

CAPITAL REGION RAIL VISION ECONOMIC IMPACT BRIEF

Regional economic impacts of the Rail
Vision's associated capital investments and
operating expenditures

MARCH 2021



GREATER WASHINGTON PARTNERSHIP

FROM BALTIMORE TO RICHMOND.
FOSTERING UNITY. ADVANCING GROWTH.

To deliver the solutions outlined in the Capital Region Rail Vision, enduring cross-border and cross-sector unity will be needed. The Greater Washington Partnership is fortunate and thankful for the tremendous support from the Partnership Board of Directors, its Regional Mobility Committee, the Rail Vision Advisory Committee, and key transportation sector partners who have guided this Vision effort. Special appreciation is extended to the project team that comprises leaders from EY, Gensler, VHB and WSP for their research, counsel, and support of this work.

REGIONAL MOBILITY INITIATIVE COMMITTEE

ROBERT M. BLUE, *DOMINION ENERGY*

CARMINE DI SIBIO, *EY*

W. MATTHEW KELLY, *JBG SMITH*

ROBERT MOSER JR., *CLARK CONSTRUCTION GROUP*

KENNETH A. SAMET, *MEDSTAR HEALTH*

MARK A. WEINBERGER, *INDEPENDENT DIRECTOR*

This Economic Impact Brief is accompanied by:

- **THE CAPITAL REGION RAIL VISION**, a regional strategy to remove key physical and operating barriers to provide residents a more coordinated, integrated, and competitive regional rail service network.
- **THE RAIL VISION'S TECHNICAL REPORT** that establishes a more detailed roadmap of the key components that underpin the Vision's outcomes and benefits, describes key barriers to realization and strategies to address them, articulates the stepping stones toward major service enhancements, and charts a 5-year Action Plan to deliver near term wins that will enable long term success.
- **AN EQUITY ANALYSIS** that maps existing jobs, housing, and residential populations with access to stations along the regional rail network, disaggregated by race and income, and compared to the region.
- **THE FUTURE RIDER EXPERIENCE AND STATION REIMAGINING** that brings to life the Rail Vision's potential at a personal level with illuminating imagery and real-life story maps.



The full scope of the Capital Region Rail Vision could support 200,000 jobs over 25 years of capital investment

The Vision¹ will benefit the Capital Region not just by improving connectivity, but also through the economic stimulus effect of an ambitious capital investment program and the increased rail service associated with the Vision over the next 25 years. The full scope of capital investments could generate more than \$40 billion (\$2020) in gross economic output for the region, supporting upwards of 200,000 jobs in worker-years² over 25 years of capital investment. In addition to capital investments, ongoing improvements in service will continue to have spillover effects for the regional economy,

supporting more than 5,000 ongoing jobs and an increase of more than \$1.3 billion in annual gross economic output.

Estimates for this section are based on the IMPLAN input-output economic model (see Appendix A) and are intended to reflect economic impacts across the breadth of the Capital Region, including counties in Maryland, Virginia, and West Virginia as well as the District of Columbia. The input-output modeling framework describes the relationships between different sectors of the economy, and allows the estimation of both direct spending impacts and the indirect “ripple” effects of capital and operational dollars throughout the regional economy.

ECONOMIC IMPACT OF CAPITAL CONSTRUCTION

The estimates in this section summarize the potential economic impact of the full scope of the Capital Region Rail Vision, including ambitious rail investments planned by a range of regional actors including MARC, VRE, and Amtrak. This includes projects already planned under current capital investment programs, proposed regional investments not yet included in the region's capital budgets, and new capital projects additional to current plans (see Appendix B for a detailed list of all capital projects included in this analysis). The full list of capital investments analyzed in the Vision

comprises diverse projects like state of good repair investments, regional megaprojects like the expansion of Washington Union Station (WUS) and the replacement of the B&P tunnel, and new capital projects additional to current plans such as the proposed Bayview Station on MARC's Penn Line.³

The capital projects included in this Vision scope are planned over the next three decades with expected completion through 2045. The bulk of planned capital investments are expected to be complete by 2035, consistent with the increased 2040 service levels projected under the Vision.

