VDOT I-66 INSIDE THE BELTWAY BUS ON SHOULDER PILOT

Project Results

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TPB Technical Committee
October 6, 2017

Agenda Item 13

National Capital Region
Transportation Planning Board

Presentation Outline

- Background: Regional Interest in Bus on Shoulder (BOS) operations
- Purpose and scope of I-66 Inside the Beltway (ITB) BOS pilot
- Pilot planning activities and pilot locations
- Pilot operating protocols and evaluation criteria
- Pilot pre-launch activities
- Pilot results
- Lessons learned

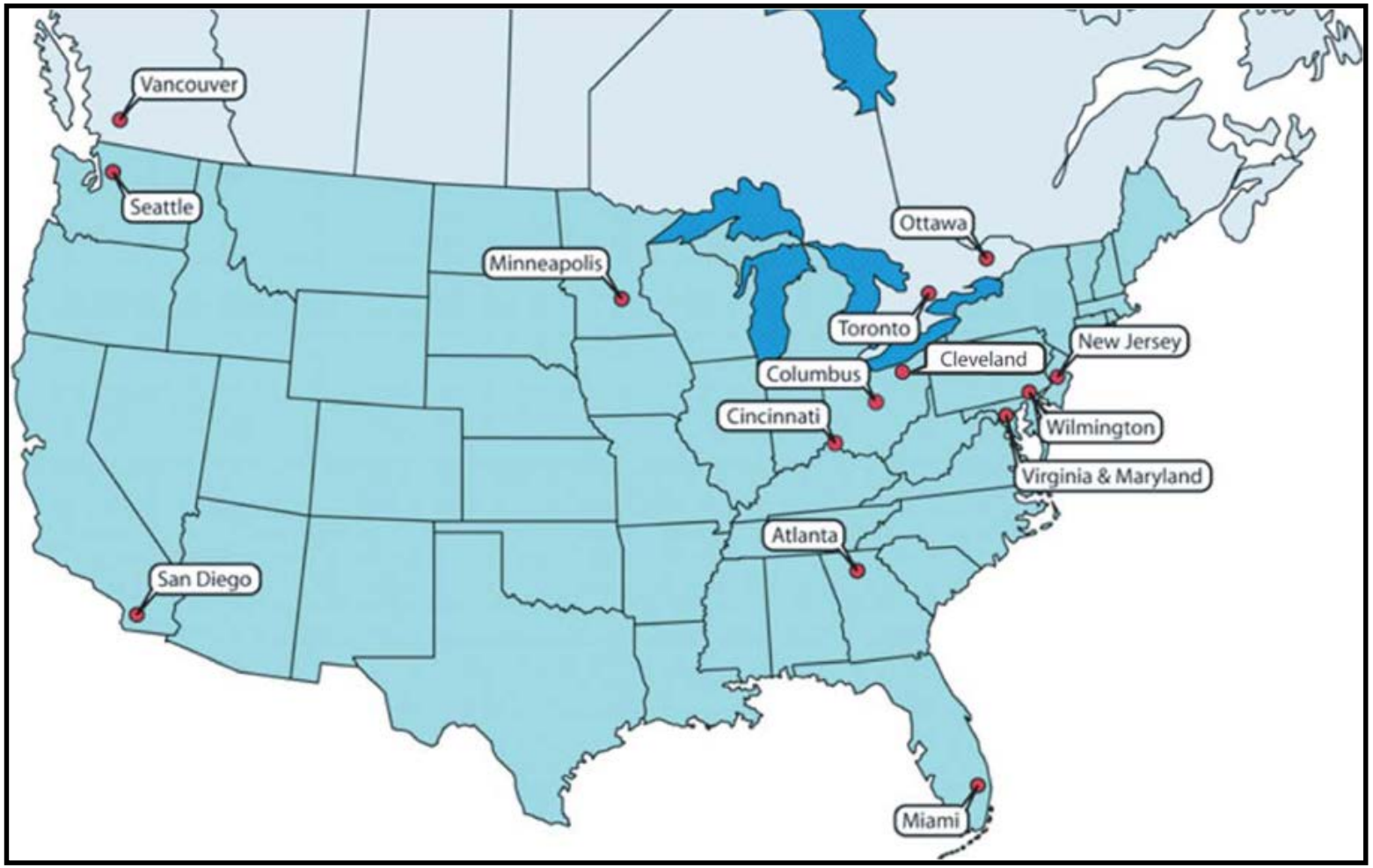
Background: Regional Interest in BOS (1)

