



Update on the Activities of the TPB Bus On Shoulders (BOS) Task Force

TPB Technical Committee

April 5, 2013

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TPB Task Force on BOS

- At the July 18, 2012 meeting of the Transportation Planning Board (TPB), it was requested that a task force be established to identify promising locations in the region to operate buses on the shoulders of highways.
- The proposed membership, work plan, and schedule were approved at the September 19 TPB meeting.



BOS is an arrangement by which buses providing public transportation service operate on designated highway shoulders, when safe and practical to do so, in order to circumvent peak traffic congestion.

Task Force – Meeting #1

Meeting #1 – October 17

- Discussed local and national/world experience with BOS.
- Requested inputs on corridors to study.

Draft Technical Memo #1 – Nov. 26

- Summary of local and national/world experience with key issues: implementation, design, operational, and regulatory.

**Summary of Local and Other Experience
with Bus On Shoulders (BOS)**

Draft Technical Memorandum 1
*Prepared for the Bus On Shoulders Task Force of the National Capital Region
Transportation Planning Board (TPB)*

November 26, 2012

Task Force – Meeting #2

Meeting #2 – January 19

- Discussed three study corridors:

Maryland

- MD 5/US 301 Corridor in Prince George's and Charles Counties.
- I-270 Corridor from City of Frederick to the Capital Beltway.

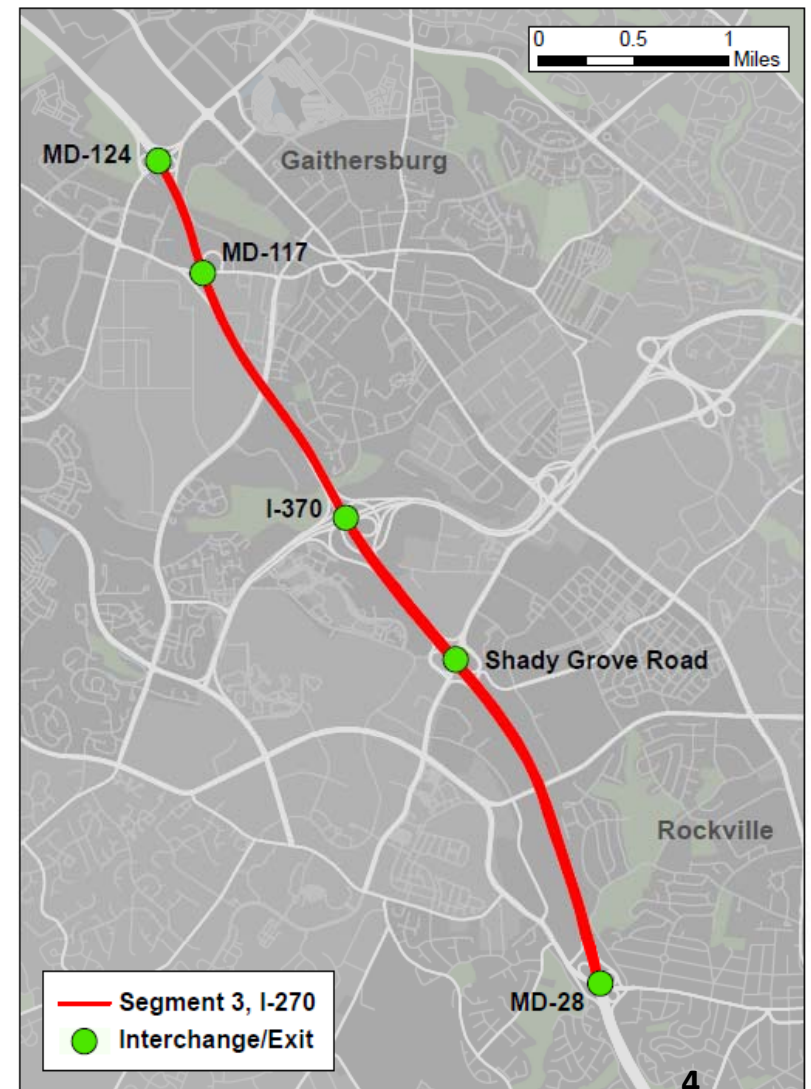
Virginia

- I-66 Inside the Beltway.

Meeting Highlights and Draft Memo #2 – February 28

- Summary of discussion of factors affecting BOS feasibility on the three study corridors.

