



BECKLEY Z-WAY PRESENTATION

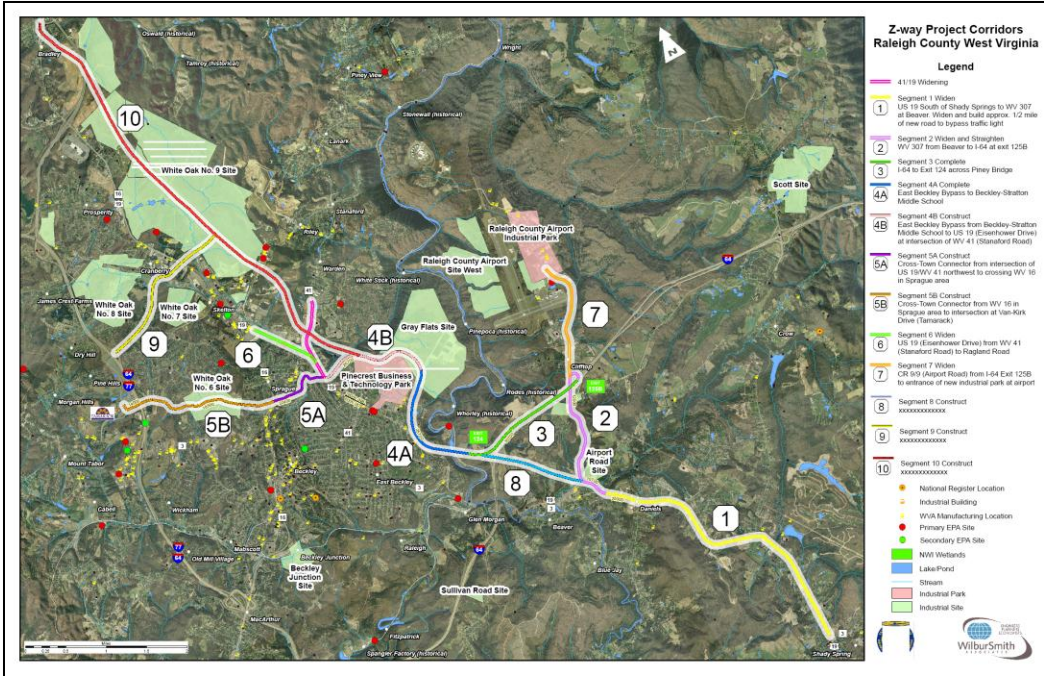
PRESENTED BY:

Wes Stafford, P.E., AICP, Project Manager



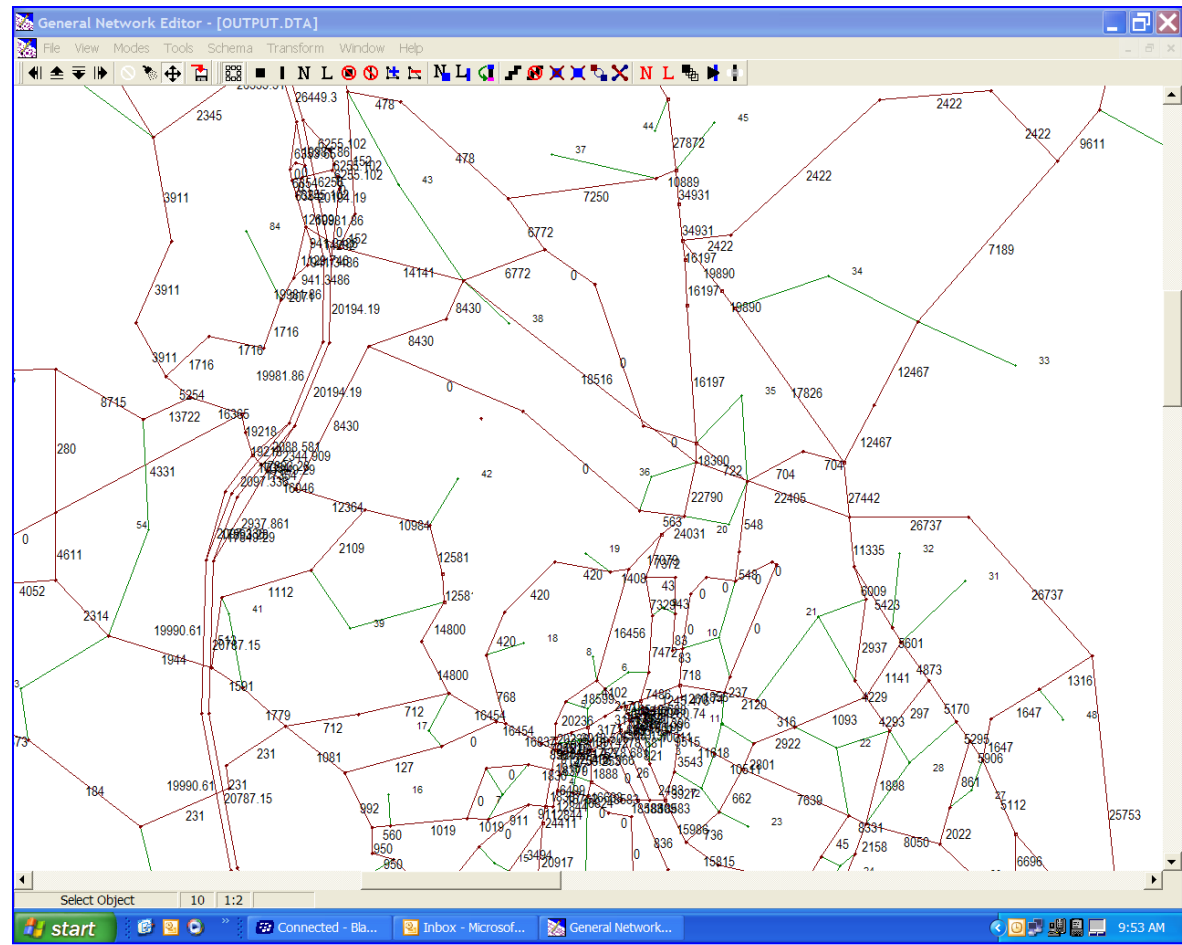
PROJECT UNDERSTANDING

- ❑ Evaluate Z-Ways Effectiveness to Improve Traffic Flow in the Beckley Area
- ❑ Compare to Other Potential Alternatives Including the East Beckley Bypass
- ❑ A Total of Ten Alternative Plus the No-Build Alternative were Evaluated



EXISTING QRSII TRAVEL MODEL

- ❑ Developed in 1998
- ❑ Update with Latest Employment & Housing Data
- ❑ “What If” Scenarios
- ❑ Impacts to Proposed East Beckley Bypass
- ❑ Quantitative Assessment



EVALUATE Z-WAY AND OTHER ALTS.

