

# **Greater RVA Transit Vision Plan: Near-Term Strategic Technical Analysis**

Progress Report:  
Implementation Feasibility Evaluation

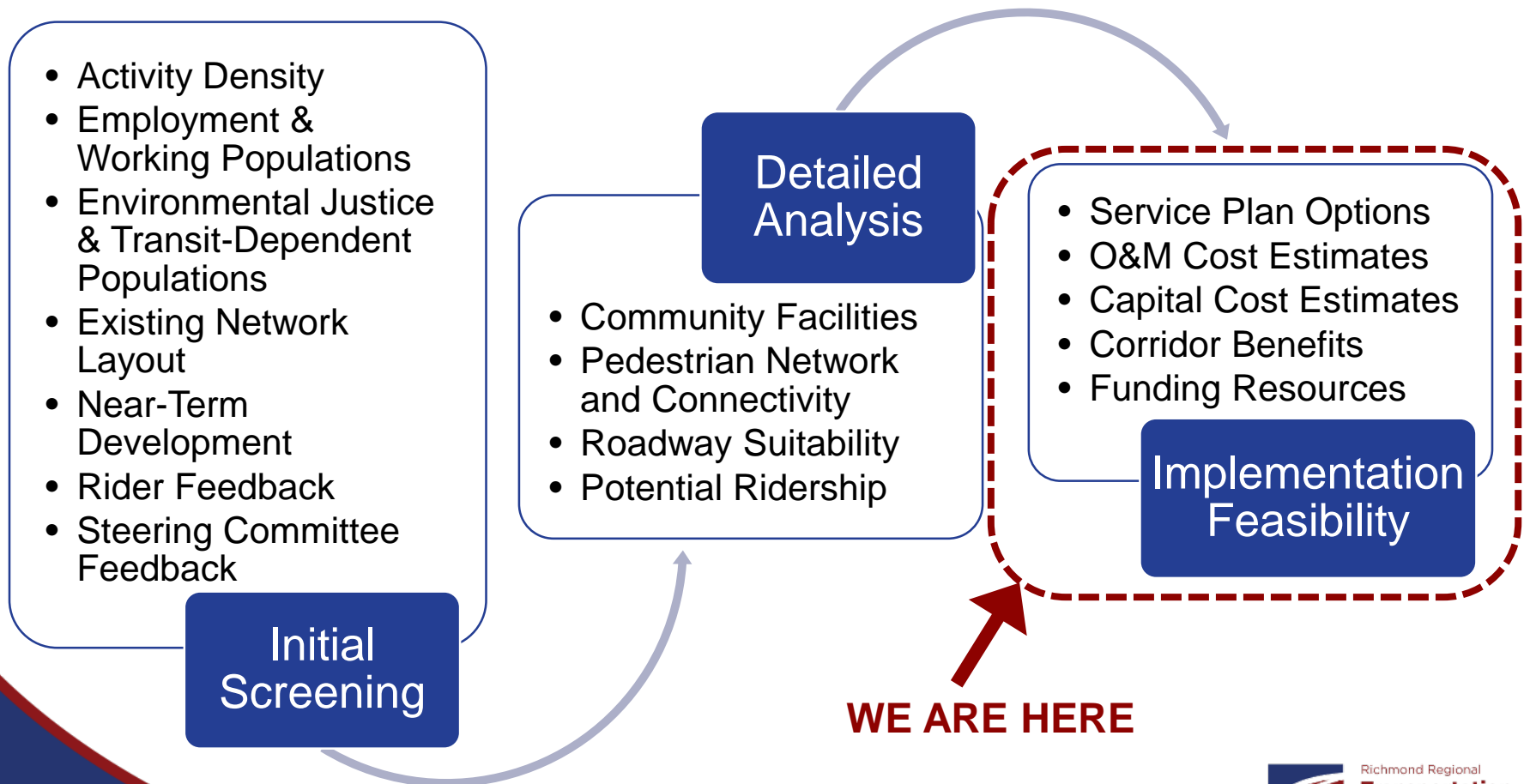
**Community Transportation Advisory Committee**

