

Virginia Statewide Multimodal Freight Study

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Virginia Department of Transportation



Why a Multimodal Freight Study?

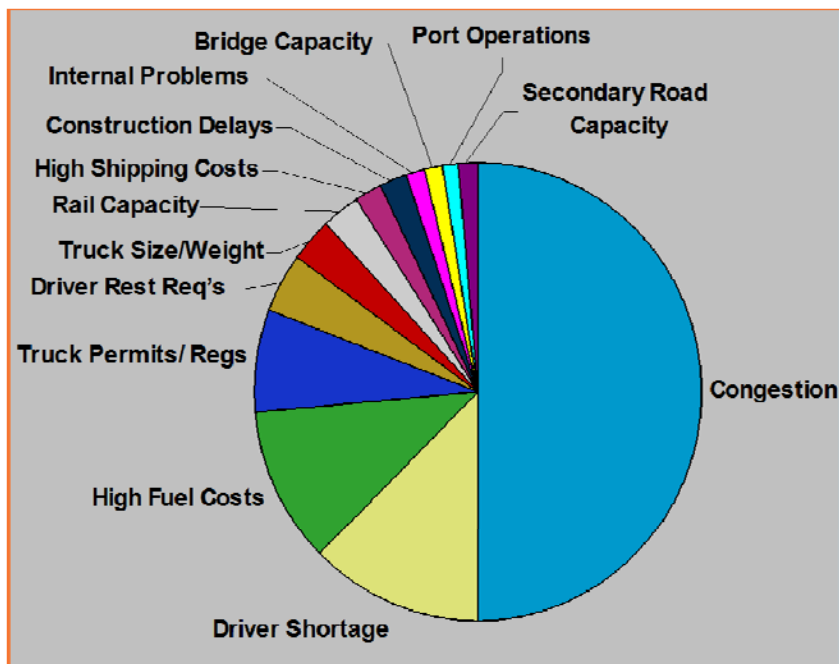
- **Freight is a major contributor to Virginia's economy**
 - Around 50% of economic output (sales, receipts, operating income), 28% of gross state product (value added), and 34% of jobs
 - Agriculture and food, energy and natural resources, construction, chemicals; trucking, port, warehouse; retail
- **Freight is a major consumer of transportation resources**
 - Nation's seventh largest container port; major international air cargo hub; two Class I railroads; two of the largest through-truck corridors (I-95 and I-81) in the US
- **Significant opportunities, chokepoints, and needs**
- **Specific legislative request for I-81 truck-rail diversion study**
- **Conducted over several years (2007-2009) as a cooperative effort of VDOT, VDRPT, VPA, VDOAV**

First Step: Ask the Stakeholders

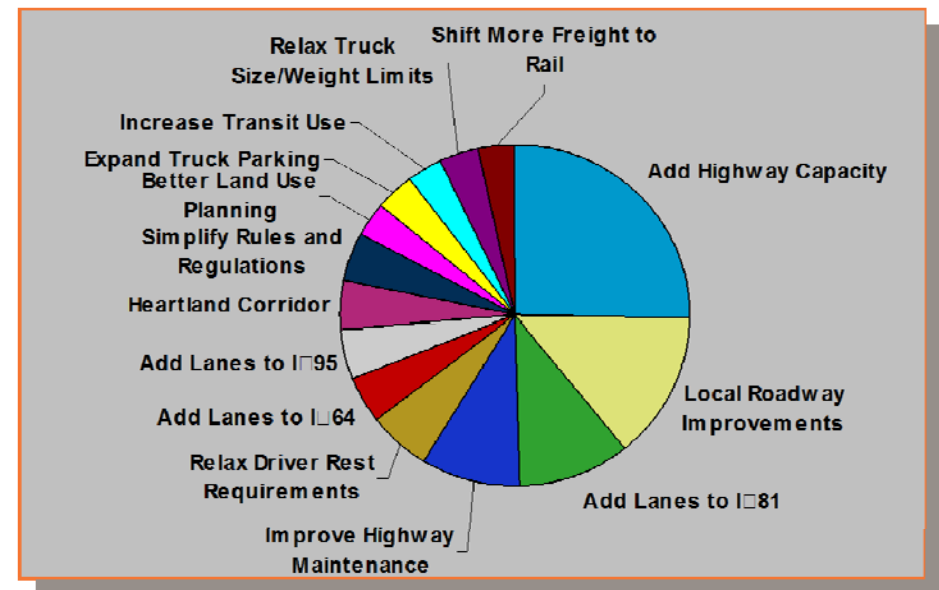
Results of 200 Stakeholder Interviews (2007)

- 63% of respondents said Virginia's system is adequate (86% in Harrisonburg, 25% in Northern Virginia)
- Highway congestion is the number one freight concern, especially in Northern Virginia, Hampton Roads, I-81 Corridor, I-95 Corridor; most recommend adding highway capacity, improving rail options

