Freight Transportation Planning in Rapidly Changing World

Bruce Lambert
Executive Director
Institute for Trade and Transportation Studies
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Outline

- Does Freight Matter to Arkansas?
- Globalization and Arkansas
- The Panama Canal Expansion
- Freight and Congestion Issues
- What Logistics Opportunities exist for Arkansas?
- Summary
Does Freight Matter to Arkansas?
How Does One Look at Freight Activity?

- Inventory Functions
- Engineering
- Operational Reliability
- Economical and Financial
- Safety and Security
- Markets
- Jobs
Top Industries in the State

Source: Chase Bank
Total Freight Transportation in Arkansas by Direction - 2008

**Tons (in millions)**
- Within State: 138 (36%)
- From State: 120 (32%)
- To State: 121 (32%)

**Dollars (in millions)**
- Within State: 18,282 (41%)
- From State: 16,915 (38%)
- To State: 9,350 (21%)

Source: Freight Analysis Framework, FWHA
### Railroads in Arkansas

- **25 railroads**
- **2780 miles**
- **2008= 9.1 million equivalent trucks**

#### Rail Traffic Originated

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Total Tons</th>
<th>Total Carloads</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stone, gravel, sand</td>
<td>6.6 million</td>
<td>63,550 carloads</td>
</tr>
<tr>
<td>Iron and steel</td>
<td>2.1 million</td>
<td>24,980 carloads</td>
</tr>
<tr>
<td>Food products</td>
<td>1.9 million</td>
<td>24,760 carloads</td>
</tr>
<tr>
<td>Lumber and wood</td>
<td>1.8 million</td>
<td>21,320 carloads</td>
</tr>
<tr>
<td>Concrete, gypsum, etc. pr.</td>
<td>1.3 million</td>
<td>13,245 carloads</td>
</tr>
<tr>
<td>Intermodal</td>
<td>1.2 million</td>
<td>68,520 carloads</td>
</tr>
<tr>
<td>Pulp and paper</td>
<td>0.9 million</td>
<td>12,400 carloads</td>
</tr>
<tr>
<td>Chemicals</td>
<td>0.8 million</td>
<td>5,892 carloads</td>
</tr>
<tr>
<td><strong>All other</strong></td>
<td>2.9 million</td>
<td>116,572 carloads</td>
</tr>
</tbody>
</table>

#### Rail Traffic Terminated

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Total Tons</th>
<th>Total Carloads</th>
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</thead>
<tbody>
<tr>
<td>Coal</td>
<td>14 million</td>
<td>116,988 carloads</td>
</tr>
<tr>
<td>Farm products</td>
<td>2.8 million</td>
<td>29,060 carloads</td>
</tr>
<tr>
<td>Intermodal</td>
<td>1.9 million</td>
<td>149,196 carloads</td>
</tr>
<tr>
<td>Food products</td>
<td>1.7 million</td>
<td>20,408 carloads</td>
</tr>
<tr>
<td>Chemicals</td>
<td>1.6 million</td>
<td>19,944 carloads</td>
</tr>
<tr>
<td>Waste and scrap</td>
<td>0.8 million</td>
<td>11,068 carloads</td>
</tr>
<tr>
<td>Lumber and wood</td>
<td>0.7 million</td>
<td>9,132 carloads</td>
</tr>
<tr>
<td>Stone, gravel, sand</td>
<td>0.6 million</td>
<td>6,120 carloads</td>
</tr>
<tr>
<td><strong>All other</strong></td>
<td>2.8 million</td>
<td>72,374 carloads</td>
</tr>
</tbody>
</table>
Truck equivalents = 250,000 truckloads
(10 million tons, 40 ton truckload)

Source: USACE, WCSC
Globalization and Arkansas
2007 Foreign Direct Investment in Arkansas

- Employed 34,500 workers in Arkansas.
- Major foreign investors: Japan, the United Kingdom, Germany, France, and Canada.
- 56 percent (19,400 workers) were in the manufacturing sector.
- Contributed 3.4 percent of the state's total private-industry employment in 2007

Source: U.S. Department of Commerce, Bureau of Economic Analysis
Arkansas Exports as Share of State GDP 1997 - 2008