July 16, 2020

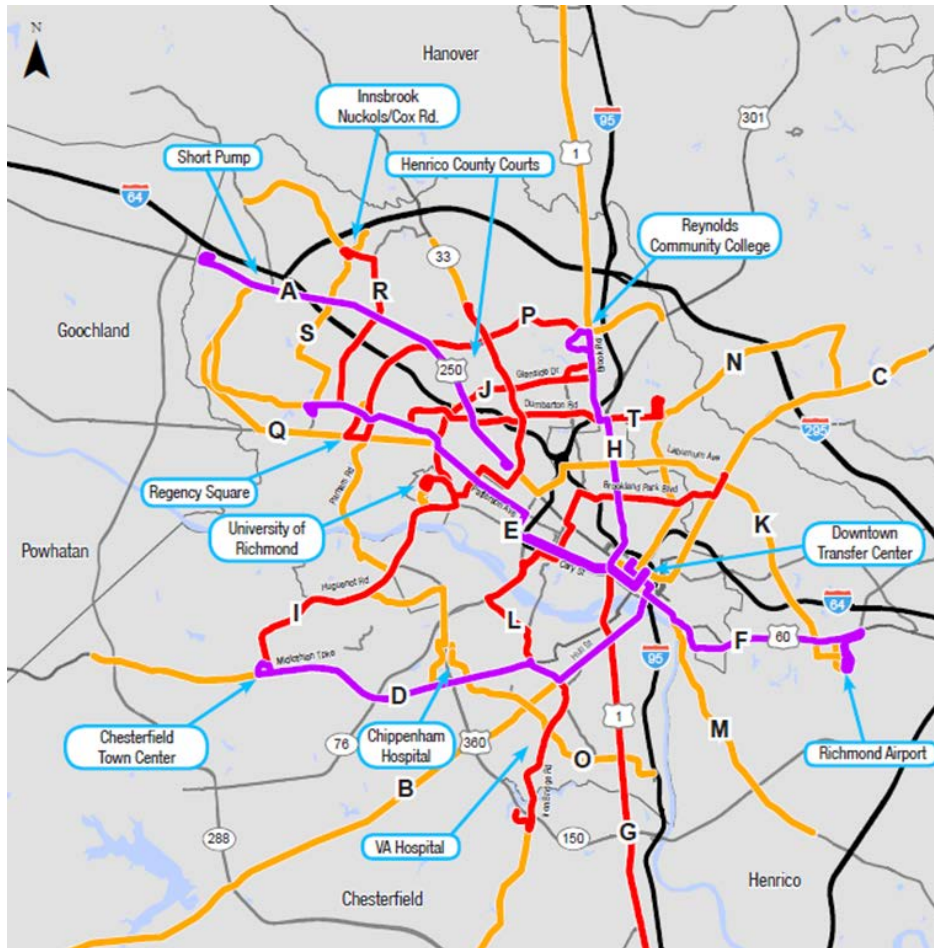
# Study Purpose

- Build upon the Greater RVA Transit Vision Plan (2017) and recent transit improvements in the Richmond Region
- Identify recommendations for high-frequency routes that can be implemented in the near-term to advance toward the region's long-term vision




# Analysis Methodology



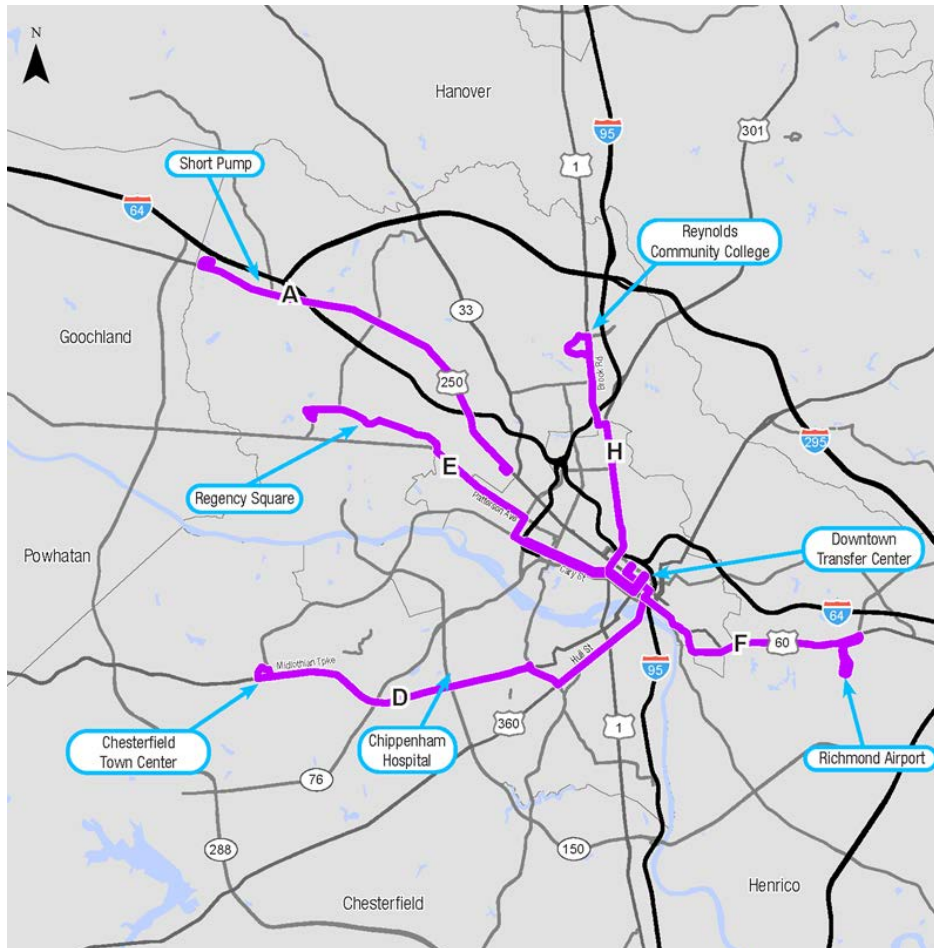
# Study Corridors



## Legend

-  Corridors Selected for Implementation Feasibility
-  Detailed Analysis Corridors
-  Initial Screening Corridors

# Corridors Selected for Implementation Feasibility



## Legend

Corridors Selected for Implementation Feasibility

### **A. Broad Street – Short Pump**

*(Willow Lawn to Bon Secours Short Pump)*

### **D. Midlothian Turnpike**

*(Downtown Richmond to Huguenot Road)*

### **E. West End South**

*(Downtown Richmond to Regency Square)*

### **F. Airport via Route 60**

*(Downtown Richmond to Richmond Airport)*

### **H. Route 1 to Ashland**

*(Downtown Richmond to Parham Road)*

# Corridor Service Plan Assumptions

- Two scenarios defined for each corridor
- Seven day a week service for all corridors
- Proposed corridor routes build on current network
- Ultimate recommended service changes subject to GRTC approval and funding
- Annual Operations & Maintenance costs estimated using current GRTC cost per service mile of \$7.63

