



# Future of Barging - A Carrier's Perspective



Marine Board Spring Meeting - May 2019



## Inland Barge Market Outlook - A Carrier's Perspective

# Inland Barge Market - Who are we?



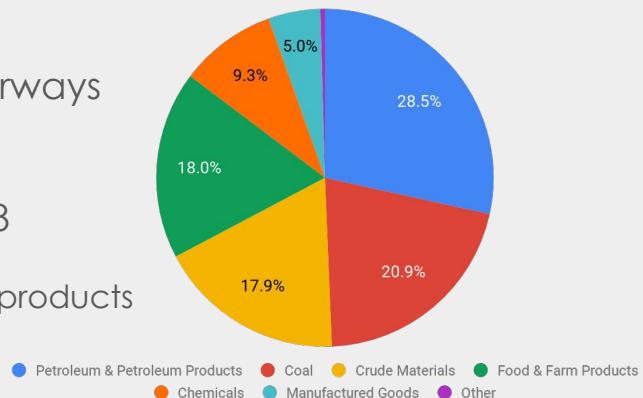
## Facts about American Commercial Barge Line

- One of the nation's largest inland carriers
- 70 million tons of liquid and dry cargoes annually
- 3,600 barges and 130 towboats
- 11 fleets and three terminals
- ~2,100 employees



## Inland Barge Industry

- 8,000 miles inland navigable waterways
- 30 Liquid and 31 Dry Carriers
- 33,000+ Mariners/50,000+ Jobs
- 540 million tons transported in 2018
  - 60% of U.S. grain exports
  - 22% of domestic petro. and petro. products
  - 20% of power generating coal





- Continued Carrier Consolidation
- Technology Advancements
- Supply/Demand Equilibrium
- Winners and Losers

