Integrating Freight in the Transportation Planning Process

Executive Summary

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Today’s Presentation

- *Introduction to freight transportation*

- Importance of freight planning

- Freight trends

- Freight challenges

- Freight planning success factors
# Introduction to Freight Transportation

## Freight vs. Passenger Transportation

<table>
<thead>
<tr>
<th>Passenger Movements</th>
<th>Freight Movements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Movements often begin and end within the same jurisdiction</td>
<td>Complex chain of interregional or international trips</td>
</tr>
<tr>
<td>Less infrastructure impact</td>
<td>Heavier vehicles have greater infrastructure impacts</td>
</tr>
<tr>
<td>Less intermodal in nature</td>
<td>Often more intermodal</td>
</tr>
</tbody>
</table>
## Introduction to Freight Transportation

### Freight vs. Passenger Planning

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<thead>
<tr>
<th>Passenger Planning</th>
<th>Freight Planning</th>
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<tbody>
<tr>
<td>▪ Can be handled within a single jurisdiction</td>
<td>▪ Multi-jurisdictional cooperation required</td>
</tr>
<tr>
<td>▪ Trip generation and attractions well understood and predicted</td>
<td>▪ Freight movements sensitive to market forces; difficult to forecast demand</td>
</tr>
<tr>
<td>▪ Plenty of publicly available data</td>
<td>▪ Fewer sources of publicly available data</td>
</tr>
<tr>
<td>▪ Well-defined funding and financing sources and strategies</td>
<td>▪ Often requires innovative funding and financing sources/strategies</td>
</tr>
<tr>
<td>▪ Stakeholders easily identified</td>
<td>▪ Freight stakeholders harder to identify and more challenging to engage</td>
</tr>
</tbody>
</table>
Introduction to Freight Transportation

Freight Stakeholders

- Public Sector
  - Federal, state, local transportation planning agencies
  - Economic development and trade organizations
  - Federal, state, local law enforcement

- Private Sector
  - Shippers and receivers of freight (businesses)
  - Freight transportation service providers
  - Owners and operators of freight facilities
  - Neighborhoods and communities affected by freight transportation
Introduction to Freight Transportation
Freight Planning Perspectives
Today’s Presentation

- Introduction to freight transportation
- *Importance of freight planning*
- Freight trends
- Freight challenges
- Freight planning success factors
Importance of Freight Planning
Federal Guidelines for Freight Planning

- Intermodal Surface Transportation Efficiency Act (ISTEA)
  - Added freight as a factor for states and MPOs to consider during their transportation planning efforts

- Transportation Equity Act for the 21st Century (TEA-21)
  - Encouraged states and MPOs to include shippers and freight service providers in the transportation planning process

- Safe, Accountable, Flexible, and Efficient Transportation Equity Act of the 21st Century (SAFETEA)
  - Proposes enhancement of the freight planning emphasis of ISTEA and TEA-21
Importance of Freight Planning
Freight Investments lead to Increased Productivity

- Transportation investments lead to increased productivity
  - Florida
    - Freight transportation investments generate a 35 percent annual rate of return in terms of GSP growth
  - Maryland
    - Highway improvements responsible for 10 percent of state’s productivity growth 1982-1996
  - Wisconsin
    - Every $1 of highway investment leads to $2 of benefits to passengers; $1 of benefits to freight movements
Efficient freight transportation system attracts new businesses, particularly manufacturing industries.
Importance of Freight Planning
Freight Movements have National Security Impacts

- Border crossing and gateway operations
- Shipments of hazardous materials
Importance of Freight Planning
Freight Contributes to Overall Quality of Life

- Move goods from farms and factories to consumers
- Supply fuel to power plants
- Deliver packages and mail to your front door
Today’s Presentation

- Introduction to freight transportation
- Importance of freight planning
- Freight trends
- Freight challenges
- Freight planning success factors
Freight Trends
Freight Movements Today
Freight Trends
Anticipated Growth in Freight Traffic 1998 to 2020

Freight Tons (in Billions)

- Domestic
- Import/Export

1998 2010 2020
Freight Trends
System Mileage and Capacity

System Miles

- Air
- Highway
- Class I Rail
- Navigation Channel
- Pipeline

1975
2001
Freight Trends
Shift from a Manufacturing to a Service Economy

Paid Employees (in Millions)

Contribution to GDP (in Trillions of Dollars)

1987  2001

Services  Manufacturing

Federal Highway Administration
**Freight Trends**

High-Value Added Industries Require Specialized Transport

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**Example**
- Microelectronics
- Aerospace

**Transport Needs**
- Air Freight
- Less-Than-Truckload

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- High Value-Added
- Basic Industries
  - Agriculture Goods, Coal, Phosphates
  - Rail Truckload
  - Water

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Federal Highway Administration
### Freight Trends
#### Changing Logistics Systems

<table>
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<tr>
<th>Manufacturing-Based Economy</th>
<th>Service-Based Economy</th>
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<tbody>
<tr>
<td>▪ Regularly scheduled flows of bulk products</td>
<td>▪ Time-sensitive flows of customized products (just-in-time delivery)</td>
</tr>
<tr>
<td>▪ Greater reliance on maintaining inventory levels</td>
<td>▪ Greater reliance on information; transportation vehicles act as “rolling warehouses”</td>
</tr>
<tr>
<td>▪ More long-haul movements</td>
<td>▪ More frequent, shorter movements</td>
</tr>
<tr>
<td>▪ More resistant to transportation system delays</td>
<td>▪ Less resistant to delays; requires reliable transportation system</td>
</tr>
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Freight Trends
Balance Between Efficiency and Security

