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STRATEGIC HIGHWAY RESEARCH PROGRAM

Accelerating solutions for highway safety, renewal, reliability, and capacity

Regional Operations Forum
Facilitating Goods Movement through Operations

Session Overview

- What are "freight" operations?
- How can you facilitate goods movement?
- What are the emerging applications and technologies?
- How can you engage the private sector and partner agencies to collaboratively improve operations?

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What are Freight Operations?

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What are Freight Operations?

Last Mile

Long Haul

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Who makes decisions about where goods move?

Decision Maker	Type of Decision	What Governs the Decisions?
Shipper Broker Consignee	• Pick-up location • Drop-off location • Mode(s) • Gateways and transfers (ports, terminals) • routes and corridors • schedule	• Total Logistics Costs • Regulatory Compliance $ $ $
Trucker	• Some routing decisions • Where to park	• Bottom line costs • Compliance (i.e. HOS) • Information on travel and routes

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Why do we care about freight?

- Freight moves the economy
- Sustains major industries in your state or region
- Sustains domestic and international trade
- Truck VMT growing faster than passenger VMT

Reliability / predictability is top operations concern of freight industry

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What can agencies do to improve freight operations?

- Identify and mitigate operations issues
    - Recurring bottlenecks
    - Safety hotspots
- Disseminate / integrate information
    - Road conditions
    - Truck parking
    - Truck routing
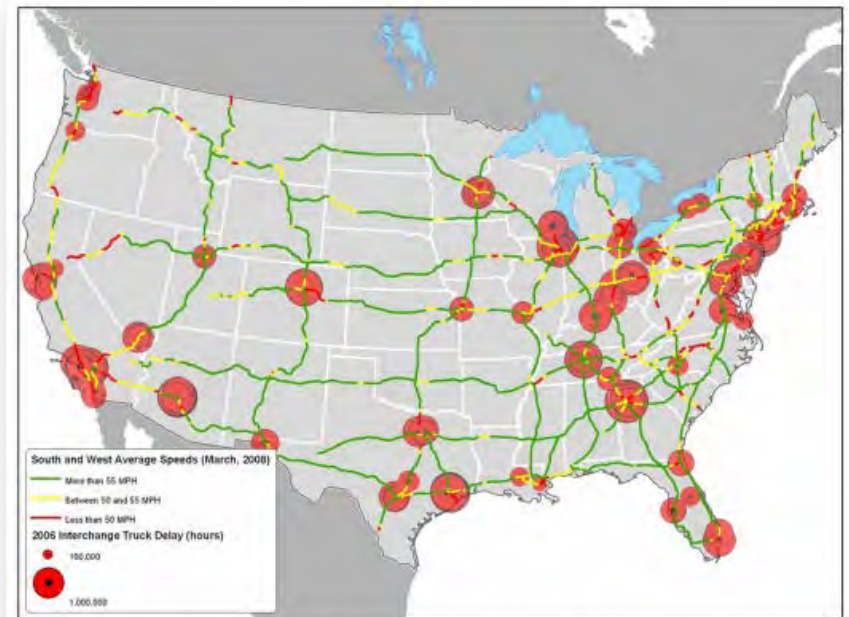- Collaborate with the private sector to improve goods movement

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What can agencies do to improve freight bottlenecks?

- Identify recurring bottlenecks
- Determine their cause(s)
- Prescribe and implement solutions

Constraint Type	Roadway Type	Freight Route
Lane-Drop	Freeway	Intercity
Interchange	Arterial	Urban
Intersection/ Signal	Local-Collector	Intermodal Connector
Roadway Geometry		Truck Access Route
Rail Grade Crossing		
Regulatory Barrier		

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How to Identify Bottlenecks

- FHWA Data (Freight Performance Measurement)
- Vendor Data
- Other reports
- Outreach
- Observation