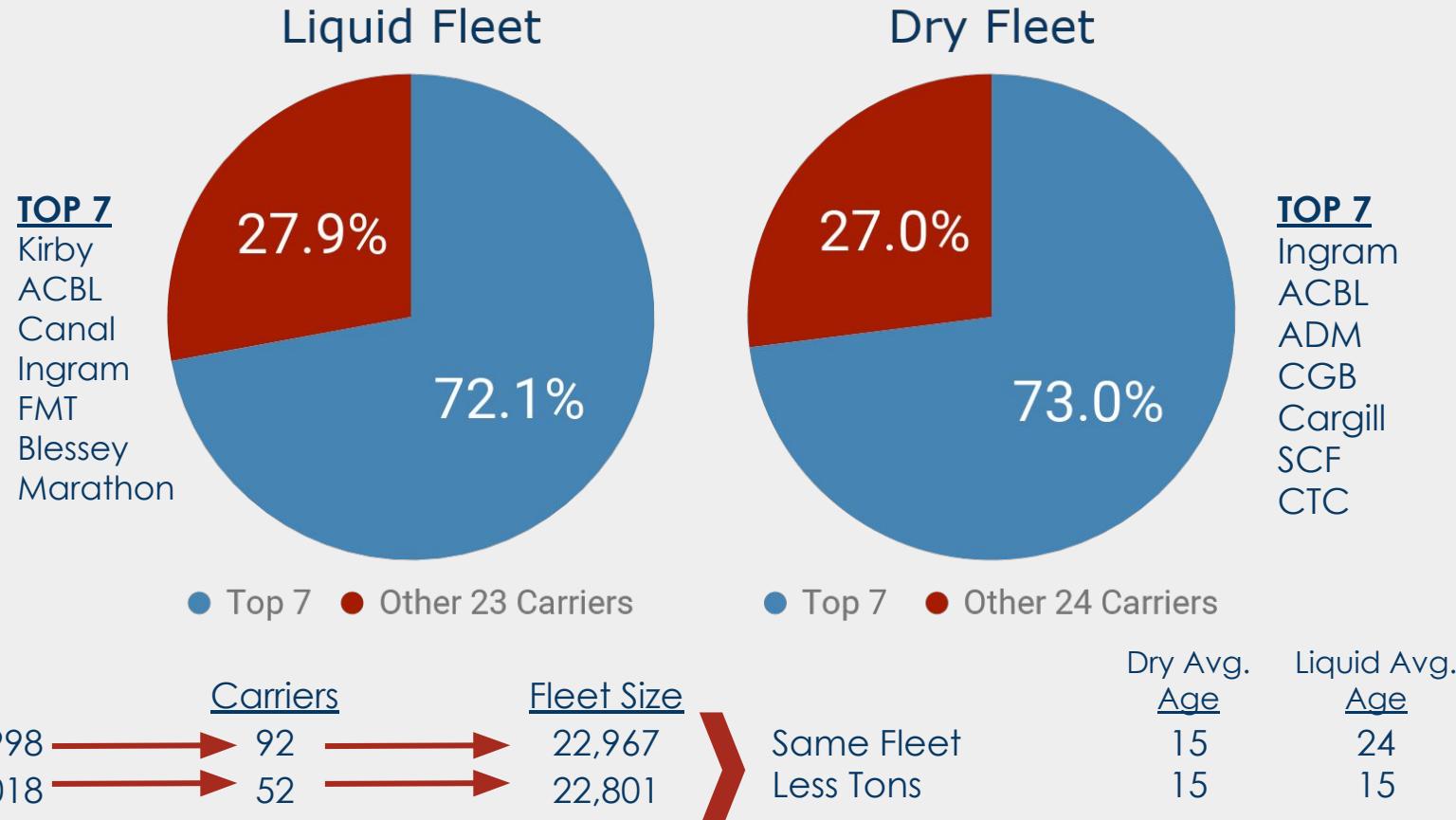


- Why Consolidation? Efficiencies of scale
  - Robust capability across end-markets and geography
  - Increased offerings and capabilities at less cost per unit
  - Absorption of regulatory compliance - person to a team
  - Generation-passing - leadership challenges, monetizing business
- Who benefits? Shippers and Carriers
  - Less carriers to choose from, but more robust capabilities
  - Scale to handle ship-load quantities to end-markets
- Carriers must be vertically integrated - just to get the work done!

Continued Carrier Consolidation

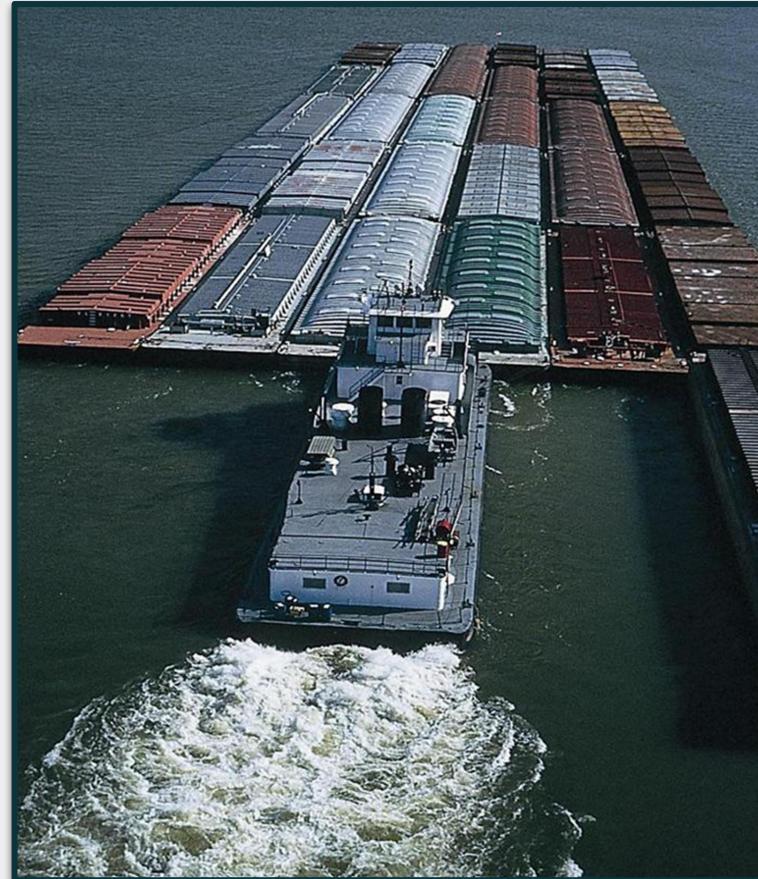


# Continued Carrier Consolidation





- Continued Carrier Consolidation
- Technology Advancements
- Supply/Demand Equilibrium
- Winners and Losers



- **Navigation**

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- **Vessel Operations**

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- **Communication and Data**

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- Auto Pilot - how far away are we?
  - Auto-assist now
  - Drone assists
- Rose Point Electronic Mapping
  - Improved situational awareness, overall safety
  - Most efficient transit times
  - Voyage data recording
  - Exceptional and time-tested reliability
- Electronic buoys and other navigation aids
  - Hand-in-hand with Electronic Mapping