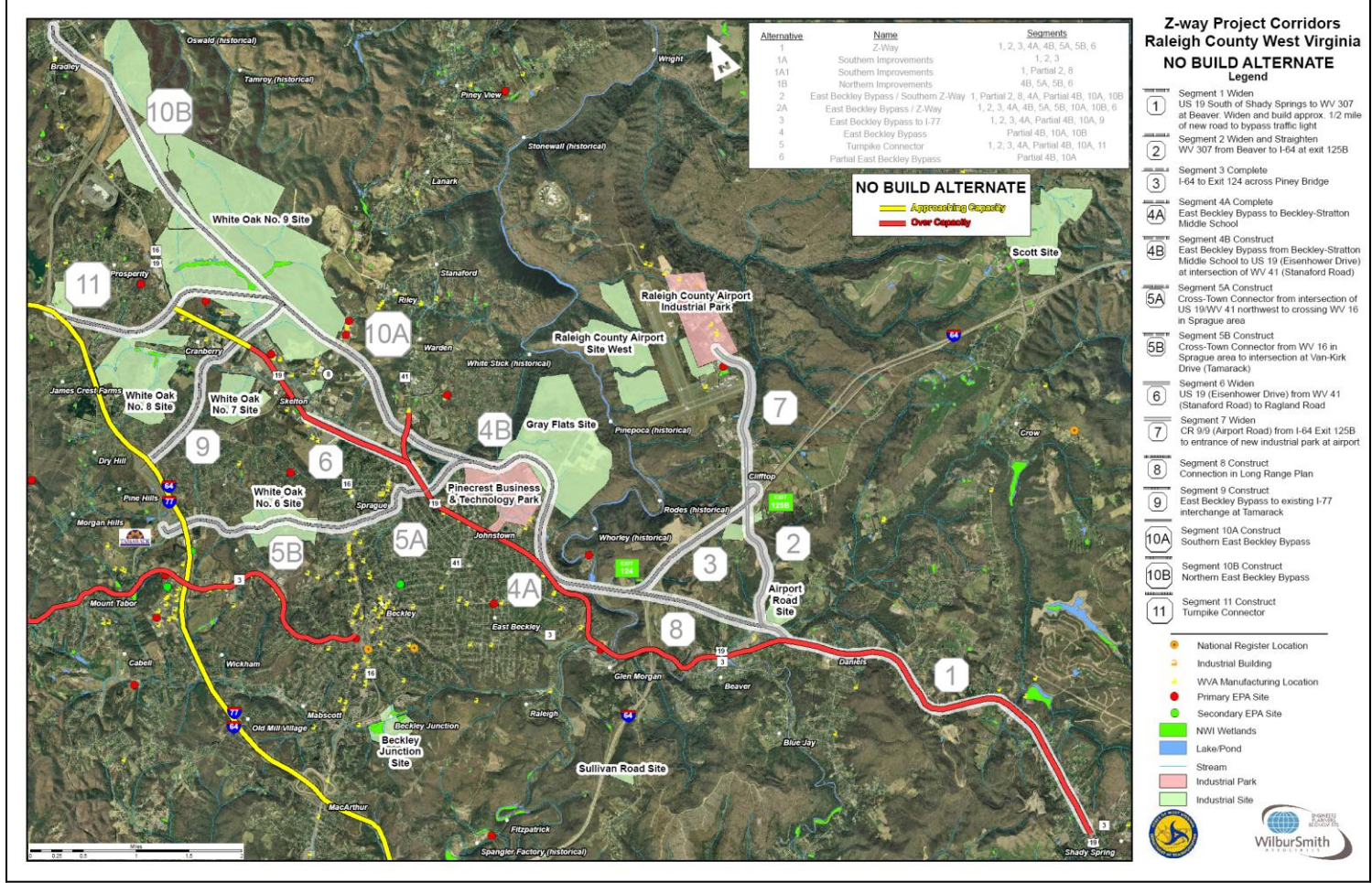
Use Existing QRSII Travel Model

- Mobility
- Safety
- Cost Effectiveness
- Regional Economic Growth
- Environmental Impacts

MEASURES	Baseline (No Build)	Alt 1	Alt 1A	Alt 1A1	Alt 1B	Alt 2	Alt 2A	Alt 3	Alt 4	Alt 5	Alt 6
		Beckley Z-Way 1,2,3,4a,4b,5a,5b,6	Southern Improvements 123	Southern Improvements 128	Northern Improvements	East Beckley Bypass & Southern Z-Way	East Beckley Bypass & Z-Way	East Beckley to I-77 Int. @ Tamarack	East Beckley Bypass	Partial East Beckley to I-77/US 19 Int.	Partial East Beckley Bypass to Ragland Rd.
MOBILITY											
1	Percent of System at Each Level of Service										
	LOS "A"	53	57	54	56	57	60	59	55	56	54
	LOS "B"	9	8	9	8	8	9	10	9	10	10
	LOS "C"	13	16	13	13	16	14	16	17	15	16
	LOS "D"	18	16	18	17	17	14	15	15	16	16
	LOS "E"	6	1	5	4	1	3	1	2	4	3
	LOS "F"	1	1	1	2	1	0	0	0	0	1
2	Vehicle Hours of Travel (VHT)	67,138	66,812	67,124	66,919	66,814	66,009	66,133	66,329	66,264	66,674
3	Total Travel Time (Millions Person Hours/Yr)	24.51	24.36	24.50	24.43	24.39	24.09	24.14	24.21	24.19	24.34
4	Vehicle Miles of Travel (VMT)	17,924,976	17,868,344	17,916,045	17,899,666	17,893,918	17,821,503	17,820,738	17,671,861	17,867,958	17,873,210
SAFETY											
5	Potential Annual Accident	2686	2670	2685	2677	2673	2641	2646	2653	2651	2662
COST EFFECTIVENESS											
6	Capital Cost	0	\$123,100,341	\$41,344,723	\$61,568,926	\$77,355,618	\$181,587,805	\$210,280,142	\$136,013,254	\$120,018,878	\$201,718,966
7	Reduction in Total User Costs (\$/Yr)	0	\$1,511,173	\$65,361	\$1,017,956	\$1,505,147	\$5,237,651	\$4,660,532	\$3,754,291	\$4,053,745	\$2,808,186
8	Year 2035 Benefit Cost Ratio	0	0.33	0.04	0.45	0.53	0.78	0.60	0.75	0.91	0.38
9	Potential Land Use Impacts										
	Total Number of Acres	0	203	68	86	117	266	351	199	166	208
	Residential Units	0	43	14	14	29	31	60	18	17	18
	Commercial Units	0	29	23	23	6	28	34	24	5	13
REGIONAL ECONOMIC GROWTH											
10	Potential for Improved Access to Existing Industrial Sites (1-5)	-	3	2	2	3	4	4	3	4	3
11	Potential for Improved Access to Existing Commercial Sites (1-5)	-	2	1	1	2	3	3	2	3	2
12	Average Travel Time, Selected Gateway to Selected Industrial and Commercial Sites										
	I-77 to Airport (min.)	19.87	19.87	19.87	19.87	19.87	19.87	19.87	19.87	19.87	19.87
	I-77 to Federal Court House (min.)	12.84	12.84	12.84	12.84	12.84	12.84	12.84	12.84	12.84	12.84
	I-77 to US 19 Commercial Area (min.)	10.13	10.13	10.13	10.13	10.13	10.13	10.13	9.25	10.13	7.96
	I-77 to Glade Springs (min.)	33.35	33.35	33.35	33.35	33.35	33.35	33.35	33.35	33.35	33.35
ENVIRONMENTAL IMPACTS											
13	Hazardous Waste Sites (EPA Sites)	0	0	0	0	0	0	0	0	0	0
14	Wetlands (acres)	0	0.5	0.2	0.2	0.2	1.2	1.4	0.2	0.9	0.0
15	Streams (feet)	0	11842	1938	1783	8563	5571	13847	4019	2295	5336
16	Historic Structures	0	1	0	0	1	0	1	0	0	0
17	Environmental Justice Communities	0	2	0	0	2	2	2	0	0	0
18a	Mining Permit Boundaries (acres)	0	0	0	0	0	0	0	0	0	0



