

Richmond Regional
**Transportation
Planning
Organization**

SUPPORTED BY **PlanRVA**
THE REGIONAL
COMMISSION

Connect RVA 2045



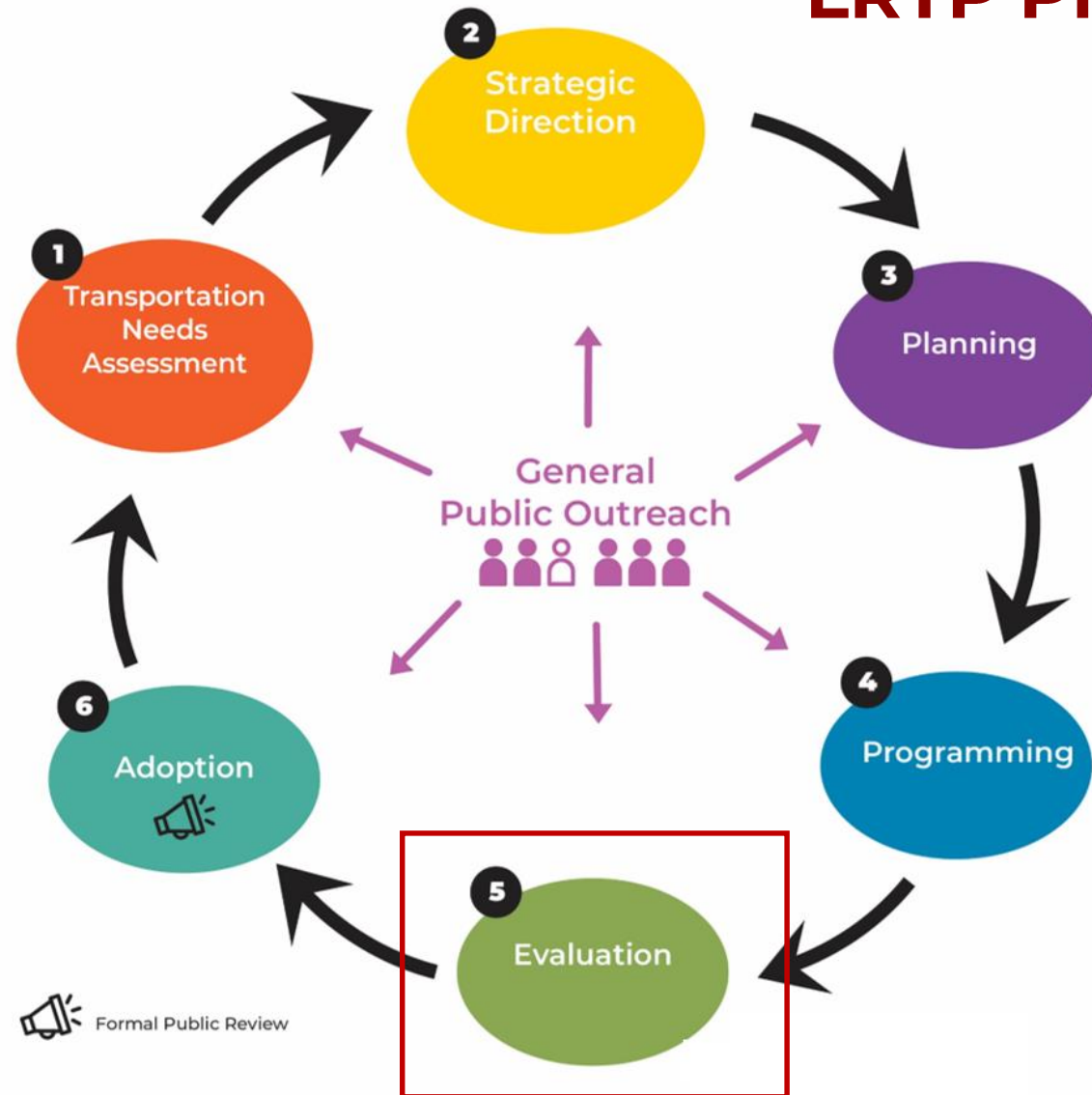
Advisory Committee Meeting

August 26, 2021

4. LRTP Process Update Task 5

Evaluation

LRTP Process Flow



Task 5: Evaluation of the Constrained Plan

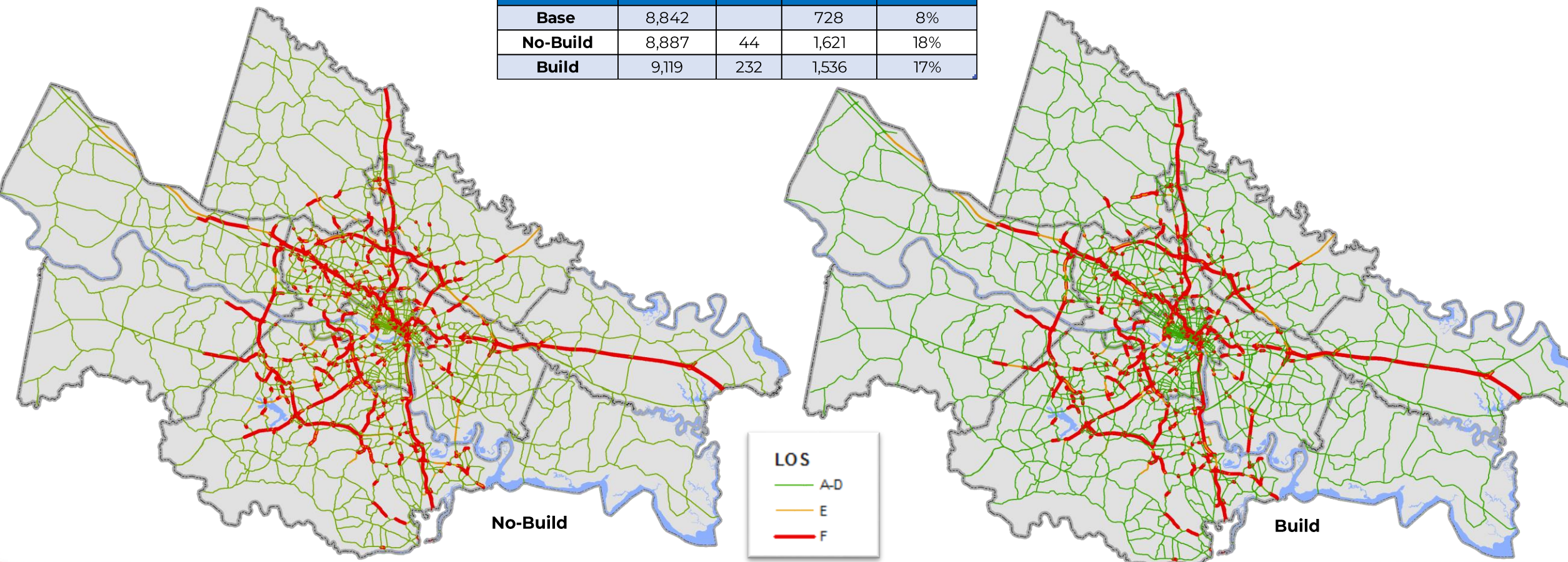
ConnectRVA 2045 systematically evaluates the performance of the financially constrained plan through quantitative metrics in five broad categories :

1. Systemwide Performances
2. Transportation Savings
3. Economic Impact Analysis
4. *Environmental Justice Analysis*
5. Accessibility Analysis

