

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

Progress Report:
Implementation Feasibility Evaluation

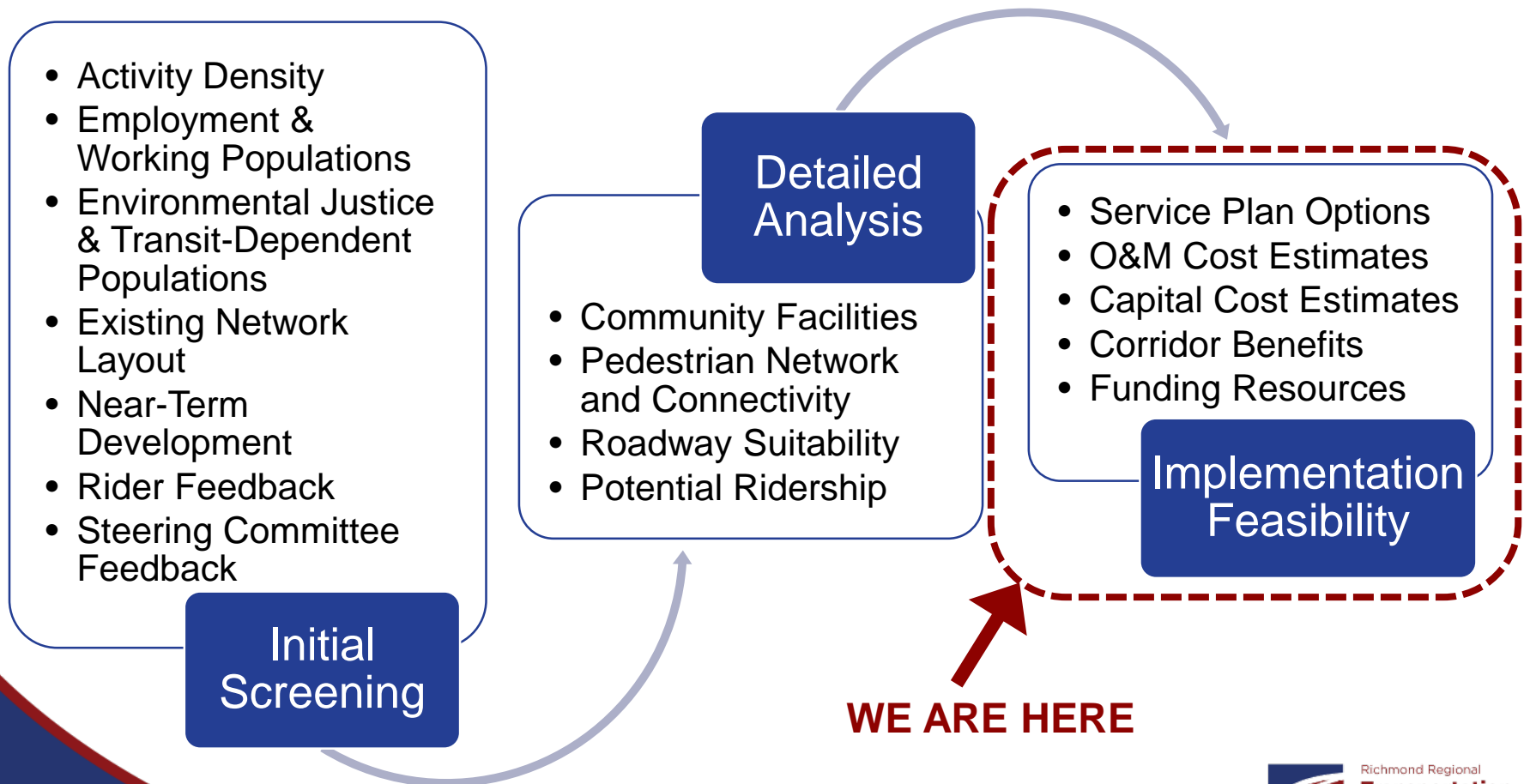
Technical Advisory Committee

August 11, 2020

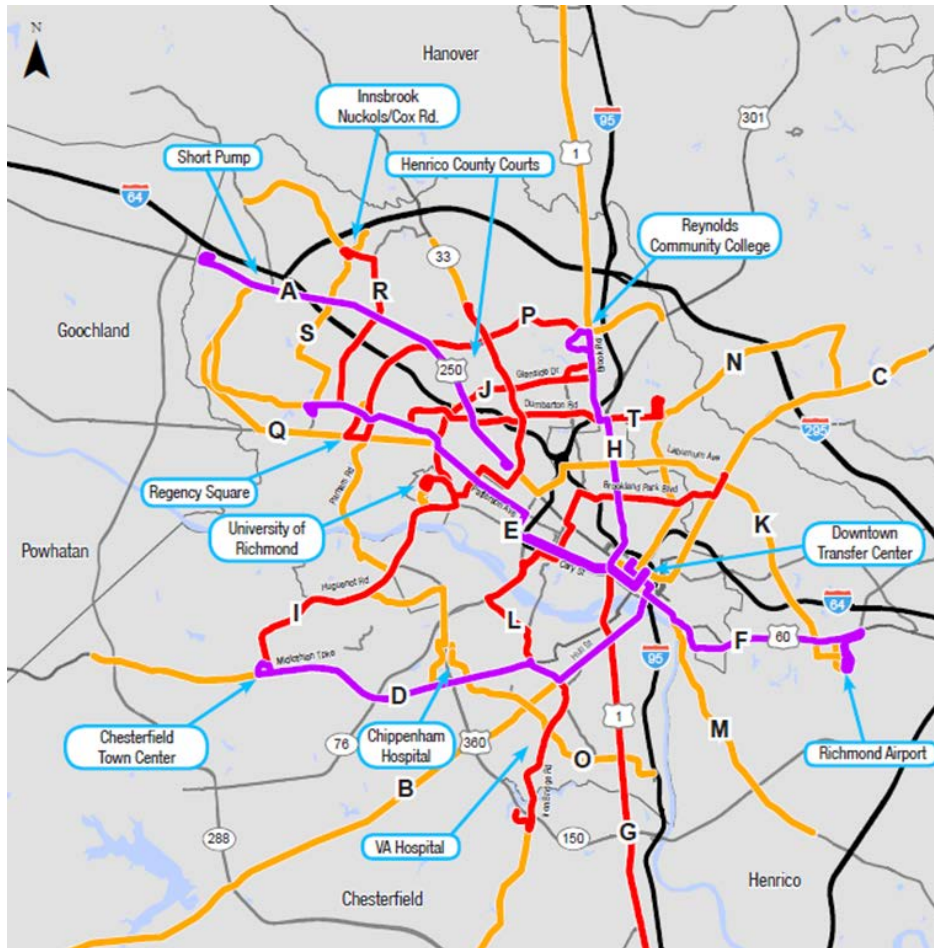
Study Purpose

- 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