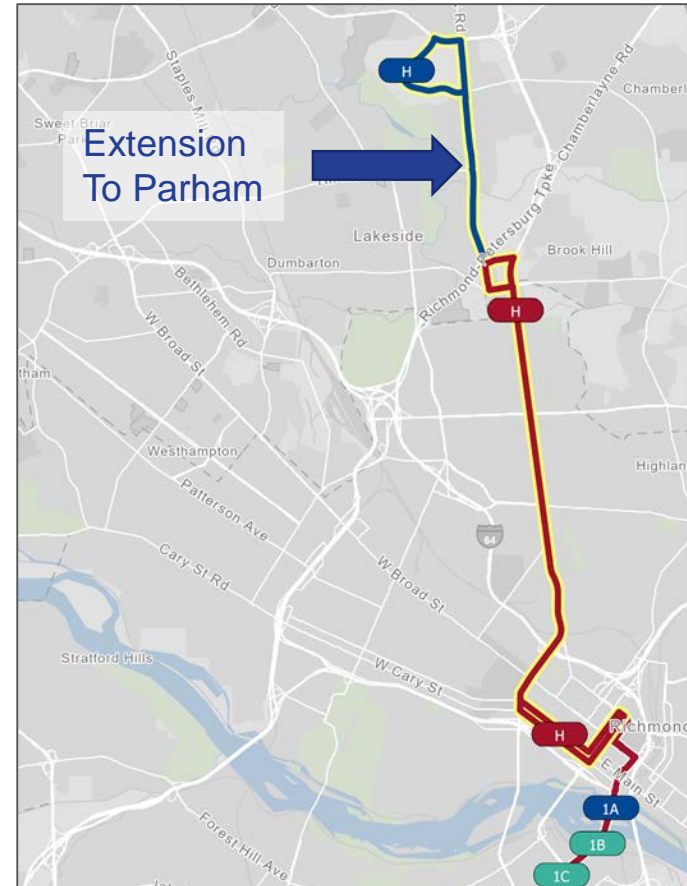
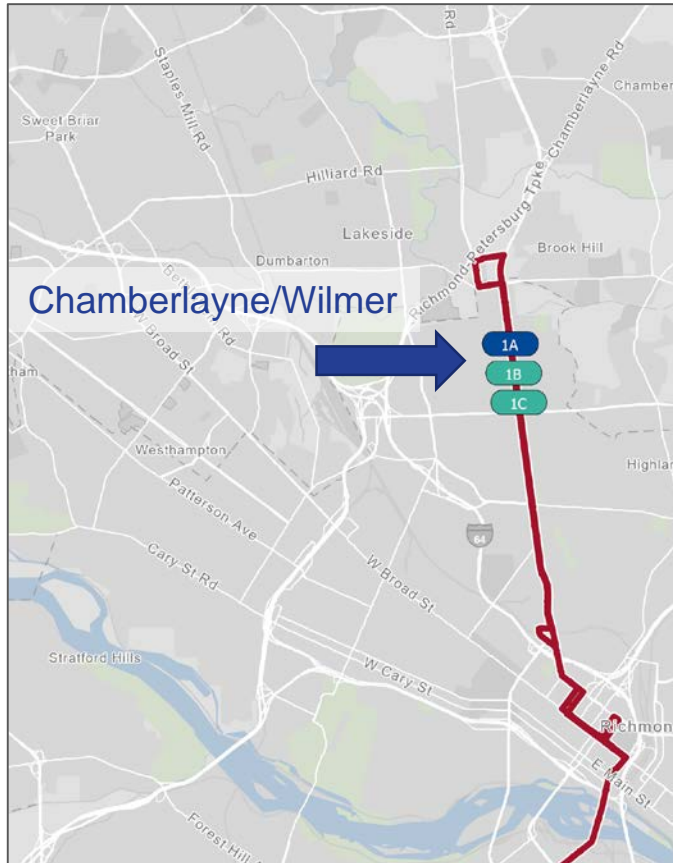


# Corridor H: Route 1 North

## Extension from Chamberlayne/Wilmer to Parham Road

Option 1: 30-minute service on extension

Option 2: 15-minute service on extension

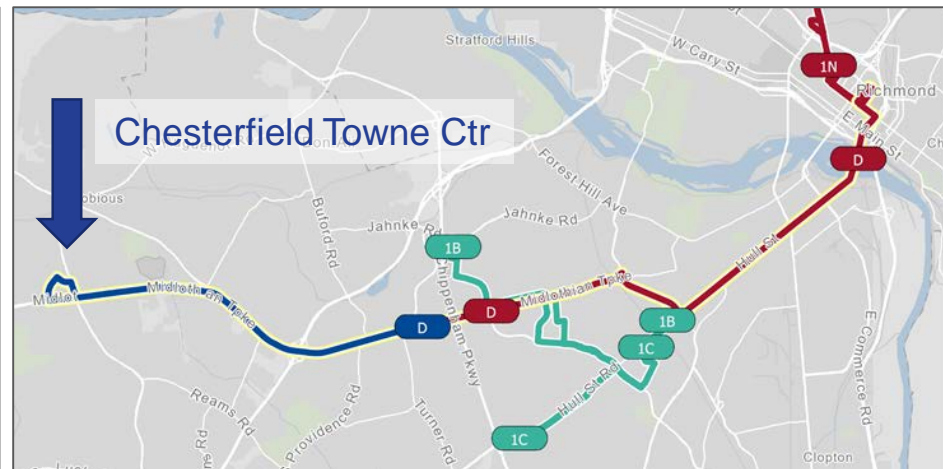
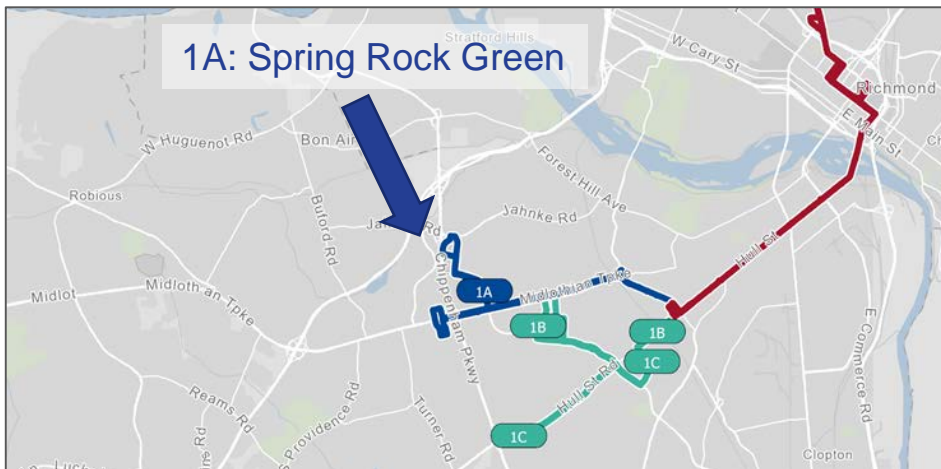


