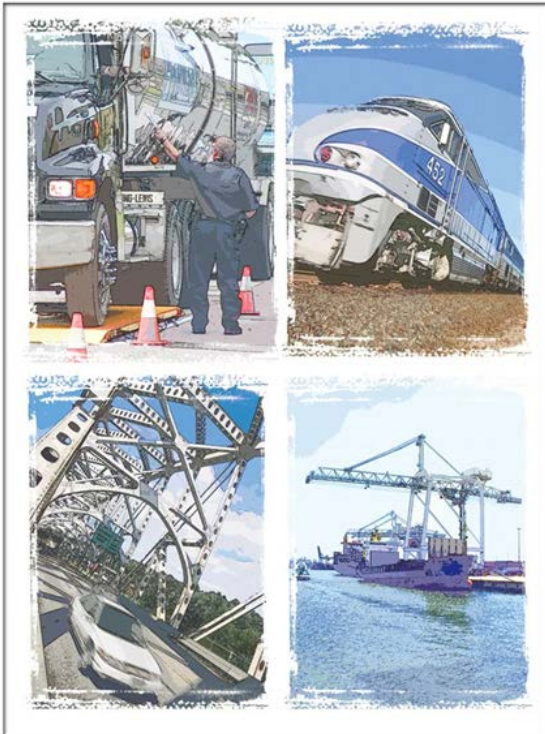# *ITS for Multi-Modal Freight*

Presented to:
ITS Carolinas
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By:
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I-95 Corridor Coalition

A Multi-Jurisdictional Corridor

- 16 States, the District of Columbia, 2 Canadian Provinces
  - DOTs, MPOs, Port, Toll, Bridge Authorities

  - $4.7 trillion economy (40% of US GDP)
  - 21% of nation's road miles; 35% of nation's VMT
  - 5.3 billion tons of freight shipments annually
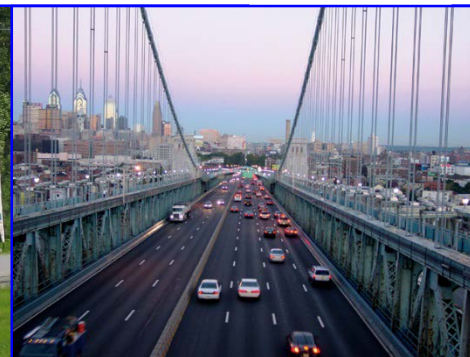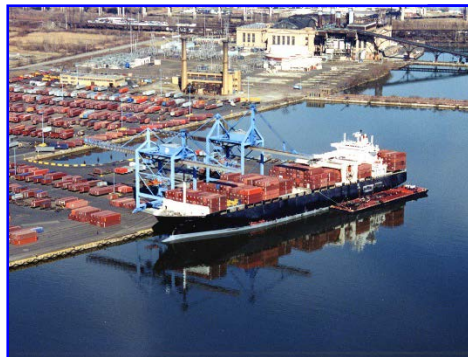
Beyond Boundaries
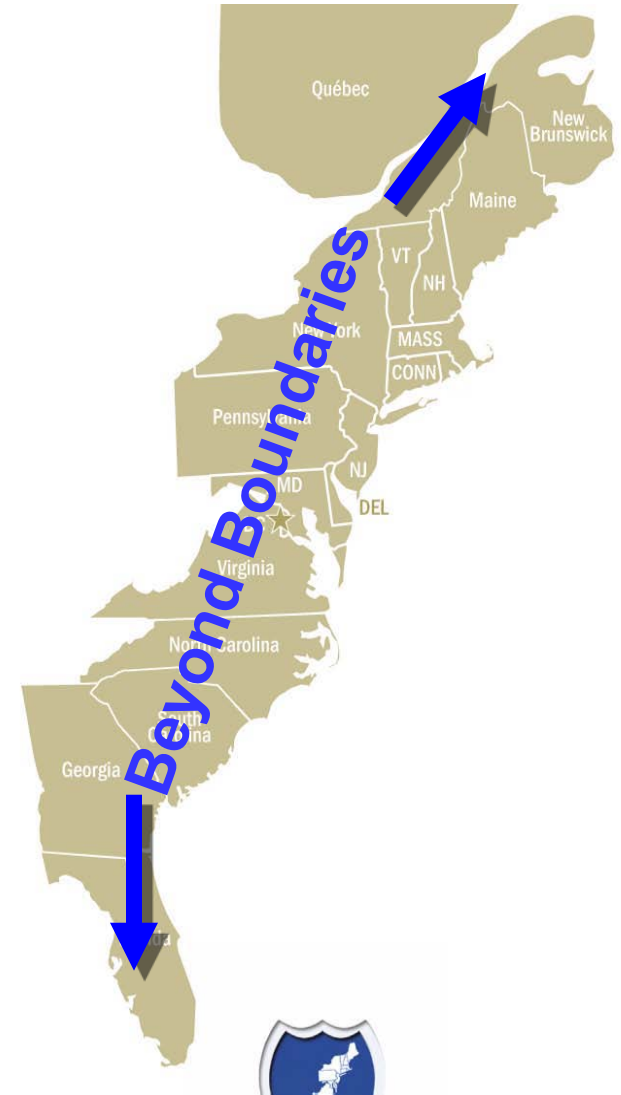
A Multi-Modal Coalition:

The Coalition region is served by all transportation modes – rail, marine, air, highway – and encompasses freight movements both domestic and international

- 40,000 National Highway System miles
- 46 Seaports, 103 Commercial airports
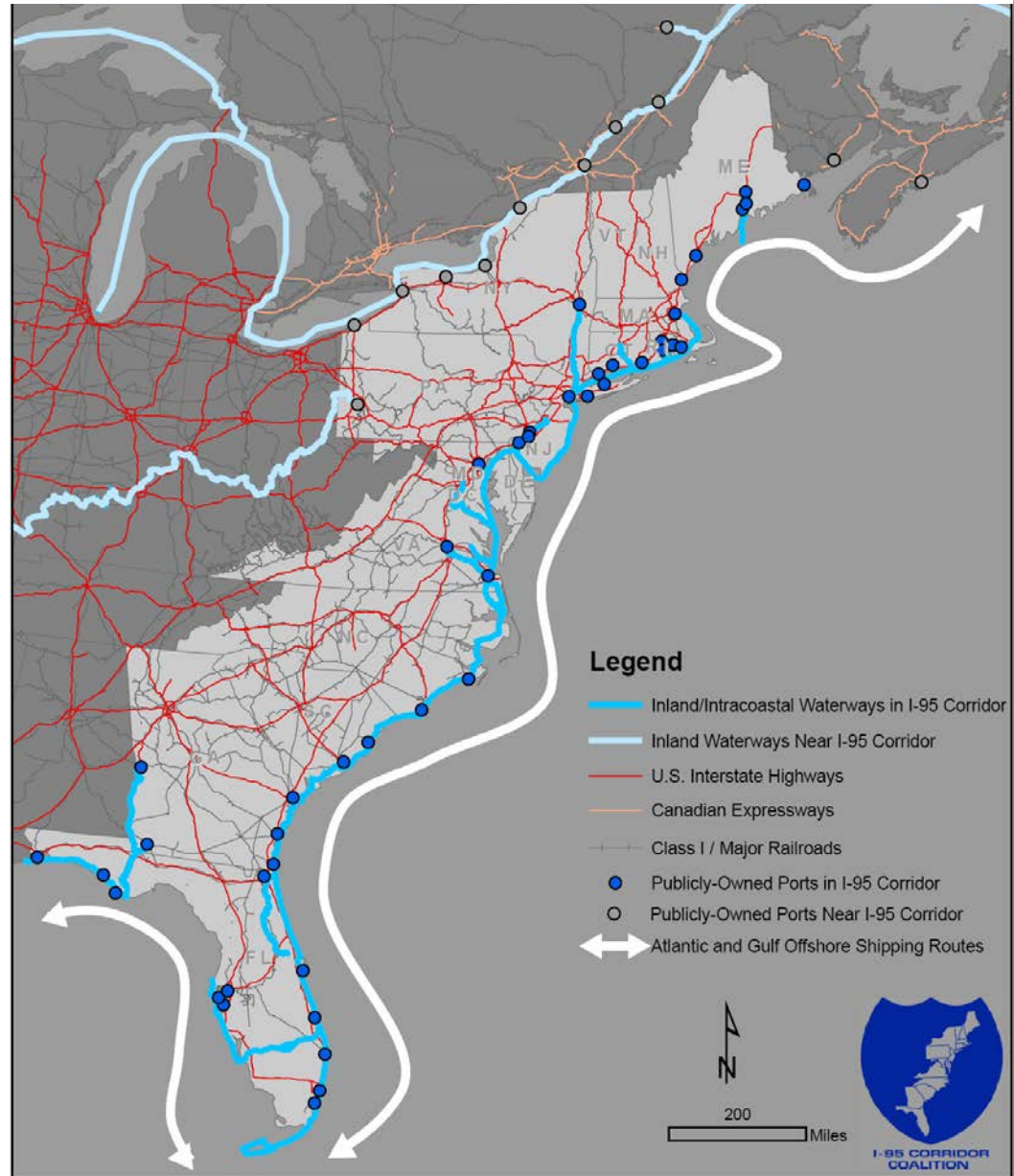- 22,000 miles of Class 1 rail

