# I-95 Corridor Coalition

## Policy & Strategic Planning Committee

## October 20, 2010

**Note to Webcast Participants:**

*The webcast will begin at 1:00 p.m. Please do not put your telephone on "Hold" (especially if it's a music hold!); muting the phone is appreciated.*

*Telephone connection:*

*1-888-413-5786 and enter 133253# at the prompt.*

# Agenda

- Project Update
  - ETC Interoperability Materials
- Project Proposals
  - VMT-Based Charge Initiative
  - Freight Corridors
  - Green Corridor
  - Performance Measures
  - Integrated Corridor Analysis Tool
- Discussion on Project Proposals

# *Project Update: ETC Interoperability Materials*

# ETC Educational Materials Project Update

- Objectives
  - ➲ Create awareness of complexities of evolving toll technology
  - ➲ Educate public officials on practical limitations of violation enforcement in current environment
  - ➲ Heighten sense of urgency to address issues for sake of broader interoperability and all electronic tolling in the future

# ETC Educational Materials Project Update

- Progress to date
  - ➲ Consultant and Project Team in place
  - ➲ Held kick-off conference call
  - ➲ Currently reviewing content and format

# ETC Educational Materials Project Update

- Timing and themes
  - Targeting early 2011 for completion
  - Coalition role to educate
  - Maximizing mobility while managing risk requires interstate and multi-organization collaboration

# *Project Update & Proposal: Multi-State VMT-Based Charge Initiative*

# Topics

- The National VMT Landscape
  - ➲ Research Underway
  - ➲ Mileage-Based User Fee Alliance
- Draft Final Report
  - ➲ Multi-State VMT-Based Charge Project
- VMT Phase 2 Draft Scope
  - ➲ Committee Consideration of Next Steps

# The National VMT Landscape

- A number of projects underway through NCHRP, FHWA, States (e.g., Oregon and Texas) – at various stages
- Very little research in administrative and institutional arena – Coalition in leadership role with FHWA support
- Significant new initiatives:
  - FHWA Road User Fee Institutional and Technology Research Study – focus on system architectures, technologies and relation to IntelliDrive
  - Mileage-Based User Fee Alliance

# *VMT Draft Final Report Multi-State VMT-Based Charge System*

# General Overview

- Project began in December 2009 as a result of 2040 Vision
- Study Approach -- used prior studies, considered three broad functionality options, conducted extensive interviews
- Guided by Member Advisory Committee
- Effort to determine VMT functionality, identify institutional and administrative requirements, assess current administrative systems, develop preliminary costs and examine legal issues
- Intended to raise level of understanding, better inform the VMT discussion, extend beyond technology

# Status

- Draft Final Report completed (reviewed by MAC).
- Report includes Executive Summary, nine chapters linking to scope and a next steps section
- Executive Summary will be distributed to Leadership Committee October 24.
- Planned Release of Final Report – mid-November
- Will present findings in various venues (TRB, AASHTO, IBTTA)

# Some Key Findings

- VMT enrollment is an extensive requirement and should be integrated with state registration fee collection. DMV interface is essential, but DMVs lack current capacity.
- Data and administrative requirements will differ substantially based on functionality of system
- Calculating and reconciling state and facility mileage (as well as distributing accurate revenues to states and authorities) will be critical component

# Some Key Findings

- Collection of VMT-based charges at the Federal level may be done via the states where the registration information resides
- Potential institutional platforms range from DMV, IAG, IRP to new operating entities and private sector
- Sole government institutional arrangements are unlikely without private sector involvement.

# Some Key Findings -- Costs

- Bids from Netherlands provide only current data and are derived from contract bids and no actual implementation
- Study concluded approximately $40 per vehicle per year with ranges from $2 to $10 less per vehicle for a simpler VMT system and use of existing registration files ($30-$38) possible
- Costs need to be considered in current environment (increased use of alternative fuel vehicles, projected increases in fuel economy, future sustainability of motor fuel tax and ancillary benefits of reshaping travel patterns)

# Some Key Findings -- Legal

- VMT-based charges would benefit from authorizing legislation to avoid controversy, litigation and to gain public confidence
- No legal or constitutional issue that cannot be overcome by properly drafted legislation
- Authorizing legislation will be needed to address:
  - characterization of VMT-based charges and use of VMT-based revenues
  - administrative authority
  - rate setting and use of revenues
  - enforcement provisions
  - adjudication processes and mechanisms
  - user privacy

# *Phase 2 Draft Scope*

# Phase 2 Draft Scope

## General Overview

- Builds on Phase 1 Foundation
  - FHWA sees as complimentary effort
  - Still little work in administrative VMT research
- Considers Actual State/Agency Operating Environments
- Three Contiguous States Work Group
  - Maryland, Delaware, Pennsylvania
- Path to proof of concept and potential test bed environment

# Phase 2 Draft Scope

## Key Project Activities

- Assess current state operating environments (3-state group, including toll authorities)
- Interview stakeholders (associations, private firms)
- Prepare a multi-state concept of operations
- Assess potential of NMVTIS as model