# Corridor D: Midlothian Turnpike

## Extension of 1A to Chesterfield Town Center

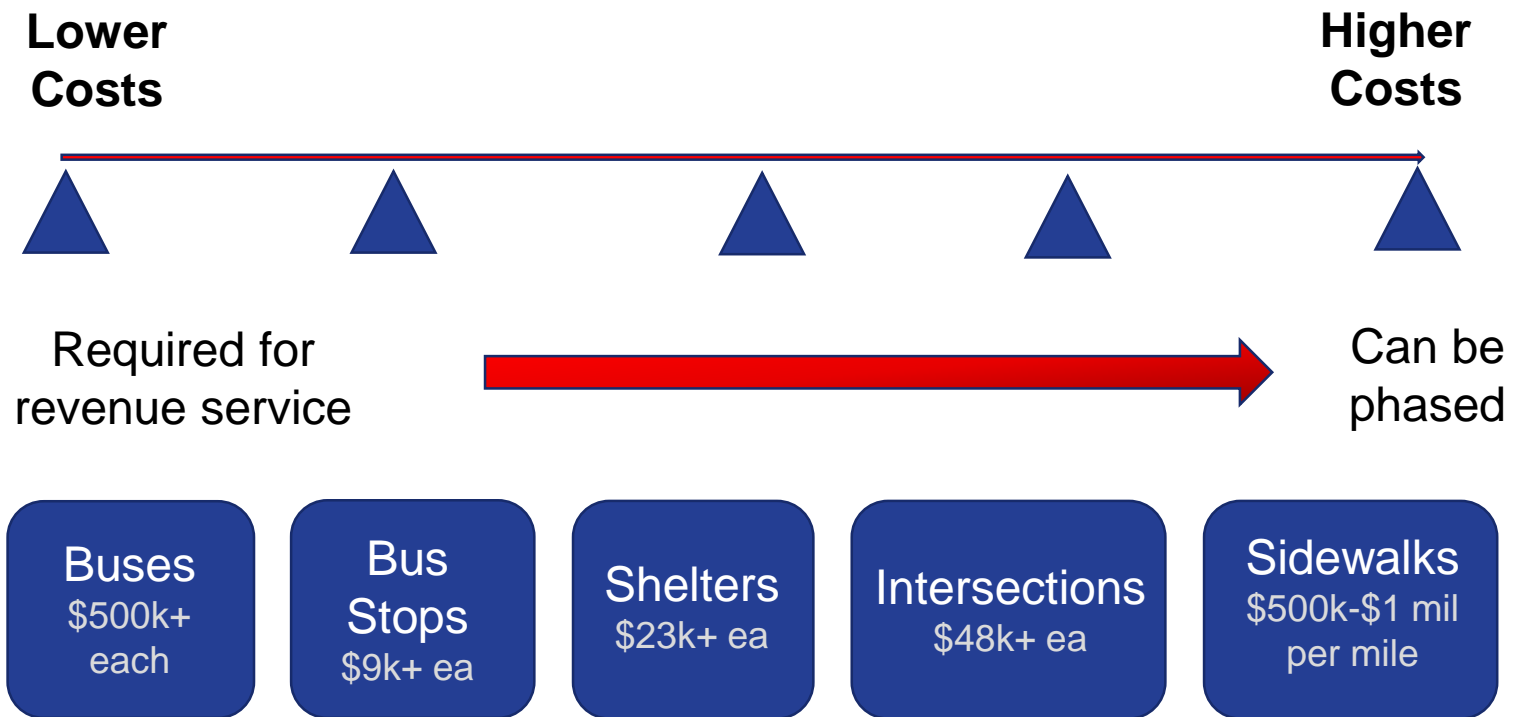
Option 1: 30-minute service on extension

Option 2: 15-minute service on extension





# Capital Costs Continuum



# Example - Route 1 North (H)

## Capital Cost by Component

	Option 1	Option 2
Vehicles	\$1,870,000	\$2,340,000
Bus Stop Amenities	\$320,000	
Shelters	\$180,000	
Sidewalk	\$6,020,000 (Low)	
	\$11,960,000 (High)	
Intersection Improvements	\$430,000	
Transit Signal Priority (TSP)	\$680,000	\$690,000

# Range of Capital Costs

Corridor	Low	High
A. Broad St-Short Pump	\$ 1,870,000	\$ 24,250,000
D. Midlothian Turnpike	\$ 2,740,000	\$ 40,510,000
E. West End South	\$ 1,920,000	\$ 13,400,000
F. Airport via Route 60	\$ 1,870,000	\$ 24,090,000
H. Route 1-north	\$ 2,190,000	\$ 15,910,000
<b>Total</b>	<b>\$10,590,000</b>	<b>\$ 118,160,000</b>

# Range of Operating Costs

Corridor	Low	High
A. Broad St-Short Pump	\$ 581,000	\$ 1,581,000
D. Midlothian Turnpike	\$ 2,274,000	\$ 2,872,000
E. West End South	\$ 2,229,000	\$ 3,103,000
F. Airport via Route 60	\$ 2,068,000	\$ 4,804,000
H. Route 1-north	\$ 854,000	\$ 1,213,000
<b>Total</b>	<b>\$ 8,006,000</b>	<b>\$ 13,573,000</b>

# Implementation Activities

- Secure Funding
  - Planning/Design funds
  - Capital funds
  - Operations & Maintenance funds
- Corridor Planning (with localities & CVTA)
  - Identification of bus stop locations
  - Prioritization of sidewalk and intersection improvements
  - Identification of technology improvements
  - Refinement of service schedule
  - Coordination of service between proposed corridor and existing routes
- Procure Vehicles
- Design and Construct Improvements
- Operate Service

Improvements throughout the corridor will need to be coordinated across jurisdictions

