



# INGRAM BARGE COMPANY

## AN INTRODUCTION TO THE BARGE INDUSTRY

September 03, 2009

Business of Towing

By Arnie Rothstein

## Presentation Outline

**I Transportation's Role in the US Economy**

II Marine Assets

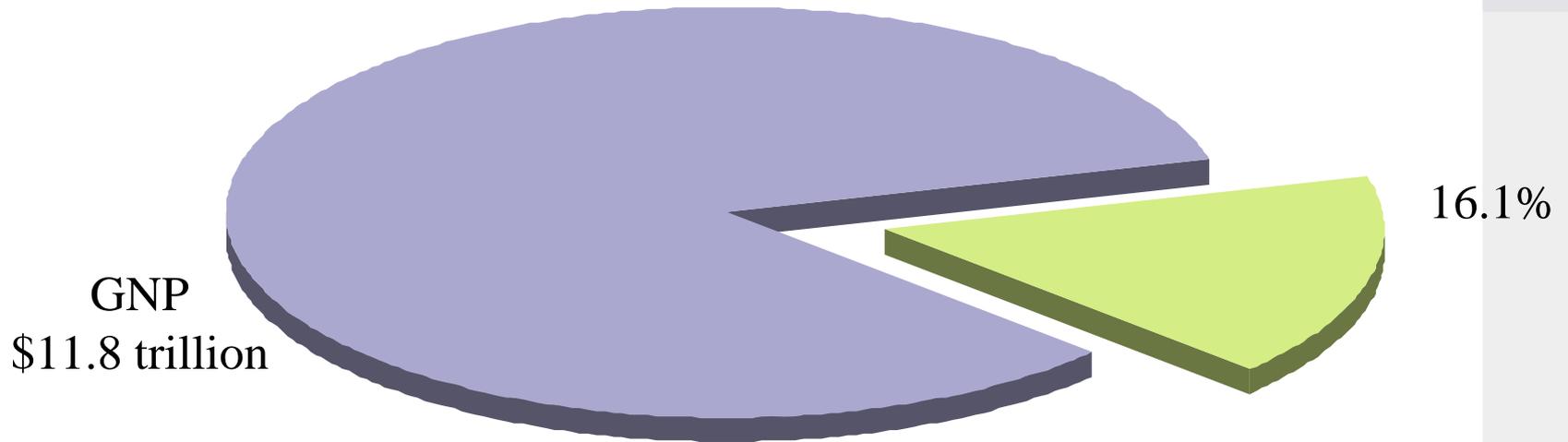
III Today's Barge Industry

IV Margin Drivers

## Transportation's Role in the US Economy

### Transportation is an Integral Part of U.S. Economic Activity

Transportation Bill Share of the GNP