- Post-September 11 cargo inspections more frequent and intensive

- Increasing reliance on pre-clearance of known shippers and closer scrutiny of chains of custody

- Increasing use of ITS and other technologies to verify cargo, vehicle, driver
**Freight Trends**

**Freight Security Agencies**

**Transportation Agencies**
- Transportation Security Administration
- Federal Motor Carrier Safety Administration
- Research and Special Programs Administration (RSPA)
- State DOTs
- State Registries of Motor Vehicles

**Law Enforcement Agencies**
- Bureau of Customs and Border Protection (CBP)
- Drug Enforcement Administration (DEA)
- Federal Bureau of Investigation (FBI)
- U.S. Marshals
- Bureau of Alcohol, Tobacco, and Firearms (ATF)
- Coast Guard
- Local police
Today’s Presentation

- Introduction to freight transportation
- Importance of freight planning
- Freight trends
- **Freight challenges**
- Freight planning success factors
Freight System Challenges
Roadway Infrastructure

- Low bridge clearances
- Pavement deterioration
- Inadequate turning radii for trucks
- Insufficient bridge weight limits
Freight System Challenges

Rail Infrastructure

- Rail system designed and built in the 19th century often inadequate for 21st century rail traffic
Freight System Challenges
Port Infrastructure

- New generation of “mega” containerships will have major infrastructure impacts, requiring
  - Deeper channels
  - Larger berths
  - Additional land for container storage

- Locks and dams on U.S. waterway system are becoming obsolete
Freight System Challenges
Border Crossing Infrastructure

- Border crossing facilities becoming obsolete
- Post-September 11 security requirements exacerbating border crossing delays
Freight System Challenges

Operations
Freight System Challenges
Operations
Freight System Challenges
Worsening Inter-City Highway Congestion (2000)
Freight System Challenges
Worsening Inter-City Highway Congestion (2020)
Freight System Challenges
Worsening Metropolitan Congestion

TTI Travel Rate Index

- Very Large Metro Areas
- Average 68 Metro Area
- Large Metro Areas
- Medium Metro Areas
- Small Metro Areas
Freight System Challenges
Rail Operations

- Freight rail shares right-of-way with passenger rail in many areas

- Passenger rail operations generally take precedence over freight rail operations
Freight System Challenges
Port and Intermodal Access

- Increasing freight volumes and worsening highway congestion cause landside access problems at ports, airports, and intermodal terminals
Freight System Challenges
Overall System Reliability

- System users are placing more emphasis on reliability and predictability of transportation services

- Economic development becoming more dependent on high quality, multimodal transportation services
Freight Challenges
Institutional and Policy Challenges

- **Freight Planning Requirements**
  - Little specific guidance as to how or to what extent states and MPOs should consider freight within transportation planning process

- **Funding**
  - Highway-related freight improvement projects are usually eligible for federal or state funding, but intermodal projects often shoehorned into other programs

- **Data**
  - Publicly available data often lack industry detail due to privacy concerns, but privately-maintained data sets often costly and require extensive analysis
Freight Challenges
Institutional and Policy Challenges

- Multi-Jurisdictional Planning
  - Multi-jurisdictional coalitions important forums for regional freight planning, but find it difficult to actually implement improvement projects

- Inter and Intra-Agency Coordination
  - Many state DOTs are organized modally, which hinders cross-modal communication and leads to fragmented freight planning
  - Some state DOTs and MPOs have very little influence over non-highway modes

- Freight Security
  - Many states/MPOs unclear of role in addressing freight security
Today’s Presentation

- Introduction to freight transportation
- Importance of freight planning
- Freight trends
- Freight challenges
- *Freight planning success factors*
Freight Planning
Factors of Success

- Development of data and tools
  - Good freight planning begins with good freight data
  - Freight analytical tools can be complex, but many inexpensive, reliable tools exist
  - Data can come from many different public and private sources

- Networking with stakeholders
  - Understand who the stakeholders are; work to build trust, define policy, develop plans, implement projects
Freight Planning
Factors of Success

- **Education and outreach efforts**
  
  - Decision-makers and general public may not realize the importance of freight and of integrating freight movements into the transportation planning process
  
  - Some DOT and MPO professional staff lack knowledge and expertise in freight issues

- **Intra- and inter-agency coordination**
  
  - Most freight projects involve several agencies – both within and outside of transportation
**Freight Planning**

*Factors of Success*

- **Linking freight to existing statewide/metropolitan long-range planning processes**
  - Treating freight with same level of emphasis as passenger movements facilitates long-term commitment to freight planning

- **Project definition, prioritization, and delivery**
  - Project delivery legitimizes freight planning programs and helps maintain momentum
  - Innovative project development and funding methods are critical
Freight Planning
Getting Started

- FHWA Freight Professional Development Program
  - Existing and future training opportunities
  - Technical assistance
  - Freight resource library
  - University-based freight and logistics programs
Freight Planning
Getting Started

- Freight Peer-to-Peer (P2P) program
- “Talking Freight” seminar series
- Freight Analysis Framework (FAF) Toolkit
- NHI Training Opportunities
  - Course 139001, Integrating Freight in the Transportation Planning Process
  - Course 139002, Freight Forecasting in Transportation Planning
- FHWA Freight Planning Website
  - www.fhwa.dot.gov/freightplanning/index.htm
Integrating Freight in the Transportation Planning Process

For Additional Information Contact:

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