# Next Steps

- Brief GRTC Board of Directors
- Brief RRTPO Technical Advisory Committee
- Brief RRTPO Policy Board
- Finalize report documenting near-term strategic implementation recommendations



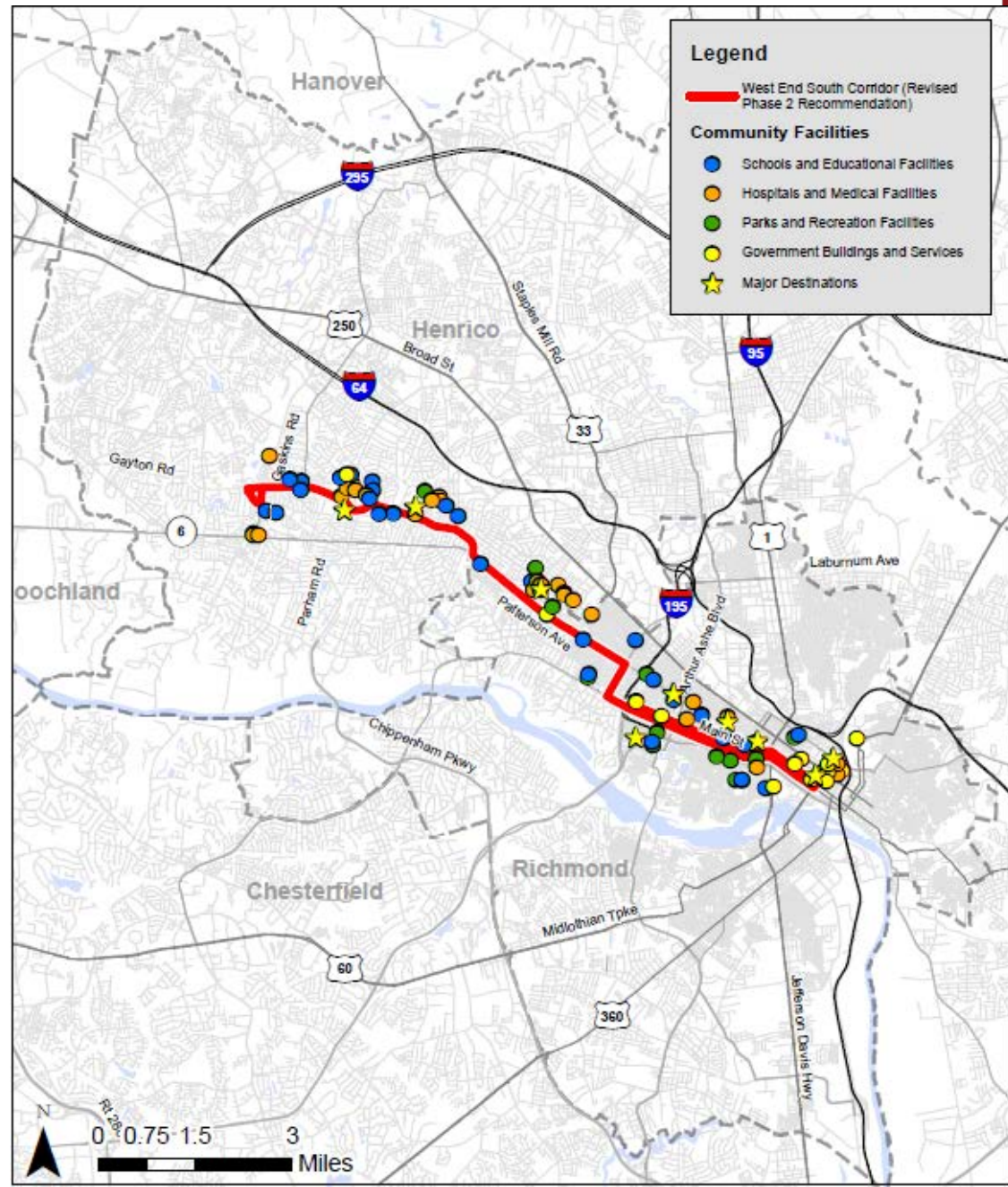
# Additional details

- See following slides for more detail on screening analysis (from March 19, 2020 CTAC meeting that was cancelled)