# Phase 2 Draft Scope

## Key Project Activities

- Explore federal charge collection interface in multi-state environment
- Complete model state legislative language
- Refine costs based on actual state and agency data
- Keep Coalition members informed on VMT research
- Final report, based on interim task products

# Phase 2 Draft Scope

## Approach

- Assumes advanced functionality (i.e., to accommodate facility and time-based pricing)
- A project work group (from the 3-states) guides the project and provides input and information
- Continued oversight by MAC
- On-site interviews, observations and assessments
- Outreach to private sector, service contractors, associations and federal government
- With approvals, project would start in January 2011
- Current Cost Estimate - $835,000
  - ➲ Funds from Year 18 ($250K), Prior Years ($285K), Year 19 (300K)

# Key Questions for Committee

- Should the Coalition continue to invest in VMT research?
- Should it continue to focus on issues pertaining to multi-state administration?
- Is the Phase 2 Scope the right next step in VMT research for the Coalition?
- Should the Coalition spend $800K of its resources on this initiative?

# *Project Update & Proposal: Freight Corridors – Freight Data Acquisition*

# Proposal

- Purchase data on freight demand and commodity flow by mode from IHS-Global Insight's TRANSEARCH database
  - ➲ *Purchase data for "Coalition freight regions"*
  - ➲ *Purchase data on current and projected freight demand and flows*
  - ➲ *Update data every two(?) years*
  - ➲ *Make data available to Coalition members through ICAT's DataCAT*
  - ➲ *Share cost among Coalition members*

# Data Users

- Coalition policymakers to understand current and projected multistate freight flows and trends
  - ➲ *Critical input to transportation investment and economic development decisions*
- Coalition staff and consultants to conduct freight projects (e.g., Freight Corridors Program projects)
  - ➲ *Fewer one-off data purchases; lower costs*
- States and MPOs to support state and metropolitan freight studies
  - ➲ *Get current and comprehensive "big picture" data, allowing states and MPOs to focus their funds on regional and corridor data*

# Data Uses

- Identify critical freight infrastructure
  - *Which facilities support the most tonnage, TEUs, and value?*
  - *Which facilities carry the most through/interstate traffic vs. local traffic?*
- Analyze freight bottlenecks
  - *Which bottlenecks are inhibiting the highest-value and largest volume of freight, or the largest share of interstate freight?*
- Assess multimodal options
  - *Which O-D pairs could potentially support intermodal rail or marine highway transportation services?*
  - *Where is more multimodal capacity needed to optimize the existing system and encourage economic growth?*
- Test “what-if” scenarios
  - *Which planned or unplanned closures result in diversion of freight traffic to alternate routes? What are the impacts?*

# Coalition Region-wide Freight Corridors Projects

| | | Funded Activities | | | 3-Year Plan | | |
|---|---|---|---|---|---|---|---|
| | Coalition Program Year | Prior Years thru Sep 2009 | Year 17 Oct 2009 – Sep 2010 | Year 18 Oct 2010 – Sep 2011 | Year 19 Oct 2011 – Sep 2012 | Year 20 Oct 2012 – Sep 2013 | Year 21 Oct 2013 – Sep 2014 |
| Region | Federal Fiscal Year | thru FY'08 | FY'09 | FY'10 | FY'11 | FY'12 | FY'13 |
| Coalition Region | **Freight System Networks and Corridors** | ICAT *Freight Networks* | ICAT *Maintenance* | Freight Corridors *Overview/Update* | | Freight Corridors *Overview/Update* | |
| | **Industries/ Supply Chains/ Freight Flows** | Regional Bottlenecks *Scan* | | | Industries/Supply Chains *Profiles* | | |
| | **Performance** | Highway System Performance Measures | | Freight Performance Measures *Data/Trends* | Freight Performance Measures** *Data/Trends* | Freight Performance Measures** *Data/Trends* | |
| | **Solutions Toolbox** | | | Freight Resiliency *Routing Information Strategies* | Freight Solutions Toolbox *Best Practices* | Freight Solutions Toolbox *Best Practices* | |
| | **Programming and Prioritization** | | | Benefits Assessment Phase I *("TIGER-compatible" B/C templates)* | Benefits Assessment Phase II | | |

# Northeast Region
# Freight Corridors Projects

| | | Funded Activities | | | 3-Year Plan | | |
|---|---|---|---|---|---|---|---|
| | Coalition Program Year | Prior Years thru Sep 2009 | Year 17 Oct 2009 – Sep 2010 | Year 18 Oct 2010 – Sep 2011 | Year 19 Oct 2011 – Sep 2012 | Year 20 Oct 2012 – Sep 2013 | Year 21 Oct 2013 – Sep 2014 |
| Region | Federal Fiscal Year | thru FY'08 | FY'09 | FY'10 | FY'11 | FY'12 | FY'13 |
| **Northeast Region** | Truck Freight System | | | | NETOps *Highway Program* | | **Northeast Freight Corridors Program & Projects** |
| | Rail Freight System | NEROps II *Projects Inventory* | | | | NEROps III *Rail Program* | |
| | Marine Freight System | Short Sea/Coastal *Issues* | Marine Highway Corridors and Port Strategic Plans | | | Marine Highway Corridors and Port Strategic Plans | |