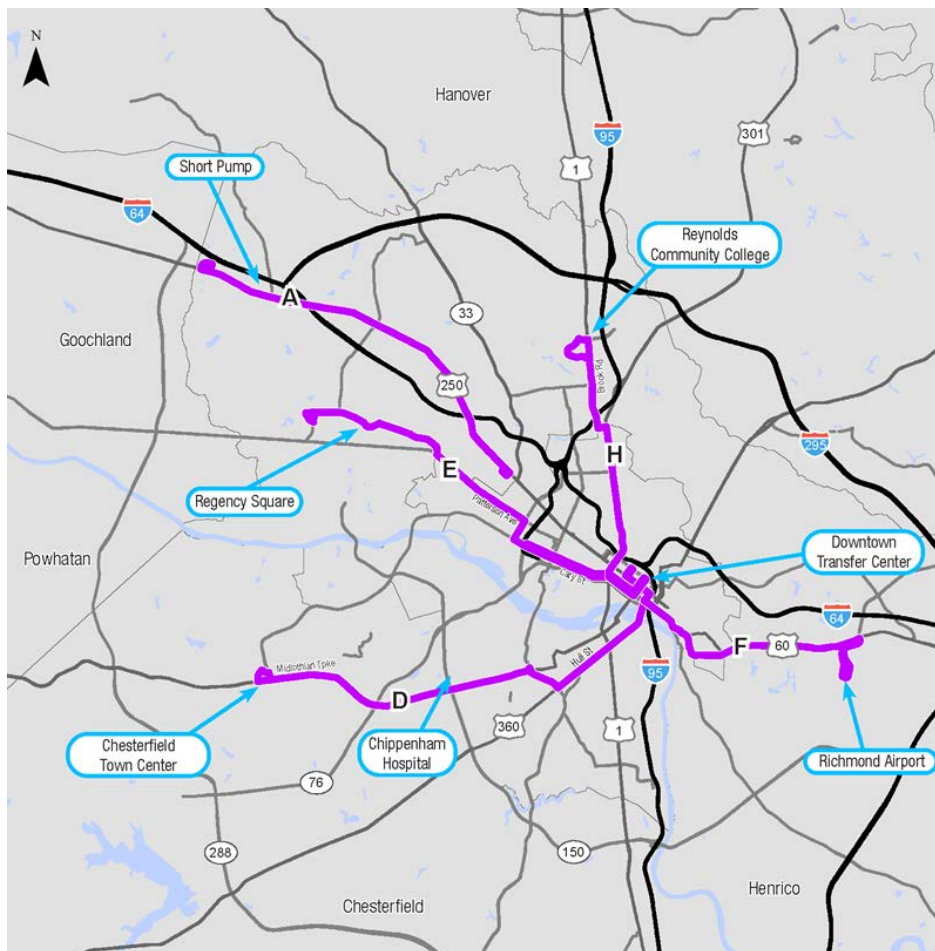
Study Corridors



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

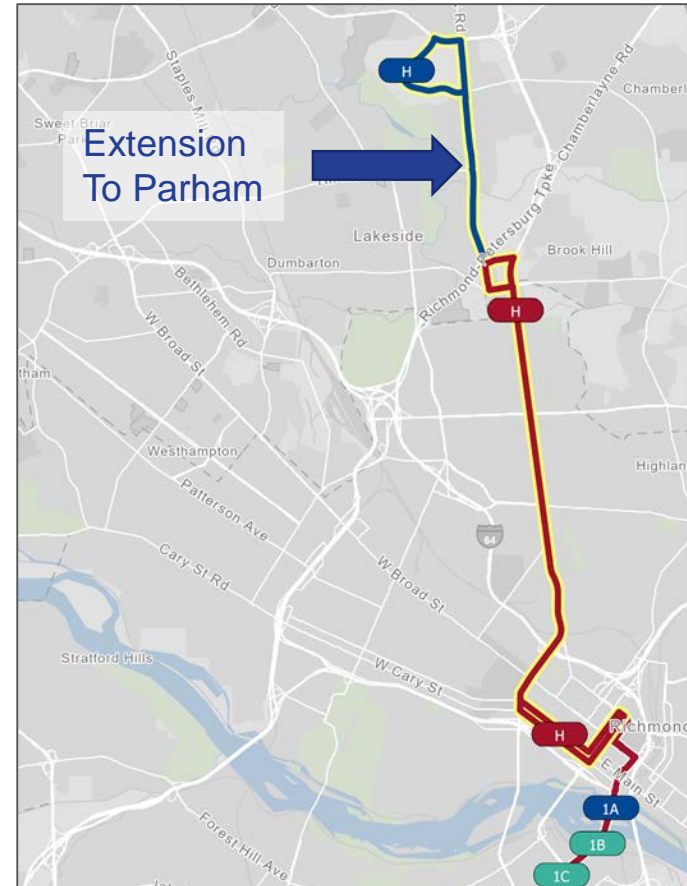
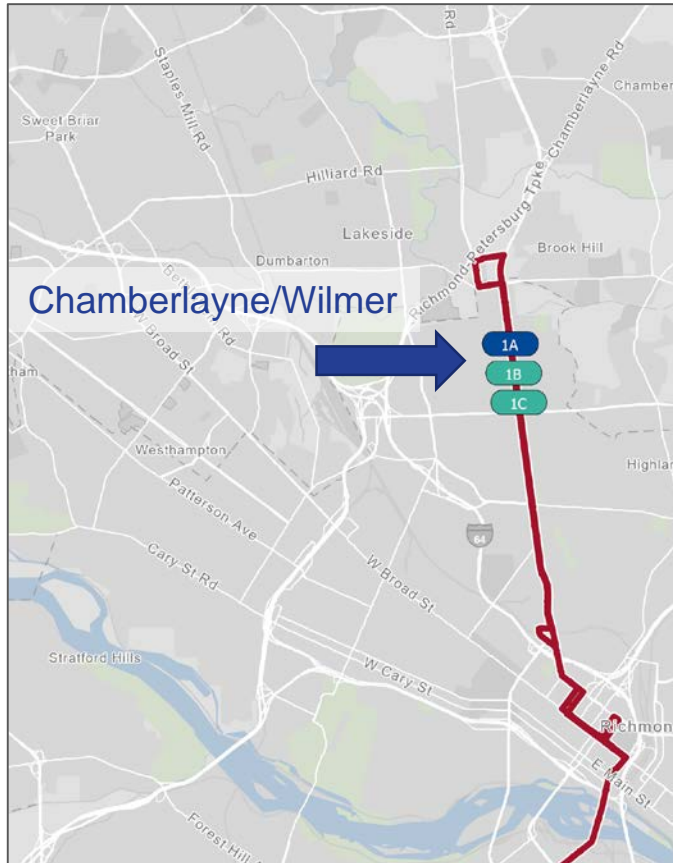
- Two scenarios defined for each corridor
- Seven day a week service for all corridors
- Proposed corridor routes build on current network
- Ultimate recommended service changes subject to GRTC approval and funding
- Annual Operations & Maintenance costs estimated using current GRTC cost per service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

