Sustainability – An Expansive View

Dr. Craig E. Philip
Retired CEO
Ingram Barge Company
Outline

• The Maritime Meta – Story

• Some Operational Responses In The Sector

• Beyond Environmental
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WATERWAYS: Working for America

Waterways transportation keeps our nation’s commerce on the move in the safest, most fuel-efficient, environmentally sound way.

Highlights of A Modal Comparison of Domestic Freight Transportation Effects on the General Public: 2001-2009
February 2012
Advantages of Inland Waterways Transport:

Easing Rail and Highway Congestion in Our Communities

Units to Carry 1,750 Short Tons of Dry Cargo

- 1 barge
- 16 rail cars
- 70 trucks

One loaded covered hopper barge carries 58,333 bushels of wheat, enough to make almost 2.5 million loaves of bread.
Advantages of Inland Waterways Transport:

Moving Freight Efficiently Throughout America

Transporting freight by water is also the most energy-efficient choice. Barges can move one ton of cargo 616 miles per gallon of fuel. A rail car would move the same ton of cargo 478 miles, and a truck only 150 miles.

Ton-miles Traveled per Gallon of Fuel

NATIONAL WATERWAYS FOUNDATION
Advantages of Inland Waterways Transport:

The Greener Way to Move America’s Cargoes

Barges have the smallest carbon footprint among other transportation modes.

To move an identical amount of cargo by rail generates 30% more carbon dioxide than by barge, and 1,000% more emissions by trucks than by barge.
Advantages of Inland Waterways Transport:

Safeguarding Our Health and the Environment

Inland waterways transport moves hazardous materials safely. Overall, spill rates remain low. Trucks lose 10.41 gallons per one million ton-miles, rail cars 4.89 gallons and barges 2.59 gallons per one million ton-miles.

Rate of Spills in Gallons per Million Ton-miles

- Spills of More Than 1,000 Gallons: 10.41
- 4.89
- 2.59

NATIONAL WATERWAYS FOUNDATION
Advantages of Inland Waterways Transport:

Safeguarding Our Health and the Environment

Inland waterways transport has a low injury record compared to rail or truck.

Ratio of Injuries in Freight Transportation

For each injury involving barge transportation, there are 95.3 injuries related to rail and 1,609.6 truck-related injuries.
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Operational Responses in the Inland Marine Sector

Biggest Single Change – Operating “Deeper” Barges

<table>
<thead>
<tr>
<th>History (Pre 1990)</th>
<th>TODAY</th>
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<tbody>
<tr>
<td>12’ Hull</td>
<td>14’ Hull</td>
</tr>
<tr>
<td>3’ Freeboard</td>
<td>2’ Freeboard</td>
</tr>
<tr>
<td>9’ Draft</td>
<td>12’ Draft</td>
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Requires Nimble, Flexibility and Operations
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SUSTAINABILITY CHALLENGES BEYOND ENVIRONMENTAL

• Overtaxed Physical Infrastructure
  – ASCE Report Card Grades: C to D –

• Increased Capacity Utilization Increases Exposure to Disruptions

• Human Capital Challenges
  – Fatigued /Hard-To-Retain Workers

CARRIERS RETURNS MAY NOT REFLECT THESE LONG TERM COSTS
Thank you

Dr. Craig E. Philip