I-270 BOS Corridor, Segment 3: MD-124 to MD-28

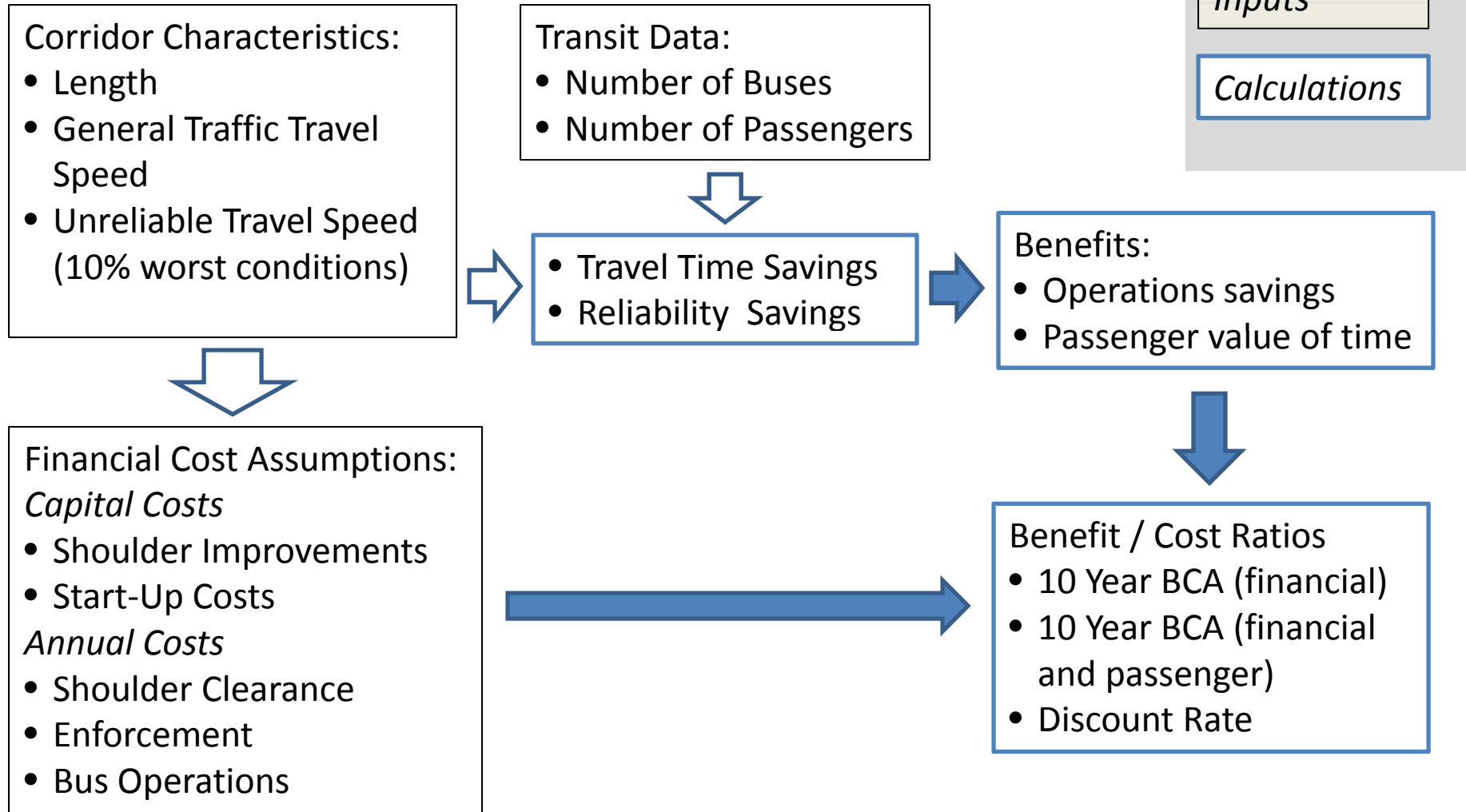


BOS Task Force Meeting #3 – April 17

Agenda

- Present further analysis of select corridors/routes.
 - VDOT: I-66 Inside the Beltway
 - SHA: I-270 and MD-5/US-301
- Present planning-level model of benefit-cost analysis (BCA) results for select corridors/routes.
 - Estimated capital costs for implementation
 - Benefits of travel time and reliability improvements
 - Sensitivity analysis for different inputs/assumptions
 - Benefit/cost ratio over ten years
- Discuss preparation of findings for final report