Reported Problems



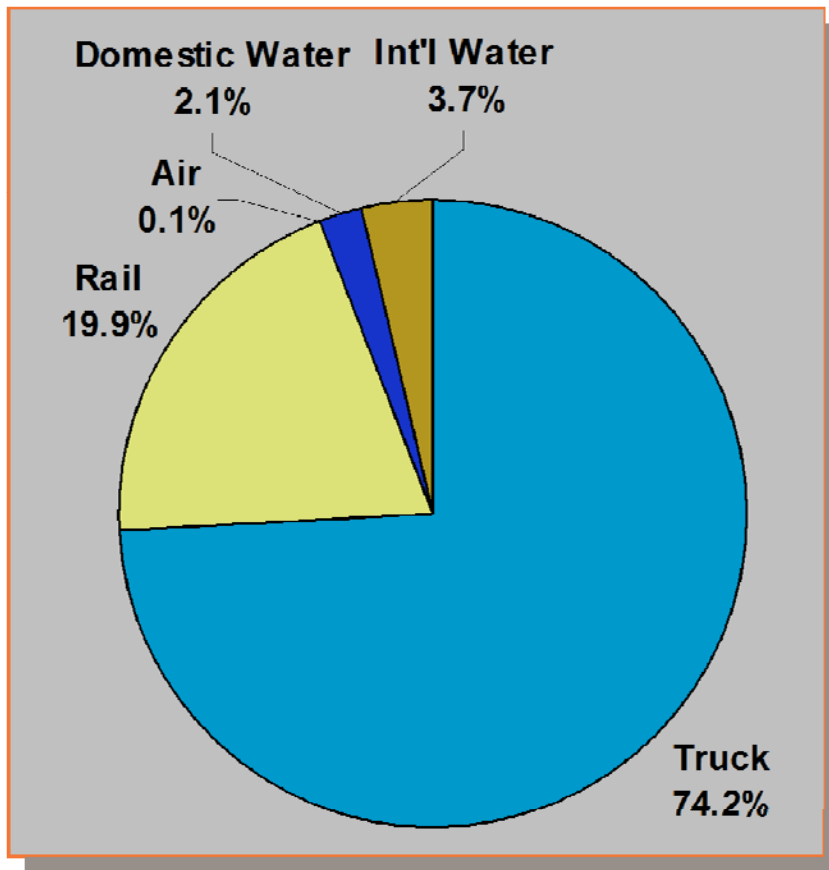
Recommendations



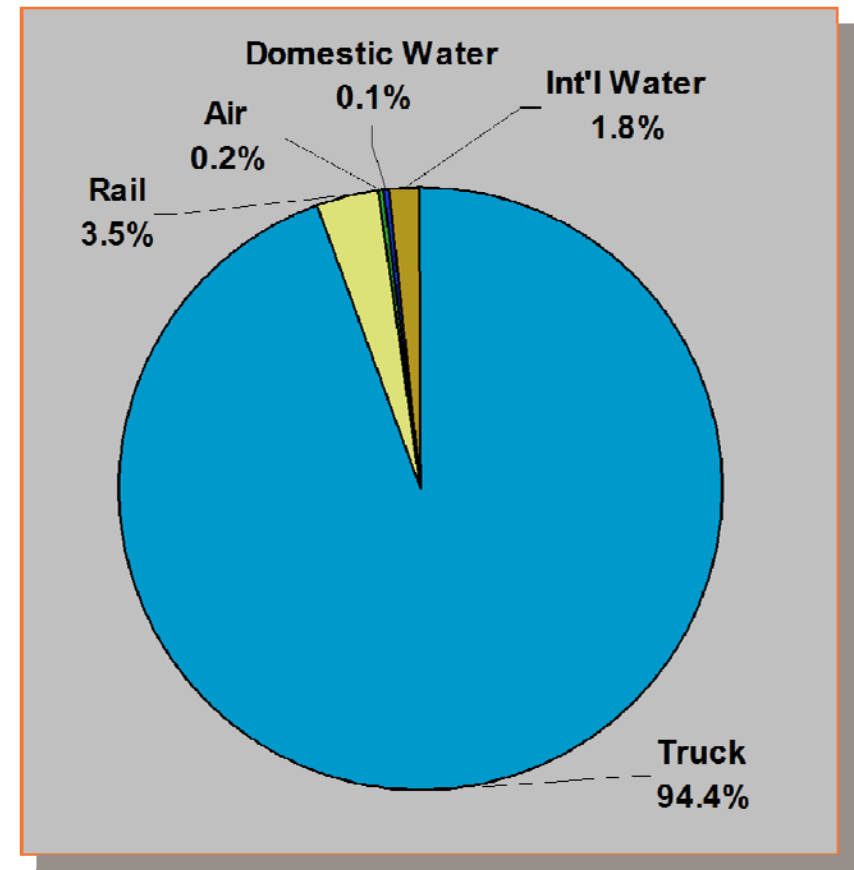
Second Step: Understand Virginia's Freight System

915 million tons worth 2.1 trillion dollars (2004) ...