NO BUILD ALTERNATIVE



Findings

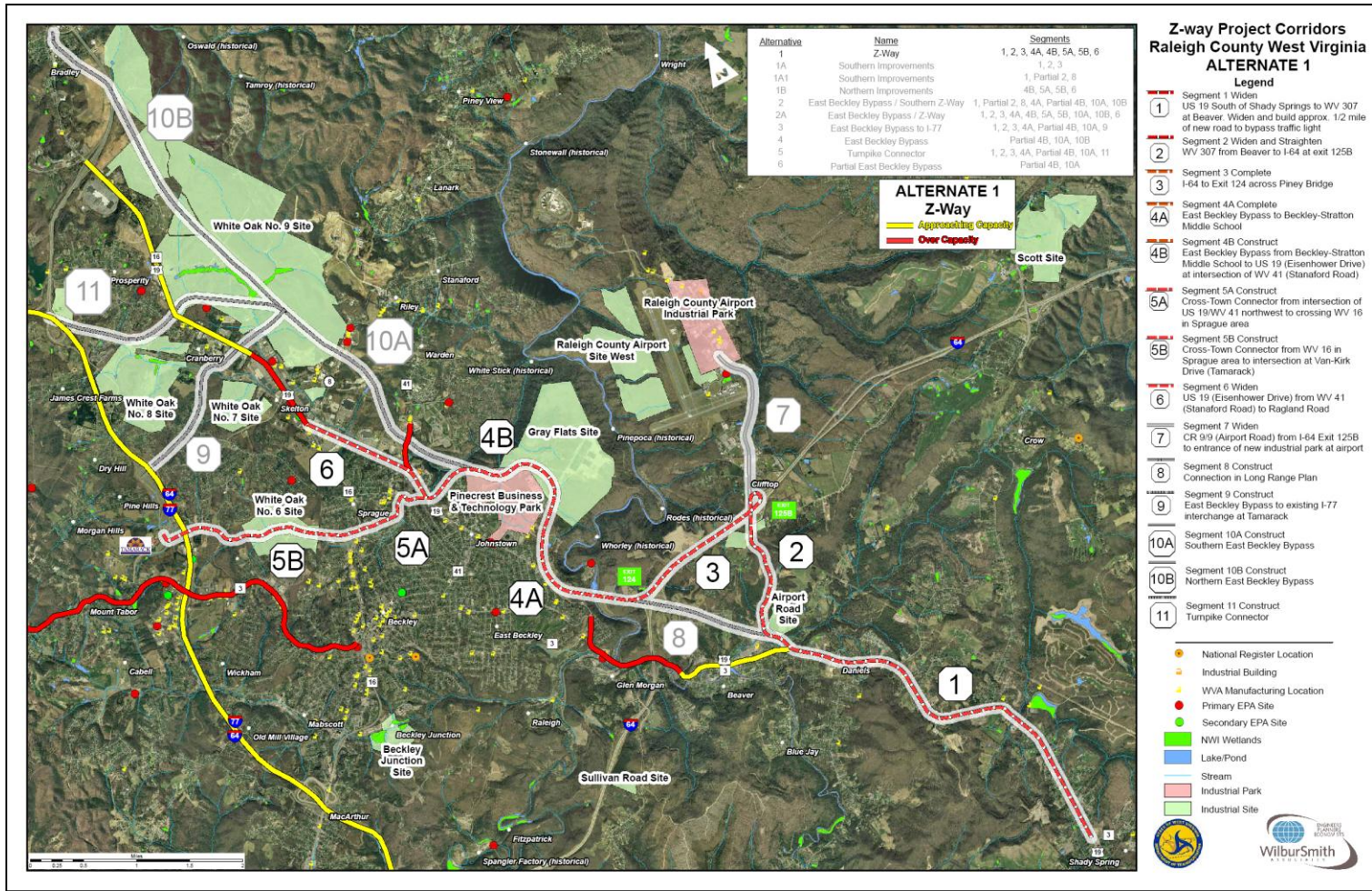
- ❑ Baseline VHT = 67,138 Hours
- ❑ Total Travel Time = 24.51 Million Person Hrs/yr
- ❑ Baseline VMT = 17.9 Million
- ❑ 2,686 Potential Annual Accidents
- ❑ Data will be compared to proposed Alternatives



US 19 North of Shady Springs



BECKLEY Z-WAY (ALT 1)



