Future of Surface Transportation
Opportunities and Challenges

presented to

Commonwealth of Virginia

Commonwealth Transportation Board
Richmond, Virginia

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Transportation leadership you can trust.

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Agenda

- System Condition and Demands
- Demographics
- Energy and Environment
- System Operations/Management/Safety
- Institutional Change
- Funding
Transportation Bottom Line

System Conditions and Demands
Freight Volumes Growing Faster than Passenger; Bottlenecks Emerging
Community and Land Use Impacts
Cost/Complexity of Expanding Marine, Rail, Truck, Air Terminals
Freight Tons, Value, and Ton-Miles, 2004 United States

Commodity Flow Analysis Summary: Modal and Directional Splits by Weight for Virginia

Total Tonnage by Mode and Direction, 2004

**Mode Split (tonnage)**
- Truck: 74%
- Air: 0%
- Rail: 20%
- Water: 6%

**Tonnage Split (direction)**
- Inbound: 21%
- Outbound: 41%
- Internal: 17%
- Through: 21%
Total Logistics Cost

U.S. Gross Domestic Product (in Percent)

21st Century Information Era/Globalization
NAFTA Freight Regions and Emerging Ports

Principal Mexican Manufacturing Regions

• BAJA
• SONORA – PACIFIC
• CENTRAL MEXICO
• RIO GRANDE VALLEY
• CHIHUAHUA

US Ports of Entry
Maquiladora Clusters
Ports and Emerging Ports
Freight-Highway Traffic (Units, 2005)
Freight-Rail Traffic (Units, 2005)
U.S. Freight Tonnage Forecast
1998 to 2020

With moderate economic growth (3% per year), import / export freight tonnage could double and domestic freight tonnage could increase by about 60%.
Do the truck and rail freight systems have the capacity to handle the growing volume of freight – even if mode shares remain constant?

Do the public benefits of a freight-rail system warrant public initiatives to expand freight capacity?
Truck Movements by Weight: All Directions (In + Out + Intra + Through), 2004
Truck Movements by Weight:
All Directions (In + Out + Intra + Through), 2030
Rail Movements by Weight:
All Directions (In + Out + Intra + Through), 2004
Rail Movements by Weight:
All Directions (In + Out + Intra + Through), 2030
Increasing congestion
Vehicle travel up 78%; road miles increased 1% and lane miles 2% in last 20 years
Annual Congestion Costs
85 Metropolitan Areas

Source: Based on data reported by Texas Transportation Institute (TTI).
Truck Congestion Bottlenecks
U.S. Rail Network Major Choke Points
Ports and Growth

- Freight forecast model developed for Port Master Plan
- Linkage of port growth and warehouse/distribution center growth
Ports and Rail/Highway Connections

- Bottlenecks and solutions
  - International gateways
  - National corridors
  - Local connectors
Other Issues and Challenges

- Demographics
- Energy and the Environment
- System Operations and Safety
- Institutional Change
- Funding
Demographics

- Population Growth
- Aging
- Migration
Census Region Population Forecast 2005-2030

- West: 35.9% increase by 2030
- Midwest: 6.8% increase by 2030
- South: 34% increase by 2030
- Northeast: 5.2% increase by 2030
Energy and Environment

- Shift from project impacts to systems (ecosystems) analysis
- Emerging Issues: air toxics
- Transportation/LU and public health
- Energy: price, alternative fuels, implications for finance strategies and environmental policy…
- Climate Change
Highways Potentially Vulnerable to Sea Level Rise (DOT / USGS Gulf Coast Study – preliminary findings)

Baseline (Present Day)

4 Feet of Sea Level Rise

Source: Cambridge Systematics analysis of U.S. DOT Data.
Hurricane Katrina Damage to Highway 90 at Bay St. Louis, MS

System Operations and Safety

- Imperative to maximize efficiency of existing system will continue to increase

- VII, Smart Roadside, open-road tolling and pricing, real time traffic management and…..even signal timing!

- Security vs. capacity at international gateways

- Safety: vehicle and roadside technology and the engineering “E” a given; political will to match international progress with all the “E’s” unclear
Institutional Change

- Shifting roles federal/state/regional
- Public and private roles and experimentation
- State CEO’s and the “Mobility Corporation”
- Recognizing need for stronger partnerships
- Skill building and retention
Funding

Is There Really a Case for More Funding?

At What Level of Government Can the Case be Made?
National Funding Gap

Gap = $50 Billion per year through 2015

Gap = $107 Billion per year through 2015

Year-of-Expenditure Dollars (in Billions)
Estimated Highway and Transit Program Levels and HTF Account Balances
Assuming Level Funding After 2009

Dollars (in Billions)

Highway Program
Transit Program
Transit Balance
Highway Balance

The Case for Investments is Strong

- Transportation as key economic driver
- Implications of new logistics and globalization
- Trends in system conditions and demand forecasts
- Historic rates of return 30% → 15%
- Cost of deferred maintenance well known
Where’s the Money?

- Federal/National
  - No system vision / goals to replace interstate
  - Donor / donee debate
  - Earmarking
  - Potential shifts in public / private roles
  - Impact of the Commission
Where’s the Money? (continued)

- **State / Regional / Local**
  - 26 of 34 (76%) transportation funding ballot initiatives passed in November 2004
  - At least ten states actively pursuing significant increases
  - Performance and accountability are key themes
  - Addressing freight and national economic issues difficult at this level

- **Wide range of mechanisms being examined including tolling and PPP’s**

- **Transition from fuel tax to other mechanisms possible/likely in a 15/20 year horizon**
Conclusions

- Passenger and freight demands on the transportation system will continue to grow
- West and south, gateways and bottlenecks on all modes will be key focus
- Demographic, environmental and energy issues will affect the strategies that will be effective
- Opportunities created by technology innovation will cut across many issues including system operations, safety, financing strategies, and security
- Strong national leadership will continue to be a critical element though significant institutional change is likely