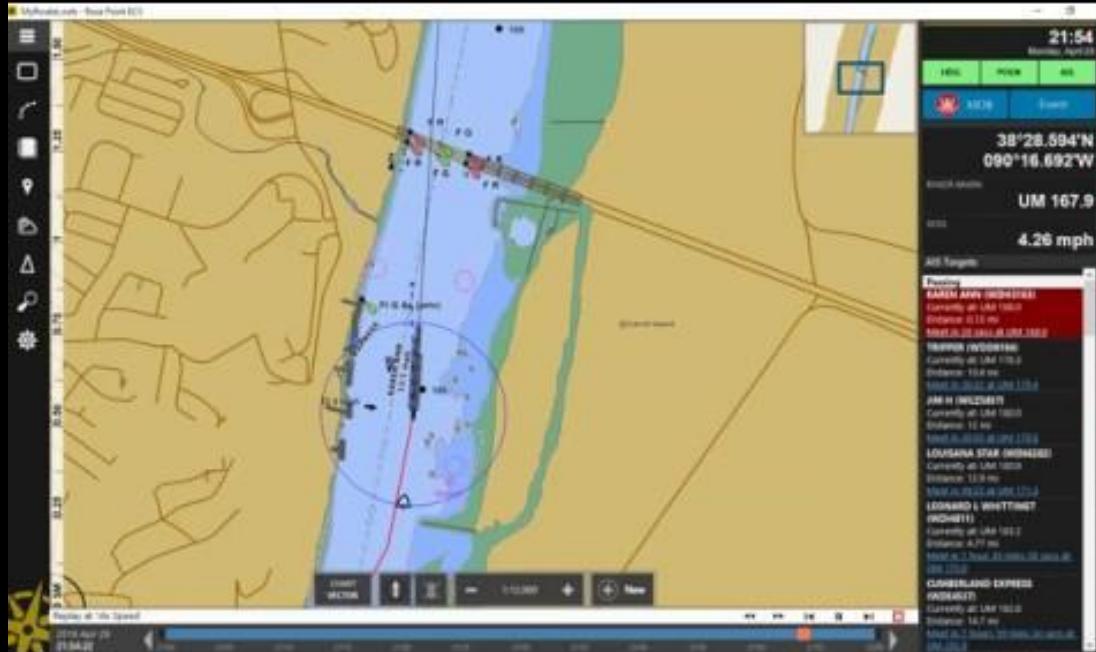
# Vicksburg Bridge - Drone Assist





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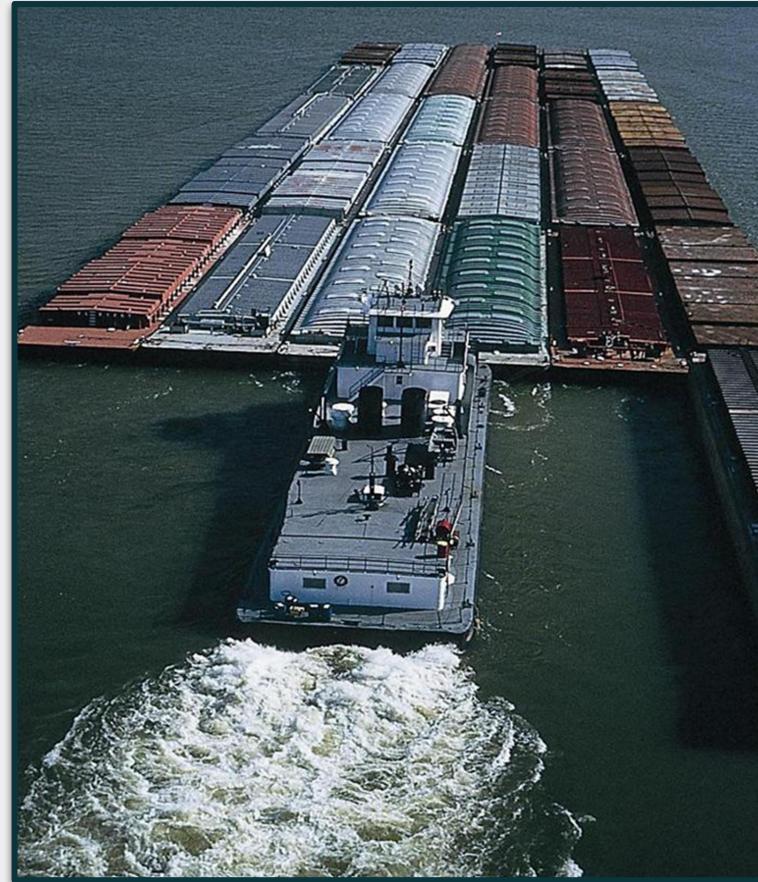
# Rose Point Electronic Mapping





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# Technology Advancements



- Navigation
- Vessel Operations
- Communication and Data

## Tier 3 → Tier 4 (804+ HP)

- SCRs on exhaust or EGR
- Increased electronics and cooling
- Increased cost 80%-100%
- Diesel Emissions Fluid (DEF)

SCR units Urea is sprayed into the exhaust to reduce Nox emissions



## Propulsion Concepts

- Z-drive:fuel, maneuverability
- Diesel Electric: GenSets, electric motors
- Hybrid Diesel: electric boost motors
- Articulated or Multiple Steering Rudders - increase steering force

## Vessel Operations

# Vessel Operations

## Old

- ❖ Reactionary; Trouble-shooting
- ❖ Swap Parts
- ❖ Excess Inventory
- ❖ Poor Records (paper)

