

US MARITIME INFRASTRUCTURE: **Investing in America**

API Marine Subcommittee





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

“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.¹”

“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

“The maritime industry plays a vital role in interstate and international commerce while the Coast Guard is a critical element to national security.³”

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.⁴”

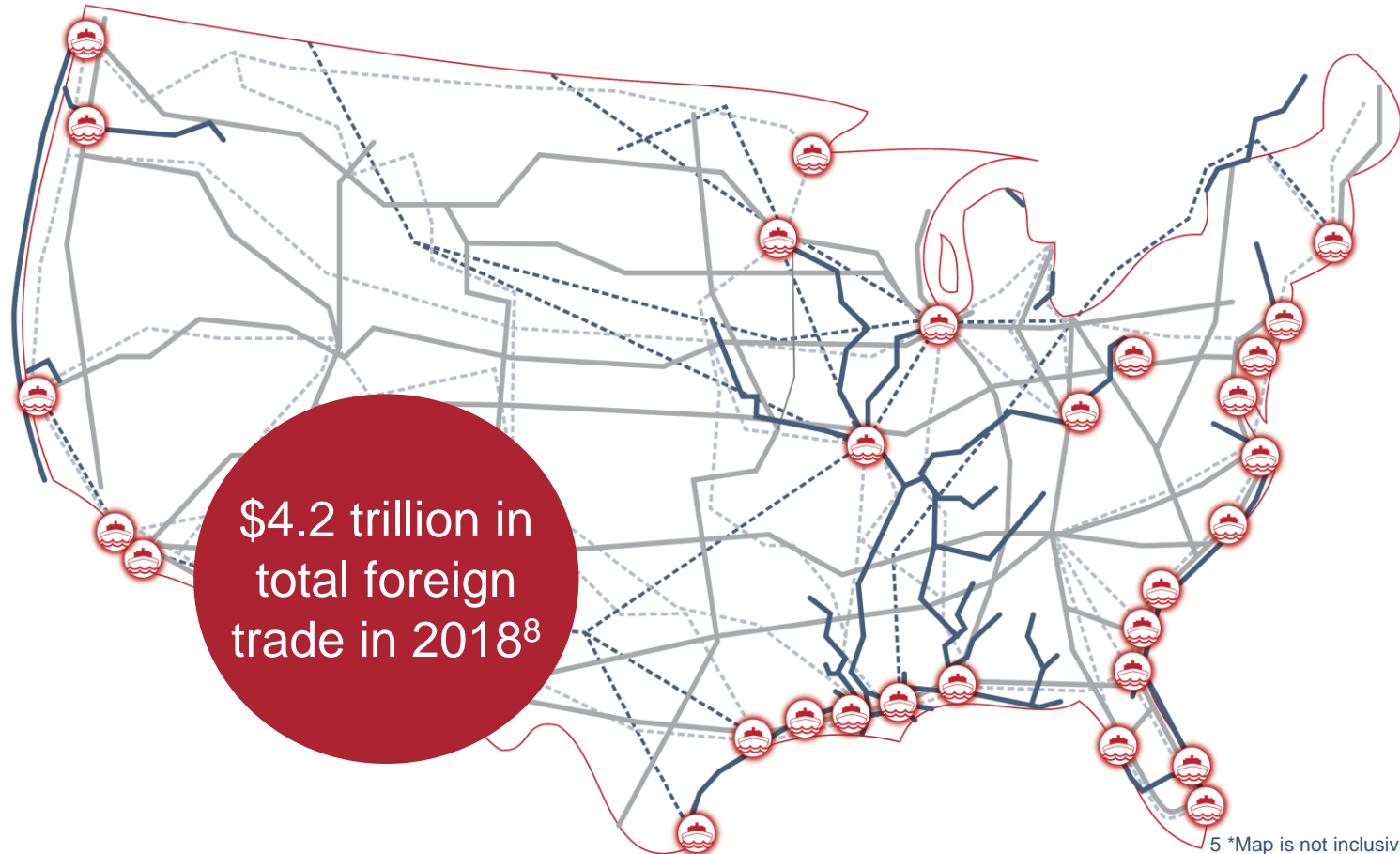
**SPEAKER
OF THE
HOUSE,
NANCY
PELOSI**

DECEMBER 7, 2018



THE US TRANSPORTATION INFRASTRUCTURE STORY: *A VITAL SYSTEM TO THE US ECONOMY*

 25,000 miles of waterways  2.6 million miles of pipelines  4 million miles of roadways  140,000 miles of railroads  120 ports



5 *Map is not inclusive or drawn to scale.

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.