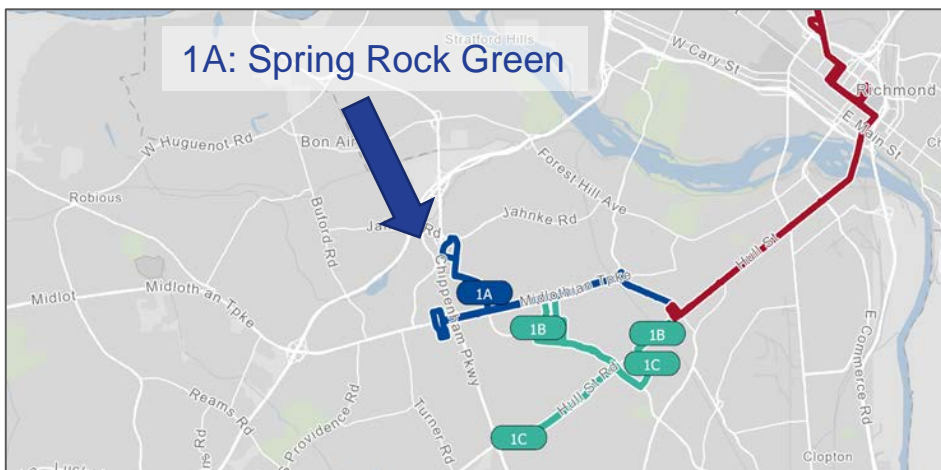


Corridor D: Midlothian Turnpike

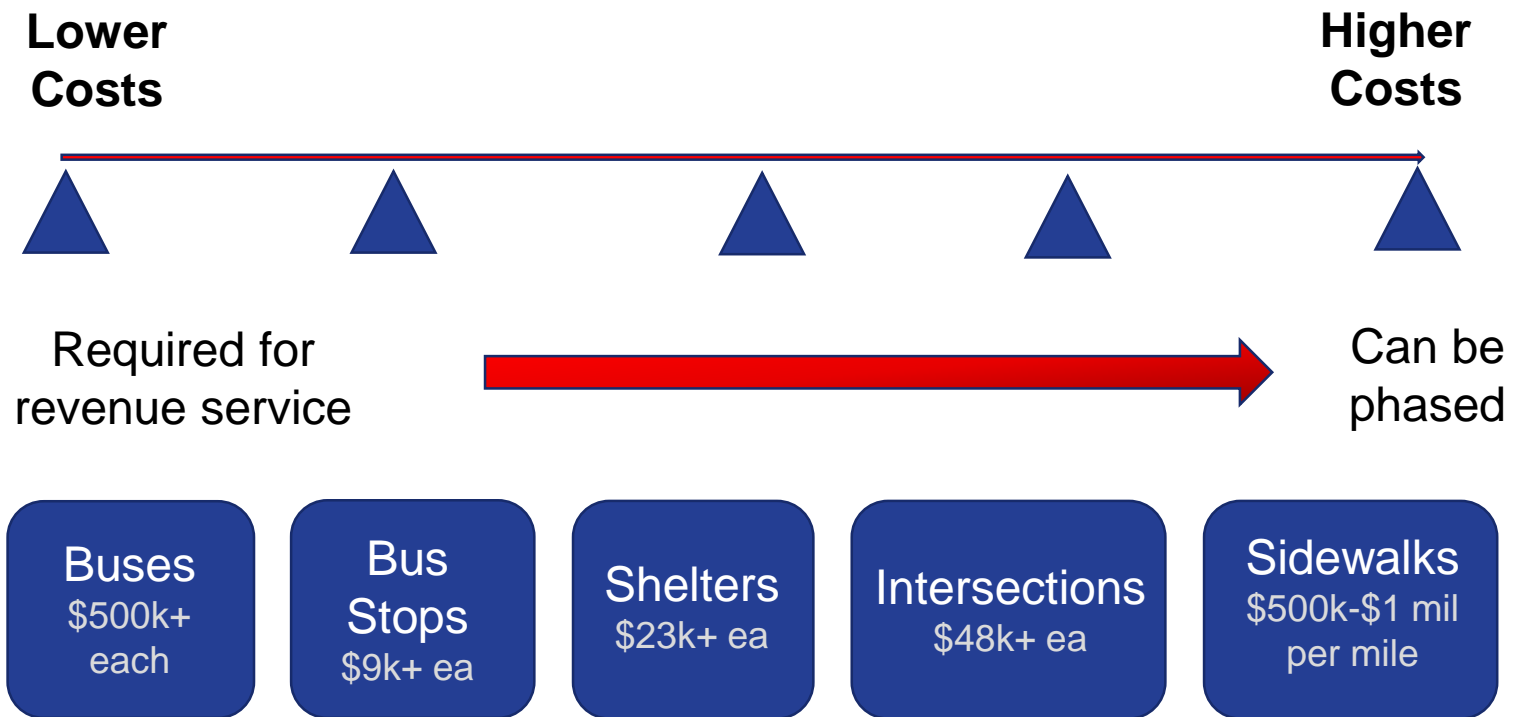
Extension of 1A to Chesterfield Town Center

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
Total	\$10,590,000	\$ 118,160,000

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
Total	\$ 8,006,000	\$ 13,573,000

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

- RRTPO Technical Advisory Committee approval
- RRTPO Policy Board approval
- Finalize report documenting near-term strategic implementation recommendations

TAC Action

TAC ACTION REQUESTED: The following resolution is presented for TAC review and recommendation to the RRTPO Policy Board:

RESOLVED, that the Richmond Regional Transportation Planning Organization Policy Board adopts the proposed plan for the Regional Transit Vision Plan Near-Term Strategic Technical Analysis of five corridor segments considered for enhanced transit in the near-term (five to seven years) planning horizon.