- Completion of 2012 TPB study "Multimodal Coordination for Bus Priority Hotspots"
- TPB interest in BOS operations and their potential applicability in the National Capital Region as a solution to bus delays
- TPB requested creation of BOS Task Force in July 2012 "to identify promising locations in the region to operate buses on the shoulders of highways."
- TPB BOS Task Force created by Board action in September 2012
    - Chaired by Board members Carol Krimm (City of Frederick) and Chris Zimmerman (Arlington County)

Background: Regional Interest in BOS (2)

- Task force work plan summarized local and national experience with BOS, assessed (planning-level) feasibility of BOS at specific locations, and analyzed selected corridors in the region
- Task force completed work and issued report in September 2013, findings presented to TPB in December 2013
  - Existing regional BOS operations on Dulles Access Road (VA 267) inside the Capital Beltway and Columbia Pike (US 29) near Burtonsville, Montgomery County
  - Assessed BOS feasibility of I-270 (City of Frederick to Capital Beltway), MD 5 / US 301 (MD 228 to Capital Beltway), and I-66 ITB.

North American BOS Operations (c. 2013)



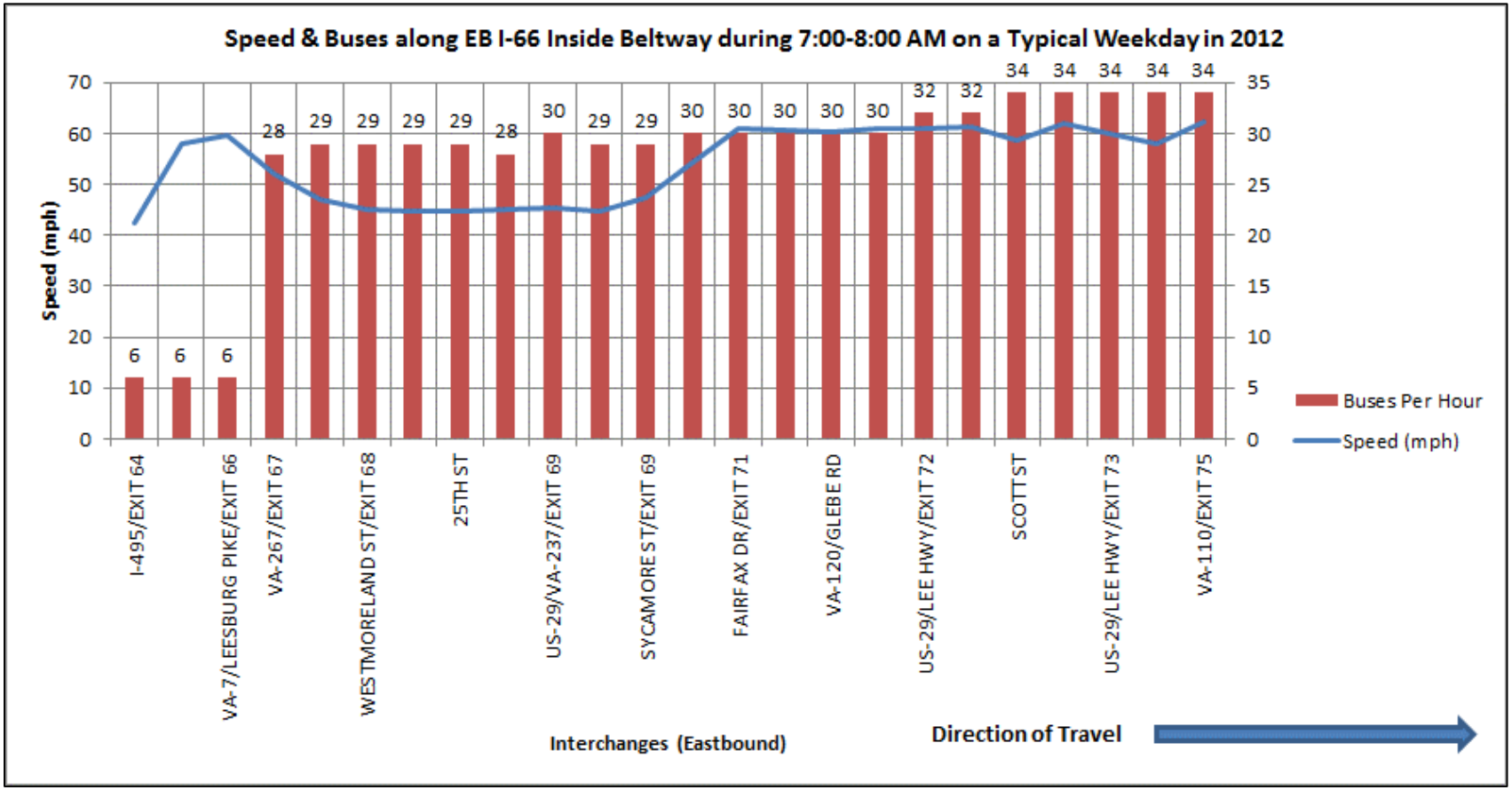
Findings of TPB BOS Task Force and Parallel Activity of I-66 ITB BOS Pilot