# Mid-Atlantic Region
# Freight Corridors Projects

| | | Funded Activities | | | 3-Year Plan | | |
|---|---|---|---|---|---|---|---|
| | Coalition Program Year | Prior Years thru Sep 2009 | Year 17 Oct 2009 – Sep 2010 | Year 18 Oct 2010 – Sep 2011 | Year 19 Oct 2011 – Sep 2012 | Year 20 Oct 2012 – Sep 2013 | Year 21 Oct 2013 – Sep 2014 |
| Region | Federal Fiscal Year | thru FY'08 | FY'09 | FY'10 | FY'11 | FY'12 | FY'13 |
| **Mid-Atlantic Region** | Truck Freight System | MATOps I *Truck Bottlenecks* | MATOps II *Highway Program* | Mid-Atlantic Freight Corridors Pilot Phase I | Mid-Atlantic Freight Corridors Pilot Phase II | **Mid-Atlantic Freight Corridors Program & Projects** | |
| | Rail Freight System | MAROps I & II *Rail Program* | | | | | |
| | Marine Freight System | Short Sea/Coastal *Issues* | Marine Highway Corridors and Port Strategic Plans | | Marine Highway Corridors and Port Strategic Plans | | |

# Southeast Region
# Freight Corridors Projects

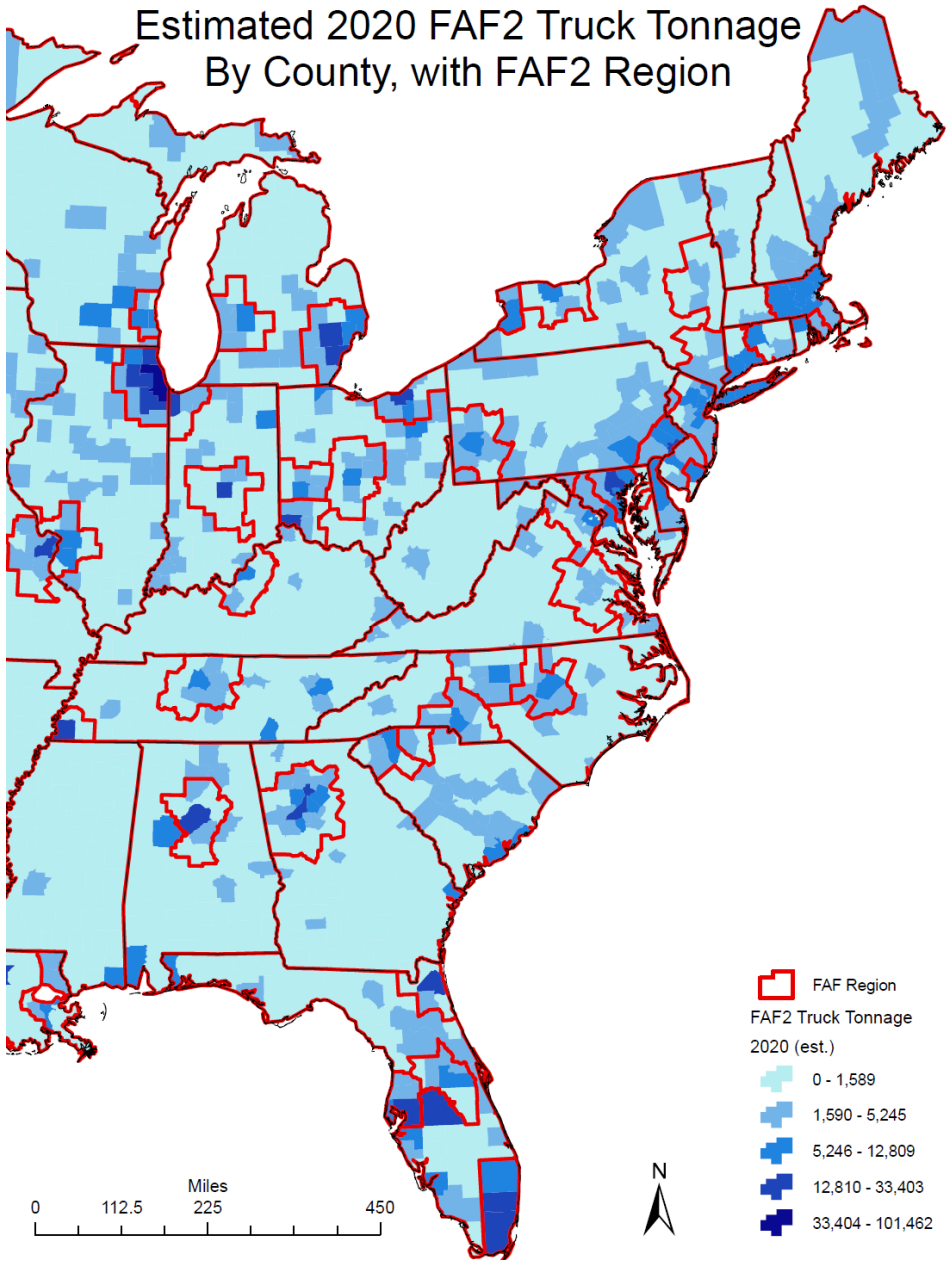
| | | Funded Activities | | | 3-Year Plan | | |
|---|---|---|---|---|---|---|---|
| | Coalition Program Year | Prior Years | Year 17 | Year 18 | Year 19 | Year 20 | Year 21 |
| | | thru Sep 2009 | Oct 2009 – Sep 2010 | Oct 2010 – Sep 2011 | Oct 2011 – Sep 2012 | Oct 2012 – Sep 2013 | Oct 2013 – Sep 2014 |
| Region | Federal Fiscal Year | thru FY'08 | FY'09 | FY'10 | FY'11 | FY'12 | FY'13 |
| **Southeast Region** | Truck Freight System | | | | SETOps I *Bottlenecks/ Projects Inventory* | SETOps II *Highway Program* | **Southeast Freight Corridors Program & Projects** |
| | Rail Freight System | SEROps II *Rail Issues/ Corridors* | | | SEROps III *Rail Program* | | |
| | Marine Freight System | Short Sea/Coastal *Issues* | Marine Highway Corridors and Port Strategic Plans | | | Marine Highway Corridors and Port Strategic Plans | |