Kimley»Horn



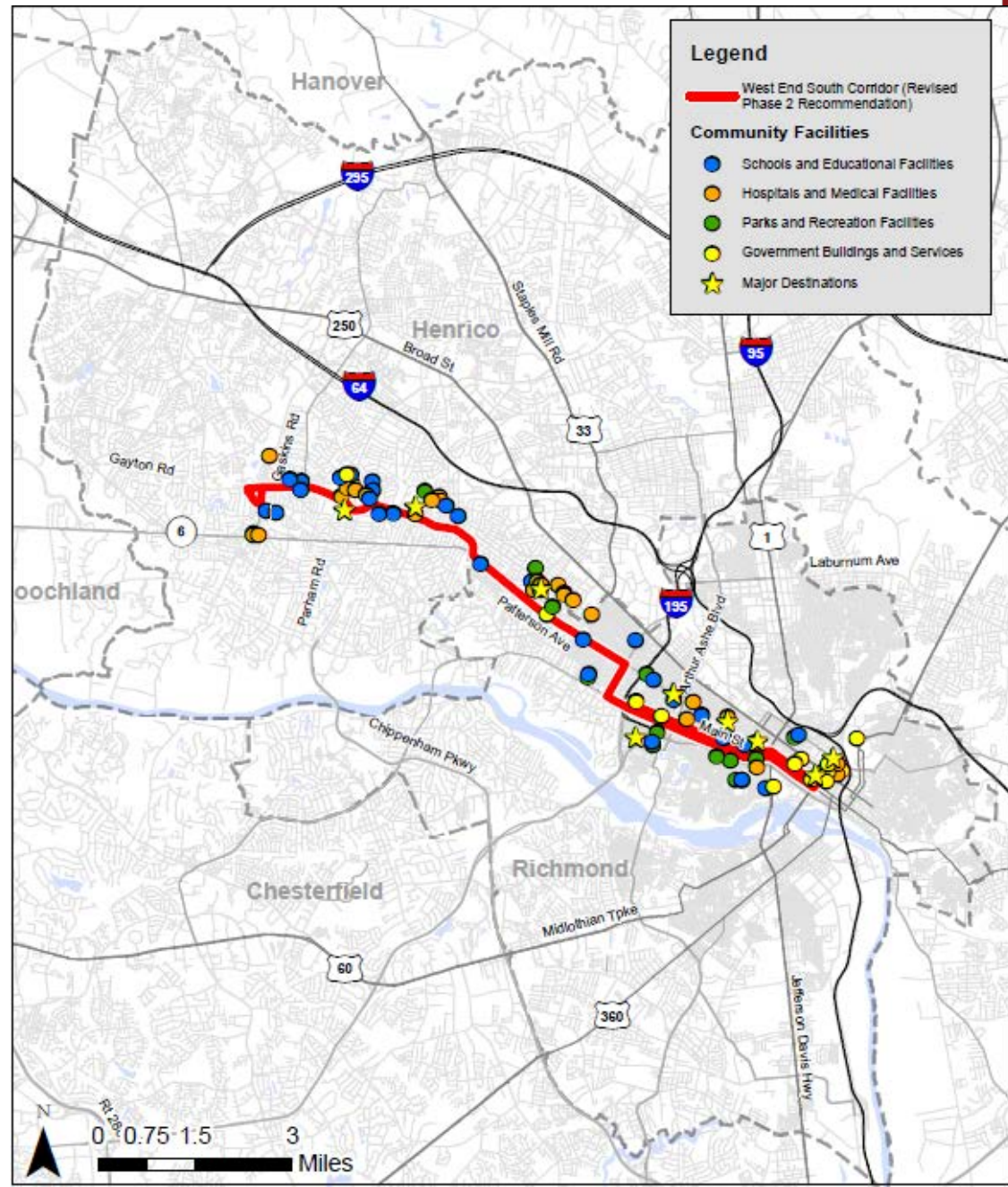
Additional details

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

