Linking Modal Shift to Inland Ports

Bruce Lambert
Statement of Work

• Can Container on Barge Succeed on Domestic Waterways
• Supply Chain considerations
  – Transportation costs
  – Connectivity
• Public Sector Benefits
Who Is Responsible for What

Public Sector

Terminal Operations
- Cargo Density
- Transportation services
- Workforce Development

Private Sector

- Business Clusters
- Intermediaries

Transportation
- Shippers

Utilities
- Carriers

Workforce Development
- National
- State
- Local

Business Climate

Incentives
The Shipper

• Demands low-cost, reliable service
• Mode and geographically neutrality
• Wants “just in time” services – does not want or care about your “problems” (carrier or infrastructure)
• Firms outsourcing the “Headaches” of logistics
• No one believes congestion will go away
• Often ignore primarily “freight” infrastructure beyond immediate facility
Inventory Carrying Costs

- Domestic vs. International
- Truck – 50-60 mph
- Train – 25 -30 mph
- Water – 5-7 mph

- “Variability is the No. 1 killer of the Supply Chain”
  Kentall Trainer, Wal-Mart
- Transport Topics, August 14, 2017
The Economics of Intermodal

Direct All-Truck Routes
(Door-To-Door 50 MPH)*

Intermodal Route

30 MPH Line-Haul

Origin Terminal
(12 Hour Dwell)

Intermediate Terminal
12 Hour Dwell

Destination Terminal
12 Hour Dwell
Mode Shift Paradigm

Figure 12: Modal Shift Projection

- % truck
- % intermodal conversions
- % rail

Current Rail Intermodal Market
Projected Market Shift
Truck Market
Regional Intermodal Rail Terminal Network Has Uneven Overlapping Dray Truck Service Patterns

Growth in use of intermodal rail will shift truck route use on the regional network

Source: IHS Global Insight TRANSEARCH
Radius to 80% of total dray volume, red radii are top volume
Short-Haul Truck Freight-Sheds

Trips <500 miles; All Commodities; Highway-Freight Density in Tons

Map showing Short-Haul Truck Freight-Sheds in the United States, with different densities indicated by the color of the lines.
Transportation Rate Costs/Discovery

- Rates are not costs
- Market conditions change
Modal Choice Matters

• CSX Service Changes
  – Coven & Co survey- nearly 50% shifted to NS, 76% to Truck

  Transport Topics Aug 14, 2017

• Could Waterways have been a solution?
Dry Cargo Capacity

Source: Texas Transportation Institute Center for Ports and Waterways
What are the barriers to getting firms to consider modal diversion

- Risk
- Existing carrier relationships
- Inventory carrying cost
- Customer responsiveness
- Single point of contact
- Size of shipment
- Cost of failure
- Ease of doing business
Modal, Commodity Relationship

- Timeliness
- Size of Shipment
- Per Unit Costs

- Inland Water
- Pipeline
- Railroads
- Trucking
- Air Service
### Top Domestic Waterway Flows - ITTS Member States, FAF tons

