Topics for Today’s Discussion

1. Why is the US transportation infrastructure so critical to local, state, and national economies?

2. What is the maritime segment's contribution to local, state, and national economies?

3. What are the benefits and critical elements of the US maritime infrastructure?

4. What are the chokepoints within maritime infrastructure and what are the impacts of these chokepoints?

5. How can we work together to support US maritime infrastructure?
The US Maritime Infrastructure: Importance for America’s Prosperity

American Society of Civil Engineers: Port Infrastructure Report Card
February 12, 2018

“Even though it is invisible to most Americans, every community across this country relies on a complex system of reservoirs, aqueducts, dams, levees, treatment plants, pumping stations, and millions of miles of pipes forming our water infrastructure.”

Tom Carper (D-Del)
Senate Environment and Public Works Committee, Ranking Member
March 24, 2017

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Bob Gibbs (R-OH)
House Committee on Transportation and Infrastructure
January 17, 2019

“We will rebuild America with clean energy, smart technology and resilient infrastructure.”

Speaker of the House, Nancy Pelosi
December 7, 2018

The maritime industry plays a vital role in interstate and international commerce while the Coast Guard is a critical element to national security.

We will rebuild America with clean energy, smart technology and resilient infrastructure.

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The freight network is only as strong as its weakest link and congestion on these landside connections hinders productivity for ports. In a survey of ports, a third indicated that this congestion over the past 10 years caused port productivity to decrease by 25% or more.

We will rebuild America with clean energy, smart technology and resilient infrastructure.
Waterways, highways, and railroads all play key roles in an intermodal system that moves trillions of dollars in raw materials and products into and around the US every year in a safe, efficient, environmentally responsible manner.

$4.2 trillion in total foreign trade in 2018

*Map is not inclusive or drawn to scale.
FOREIGN TRADE ON US INFRASTRUCTURE

- MARITIME TRANSPORTATION: $1.8 TRILLION
- AIR TRANSPORTATION: $1.2 TRILLION
- PIPELINE: $73 BILLION
- ROAD TRANSPORTATION: $772 BILLION
- RAIL TRANSPORTATION: $179 BILLION
- OTHER: $61 BILLION

$4.2 trillion in total U.S. foreign trade in 2018
THE US MARITIME INFRASTRUCTURE STORY: MOVING CRUDE OIL AND PETROLEUM PRODUCTS

40.3% of all U.S. waterborne trade (imports & exports) is petroleum or petroleum products.

38.5% of all domestic waterborne trade is petroleum or petroleum products.

28.4% of all crude oil arriving at refineries is delivered via water.

44.9% of all U.S. self-propelled waterborne trade is petroleum or petroleum products.

37.2% of all U.S. barge traffic is petroleum or petroleum products.
The inland and coastal waterway system is a critical component for the safe, efficient, and secure transportation of raw materials, energy, consumer goods, and other commodities that impact our everyday lives.

Petroleum (Crude Oil, Feedstocks, and Refined Petroleum Products) 40.3%

Raw Materials (Excluding Fuels) 14.1%

Coal 9.2%

Food and Farm Products 13.8%

Chemicals and Related Products 7.8%

Machinery and Equipment 5.8%

Primary Manufactured Goods 5.7%

Other 3.3%

Raw Materials (Excluding Fuels) 14.1%

Coal 9.2%

Food and Farm Products 13.8%

Chemicals and Related Products 7.8%

Machinery and Equipment 5.8%

Primary Manufactured Goods 5.7%

Other 3.3%

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SHORT TONS TRANSPORTED VIA WATER IN 2017 BY COMMODITY GROUP

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Waterways are the most efficient way of transporting everyday products – from petroleum, grain, coal, and farm products to steel, sand, chemicals, and other building supplies – across the country.

One tanker carries the tonnage equivalent to several common inland barge tows or thousands of rail cars or trucks.
Waterway transportation is safe, environmentally responsible, and energy efficient as a result of the large capacity and a stringent industry standard of care.