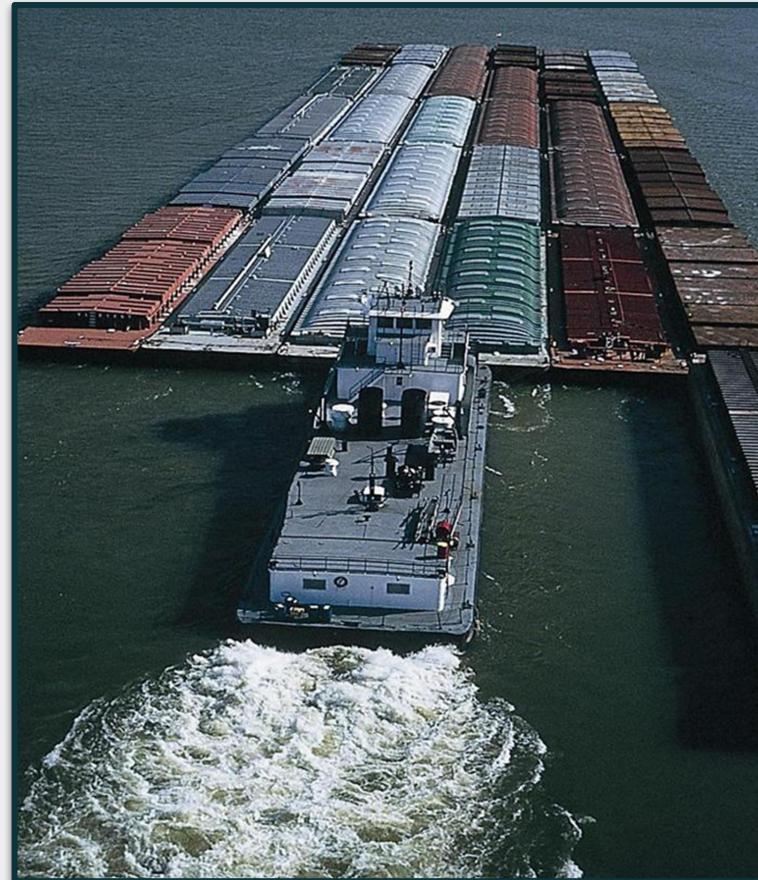
## Current

- ❖ Mfg Maintenance Schedules
- ❖ Managed Inventory
- ❖ Enterprise Asset Mgmt
- ❖ Electronic Sensors & Alarms

## Future

- ❖ Condition-based & Predictive
- ❖ Real-time shoreside oversight
- ❖ PM's Based on Failure
- ❖ Analytics
- ❖ More sensors, AI & Data
- ❖ Mining
  - Vibration
  - Machine Learning
  - Onboard Oil Analysis
  - Crankshaft Electro-Mag

# Technology Advancements



- Navigation
- Vessel Operations
- Communication and Data

# Improved Communications and Data Sharing



- **Work**

- 5G cellular network: more and faster data
- Vessel-side similar to shore-side capabilities
- GPS, sensors, and Internet-of-Things
- Live, online training, Video conferencing
- More information shared securely between nearby vessels, service providers, lock operators

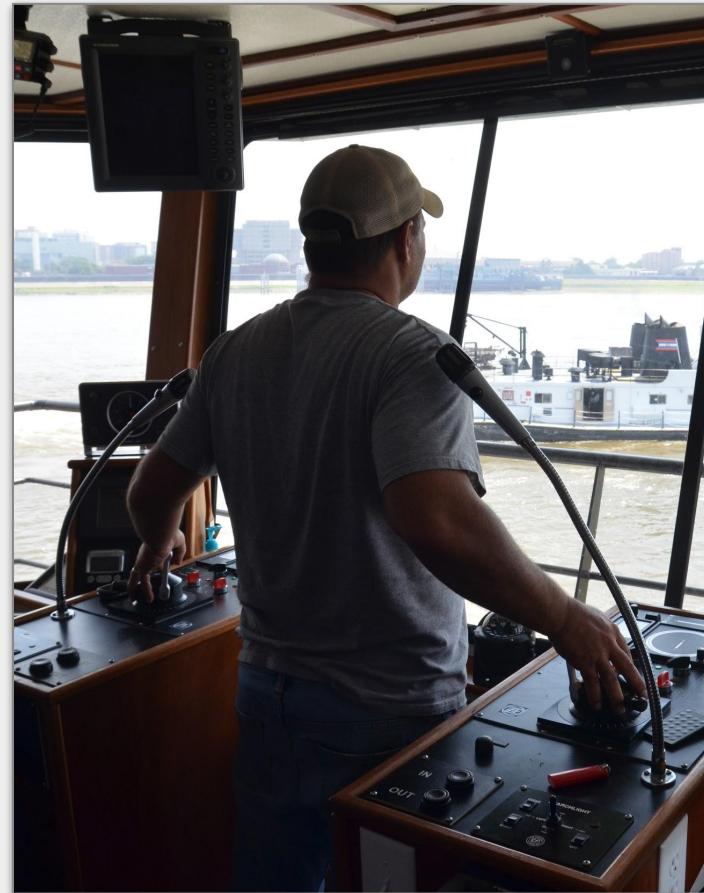
- **Play**

- Streaming media: hometown sports and shows
- Video calls with family and friends
- Online educational opportunities
- Is that 3-D or virtual reality?





- Continued Carrier Consolidation
- Technology Advancements
- Supply/Demand Equilibrium
- Winners and Losers



## What drives it?

- End-market demand
- Energy renaissance
- Global Trade
- Cheap natural gas
- Barge Construction