# Options

| "FAF Region" Zones | "Coalition Freight Region" Zones | County-Level Zones |
|---|---|---|
| ●*Large zones (e.g., state or state portion of BEA economic region)*<br>●*Two-digit commodity detail*<br>●*Updated about every five years* | ●*Medium-size zones (e.g., clusters of counties or MSAs for freight intensive areas; FAF regions elsewhere)*<br>●*Two-digit commodity detail*<br>●*Updated every two(?) years* | ●*Small zones (e.g., counties)*<br>●*Four- or seven-digit commodity detail*<br>●*Updated annually* |
| ●*Good for national-level studies*<br>●*Too aggregate for most Coalition, state, and MPO studies* | ●*Sufficient for Coalition multistate studies*<br>●*Provides "big picture" context for state and MPOs studies* | ●*Appropriate for state and MPOs studies; special corridor studies, etc.* |
| ●*Lowest cost* | ●*Moderate cost (to be determined)* | ●*Highest cost* |

# *FAF Regions and Truck Tonnage by County*

- *FAF region-level data do not provide enough detail for Coalition use*
- *County-level data provide too much detail for Coalition use*



# Project Scope

- Project will the following issues:
  - *What is the appropriate level of detail (between FAF region- and county-level) for Coalition, State and MPO needs?*
  - *What restrictions would there be on state and MPO access to and use of the data?*
  - *How much overlap or duplication would there be between the Coalition data purchase and ongoing state data purchases?*
  - *Could states supplement the Coalition's higher-level (aggregated) data by purchasing more detailed data for specific areas?*
  - *Would supplemental data be purchased through the Coalition contract or directly from IHS-Global?*
  - *Would it be cost effective for the states to contribute to the Coalition's purchase of data?*
  - *How would the Coalition's data be integrated into ICAT?*
  - *What provisions should be made for QA/QC for the data?*

# Next Steps

- Coalition staff will canvass interested states and MPOs to determine what level/s of…
  - ➲ *Commodity detail,*
  - ➲ *Geographic aggregation, and*
  - ➲ *Purchase cycles*

  …would best meet Coalition, state, and MPO needs
- Coalition will continue discussions with IHS-Global Insight regarding data acquisition
- Year 19 Proposal: ~ $100,000

# *Project Update & Proposal: Green Corridors*

# Green Corridors – Sustainability Initiatives

- Objective: Continue the work of the Green Corridors Initiative to share best practices, create resources for members, engage with partners and work as a regional player to support sustainability efforts for member agencies.
- Type of Project: Research
- Funding Requested: $75,000
- Lead Agency: ???
- Stakeholders: AASHTO Center for Environmental Excellence, NCDOT, NYSDOT, RGGI

# Green Corridors – Sustainability Initiatives

- Major Tasks/Deliverables
  - Create sustainability web page on Coalition's website
    - Videos and other multi-media features
    - Project features (e.g. Eco-Driving Toolkit with downloadable templates
  - Create interactive sustainability map for web page
    - Share best practices from throughout the region
    - Updated with new and evolving programs
  - Further sustainability performance measurement program
  - Act as regional partner in electric vehicle station deployment efforts