THE US MARITIME INFRASTRUCTURE STORY: MARITIME TRANSPORTATION'S LARGE PRESENCE

FOREIGN TRADE ON US INFRASTRUCTURE⁸

OTHER **\$61 BILLION**



ROAD TRANSPORTATION

\$772 BILLION



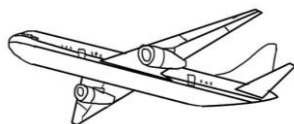
RAIL TRANSPORTATION

\$179 BILLION



PIPE LINE

\$73 BILLION



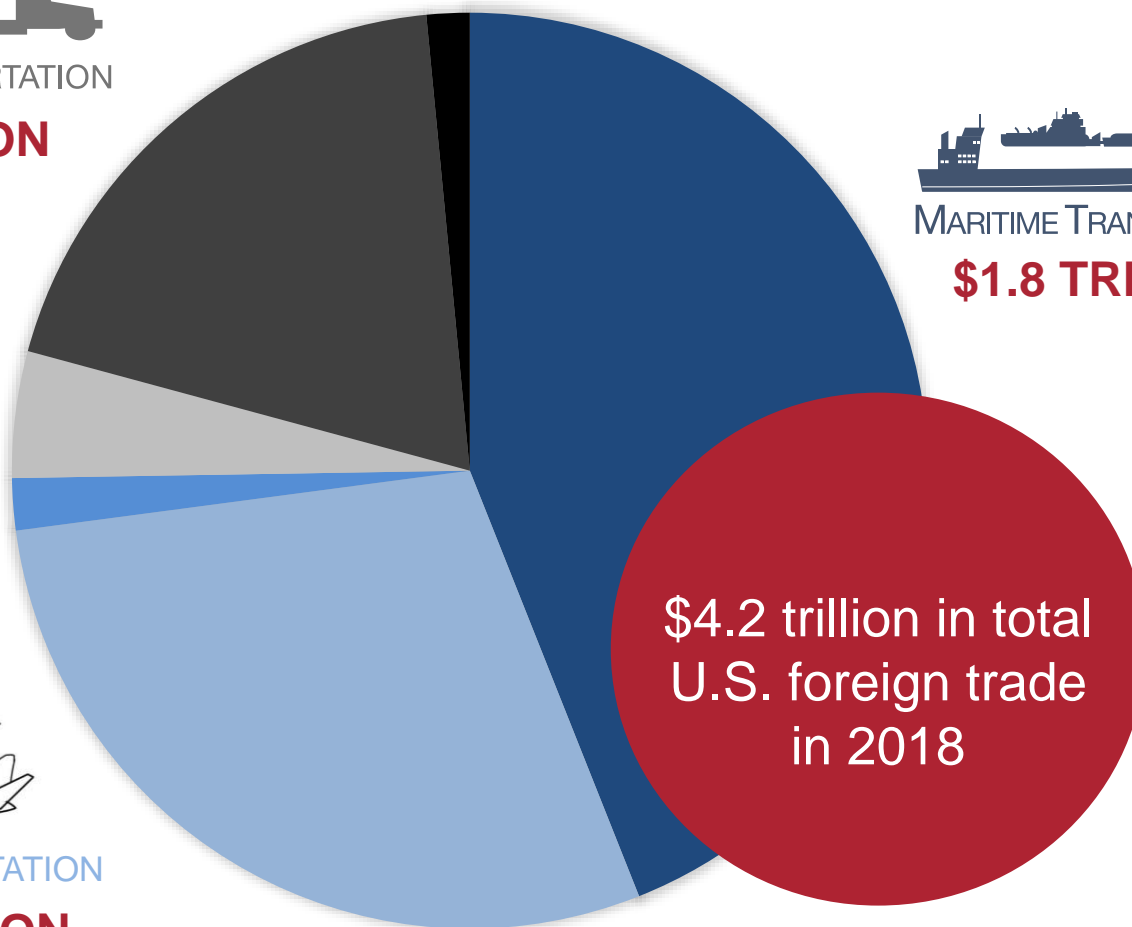
AIR TRANSPORTATION

\$1.2 TRILLION



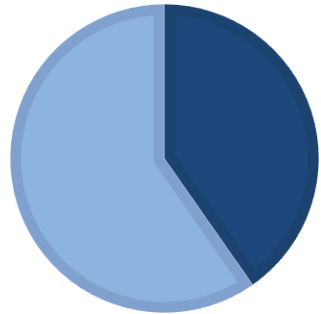
MARITIME TRANSPORTATION

\$1.8 TRILLION

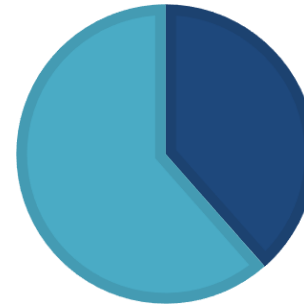




THE US MARITIME INFRASTRUCTURE STORY: *MOVING CRUDE OIL AND PETROLEUM PRODUCTS*



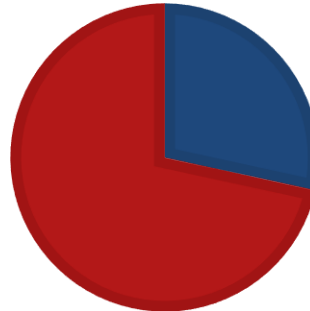
40.3 % OF ALL U.S. WATERBORNE TRADE (IMPORTS & EXPORTS) IS PETROLEUM OR PETROLEUM PRODUCTS



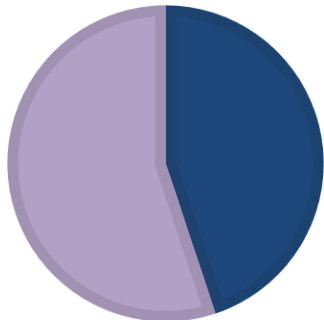
38.5 % OF ALL DOMESTIC WATERBORNE TRADE IS PETROLEUM OR PETROLEUM PRODUCTS