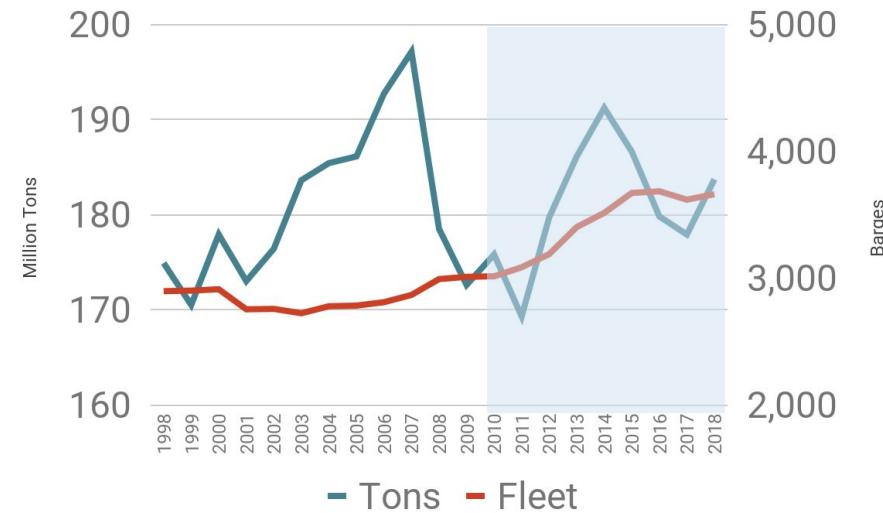
# Supply/Demand Equilibrium



## Dry Demand v. Fleet 1998 - 2018



## Liquid Demand v. Fleet 1998 - 2018



# Supply/Demand Equilibrium



## Cement

OLD



NEW



## EAF v. Int. Mills

OLD



NEW



## Fertilizer

OLD



NEW



# Supply/Demand Equilibrium

## 1998 - 2018 Barged Coal v. Open Top Fleet



# Supply/Demand Equilibrium

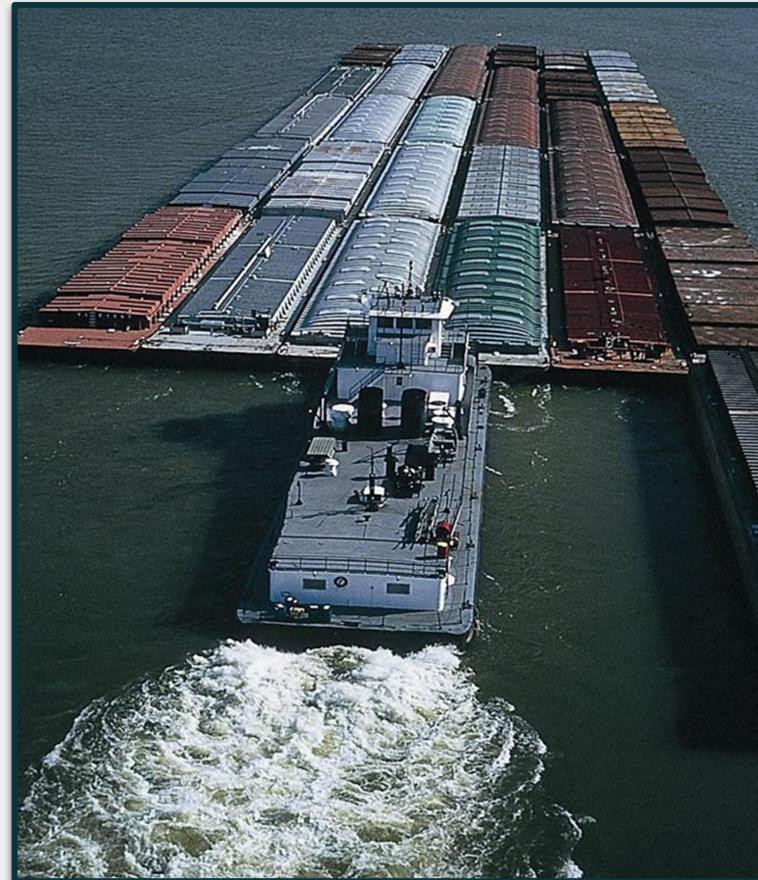
## Comparison of Inland River Barge Ton-Mile Demand and Fleet Size





- Continued Carrier Consolidation
- Technology Advancements
- Supply and Demand Equilibrium
- Winners and Losers

# Who will be the Biggest Winners and Losers?



- **Shippers - Winners**

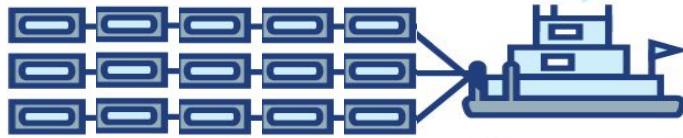
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- **Carriers - Challenges**

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- **Public - Winners**

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- **Environment - Winners**

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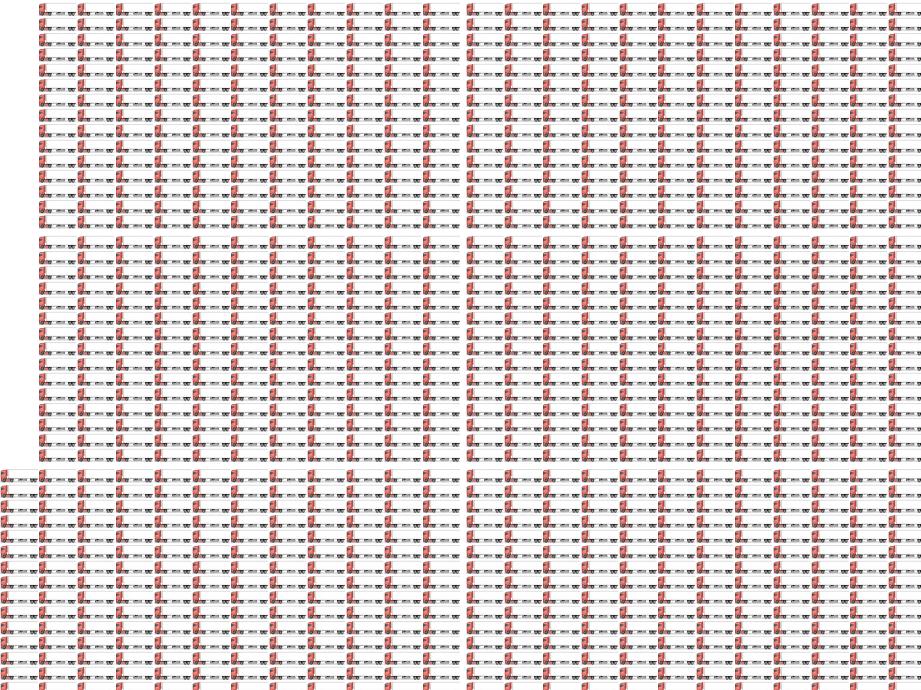
One 15-Barge Tow



