



I-66 Inside the Beltway Bus on Shoulder Pilot Program

**Overview
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Ms. Rene'e Hamilton
Asst. Dis. Administrator – Planning & Investment
VDOT NoVA District Office



Presentation Overview

- **Pilot Program Overview**
- **Tasks For Working Group**
- **Preliminary Data Collection & Analysis**
- **Factors For Selecting Locations BOS**
- **I-66 BOS Pilot Program Schedule**

Pilot Program Overview

- **Impetus**
 - I-66 Inside the Beltway Multimodal Study
 - Low-cost, high impact, quick turn around congestion mitigation projects
- **Program Goals**
 - Successfully implement pilot
 - Develop Design and Operational protocol for BOS
 - Experience in Design, Operation, Safety, Maintenance, Costs
- **Working Group Products**
 - Operational & Design protocol
 - Rank and Recommend locations along I-66 (Inside the Beltway)
 - Transit services on BOS System
 - Monitoring & Evaluation plan
- **VDOT Follow up Actions**
 - Federal concurrence
 - Fund and Implement Engineering/Operational improvements
 - Implement pilot program

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Working Group Tasks

Literature review

- **ID best practices related to operational, design, safety & implementation elements**
 - Recent TCRP Report 151 and other BOS systems operating in the USA
- **Operational, Design & Safety elements**
 - hours of operation, bus speed on shoulders, ITS elements including ramp meter bypass
 - shoulder width requirements, structural strength of shoulders, drainage requirements,
 - BOS at interchanges/ramps, emergency operations and snow removal and signage

Baseline data analysis

- **I-66 operating speeds & travel times, auto and bus volumes, AVL data, engineering survey, aerial photographs**
- **Transit operator experiences related to recurring congestion in corridor**

Definition of Problem / Opportunities

- **Location of bottlenecks for buses (Mainline and/or Ramps)**
- **Magnitude of impact on bus operations**
- **Screening criteria to select locations for BOS treatment**

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Working Group Tasks (Continued)

Identify Potential Solutions

- Type of BOS treatment (shoulder use OR ramp meter bypass OR Merge/Diverge, etc.)
- Implementation feasibility – Planning level (including Safety implications)
- Monitoring / Evaluation Plan

Design / Operations Protocol

- Trigger for BOS Operation
- Ramp meter by-pass criteria
- Shoulder width and strength
- Signage

Pilot Program Implementation Plan (Specifics)

- Locations & BOS Treatments
- Transit services on BOS system
- Signage plan (including DMS)
- Signal system updates
- Bus Operating rules (Speed; Merge/Diverge; Bypass)
- Driver Training And Program Monitoring/Evaluation
- Federal Concurrence; Inter-agency Agreements OR MOUs

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Initial Travel Data Collection on I-66 Inside the Beltway

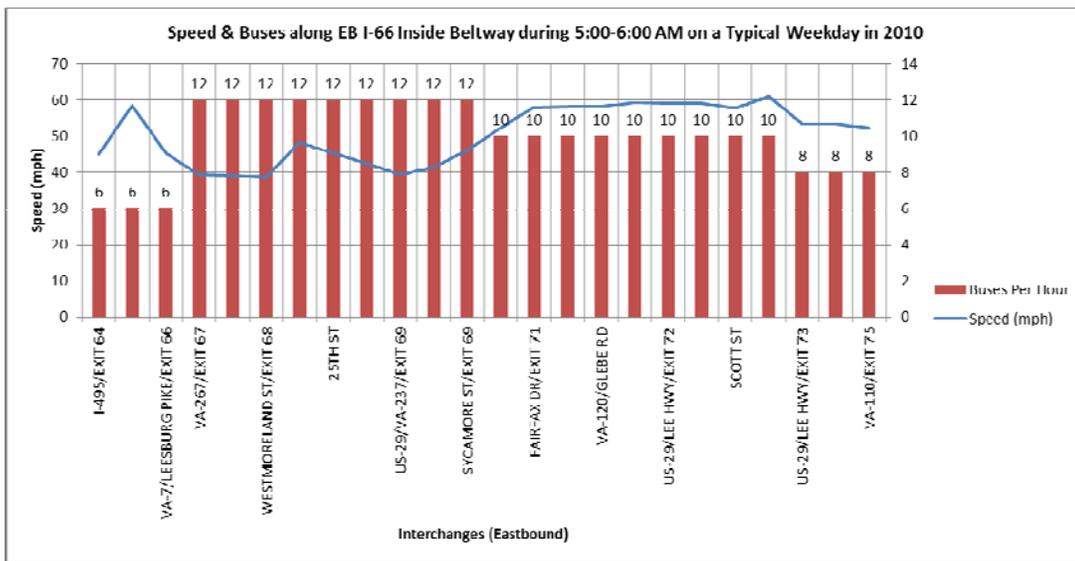
- **Peak periods cover HOV restricted periods and temporal shoulder hours (i.e., before and after HOV restricted periods)**
 - Morning analysis period: 5:00am to 11:00am
 - Afternoon / evening analysis period: 1:00pm to 8:00pm
- **Average weekday travel speeds from 2010 I-95 Corridor Coalition Vehicle Probe Project data (a.k.a. Inrix data)**
- **Bus information from transit providers operating along I-66**
 - PRTC, Loudoun County Transit, WMATA, Fairfax Connector,