Community Facilities

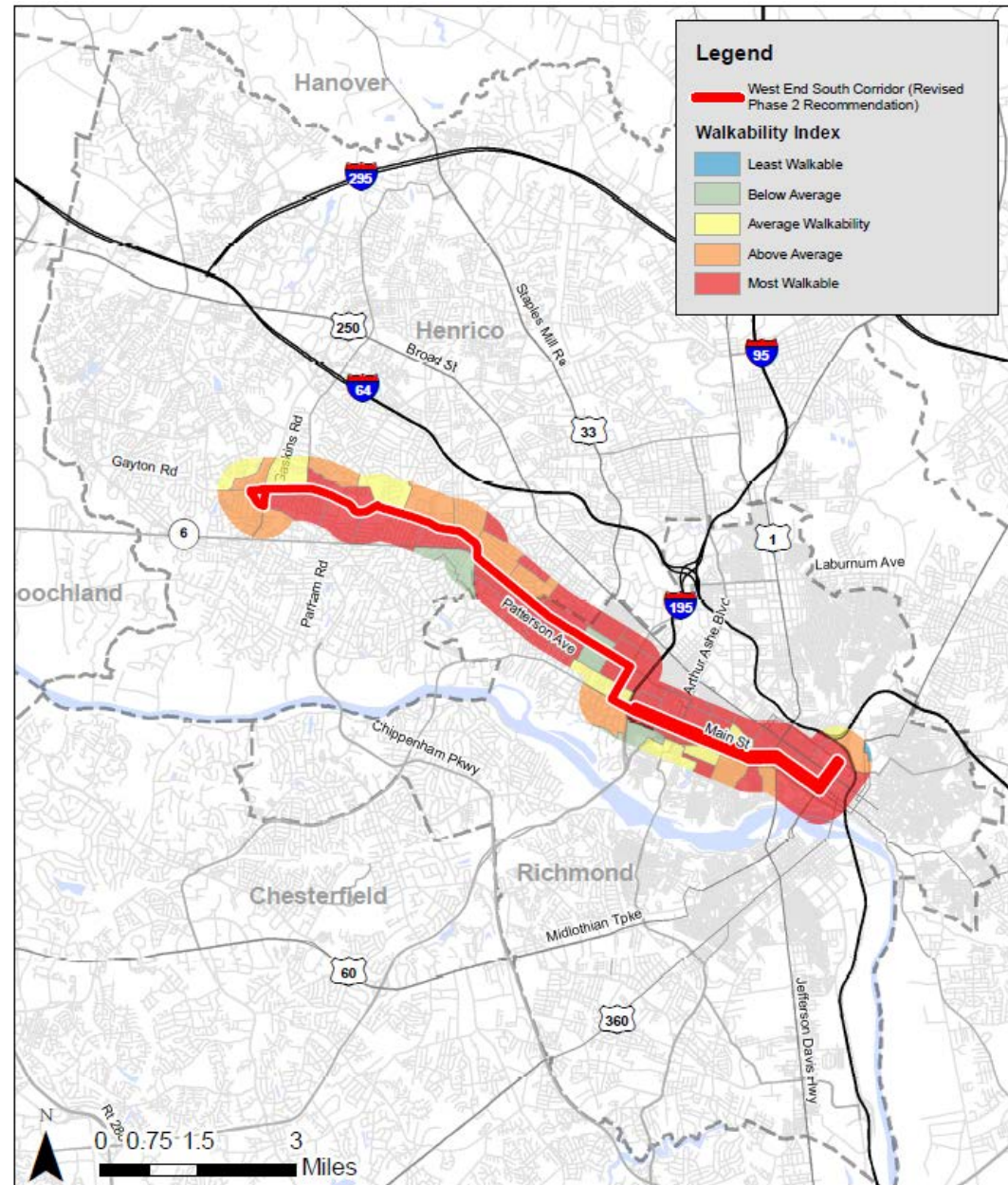
- Identified community facilities within ½ mile of route