Source: Bureau of Economic Analysis, U.S. Dept. of Commerce & WISERTrade State Exports
What is the Demographic of Arkansas Exporters

Employment related to Manufacturing in 2006

- 52,300 jobs tied to manufacturing exports
- 20,200 tied directly to manufacturing
- 32,100 worked in supporting industries

2007 Exporters of record

- 1,484 Total
- 1,148 were SME’s (77%)
Arkansas Shipments of Origin, top Commodities 2010
(All modes - $5.2 Billion)

- Industrial Machinery, Including Computers (11%)
- Aircraft, Spacecraft, And Parts Thereof (10%)
- Cereals (9%)
- Electric Machinery Etc; Sound Equip; Tv Equip; Pts (8%)
- Organic Chemicals (7%)
- Arms And Ammunition; Parts And Accessories Thereof (7%)
- Meat And Edible Meat Offal (7%)
- Paper & Paperboard & Articles (Inc Papr Pulp Artl) (4%)
- Iron And Steel (4%)
- Plastics And Articles Thereof (4%)
- Other (29%)
Arkansas Shipments of Origin, top Destinations 2010 (All modes - $5.2 Billion)
Arkansas Shipments of Origin, top Gateways, 2010 (All modes - $5.2 Billion)

- Detroit, Michigan (8%)
- Los Angeles, Calif. (8%)
- Laredo, Texas (7%)
- New Orleans, La. (7%)
- Houston, Texas (6%)
- Port Huron, Michigan (6%)
- Little Rock-N.L.R., Ark. (6%)
- Savannah, Ga. (6%)
- Long Beach, Calif. (4%)
- Charleston, S.C. (3%)
- Other (38%)
Arkansas Needs Infrastructure to Connect Its Markets

Note: Major flows include highway segments with truck tonnage of more than 140,000 tons per year, between places more than 50 miles apart. 140,000 tons is equivalent to approximately twenty-four trucks per day.

Is the Third Set of Locks Needed for the Panama Canal?
The Panama Canal

- Approx. 50 miles long
- Gatun Lake is 85 feet (26 m) above sea level
- 52 million gallons used per transit
- Transferred to Panama in 1999
Why Expand the Canal?

- Overall strong growth over past few years
- Seem as critical bottleneck
- Coastal Competition
- West Coast Uncertainties
- Vessel Economics
Comparison between Panamax and Post-Panamax Container Vessels

<table>
<thead>
<tr>
<th></th>
<th>Panamax</th>
<th>Post-Panamax</th>
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<tbody>
<tr>
<td><strong>Capacity:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Containers (TEUs)</td>
<td>4,500</td>
<td>12,000</td>
</tr>
<tr>
<td><strong>Dimensions:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beam</td>
<td>32m (106')</td>
<td>49m (160')</td>
</tr>
<tr>
<td>Length</td>
<td>294m (965')</td>
<td>366m (1,200')</td>
</tr>
<tr>
<td>Draft</td>
<td>12m (39.5')</td>
<td>15m (50')</td>
</tr>
</tbody>
</table>
How Big is Big?
Panama Canal Expansion Projects

Components of Third Set of Locks Project

1. Deepening and widening of the Atlantic entrance channel
2. New approach channel for the Atlantic Post-Panamax locks
3. Atlantic Post-Panamax locks with 3 water saving basins per lock chamber
4. Raise the maximum Gatun lake operating water level
5. Widening and deepening of the navigational channel of the Gatun lake and the Culebra Cut
6. New approach channel for the Pacific Post-Panamax locks
7. Pacific Post-Panamax locks with 3 water saving basins per lock chamber
8. Deepening and widening of the Pacific entrance channel
NCHRP 15 – Supply Chains
Intermodal Traffic In U.S.

Tonnage of Trailer-on-Flatcar and Container-on-Flatcar Rail Intermodal Moves: 2008

Source: U.S. Department of Transportation, Federal Railroad Administration, October, 2010
What Will Happen?

**Waterway Side**
- WC Ports – time sensitive cargo
- EC Ports – Dredging, capacity, air draft
- GC Ports – Dredging, Services
- Canada/Mexico?
- Carriers – Cannibalize services, ship rotations

**Landside**
- Western Railroads - Capacity
- Eastern Railroads – Networks, interchanges
- Shippers – change supply chains
Are We Prepared for the future?