Tankers and barges emit fewer tons of carbon dioxide per million tons of freight moved one mile compared to rail cars and trucks.\(^\text{14}\)

Tankers and barges can move one ton of cargo many more miles per gallon of fuel than rail, cars and trucks.

<table>
<thead>
<tr>
<th>Transportation Mode</th>
<th>CO(_2) Emissions (tons per million tons of freight moved one mile)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tankers and barges</td>
<td>2.0</td>
</tr>
<tr>
<td>Rail</td>
<td>16.9</td>
</tr>
<tr>
<td>Cars and trucks</td>
<td>22.1</td>
</tr>
<tr>
<td>Trains</td>
<td>171.8</td>
</tr>
</tbody>
</table>

**Number of miles one ton of cargo can be carried per gallon of fuel**

- Tankers and barges: 6842 miles
- Rail: 595 miles
- Cars and trucks: 456 miles
- Trains: 135 miles
CRITICAL ELEMENTS OF THE OIL SUPPLY CHAIN
WELLS TO WHEELS

S.P.R. = Strategic Petroleum Reserve
The infrastructure elements of the maritime transportation system include:

- **Ports**: Gateways for the movement of goods and materials.
- **Inland Waterways**: Navigable bodies of water located in the interior of the US.
- **Locks**: Devices for raising and lowering vessels between stretches of water at different levels.
- **Floodgates**: Adjustable gates used to manage the flow of water.
- **Dams**: Barriers that retain water within a specific location.
CRITICAL ELEMENTS OF US MARITIME INFRASTRUCTURE
Physical Chokepoints:
- Restrictive port surface bottoms
- Deferred dredging
- Lack of intermodal connections
- High cost of upgrading for maximum effectiveness

Chokepoints in Operational Flow:
- Outdated navigational technology
- Pilot and staff shortages
- Lack of agility to respond to increased market demand
- Need for breaking tugs into multiple parts
- Need for conducting offshore lightering or light-loading

Reliability Chokepoints (magnified with infrastructure age):
- Unplanned maintenance and outages
- Delays and vessel backlogs
- Decreased efficiency
- Enhanced impacts of low water scenarios
- Increased risks around two-way vessel traffic

Waterway Chokepoints:
- Too narrow
- Too shallow
- Vessel size restrictions create inefficiencies
Waterway Chokepoints:
- Daylight passage restrictions
- Underfunding for completing dredging activities
- Prioritization of water uses during droughts

Reliability Chokepoints (magnified with infrastructure age):
- Underfunding of lock, dam, and floodgate infrastructure improvement

Physical Chokepoints:
- Expending Harbor Maintenance Trust Fund dollars
- Insufficient dollars in the Inland Waterways Trust Fund
- Delays in completing studies and authorizing/funding new projects
- Inability to build petroleum storage tanks in a timely manner

Chokepoints in Operational Flow:
- Lack of substantial contingency planning/preparedness plans and drills
- Lack of harmonization between US and IMO standards
- Inconsistent regulations around ballast water and emissions regulations by federal agencies and states
- Underfunding of maritime academies
- Limited regulatory capacity
Many of the country’s locks and dams are 50 years or older and have exceeded their life expectancy. This can result in significant delays due to unplanned outages, increased risk as a result of more trips to move the same quantity of cargo, and increased costs to the end consumer.
Underinvestment in maintaining and improving maritime infrastructure could result in annual losses of as much as $49 billion in lost revenue for US businesses by 2020\textsuperscript{24}.

Underinvestment in maritime infrastructure chokes the flow of commerce.

This can lead to increased costs of everyday products, commodities, and raw materials for the end consumer.

As a result, revenue decreases for local economies and businesses.
Through a shared understanding of the importance of maritime infrastructure to local, state, and national economies – together, local, federal and state counterparts can:

- Engage in an open dialogue around strengthening US transportation infrastructure, including maritime infrastructure.

- Escalate the issue of maritime infrastructure policy and investment to the forefront of government and industry attention to proactively inform policy decisions.

- Appropriate adequate funds to upgrade maritime infrastructure.


11 – https://grains.org/waterways-provide-efficient-movement-of-u-s-grain/