216 Rail Cars + 6 Locomotives



1,050 Large Semi Tractor-Trailers





A loaded tank barge carries 27,500 barrels of gasoline, enough to keep about **2,500 automobiles** running for an entire year.

## Units to Carry 27,500 Barrels of Liquid Cargo

1 barge



46 rail cars

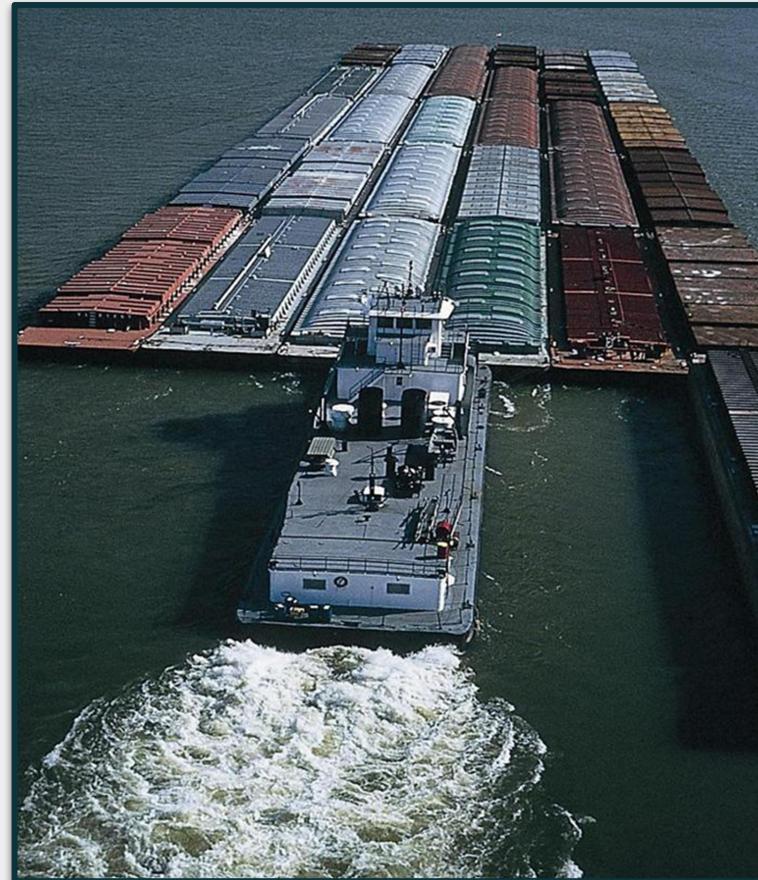


144 trucks



Who will be the biggest winners and losers?

# Who will be the Biggest Winners and Losers?



- Shippers - Winners

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- Carriers - Challenges

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- Public - Winners

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- Environment - Winners

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## Certification and Watchkeeping for Seafarers

**TWIC**  
Automatic Identification Systems

Vessel Discharges

Future of Navigation

Federal Preemption

Invasive Species

Certain Dangerous Cargoes

MARPOL Annex VI  
Mariner Credentialing

Vessel Security Plans

Medical Standards

Maritime Security

IMO Polar Code

Cyber Risk Management

Marine Engine Emissions

Renewable Energy

Safe Manning

Towing Vessel Inspection

Ballast Water  
Jones Act

International Convention on Standards

Maritime Labor Convention

State Actions

Sewage No-Discharge Zones

Certification and Watchkeeping for Seafarers

State Taxes

Fatigue and Crew Endurance

ATONS  
Tank Barge Emissions

Missouri River

Infrastructure and Funding

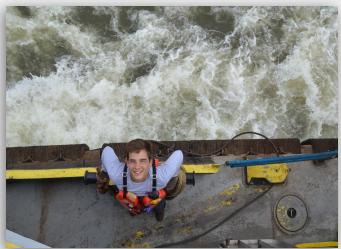
Tank Vessel Response Plans

Challenges - regulatory challenges are stifling

## Carriers Challenges - SubM Cost and Benefit

- Four Areas of Impact/Cost
  - Audit/Survey: Costs = Time & Material
  - Training: Systems & Policies
  - New Equipment Requirements
  - Material Condition of Vessel
- SubM Benefit to Carrier
- SubM Challenges