South and West Average Speeds (March, 2008)
— More than 55 MPH
— Between 50 and 55 MPH
— Less than 50 MPH
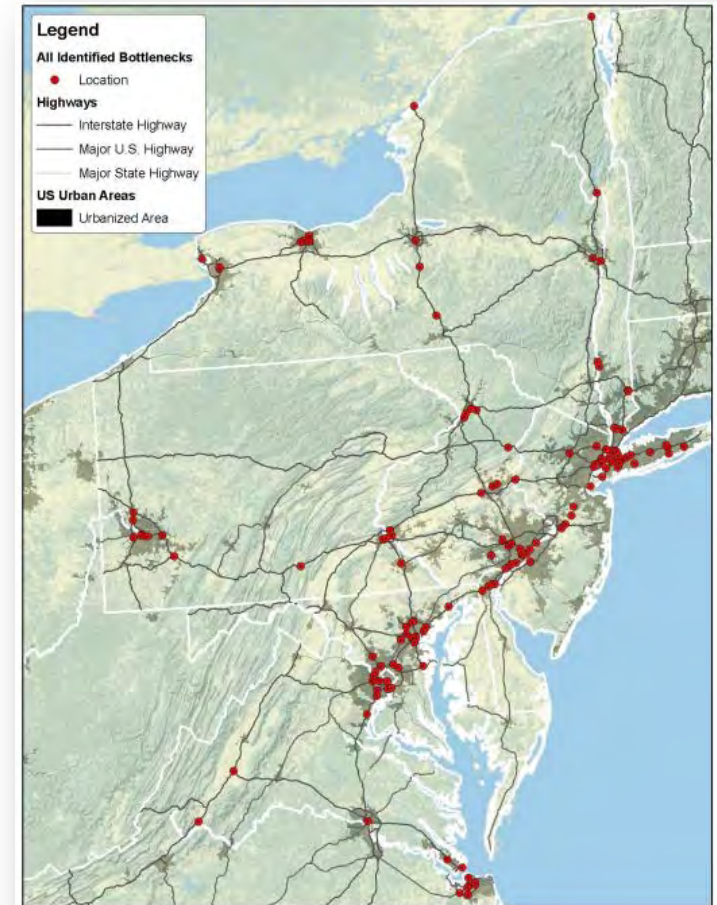2006 Interchange Truck Delay (hours)
• 100,000
• 1,000,000

Source: Federal Highway Administration, *Estimated Cost of Freight Involved in Highway Bottlenecks*, prepared by Cambridge Systematics, Inc., November 12, 2008.

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Truck Bottlenecks
Mid-Atlantic Truck Operations Study

- Estimates the truck-hours of delay of 29 truck bottlenecks
- Estimates the value and tonnage of the commodities caught in the truck bottlenecks
- Recommends actions to reduce truck bottleneck delays

Source: Cambridge Systematics, Inc.

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Truck Bottlenecks
Potential Mitigating Actions

Correct Capacity Deficiencies

- Low capacity left exits
- More through lanes

Shift or Reduce Facility Demand

- Managed lanes
- Multimodal investments

Implement Aggressive Incident Management

- Traveler information systems
- Queue warning system
- Quick clearance

Deploy Portfolio Approaches

- Multimodal strategies (combination of strategies)