BECKLEY Z-WAY – ALT 1

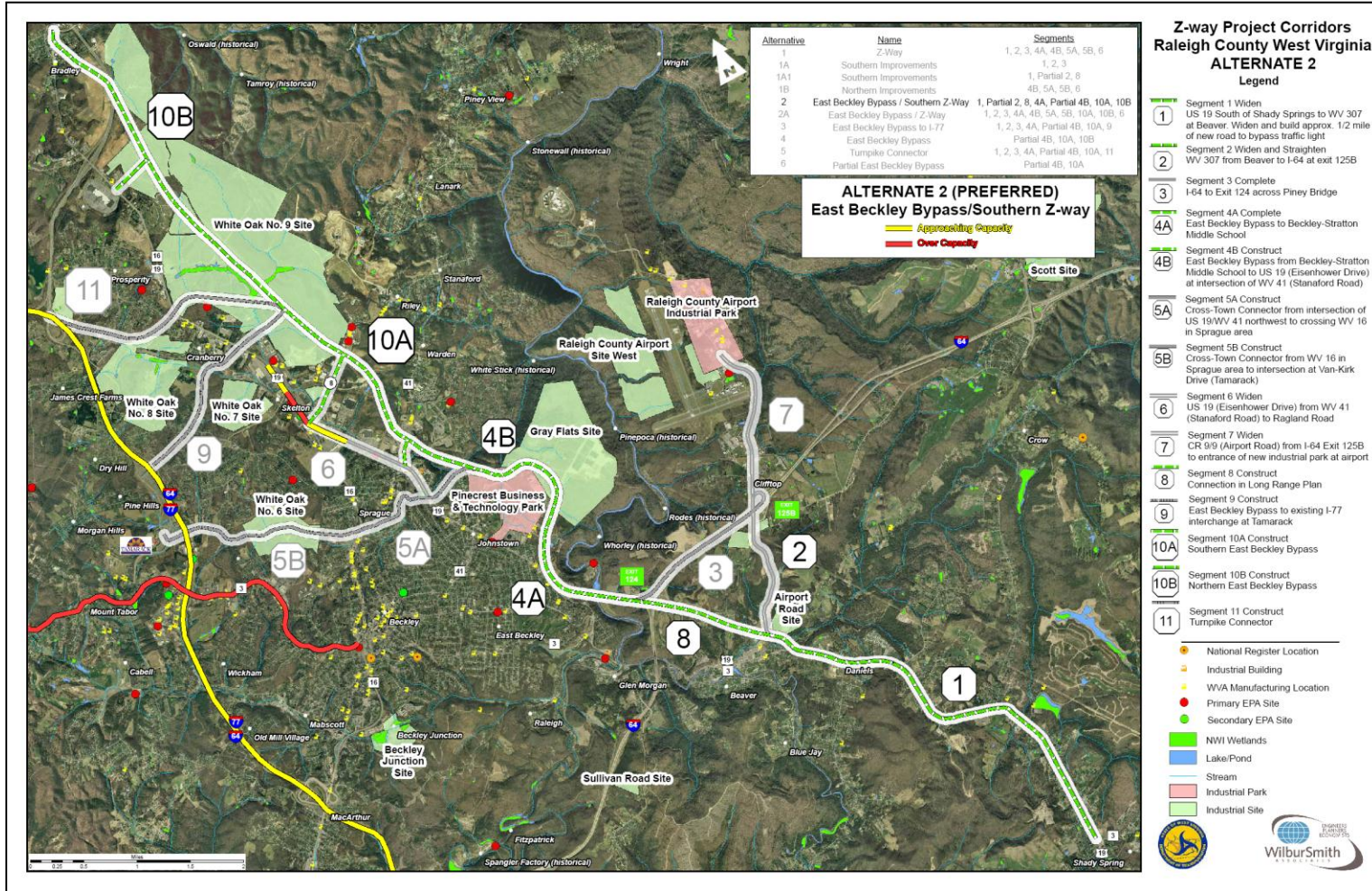
Findings

- ❑ Improves LOS
- ❑ 326 Hour reduction in VHT
- ❑ 0.15 reduction in Million person hrs/yr
- ❑ 56,632 reduction in VMT
- ❑ Reduction in Accidents = 16/yr
- ❑ Capital Cost = \$123.1 Million
- ❑ Reduction in User Cost = \$1.5 Mil/yr
- ❑ Benefits Cost Ratio = 0.33

MEASURES		Baseline (No Build)	Alt 1 Beckley Z-Way 1,2,3,4a,4b,5a,5b,6
MOBILITY			
1	Percent of System at Each Level of Service		
	LOS "A"	53	57
	LOS "B"	9	8
	LOS "C"	13	16
	LOS "D"	18	16
	LOS "E"	6	1
	LOS "F"	1	1
2	Vehicle Hours of Travel (VHT)	67,138	66,812
3	Total Travel Time (Millions Person Hours/Yr)	24.51	24.36
4	Vehicle Miles of Travel (VMT)	17,924,976	17,868,344
SAFETY			
5	Potential Annual Accident	2686	2670
COST EFFECTIVENESS			
6	Capital Cost	0	\$123,100,341
7	Reduction in Total User Costs (\$/YR)	0	\$1,511,173
8	Year 2035 Benefit Cost Ratio	0	0.33
9	Potential Land Use Impacts		
	Total Number of Acres	0	203
	Residential Units	0	43
	Commercial Units	0	29
REGIONAL ECONOMIC GROWTH			
10	Potential for Improved Access to Existing Industrial Sites (1-5)	-	3
11	Potential for Improved Access to Existing Commercial Sites (1-5)	-	2
12	Average Travel Time, Selected Gateway to Selected Industrial and Commercial Sites		
	I-77 to Airport (min.)	19.87	19.87
	I-77 to Federal Court House (min.)	12.84	12.84
	I-77 to US 19 Commercial Area (min.)	10.13	10.13
	I-77 to Glade Springs (min.)	33.35	33.35
ENVIRONMENTAL IMPACTS			
13	Hazardous Waste Sites (EPA Sites)	0	0
14	Wetlands (acres)	0	0.5
15	Streams (feet)	0	11842
16	Historic Structures	0	1
17	Environmental Justice Communities	0	2
18a	Mining Permit Boundaries (acres)	0	0



EB BYPASS & SOUTH Z-WAY (ALT 2)



EB BYPASS & SOUTH Z-WAY (ALT 2)

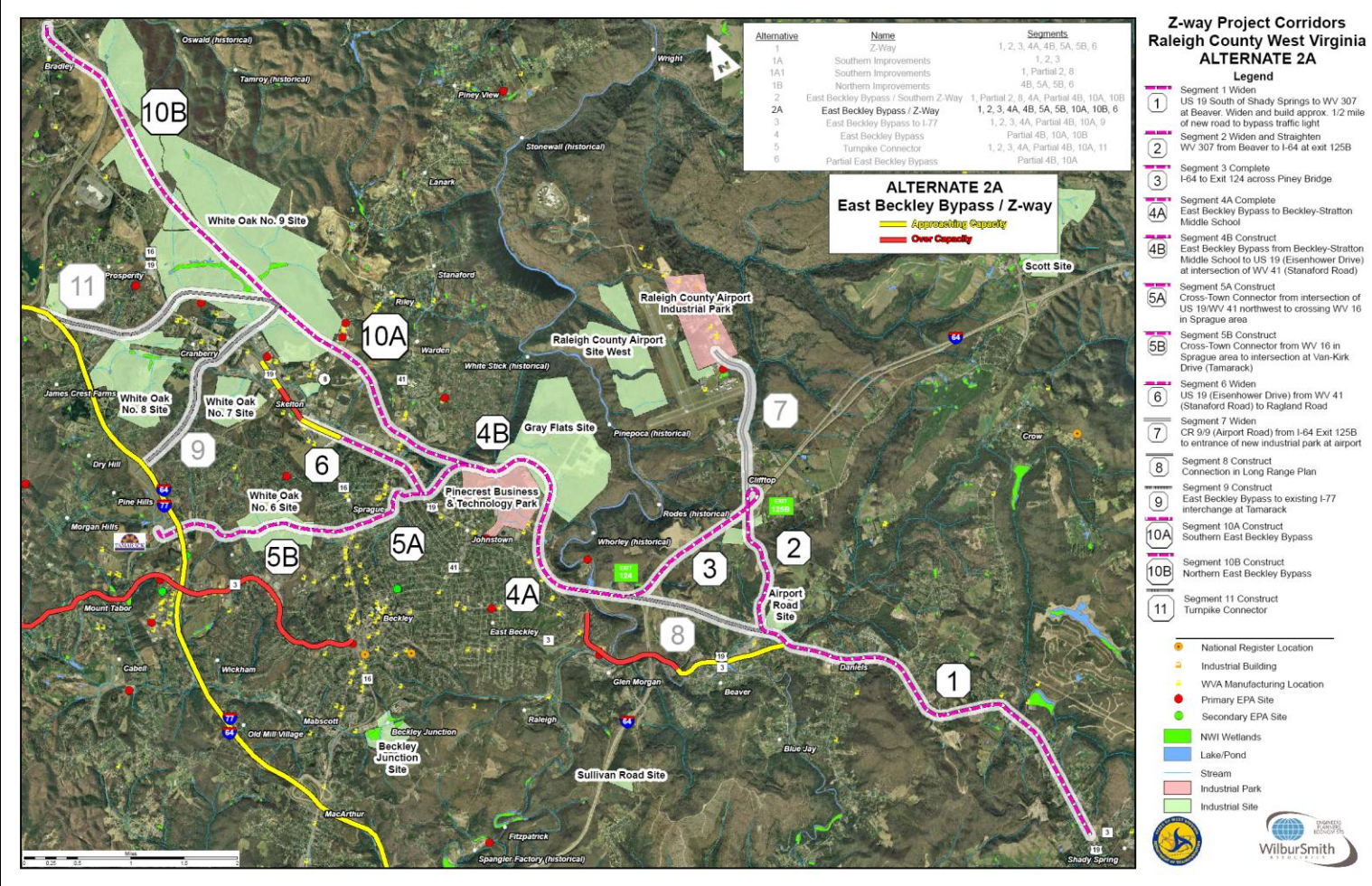
Findings

- ❑ Improved LOS above Baseline and Z-Way
- ❑ 1,129 Hour reduction in VHT
- ❑ 0.42 reduction in Million person hrs/yr
- ❑ 103,473 reduction in VMT
- ❑ Reduction in Accidents = 45/yr
- ❑ Capital Cost = \$181.5 Million
- ❑ Reduction in User Cost = \$5.2 Mil/yr
- ❑ Benefits Cost Ratio = 0.78