Systemwide Performances

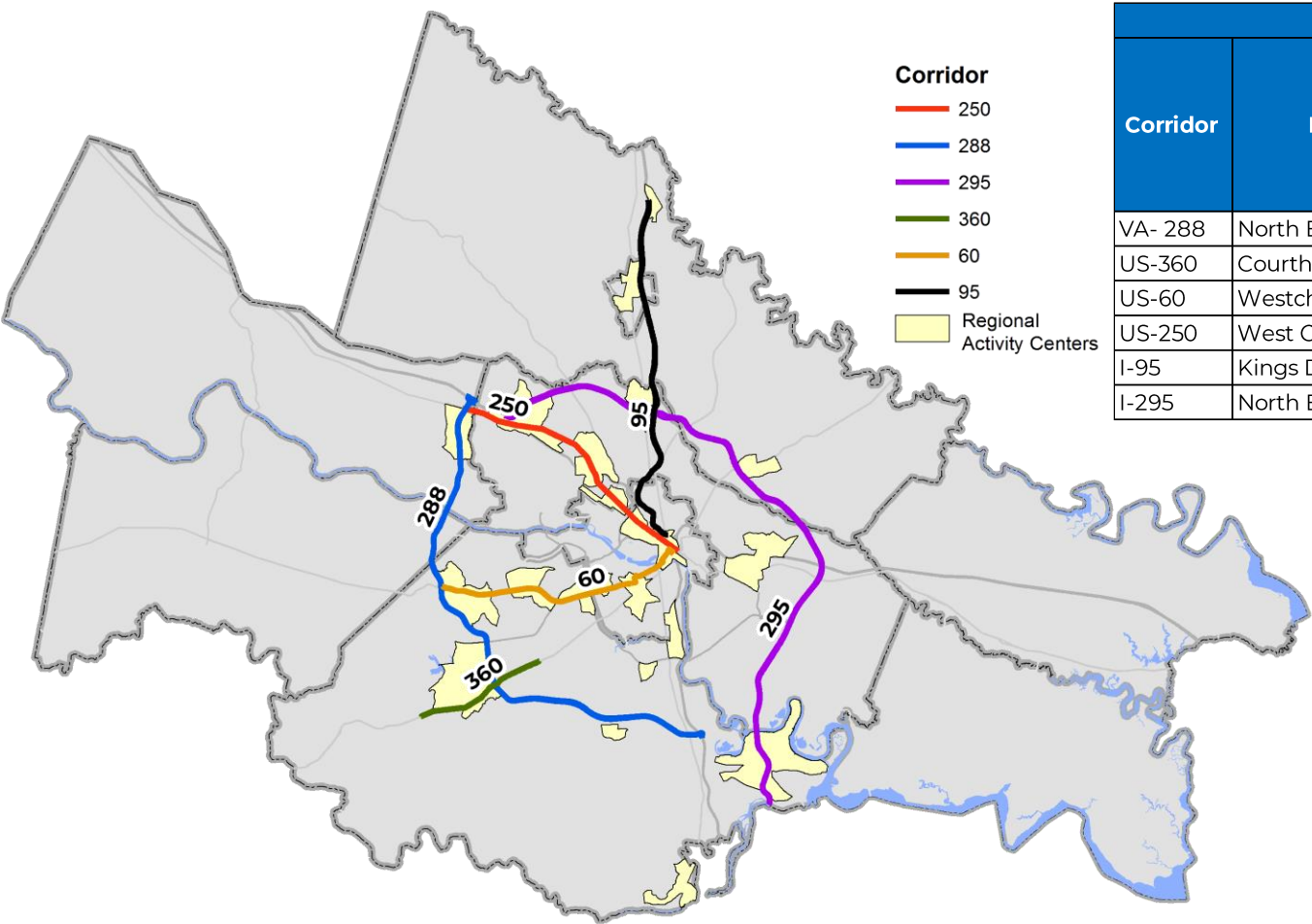
Congested Lane Miles

Scenario	Total Lane Miles	Lane Mile Added	Congested lane Miles	Percentage of Congested Lane Miles
Base	8,842		728	8%
No-Build	8,887	44	1,621	18%
Build	9,119	232	1,536	17%



Systemwide Performances

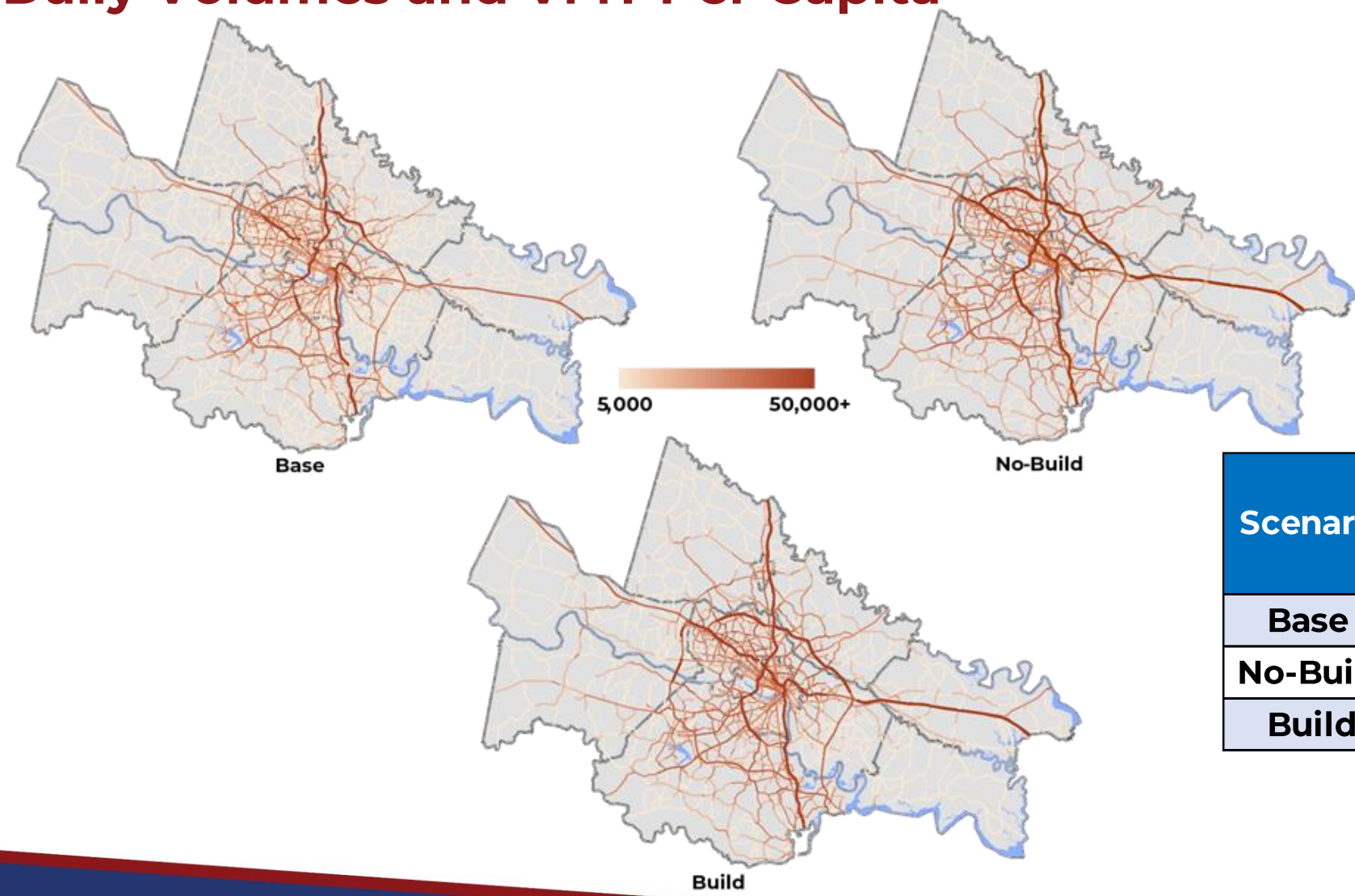
Travel Time Improvement in Major Corridors