<table>
<thead>
<tr>
<th>State Route - St..</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>LA to LA</td>
<td>76,173</td>
<td>77,492</td>
<td>88,255</td>
<td>90,291</td>
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<tr>
<td>KY to KY</td>
<td>25,868</td>
<td>26,112</td>
<td>27,604</td>
<td>25,658</td>
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<tr>
<td>LA to TX</td>
<td>23,210</td>
<td>22,555</td>
<td>24,299</td>
<td>23,833</td>
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<tr>
<td>KY to LA</td>
<td>12,636</td>
<td>13,805</td>
<td>14,036</td>
<td>14,313</td>
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<tr>
<td>LA to FL</td>
<td>13,450</td>
<td>12,994</td>
<td>13,328</td>
<td>13,343</td>
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<tr>
<td>IL to LA</td>
<td>9,320</td>
<td>9,642</td>
<td>10,135</td>
<td>10,471</td>
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<tr>
<td>TX to LA</td>
<td>7,991</td>
<td>8,806</td>
<td>9,573</td>
<td>10,040</td>
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<tr>
<td>KY to OH</td>
<td>9,421</td>
<td>8,853</td>
<td>8,676</td>
<td>8,535</td>
</tr>
<tr>
<td>KY to WV</td>
<td>7,839</td>
<td>7,824</td>
<td>7,784</td>
<td>7,652</td>
</tr>
<tr>
<td>FL to FL</td>
<td>5,094</td>
<td>4,563</td>
<td>6,446</td>
<td>6,645</td>
</tr>
<tr>
<td>MO to LA</td>
<td>4,838</td>
<td>4,356</td>
<td>4,861</td>
<td>5,012</td>
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<tr>
<td>LA to NC</td>
<td>4,379</td>
<td>4,561</td>
<td>4,772</td>
<td>4,913</td>
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<tr>
<td>OK to KY</td>
<td>4,152</td>
<td>4,318</td>
<td>4,788</td>
<td>4,790</td>
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<tr>
<td>IN to KY</td>
<td>3,752</td>
<td>4,067</td>
<td>4,564</td>
<td>4,699</td>
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<tr>
<td>LA to MN</td>
<td>4,388</td>
<td>4,055</td>
<td>4,004</td>
<td>3,955</td>
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<tr>
<td>LA to TN</td>
<td>2,536</td>
<td>2,740</td>
<td>3,169</td>
<td>3,730</td>
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<tr>
<td>LA to AL</td>
<td>3,394</td>
<td>3,320</td>
<td>3,631</td>
<td>3,656</td>
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<tr>
<td>TX to MO</td>
<td>3,549</td>
<td>3,514</td>
<td>3,518</td>
<td>3,588</td>
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<td>GA to GA</td>
<td>2,530</td>
<td>3,415</td>
<td>3,362</td>
<td>3,334</td>
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<td>MO to TN</td>
<td>2,413</td>
<td>2,906</td>
<td>3,025</td>
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<tr>
<td>LA to OH</td>
<td>2,956</td>
<td>2,988</td>
<td>2,970</td>
<td>3,079</td>
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<td>WV to PA</td>
<td>3,087</td>
<td>3,070</td>
<td>3,191</td>
<td>3,011</td>
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<tr>
<td>LA to KY</td>
<td>2,627</td>
<td>2,258</td>
<td>2,164</td>
<td>2,964</td>
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<tr>
<td>LA to MS</td>
<td>2,293</td>
<td>2,483</td>
<td>2,655</td>
<td>2,671</td>
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<tr>
<td>IL to KY</td>
<td>2,473</td>
<td>2,397</td>
<td>2,477</td>
<td>2,636</td>
</tr>
<tr>
<td>MN to LA</td>
<td>2,556</td>
<td>2,322</td>
<td>2,295</td>
<td>2,447</td>
</tr>
<tr>
<td>TX to AR</td>
<td>2,187</td>
<td>2,237</td>
<td>2,325</td>
<td>2,422</td>
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<tr>
<td>LA to MO</td>
<td>2,136</td>
<td>2,077</td>
<td>2,267</td>
<td>2,408</td>
</tr>
<tr>
<td>NY to VA</td>
<td>1,055</td>
<td>4,305</td>
<td>3,315</td>
<td>2,340</td>
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<tr>
<td>MO to MO</td>
<td>1,820</td>
<td>1,951</td>
<td>2,096</td>
<td>2,141</td>
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<tr>
<td>TX to KY</td>
<td>1,517</td>
<td>1,983</td>
<td>2,051</td>
<td>2,119</td>
</tr>
</tbody>
</table>
Tenn-Tom Waterways Economic Benefit

### Economic Impact 1996-2008 (in Millions)

<table>
<thead>
<tr>
<th>State</th>
<th>Direct</th>
<th>Indirect</th>
<th>Induced</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>$15,217.1</td>
<td>$550.3</td>
<td>$718.8</td>
<td>$16,486.2</td>
</tr>
<tr>
<td>Kentucky</td>
<td>$867.2</td>
<td>$163.1</td>
<td>$559.1</td>
<td>$1,609.4</td>
</tr>
<tr>
<td>Mississippi</td>
<td>$6,854.7</td>
<td>$1,333.0</td>
<td>$1,276.6</td>
<td>$9,464.3</td>
</tr>
<tr>
<td>Tennessee</td>
<td>$2,361.6</td>
<td>$381.1</td>
<td>$471.1</td>
<td>$2,446.8</td>
</tr>
<tr>
<td>Regional</td>
<td>$25,320.5</td>
<td>$2,093.3</td>
<td>$2,641.1</td>
<td>$30,054.9</td>
</tr>
<tr>
<td>United States</td>
<td>$25,320.5</td>
<td>$5,822.6</td>
<td>$11,380.6</td>
<td>$42,523.7</td>
</tr>
</tbody>
</table>

This table shows the impact from private investment and ports operating in the Tenn-Tom Waterway region.