MEASURES		Baseline (No Build)	Alt 1	Alt 2
			Beckley Z-Way 1,2,3,4a,4b,5a,5b,6	East Beckley Bypass & Southern Z-Way 1,8,4a, partial 4b,10a,10b
MOBILITY				
1	Percent of System at Each Level of Service			
	LOS "A"	53	57	60
	LOS "B"	9	8	9
	LOS "C"	13	16	14
	LOS "D"	18	16	14
	LOS "E"	6	1	3
	LOS "F"	1	1	0
2	Vehicle Hours of Travel (VHT)	67,138	66,812	66,009
3	Total Travel Time (Millions Person Hours/Yr)	24.51	24.36	24.09
4	Vehicle Miles of Travel (VMT)	17,924,976	17,868,344	17,821,503
SAFETY				
5	Potential Annual Accident	2686	2670	2641
COST EFFECTIVENESS				
6	Capital Cost	0	\$123,100,341	\$181,587,805
7	Reduction in Total User Costs (\$/YR)	0	\$1,511,173	\$5,237,651
8	Year 2035 Benefit Cost Ratio	0	0.33	0.78
9	Potential Land Use Impacts			
	Total Number of Acres	0	203	266
	Residential Units	0	43	31
	Commercial Units	0	29	28
REGIONAL ECONOMIC GROWTH				
10	Potential for Improved Access to Existing Industrial Sites (1-5)	-	3	4
11	Potential for Improved Access to Existing Commercial Sites (1-5)	-	2	3
12	Average Travel Time, Selected Gateway to Selected Industrial and Commercial Sites			
	I-77 to Airport (min.)	19.87	19.87	19.87
	I-77 to Federal Court House (min.)	12.84	12.84	12.84
	I-77 to US 19 Commercial Area (min.)	10.13	10.13	10.13
	I-77 to Glade Springs (min.)	33.35	33.35	33.35
ENVIRONMENTAL IMPACTS				
13	Hazardous Waste Sites (EPA Sites)	0	0	0
14	Wetlands (acres)	0	0.5	1.2
15	Streams (feet)	0	11842	5571
16	Historic Structures	0	1	0
17	Environmental Justice Communities	0	2	2
18a	Mining Permit Boundaries (acres)	0	0	0



EB BYPASS & Z-WAY (ALT 2A)



EB BYPASS & Z-WAY (ALT 2A)

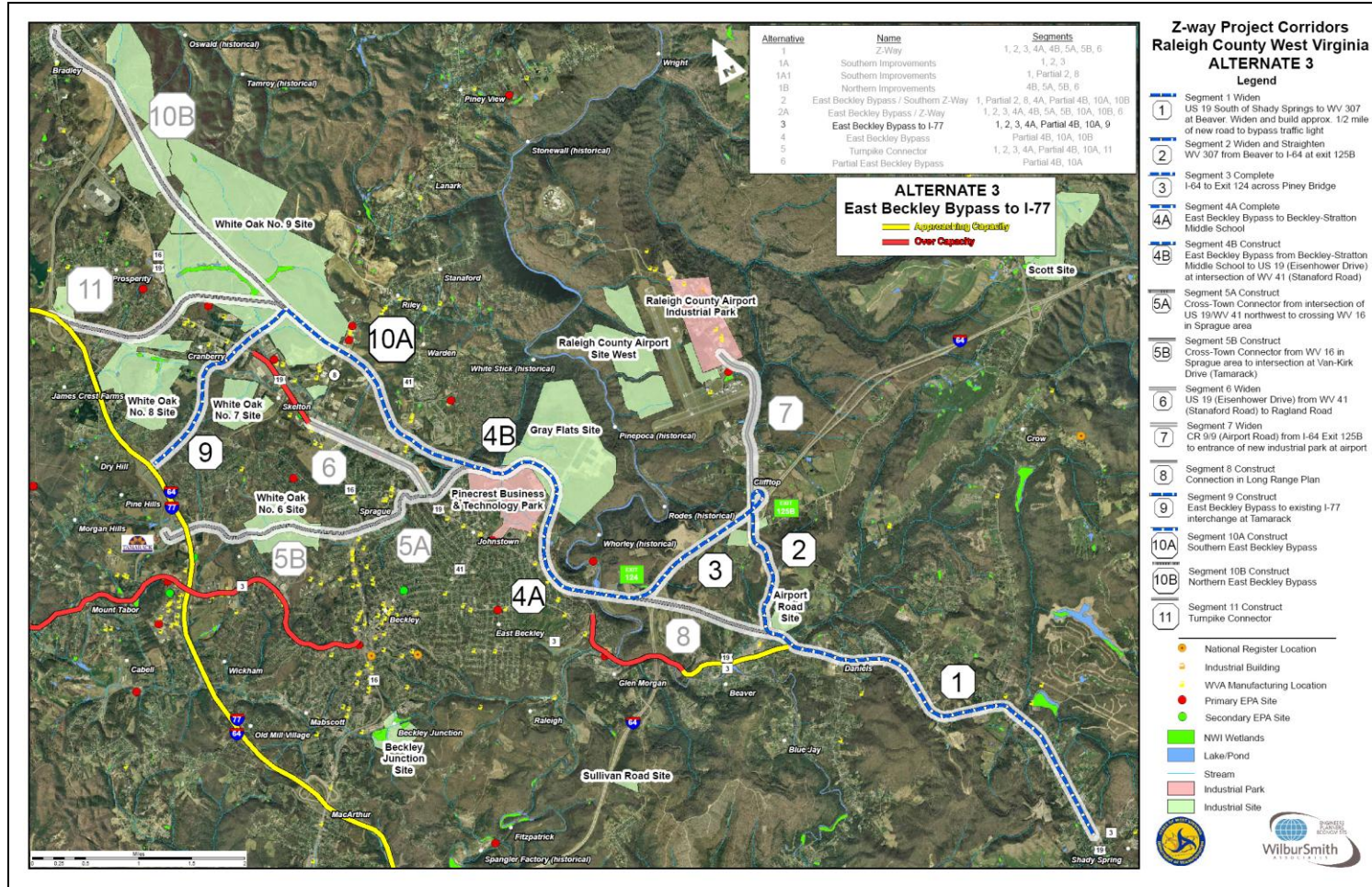
Findings

- ❑ Improved LOS above Baseline has the best LOS performance of all Alts.
- ❑ 1,005 Hour reduction in VMT
- ❑ 0.37 reduction in Million person hrs/yr
- ❑ 104,238 reduction in VMT
- ❑ Capital Cost = \$210.2 Million
- ❑ Reduction in User Cost = \$4.66 Mil/yr
- ❑ Benefits Cost Ratio = 0.60