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



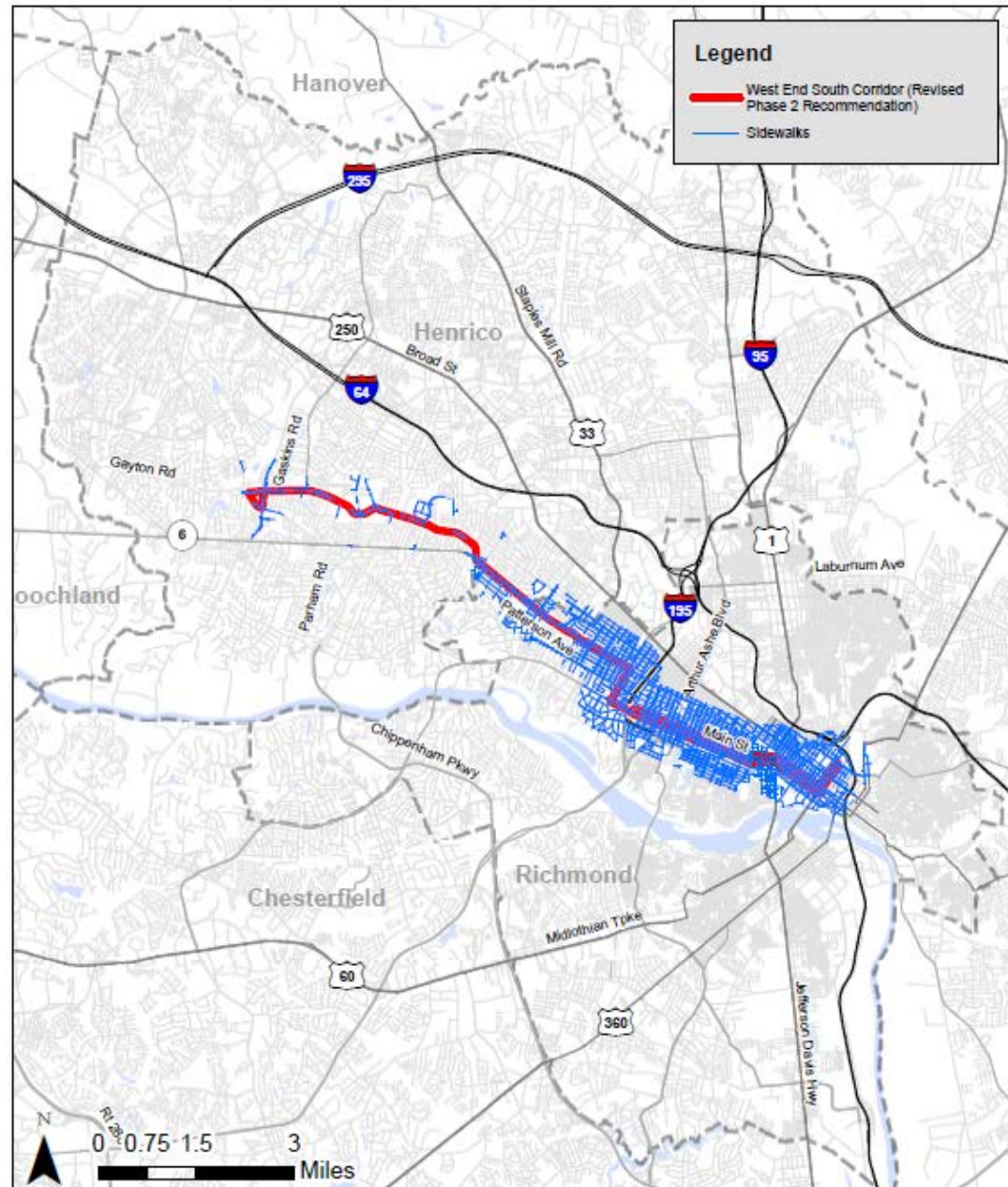
Walkability

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



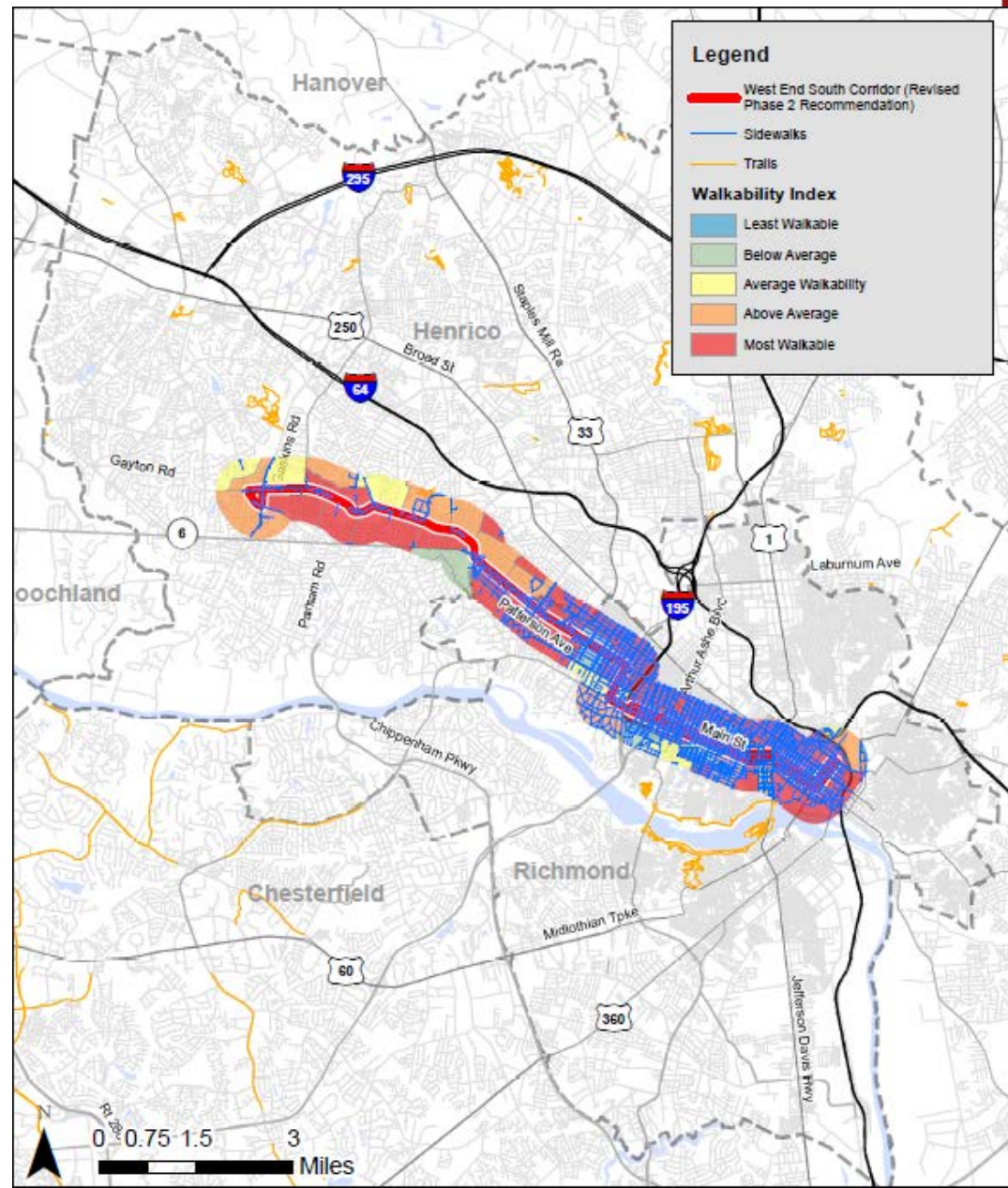
Pedestrian Network

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



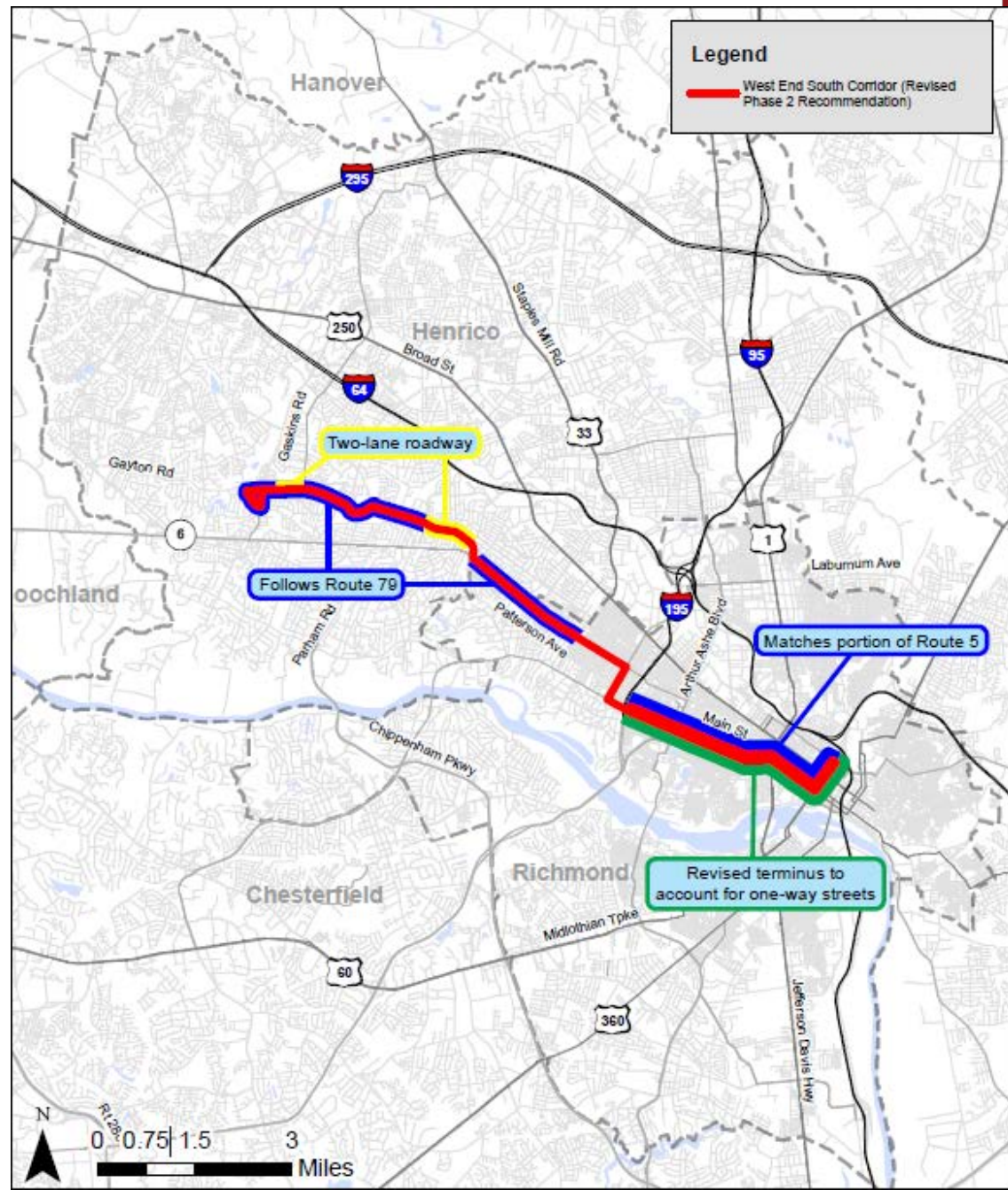
Pedestrian Connectivity

- 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	¹ \$ 1,870,000	² \$ 2,800,000
		³ \$ 2,340,000	⁴ \$ 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	¹ \$ 23,150,000	² \$ 24,090,000
		³ \$ 34,630,000	⁴ \$ 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
A	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
D	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
E	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
F	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
H	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