



Virginia Department of Rail and Public Transportation ("DRPT")

Economic & Productivity Impact Results from Sunset of Transit Capital and PRIIA Funding

Executive Summary

PRELIMINARY DRAFT

May 2017



» Disclaimer

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» Objectives

- In January 2017, DRPT requested KPMG estimate the economic impacts of a reduction in expenditures associated with the expiration of Transit Capital Project Revenue Bonds.
- KPMG analyzed two funding scenarios as part of the analysis.

Scenario	Description
Existing Funding	<ul style="list-style-type: none"> • Transportation Capital Revenue bonds sunset in FY 2019 and Passenger Rail Investment and Improvement Act (“PRIIA”) authorized state/federal Washington Metropolitan Area Transit Authority (“WMATA”) funding expire in FY 2019.
Replacement Funding	<ul style="list-style-type: none"> • Transportation Capital Revenue bonds are reauthorized and continue until FY 2027. • Up to \$130 million in additional expenditure per year: \$60 million attributed to Transit Capital Bonds, \$50 million attributed to PRIIA Bonds, and \$20 million of additional funding.

» Approach

- KPMG used a combination of models and informed analysis of areas where expenditure reductions would be felt (from WSP Parsons Brinkerhoff analysis) in its analysis.

Model / Input	Description & Application
Capital Spending Projections	Capital Spending projections and project prioritization analysis from WSP Parsons Brinkerhoff were used as inputs to traffic demand models and input-output model. Forms basis for calculating all economic measures.
Input-Output Model	IMPLAN ¹ , a widely utilized economic impact assessment model was used by KPMG to calculate the direct and indirect impact on Jobs, Economic Output, Labor Income and State Tax Revenues.
Traffic Demand Models	The VDOT and MWCOG ² traffic demand models were used to calculate the impact on automobile and public transit usage from projected change in service levels.
Cost-Benefit Model	KPMG developed a custom cost-benefit model to assign financial values to traffic model outputs including value of time, safety and vehicle ownership cost.

[1] IMPLAN Model: www.IMPLAN.com

[2] MWCOG Model: <https://www.mwcog.org/transportation/data-and-tools/modeling/>

Results

- Without replacement of funding, KPMG estimates Virginia will lose the following economic benefits and experience efficiency losses in the form of increased costs of travel, safety costs, and vehicle operating costs

Measure	Impact of Loss of Funding (Annual)	Comment
Employment	-1,000	Jobs directly supported by public transportation investment (500 jobs) and additional 'indirect' jobs (500 jobs) created due to economic activity stimulated by the initial investment.
Labor Income	-\$80 Million	Wages and salaries paid to all persons employed in support of public transportation capital investment plus those employed by all other industry groups to support public transportation capital investment.
Tax Revenue	-\$4 Million	State tax impacts include sales and use taxes, individual income taxes, corporate income taxes, and other taxes..
Total Output	-\$200 Million	The value of goods and services produced in an economy due to certain economic activity, measured in gross state product (revenues) generated.
Productivity Benefits	-\$208 Million	Additional Travel Time: -\$134 Million Reduced Safety: -\$10 Million Additional Vehicle Ownership Cost: -\$64 Million

[1] Employment, Labor Income, Tax Revenue and Total Output reflect average annual impacts for 2018-2027.

[2] Productivity benefits equal to average of 2020 and 2030 benefits calculations.



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Appendix A

- Measure Descriptions

Measure Descriptions

- KPMG calculated seven economic and productivity measures for the ‘Existing Funding’ and ‘Replacement Funding’ scenarios to show the impact of a reduction in expenditures associated with the expiration of Transit Capital Project Revenue Bonds.

Area of Analysis	Description
Employment	The total number of jobs that are directly supported by public transportation capital investment and additional jobs created due to economic activity stimulated by the initial investment. This economic measure includes part-time and full-time employees.
Economic Output	The value of goods and services produced in an economy due to certain economic activity, measured in gross state product (revenues) generated. In this study, economic activity includes the value of goods and services directly supported by public transportation capital investment plus the goods and services produced by all other companies and industries to support public transportation capital investment.
Labor Income	Or payroll, refers to the sum of all the wages and salaries (including employee benefits) paid to employees involved in a certain business activity. In this study, labor income includes wages and salaries paid to all persons employed in support of public transportation capital investment plus those employed by all other industry groups to support public transportation capital investment.
State Tax Revenue	In this study, tax revenues include all revenues generated by public transportation capital investment and firms and industries supporting these activities. State tax impacts include sales and use taxes, individual income taxes, corporate income taxes, and other taxes.

Cont.