Corridor Characteristics					Congested Travel Time (minutes)			
Corridor	From	To	No. Of Activity Center	Distance (Miles)	Base (Minutes)	No-Build (Minutes)	Build (Minutes)	Difference (No-Build - Build)
VA- 288	North End	South End	4	34	55.67	59.50	57.72	1.78
US-360	Courthouse Rd	Otterdale Rd	1	8	20.98	25.39	23.94	1.45
US-60	Westchester	CBD	5	15	55.98	62.16	61.65	0.51
US-250	West Creek	CBD	5	16	59.86	68.64	64.08	4.56
I-95	Kings Dominion	CBD	5	22	45.82	62.07	61.80	0.27
I-295	North End	South End	4	40	89.07	92.26	91.96	0.30

Systemwide Performances

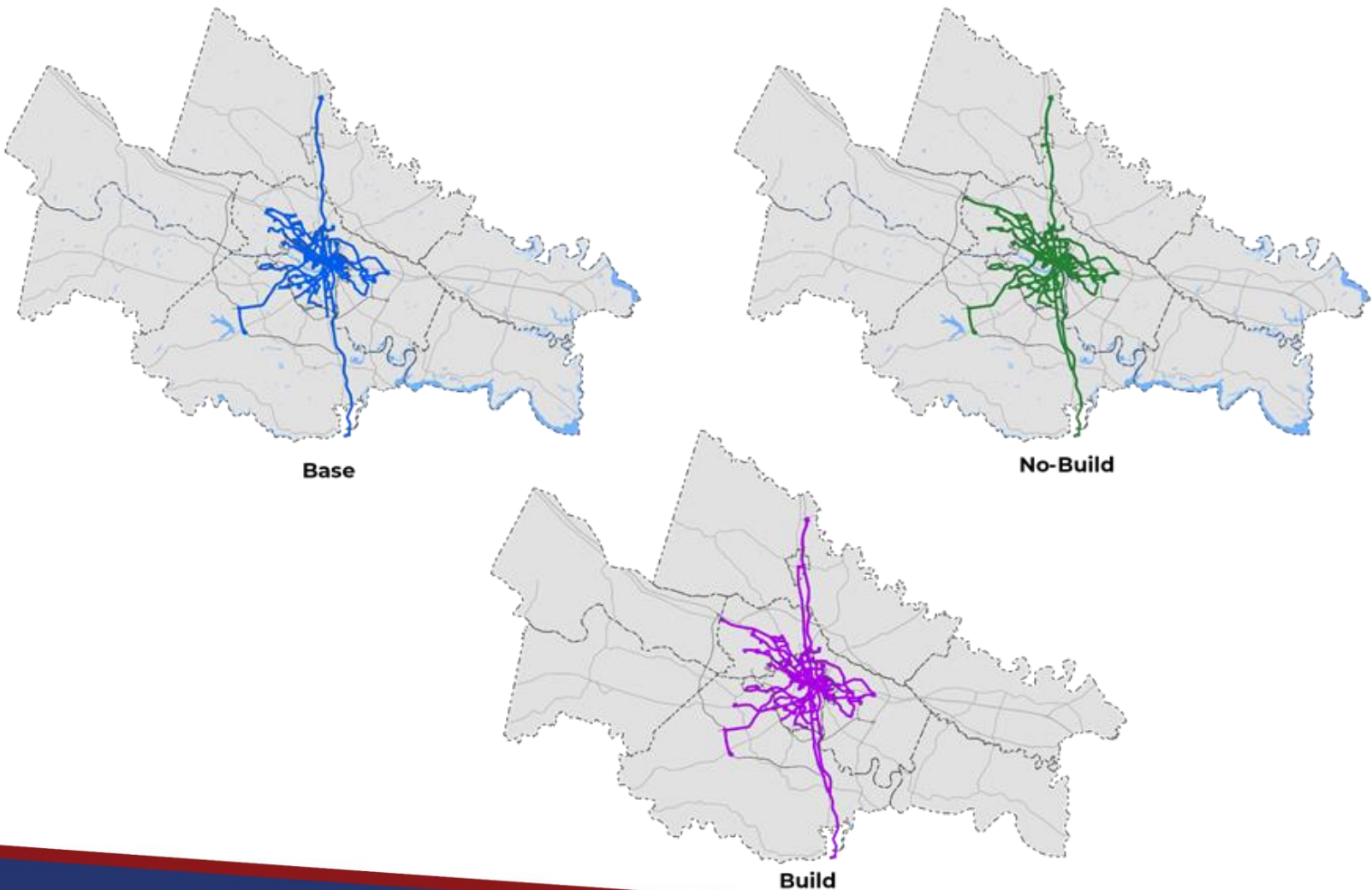
Daily Volumes and VMT Per Capita



Scenario	Daily VMT Per Capita	Annual VMT Per Capita
Base	33.09	12,078
No-Build	35.87	13,091
Build	35.82	13,073

Systemwide Performances

Transit Ridership and Passenger Miles Travelled (PMT)