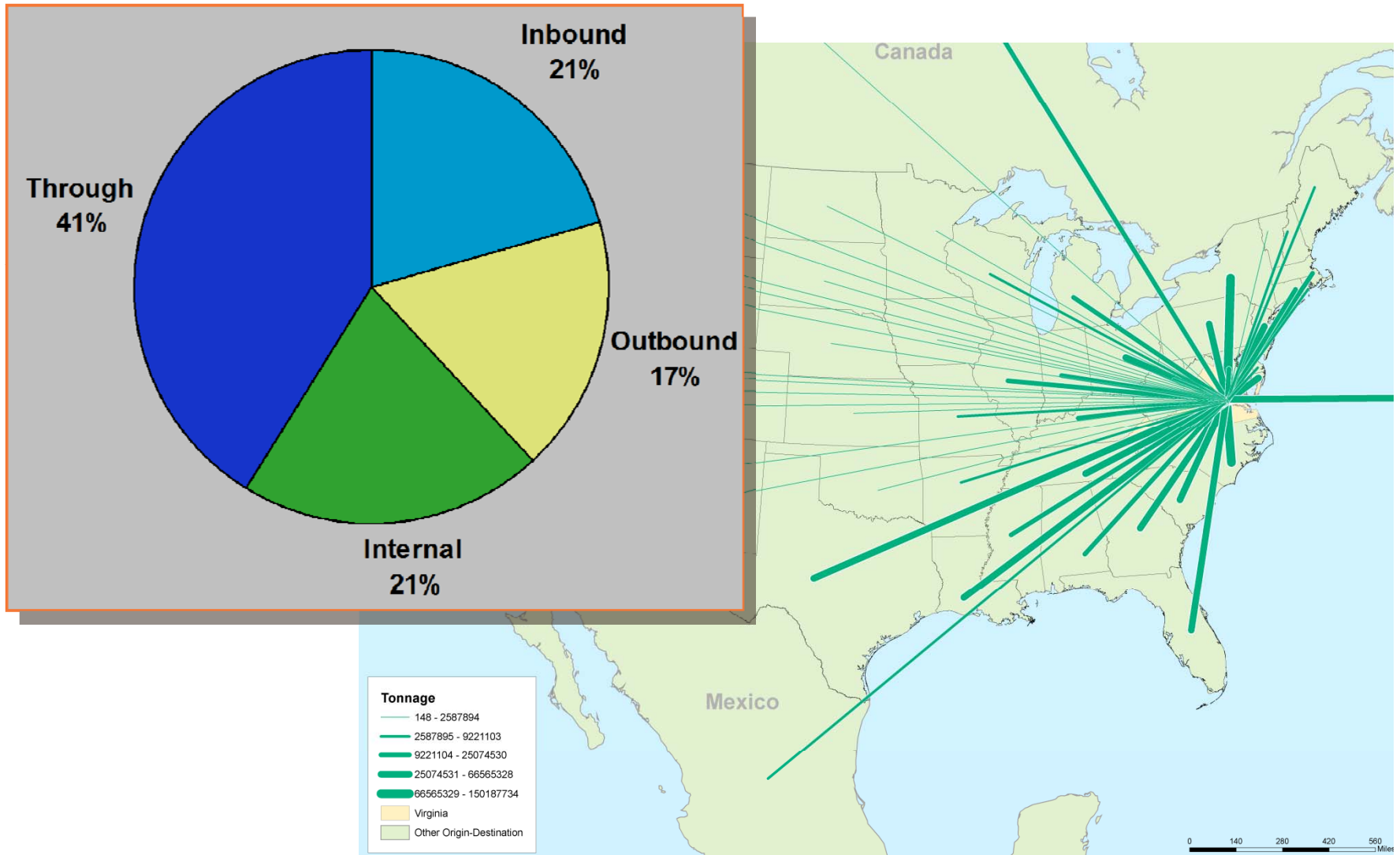
Tons



Value



... and over 40% of tons were pass-through



How Freight Uses Virginia's Roads

• Critical issues in 2007

- Roadway and bridge condition
- Capacity, congestion, speed, and reliability, especially for critical corridors and urban areas
- Safety and emergency response
- Environment (emissions, noise, neighborhoods, fuel consumption)

– Intermodal connectivity

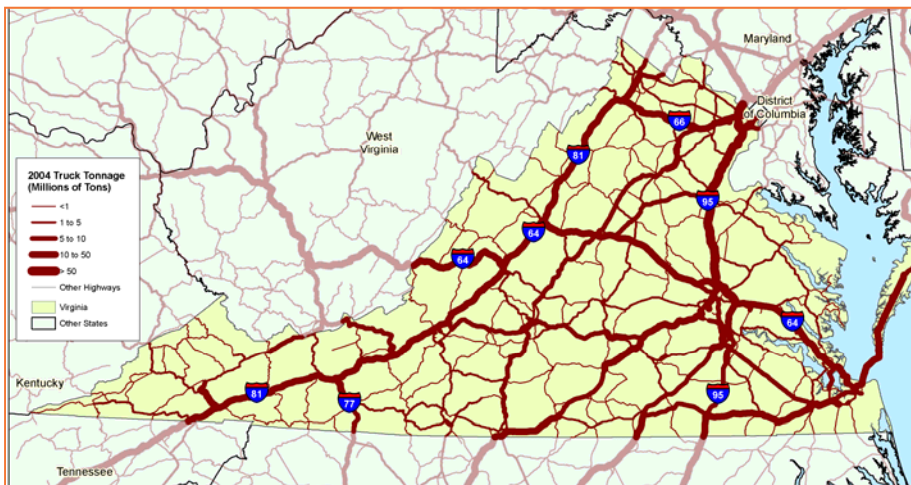
- Truck rest areas, driver shortages
- Advanced two-way information systems
- Mode-shift and time-shift opportunities

• Critical issues by 2035

- How to deal with projected freight growth and growing urban congestion?