- Detailed feasibility analysis challenging due to availability of shoulder information (width, strength, overall suitability for routine use by buses) without conducting engineering field inspections
- Pinch points and conflict points on corridors require additional evaluation
- BOS implementation likely to be more feasible if initially targeted to short segments with high transit usage and high congestion
- Meanwhile, VDOT initiated “I-66 Bus Shoulder Bypass Lane Pilot Working Group” for I-66 ITB in May 2012

Purpose and Scope of VDOT I-66 ITB BOS Pilot

- Based on stakeholder interviews from 2012 I-66 Multimodal Study (Cambridge Systematics, *et al.,* for VDOT)
- Identify most beneficial sections of I-66 ITB for BOS operations
- Determine "what it will take" for pilot implementation
- Develop operational parameters for BOS, including monitoring shoulder conditions
- Identify costs of implementation and operation
- Develop and assist with a monitoring and evaluation plan to objectively assess the effectiveness of the pilot program
- Led by Kanti Srikanth and Rahul Trivedi of VDOT; TPB staff engaged from pilot initiation to pilot completion via Technical Assistance Program of UPWP (plus consultant data support)

Sample Analysis Used for I-66 ITB BOS Pilot Planning

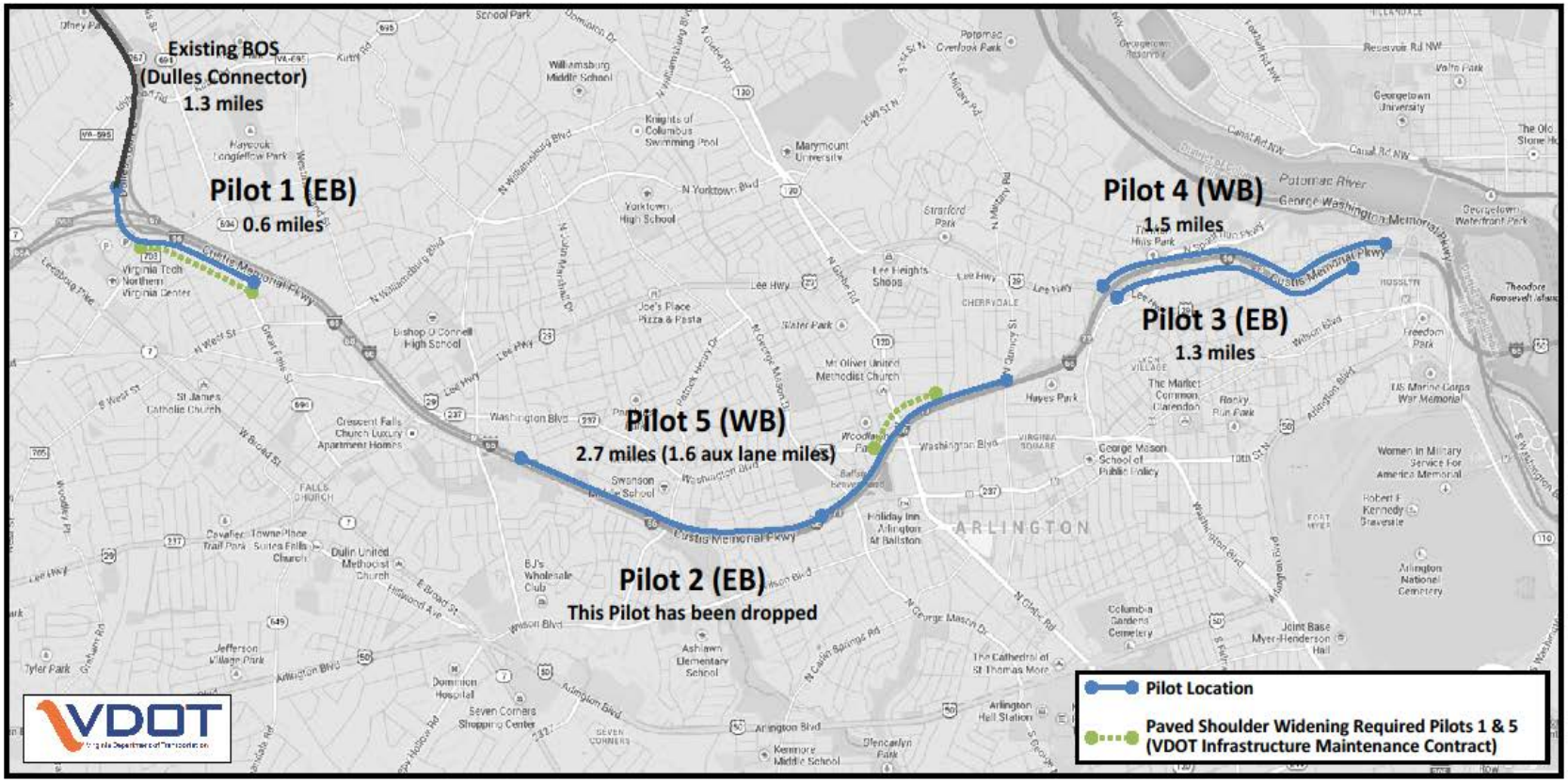


VDOT I-66 ITB BOS Pilot: Planning Activities

- Convene Pilot Working Group (October 2012, December 2012, February 2013, April 2014)
- Issue pilot final planning report in September 2013
  - Identify five pilot locations
  - Pilot implementation plan

- BOS test run with Loudoun County Transit bus with video monitoring from inside bus and from VDOT Safety Service Patrol (SSP) trail vehicle (May 2013, with police escort)
- Second trial run with PRTC bus and escorts for training video development in October 2013

VDOT I-66 ITB BOS Pilot Locations



VDOT I-66 ITB BOS Pilot: Operating Protocols

- Authorized transit buses only
- 24/7/365: no time of day restrictions
- Speed in regular travel lanes must be below 35 mph
- Maximum bus speed on shoulder: 25 mph

- Operator judgment for using shoulders when conditions permit
- Shoulder use for emergencies takes precedence over BOS
- At all times, authorized buses traveling on the shoulder will have to yield to all other vehicles
- No BOS during winter weather conditions (snow removal)

VDOT I-66 ITB BOS Pilot: Evaluation Criteria (1)

- BOS utilization: number of permitted days vs. number of days shoulder used
  - Speeds below 35 mph (from VPP data); BOS use self-reported by transit operators (drivers) via log to VDOT as part of MOU granting access to the shoulders