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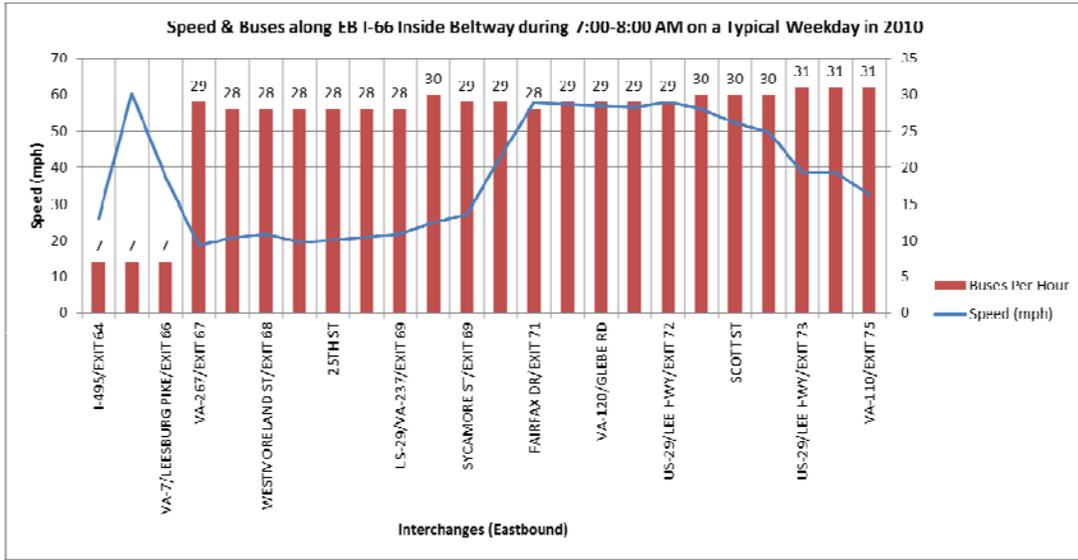
Travel way, Shoulders and Right Of Way