# *Green Corridors – Sustainability Initiatives*

- Schedule: 12 months, starting September 2011

- Prior Related Work: Eco-Driving Campaign, Sustainability Map

# Green Corridors – Sustainability Initiatives

- Relationship to Three Year Plan(s) and/or other Federal initiatives:
  - Supporting all projects included in the Green Corridor Initiative's Three Year Plan
  - In line with Three Year Plan Strategic Actions:
    - Facilitate education and awareness of sustainability programs
    - Identify sustainability practices
    - Identify "sustainability players" in the Corridor
  - Relevant to the DOT/HUD/EPA Interagency Partnership for Sustainability Communities

# *Project Update & Proposal: Performance of Major Bottlenecks in the I-95 Corridor*

# *Why This Project Was Undertaken*

- Performance monitoring for major bottlenecks, where "bottleneck" is a specific highway feature that is the source of recurring congestion
  - A new approach to congestion monitoring
    - Areas influenced by bottlenecks also experience a large amount of nonrecurring as well
  - "Regionally significant travel"
    - Policy perspective: how are things functioning over time
    - Both local and long distance intercity travel affected, especially trucks
  - Leverage the Coalition's *Vehicle Probe Project*
    - Demonstrate one of many potential performance measure applications that are possible

# I-95 Bottleneck Methodology

- Scan Inrix data for potential bottlenecks
  - ➲ Speeds < 40 mph for time slice of interest for all of 2009
- Combine adjacent links
- Map and identify the physical features that are bottlenecks
  - ➲ Interchanges (mainly freeway-to-freeway)
  - ➲ Bridges
  - ➲ Toll facilities
- Merge in volumes; compute delay and other PMs (queues)
- Estimate effect of bottlenecks on long distance trips

# Major Bottleneck Locations

# The Worst Bottlenecks: Highest Annual Delay, All Days (2009)

| Location | Vehicle-Hours of Delay (000) |
|---|---|
| **I-495 @ Conn. Ave. (MD)** | **37,656** |
| **I-495 @ I-270 (MD)** | **31,827** |
| **I-495 @ American Legion Br (MD/VA)** | **24,045** |
| **I-95 @ GW Bridge (NJ)** | **22,701** |
| **I-495 @ I-95 (Exit 27; MD)** | **17,406** |
| **I-495 @ I-66 (VA)** | **15,323** |
| **I-95 @PA-90 (PA)** | **12,529** |
| **I-695 @ I-70 (MD)** | **11,471** |

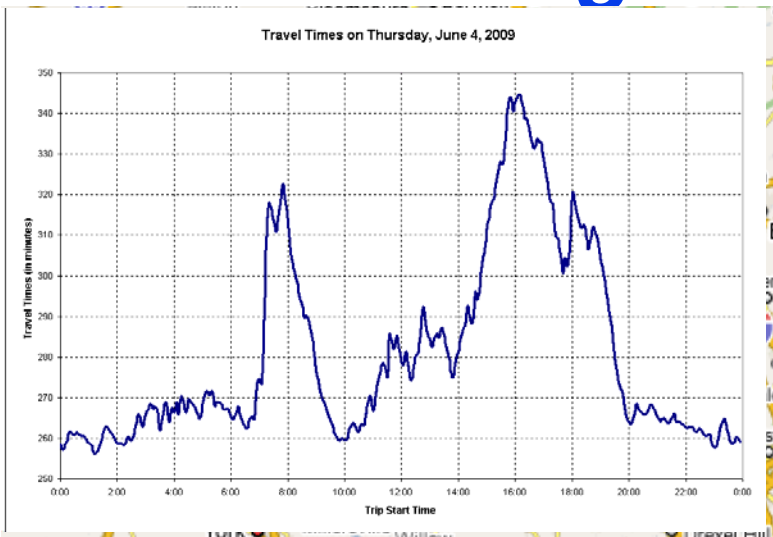
# The Worst Bottlenecks: Weekend/Holiday Highest Annual Delay (2009)