MEASURES		Baseline (No Build)	Alt 1	Alt 2	Alt 2A
			Beckley Z-Way	East Beckley Bypass & Southern Z-Way	East Beckley Bypass & Z-Way
			1,2,3,4a,4b,5a,5b,6	1,8,4a, partial 4b,10a,10b	1,2,3,4a,4b,5a,5b,10a,10b,6
MOBILITY					
1	Percent of System at Each Level of Service				
	LOS "A"	53	57	60	59
	LOS "B"	9	8	9	9
	LOS "C"	13	16	14	16
	LOS "D"	18	16	14	15
	LOS "E"	6	1	3	1
	LOS "F"	1	1	0	0
2	Vehicle Hours of Travel (VHT)	67,138	66,812	66,009	66,133
3	Total Travel Time (Millions Person Hours/Yr)	24.51	24.36	24.09	24.14
4	Vehicle Miles of Travel (VMT)	17,924,976	17,868,344	17,821,503	17,820,738
SAFETY					
5	Potential Annual Accident	2686	2670	2641	2646
COST EFFECTIVENESS					
6	Capital Cost	0	\$123,100,341	\$181,587,805	\$210,260,142
7	Reduction in Total User Costs (\$/YR)	0	\$1,511,173	\$5,237,651	\$4,660,532
8	Year 2035 Benefit Cost Ratio	0	0.33	0.78	0.60
9	Potential Land Use Impacts				
	Total Number of Acres	0	203	266	351
	Residential Units	0	43	31	60
	Commercial Units	0	29	28	34
REGIONAL ECONOMIC GROWTH					
10	Potential for Improved Access to Existing Industrial Sites (1-5)	-	3	4	4
11	Potential for Improved Access to Existing Commercial Sites (1-5)	-	2	3	3
12	Average Travel Time, Selected Gateway to Selected Industrial and Commercial Sites				
	I-77 to Airport (min.)	19.87	19.87	19.87	19.87
	I-77 to Federal Court House (min.)	12.84	12.84	12.84	12.84
	I-77 to US 19 Commercial Area (min.)	10.13	10.13	10.13	10.13
	I-77 to Glade Springs (min.)	33.35	33.35	33.35	33.35
ENVIRONMENTAL IMPACTS					
13	Hazardous Waste Sites (EPA Sites)	0	0	0	0
14	Wetlands (acres)	0	0.5	1.2	1.4
15	Streams (feet)	0	11842	5571	13847
16	Historic Structures	0	1	0	1
17	Environmental Justice Communities	0	2	2	2
18a	Mining Permit Boundaries (acres)	0	0	0	0



EB BYPASS TO I-77 @ TAMARACK (ALT 3)



EB BYPASS TO I-77 @ TAMARACK (ALT 3)



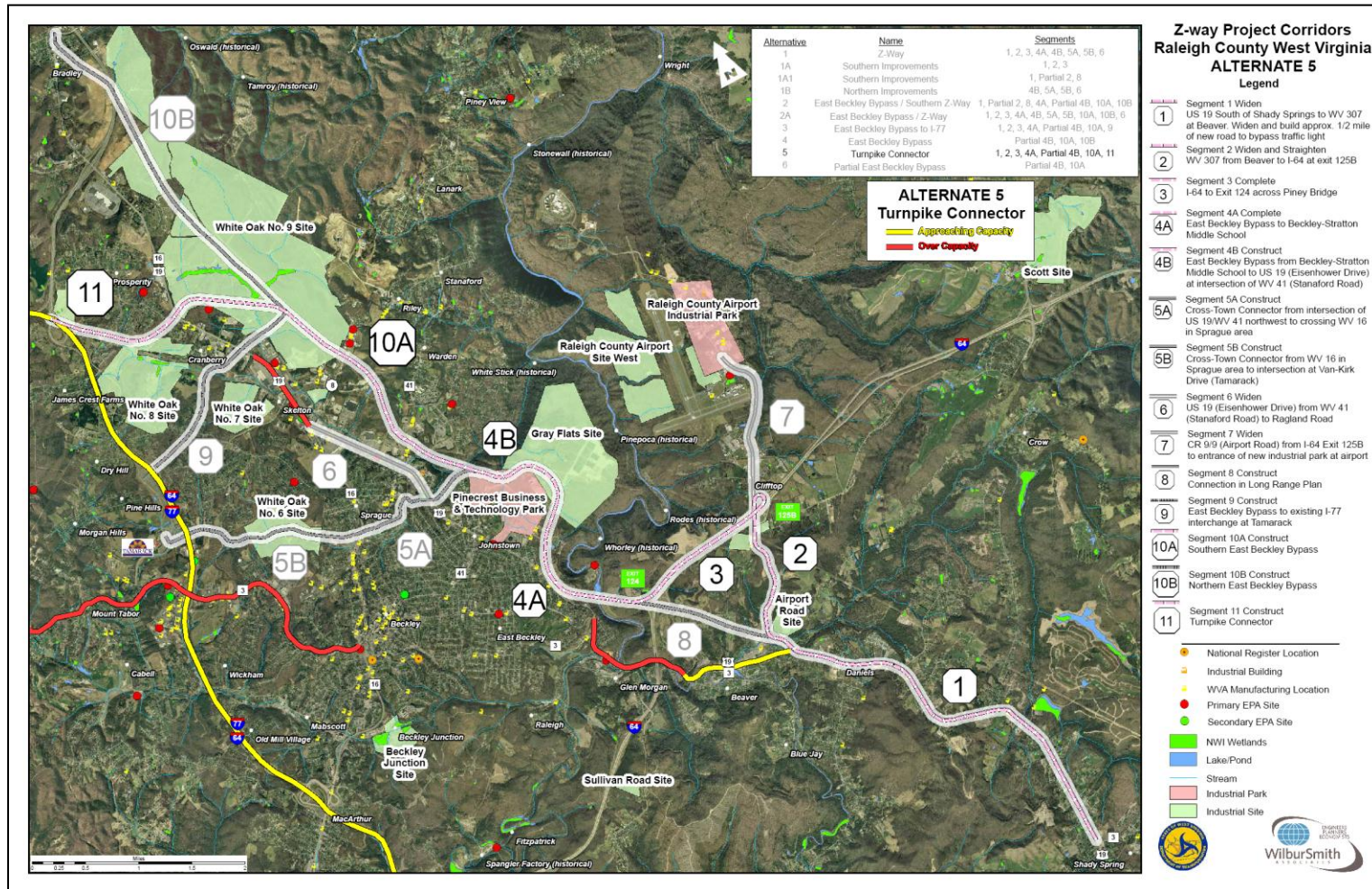
Findings

- ❑ LOS improvement above Baseline
- ❑ 809 Hour reduction in VHT
- ❑ 0.30 Million person hrs/yr reduction in Travel Time
- ❑ 253,115 mile reduction in VMT
- ❑ Reduction in Accidents = 33/yr
- ❑ Capital Cost = \$136.0 Million
- ❑ Reduction in User Cost = \$3.75 Mil/yr
- ❑ Benefits Cost Ratio = 0.75