TABLE 1: PROJECTED CAPITAL EXPENDITURES INCLUDED IN THE VISION SCOPE (IN MILLIONS, \$2020)

	LAUNCH (CURRENT CAPITAL INVESTMENT PLANS, 2020-2035)	EXPAND (PLANNED THROUGH 2035)	REALIZE (PLANNED THROUGH 2045)	TRANSFORM (ADDT'L TO CURRENT PLANS, THROUGH 2045)	TOTAL
Rail infrastructure	\$356	\$8,359	\$4,267	\$781	\$13,762
Station improvements	\$376	\$338	\$6,064	\$100	\$6,878
Fleet investments ⁴	\$34	\$126	\$127	\$0	\$287
Additional Facilities	\$330	\$195	\$184	\$320	\$1,029
State of Good Repair	\$1,009*	N/A	N/A	N/A	\$1,009
Total	\$2,104	\$9,017	\$10,642	\$1,201	\$22,964

Data source: WSP Analysis based on MARC Growth and Investment Plan Update 2013 to 2050 and the VRE Transit Development Plan FY 2020–2025.

For project-specific cost sourcing, please see Appendix B. Totals may not sum due to rounding.

*Monetary figures past 2035 will depend on basic infrastructure investments needed to keep regional assets at a State of Good Repair, but is not currently identified.

Completing the full suite of regional rail capital investments underlying the Vision is projected to exceed \$40 billion in terms of gross economic output

The region will see both direct and indirect effects as construction spending ripples through the regional economy. The economic impact of completing the full suite of regional rail capital investments underlying the Vision is projected to exceed \$40 billion in terms of gross economic output—almost 8 times that of the Long Bridge and adjacent corridor projects. This figure, which includes both the direct effects of construction spending as well as indirect and induced effects of the re-spending of those dollars within the regional economy, illustrates

the scale of impact achievable through a coordinated approach to capital investment in regional rail.

Workers in the region—including direct and secondary personal income earnings—are projected to accrue more than \$14 billion in wages. Similarly, jobs supported either directly through capital investments (in construction or professional services), or indirectly through spillover effects, could exceed 200,000 worker-years over the projected investment period.

TABLE 2: DIRECT, INDIRECT, AND INDUCED ECONOMIC IMPACTS

IMPACT TYPE		DEFINITION
Direct construction expenditures	Direct impacts	Spending on wages and construction costs directly associated with rail capital projects
	Indirect impacts	Spending on goods and services purchased within the Capital Region (including subcontractors, suppliers, and distribution services)
Spillover impacts	Induced impacts	Private consumption spending that results from the labor income generated by the initial activity (including food, retail, and housing)

TABLE 3: VISION PROJECT CAPITAL INVESTMENT ECONOMIC IMPACTS
(DOLLARS IN BILLIONS, \$2020)

ECONOMIC INDICATOR	DIRECT IMPACT	INDIRECT + INDUCED IMPACT	TOTAL IMPACT
Gross economic output	\$22.7	\$17.8	\$40.4
Labor income*	\$9.1	\$5.3	\$14.4
Employment (number of worker years)	122,345	78,119	200,464

*subset of gross economic output
Totals may not sum due to rounding

ESTIMATES FOR CONSTRUCTION IMPACTS OF KEY REGIONAL RAIL MEGAPROJECTS⁵

Independent economic analyses have already been developed for several key regional rail projects included in the Vision. These estimates, drawn from third party sources, illustrate the economic importance of key megaprojects within the regional rail Vision, but also the scale of the Vision—the economic impact of coordinated capital investment across the region far exceeds that of any single megaproject.



Photo Credit: Amtrak

B&P TUNNEL PROJECT⁶

- **39,000–43,000** construction jobs supported
- **\$5.9–\$6.6 billion** in total economic output
- **\$2.4–\$2.7 billion** in total new labor income



WASHINGTON UNION STATION EXPANSION⁷

- **6,543** construction jobs supported annually over 10+ years of construction
- **\$586–\$1,405 million** in total economic output annually over 10+ years of construction
- **\$254–\$609 million** in annual new labor income



Photo Credit: Leandro Neumann Ciuffo

LONG BRIDGE EXPANSION AND CORRIDOR PROJECTS⁸

- **30,000** construction jobs supported
- **\$5.1 billion** in total economic output
- **\$1.5 billion** in total new labor income

ECONOMIC IMPACT OF EXPANDED OPERATIONS & SERVICE

The regional impact of the Vision's expanded operations in terms of gross economic output could exceed \$1.3 billion annually

Spending associated with the operation and maintenance of a Vision-level network will have a significant, ongoing impact on the regional economy. In addition to operation and maintenance of Vision capital projects, spending in this category includes additional operating personnel employed in service delivery (e.g., train engineers and crew), additional staff in back-office roles, operation and maintenance of additional rolling stock, and additional spending associated with costs that increase with increased service levels (e.g., fuel). For the purpose of this analysis, additional operating expenditures are measured relative to current operating expenses for both MARC and VRE, and therefore include both operating expenditures associated with currently planned service increases as well as additional costs specific to Vision-level service.

