Transportation Consortium at the Center for Transportation
February 14, 2014

Freight Planning for One Transportation System – Marine Highways

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Illinois Department of Transportation
Presentation Highlights

- Freight Transportation System - Illinois
- Planning for One Transportation System
- Federal Maritime Freight Planning - U.S. Dept. of Transportation –Maritime Adm. Program
- Keeping Maritime Freight Mobility in Forefront
- Relevant Questions
Freight Transportation System – Glance at Illinois
Tonnage on Highways, Railroads, and Inland Waterways: 2007 Map
Illinois Based Freight Tonnage

2010 – 2040 Growth by Mode

Source: Illinois Freight Mobility Plan (2012)
Illinois Freight Mobility Plan – 2010/2040

- In 2010 - 1.26 Billion tons of goods moved (30% Outbound, 28% Inbound & 42% Interstate)
- In 2010 - 63% trucks; 26% rail; 11% waterways; and a tenth of 1% by air.
- 2040 - 34% increase to 1.7 Billion tons
- 2040 - 67% trucks; 24% rail; 9% waterways; and two tenths of 1% by air
2010 Truck Flows - Third in the nation for Trucking Volume

- 140,745 miles of roadway
- 26,000 bridges
- 2,182 interstate miles, 3rd in nation
- Warehousing-distribution facilities are now along all major Interstates throughout the state
- Home to 7,200 trucking establishments
2040 Truck Flows

• Primary Freight Network

• Zero Backlog for the Interstate Highway System

• Human Capital Plan: Enough Truckers to meet demand?
Average Daily Long-Haul Traffic – 2040

Note: Long-haul freight trucks typically serve locations at least 50 miles apart, excluding trucks that are used in movements by multiple modes and mail.
Illinois Freight Intermodal Terminals

- 2nd in Nation in Rail Intermodal Traffic

- Chicago has 19 Intermodal Terminals supporting six Class I RRs

- CenterPoint Intermodal Center - 6,000 acres, Container/Eq. Yards, 30 million sq/ft. Facilities

- Illinois DOT should strive to give private enterprise maximum flexibility and access to all modes to enhance global competitiveness.
Illinois Inland Ports – Next Generation of Intermodal Terminals

- Class I Rail Multi-modal Center capable of handling 1 million lifts

- Components:
  1) International Container Activities
  2) Access to High Density Corridor
  3) Multiple Logistics Support Services

Exhibit 6-21: Inland Ports in United States
Illinois Freight Railroads – 9,400 Miles

- 7 Class I Railroads
- 3 Regional RRss
- 26 Short Line RRss
- 9 Terminal Carriers
- 3rd in Rail Volume
- 7,821 Public RR Grade Crossings
Rail Density – Illinois’ Central Position
- 1,300 Daily Trains through NE Region

Average Traverse
Around Chicago
= 30 hrs

Los Angeles - 2,200 miles
to Chicago = 48 hrs
Lock & Dams

Illinois between two great national assets – Great Lakes & Mississippi River

5 Locks on Mississippi River & two on Illinois River approved but not funded by Congress
Illinois Port Districts and Water Landing Facilities - 1,095 Miles of Navigable Waterways

Outbound - 2010

<table>
<thead>
<tr>
<th>COMMODITY</th>
<th>%</th>
<th>TONNAGE (in millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal</td>
<td>56</td>
<td>58.4</td>
</tr>
<tr>
<td>Agriculture</td>
<td>25</td>
<td>26.2</td>
</tr>
<tr>
<td>Petro/Gas</td>
<td>11</td>
<td>11.8</td>
</tr>
<tr>
<td>Other</td>
<td>8</td>
<td>7.8</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>100</td>
<td><strong>104.2</strong></td>
</tr>
</tbody>
</table>

Inbound - 2010

<table>
<thead>
<tr>
<th>COMMODITY</th>
<th>%</th>
<th>TONNAGE (in millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stone/Ore</td>
<td>36</td>
<td>6.3</td>
</tr>
<tr>
<td>Fertilizer/Chem</td>
<td>20</td>
<td>3.5</td>
</tr>
<tr>
<td>Metal Products</td>
<td>14</td>
<td>2.5</td>
</tr>
<tr>
<td>Other</td>
<td>30</td>
<td>5.2</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>100</td>
<td><strong>17.5</strong></td>
</tr>
</tbody>
</table>
Illinois Airports

• 110 Public-Use Aviation Landing Facilities

• O’Hare is 6th in the nation in cargo activity

• Rockford Airport has the second largest FedEx hub in North America
Freight Moving via Pipelines
Planning for One Transportation System
Vision – Prepare for Future
Illinois DOT Secretary Schneider

“IDOT must prepare and plan for one transportation system for the next 5, 10, 20, 40 years by integrating multi-modal planning and programming to support our economy and our way of life.”