MEASURES	Baseline (No Build)	Alt 1	Alt 2	Alt 2A	Alt 3
		Beckley Z-Way	East Beckley Bypass & Southern Z-Way	East Beckley Bypass & Z-Way	East Beckley to I-77 Int. @ Tamarack
		1,2,3,4a,4b,5a,5b,6	1,8,4a, partial 4b,10a,10b	1,2,3,4a,4b,5a,5b,10a,10b,6	1,2,3, 4a,partial 4b,10a,9
MOBILITY					
1	Percent of System at Each Level of Service				
	LOS "A"	53	57	60	55
	LOS "B"	9	8	9	10
	LOS "C"	13	16	14	17
	LOS "D"	18	16	14	15
	LOS "E"	6	1	3	1
	LOS "F"	1	1	0	0
2	Vehicle Hours of Travel (VHT)	67,138	66,812	66,009	66,133
3	Total Travel Time (Millions Person Hours/Yr)	24.51	24.36	24.09	24.14
4	Vehicle Miles of Travel (VMT)	17,924,976	17,868,344	17,821,503	17,820,738
					17,671,861
SAFETY					
5	Potential Annual Accident	2686	2670	2641	2646
					2653
COST EFFECTIVENESS					
6	Capital Cost	0	\$123,100,341	\$181,587,805	\$210,260,142
7	Reduction in Total User Costs (\$/YR)	0	\$1,511,173	\$5,237,651	\$4,660,532
8	Year 2035 Benefit Cost Ratio	0	0.33	0.78	0.60
9	Potential Land Use Impacts				
	Total Number of Acres	0	203	266	351
	Residential Units	0	43	31	60
	Commercial Units	0	29	28	34
REGIONAL ECONOMIC GROWTH					
10	Potential for Improved Access to Existing Industrial Sites (1-5)	-	3	4	4
11	Potential for Improved Access to Existing Commercial Sites (1-5)	-	2	3	3
12	Average Travel Time, Selected Gateway to Selected Industrial and Commercial Sites				
	I-77 to Airport (min.)	19.87	19.87	19.87	19.87
	I-77 to Federal Court House (min.)	12.84	12.84	12.84	12.84
	I-77 to US 19 Commercial Area (min.)	10.13	10.13	10.13	10.13
	I-77 to Glade Springs (min.)	33.35	33.35	33.35	33.35
ENVIRONMENTAL IMPACTS					
13	Hazardous Waste Sites (EPA Sites)	0	0	0	0
14	Wetlands (acres)	0	0.5	1.2	1.4
15	Streams (feet)	0	11842	5571	13847
16	Historic Structures	0	1	0	1
17	Environmental Justice Communities	0	2	2	2
18a	Mining Permit Boundaries (acres)	0	0	0	0



PARTIAL EB TO I-77/US 19 I/C (ALT 5)



PARTIAL EB TO I-77/US 19 I/C (ALT 5)

Findings

- ❑ LOS improvement above Baseline
- ❑ 605 Hour reduction in VHT
- ❑ 0.23 Million person hrs/yr reduction in Travel Time
- ❑ 248,267 mile reduction in VMT
- ❑ Reduction in Accidents = 24/yr
- ❑ Capital Cost = \$201.7 Million
- ❑ Reduction in User Cost = \$2.80 Mil/yr
- ❑ Benefits Cost Ratio = 0.38

MEASURES	Baseline (No Build)	Alt 1	Alt 2	Alt 2A	Alt 3	Alt 5
		Beckley Z-Way	East Beckley Bypass & Southern Z-Way	East Beckley Bypass & Z-Way	East Beckley to I-77 Int. @ Tamarack	Partial East Beckley to I-77/US 19 Int.
MOBILITY						
1	Percent of System at Each Level of Service					
	LOS "A"	53	57	60	59	55
	LOS "B"	9	8	9	9	10
	LOS "C"	13	16	14	16	17
	LOS "D"	18	16	14	15	14
	LOS "E"	6	1	3	1	2
	LOS "F"	1	1	0	0	0
2	Vehicle Hours of Travel (VHT)	67,138	66,812	66,009	66,133	66,329
3	Total Travel Time (Millions Person Hours/Yr)	24.51	24.36	24.09	24.14	24.21
4	Vehicle Miles of Travel (VMT)	17,924,976	17,868,344	17,821,503	17,820,738	17,671,861
SAFETY						
5	Potential Annual Accident	2686	2670	2641	2646	2653
COST EFFECTIVENESS						
6	Capital Cost	0	\$123,100,341	\$181,587,805	\$210,260,142	\$136,013,254
7	Reduction in Total User Costs (\$/Yr)	0	\$1,511,173	\$5,237,651	\$4,660,532	\$3,754,291
8	Year 2035 Benefit Cost Ratio	0	0.33	0.78	0.60	0.75
9	Potential Land Use Impacts					
	Total Number of Acres	0	203	266	351	199
	Residential Units	0	43	31	60	18
	Commercial Units	0	29	28	34	24
REGIONAL ECONOMIC GROWTH						
10	Potential for Improved Access to Existing Industrial Sites (1-5)	-	3	4	4	3
11	Potential for Improved Access to Existing Commercial Sites (1-5)	-	2	3	3	2
12	Average Travel Time, Selected Gateway to Selected Industrial and Commercial Sites					
	I-77 to Airport (min.)	19.87	19.87	19.87	19.87	19.87
	I-77 to Federal Court House (min.)	12.84	12.84	12.84	12.84	12.84
	I-77 to US 19 Commercial Area (min.)	10.13	10.13	10.13	10.13	9.25
	I-77 to Glade Springs (min.)	33.35	33.35	33.35	33.35	7.96
ENVIRONMENTAL IMPACTS						
13	Hazardous Waste Sites (EPA Sites)	0	0	0	0	0
14	Wetlands (acres)	0	0.5	1.2	1.4	0.2
15	Streams (feet)	0	11842	5571	13847	4019
16	Historic Structures	0	1	0	1	0
17	Environmental Justice Communities	0	2	2	2	0
18a	Mining Permit Boundaries (acres)	0	0	0	0	0