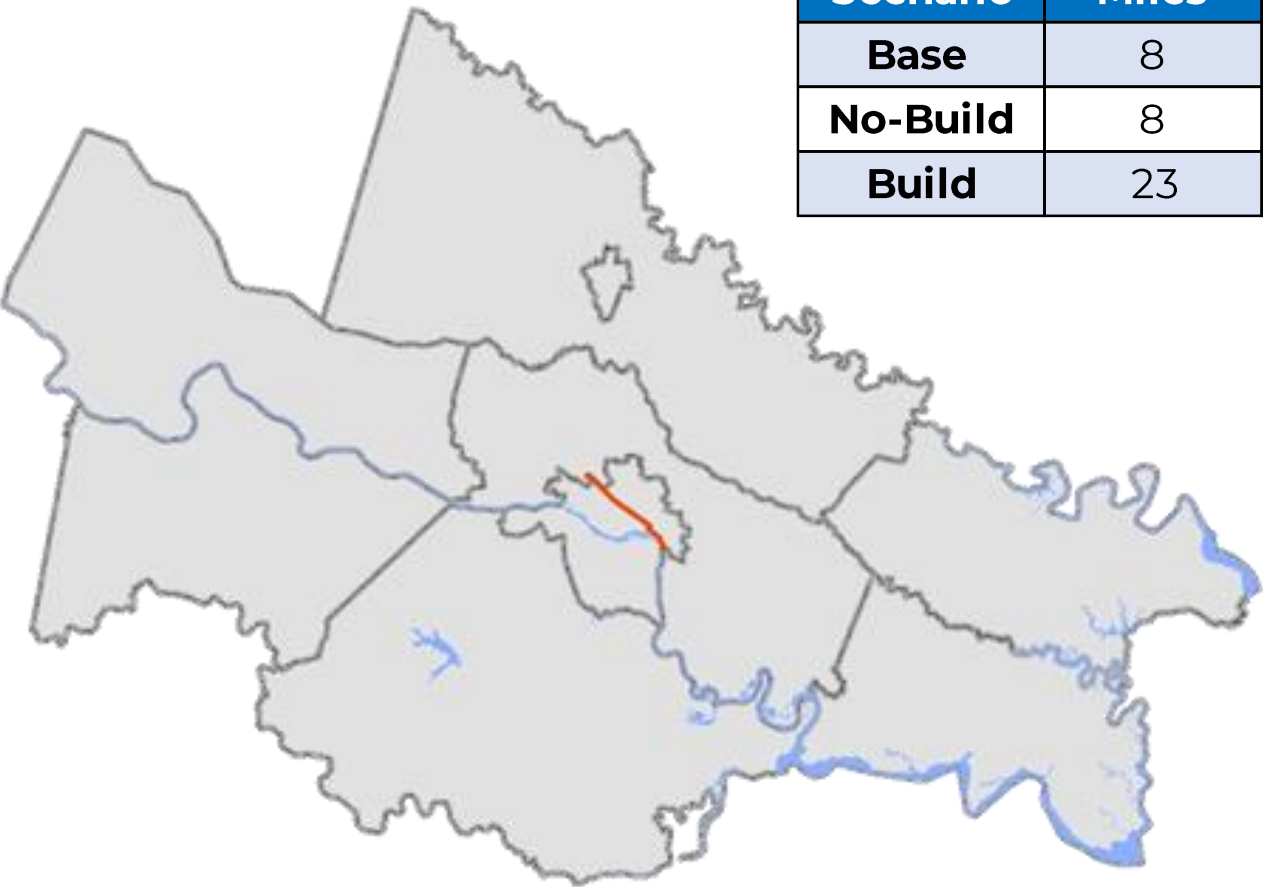


Scenario	Daily Ridership	Person Miles
Base	28,749	74,835
No-Build	35,507	88,115
Build	46,447	138,814