TABLE 4: CURRENT AND VISION-LEVEL ANNUAL OPERATING EXPENDITURES

OPERATING EXPENSE CATEGORY	ANNUAL COST AT FULL OPERATIONS (IN MILLIONS, \$2020)
Current MARC + VRE Operating Expenditures	\$245
Incremental Annual Cost (vs. Existing Operating Expenditures)	\$653
Total Operating Expenditures at Full Vision Operation	\$897

*Data source: VHB Analysis
Totals may not sum due to rounding*



Unlike the one-time stimulus impact of capital investments, operational impacts are sustained each year over the operating period

Like capital investments, operational improvements and increased service levels under the Vision will have a significant impact on the regional economy. Overall, the regional impact of the Vision’s operations in terms of gross economic output could exceed \$1.3 billion annually, including both direct and indirect effects. Labor income associated with direct operational personnel as well as spillover wage effects could exceed \$500 million annually, with more than 5,400 jobs supported in terms of annual employment. It is important to note that unlike the stimulus effect of capital investments, which generally conclude around the close of construction, operational impacts can be expected to be sustained each year over the operating period.

TABLE 5: VISION PROJECT OPERATING EXPENDITURE ECONOMIC IMPACTS—ANNUAL, AT FULL OPERATIONS (DOLLARS IN BILLIONS, \$2020)			
ECONOMIC INDICATOR	DIRECT IMPACT (ANNUAL)	INDIRECT + INDUCED IMPACT (ANNUAL)	TOTAL IMPACT (ANNUAL)
Gross economic output	\$653	\$692	\$1,345
Labor income*	\$243	\$273	\$515
Employment (number of worker years)	1,828	3,624	5,452

*subset of gross economic output

BENEFITS TO REGIONAL INFRASTRUCTURE SYSTEMS

In addition to the benefits to the regional economy and connectivity improvements for riders, the Vision will create operational benefits for the regional transportation system as a whole. By alleviating the load on overburdened pressure points like WUS and increasing overall transit capacity, Vision service would reduce stress on regional providers like WMATA and promote an overall shift towards transit and reducing highway congestion.



ENHANCE REDUNDANCY AND RESILIENCY

Run-through service can create redundancy for parallel systems like WMATA's Metrorail, increasing peak capacity and allowing the regional system to better respond to unexpected shutdowns.



IMPROVE CIRCULATION AND REDUCE PEAK CROWDING AT KEY STATIONS

At WUS internal circulation is already strained by current volumes of peak passengers (60-75% of which are transferring from commuter rail⁹), with crowding expected to increase over the next 20 years. By reducing peak demand at WUS, VRE/MARC run-through service will help alleviate circulation issues. Additionally, run-through service could reduce peak crowding at other critical points in the WMATA system such as Gallery Place, Court House, or Pentagon stations, improving the experience for all riders.



PROMOTE A REGIONAL MODE SHIFT FROM CAR TO TRANSIT

By encouraging more people to switch from driving to transit, faster and more convenient run-through service can build familiarity with the public transit system, creating new riders for other regional operators.



BENEFIT TO L'ENFANT PLAZA

Run-through MARC service through L'Enfant Plaza can improve access to the station and economic development opportunities near the station, which could generate more riders for the regional rail service and WMATA.

CONCLUSION

Investments in a world-class regional rail system and the long-run economic impact of improved operations—even before accounting for the benefits of improved connectivity—could provide an exceptional long-term return on the investment for the Capital Region.

Overall, the capital and operating expenditures associated with a Vision-level regional rail system—including the many regional efforts and investments included in the Vision—will require major ongoing investments but also generate significant economic impacts to the Capital Region. Particularly as the region looks to accelerate a post-pandemic economic recovery, the stimulus effect of investments in a world-class regional rail system and the long-run economic impact of improved operations—even before accounting for the benefits of improved connectivity—could provide an exceptional long-term return on rail investment for the Capital Region.

ABOUT

The Greater Washington Partnership is a first-of-its-kind civic alliance of CEOs in the region, drawing from the leading employers and entrepreneurs committed to making the Capital Region—from Baltimore to Richmond—one of the world's best places to live, work and build a business.

APPENDIX A: TECHNICAL DETAILS ON METHODOLOGY

The inputs to this economic impact analysis are based on regional capital planning, as sourced from long-term planning documents, and/or estimated by VHB and WSP. The IMPLAN analysis was undertaken by EY. Resulting estimates of economic impact should be understood as high-level estimates of potential economic effects given currently available estimates of required capital projects and associated spending, both of which may see changes over the Vision implementation period.