Without Planning This Would Have Been a Mess
## Other Issues?

### Domestic
- Security risks and asymmetric disruptions
- Free Trade negotiations
- Truck chassis, operations, drayage
- “Greening” of supply chains
- Container availability
- Railroad investment
- Waterway funding

### External
- Price of fuel – Energy
- Opening of Cuba
- China – “Insourcing”
- Future of U.S. Dollar
- Near Sourcing to Latin America
Note: Highway & Rail is additional highway mileage with daily truck payload equivalents based on annual average daily truck traffic plus average daily intermodal service on parallel railroads. Average daily intermodal service is the annual tonnage moved by container-on-flatcar and trailer-on-flatcar service divided by 365 days per year and 16 tons per average truck payload.
Comparison of Peak Period Congestion – 2002 - 2035
Railroad Bottlenecks: 2007-2035
(National Rail Freight Infrastructure Capacity and Investment Study)
IF NO INVESTMENT IS MADE IN THE SYSTEM – BASE FORECAST
Ton Miles of Truck Shipments by State for 2002

- **Within/Local**
- **To/From**
- **Through**

### Regional Average

### States
- Alabama
- Arkansas
- Florida
- Georgia
- Kentucky
- Louisiana
- Mississippi
- North Carolina
- South Carolina
- Tennessee
- Virginia
- West Virginia

The bar charts show the percentage distribution of ton miles of truck shipments by state for 2002, categorized into three types: Within/Local, To/From, and Through.
Strategies Recommended By LATTSS

- Utilization of Existing Infrastructure
- Add Physical Infrastructure
- Increase Operating Throughput
- Corridor Approach for Investing
- Develop Agile Freight Operations
- Improve Clearance at Gateways
- Attention to Connectors
- Encourage Technology
- Integration of Information
- ITS Applications
- Increase Public Awareness
- Improve Institutional Relationships
- Improve Freight Profile
- Partnerships
What Logistics Opportunities Exist for Arkansas?
Logistics Today

- Time means money
- Growth Poles vs. Growth Clusters
- Seen as cost management strategy
- Shipper is removed from transport decisions
- Site developers more focused on access issues
- Congestion is wasteful
  - lost productivity
  - more emissions
  - higher costs
Logistics Parks and Economic Development

- What type of facility?
- Trackage and Terminals
- Develop densities
  - Drayage and equipment
  - Domestic and international
  - Shippers bear costs?

Transport, Talent and Taxation Top Factor List

Site Selection’s October survey of corporate real estate executives reveals which factors on average are most important to them when they are involved in location decision making.

1. Transportation infrastructure
2. Existing work force skills
3. State and local tax scheme
4. Utility infrastructure
5. Land/building prices and supply
6. Ease of permitting and regulatory procedures
7. Flexibility of incentives programs
8. Access to higher education resources
9. Availability of incentives
10. State economic development strategy
Who Are the Players?

Private
Shippers – International
Shippers – Domestic
Carriers – Intermodal
Carriers – Drayage, Regional

Public
State
Local
Federal
Where do we go from here...
Benefits of discussing the Panama Canal’s Future

- Connecting ports and hinterlands
- Connecting exports to trade markets
- Discussion of regional transportation needs
- Finding partners
- Timing of these events
- Managing Expectations
Arkansas State and Local Budgets for Transportation vs. Total Spending

% Change from Previous Year

16% 12%
Some Considerations

Theory?
- Relinking Transportation to industrial development
- Perception of value of capital stock
- Economic development = people development

Practice
- Private sector more engaged in debate
- System’s use not fully understood
- “Others Have It” syndrome
- Scale and Densities
- Aging Infrastructure vs. Capacity
Summary

World is Changing
- New Markets
- Energy
- Security
- Globalization
- Moneys
- Expectations

Arkansas’ Response
- Collaboration
- Build on strengths
- Priorities
- Funding
Thank you

Bruce Lambert
Executive Director
Institute for Trade and Transportation Studies
540-455-9882
bruce@ittsresearch.org

Other items of note
- Freight in the Southeast Conference
- ITTS newsletter
- Smart Rivers

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