<table>
<thead>
<tr>
<th>Population</th>
<th>2010</th>
<th>2020</th>
<th>2030</th>
<th>2040</th>
<th>Change</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>309,349,689</td>
<td>341,069,539</td>
<td>373,924,268</td>
<td>406,416,632</td>
<td>97,066,943</td>
<td>31.4%</td>
</tr>
<tr>
<td>Illinois</td>
<td>12,843,166</td>
<td>13,847,964</td>
<td>14,957,995</td>
<td>15,841,534</td>
<td>2,998,368</td>
<td>23.3%</td>
</tr>
<tr>
<td>Percentage of Growth from Previous Decade</td>
<td>7.8%</td>
<td>8.0%</td>
<td>5.9%</td>
<td>4.15%</td>
<td>4.1%</td>
<td>4.0%</td>
</tr>
</tbody>
</table>

Source: ACG Revised Projection, 2012
"By 2050, America will be home to more than 100 million additional people – requiring us to move more than 8 billion extra tons of goods per year. That means our freight system – which is already the strongest in the world – will need to become even stronger."
China has overtaken the United States and the European Union to become the world’s largest investor in infrastructure.

1. Percentage of 2010 world GDP generated by the 88 countries in our analysis.
2. Australia, Canada, Croatia, Iceland, Lichtenstein, New Zealand, Norway, Singapore, South Korea, Switzerland, Taiwan (Chinese Taipei), and the United Arab Emirates.
3. Excludes unusually high port and rail data for Nigeria; including these data brings the total weighted average to 5.7 percent.

SOURCE: IHS Global Insight, GWI, IEA, ITF, McKinsey Global Institute analysis
Illinois Freight Mobility Plan

- LRTP, Freight & Rail Plans provide strategic direction for IDOT’s vision, *Transforming Transportation for Tomorrow*

- View freight mobility through a **multi-modal** lens that promotes **sustainable** practices and **intermodal** connections for more **efficient**, **seamless**, **resilient**, **economical**, **safe** and **reliable** transportation system
A system-based approach, viewing it as **ONE** transportation system, could better identify choke points, or even failures, in the network where planning and investments could target improving interaction among the modes.
Example of Need for Multimodal Approach…
September, 2012 – Lock 27 (5-Day Closure)

63 Vessels
455 Barges
Comparison of Cargo Capacity

<table>
<thead>
<tr>
<th>CARGO CAPACITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>BARGE 1750 TON</td>
</tr>
<tr>
<td>61,250 BUSHELS</td>
</tr>
<tr>
<td>1,375,000 GALLONS</td>
</tr>
<tr>
<td>15 BARGE TOW 26,250 TON</td>
</tr>
<tr>
<td>918,750 BUSHELS</td>
</tr>
<tr>
<td>20,625,000 GALLONS</td>
</tr>
<tr>
<td>JUMBO HOPPER CAR 110 TON</td>
</tr>
<tr>
<td>3,850 BUSHELS</td>
</tr>
<tr>
<td>30,240 GALLONS</td>
</tr>
<tr>
<td>100 UNIT TRAIN 10,000 TON</td>
</tr>
<tr>
<td>350,000 BUSHELS</td>
</tr>
<tr>
<td>3,024,000 GALLONS</td>
</tr>
<tr>
<td>LARGE SEMI TRUCK 25 TON</td>
</tr>
<tr>
<td>779 BUSHELS</td>
</tr>
<tr>
<td>7,885 GALLONS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EQUIVALENT UNITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 BARGE = 1750 tons of dry cargo</td>
</tr>
<tr>
<td>16 JUMBO HOPPER CARS =</td>
</tr>
<tr>
<td>70 TRUCKS</td>
</tr>
<tr>
<td>1 TOW = 2.25 100 UNIT TRAINS</td>
</tr>
<tr>
<td>1050 TRUCKS (Bumper to Bumper) =</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EQUIVALENT LENGTHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 BARGE TOW = .25 MILE</td>
</tr>
<tr>
<td>2.25 UNIT TRAINS = 2.75 MILES</td>
</tr>
<tr>
<td>1050 TRUCKS = 13.9 Miles</td>
</tr>
</tbody>
</table>
Tonnage Displacement on Rail & Highways

Impact to Industry: - $15-20 million

6,100 Railcars

26,400 Trucks

63 Vessels 455 Barges

IOWA

MISSOURI

ILLINOIS

Peoria

St. Louis
Illinois Freight Mobility Plan for One Transportation System

- IDOT has a role in promoting more sustainable, effective and efficient connections in order to maximize private sector logistics options.