Freight Flows by Highway, Railroad, and Waterway: 2010

Pacific Ocean

CANADA

Atlantic Ocean

MEXICO

Gulf of Mexico

Mode
- Interstate Highways
- Non-Interstate Highways
- Railroad
- Inland Waterway

Volume Scale (Tons/Year)
250 Million   100 Million   50 Million

Miles
0   250   500

Miles
0   75   150

Miles
0   150   300

Sources: Highways: U.S. Department of Transportation, Federal Highway Administration, *Freight Analysis Framework*, Version 3.4, 2013; **Rail:** Based on Surface Trvansportation Board, Annual Carload Waybill Sample and rail freight flow assignments done by Oak Ridge National Laboratory;
Inland Waterways: U.S. Army Corps of Engineers, Institute or Water Resources, Annual Vessel Operating Activity and Lock Performance Monitoring System data, 2013.

"M-95 Corridor" A Marine Highway

Legend
- Inland/Intracoastal Waterways in I-95 Corridor
- Inland Waterways Near I-95 Corridor
- U.S. Interstate Highways
- Canadian Expressways
- Class I / Major Railroads
- ● Publicly-Owned Ports in I-95 Corridor
- ○ Publicly-Owned Ports Near I-95 Corridor
- ⟷ Atlantic and Gulf Offshore Shipping Routes
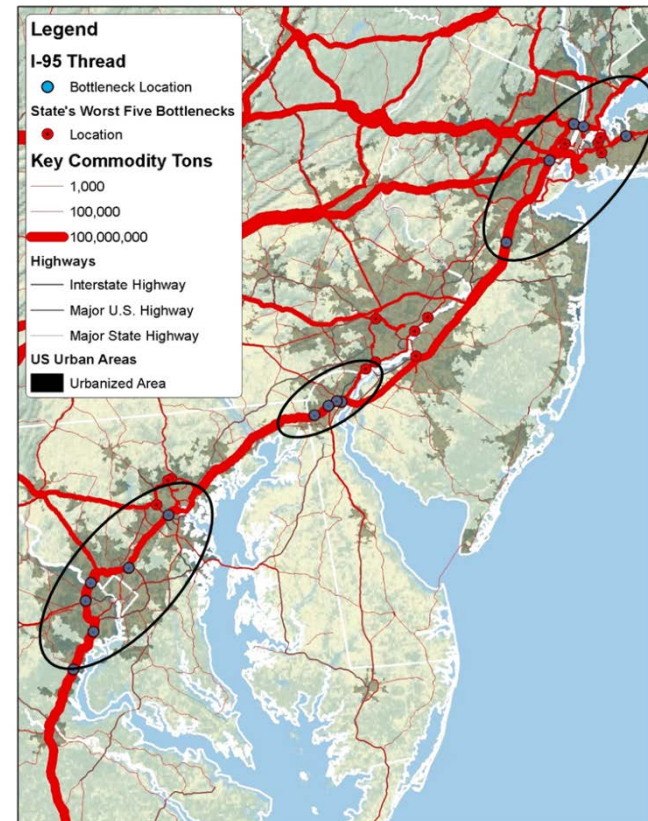
200 Miles

I-95 CORRIDOR COALITION

Freight issues in the Corridor

- Increasingly congested highways
- Limited freight and passenger rail and highway capacity to meet demand/sustain growth
- Safety and vulnerability concerns
  - Truck parking availability shortages
  - Hours of service and other compliance requirements
  - "Dwelling" for ports, distribution, warehouse , retail pick-up/delivery
- Need to reduce greenhouse gases (CO_2) and mitigate climate change
- Continued shifts in distribution centers and freight flows as a result of changes in trade patterns and logistics
- Transportation system operators pressed to provide reliable and efficient systems
- Shippers and Carriers seek to optimize supply chain/trip