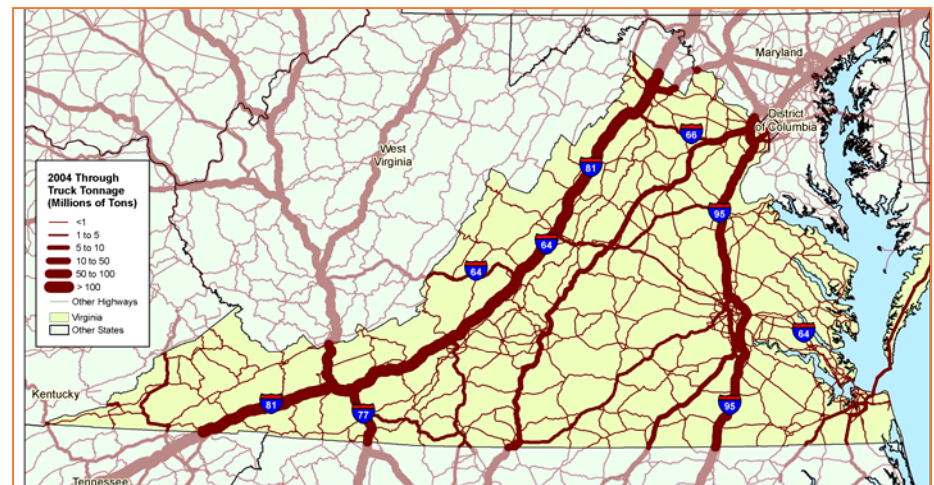
Virginia Tonnage (Inbound, Outbound, Internal)