Measure Descriptions

- KPMG calculated seven economic and productivity measures for the ‘Existing Funding’ and ‘Replacement Funding’ scenarios to show the impact of a reduction in expenditures associated with the expiration of Transit Capital Project Revenue Bonds.

Area of Analysis	Description
Travel Time	The amount of time saved by new and existing users of public transportation & time saved by automobile and truck travelers due to reduction in congestion on roadways that can be attributed to public transportation. Value of time calculated based on regional income levels.
Safety	Reduction in roadway accidents due to more of public transportation users and less congestion on road due to increased public transportation usage. Safety values calculated based on USDOT guidance.
Vehicle Ownership Costs	Cost of personal vehicle ownership includes depreciation, upkeep, insurance. It is expected that greater use of public transportation reduces both vehicle usage and ownership.

*Other economic benefits not considered in this analysis, include access to jobs, agglomeration benefits, and real estate impacts.



Appendix B

- Methodology Detail

» EIA Methodology

- IMPLAN, a widely utilized economic impact assessment model was used by KPMG to calculate the direct and indirect impact on Jobs, Economic Output, Labor Income and State Tax Revenues.
- KPMG relied upon the most recently available data from all sources when preparing the IMPLAN input-output model, including the most recently available PB needs assessment model, provided to KPMG on May 2, 2017.
- After preparing model inputs and assigning IMPLAN industry sector codes to each public transportation investment occurring within Virginia for FY 2018 – FY 2027, KPMG determined the distribution of IMPLAN industry sector codes across the SGR, MIN, and MAJ classifications for SYIP and WMATA CIP expenditures for each FY.
- KPMG used this distribution of IMPLAN industry sector codes along with total expenditure data from PB to run the IMPLAN model for the base scenario.

[1] The largest share of model inputs were attributed to SGR expenditures. These expenditures primarily focus on improvements to rolling stock and rely on materials sourced from outside of Virginia.

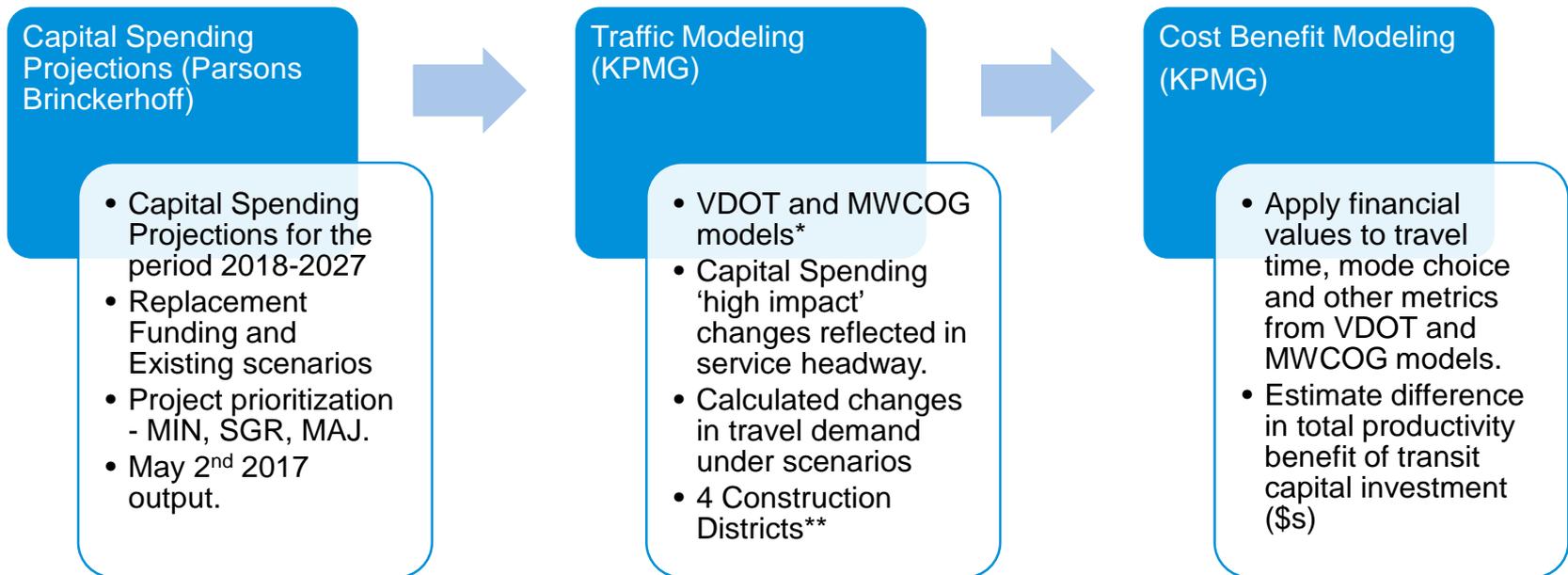
» EIA Methodology

- KPMG distributed the additional expenditure of up to \$130 million per year in the alternative scenario according to priority order guidance provided by PB for each combination of DRPT SYIP and WMATA CIP expenditure with the SGR, MIN, and MAJ classifications.
- KPMG distributed these expenditures according to the identified distribution of IMPLAN industry sector codes for each combination of DRPT SYIP and WMATA CIP expenditure with the SGR, MIN, and MAJ classifications present in the base scenario.