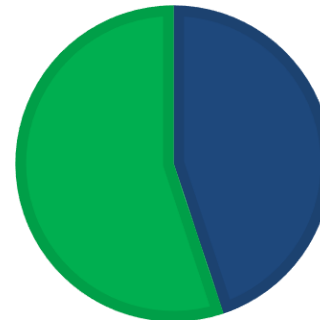
MARITIME TRANSPORTATION



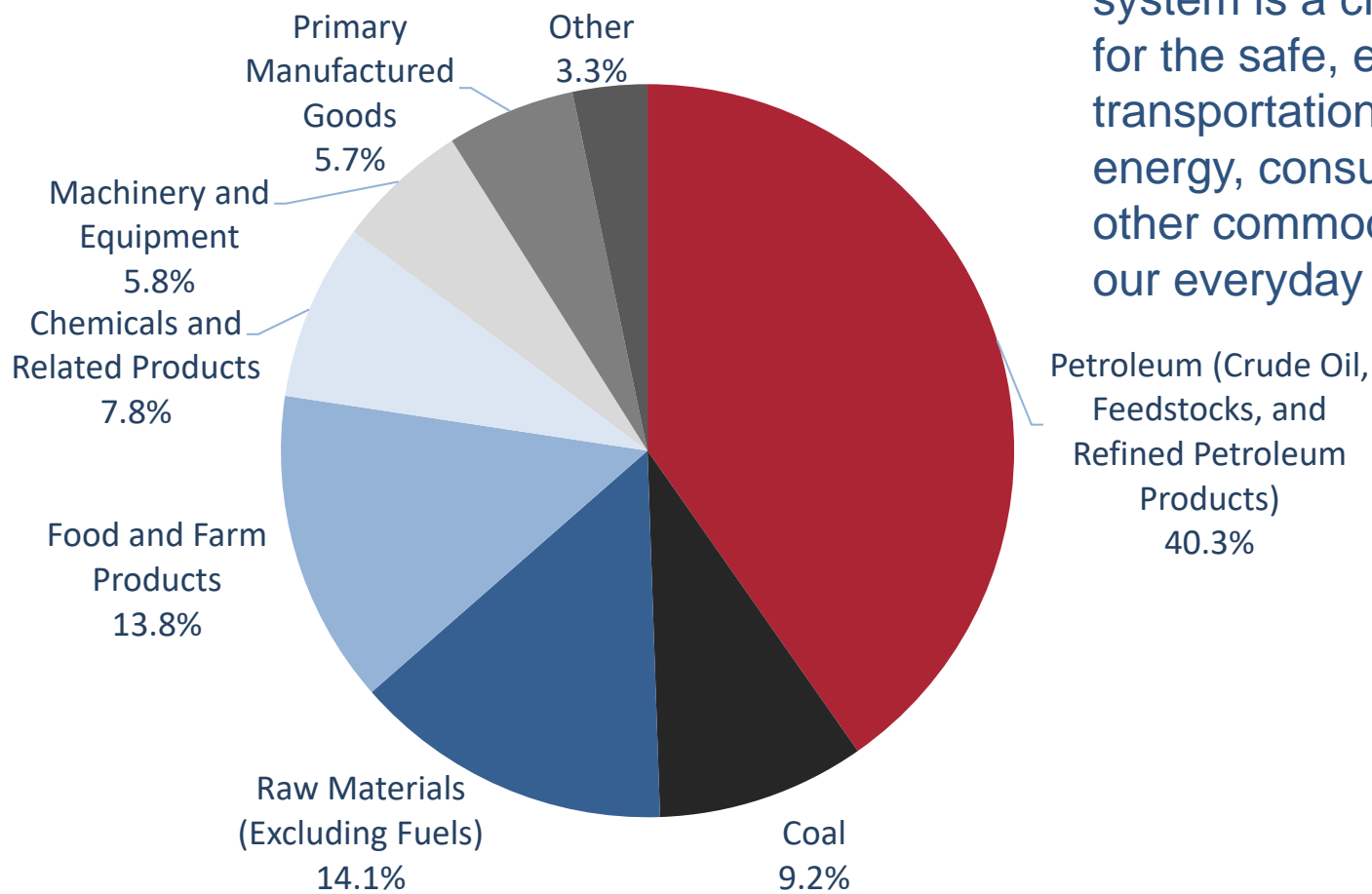
28.4 % OF ALL CRUDE OIL ARRIVING AT REFINERIES IS DELIVERED VIA WATER



44.9 % OF ALL U.S. SELF-PROPELLED WATERBORNE TRADE IS PETROLEUM OR PETROLEUM PRODUCTS



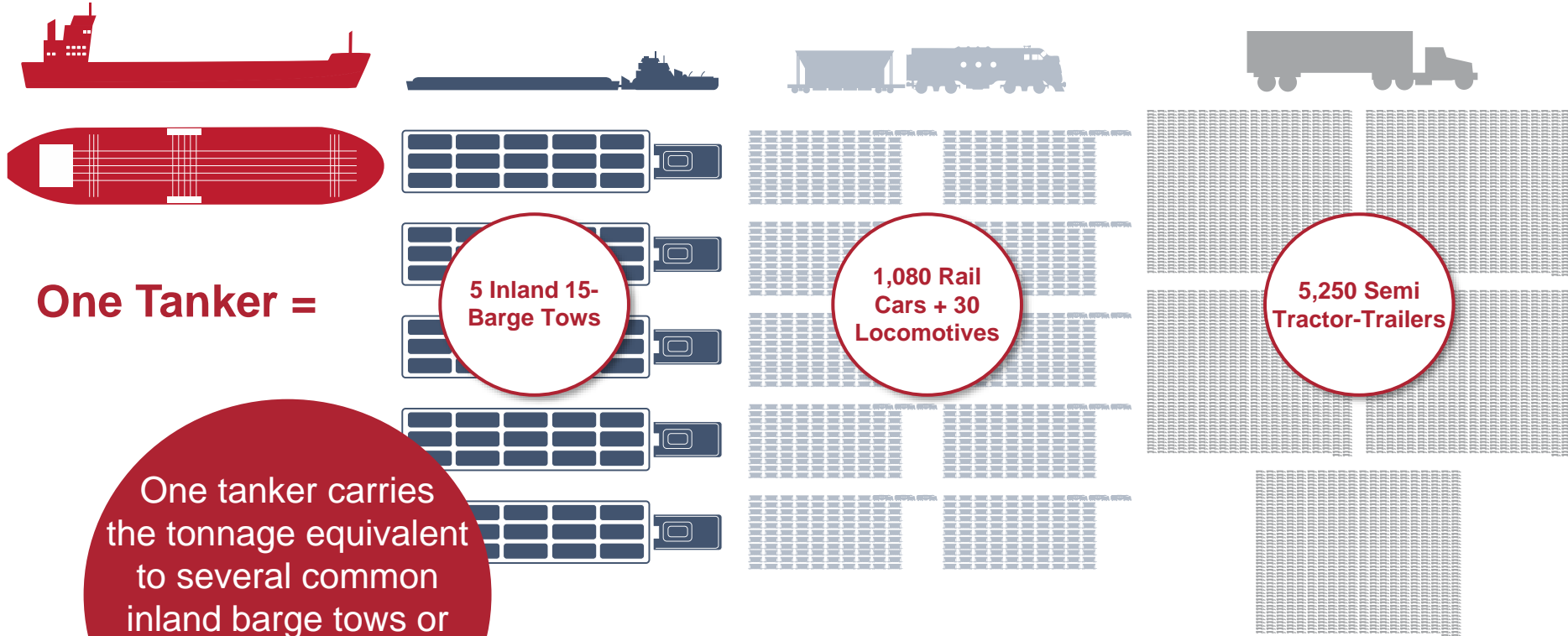
37.2 % OF ALL U.S. BARGE TRAFFIC IS PETROLEUM OR PETROLEUM PRODUCTS