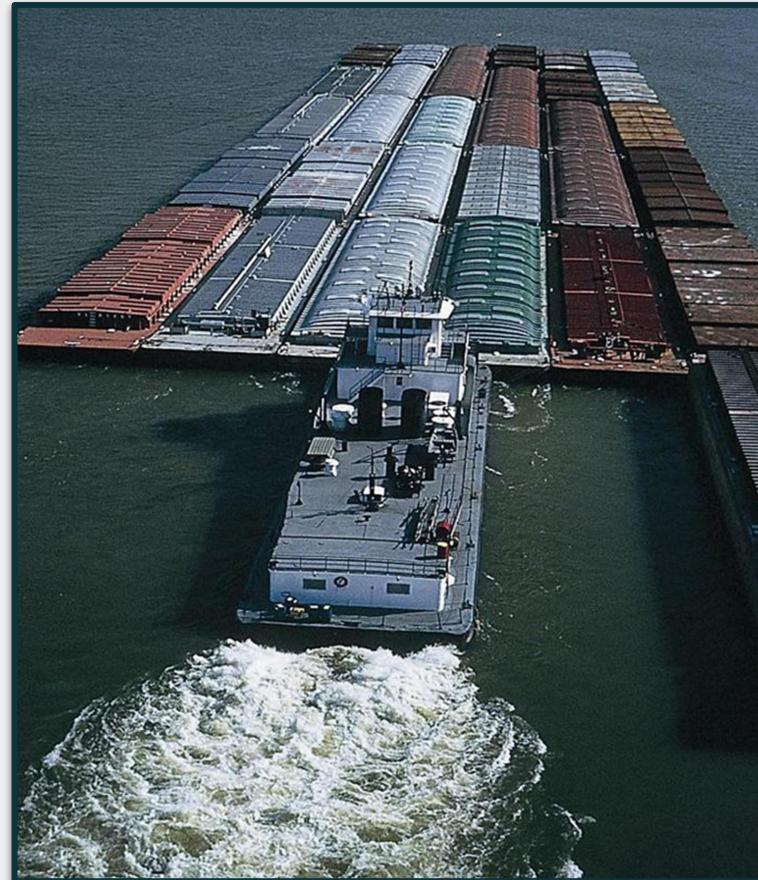




## User Taxes

- Barge Industry is only beneficiary contributing to the IWTF - \$115M annually
- Many benefit from our industry's contributions at no cost to them
  - Hydro electric industry
  - Water supply & irrigation
  - Real estate development
  - Flood protection
  - Commercial fishing
  - Industrial Water Supply
  - Municipal Water Supply
  - Recreational Boaters

# Who will be the Biggest Winners and Losers?



- Shippers - Winners

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- Carriers - Challenges

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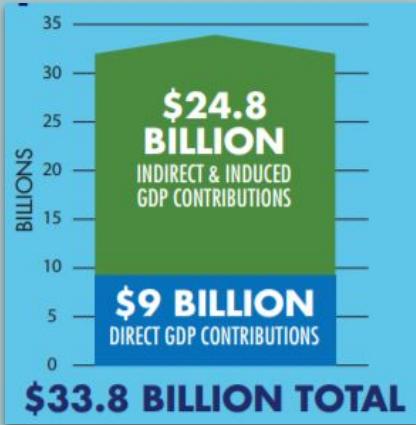
- Public - Winners