- Safety: number of incidents attributable to BOS operations
  - Incidents reported by transit operators
- Safety: number of SSP assists impacting shoulder in pilot locations
  - Obtained by VDOT

VDOT I-66 ITB BOS Pilot: Evaluation Criteria (2)

- Benefit/Cost: annualized time savings (riders + bus) / annualized shoulder maintenance upgrade costs >=1.0
- Rider feedback: rider "seat survey"… positive feedback outweighs negative feedback
  - To be conducted by transit operators
- Evaluation results to determine if BOS operations are warranted after the 12-month pilot
- Monthly BOS team meetings proposed during pilot with monthly evaluation data
- Mid-year and full-year evaluation of program efficacy

VDOT I-66 ITB BOS Pilot: Pre-Launch Activities

- VDOT design, approvals, funding – Fall 2013, winter / spring 2014
- VDOT construction during Summer and Fall 2014
  - Final total cost about $600,000 (preliminary engineering and construction, including signage)
- Develop public outreach materials (FAQ file, web updates, media contacts)
- Develop operator training video (initially TPB, then VDOT)
- Develop and execute MOUs with transit operators (Loudoun County Transit, PRTC, Fairfax Connector, WMATA) - issues
- Pilot launched March 23, 2015 with only one operator – PRTC
  - One-year pilot, then extended to February 23, 2017

And Now For Something Completely Different: Transform 66 ITB

- Transform 66 ITB announced by Secretary Layne on March 12, 2015
- Project construction directly impacts pilot locations
- Project goals, if successful, obviate need for BOS operations in corridor
- Pilot continued with PRTC actively using BOS

Noted Transit Expert John Cleese

VDOT I-66 ITB BOS Pilot: Evaluation and End

- TPB staff provided evaluation data through end of 2015
  - "Permitted days" based on speed thresholds on corridors
- Results of pilot: inconclusive
  - Only one operator (PRTC)
  - 2015 transit data showed relatively low BOS utilization even on permitted days
  - Limited data on other metrics due to low usage
- Pilot terminated by VDOT in coordination with PRTC on July 15, 2016 due to start of construction for Transform 66 ITB

Lessons Learned

- Low cost improvements such as BOS are feasible and can be implemented
- Even for a low-cost pilot, project development and implementation takes longer than expected
- Engage risk management / legal staff very early in the process
- Existing and planned operational conditions in a potential BOS corridor can change very quickly, and may supersede pilot project while still meeting BOS goals

VDOT project website: http://www.virginiadot.org/projects/northernvirginia/66_bos.asp

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