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.

**SHORT TONS TRANSPORTED VIA WATER IN 2017
BY COMMODITY GROUP¹⁰**

THE US MARITIME INFRASTRUCTURE STORY: *THE EFFICIENCY OF MARITIME TRANSPORTATION*



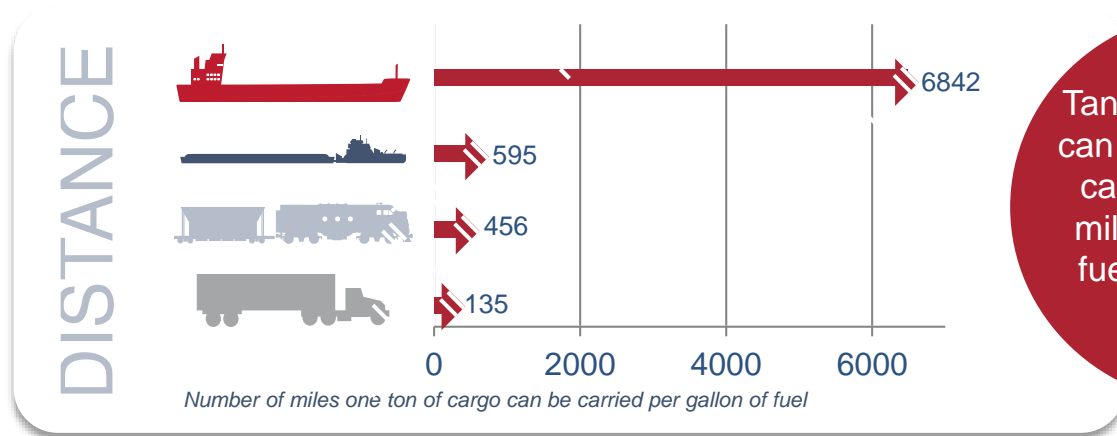
One tanker carries the tonnage equivalent to several common inland barge tows or thousands of rail cars or trucks.¹³

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.



THE US MARITIME INFRASTRUCTURE STORY: ENVIRONMENTALLY CONSCIOUS

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

Tankers and barges emit fewer tons of carbon dioxide per million tons of freight moved one mile compared to rail cars and trucks.¹⁴