Systemwide Performances

Premium Transit Miles

Scenario	Miles
Base	8
No-Build	8
Build	23



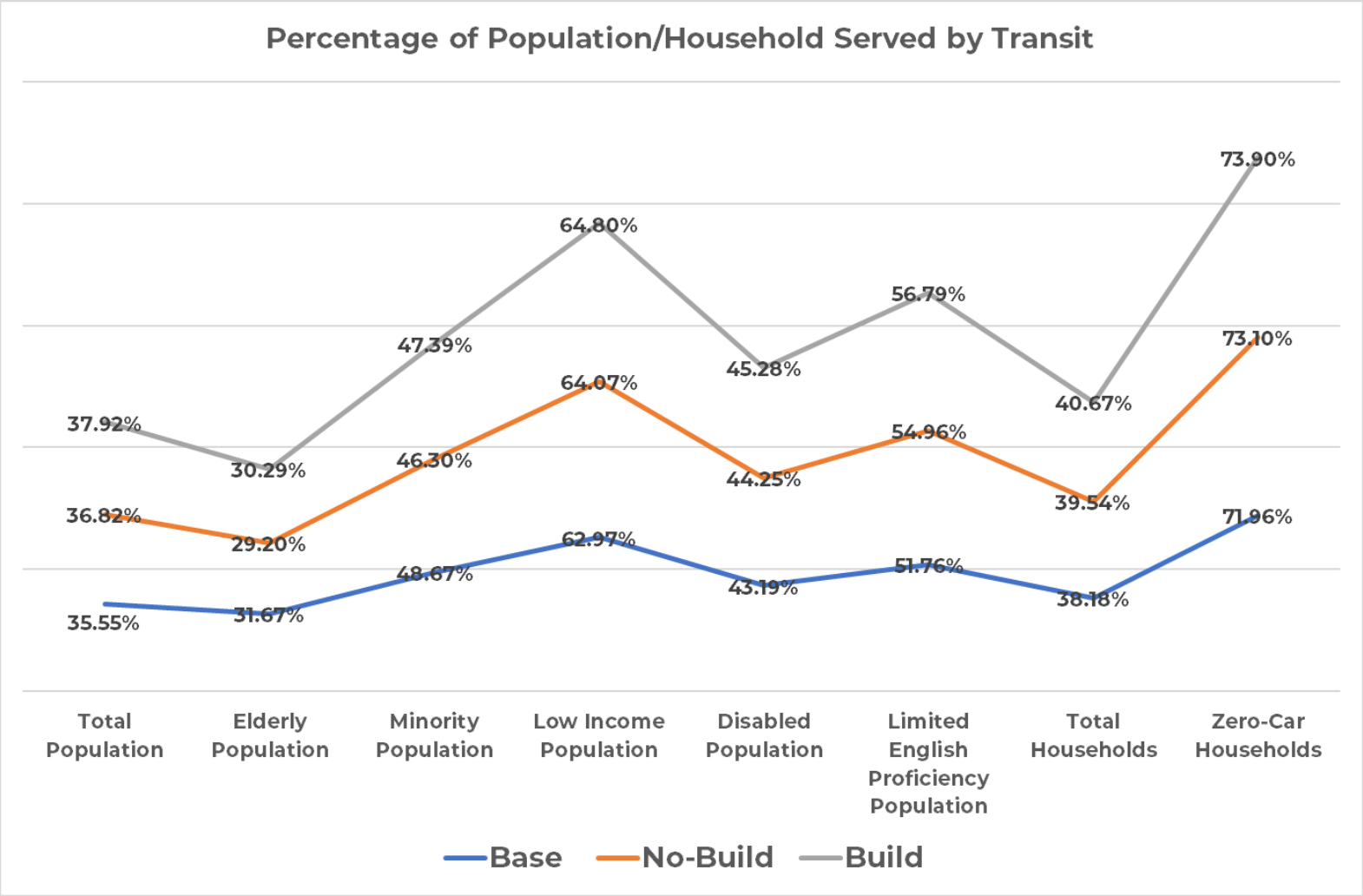
No-Build



Build

Systemwide Performances

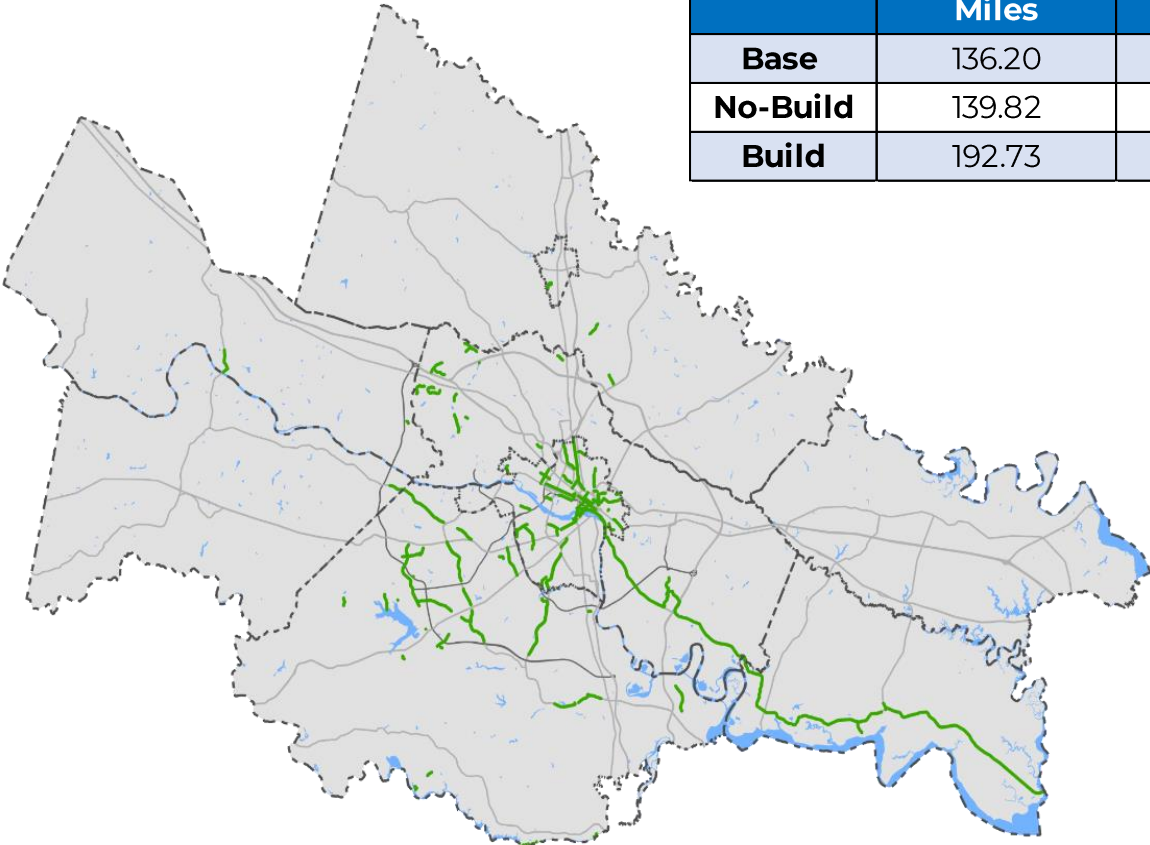
Transit Coverage



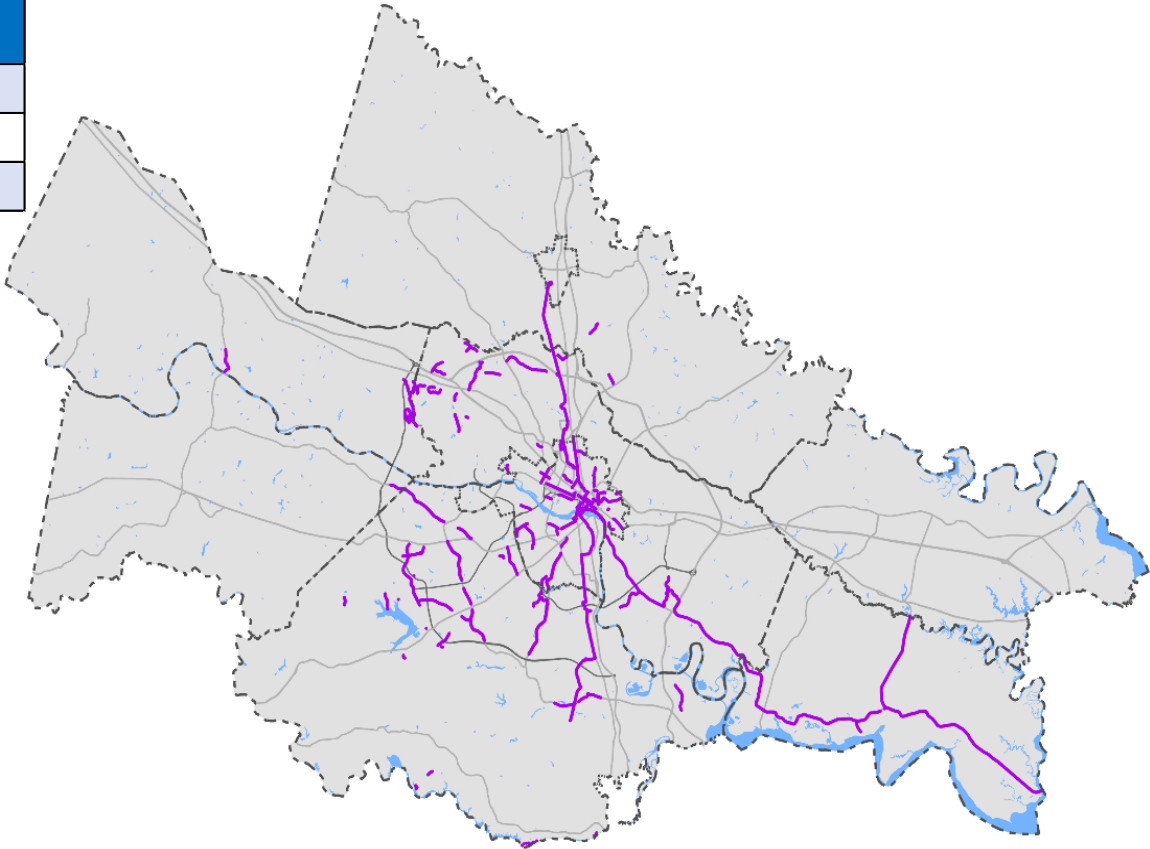
Systemwide Performances

Active Transportation Dedicated Miles

Scenario	Centerline Miles	Miles Added
Base	136.20	
No-Build	139.82	3.62
Build	192.73	52.91