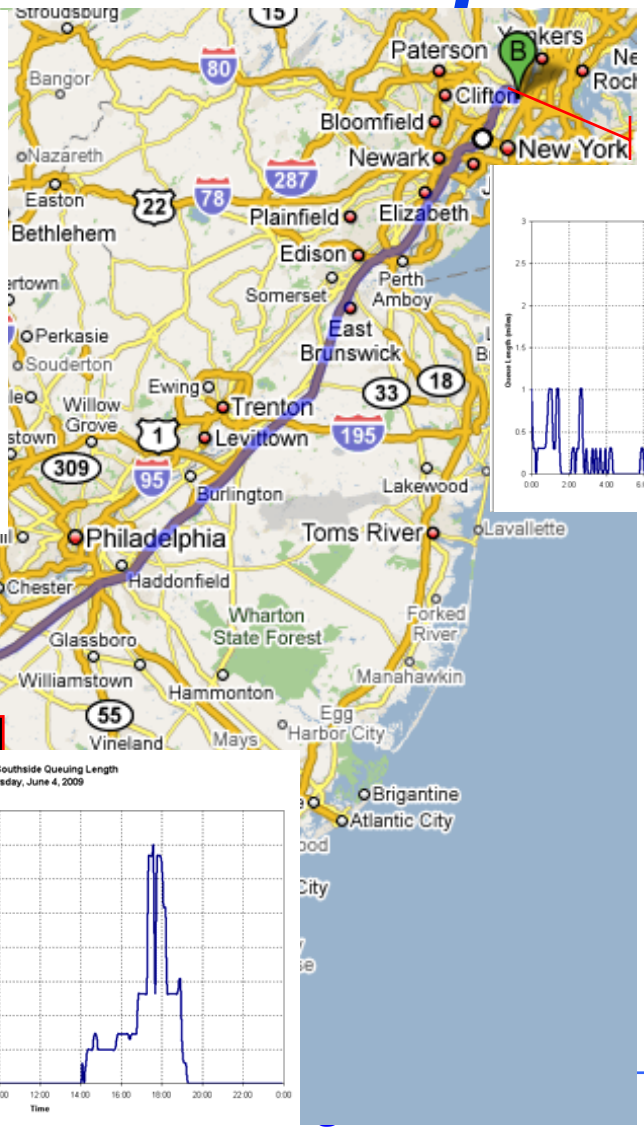
| Location | Vehicle-Hours of Delay (000) |
|---|---|
| **I-95 @ GW Bridge (NJ)** | **8,665** |
| **I-495 @ Conn. Ave. (MD)** | **1,991** |
| **I-95 (NJ Turnpike), near Exit 8 (NJ)** | **1,672** |
| **I-95 @ I-295 (Exit 5; DE)** | **1,112** |
| **I-495 @ I-95 (MD)** | **1,086** |
| **I-495 @I-95 (Springfield/Wilson Br, VA)** | **1,024** |
| **I-95 @ Hwy 896, Exit 1 (DE)** | **941** |

# What Happens on the Worst Days at all the Bottlenecks in the Corridor?

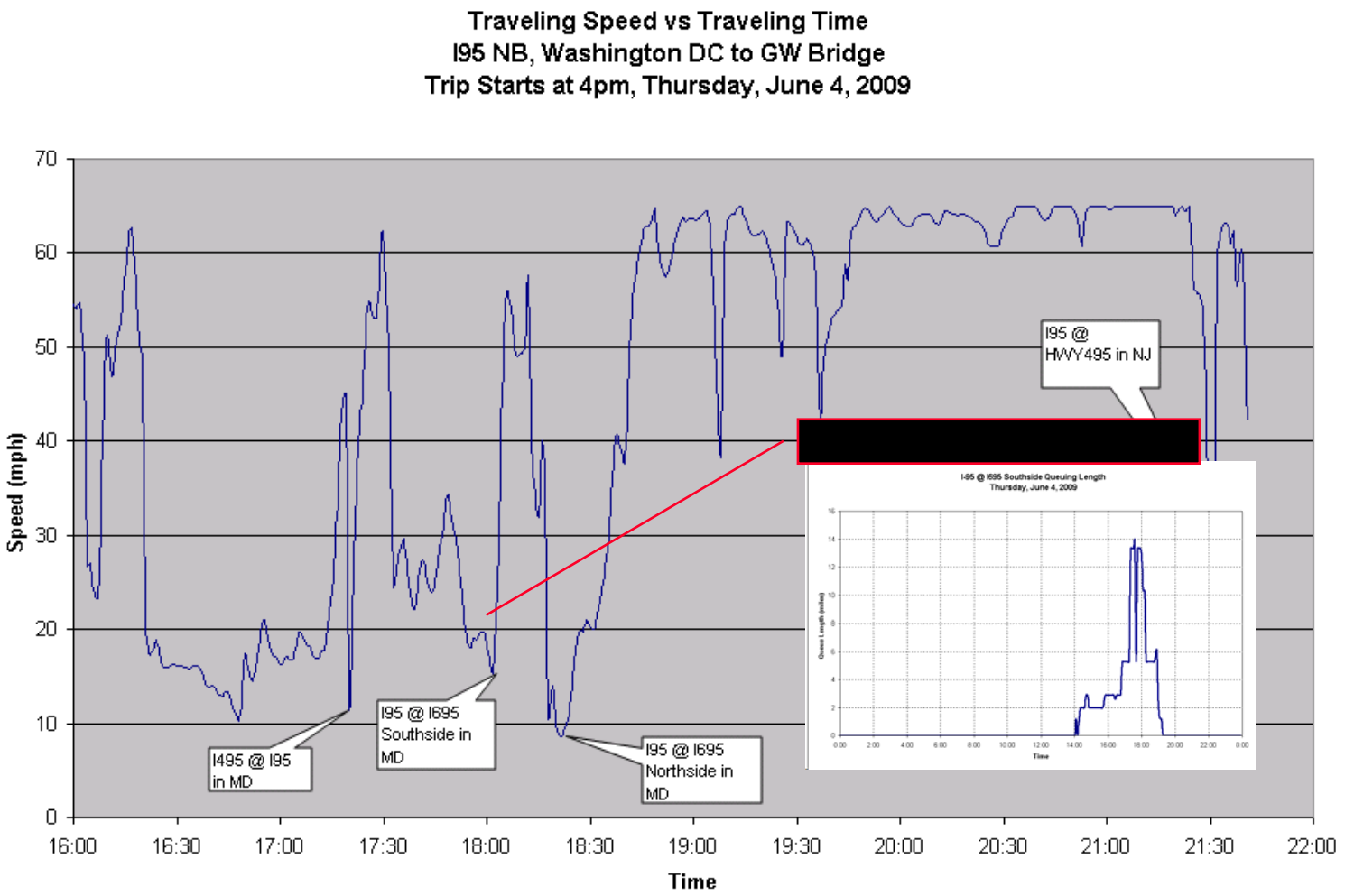
| Date | DOW | Comments |
|---|---|---|
| 12/19/2009 | Saturday | 20+” snowstorm |
| 11/24/2009 | Tuesday | 0.5” rain; Thanksgiving week |
| 05/29/2009 | Friday | 1.2” rain |
| 06/04/2009 | Thursday | |
| 10/15/2009 | Thursday | 0.5” rain |
| 12/23/2009 | Wednesday | Christmas week |
| 11/19/2009 | Thursday | 0.8” rain |
| 06/05/2009 | Friday | 0.7” rain |
| 07/31/2010 | Friday | 1.2” rain |
| 04/17/2009 | Friday | |