BOS – BCA Model Flowchart



Sensitivity analysis can vary costs based on assumptions or new information

BCA Model: I-270 (SB, AM) Inputs

<u>Bus On Shoulders (BOS) Benefit-Cost Analysis</u>		I-270 - Segments				
		1	2	3	4	TOTAL
		I-70 interchange (Frederick) to MD-	MD-121 to MD-124 (Gaithersburg)	MD-124 to MD-28 (Rockville)	MD-28 to Beltway	
Corridor Characteristics						
Length of Bus On Shoulder Segment	miles	14.35	6.87	4.96	6.51	32.69
General Traffic Travel Speed	miles per hour	45.4	33.1	26.8	38.2	
Unreliable Travel Speed (10% worst conditions)	miles per hour	29.5	16.3	16.3	24.1	
Transit Data						
Number of Buses	Scheduled trips (peak hour)	4	25	25	4	25
	Scheduled trips (peak period)	12	70	70	11	70
	peak factor	33%	33%	33%	33%	
Number of Passengers	Ridership (peak hour)	416	1442.8	1442.8	94.6	1443
	Ridership (peak period)	2080	6558	6558	215	6558
Preview for Illustrative Purposes Only – 04/05/13						
Travel Time Savings						
	% of peak bus trips using shoulders	50%	50%	50%	50%	
	BOS speed	0	35	35	0	
	average speed differential	0	1.9	8.2	0	
	segment length	14.35	6.87	4.96	6.51	
	Travel Time Savings (hr)	0.000	0.006	0.022	0.000	0.0273
Reliability Improvement						
	% of peak bus trips arriving on time	90%	90%	90%	90%	
	BOS speed	35	31.3	31.3	35	
	average speed differential	5.50	15.00	15.00	10.90	
	segment length	14.35	6.87	4.96	6.51	
	Reliability Savings (hr)	0.069	0.182	0.131	0.076	0.4575

BCA Model: I-270 (SB, AM) BCA Results

		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>TOTAL</u>
		I-70 interchange (Frederick) to MD- 121 (Clarksburg)	MD-121 to MD-124 (Gaithersburg)	MD-124 to MD-28 (Rockville)	MD-28 to Beltway	
Benefits and Costs						
Capital Costs	<i>Assumptions</i>					
Shoulder Improvements (cost/mile)	\$1,500,000	\$21,525,000	\$10,305,000	\$7,440,000	\$9,765,000	\$50,535,000
Public Education (per project)	\$50,000					\$50,000
Operations Training (per bus driver)	\$600					\$42,000
O & M Costs						
Shoulder Clearance (annual, per mile)	\$10,000	\$5,000	\$5,000	\$5,000	\$5,000	\$30,000
Enforcement (annual, per mile)	\$5,000	\$2,500	\$2,500	\$2,500	\$2,500	\$15,000
Bus Operations (annual, per bus)	\$2,500					\$175,000
Travel Time & Reliability						
Operations Savings (weekday, \$/hour)	\$100	\$46	\$747	\$609	\$48	\$1,550
Passenger value of time (\$/hour)	\$12.00	\$797	\$7,041	\$5,745	\$122	\$13,718
Preview for Illustrative Purposes Only – 04/05/13						
Project Summary						
Capital Costs (once)		\$21,525,000	\$10,305,000	\$7,440,000	\$9,765,000	\$50,627,000
O & M Costs (annual)		\$7,500	\$7,500	\$7,500	\$7,500	\$220,000
Financial Benefits (annual)		\$11,420	\$186,716	\$152,352	\$11,944	\$387,432
Passenger Benefits (annual)		\$199,191	\$1,760,355	\$1,436,371	\$30,512	\$3,429,429
10 Year BCA (financial)		0.00	0.17	0.19	0.00	0.03
10 Year BCA (financial and passenger)		0.09	1.88	2.13	0.04	0.71
Discount Rate	3%					
10 Year BCA (financial)		0.00	0.15	0.17	0.00	0.03
10 Year BCA (financial and passenger)		0.08	1.61	1.81	0.03	0.61

Next Steps

- Task Force Meeting #3 – April 17 (prior to TPB that day)
 - Meeting Rooms 4&5, 10:00 to 11:45 am
 - Possible press attendance – WTOP
 - Co-Chairs to report on task force at TPB meeting
- Final Steps
 - Take away discussion from meeting.
 - Complete technical memorandum #3 with corridor information and BCA results.
 - Compile meeting discussions and materials, and three technical memoranda, into final report (June).
 - Update TPB in early 2014 on VDOT I-66 Pilot Implementation and further BOS developments.



Information

<http://www.mwcog.org/bostf>