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Incident Management
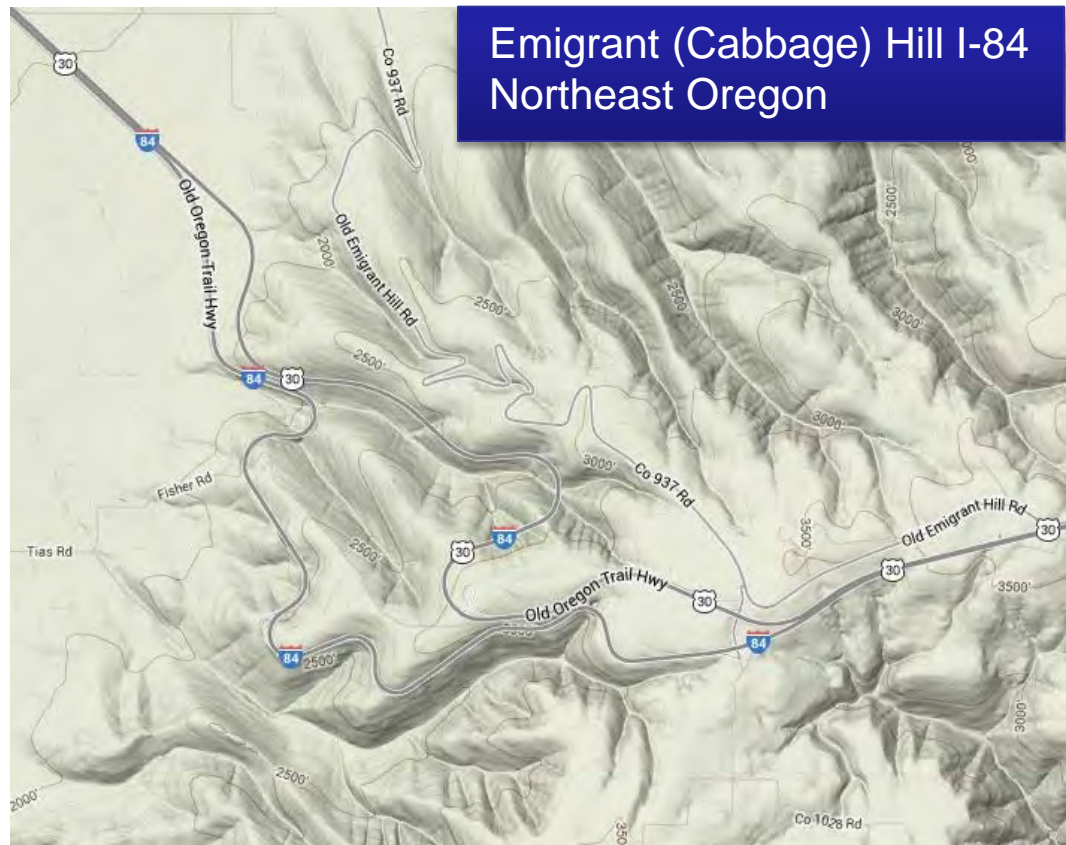## Aggressive Quick Clearance

- Contracts with heavy duty wreckers
  - Access to specialized equipment (e.g. air cushions for overturned trucks)
- Monetary incentives for rapid response
  - Georgia TRIP (Towing and Recovery Incentive Program)
  - Florida RISC (Rapid Incident Scene Clearance)
- Quick clearance laws and procedures

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Safety Hotspots
Oregon Downhill Speed Information System

- 6% Grade
- 2,000' elevation change (9 miles)
- Double hairpin turn
- 51 truck accidents from 2003 to 2007 (31 truck at fault)
- 78% are out of state motor carriers

Emigrant (Cabbage) Hill I-84 Northeast Oregon

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Safety Hotspots
Oregon Downhill Speed Information System

- Upstream WIM relates weight to transponder in truck to issue advisory

- Public information campaign

- 13 percent reduction in crashes

Keeping Freight Informed
WSDOT Trucking and Freight Alert

Short-Term Closures, Incidents, Construction Projects

E-Mail of SMS/Text Message

> **I-90 Both Directions** - Snoqualmie Pass: One hour rock blasting closures scheduled Thursday at 7 p.m. Reopening time depends on the amount of debris that comes down and the slope stability. Crews will close the pass eastbound at Gold Creek, milepost 56, and westbound at Price Creek, milepost 61. No services past exit 53 eastbound and exit 70, westbound during closures. Last Updated: 8/14/2013 8:18 PM

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Keeping Freight Informed
Notify Every Truck (NET)

Goal: Alert drivers when lengthy delays may interrupt their trip

Notification of delays of two hours or more on 10 Interstates

NET Advisory ###: US 60 Roadwork
Tuesday, April 09 2013 12:19
2013-04-09 12:19:28: KYTC requests that all Commercial Motor Vehicles use US 127 as the primary route when connecting from/to Interstate 64 and the Bluegrass Parkway. Major delays are being experienced on US 60 near Lexington due to construction and racing at Keeneland.