The economic impacts related to this activity were estimated using IMPLAN input-output modeling (IMPLAN LLC 2018 Input-Output Economic Model), which describes relationships between businesses, households and governments for a combined region comprising the Washington-Arlington-Alexandria Metropolitan Statistical Area, the Baltimore-Columbia-Towson Metropolitan Statistical Area, and the Richmond, VA Metropolitan Statistical Area (referred to as the Washington, DC MSA, the Baltimore MSA, and the Richmond MSA, respectively in this Report).

This model follows financial flows, as purchases of local goods by companies and employees support sales, jobs and labor income. IMPLAN is used by the public sector, as well as by private-sector businesses and

other researchers, and is based on widely accepted methodology for estimating these types of economic linkages. The three types of effects estimated by the IMPLAN model—direct, indirect and induced effects—describe the nature of the economic “ripple” effects generated by the expenditure.

The magnitude of each economic effect is described in terms of an economic multiplier. The multipliers in the IMPLAN model are based on the Leontief matrix, which estimates the total economic requirements for every unit of direct output in a given industry using detailed interindustry relationships documented in the input-output model. The input-output framework connects commodity supply from one industry to commodity demand by another. The multipliers estimated by using this approach capture all of the backward linkages related to an industry’s production by attaching technical coefficients to expenditures. These output coefficients (dollars of demand) are then translated into dollars of economic output, labor income and number of employees based on industry averages. A static input-output model is based on observed historical relationships and therefore does not account for supply-side constraints, price changes, labor-capital substitution or other market dynamics.

**APPENDIX B: PLANNED AND PROPOSED CAPITAL INVESTMENTS
IN CAPITAL REGION RAIL, 2020–2045 (IN MILLIONS, \$2020)**

PROJECT	LAUNCH (CURRENT CAPITAL INVESTMENT PLANS, 2020- 2035)	EXPAND (PLANNED THROUGH 2035)	REALIZE (PLANNED THROUGH 2045)	TRANSFORM (ADDT'L TO CURRENT PLANS, THROUGH 2045)	TOTAL	SOURCE
Virginia—All Lines						
L'Enfant Station & DC 4th Track	\$80				\$80	VRE Budget
Long Bridge Expansion		\$1,900			\$1,900	Long Bridge DEIS
AF2RO Fourth Track	\$195				\$195	DRPT sources
Occoquan to Fredericksburg 3rd Track			\$1,241		\$1,241	DC2RVA
Fredericksburg Third Track		\$507			\$507	DRPT sources
First Street Tunnel Improvements*					N/A	
State of Good Repair Improvements	\$81				\$81	VRE Budget
Alexandria Station	\$31				\$31	VRE Budget
Crystal City Station	\$50				\$50	VRE Budget
Washington Union Station Improvements	\$55		\$5,560		\$5,615	FY26 is VRE costs. 2045 is full WUS expansion cost
Other Stations	\$150				\$150	VRE Budget
Fleet Expansion and Modernization	\$34	\$126	\$127		\$287	VRE Budget/2040 System Plan
Planned storage and maintenance facilities	\$290				\$290	VRE Budget
Alexandria Storage/Siding				\$20	\$20	
Additional storage and maintenance facilities				\$300	\$300	
Maryland—Penn Line						
3-main tracks, New York Ave to New Carrollton				\$271	\$271	NEC FUTURE
Additional 4th track, New Carrollton to Grove			\$584		\$584	NEC FUTURE
B&P Tunnel replacement—4 tubes		\$4,520			\$4,520	B&P Tunnel project
Baltimore Penn Station interlocking improvements		\$67			\$67	NEC FUTURE
Union Tunnel expansion—additional 4th track			\$151		\$151	NEC FUTURE
Track A upgrade, Baltimore to Gunpowder River			\$19		\$19	MARC Growth and Investment Plan, 2007