I-81, I-95, I-64, I-66, I-77, I-85, I-295, US 29,
US 360, US 460, US 58, US 13



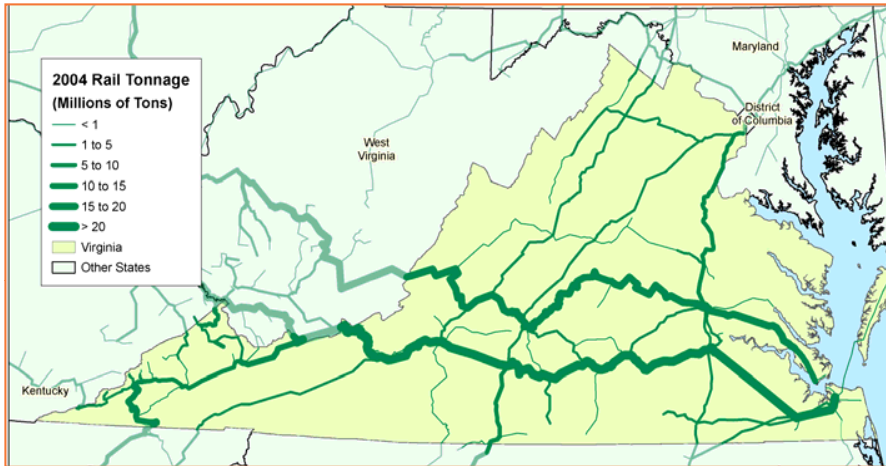
Pass-Through Tonnage

I-81, I-95, I-77, I-85, US 29

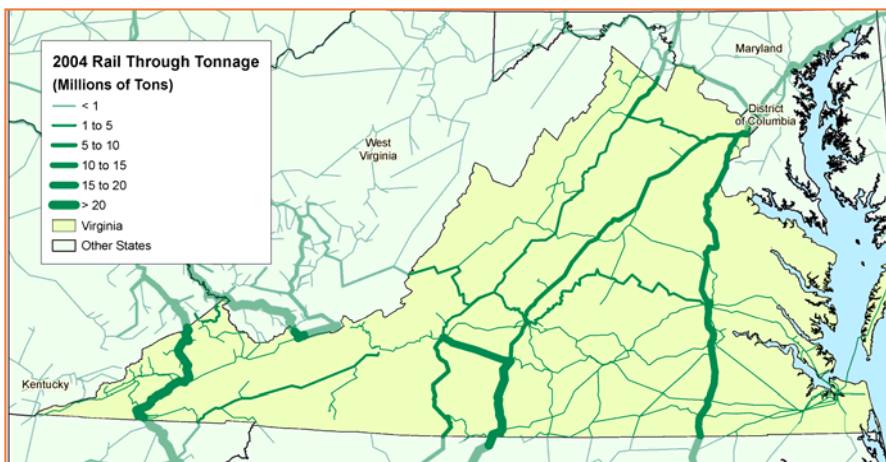


How Freight Uses Virginia's Railroads

Virginia Tonnage (Inbound, Outbound, Internal) NS and CSX east-west lines



Pass-Through Tonnage NS and CSX north-south lines



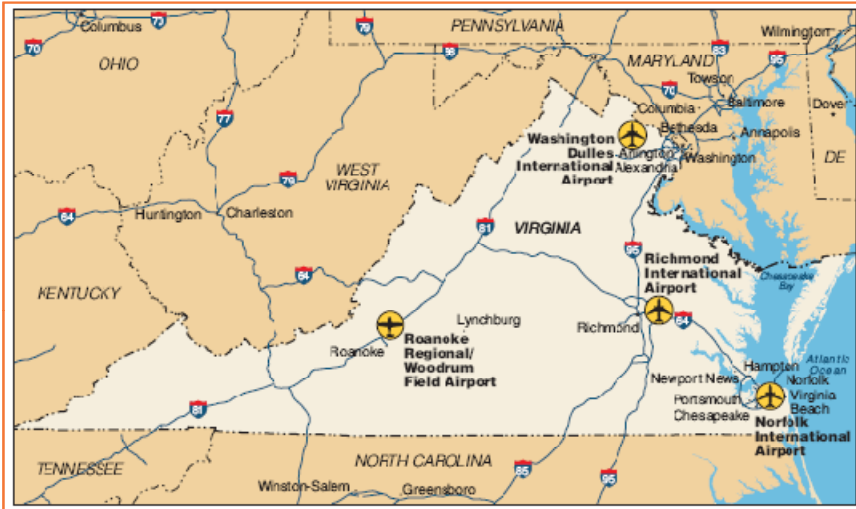
• Critical issues in 2007

- System preservation and maintenance (lines, bridges, tunnels)
- Modernizing historic, aging infrastructure to handle heavier, larger railcars in faster and/or scheduled services
- Port access and quality of service
- Inland ports, intermodal yards, “integrated logistics centers”
- Shared access with passengers
- Diversion of long haul trucks to rail
- Multistate coordination

• Critical issues by 2035

- How to handle natural growth in rail traffic while also using rail to reduce pressures on Virginia's highways?

How Freight Uses Virginia's Airports



- **Critical issues in 2007**

- Air freight through Virginia does not suffer from significant bottlenecks – good facilities, good ground access
- Competition from out of state airports for international service – shippers will truck to JFK, O'Hare because of more frequent wide-body services

- **Critical issues through 2035**

- Facilities and ground access generally good
- How can Virginia be more competitive for international services?

OPERATIONAL CHARACTERISTICS OF VIRGINIA CARGO AIRPORTS

Airport	2005 Total air cargo (tonnes)	Airline Service/Capacity (a)	Number of commercial length runways	Length of longest runway (feet)	Distance to connecting transport (b)	Cargo warehouse (sq. feet)	On-site customs & agriculture inspections	FTZ access	Average customs clearance time required
IAD	303,012	40, 5	3	11,500	14, 35, 60, 50	1,229,128	Yes	Yes	1 hour
RIC	49,614	8, 3	2	9,000	5, 5, 30, 25	142,000	Yes	Yes	2 hours
ORF	31,791	7, 3	2	9,000	5, 5, 5, 5	88,000	No	Yes	2 hours
ROA	14,333	5, 3	2	6,800	5, 10, 150, 20	n.a.	No	No	Unknown

* - Indicates that facilities are on airport property.