# Community Facilities

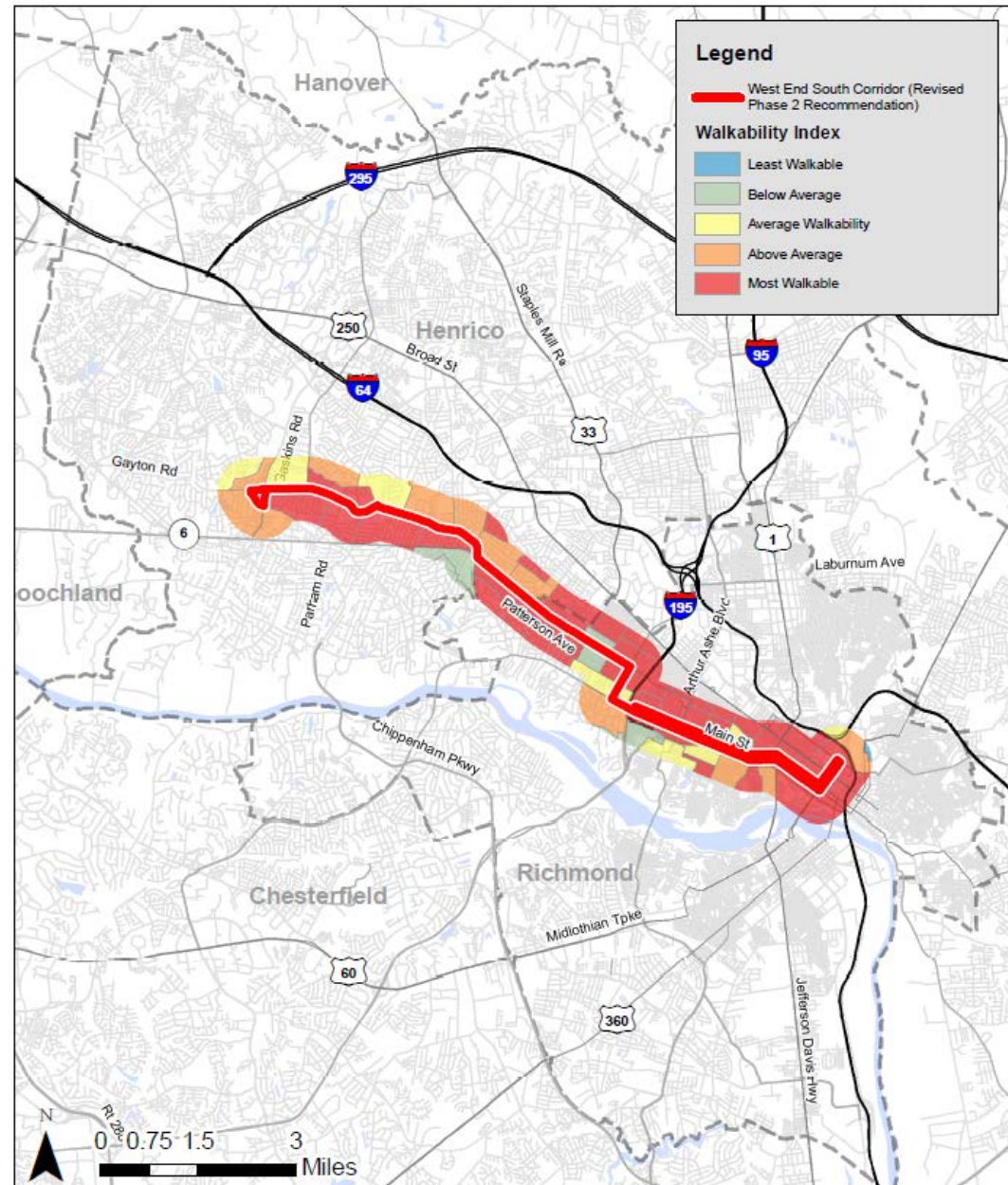
- Identified community facilities within ½ mile of route

- Schools and Educational Facilities
- Hospitals and Medical Facilities
- Parks and Recreation Facilities
- Government Buildings and Services
- ★ Major Destinations
  - Grocery Stores (reviewed but not shown)



# Walkability

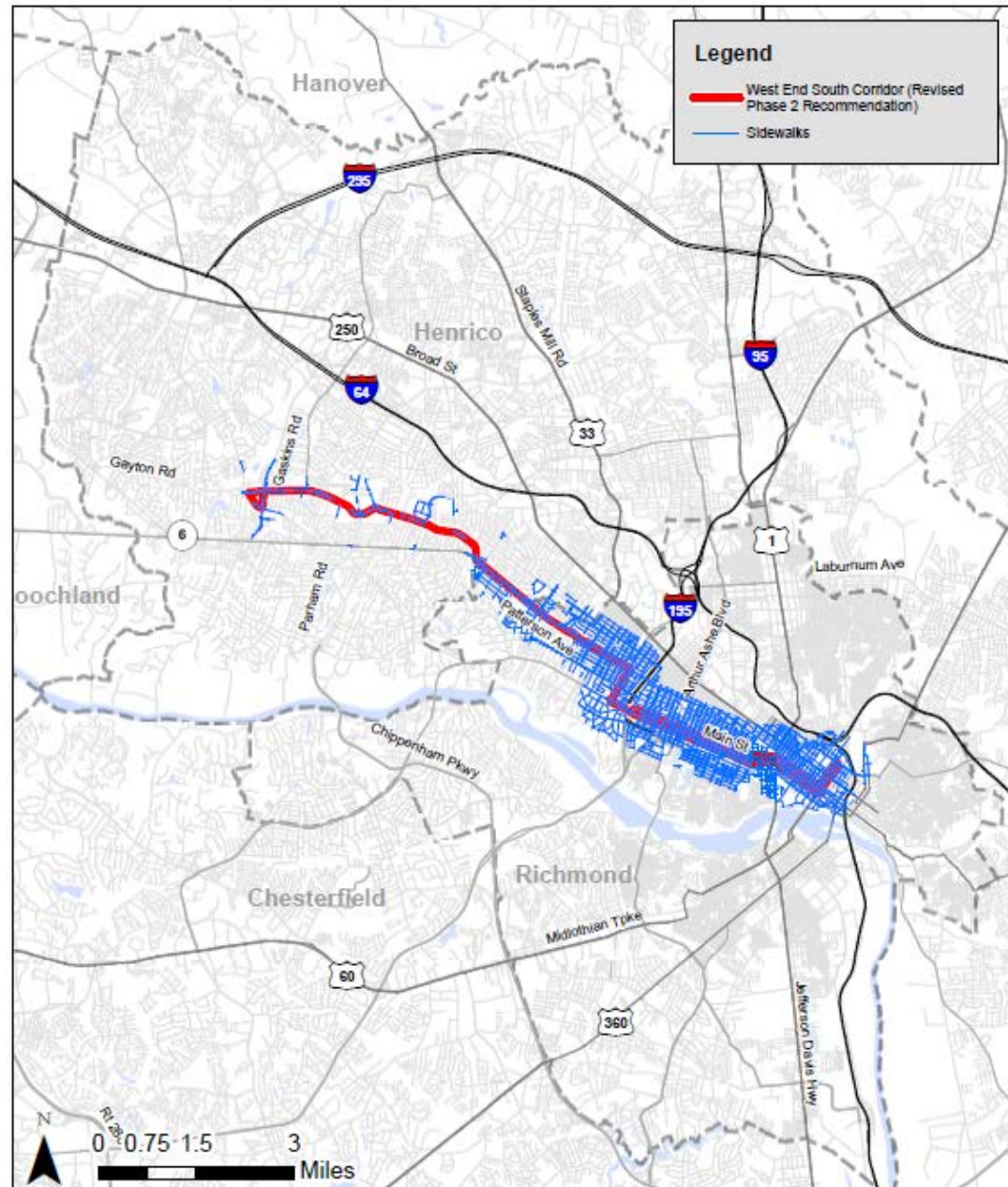
- Highlighted areas that *might* be desirable to walk in if safe walking conditions are available
  - Based on EPA's walkability index