No-Build

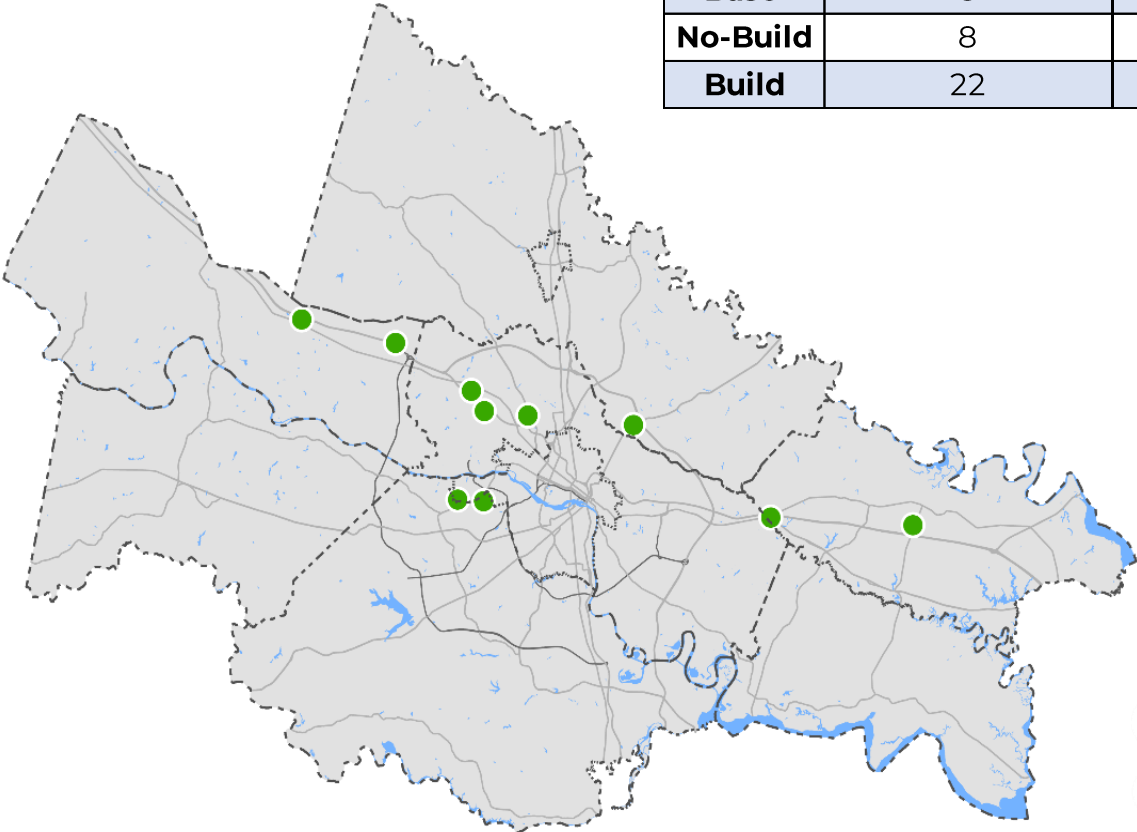


Build

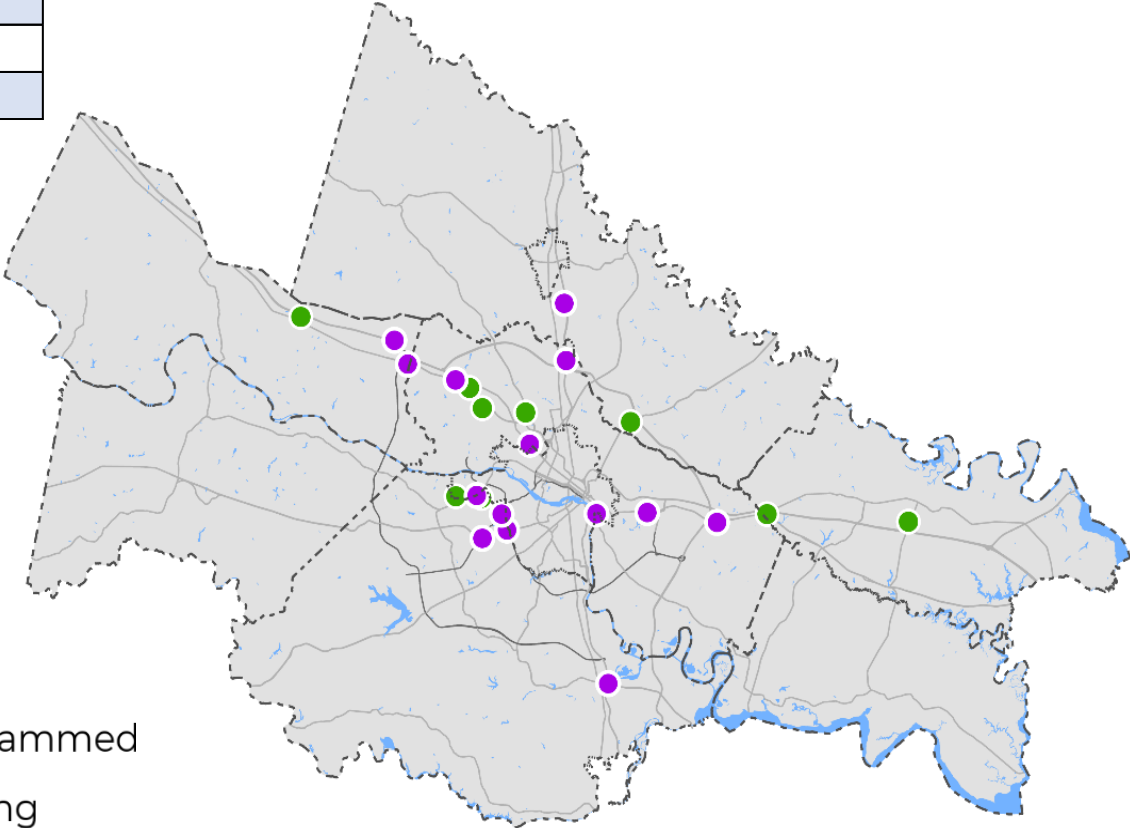
Systemwide Performances

Park and Ride Lots

Scenario	Official Lots	Parking Spaces
Base	8	1,659
No-Build	8	1,659
Build	22	4,256



