because projected retail spending by corridor residents is so much greater than projected retail sales on the corridor, it is appropriate to assume that all projected sales tax revenues will be net new to the Commonwealth of Virginia.

Over a 30-year period, HR&A projects that streetcar service will generate a cumulative impact of \$15 million to \$25 million in net new sales tax revenues to the Commonwealth relative to what would be generated by enhanced bus (**Figure 6**).

**Figure 6: Cumulative Net New Sales Tax Revenue Due to Enhanced Bus and Streetcar Service**

	0% Discount Rate		3% Discount Rate		7% Discount Rate	
	TSM 2	Streetcar	TSM 2	Streetcar	TSM 2	Streetcar
Sales Tax	\$15	\$55	\$10	\$35	\$5	\$20

Source: HR&A Advisors, Inc. analysis

Note: All dollar amounts are in millions of \$2014, rounded to nearest \$5 million.

*Total Revenue Impact*

Overall, ten years after the beginning of streetcar construction (2027), HR&A projects that the streetcar would generate a total of \$14.9 million in additional tax revenue to the Commonwealth, relative to the baseline scenario, while the enhanced bus would generate \$4.1 million in additional tax revenue relative to the baseline scenario (**Figure 7**).

**Figure 7: Annual Net New Tax Revenue Due to Enhanced Bus and Streetcar Service in 2027**

	TSM 2	Streetcar
Individual Income Tax	\$3.4	\$12.6
Sales Tax	\$0.7	\$2.3
<b>Total</b>	<b>\$4.1</b>	<b>\$14.9</b>

Source: HR&A Advisors, Inc. analysis

Note: All dollar amounts are in millions of \$2014, rounded to nearest \$0.1 million.

HR&A projects that over a 30-year period, streetcar service will generate an estimated \$425 million in incremental tax revenues for the Commonwealth compared with the baseline (no build) scenario and \$305 million more than would an investment in enhanced bus. Using a range of discount rates for this period, HR&A estimates that the streetcar investment would generate between \$125 million and \$250 million more in additional tax revenues than under baseline conditions, and \$90 million to \$180 million more in additional tax revenues to the Commonwealth than would be generated by an investment in enhanced bus (**Figure 8**).

**Figure 8: Total Incremental Virginia Tax Revenue Due to Enhanced Bus and Streetcar Service**

	0% Discount Rate		3% Discount Rate		7% Discount Rate	
	TSM 2	Streetcar	TSM 2	Streetcar	TSM 2	Streetcar
Income Tax	\$105	\$370	\$60	\$215	\$30	\$105
Sales Tax	\$15	\$55	\$10	\$35	\$5	\$20
<b>Total</b>	<b>\$120</b>	<b>\$425</b>	<b>\$70</b>	<b>\$250</b>	<b>\$35</b>	<b>\$125</b>

Source: HR&A Advisors, Inc. analysis

Note: All dollar amounts are in millions of \$2014, rounded to nearest \$5 million.