CARBON DIOXIDE EMISSIONS

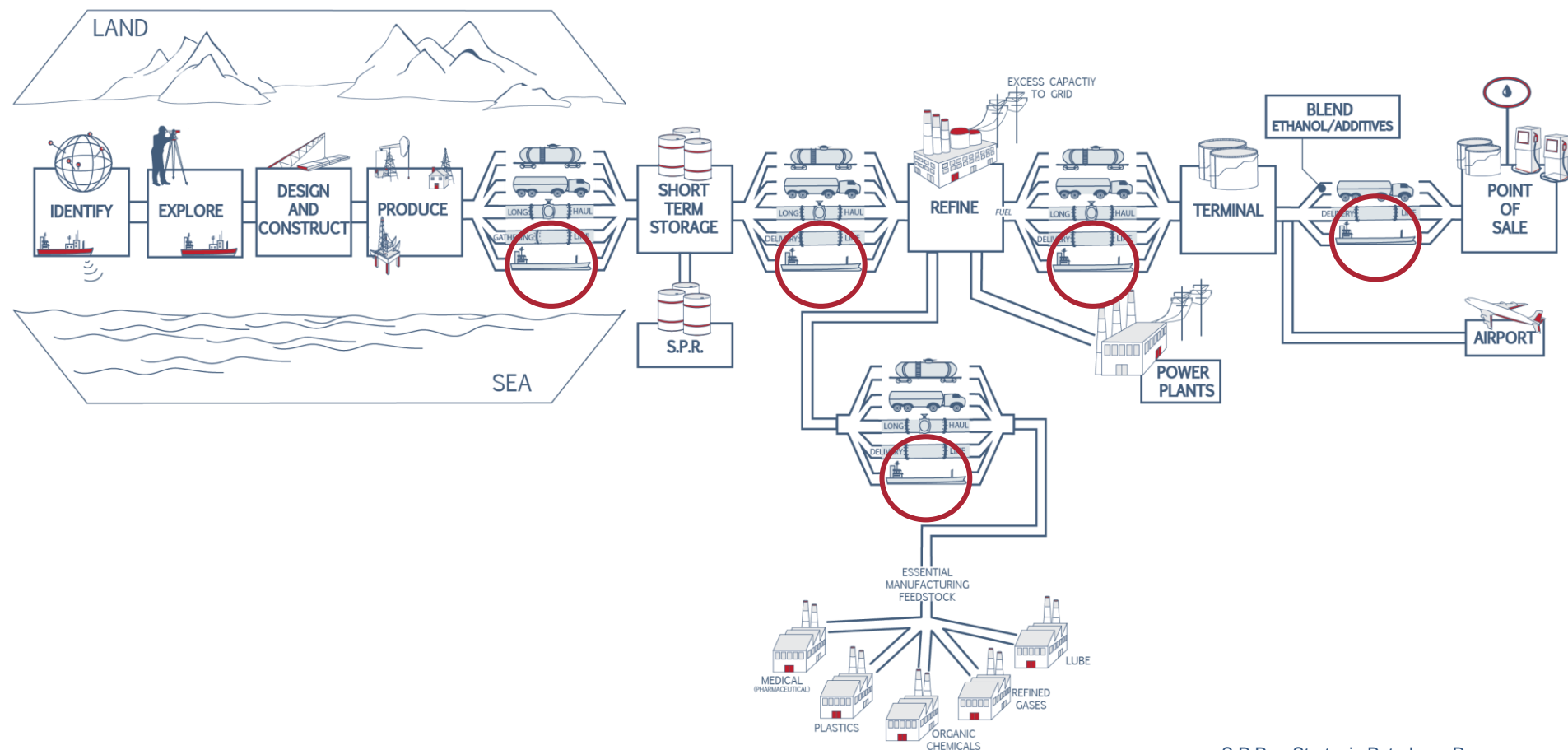
	2.0
	16.9
	22.1
	171.8

Number of tons of CO₂ emitted per one million tons of cargo moved one mile



CRITICAL ELEMENTS OF THE OIL SUPPLY CHAIN

WELLS TO WHEELS



S.P.R. = Strategic Petroleum Reserve



THE US MARITIME INFRASTRUCTURE STORY:

ELEMENTS OF THE MARITIME INFRASTRUCTURE SYSTEM

The infrastructure elements of the maritime transportation system include:



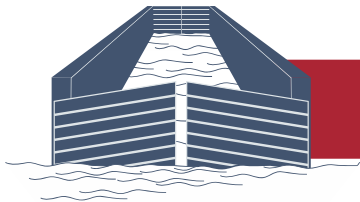
PORTS

Gateways for the movement of goods and materials



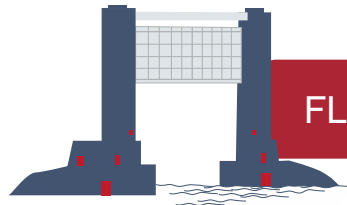
INLAND WATERWAYS

Navigable bodies of water located in the interior of the US



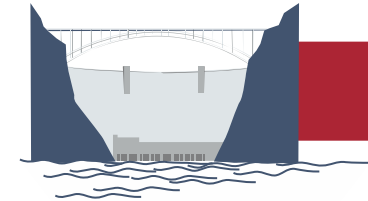
LOCKS

Devices for raising and lowering vessels between stretches of water at different levels



FLOODGATES

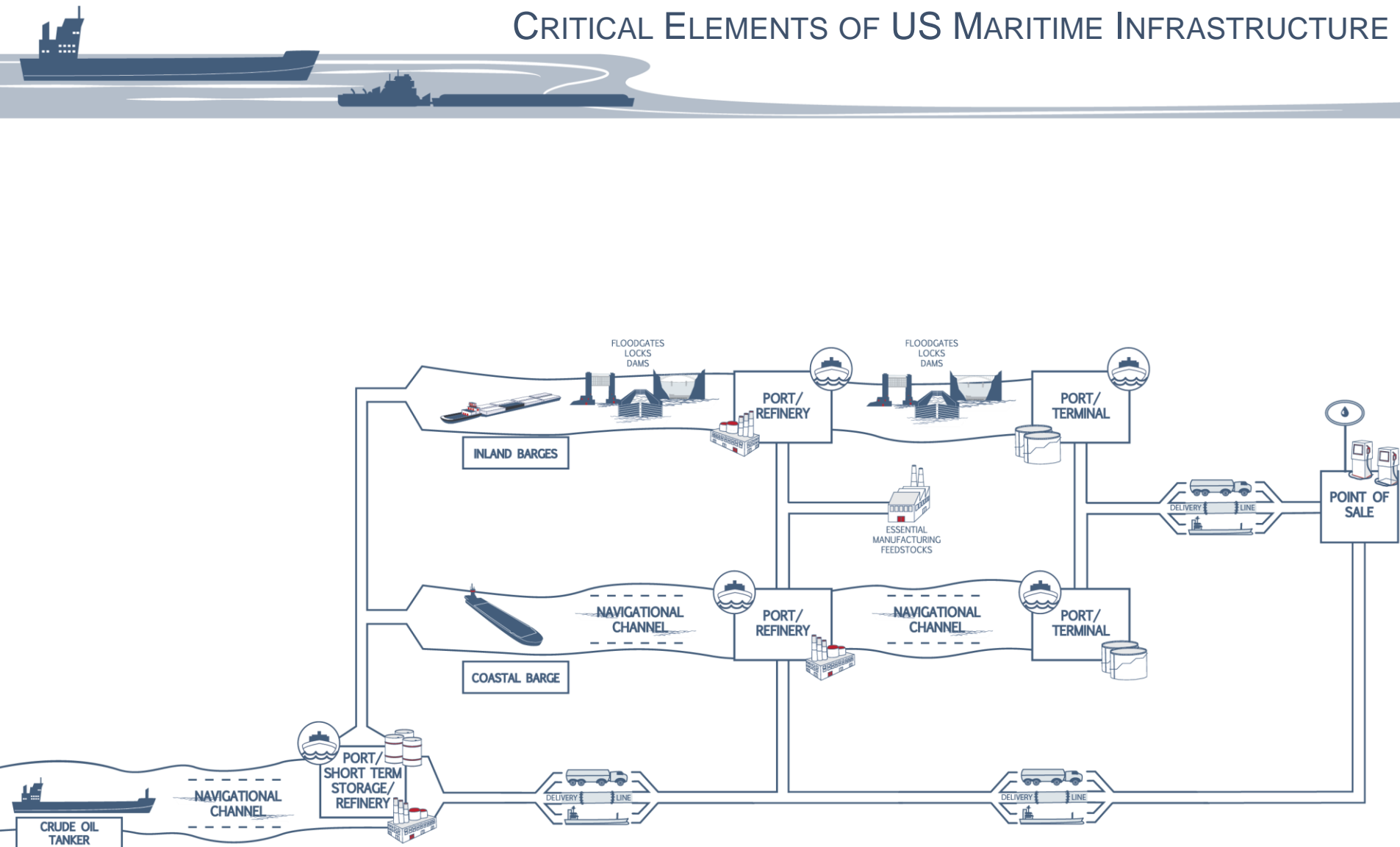
Adjustable gates used to manage the flow of water