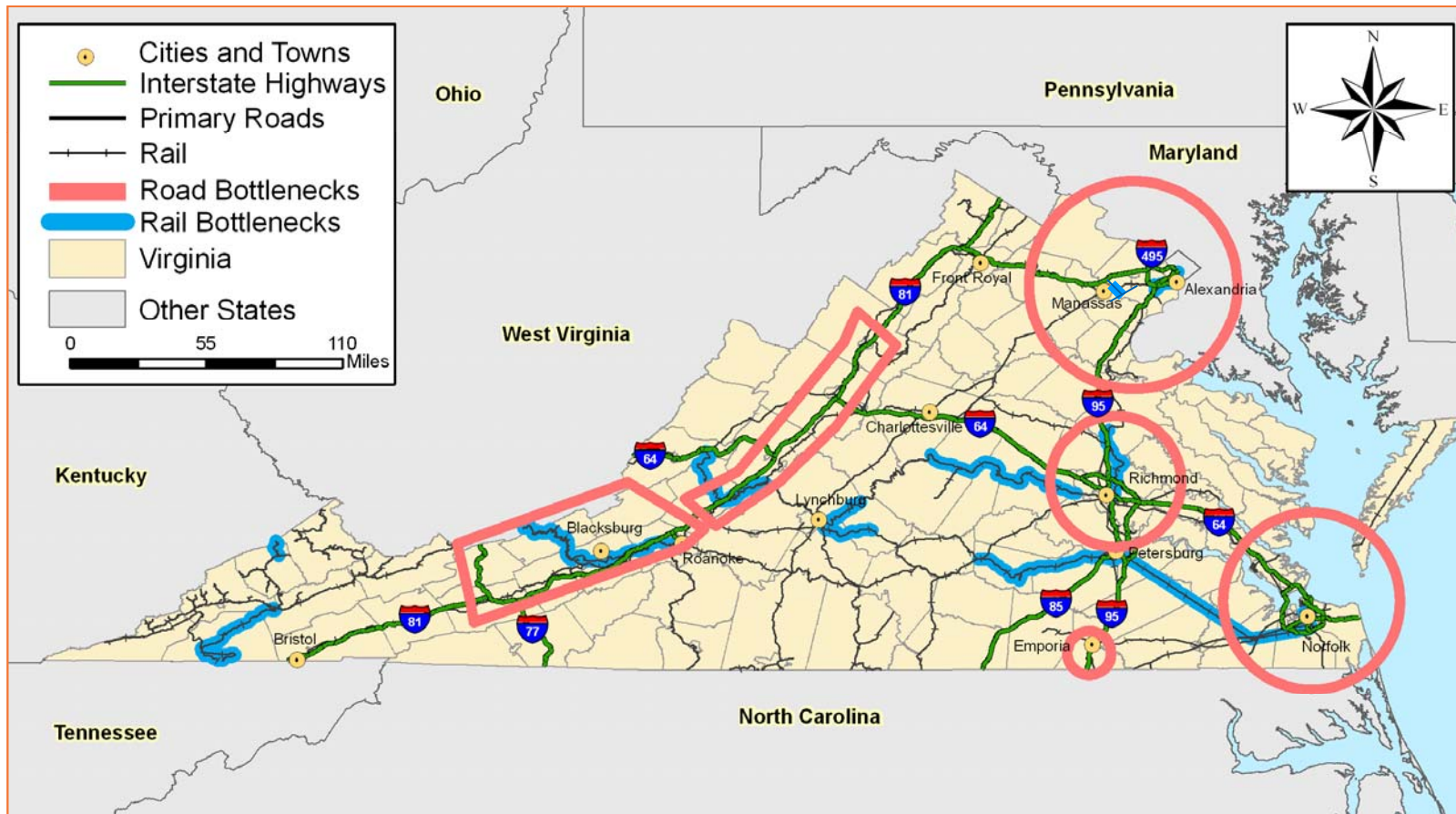
(a) First number is total carriers and second is all-cargo (including integrated) carriers.

(b) Numbers, in order, are distance, in miles, to major highway, truck terminal, major water port (inland), intermodal center.

Source: 2005 Airport Directory, Air Cargo World, 2006.

Where are the Most Pressing Needs?

- Urban congestion – Northern Virginia, Hampton Roads, Richmond, Roanoke
- Critical multimodal corridors – I-95, I-81, I-64
- Port capacity and port access



Programmed Near-Term Projects Descriptions and Costs (2009)