No-Build

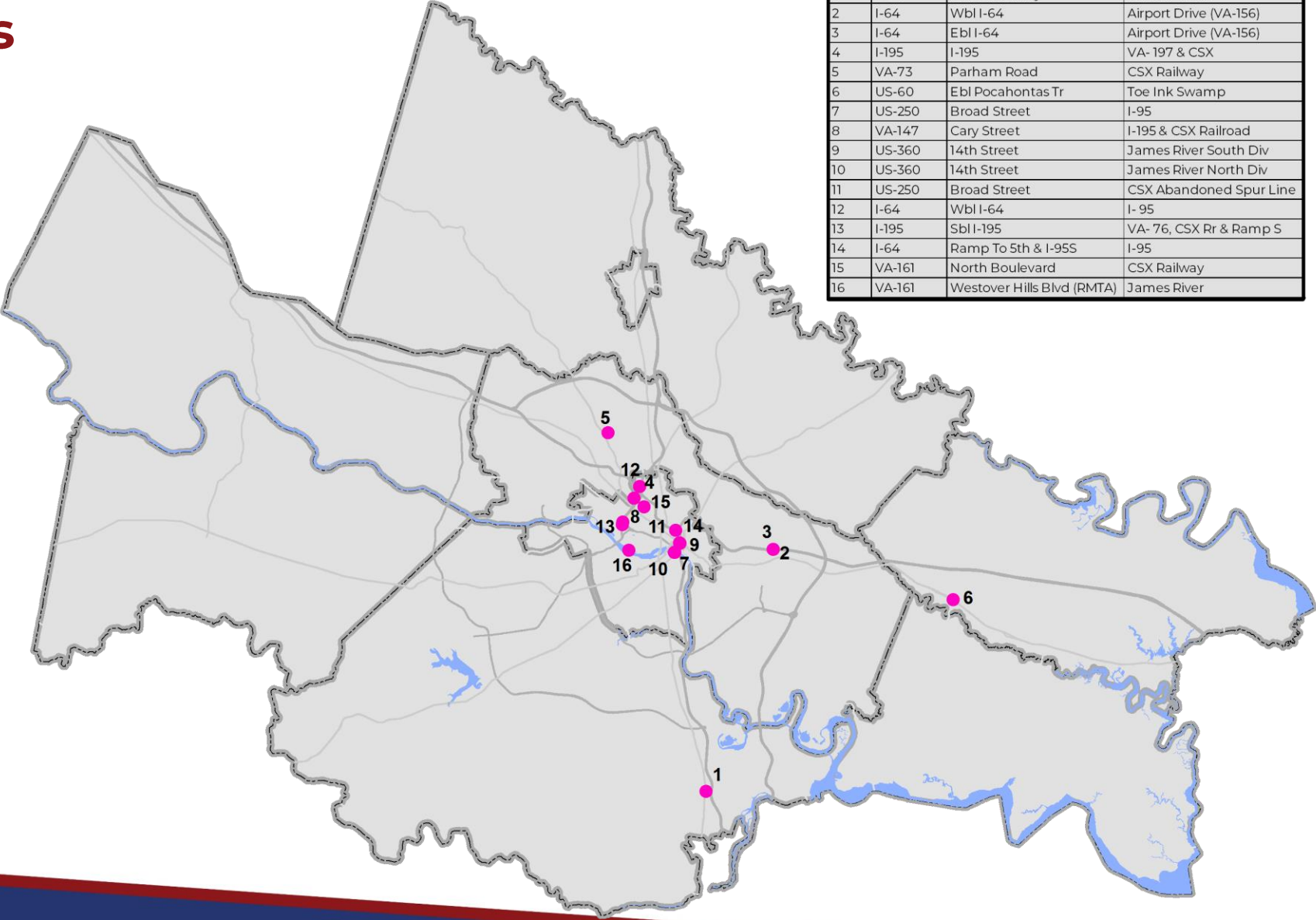


Build

- Programmed
- Existing

Systemwide Performances

Bridges



S.N	Route	Facility	Featured Crossing
1	US-1	Jeff Davis Hwy	Ashton Creek
2	I-64	Wbl I-64	Airport Drive (VA-156)
3	I-64	Ebl I-64	Airport Drive (VA-156)
4	I-195	I-195	VA- 197 & CSX
5	VA-73	Parham Road	CSX Railway
6	US-60	Ebl Pocahontas Tr	Toe Ink Swamp
7	US-250	Broad Street	I-95
8	VA-147	Cary Street	I-195 & CSX Railroad
9	US-360	14th Street	James River South Div
10	US-360	14th Street	James River North Div
11	US-250	Broad Street	CSX Abandoned Spur Line
12	I-64	Wbl I-64	I- 95
13	I-195	Sbl I-195	VA- 76, CSX Rr & Ramp S
14	I-64	Ramp To 5th & I-95S	I-95
15	VA-161	North Boulevard	CSX Railway
16	VA-161	Westover Hills Blvd (RMTA)	James River

512,308 square feet of structurally deficient (poor condition) deck areas will be replaced or rehabilitated to good condition

Annual Transportation Savings

- Operational Savings = Monetary values of (Auto delay savings + Truck delay saving + VMT savings) **\$485,254,000**
- Environmental Savings = Monetary values of (VOC savings + NOx savings) **\$348,000**
- Safety Savings = Monetary value of (reduced fatal and severe injuries crashes) **\$120,583,000**

Total Savings of \$606,185,000 (2030 Dollars)

Economic Impact Analysis (EIA)

- EIA evaluates the cumulative economic growth estimated to be generated in the 2045 Build Scenario due to changes in productivity and competitiveness attributable to changes in transportation conditions
- How do the transportation projects in ConnectRVA 2045 as a whole impact Richmond region's economy?
- RRTPO developed a tool based on findings from a recent and extensive study called EconWorks. EconWorks is a product of the (SHRP2)
- National partnership of AASHTO, TRB and FHWA
- Direct Impact – Jobs, Wages, Economic Output
- Secondary Impact – Jobs, Wages, Economic Output
- Total Impact = Direct Impact + Secondary Impact
- Individual Impact of each project calculated separately
- Sum of all impacts scaled to avoid double counting due to the overlap of projects

Economic Impact Analysis (EIA)

The full implementation of the **ConnectRVA 2045** is projected to have the following positive impact on the Richmond region's economy:

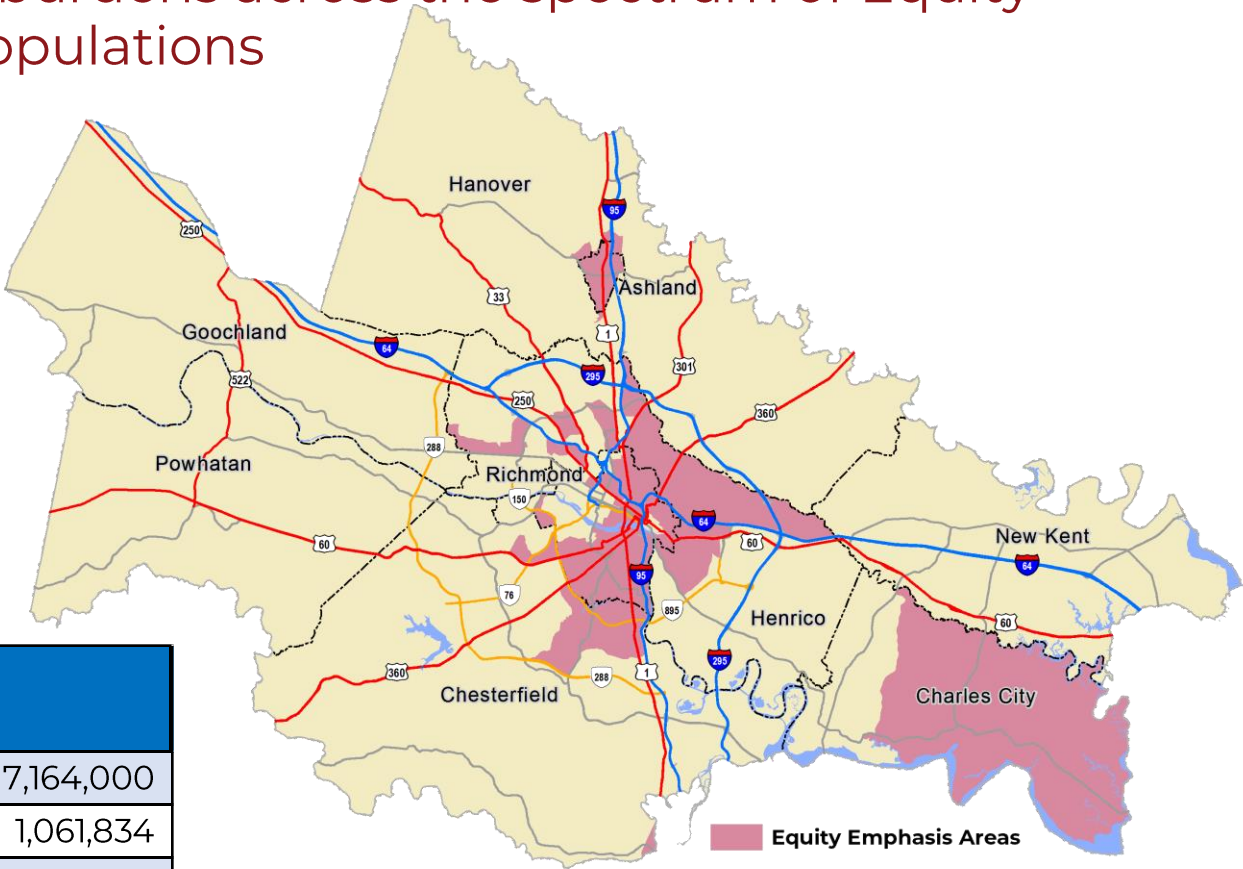
- **56,223 direct jobs** and **38,046 indirect jobs** will be created for a total of **94,269 jobs**.
- **\$2.8 billion** direct wages and **\$1.9 billion** of indirect wages as a result of the income and wages from direct and indirect jobs.
- A net economic impact of around **\$15 billion** to the Richmond region's Gross Domestic Product (GDP).