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- Environment - Winners

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## GDP



## TAXES



## JOBS

**50,480**  
Direct Jobs

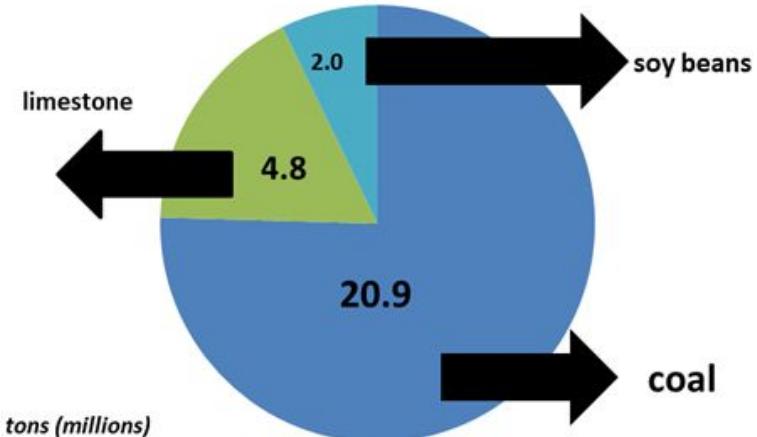
**251,070**  
Indirect & Induced



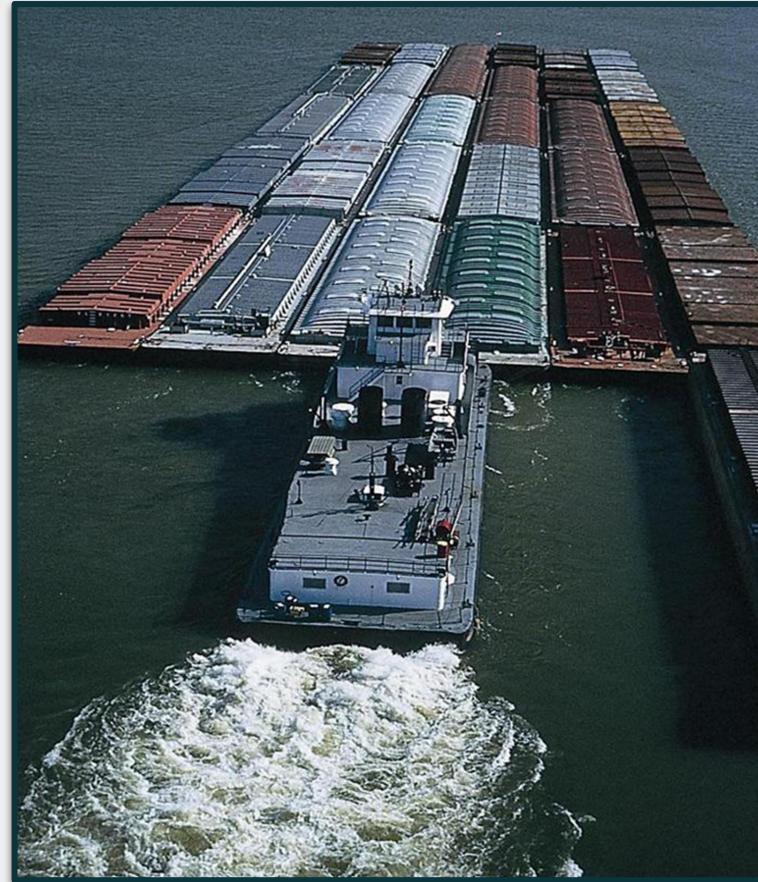
## Easing Rail and Highway Congestion in our Communities

- Waterways provide great cargo capacity
- Move freight more safely, less congestion
- Barges carry 49 million truck trip equivalent

### McAlpine's Top Commodities (2017)



# Who will be the Biggest Winners and Losers?



- Shippers - Winners

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- Carriers - Challenges

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- Public - Winners

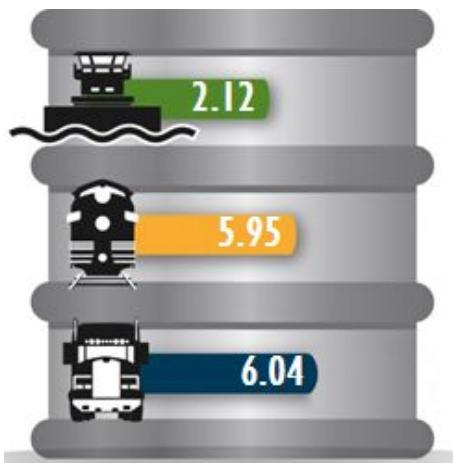
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- Environment - Winners

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Who will be the biggest winners and losers?

Barging is **THE** most efficient, greenest and safest mode of bulk transportation



Ton-Miles Traveled  
per Gallon of Fuel



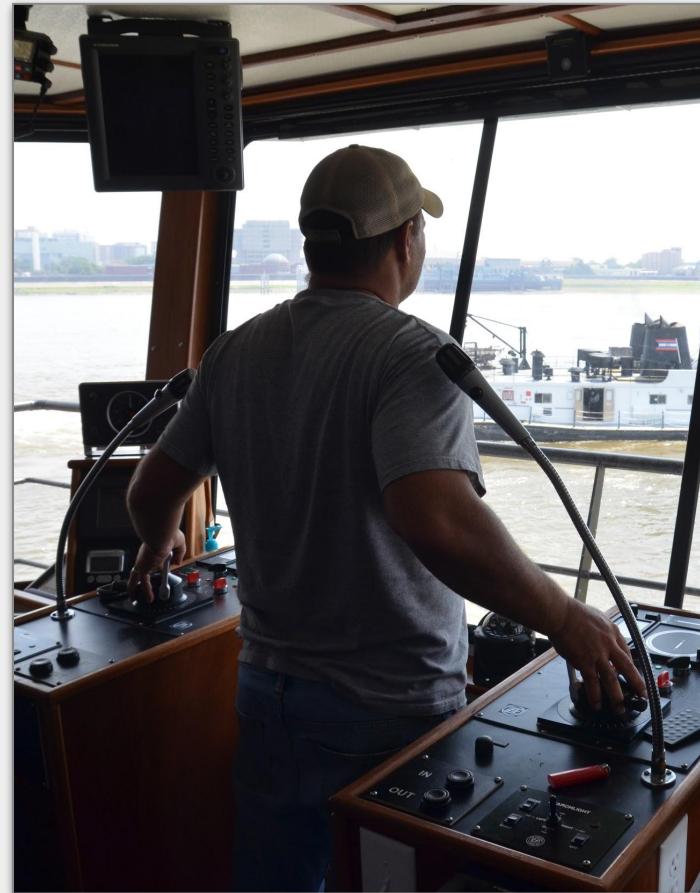
Tons of CO<sub>2</sub> per  
Million Ton-miles



Spills of More Than  
1000 Gallons



Fatalities



- Infrastructure Delivery
- More beneficiaries - sharing the cost burden



## Infrastructure

- Improve reliability
- Improve capacity (NESP)
- Improve infrastructure delivery
- Improved Corps project delivery process
- Broaden beneficiaries support



Criton Corporation

Informa Economics IEG Barge Commodity Profile

Informa Economics IEG Barge Fleet Profile

National Waterways Foundation

Price Waterhouse Coopers

The American Waterways Operators

US Army Corps of Engineers

US Department of Transportation - Maritime Administration

Closing