[1] The largest share of model inputs were attributed to SGR expenditures. These expenditures primarily focus on improvements to rolling stock and rely on materials sourced from outside of Virginia.

Productivity Methodology

To calculate the productivity benefits to the Virginia economy from capital investment in public transportation under two scenarios, KPMG applied a three stage methodology shown below.



*VDOT and MWCOG (Metropolitan Washington Council of Government) traffic demand model.

**Analysis limited to 4 construction districts and does not reflect all of Virginia.



Appendix C

- Detailed Results

» Detailed Results - EIA (Average Annual)

- **Statewide Impact**
- The table below shows the economic impact analysis (EIA) of statewide Existing Funding and Replacement Funding scenarios. The comparison shows the annual average impact for the year 2018 to 2027.

Impact Measure (FY18 – FY27 per year)	Existing Funding Scenario	Replacement Funding Scenario	Impact of Loss of Funding
Employment	7,300	8,300	-1,000 jobs
Labor Income	\$480 Million	\$560 Million	-\$80 Million
State Taxes	\$26 Million	\$30 Million	-\$4 Million
Economic Output	\$1.4 Billion	\$1.6 Billion	-\$200 Million

[1] Values presented in 2017 dollars.

[2] Annual average impacts derived as average annual impacts for FY18 through FY27

[3] Difference between Existing and Replacement Funding Scenarios is up to \$130 million in annual public transportation investment each year.

» Detailed Results - EIA (Average Annual)

- **Statewide Impact (Tax)**
- The table below shows the breakdown of tax impacts of statewide Existing Funding and Replacement Funding scenarios. The comparison shows the annual average impact for the year 2018 to 2027.

State Tax Type	Existing Funding Scenario (\$M)	Replacement Funding Scenario (\$M)	Impact of Loss of Funding (\$M)
Individual Income Tax	\$17.5	\$20.3	-\$2.8
Sales and Use Tax	\$4.7	\$5.4	-\$0.8
Other	\$2.1	\$2.5	-\$0.3
Corporate Income Tax	\$1.2	\$1.4	-\$0.2
Total	\$25.5	\$29.6	-\$4.1

[1] Values presented in 2017 dollars. [2] Annual average impacts derived as average annual impacts for FY18 through FY27 [3] Difference between Base and Alternative Scenarios is up to \$130 million in annual public transportation investment. [4] State tax split based on historical data from the Virginia Department of Taxation. [4] 'Other' includes taxes on insurance premiums, deeds, estates, rolling stock, and other taxes.

» Detailed Results - EIA (Average Annual)

- **Statewide Impact (Direct vs. Indirect)**
- The table below shows the economic impact analysis (EIA) of statewide Existing Funding and Replacement Funding scenarios broken out by Direct, Indirect and Total Impacts.

Existing Funding Scenario: \$6.2B Capital Expenditure 2018 to 2027 Annualized			
Impact Type	Employment	Labor Income (\$M)	Output (\$M)
Direct Effect	3,585	\$ 258.0	\$ 763.7
Indirect & Induced Effect	3,742	\$ 218.9	\$ 593.8
Total Effect	7,327	\$ 476.9	\$ 1,357.5

Replacement Funding Scenario: \$7.3B Capital Expenditure 2018 to 2027 Annualized			
Impact Type	Employment	Labor Income (\$M)	Output (\$M)
Direct Effect	4,100	\$ 301.8	\$ 893.5
Indirect & Induced Effect	4,242	\$ 250.1	\$ 675.3
Total Effect	8,342	\$ 551.9	\$ 1,568.8

» Detailed Results - Productivity (Annual)

- **Construction District: Northern Virginia**
- The table below shows the Existing Funding and Replacement Funding scenarios for the Northern Virginia Construction District. The comparison is based on the model's 2040 forecast year.