Environmental Justice Analysis

Comparative assessment of the benefits and burdens across the spectrum of Equity Emphasis Areas (EEAs) and Non-EEAs area populations

Project Area	No of Projects	Value of Investment
Does not Serve Equity Emphasis Area	78.00	\$ 2,356,988,000
Serves Equity Emphasis Area	132.00	\$ 3,460,176,000
Total	210.00	\$ 5,817,164,000

Projects that Serve EEA		All Projects	
Investment	\$ 3,460,176,000	Investment	\$ 5,817,164,000
EEA Population	\$ 337,049	Total Population	\$ 1,061,834
Per Capita	\$ 10,266	Per Capita	\$ 5,478



Accessibility Analysis

Comparative assessment of the benefits and burdens across the spectrum of Equity Emphasis Areas (EEAs) and Non-EEAs area populations for **No-Build and Build Conditions**.

- Average number of work (jobs) and non-work (destinations) opportunities by different transportation modes within a reasonable specified travel time based on mode.
- Average Travel Times by Trip Purpose
- Access to Transit within certain walking and biking travel times

Accessibility Analysis

Average number of work (jobs) and non-work (destinations) opportunities by different transportation modes within a reasonable specified travel time based on mode.

Total Employment					Total Weighted Destinations				
Mode (minutes)	Alternative	Average Jobs Accessible Per Capita			Mode (minutes)	Alternative	Average Destinations Accessible Per 1000 Person		
		EEA	Non-EEA	Regionwide			EEA	Non-EEA	Regionwide
Auto (30)	Build	2,717.28	2,208.82	2,403.60	Auto (30)	Build	41,002.14	34,016.65	36,692.64
	No-Build	2,691.02	2,179.05	2,375.17		No-Build	40,677.58	33,644.19	36,338.53
	Difference	26.25	29.77	28.42		Difference	324.56	372.46	354.11
	Percentage	0.98%	1.37%	1.20%		Percentage	0.80%	1.11%	0.97%
Transit (45)	Build	1,507.81	1,096.08	1,253.81	Transit (45)	Build	19,068.74	14,191.32	16,059.76
	No-Build	1,147.58	872.13	977.65		No-Build	14,158.45	11,308.81	12,400.44
	Difference	360.22	223.95	276.15		Difference	4,910.29	2,882.51	3,659.31
	Percentage	31.39%	25.68%	28.25%		Percentage	34.68%	25.49%	29.51%
Biking (30)	Build	595.06	212.60	355.09	Biking (30)	Build	5,041.51	2,481.72	3,435.43
	No-Build	249.54	165.25	196.65		No-Build	2,600.79	1,805.76	2,101.97
	Difference	345.52	47.35	158.44		Difference	2,440.72	675.96	1,333.46
	Percentage	138.46%	28.65%	80.57%		Percentage	93.85%	37.43%	63.44%
Walking (30)	Build	63.58	402.45	214.83	Walking (30)	Build	461.61	2,222.98	1,247.74
	No-Build	49.09	371.20	192.85		No-Build	461.61	2,222.98	1,247.74
	Difference	14.49	31.25	21.97		Difference	0.00	0.00	0.00
	Percentage	29.53%	8.42%	11.39%		Percentage	0.00%	0.00%	0.00%

Per Capita Net
Accessibility
Benefit



Regionwide - 485 new jobs and new 5 destinations
EEA- 747 new jobs and 7.6 new destinations
Non-EEA - 332 new jobs and 3.9 new destinations

Accessibility Analysis

Average Travel Times & Trip Length by Trip Purpose

Exhibit 22 A - All Trips

		EEA Areas		Non-EEA Areas		Regionwide	
		TIME	DISTANCE	TIME	DISTANCE	TIME	DISTANCE
Peak	Base	12.74	6.76	15.21	9.01	14.17	8.27
	No Build	13.28	6.91	16.07	9.28	14.99	8.56
	Build	13.24	6.91	15.85	9.24	14.85	8.54
Off -Peak	Base	13.79	6.82	15.66	8.59	14.89	8.10
	No Build	14.88	6.96	16.83	8.74	16.06	8.28
	Build	14.78	7.00	16.55	8.79	15.86	8.33

Exhibit 22 B - Home-Based Work Trips

		EEA Areas		Non-EEA Areas		Regionwide	
		TIME	DISTANCE	TIME	DISTANCE	TIME	DISTANCE
Peak	Base	13.07	7.37	16.96	10.85	15.42	9.66
	No Build	13.92	7.67	18.24	11.31	16.62	10.16
	Build	13.85	7.65	17.92	11.23	16.40	10.11
Off -Peak	Base	13.83	7.39	17.83	10.91	16.19	9.69
	No Build	15.25	7.69	19.53	11.35	17.83	10.17
	Build	15.14	7.71	19.11	11.32	17.54	10.16

Exhibit 22 E - Non-Home Based Trips

		EEA Areas		Non-EEA Areas		Regionwide	
		TIME	DISTANCE	TIME	DISTANCE	TIME	DISTANCE
Peak	Base	14.74	8.26	16.11	9.72	15.56	9.32
	No Build	15.36	8.51	16.91	10.04	16.32	9.63
	Build	15.31	8.50	16.74	10.01	16.20	9.61
Off -Peak	Base	16.01	8.46	17.28	9.84	16.71	9.44
	No Build	17.52	8.78	18.71	10.10	18.16	9.74
	Build	17.32	8.81	18.36	10.17	17.89	9.79

Exhibit 22 C - Home-Based Shopping Trips

		EEA Areas		Non-EEA Areas		Regionwide	
		TIME	DISTANCE	TIME	DISTANCE	TIME	DISTANCE
Peak	Base	11.54	5.55	13.39	7.30	13.25	7.36
	No Build	11.91	5.63	14.11	7.53	13.81	7.50
	Build	11.89	5.63	13.92	7.49	13.70	7.48
Off -Peak	Base	12.28	5.53	13.99	7.20	14.03	7.39
	No Build	13.22	5.63	15.09	7.38	14.98	7.47
	Build	13.13	5.65	14.80	7.37	14.76	7.46

Exhibit 22 D - Home-Based Others Trips

		EEA Areas		Non-EEA Areas		Regionwide	
		TIME	DISTANCE	TIME	DISTANCE	TIME	DISTANCE
Peak	Base	11.65	5.75	13.74	7.54	12.63	6.82
	No Build	11.95	5.76	14.33	7.63	13.24	6.97
	Build	11.94	5.77	14.17	7.63	13.14	6.97
Off -Peak	Base	12.11	5.56	14.13	7.29	13.02	6.60
	No Build	12.75	5.46	14.91	7.22	13.86	6.61
	Build	12.73	5.53	14.75	7.32	13.76	6.70

EEA areas shows slightly better decrease in travel times compared to Non-EEA areas.

Accessibility Analysis

Percentage of population within EEA Areas, Non-EEA Areas and regionwide who can access to Transit within certain walking and biking travel times

	Scenario	No-Build			Build		
Mode	Travel Time (Minutes)	Total	EEA Area	Non-EEA Area	Total	EEA Area	Non-EEA Area
Walking	5	27.6%	52.7%	12.9%	28.4%	53.5%	13.6%
	10	36.8%	67.1%	19.0%	37.9%	68.1%	20.2%
	15	42.6%	74.4%	23.9%	44.0%	75.3%	25.6%
	20	47.6%	79.2%	29.0%	49.1%	80.1%	31.0%
	25	52.1%	83.4%	33.7%	53.5%	84.1%	35.6%
	30	56.3%	86.9%	38.3%	57.6%	87.4%	40.1%
Biking	10	58.9%	88.7%	41.4%	60.1%	89.1%	43.1%
	30	86.1%	98.3%	78.9%	86.2%	98.3%	79.1%

Connect RVA 2045



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