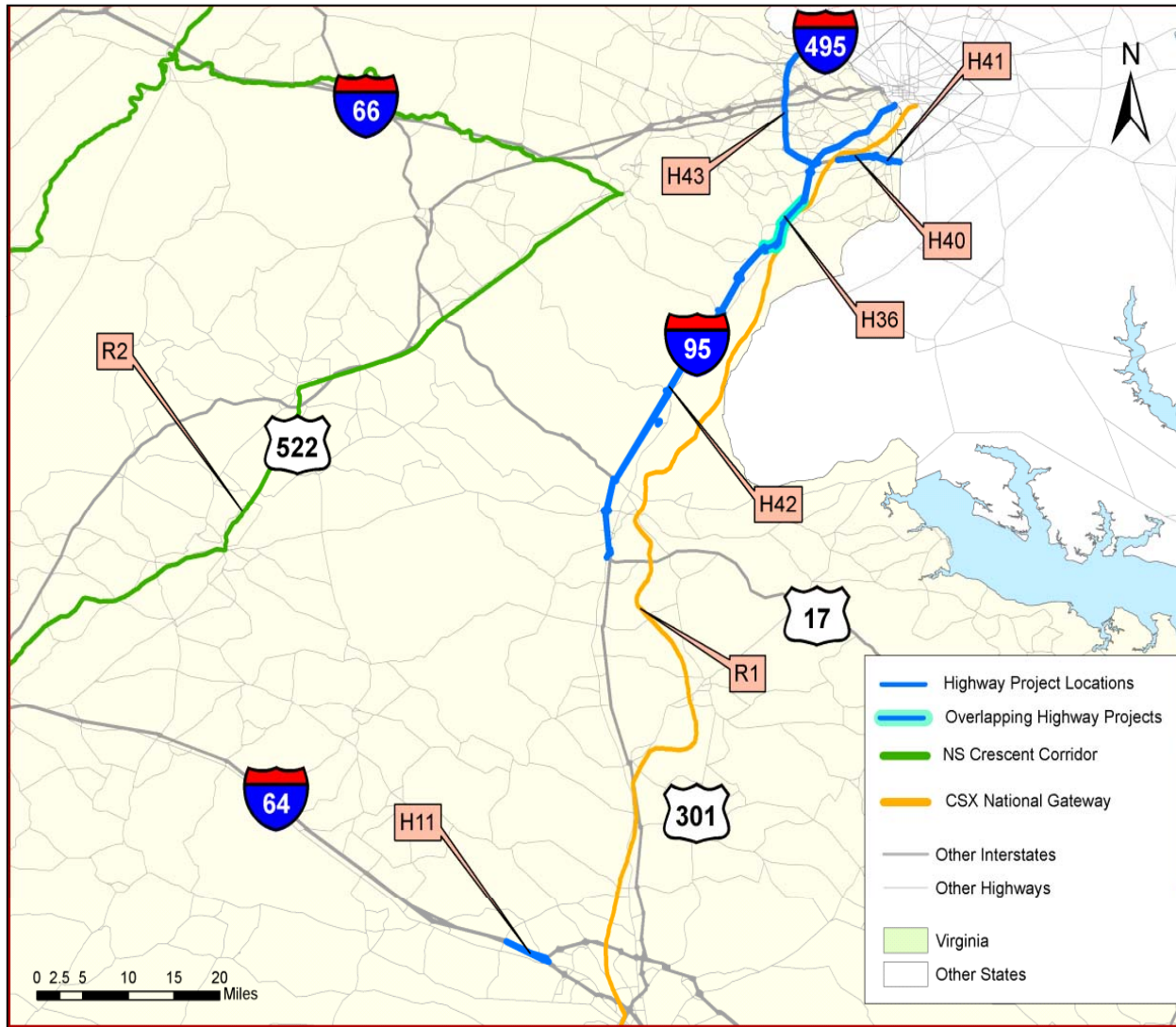
Mode and Number/Sets of Projects	Summary Descriptions	Total Cost (millions)	Commonwealth Cost (millions)
Rail (4)	Heartland Corridor Phase I Crescent Corridor Phase I National Gateway Phase I Rail Access to NIT	\$ 194.0	\$ 65.1
Port (6)	Channel Deepening Terminal Projects (NIT, PMT, NNMT) Craney Island Dike Construction and Engineering/Environmental Studies Terminal Equipment	\$ 1,588.6	\$ 978.3
Highway (18)	I-81 Selected Widening and Climbing Lanes I-64 Selected Widening I-564 Extension to NIT VA 164 Design/Build for APM Terminal Access I-95 Selected Widening I-95/395 BRT and HOT Lanes I-495 HOT Lanes	\$ 3,821.8	\$ 499.9
Total (28)		\$ 5,604.4	\$ 1,543.3

Potential Longer-Term Projects Descriptions and Costs (2009)

Mode and Number/Sets of Projects	Summary Descriptions	Total Cost (millions)	Commonwealth Cost (millions)
Rail (8)	Heartland Corridor Phase II Crescent Corridor Phases II and III, plus Open Technology and Virginia Terminals National Gateway Phases II and III Rail Access to Port (N&P Belt Line, NIT, VA 164 Median Rail to APM, and Craney Island) Shortline Preservation Short-Haul Services to DCs and Inland Ports	\$ 1,219.7	\$ 975.8
Port (6)	Terminal Projects (NIT, PMT) Virginia Inland Port Expansion Craney Island Phases I - IV Terminal Equipment Marine Highway Service Expansion	\$ 2,193.0	\$ 2,193.0
Highway (42)	I-64 Selected Widening and HOV Lanes I-77 Climbing Lanes I-81 Selected Widening I-66 Selected Widening and HOV Lanes I-95 Selected Widening, CD/HOV/HOT Lanes US 17, 19, 58, 460 Selected Widening US 460 Expressway Hampton Roads Third Crossing	\$ 11,219.3	\$ 2,800.6
Total (56)		\$ 14,632.1	\$ 5,969.4