# Effect of Bottlenecks on Long Distance Trips



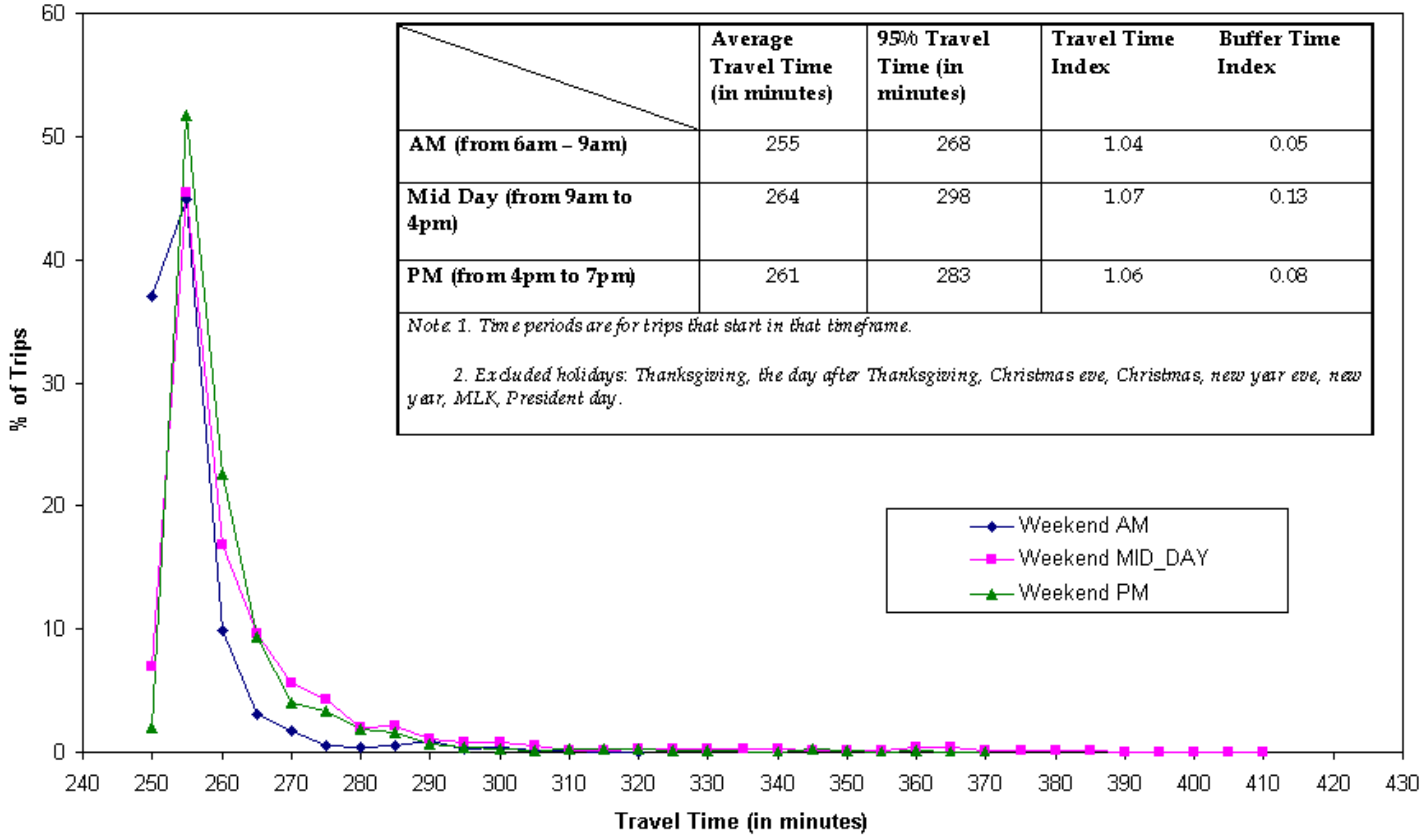



# Effect of Bottlenecks on Long Distance Trips



# Travel Time History: D.C. to GW Bridge

Non-Holiday Weekend Travel Time Distributions
I95 DC to GW Bridge, NB, 247 miles, Nov 2008 and March 2009