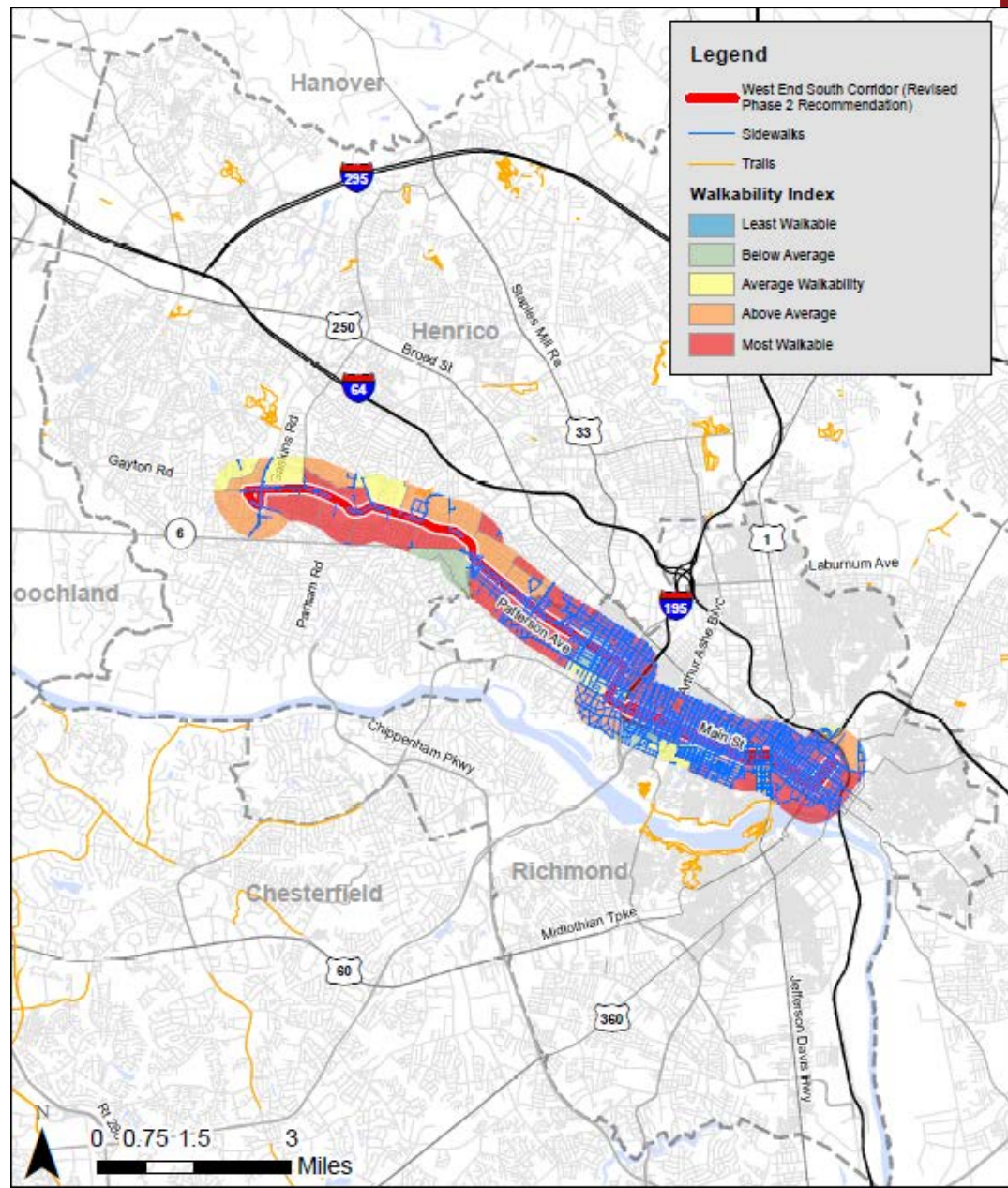
# Pedestrian Network

- Evaluated existing pedestrian infrastructure
  - Percent of roadway network within ½ mile of route with sidewalk