Area of Analysis	Northern Virginia (Existing Funding)	Northern Virginia (Replacement Funding)	Impact of Loss of Funding
Mode Types	Auto/Truck/Bus /Rail	Auto/Truck/Bus /Rail	-
Daily Auto Vehicle Miles Traveled (VMT)	59,940,160	59,639,557	300,603
Daily Auto Vehicle Hours Traveled (VHT)	1,940,286	1,919,722	20,564
Daily Total Auto Trips (Person)	25,261,867	25,124,741	137,126
Peak Transit Share	27.03%	28.33%	-1.3%
Off-Peak Transit Share	4.79%	5.64%	-0.9%
Avg. Transit Trip Length (miles)	6.42	6.27	0.14
Daily Transit Trips (Person)	964,193	1,050,577	-86,384

» Detailed Results - Productivity (Annual)

- **Construction District: Hampton Roads**
- The table below shows the Existing Funding and Replacement Funding scenarios for the Hampton Roads Construction District. The comparison is based on the model's 2040 forecast year.

Area of Analysis	Hampton Roads (Existing Funding)	Hampton Roads (Replacement Funding)	Impact of Loss of Funding
Mode Types	Auto/Truck/Bus	Auto/Truck/Bus	-
Daily Auto Vehicle Miles Traveled (VMT)	53,517,657	53,482,878	34,778
Daily Auto Vehicle Hours Traveled (VHT)	1,526,049	1,523,252	2,797
Daily Total Auto Trips (Person)	9,160,969	9,150,538	10,431
Peak Transit Share	0.78%	0.95%	-0.17%
Off-Peak Transit Share	0.33%	0.42%	-0.09%
Avg. Transit Trip Length (miles)	2.7	2.8	-0.12
Daily Transit Trips (Person)	50,416	65,448	-15,032

» Detailed Results - Productivity (Annual)

- **Construction District: Fredericksburg**
- The table below shows the Existing Funding and Replacement Funding scenarios for the Fredericksburg Construction District. The comparison is based on the model's 2040 forecast year.

Area of Analysis	Fredericksburg (Existing Funding)	Fredericksburg (Replacement Funding)	Impact of Loss of Funding
Mode Types	Auto/Truck/Bus	Auto/Truck/Bus	-
Daily Auto Vehicle Miles Traveled (VMT)	33,600,867	33,560,206	40,661
Daily Auto Vehicle Hours Traveled (VHT)	979,540	975,921	3,619
Daily Total Auto Trips (Person)	506,783	505,171	1,612
Peak Transit Share	0.11%	0.16%	-0.05%
Off-Peak Transit Share	0.07%	0.11%	-0.04%
Avg. Transit Trip Length (miles)	22.6	21.3	1.30
Daily Transit Trips (Person)	21,902	25,157	-3,255

» Detailed Results - Productivity (Annual)

- **Construction District: Richmond**
- The table below shows the Existing Funding and Replacement Funding scenarios for the Richmond Construction District. The comparison is based on the model's 2040 forecast year.

Area of Analysis	Richmond (Existing Funding)	Richmond (Replacement Funding)	Impact of Loss of Funding
Mode Types	Auto/Truck/Bus	Auto/Truck/Bus	-
Daily Auto Vehicle Miles Traveled (VMT)	46,675,609	46,660,296	15,313
Daily Auto Vehicle Hours Traveled (VHT)	1,238,454	1,237,498	956
Daily Total Auto Trips (Person)	6,333,108	6,329,344	3,764
Peak Transit Share	1.20%	1.35%	-0.15%
Off-Peak Transit Share	0.28%	0.32%	-0.04%
Avg. Transit Trip Length	2	2.6	-0.12
Daily Transit Trips (Person)	32,857	37,981	-5,124

» Detailed Results - Productivity (Annual)

- **Construction District: Northern Virginia**
- The chart below shows the estimated productivity benefit from transit capital investment that will be lost without replacement funding.

IMPACT OF LOSS OF FUNDING - NORTHERN VIRGINIA
\$ MILLIONS (2016 DOLLARS)



» Detailed Results - Productivity (Annual)

- **Construction District: Hampton Roads**
- The chart below shows the estimated productivity benefit from transit capital investment that will be lost without replacement funding.

IMPACT OF LOSS OF FUNDING – HAMPTON ROADS
\$ MILLIONS (2016 DOLLARS)



» Detailed Results - Productivity (Annual)

- **Construction District: Fredericksburg**
- The chart below shows the estimated productivity benefit from transit capital investment that will be lost without replacement funding.

IMPACT OF LOSS OF FUNDING – FREDERICKSBURG
\$ MILLIONS (2016 DOLLARS)



» Detailed Results - Productivity (Annual)

- **Construction District: Richmond**
- The chart below shows the estimated productivity benefit from transit capital investment that will be lost without replacement funding.

IMPACT OF LOSS OF FUNDING – RICHMOND
\$ MILLIONS (2016 DOLLARS)