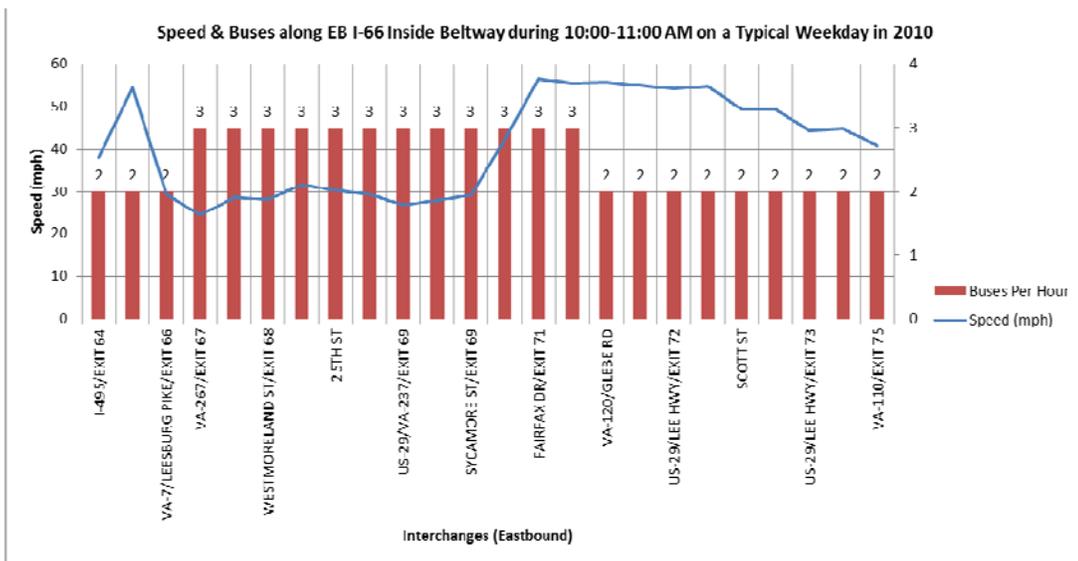
AM PEAK PERIOD (5AM-6AM) EASTBOUND



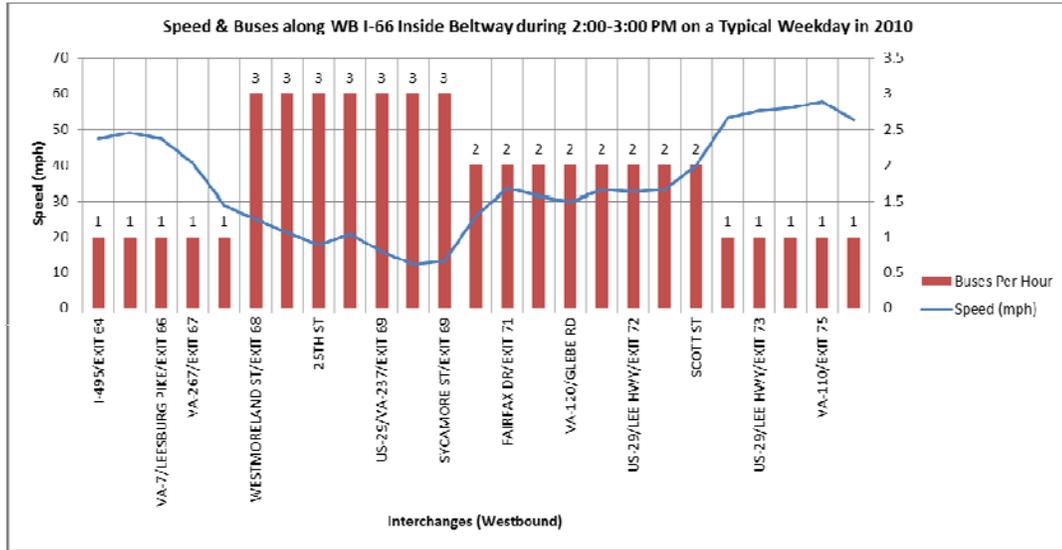
AM PEAK PERIOD (7AM-8AM) EASTBOUND



AM PEAK PERIOD (10AM-11AM) EASTBOUND

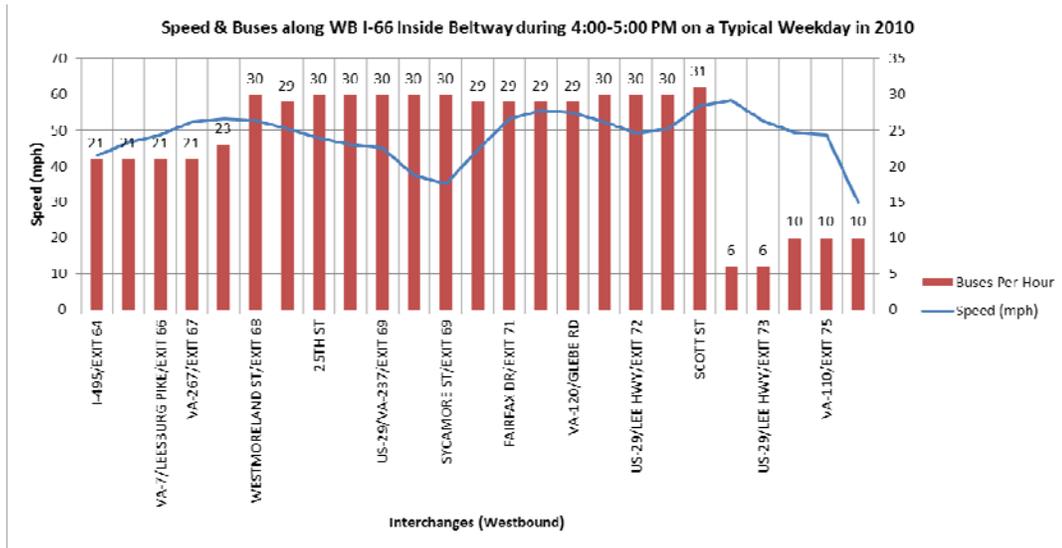


PM PEAK PERIOD (2PM-3PM) WESTBOUND



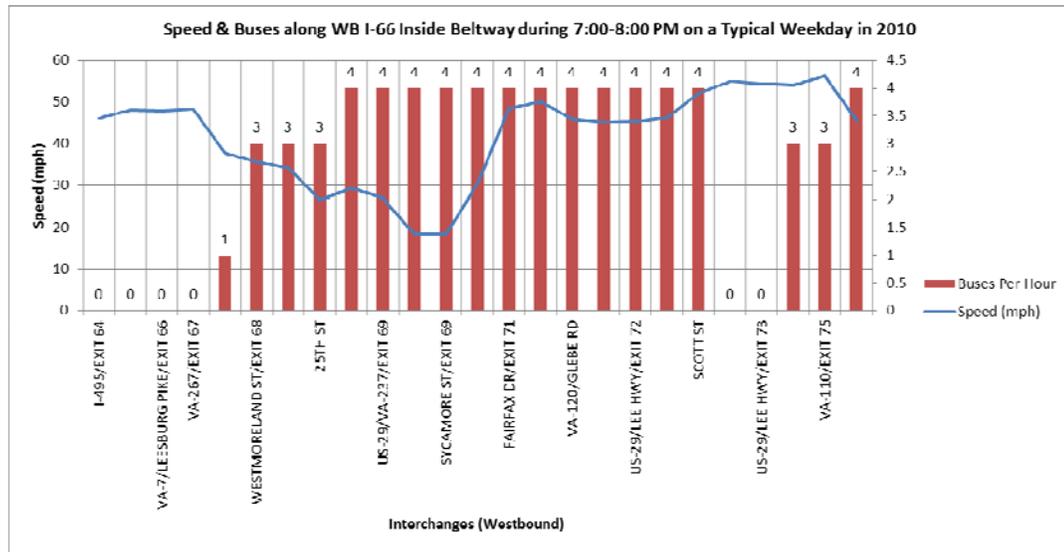
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PM PEAK PERIOD (4PM-5PM) WESTBOUND



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PM PEAK PERIOD (7PM-8PM) WESTBOUND



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Factors For Selecting Locations for BOS Operations

- **Minimum number of buses**
- **Time and direction of operation**
 - *Peak Direction, Peak Period Plus shoulder hours?*
 - *Both Directions, Peak Period?*
- **Minimum shoulder width**
 - *Fixed OR Based on buses permitted to use*
- **Operating Speeds**
 - *Minimum mainline speed to trigger BOS operation*
 - *Maximum bus operating speed on the shoulder*
- **Maximum Ramp volumes**
 - *Not more than 1,000 vehicles per hour*
- **Others?**

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Working Group Schedule

TASK	2012				2013		
	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1. Baseline Data Analyses and Literature Review	■		▲				
2. Pilot Program Objectives		■					
3. Definition of Problem and/or Opportunities		■		▲			
4. Identify Range of Solutions			■		▲		
5. Develop Operations and Design Criteria for the Program				■		▲	
6. Implementation Plan and Final Report						■	
7. Presentations							■

▲ Working Group Meeting