DAMS

Barriers that retain water within a specific location

CRITICAL ELEMENTS OF US MARITIME INFRASTRUCTURE





CHOKEPOINTS IN US MARITIME INFRASTRUCTURE: *PHYSICAL INFRASTRUCTURE*

Physical Chokepoints:

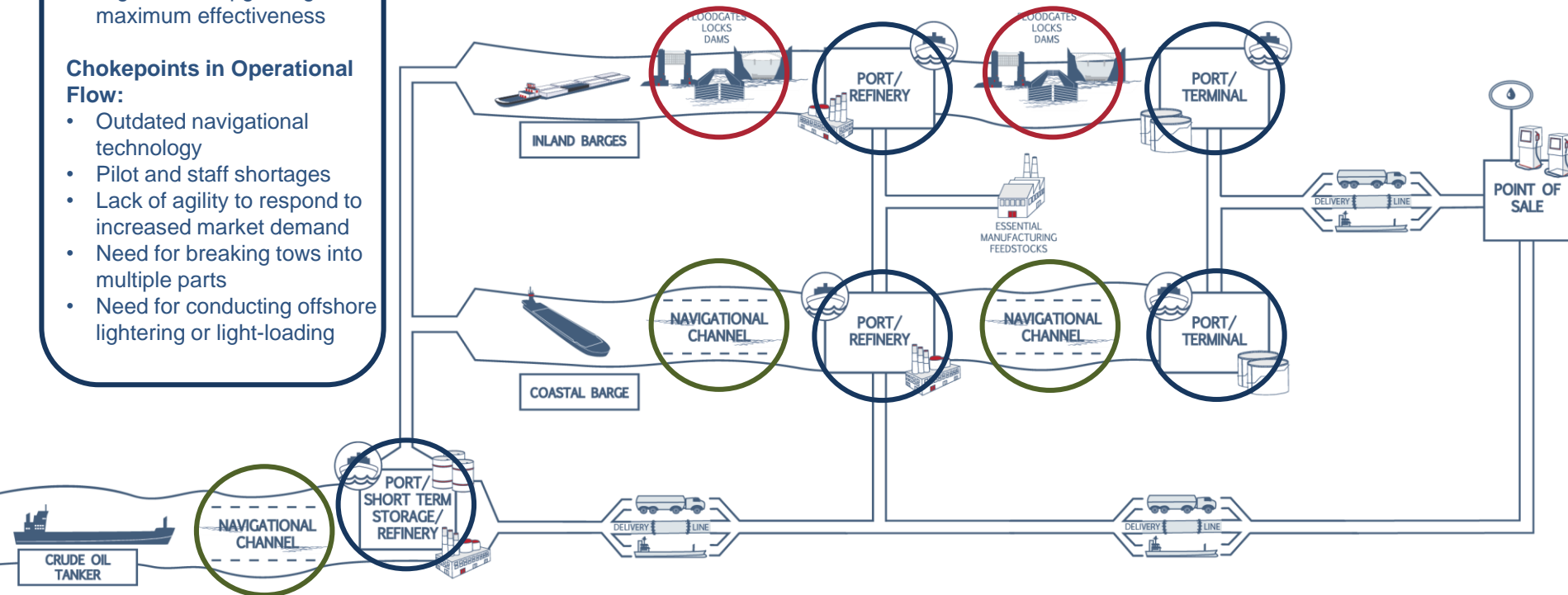
- Restrictive port surface bottoms
- Deferred dredging
- Lack of intermodal connections
- High cost of upgrading for maximum effectiveness

Chokepoints in Operational Flow:

- Outdated navigational technology
- Pilot and staff shortages
- Lack of agility to respond to increased market demand
- Need for breaking tows 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