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Truck Parking
National Shortage

- Demand exceeds supply at public rest areas and private truck stops
- US DOT, state DOTs, and private sector working to improve information and allocation of spots

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Truck Parking
UDOT Truck Parking Program

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Truck Parking
I-5 Reservations Pilot

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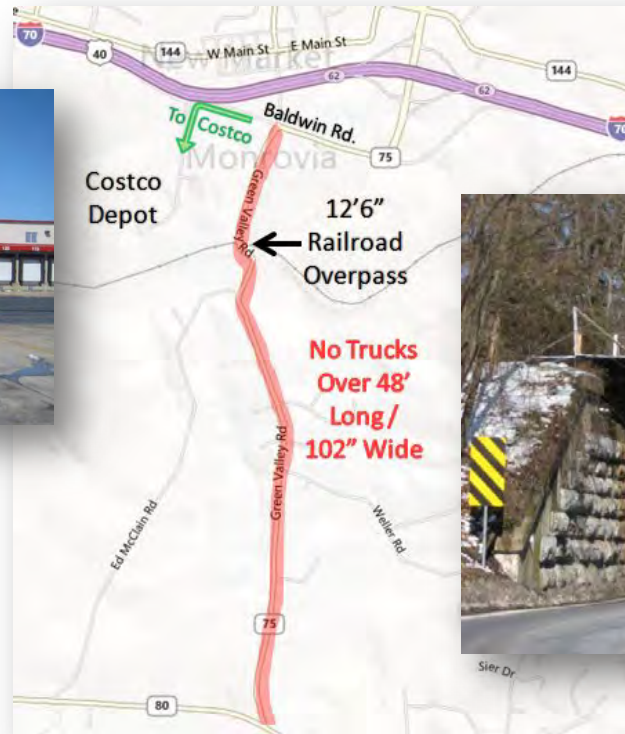
Truck Routing
On-Board Technologies

- Subscription-based navigation technologies warn drivers of upcoming conditions.

- Navigation firms collect data and conduct field reconnaissance to update infrastructure attributes.

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Truck Routing
Maryland Route 75 / CSX Rail Bridge

- MD-75 Near New Market (I-70 Exit 62)
- Major new Costco Distribution Center

Truck Routing
Maryland Route 75 / CSX Rail Bridge

- Improvement Actions:
    - MD SHA installed overhead warning system
        - Reflective tubes strung between two 30' poles provide audible alert to trucks
        - Infrared height detectors
    - Outreach and new map
    - Increased fine to $500
    - 75% reduction in trailer incidents
      (3 per month. vs. 9 prior)

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Connected Trucks

- U.S. DOT Safety Pilot Model Deployment includes trucks (Fall 2012 to Fall 2013)

- 3 trucks integrated with wireless crash warning devices

- Driver clinics with a cross section of commercial drivers. that will be part of separate truck driver clinics.

- Closed-course environment

ITS Mobility Applications for Freight Operations

- U.S. DOT Dynamic Mobility Applications (DMA)
  - Research to identify promising ITS applications which leverage multi-source wireless data streams drawn from connected travelers, vehicles, and infrastructure.
  - *Transformational impact by enabling dynamic, real-time decision making for transportation system users and managers*
- Freight Advanced Traveler Information System (FRATIS) is a bundle supporting goods movement

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FRATIS
Applications

|	

1. Freight Real-Time Traveler Information with Performance Measures	• Provides traveler information to freight operators and drivers:
	     • real-time travel estimates with route guidance to freight facilities,
	     • basic incident alert, road closure and work zone information.
	     • Could include oversize/overweight route restrictions with associated time periods
	     • tailored weather information,
	     • intermodal connection information,
	     • container disposition / shipment schedule updates.
	 • Uses archived information for performance monitoring.

2. Freight Dynamic Route Guidance	• Determine, in real-time, and potentially while a truck is already on a route, the best route (or re-routing, if applicable) between freight facilities for each carrier that subscribes to the service.
3. Drayage Optimization	• Coordinate load movements between freight facilities. Trucks assigned time windows for pickup or drop-off Web-based forum for load matching to reduce empty or unproductive moves