- Illinois DOT supports ALL modes.

- It is essential for strategic freight planning to use a multi-modal lens to tie intermodal connections across all freight modes.
Maritime Freight Planning - U.S. Department of Transportation – Maritime Administration (MARAD) Program
Multi-Modal Approach

Emphasize importance at State and Federal levels of government where transportation governance is siloed.
U.S. Department of Transportation

Secretary
Deputy Secretary

Chief of Staff

Under Secretary for Policy
Office of Drug and Alcohol Policy and Compliance

Executive Secretariat
Board of Contract Appeals
Office of Civil Rights
Office of Small & Disadvantaged Business Utilization
Office of Intelligence and Security
Office of the Chief Information Officer
Office of Public Affairs

General Counsel
Assistant Secretary for Transportation Policy
Assistant Secretary for Aviation & International Affairs
Assistant Secretary for Budget & Programs
Assistant Secretary for Governmental Affairs
Assistant Secretary for Administration
Office of Inspector General

Federal Aviation Administration
Federal Highway Administration
Federal Railroad Administration
National Highway Traffic Safety Administration
Federal Transit Administration
St. Lawrence Seaway Development Corp.

Maritime Administration
Research & Innovative Tech. Administration
Pipeline & Hazardous Materials Safety Administration
Federal Motor Carrier Safety Administration
America’s Marine Highways: From Concept to Reality!

- U.S. DOT Maritime Administration (MARAD)
- Authorized in 2007
- Grant program created and $7M awarded in 2010
- Four new services funded
- Three market studies funded
- New vessel designs funded
Maritime Backlog

- America Society of Civil Engineers reports that in order for US to remain competitive on a global scale, ports and waterways will require an investment beyond the $14.4 billion, but rather $15.8 million more.
MARITIME ADMINISTRATION
PROJECTS

[Map of the United States with various port projects indicated]
## MARAD ADMINISTERED PORT RELATED PROJECTS

<table>
<thead>
<tr>
<th>NAME-YEAR</th>
<th>NUMBER OF PROJECTS</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARRA</td>
<td>3</td>
<td>$25 million</td>
</tr>
<tr>
<td>TIGER FY2009</td>
<td>7</td>
<td>$128 million</td>
</tr>
<tr>
<td>TIGER FY2010</td>
<td>6</td>
<td>$87 million</td>
</tr>
<tr>
<td>TIGER FY2011</td>
<td>4</td>
<td>$62 million</td>
</tr>
<tr>
<td>TIGER FY2012</td>
<td>7</td>
<td>$68 million</td>
</tr>
<tr>
<td>TIGER FY2013</td>
<td>7</td>
<td>$61 million</td>
</tr>
<tr>
<td>MARINE HIGHWAY</td>
<td>3</td>
<td>$7 million</td>
</tr>
<tr>
<td>PORT CONVEYANCE</td>
<td>10</td>
<td>(depends on land value)</td>
</tr>
</tbody>
</table>

**TOTAL DOLLAR VALUE** $438 million
**StrongPorts Program Framework**

**Category I**
Planning & Engagement

- **All Ports**
  - Low Federal Oversight
  - No Market Interference

**Category II**
Financing

- **Limited No. of Ports**
  - Moderate Federal Oversight
  - Minimal Market Interference

**Category III**
Project Management

- **Very Few Ports**
  - High Federal Oversight
  - Minimal Market Interference

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**Public Benefit & Public Stake**

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**A. Guidelines & Data:**

- Sector advocate through analysis & showcasing opportunities/consequences regarding port role/investment

**Possibilities Include:**
- Port Investment Plan Guidelines (With Stakeholders)
- Strategic Asset Management Guidelines (With Stakeholders)
- Port/Terminal Ops Guidelines for AMH (With Stakeholders)
- National/Regional Studies and Maritime Impact Analysis
- Condition & Performance Tracking & Measures

**B. Assistance:**

- Direct support to individual ports (upon request)