Why the need to consider ITS to support Freight (I-95 Corridor Perspective)

- Large volume of traffic flows in the corridor across multiple states - *ITS can provide data and/or ability to analyze data to identify issues/solutions*

- Proximity of states necessitates coordination to support efficient freight movements, particularly during significant events. Bottlenecks in one state can closely impact another state's transportation flow - – *ITS technology allows for linkage of information*

- Coordinated ITS can be particularly important to freight as "O" and "D" often in multiple states (avg. truck trip is 100+miles per trip)

Legend

I-95 Thread
🔵 Bottleneck Location

State's Worst Five Bottlenecks
🔴 Location

Key Commodity Tons
— 1,000
— 100,000
━ 100,000,000

Highways
— Interstate Highway
— Major U.S. Highway
— Major State Highway

US Urban Areas
■ Urbanized Area

To Deploy ITS for Freight Must Understand Freight

- Need to understand Freight Industry and various perspectives
    - Shipper, mode/carrier
        - Who makes decisions to use modes/ technology, who pays, what is ROI for various segments
    - Supply chain considerations
        - Does your ITS application answer/relate to key considerations
    - What public role is in supply chain
        - Is decision to use elective, mandated? - This may impact adoption

- Why understand?
    - Industry considerations (cost, reliability, commodity, safety/security) drive whether "they are buying what you are selling"
    - Deployment test "success" may not always translate and may vary dependent on many factors including
        - Industry considerations including market conditions
        - How supply chains function
        - Variance for geographic/regional considerations/factors

Why understand Supply Chain Considerations in Freight Movement?

- Supply chains are "end to end"

- Shippers measure performance typically by:
  - Cost
  - Reliability
  - Safety/Security

- Mode choice determined by:
  - Type of Commodity
  - Cost
  - Reliability
  - Safety/Security

Source –"Freight Performance Measurement – Measuring the Performance of Supply Chains across Multistate Jurisdictions – Report by I-95 Corridor Coalition

Public Role in Supply Chain Performance

- Supply chain performance is public-private

- Public contributes networks and policies to total outcome

- Contribution is at many stages from many jurisdictions

- Pain is shared, so are solutions

- Fundamentally a cooperative venture: between sectors, between agencies

Traveler Information for Freight

- Enhance traveler information in the corridor for commercial vehicle operations
  - Facilitate development and deployment of real time, reliable, travel information
    - Integrated systems that link various components of information in agencies to allow more real time system status
      - i.e. special hauling data linked to real time status from agency bridge/pavement systems
      - Consider "low hanging fruit options" such as through "portals" that link public to individual agency's travel information
    - State work to enhance access to their data for agency to agency sharing and to make data available to travel information developers (third party entrepreneurs")
      - i.e., Port Authority New York/New Jersey "G-MAP" program

I-95 Coalition
Commercial Vehicle Operations Information Portal

- Critical to take a "One Stop Shop" look from a commercial vehicle operations perspective

- I-95CC CVO Online Portal provides direct links to Member States' Commercial Vehicle sites for registration, credentialing, permitting, regulations, and related trucking information

- Working with states to share best practices on "trucker-friendly" agency web-sites and to encourage access to pertinent data for developers (i.e. bridge height/weight info)

- See portal at: http://i95coalition.org/i95/CommercialVehicleOperationsPortal/tabid/127/Default.aspx

I-95 CORRIDOR
COALITION
Beyond Boundaries

Home   Committees   Projects   Library   Training   511 Travel Information   CVO Online Portal   Calendar

TRAVEL INFORMATION APPS

Please click on the icons to open their URL links in a new window.