FRATIS
Freight Advanced Traveler Information System
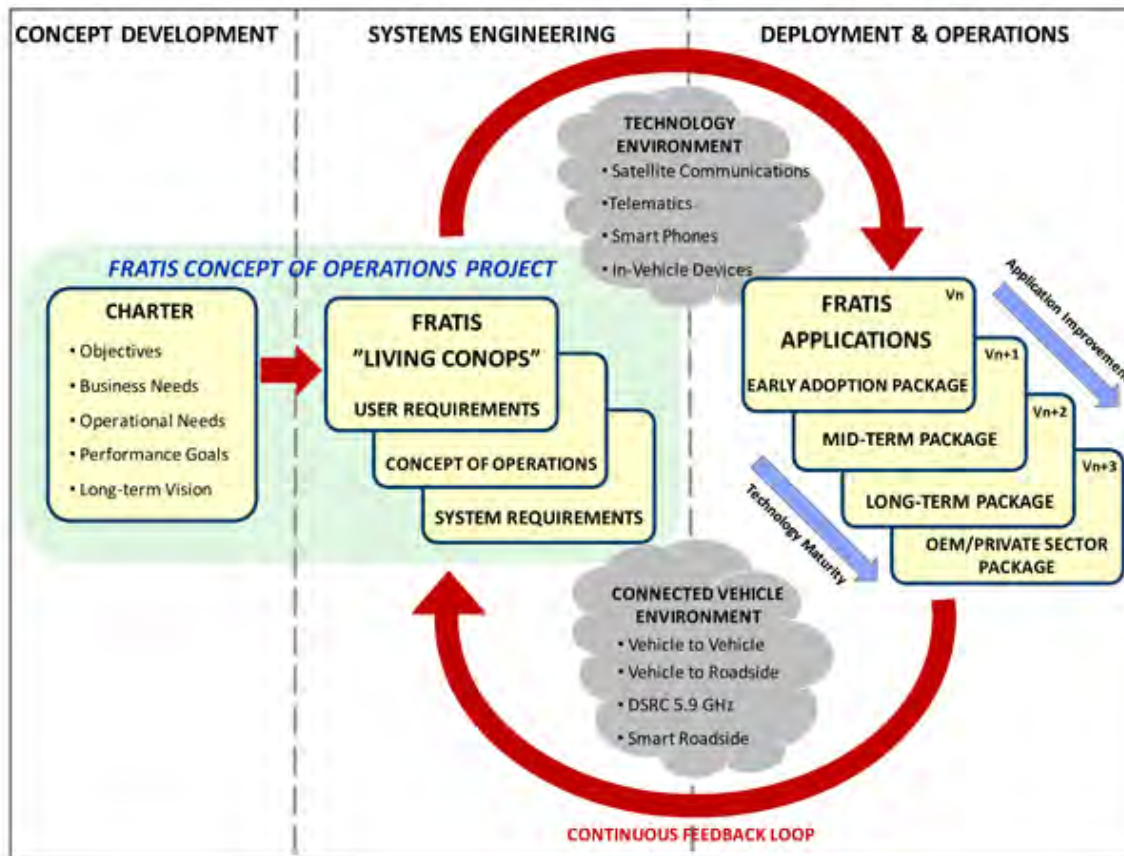
- ConOps to deployment approach to FRATIS
- Eventual OEM and private sector applications
- Broad adoption results in more efficient and green freight system

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Stakeholder Outreach

How to integrate freight considerations into operations?

- MAP-21 Freight Advisory Groups (recommended)
  - Membership includes carriers, shippers, logistics providers
  - Involve ITS / operations staff
- Focus other efforts on matching the issue to the audience

Virginia Freight Transportation Technical Advisory Committee (VFTTC)

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Stakeholder Outreach
Goods Movement Task Force

- Goods Movement Task Force meets quarterly
  - Inform members of upcoming topics and high-interest issues
  - Make it the "place to be" for networking and information
  - Formal process to shape the planning and programming process (e.g. freight projects in the regional plan)

Working Together
Multi-Agency Cooperation

- Goods move across regions
  - Corridor and multi-state groups working together on freight operations
    - I-95 Corridor Coalition (truck bottlenecks, operations)
    - I-80 Winter Operations Coalition (freight, weather)

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Public Agency Role
How can you facilitate goods movement?

- Understand the role of operations in goods movement
- Work with agency staff and private sector to identify "freight" bottlenecks and develop improvement strategies
- Identify and mitigate truck crash hotspots
- Improve freight-specific communications
- Improve truck parking and information on availability
- Get to know emerging technologies and applications
- Outreach with freight stakeholders to identify operations needs and work on improvements

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Questions and Discussion

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