**Financing:**

- Direct funding support via existing/future programs

**Project Mgt:**

- Increased Federal project assistance where unique Federal interest exists

**Possibilities Include:**
- TIGER I-IV Grants
- Marine Highway Grants
- Other Future Grant Programs
- Loans/Loan Guarantees
- Possible Cargo Facility Fee Program
- Eligible for Port Infra Devel. Fund
- Eligible for MARAD Lead Fed Agency Support
- Eligible for Project Delivery Initiative

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Authority: 46 USC, Section 50302
New Corridor Designation M-35 Upper Mississippi River
M-35 Co-Sponsors

“Waterway of the Saints”

- Illinois Department of Transportation
- Iowa Department of Transportation
- Minnesota Department of Transportation
- Missouri Department of Transportation
- Wisconsin Department of Transportation
Interstate – 35 Corridor Congestion (Mid-America Freight Coalition)
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Minnesota</td>
<td>43,109,000</td>
<td>190</td>
<td>I-35 from IA - MN state line to Minneapolis</td>
<td>114</td>
<td>1,724,360,1,642.2 $ 19,657,704.00</td>
<td>189,603</td>
<td>5,676,713.82</td>
</tr>
<tr>
<td>Iowa</td>
<td>9,740,000</td>
<td>312</td>
<td>I-35 from IA - MN state line to SR 27 to IA - MO state line</td>
<td>278</td>
<td>389,600,371.0 $ 10,830,880.00</td>
<td>133,712</td>
<td>4,003,337.28</td>
</tr>
<tr>
<td>Illinois</td>
<td>109,663,000</td>
<td>580</td>
<td>Davenport, IA to Springfield to St. Louis via I-74 to I-55</td>
<td>266</td>
<td>4,386,520,4,177.6 $ 116,681,432.00</td>
<td>828,047</td>
<td>24,791,727.18</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>32,042,000</td>
<td>231</td>
<td>Hudson, WI to WI - IA state line (near Dubuque) via I-94 to US 61</td>
<td>259</td>
<td>1,281,680,1,220.6 $ 33,195,512.00</td>
<td>447,755</td>
<td>13,405,784.70</td>
</tr>
<tr>
<td>Missouri</td>
<td>33,111,000</td>
<td>361</td>
<td>SR 27 @ IA - MO state line to U.S. 61 to St. Louis/Miss. River</td>
<td>185</td>
<td>1,324,440,1,261.4 $ 24,502,140.00</td>
<td>201,728</td>
<td>6,039,736.32</td>
</tr>
</tbody>
</table>

DISCLAIMER: The numbers in the table are calculated estimates using data from the sources listed below. For an actual valuation, more in-depth research would be needed. However, this methodology is sufficient for providing general estimations for a marine highway corridor designation application.
Marine Highway Studies

Three Routes Studied (M-5, M-55, & M-95)

- Market Analysis
- Operation/Infrastructure Analysis
- Business Case

Major Findings

- Where the geography and market were favorable, services could work
- Infrastructure gaps and modal connectivity need to be addressed
- Handling costs and vessel operations continue to be the major cost drivers
- Must be part of a total supply chain package
Heartland of America, M-55 Study

- 2,100 miles by rail from Seattle to Long Beach
- 2,100 miles by rail from Savannah to Long Beach
- 2,100 miles by rail from Savannah to Chicago
- 266 miles by truck from Chicago to Peoria
- 1,280 miles by rail from Peoria to Savannah
- 1,204 miles by truck from Savannah to New Orleans
- 1,240 miles by barge from New Orleans to Houston
- 400, 200, 0, 400 Miles scale on the map
M55 – Study Findings

- Viable for RORO and study is starting point for starting service
- Building block for containerized cargo
- Containerized products in study focused on identity preserved grains and soy
21 Key COB Findings

- Containerized grain is a core market opportunity
- Repositioning of container empties is key factor
- Inland port’s market is optimally 50 mile radius
- Greatest success COB is with regular schedule to gateway port
- Modal integration needed
- COB concentrated on international trade
- Northbound backhaul is critical
- Mismatch in viability for COB cargo must be solved
Figure 2: Strategies for Meeting Service Requirements

**Requirement**
- Scheduled and reliable service
- Meet vessel cuts at coastal ports
- Min. weekly service (container)
- Every 10 days suffice for Ro/Ro
- 7-days max line-haul transit
- Lowest cost expected
- No damage to finished goods

**Strategy**

***Short Term***
- More equipm’t in-lieu of speed
- Two weekly “bookend” services
- Extra barges loaded pre-arrival

***Long Term***
- Faster marine highway vessel
- Requires further R&D
Study

Findings

Service Requirements

- 5-7 days transit for containers
- 14 days for Ro/Ro

Recommended Strategy

- Short term – hook and haul
- Long term – new build mono hulled self-propelled vessel