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Bayview track realignment			\$15		\$15	MARC Growth and Investment Plan Update 2013 to 2050
Gunpowder River crossing			\$840		\$840	NEC FUTURE
Bush River crossing			\$605		\$605	NEC FUTURE
Susquehanna River crossing		\$1,240			\$1,240	NEC FUTURE
4-tracks, Gunpowder River to Susquehanna River			\$491		\$491	NEC FUTURE
Freight improvements, Bayview-Aberdeen				\$110	\$110	NEC FUTURE
Station modifications to support one additional main track: Odenton, Bowie State, Seabrook, New Carrollton	\$90				\$90	MARC Growth and Investment Plan, 2007
New Carrollton Station -- 4th track with platform		\$53			\$53	NEC FUTURE
Baltimore Penn Station improvements		\$90	\$50		\$140	2035 cost represents Amtrak commitment; 2045 is allowance for future expansion needs
New Bayview Station				\$100	\$100	
Station modifications to support additional main tracks: Martin Airport, Edgewood, Aberdeen, Perryville			\$295		\$295	MARC Growth and Investment Plan, 2007
Maryland–Camden Line						
Montana siding extension			\$13		\$12	MARC Growth and Investment Plan, 2007
Third track: Brentwood-Hyattsville			\$32		\$31	MARC Growth and Investment Plan, 2007
Third track: Hyattsville-Greenbelt		\$24			\$23	MARC Growth and Investment Plan, 2007
Third track, Savage-Jessup		\$23			\$22	MARC Growth and Investment Plan, 2007
Double-tracking: Alexandria Branch across Anacostia River			\$11		\$11	MARC Growth and Investment Plan, 2007
Additional 3rd track				\$200	\$200	MARC Growth and Investment Plan, 2007
Signal system improvements			\$23		\$22	MARC Growth and Investment Plan, 2007

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Station upgrades		\$54			\$54	MARC Growth and Investment Plan, 2007
Station parking and access improvements		\$54	\$51		\$105	MARC Growth and Investment Plan, 2007
Maryland–Brunswick Line						
3rd track: Lincoln Park-Derwood			\$29		\$29	MARC Growth and Investment Plan, 2007
Third track: Barnesville Hill		\$78			\$78	MARC Growth and Investment Plan, 2007
2nd track: Old Main Line, Doub-Frederick Jct.			\$190		\$190	MARC Growth and Investment Plan, 2007
Additional third track sections				\$200	\$200	MARC Growth and Investment Plan, 2007
Signal system improvements			\$23		\$23	MARC Growth and Investment Plan, 2007
Station upgrades		\$15	\$47		\$62	MARC Growth and Investment Plan, 2007
Station parking and access improvements		\$72	\$61		\$133	MARC Growth and Investment Plan, 2007
State of Good Repair Improvements	\$1,009				\$1,009	Growth and Investment Plan Update 2013 to 2050
Storage & Maintenance Facilities						
Penn Line overnight storage facility	\$40				\$40	MARC Cornerstone Plan
Penn Line storage and maintenance facilities		\$110	\$184		\$294	MARC Growth and Investment Plan, 2007
Camden Line facility improvements		\$37			\$37	MARC Growth and Investment Plan, 2007
Brunswick Line facility improvements		\$48			\$48	MARC Growth and Investment Plan, 2007
Totals						
Rail Infrastructure	\$356	\$8,359	\$4,267	\$781	\$13,762	
Station Improvements	\$376	\$338	\$6,064	\$100	\$6,878	
Fleet Investments	\$34	\$126	\$127	\$0	\$287	
Additional Facilities	\$330	\$195	\$184	\$320	\$1,029	
State of Good Repair	\$1,009	\$0	\$0	\$0	\$1,009	
Total	\$2,104	\$9,017	\$10,642	\$1,201	\$22,964	

Source: WSP Analysis. Totals may not sum due to rounding

*First Street Tunnel is a key project that has received little planning but improvements to it is critical to the full realization of the Vision

ENDNOTES

1. The Capital Region Rail Vision, a regional strategy to remove key physical and operating barriers to provide residents a more coordinated, integrated, and competitive regional rail service network.
2. One “worker year” is one full-time job for a one-year period.
3. Vision-specific projects for which no reasonable spending estimate is available—notably including improvements to Washington, D.C.’s First Street Tunnel— are not included in the capital expenditure estimates used for this analysis. As such, this should be considered a lower-bound estimate for the potential economic impact of the capital investments incorporated into the Vision.
4. Economic impacts associated with manufacture of rolling stock have been excluded from this analysis due to likely accrual of the majority of economic activity benefits to areas outside of the Capital Region.
5. Figures are drawn from third-party sources and may not align in terms of format
6. Amtrak B&P Tunnel Project: Ready to Build estimates
7. DEIS for Washington Union Station Expansion Project—Chapter 5—Environmental Consequences ([dot.gov](https://www.dot.gov))
8. Long Bridge Economic Impact and the Role in the Economy. Jeannette Chapman and Stephen Fuller, The Stephen S. Fuller Institute, George Mason University. Prepared for the Virginia Department of Rail and Public Transportation, Dec. 2019
9. WMATA 2016 Metrorail customer survey