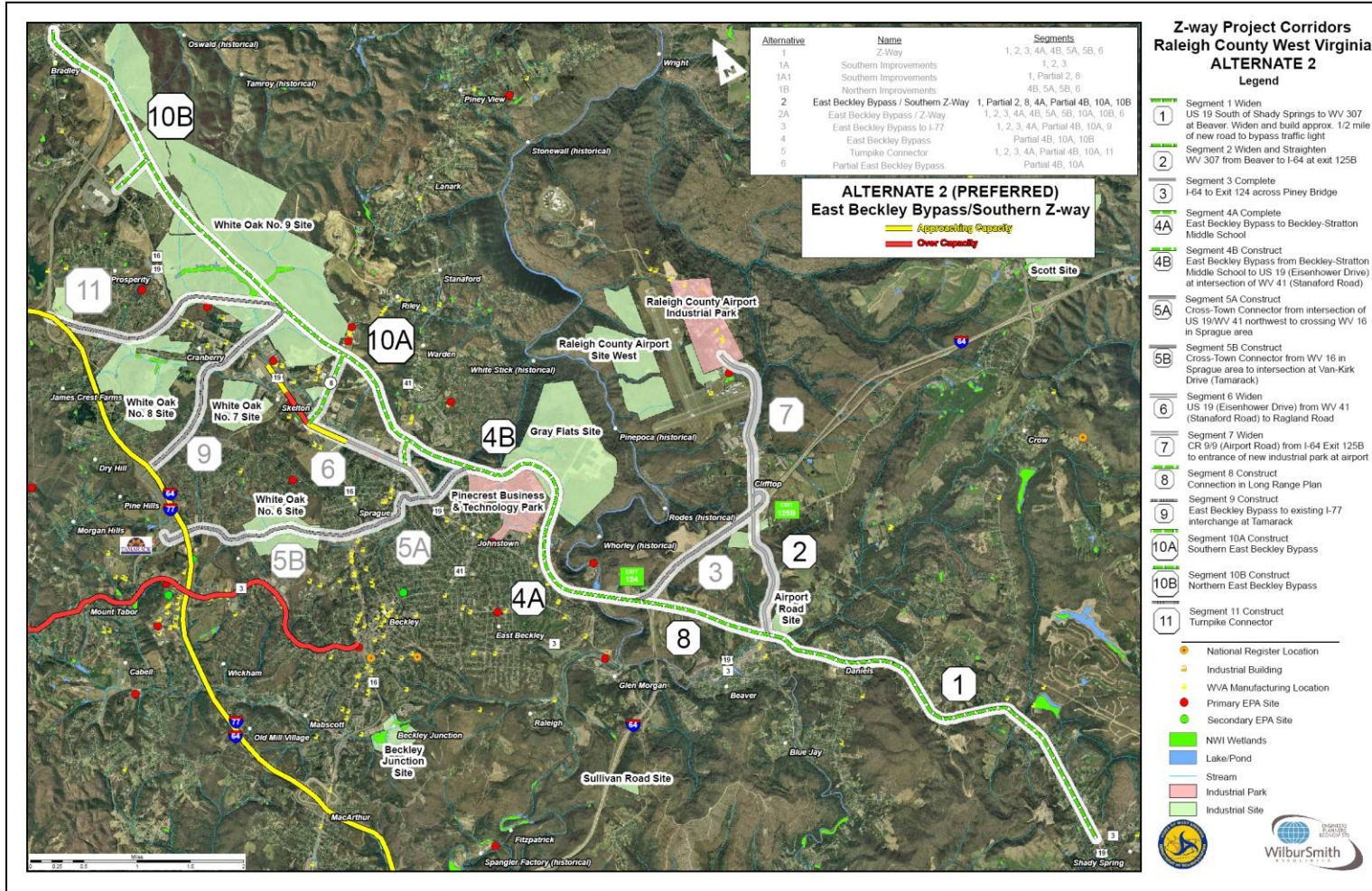


East Beckley Bypass with Southern Z-Way Improvements (Alternative 2)

- ❑ Best Performing Alternative
- ❑ Highest Scoring Benefits Cost Ratio (0.78)
- ❑ Recommend to be Studied in Phase II, Design Report.
- ❑ Can be Phased to Construct Segments that will Provide Immediate Benefits.



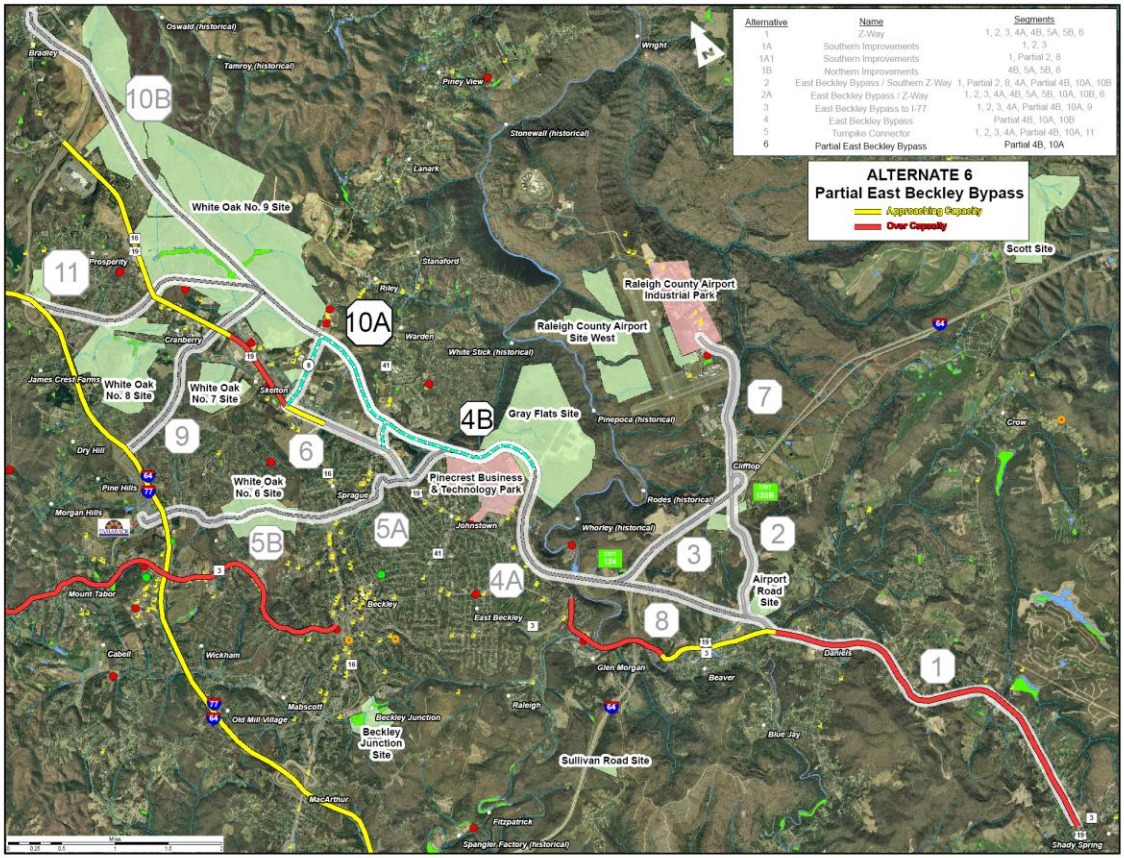
OVERALL RESULTS & RECOMMENDATIONS



RESULTS & RECOMMENDATIONS

Constructions Priorities – Recommended Alt. Reviewed

- ❑ Construct from Existing EEB termini to Ragland Road.
- ❑ Cost = \$46 Million
- ❑ Benefits Cost Ratio (1.25)
- ❑ Environmental Document Complete
- ❑ Design Complete for this Section



RECOMMENDED CONSTRUCTION ORDER

Suggested Segment Priorities Are:

PRIORITY	SEGMENT NAME	COST
1	<i>Segment 4B/10A</i> - Construct East Beckley Bypass from Gray Flats Road to Ragland Road	\$48,000,000
2	<u>Segment 1</u> – Widen US 19 from WV 3 north to WV 307.	\$39,000,000
3	<i>Partial Segment 2 & Segment 8</i> - Build approximately ½ mile of new road to bypass the traffic light at the WV 307, Airport Road intersection. Construct new connector from WV 307 to I-64 Exit 124.	\$22,000,000



EAST BECKLEY BYPASS

WHAT'S DONE and WHAT'S NEXT



***JAY CANTLEY, P.E. & P.S. – EXECUTIVE VICE PRESIDENT
L.A. GATES COMPANY***



QUESTIONS?