CHOKEPOINTS IN US MARITIME INFRASTRUCTURE: *POLICY*

Physical Chokepoints:

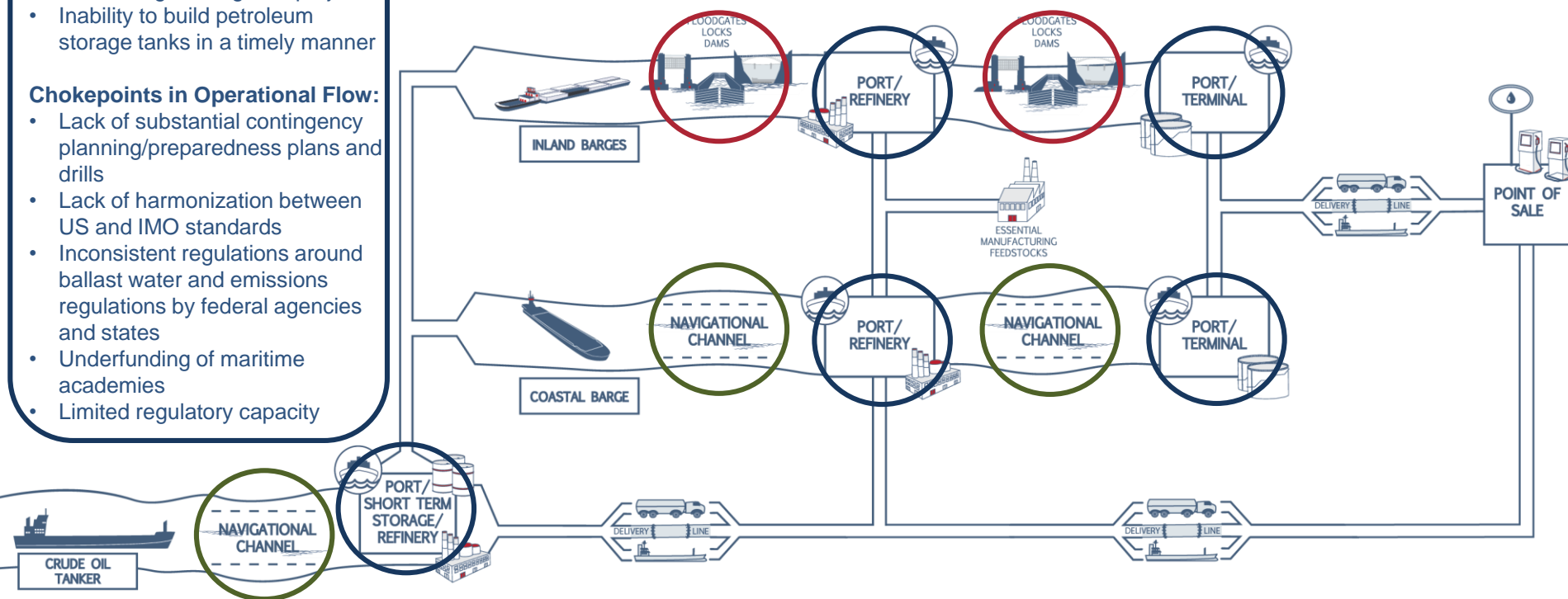
- Expending Harbor Maintenance Trust Fund dollars
- Insufficient dollars in the Inland Waterways Trust Fund
- Delays in completing studies and authorizing/funding new projects
- Inability to build petroleum storage tanks in a timely manner

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

Reliability Chokepoints (magnified with infrastructure age):

- Underfunding of lock, dam, and floodgate infrastructure improvement



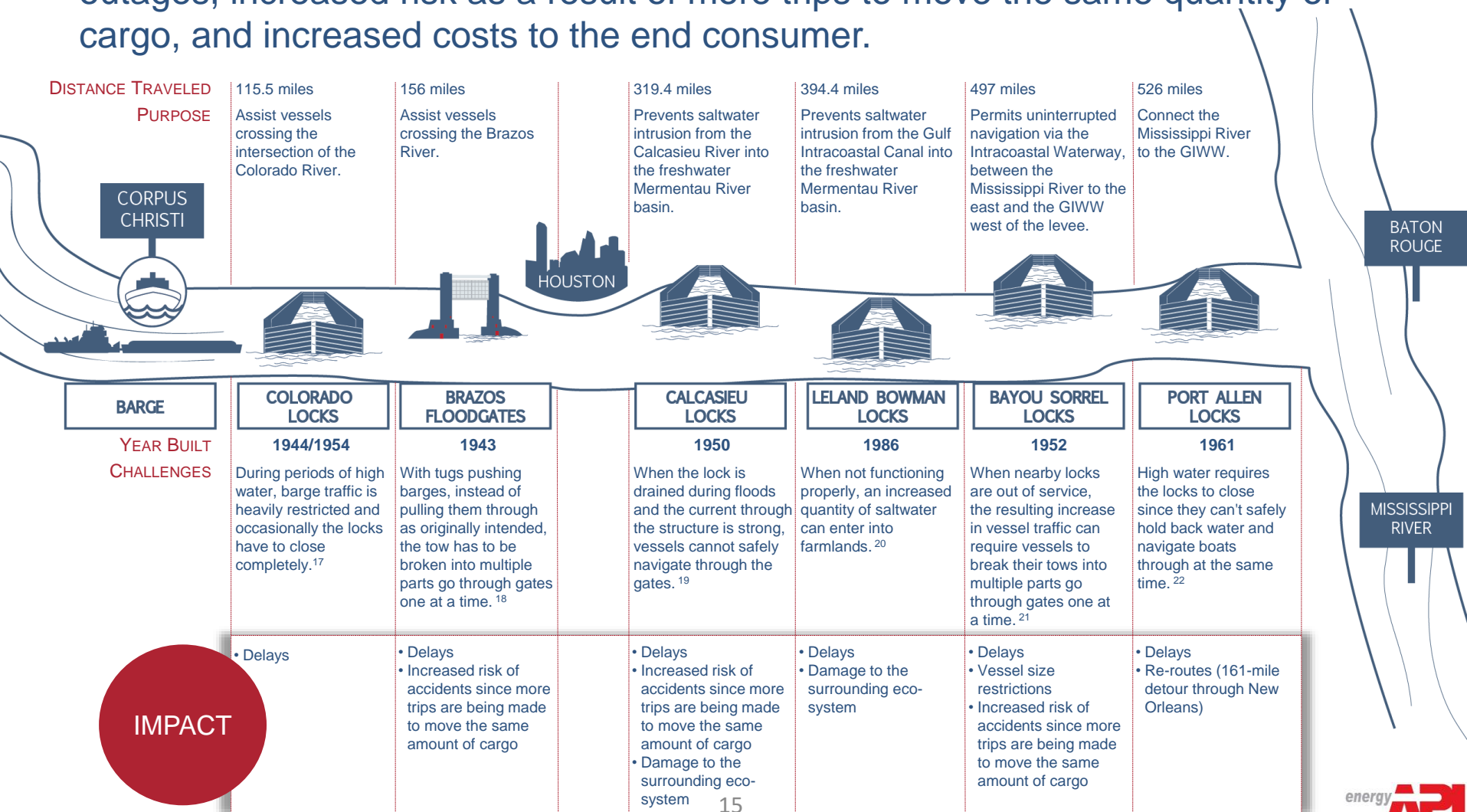
Waterway Chokepoints:

- Daylight passage restrictions
- Underfunding for completing dredging activities
- Prioritization of water uses during droughts



EXAMPLE OF OVERBURDENED INFRASTRUCTURE: GULF INTRACOASTAL WATERWAY (GIWW)

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.





TRUE CONSEQUENCES OF UNDERINVESTMENT IN US MARITIME INFRASTRUCTURE

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 2020²⁴.



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.



WORKING TOGETHER TO SUPPORT MARITIME INFRASTRUCTURE

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.

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- 1 – <https://www.infrastructurereportcard.org/wp-content/uploads/2017/01/Ports-Final.pdf>
 - 2 – <http://www.boxer.senate.gov/en/issues-legislation/spotlight/infrastructure.cfm>
 - 3 – <http://transportation.house.gov/press-release/hearing-highlights-federal-role-infrastructure-and-economic-importance-transportation>
 - 4 – <http://boehner.house.gov/news/documentsingle.aspx?DocumentID=344317>
 - 5 – <http://www.usace.army.mil/Missions/CivilWorks/Navigation.aspx>; <http://www.mapsofworld.com/usa/usa-maps/usa-rail-map.jpg>;
<http://ww1.prweb.com/prfiles/2012/01/30/9167630/InterstateMap.png>; http://www.theodora.com/pipelines/united_states_pipelines.html;
http://www.eia.gov/pub/oil_gas/natural_gas/analysis_publications/ngpipeline/index.html
 - 6 – GAO Report (GAO-13-80): Maritime Infrastructure: Opportunities Exist to Improve the Effectiveness of Federal Efforts to Support the Marine Transportation System: November 2012.; <https://www.phmsa.dot.gov/fags/general-pipeline-fags>
 - 7 – http://www.ngs.noaa.gov/RSD/coastal/projects/coastal/ports_list.html
 - 8 – https://www.census.gov/foreign-trade/Press-Release/current_press_release/ft900.pdf ; <https://www.bts.gov/sites/bts.dot.gov/files/docs/browse-statistical-products-and-data/transborder-freight-data/220171/codes-north-american-transborder-freight-raw-data.pdf>
 - 9 - http://www.eia.gov/dnav/pet/pet_pnp_caprec_dcu_nus_a.htm; http://transborder.bts.gov/programs/international/transborder/index/Index_Interface.html;
<http://www.census.gov/foreign-trade/statistics/highlights/annual.html>; <https://usace.contentdm.oclc.org/digital/collection/p16021coll2/id/1387>
 - 10 – <https://usace.contentdm.oclc.org/digital/collection/p16021coll2/id/3002/>
 - 11 – <https://grains.org/waterways-provide-efficient-movement-of-u-s-grain/>
 - 12 – National Waterways Foundation, WATERWAYS: Working for America: 2008.
 - 13 – National Waterways Foundation, WATERWAYS: Working for America: 2008., <http://www.oecd.org/sti/ind/48337841.pdf>; National Waterways Foundation/Texas Transportation Institute, Update to a Modal Comparison of Domestic Freight Transportation Effects on the General Public - September 2011
 - 14 – http://www.americanwaterways.com/sites/default/files/legacy/tti/tti_study_greenhouse_gas_insert.pdf; <http://www.oecd.org/sti/ind/48337841.pdf>;
National Waterways Foundation/Texas Transportation Institute, Update to a Modal Comparison of Domestic Freight Transportation Effects on the General Public - September 2011
 - 15– GAO Report (GAO-13-80): Maritime Infrastructure: Opportunities Exist to Improve the Effectiveness of Federal Efforts to Support the Marine Transportation System: November 2012.
 - 16 – Wikipedia: The Free Encyclopedia: <http://en.wikipedia.org/> (Entries: Inland Waterways, Floodgates, Locks, Dams)
 - 17 – America’s Maritime Infrastructure: Crying out for dollars. The Economist: February 2, 2013.