| | Average Travel Time (in minutes) | 95% Travel Time (in minutes) | Travel Time Index | Buffer Time Index |
|---|---|---|---|---|
| AM (from 6am – 9am) | 255 | 268 | 1.04 | 0.05 |
| Mid Day (from 9am to 4pm) | 264 | 298 | 1.07 | 0.13 |
| PM (from 4pm to 7pm) | 261 | 283 | 1.06 | 0.08 |

*Note 1. Time periods are for trips that start in that timeframe.*

*2. Excluded holidays: Thanksgiving, the day after Thanksgiving, Christmas eve, Christmas, new year eve, new year, MLK, President day.*

# *Summary: Aspects of Congestion We Should be Monitoring*

- Corridor and Areawide congestion are the typical things we measure, but we should be doing more:
  - ➲ Bottleneck performance is significant because bottlenecks dominate the urban congestion picture
    - ◆Source of recurring congestion
    - ◆Impact of nonrecurring disruptions is heightened when "base" congestion is high
  - ➲ Intercity trip performance is important for freight, business, and recreational travel

# Summary: Aspects of Congestion We Should be Monitoring (cont.)

- Also need information on what causes congestion to explain trends/patterns
  - Disruptions (incidents, weather, work zones)
  - Demand
  - Geometric and operating changes
- Although our study was regional in nature, state-specific analyses can be undertaken using the same data and concepts
  - Shows the power of continuously-collected travel time data
  - Especially when combined with “cause” data
  - Reliability monitoring possible with continuous vehicle probe data

# *Further Work*

- We now have a baseline for performance of major bottlenecks, but trends are what matters
  - ➲ Monitoring annual trends provides a snapshot on the "health" of the system
  - ➲ Drilling down to the causes will provide explanation of trends and indicate potential actions for improvement
- Historical performance of intercity trips can be used in trip planning: *SafeTrip* enhancement
  - ➲ Historically, how long should my trip take?
  - ➲ Combine with current conditions to provide more useful traveler information

# Year 19 Project Proposal – Performance Measures Using the VPP Data - II

- Expand capabilities of web-based tool
  - Integrate causal considerations - volume and incident data
  - Customized bottleneck definition
  - User defined travel time reliability ranges
- Produce first Annual Bottleneck Congestion Trends Report (2009-2010)
  - Track bottleneck congestion and intercity trip performance over time
- Research bottleneck congestion causes
  - Demand, incidents, weather, work zones
- Develop realistic intercity trip travel time histories
  - Account for historic performance at predicted time of arrival
  - Integrate into SafeTrip trip planner
- Proposed Budget = $215K

# *Project Update & Proposal: Integrated Corridor Analysis Tool*

# ICAT – Current Maintenance Activities

- Using remaining Year 17 Funding (original $100K budget)
  - Continuing discussions re potential applications (e.g., SHRP II)
  - Updating national databases (NBI and FARS)
  - Adding data from Coalition projects (e.g., MAROps and NEROps)
  - Creating topic-specific folders (e.g. rail studies)
  - Updating State attribute data from 2009 HPMS submissions
  - Exploring addition of TMC codes
  - Developing procedures for member addition of databases to be displayed on WebCAT

# *ICAT – Candidate Year 18 Maintenance Activities*

- $100K budget
- To be discussed with Project Team on October 22 to determine priorities
- Candidate activities
  - Integrate remaining state road networks
  - Update state roadway inventory data
  - QC road network connectivity
  - Update auto and truck OD tables
  - Add thematic maps and databases to WebCAT
  - Technical assistance
  - Marketing and outreach

# ICAT – Year 19 Project Idea

- $100K requested
- Categories of potential activities:
  - Data maintenance and updating
    - State and national databases
  - Application development and support
  - Demonstrations to internal and external audiences
  - WebCAT and DataCAT enhancements
    - User interfaces, new query capabilities, new data or databases, etc.
  - Technical support

# *Project Proposals Year 19 Work Plan*

| | |
|---|---|
| VMT-Based Charges Concept of Operations | $300,000 |
| Data Acquisition for Freight Corridors | $100,000 |
| Green Corridors Sustainability Initiative | $75,000 |
| Performance Measures Using Vehicle Probe Data II | $215,000 |
| ICAT Maintenance and Support | $100,000 |

# *Thank You!*