**Figure 1: Market Development Phasing**

**Phase I**

Ro/Ro

- Large Over Dimension
  - Truck

- Medium and KD
  - Rail & truck

**Phase II**

Containers

- Industrial Market
  - Equipment & auto makers
  - Shippers – local industry, growers/ coops;
  - Segment – Grain exports to Asia; industrial exports to Latin America
  - Pricing – Delay to assess impact of Panama Canal expansion on container pricing
  - Differentiate – Local within 50 miles; save on drayage to Chicago

- Agriculture Market
  - Identity preserved mkt

KD = Knocked down
Figure 3: The Three Recommended Routes

**Peoria – Galveston**
One-Way Distance – 1,434 miles
Return Distance – 2,868 miles
Ports – Peoria and Galveston
Routes – Illinois River, Upper and Lower Mississippi River, Port Allen leg of the Gulf Intracoastal Waterway (GIWW), and the western segment of the GIWW.

**Peoria – Houston**
One-Way Distance – 1,454 miles
Return Distance – 2,908 miles
Ports – Peoria and Houston
Routes – Illinois River, Upper and Lower Mississippi River, Port Allen leg of the GIWW, and the western segment of the GIWW.

**Peoria – NOLA/Mobile**
One-Way Distance – N/A
Return Distance – 2,495 miles
Ports – Peoria, New Orleans and Mobile
Routes – Illinois River, Upper and Lower Mississippi River, eastern portion of the GIWW, Mobile River, Tenn-Tom Waterway, Tennessee River and the Ohio River.
Figure 7: Shared Funding Role for Public and Private Sector

Development Funding
- Public-Private
  - Private
    - Carrier >> provides barge equipment
    - Terminal Operator >> port equipment
  - Public
    - TransPORT – Apply for Tiger grant to help fund port equipment and barges

Operational Funding
- Public-Private
  - Private
    - Carrier >> fund operations
    - Terminal Operator >> fund operations
  - Public
    - TransPORT – Consider issuing revenue bonds to fund a revolving loan program to support/back working capital funds for operations and container pool
M-55 Corridor Benefit

1. Allows IDOT & MoDOT to pull in other stakeholder agencies for Maritime freight opportunities and development

2. Present Study along the entire M-55 Corridor, (ie. St. Louis Port Working Group)

3. Study helps establish baseline for future port studies for COB opportunities and overall awareness for maritime freight
Keeping Maritime Freight Mobility in Forefront
MAP – 21 Basic Requirements – Strategic Planning

1. Strategic Plan how DOTs to meet national freight goals & overview of trends, needs, and issues

2. Freight policies & strategies aimed to guide freight-related decisions and enhance freight mobility & regional collaboration

3. Condition & performance of state freight system including measurements to be used to guide investment decision-making.
MARITIME COLLABORATION

- USDOT–MARAD, State DOTs, USACE
- Inland Rivers, Ports & Terminals Assn.
- Upper Mississippi Rivers Basin Assn.
- Upper Mississippi, Illinois & Missouri Rivers Assn.
- Big River Coalition & Louisiana Maritime Assn.
- Waterways Council, Inc.
- Mississippi River Cities & Towns Initiative
- Council of Great Lakes of Governors – Maritime Taskforce
Illinois State Freight Advisory Council (ISFAC)

- Standing Forum
- Public and Private Sector Interests
- Governor’s Export Advisory Council Assistance
- Focus on Connectivity Across All Modes
- Advise IDOT on Establishing Regional Corridors to be a part of National Freight Network
Relevant Freight Questions

• How will the Panama Canal Expansion effect freight pricing on waterways and rail networks?
• What direction will Congress take in Freight planning and programming?
• Will U.S. DOT and Congress continue to emphasize the importance of Maritime navigation on inland waterways and at seaports?
• How will state DOTs and Metropolitan Planning Organizations integrate maritime movement in freight plans?
LRTP, Freight & State Rail Plan - 2012

- Long Range Transportation Plan (LRTP)
- Illinois Freight Mobility Plan
- Illinois State Rail Plan
- M-55 Study

You may access these reports by:
http://www.illinoistransportationplan.org/info_center/reports.aspx
http://www.dot.il.gov/ilrailplan/Info.html
http://www.dot.il.gov/freightcouncil/documents.html
Questions?

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