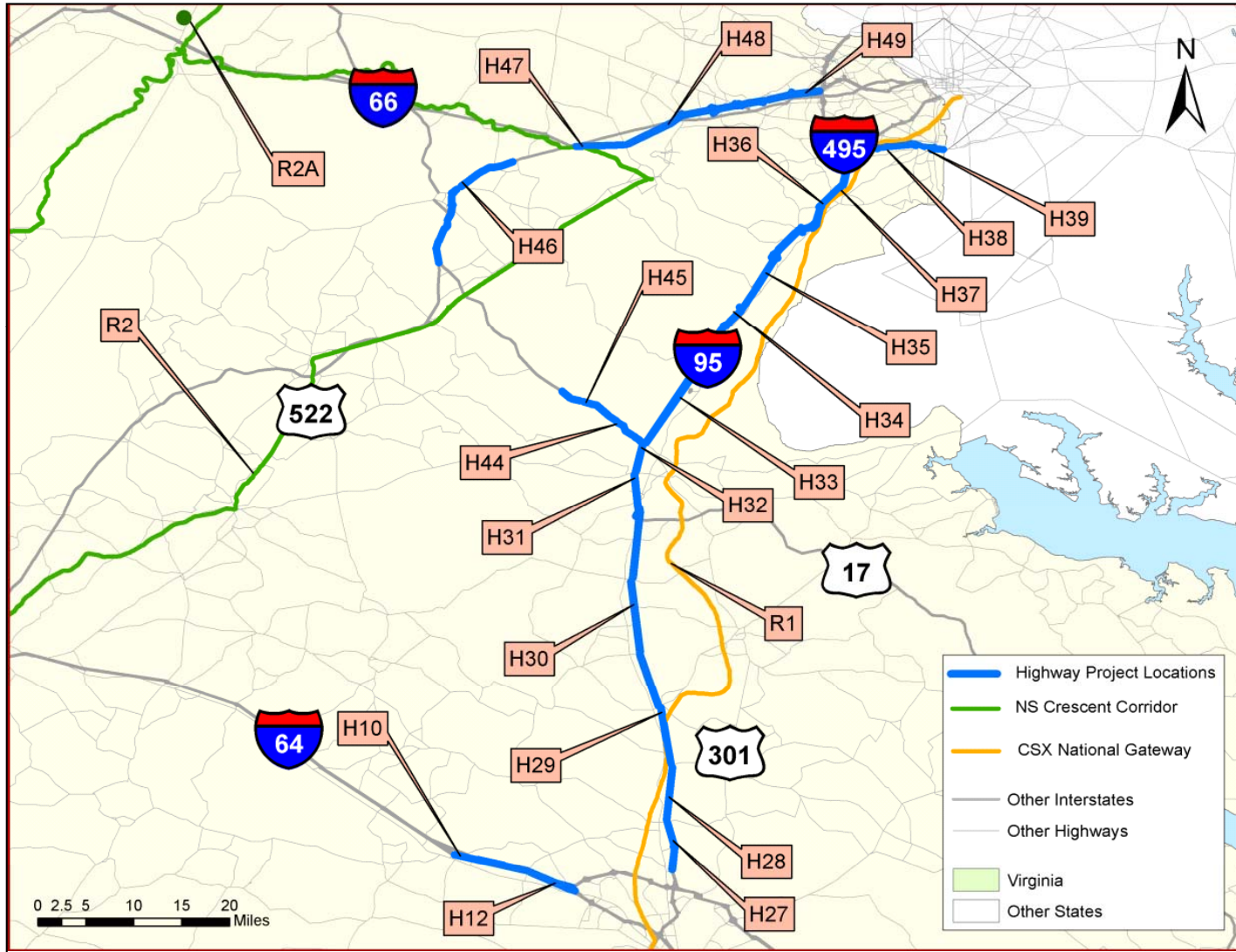
Programmed Near-Term Projects

Project Locations, Northern Virginia (2009)



Potential Longer-Term Projects

Project Locations, Northern Virginia (2009)



Potential Policy Recommendations (2009)

Strategy Area	Strategy Type
Business Information and Outreach	Software Portals for Information Exchange; Education and Outreach
Intelligent Transportation Systems	“Freight 5-1-1”, Height Monitoring, Ramp Metering
Transportation System/ Demand Management	Public Transportation, Dedicated Lanes, Mode Shift (Barge, Long-Haul Rail, Rail Shuttle); Time/Route Shift, Tolling/Pricing
Freight Planning	Truck Routing, Permitting, Compliance; Land Use Coordination; Multistate Planning; Analysis Tools and Data; Organization
Funding	New Funding Sources and Strategies

Freight Program Benefits and Impacts

- For year 2035, compared to a No Action alternative, the recommendations would result in:
 - 30% less truck VMT under congested conditions and 20% less truck vehicle miles of travel (VMT) each day, due primarily to mode shifting
- Between 2009 and 2035, the anticipated VMT reduction produces discounted cumulative savings to Virginia of:
 - \$1.3 billion in avoided pavement maintenance costs
 - \$1.7 billion in avoided crash-related costs
 - \$1.7 billion in avoided emissions costs (after adjusting for increased emissions in modes that substitute for truck)
 - \$6.6 billion in value of time saved by automobiles and trucks on Virginia's highways due to reduced congestion
 - \$6.4 billion in direct shipper cost savings from using lower-cost transportation modes (accruing inside and outside VA)
 - \$5.4 billion in indirect and induced benefits from industries applying the savings to other productive uses (accruing inside and outside VA)

Key Take-Aways

- **Freight Study recommendations would improve Virginia freight mobility and generate significant benefits**
- **Programmed Near-Term Projects are largely funded and in place through modal system plans – rail, port, airport, and highway**
- **Potential Long-Range Projects extend the benefits of the Programmed Near-Term Projects, but at significant cost**
 - **Some of the cost will be addressed through facility revenues, or under PPTAs, or by private freight carriers -- but much of the cost burden may fall to the Commonwealth -- further benefit-cost and prioritization is needed.**
 - **Identified projects will, of course, require appropriate environmental review, engineering studies, etc. for informed decision-making**
- **Many of the Potential Strategies can be implemented in the near-term, and at relatively low cost compared to infrastructure improvements**
 - **The Commonwealth should establish a review process to determine which of these strategies to advance, and how**
- **Opportunity to integrate Freight Study findings into other ongoing local, regional, and statewide planning and programming efforts**