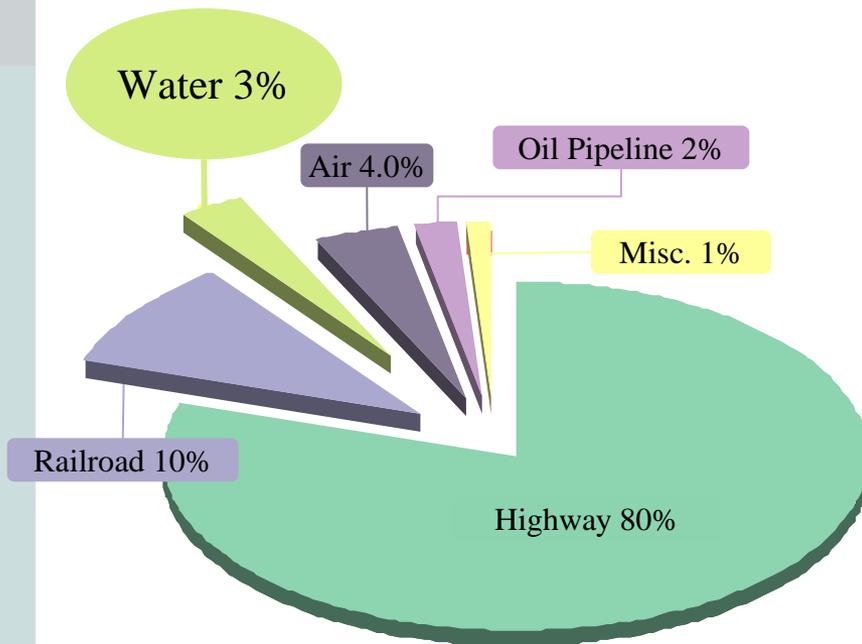


By any measure, the U.S. has the most well-developed Freight Transport Infra-Structure in the World and it is a global competitive advantage

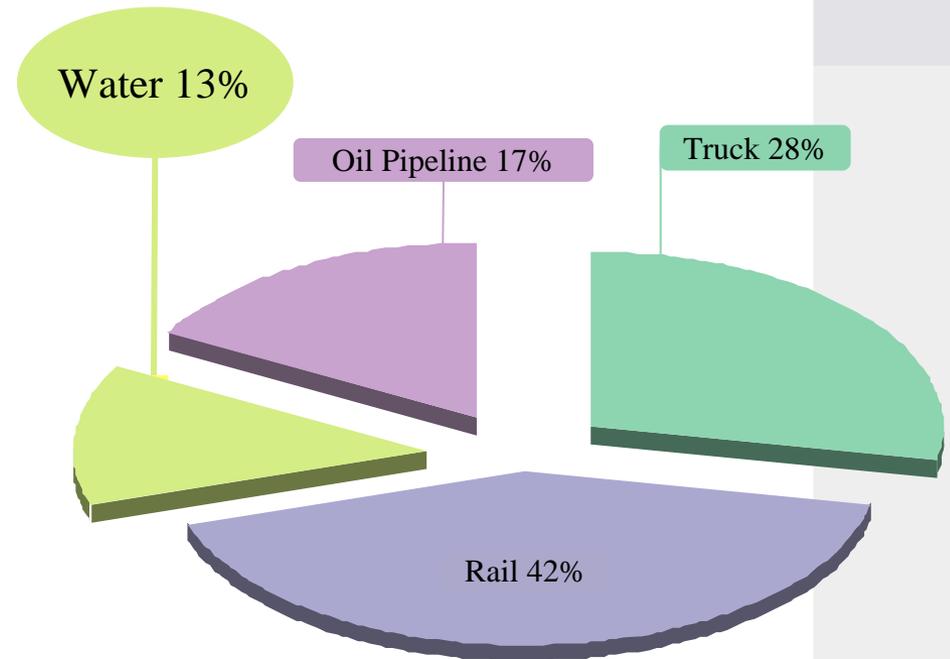
## Transportation's Role in the US Economy

While water carriage requires just 3% of freight costs, it accounts for 13% of the ton-miles produced