### Employment Impact 1996-2008

<table>
<thead>
<tr>
<th>State</th>
<th>Direct</th>
<th>Indirect</th>
<th>Induced</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>8,384</td>
<td>3,879</td>
<td>7,567</td>
<td>19,830</td>
</tr>
<tr>
<td>Kentucky</td>
<td>8,046</td>
<td>1,201</td>
<td>5,850</td>
<td>15,097</td>
</tr>
<tr>
<td>Mississippi</td>
<td>12,145</td>
<td>7,858</td>
<td>13,440</td>
<td>33,443</td>
</tr>
<tr>
<td>Tennessee</td>
<td>507</td>
<td>271</td>
<td>493</td>
<td>1,271</td>
</tr>
<tr>
<td>Regional</td>
<td>29,191</td>
<td>13,292</td>
<td>27,806</td>
<td>70,289</td>
</tr>
<tr>
<td>United States</td>
<td>29,191</td>
<td>29,001</td>
<td>79,471</td>
<td>137,663</td>
</tr>
</tbody>
</table>

This table indicates the number of jobs that were directly and indirectly created based on industry-to-industry transactions, as well as the number of jobs that were created based on employee spending in the local economy.

Study Area for the Economic Impacts of the Tennesse-Tombigbee Waterway
Paducah Riverport and the Port of Mobile were not included in the study area.
The Maritime Sector’s Role in Freight Movement

**Domestic Systems**
- Latent capacity
- Environmental benefits for cargo
- Reliability issues on channels, locks/dams
- Scale = small, fragmented

**Coastal Systems**
- Pass through function
- Development challenges
- Environmental pressures (domestic/ international)
- Scale = large, concentrated
## Alternatives for Action from AASHTO Water Bottomline Report

### Table ES-3. Summary of Action Alternatives

<table>
<thead>
<tr>
<th>Issues</th>
<th>Action Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic waterway maintenance needs are not being met.</td>
<td>Direct the Army Corps to develop a plan to address the nation’s MTS maintenance backlog, and ensure funding to eliminate the backlog by the year 2020.</td>
</tr>
<tr>
<td>Needed projects are often delayed for years, even decades.</td>
<td>Develop and adopt new Water Resources Development Act, focusing on upgraded project benefit-cost analysis and project-delivery streamlining.</td>
</tr>
<tr>
<td>Funding for critical MTS expansion needs is inadequate and uncertain.</td>
<td>Pass legislation requiring full utilization of HMT funds, with HMT exemptions for domestic Marine Highway services.</td>
</tr>
</tbody>
</table>
| National investments in the MTS are not targeted to national needs and national benefits. | Establish new Office of Multimodal Freight, empowered to coordinate and advance MTS planning and projects:  
  - Improved MTS funding strategies  
  - Stakeholder coordination  
  - Map and classification of MTS facilities  
  - MTS Condition and Performance Report  
  - MTS Economic Impact evaluation  
  - Environmental Analysis and Mitigation strategy  
  - Long-range national MTS vision |
| No locus of responsibility for the well-being of the MTS and accountable for its failure or success. | Promote best practice guidance for state, regional, and local MTS planning and investment, including “fast track” guidance for MAP-21 input and compliance. |
What did SeaCore need for Tenn-Tom Service

• The cargo market near ports
• Competitive trucking rates, including overweight
• Storage for containers, drayage equipment
• Tax exemption for MS Firms

— Meet the Shipper’s Needs
Literature Review

NCFRP No. 5 North American Marine Highways

NCHRP Report 586 Rail Freight Solutions to Roadway Congestion - Final Report and Guidebook

M-55 Illinois-Gulf Marine Highway Initiative
PIANC Reports

• Governance Organisation and Management of River Ports
• Analysis of Cost of Operating Vessels on Inland Waterways
• Container Transport with Inland Vessels
• Economic Aspects of Inland Waterways
• “Sustainable Ports” A Guide for Port Authorities
• Values of Inland Waterways
• Economic Implications of Inland Waterway Development
• Performance Measures
• Previous Smart Rivers reports
Three Questions...

1. Can Waterways work?
   - Has worked, does work, and may continue to do so
2. Can we avoid significant obstacles?
   - Get businesses to see water as a viable alternative
   - Provide the proper service
   - Support/fund startups
   - Govt. Programs
3. Can we outline first steps?
   - Get firms to the river before picking winners/losers
   - Understand supply chains
   - Continue to educate public and private sector
   - Manage expectations
Thank you
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bruce@ittsresearch.org