State Agencies	IOS	Android	Blackberry	Twitter	Facebook	Pinterest	Flickr	YouTube	RSS	Email/Text Alerts
Maine DOT					f					
Maine Turnpike				t	f					●
New Hampshire DOT				t	f					
Vermont AOT				t				You Tube		
Massachusetts DOT				t	f		flickr	You Tube	RSS	● SMS
Rhode Island DOT				t	f	P	flickr			
Connecticut DOT				t						
New York State DOT	🍎	🤖	⚫	t	f	P	flickr	You Tube		
NY State Thruway				t Transportation Alert / t NYS Thruway Info	f					● SMS
Port Authority of New York & New Jersey				t						● SMS

STAY INFORMED, PLAN AHEAD

A quick-easy access to your State Transportation Apps

Real-Time Truck Parking Availability Systems

Real Time ITS Systems utilizing various technologies for:

Data Gathering and Analytics:

- Cameras, in-pavement sensors, loop detection (others emerging)

Data Dissemination:

- Truck Parking Websites/Mobile Apps

- IVR Telephone Systems (with automatic call-back feature)

- Dynamic Message signs

- Continuously-generated external data feed, for states and third-parties

- FHWA funded projects nationally including VA/MD, FL, PA, CA, Kansas (Midwest/Great Lakes), UT etc....

Opportunities and Challenges in Real Time Truck Parking System Deployment

- Technological
  - Many options to consider – must maintain level of accuracy – >96%
- Safety
  - How best to reach driver:
    - DMS – requires no interaction by driver, may not allow for "next consideration"
    - in-vehicle information dissemination (hands free IVF features) – must design to minimize distraction but can provide "what's ahead"
- Business Model
  - Public Agency operated - federal law does not allow "pay to park" on NHS ROW - shifts deployment and O&M cost to public agency
    - Public agencies may explore other alternatives – i.e. City of Elmira brownfield site
  - PPP – business models to date have not fully alleviated "public cost"
  - Private sector operated – emerging opportunities – shift recently in position from National Association of Truck Stop Operators (NATSO), including launch of mobile app "Park My Truck"
    - "Reservation" systems, reserve only and/or "pay to park" such as TCA "TruckSmart"

Freight Technology for Smarter Operations

☐ Electronic Freight Management (EFM)*

- ☐ Applies Web technologies that improve data and message transmissions between supply chain partners. It promotes and evaluates innovative e-business concepts, enabling process coordination and information sharing for supply chain \\reight partners through public-private collaboration.

  - ☐ The CEFM (Columbus EFM) project was a successful 2007 deployment test which implemented web services and other components to support an existing international import truck-air-truck supply chain

☐ Cross-Town Improvement Project (C-TIP)*

- ☐ The first iteration of the project consisted only of a high-level concept that incorporated an 'intermodal move database' for coordinating cross-town traffic to reduce empty moves between terminals, and loosely defined ideas for tracking intermodal assets and distributing information to truckers wirelessly., the C-TIP project grew to incorporate Intermodal Move Exchange (IMEX), Chassis Utilization Tracing (CUT), Real-Time Traffic Monitoring (RTTM), Dynamic Route Guidance (DRG), and Wireless Drayage Updating (WDU).

(*Source, FHWA, Office of Freight Management)

Freight Advanced Traveler Information System (FRATIS)

- Freight traveler information system that provides freight-specific route guidance and optimizes drayage operations so that load movements are coordinated between freight facilities to reduce empty-load trips:
  - Freight-Specific Dynamic Travel Planning and Performance (combines the two formerly separate DMA program areas of Freight Dynamic Route Guidance (F-DRG) and Freight Real-Time Traveler Information with Performance Monitoring (F-ATIS)
  - Drayage Optimization (DR-OPT)

Freight Technology for Smarter Operations

- Port Operations
  - Truck Appointment Systems
    - Allows for multiple container terminals and truckers to find a variety of information, including container status, vessel schedules, terminal locations and truck driver lists
      - i.e. LA/Long Beach
      - Challenge is often getting terminal operators to agree, shippers to utilize

  - Other examples of resources for truckers
    - Port of Norfolk VA – Provides "operations alerts to drivers via smartphones

Look for Smarter Freight Operations in Existing/New efforts

- Institutionalize more Freight ITS technologies into Freight Planning process
  - i.e. State Freight Plans
  - Link agency plans across jurisdictions for seamless interaction (i.e. PANYNJ G-MAP work)
- Build Freight into Integrated Corridor Management Plans
  - http://ops.fhwa.dot.gov/publications/fhwahop15018/index.htm
- Example:
  - Signal Timing for Freight Operations
    - Consider signal timing configurations in high truck volume areas (i.e. Port gate to interstate, distribution/warehouse on local roads) with more emphasis on truck flow (typical focus is on passenger cars)

Questions?
Thank You!

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