Annual U.S. Intercity Freight Bill



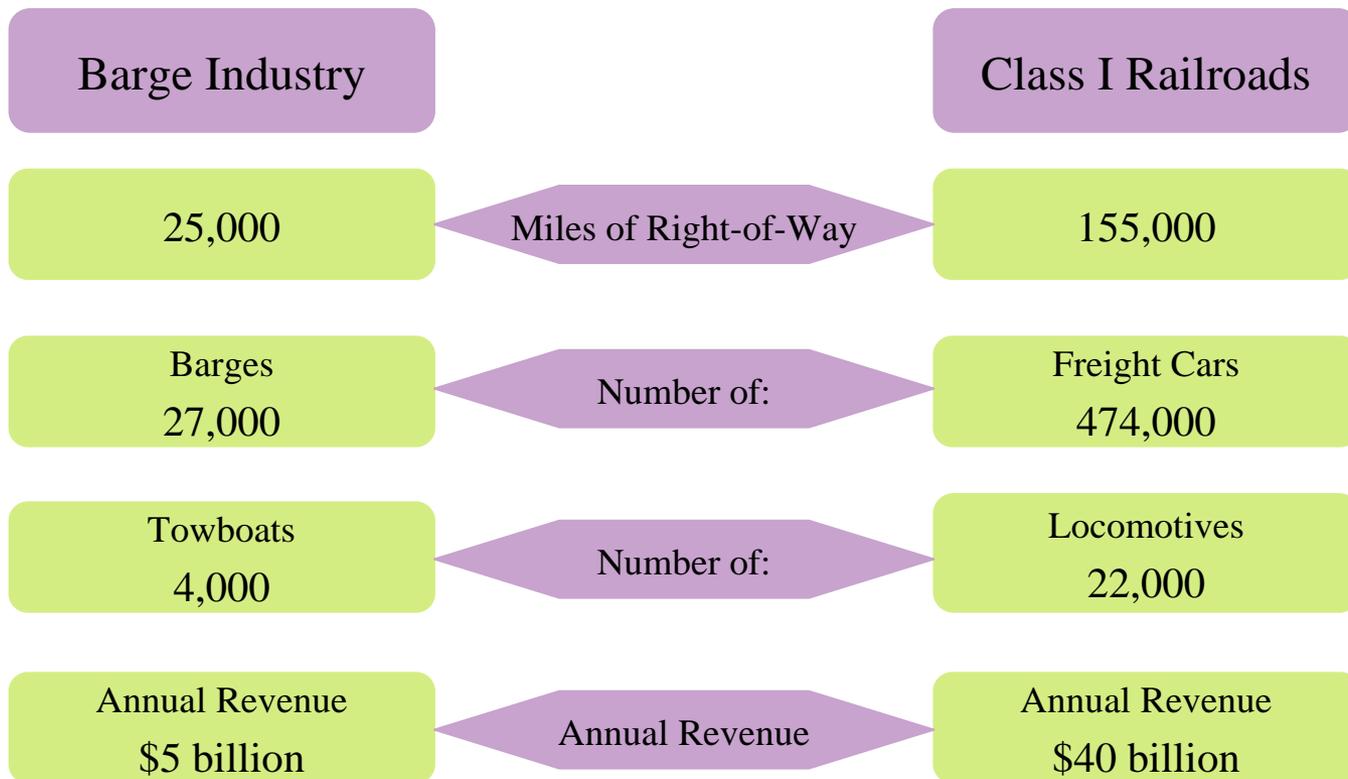
Ton - Miles



By any measure, the U.S. has the most well-developed Freight Transport Infra-Structure in the World and it is a global competitive advantage