# Pedestrian Connectivity

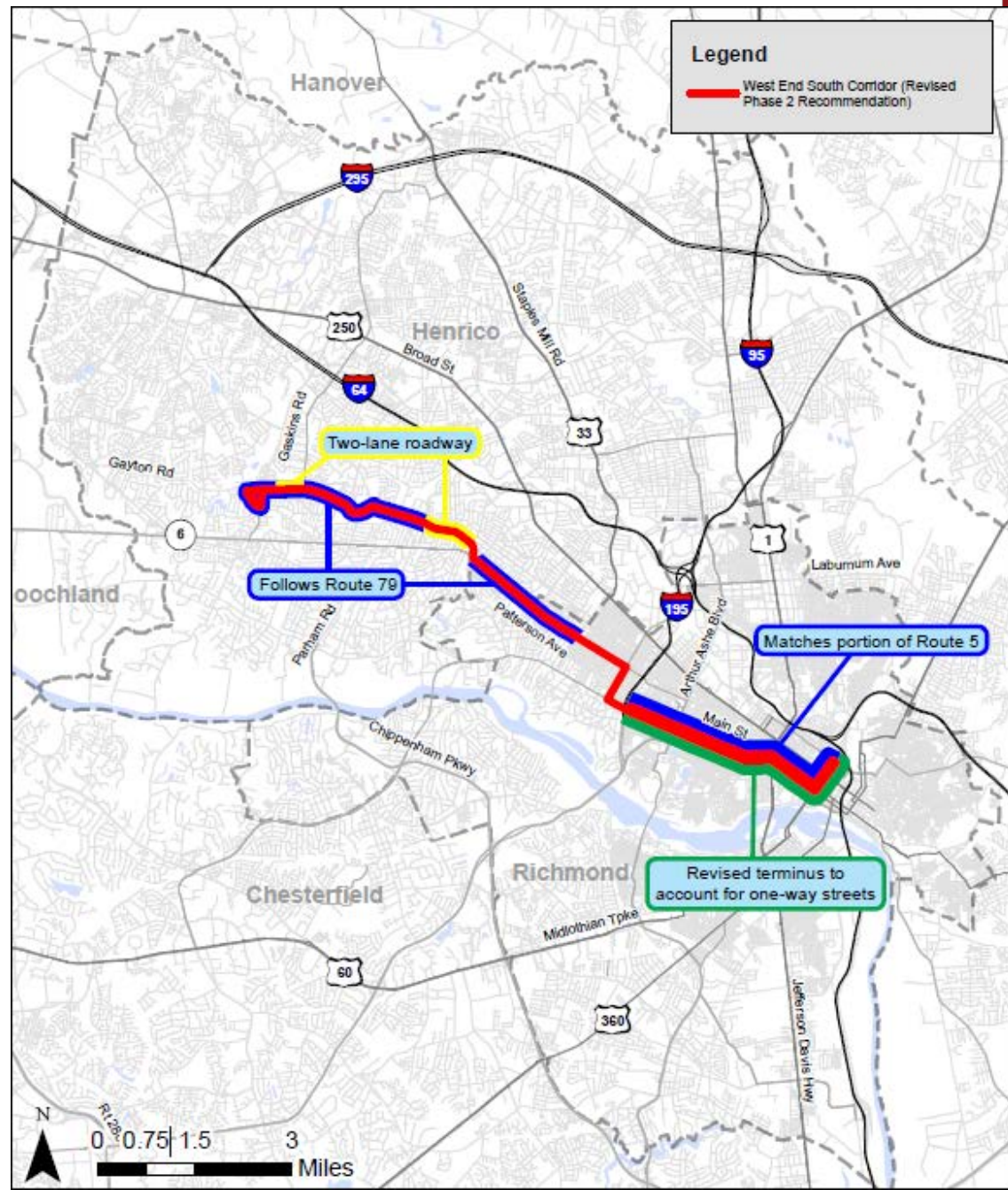
- Overlap of walkability index score and existing pedestrian infrastructure identifies areas where investment in pedestrian infrastructure may be needed to support connections to transit





# Roadway Suitability

- Reviewed roadway characteristics of routes and identified:
  - One-way streets
  - Two-lane roads
  - Difficult turning radii
  - Unsignalized left-turn movements
  - Turnaround locations
  - Alignment with existing GRTC routes





# Corridor Capital Cost Assumptions

- Provide a variety of potential infrastructure improvements that could be implemented in each corridor
- Align with service plan options
- Account for vehicle, bus stop, shelter, sidewalk, intersection, and transit technology costs
- Based on current local capital construction costs and cost estimates from GRTC, Chesterfield County, Henrico County, City of Richmond, and VDOT

# Summary of Capital Costs

## Low Capital Cost

Corridor		Option 1	Option 2
A	Broad Street - Short Pump	\$ 1,870,000	
D	Midlothian Turnpike	\$ 2,740,000	\$ 3,210,000
E	West End South	\$ 1,920,000	\$ 2,860,000
F	Airport via Route 60	<sup>1</sup> \$ 1,870,000	<sup>2</sup> \$ 2,800,000
		<sup>3</sup> \$ 2,340,000	<sup>4</sup> \$ 3,740,000
H	Route 1 North	\$ 2,190,000	\$ 2,650,000

## High Capital Cost

Corridor		Option 1	Option 2
A	Broad Street - Short Pump	\$ 24,250,000	
D	Midlothian Turnpike	\$ 40,050,000	\$ 40,510,000
E	West End South	\$ 12,450,000	\$ 13,400,000
F	Airport via Route 60	<sup>1</sup> \$ 23,150,000	<sup>2</sup> \$ 24,090,000
		<sup>3</sup> \$ 34,630,000	<sup>4</sup> \$ 44,570,000
H	Route 1 North	\$ 15,440,000	\$ 15,910,000

# Comparison of Corridor Benefits

Low



High

Initial Screening

	Activity Density	Transit-Supportive Jobs	Working Populations	Environmental Justice Populations	Transit Dependent Populations
A					
D					
E					
F					
H					

Detailed Analysis

	Ridership (daily riders)	Boardings per Mile	Boardings per Trip	Boardings per Hour	Community Facilities (# w/in 0.5 mi)	Connected Ped Areas (% ped facility coverage)	Walkability (average score)
A							
D							
E							
F							
H							

# Summary of Operating Statistics and Operations & Maintenance Costs

Scenario		Peak Veh.	Fleet Veh.	Ann. Rev. Hrs.	Ann. Rev. Miles	Total Miles (Est.)	Annual O&M Cost
<b>A</b>	Option 1	3	4	4,600	68,600	76,200	\$581,000
	Option 2	3	4	12,500	186,600	207,300	\$1,581,000
<b>D</b>	Option 1	4	5	26,600	268,400	298,200	\$2,274,000
	Option 2	5	6	32,400	338,900	376,500	\$2,872,000
<b>E</b>	Option 1	3	4	18,200	263,000	292,200	\$2,229,000
	Option 2	5	6	27,400	366,200	406,800	\$3,103,000
<b>F</b>	Option 1	3	4	20,800	244,100	271,200	\$2,068,000
	Option 2	5	6	32,500	449,800	499,700	\$3,811,000
	Option 3	4	5	28,200	322,900	358,700	\$2,736,000
	Option 4	7	9	49,000	567,000	629,900	\$4,804,000
<b>H</b>	Option 1	3	4	17,000	100,800	112,000	\$854,000
	Option 2	4	5	21,500	143,200	159,100	\$1,213,000