# Transportation's Role in the US Economy

## Comparison: Barge Industry versus Rail Industry

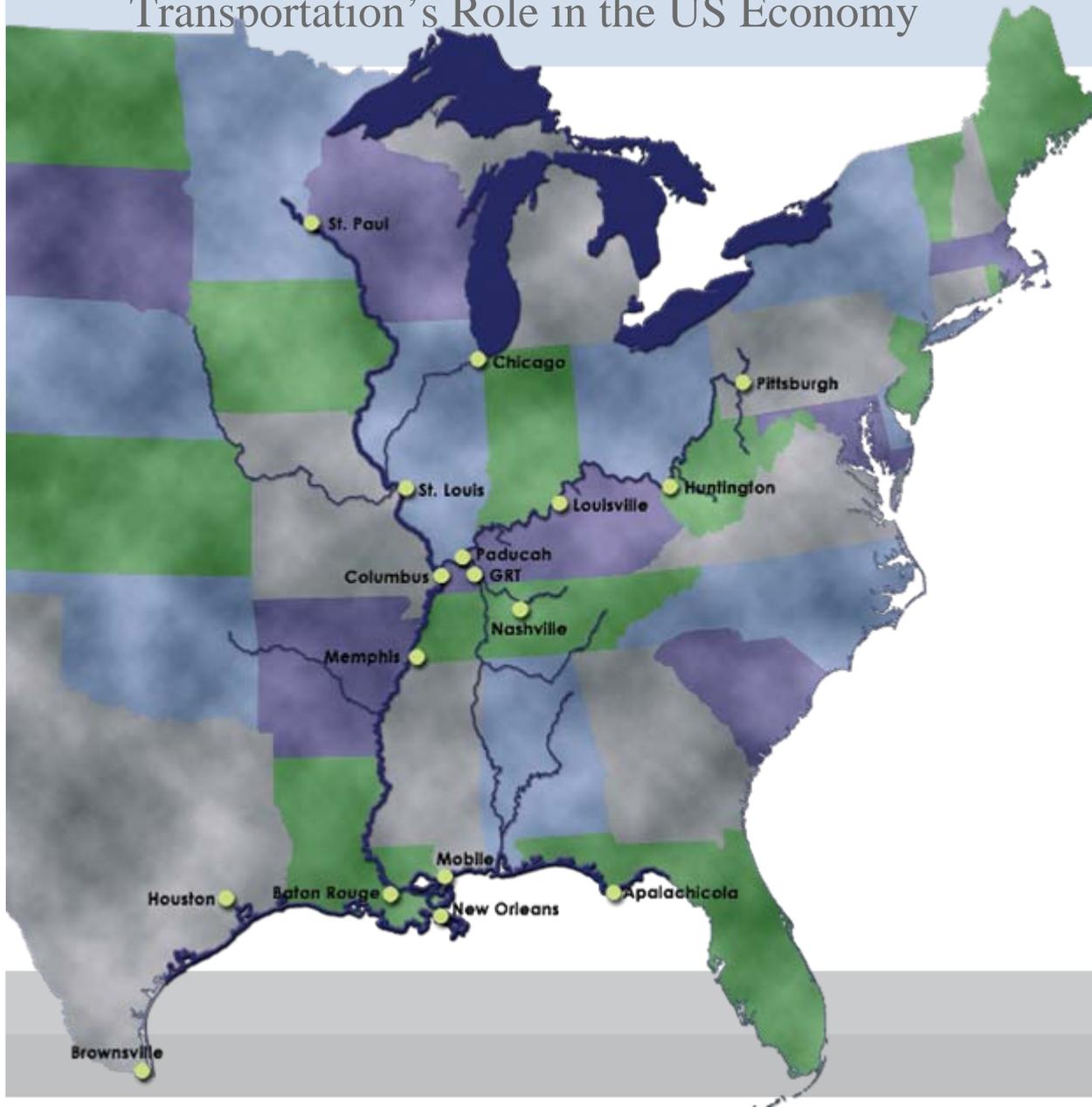


# Transportation's Role in the US Economy

## Modal Comparison

	Barge	Rail	Pipeline	Truck
Geographic Coverage	Limited to navigable channels	Limits shipper options	limited to build network	ALL
Shipment size	1,500 ton minimum	100 ton	very large	40 ton minimum
Speed	5-10 MPH	25 MPH	---	50 MPH
Capital cost	moderate	high	very high	low
Operating cost	low	moderate	very low	very high
Environmental hospitability	good	poor	good for existing very bad for new	bad
Cargo Types	bulk liquid or dry	ALL	bulk liquid	ALL

# Transportation's Role in the US Economy



## Presentation Outline

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## Marine Assets

A BARGE is an unmanned vessel that is loaded with the products we carry

There are two main types:

- Dry Cargo Hopper Barges
- Liquid Tank Barges

## Marine Assets

### Dry Cargo Hopper Barges

**Capacity:** 1,400 to 1,600 tons when loaded to a 9' draft

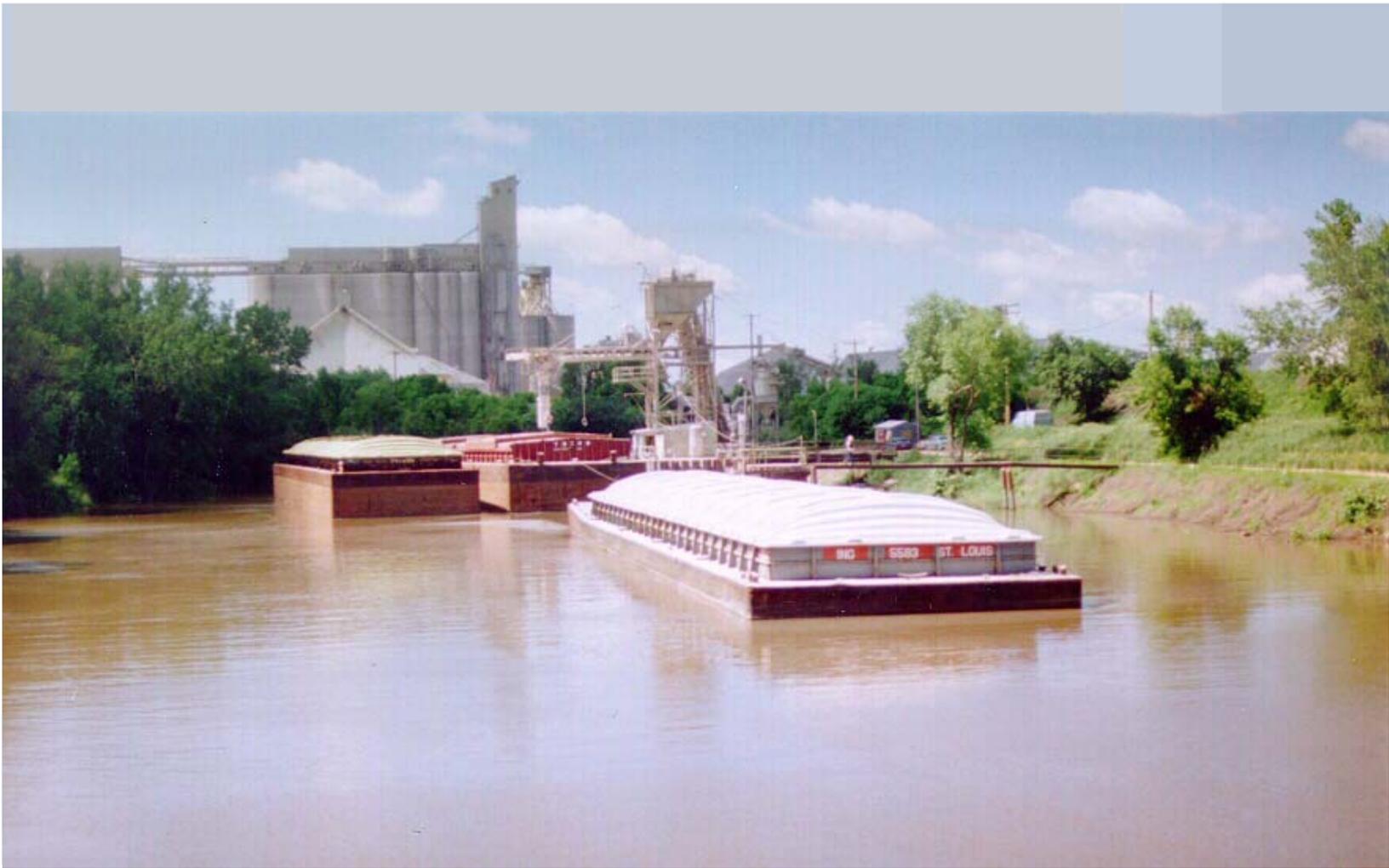
**Size:** 195' to 200' long, 35' wide, 10' to 14' deep

**Useful Life:** 20-30 years, depending on type of service and construction quality

**Unit Cost:** Opens: \$500,000  
Covers: \$550,000

<b>Industry Fleet Size &amp; Age:</b>	<u>Barges</u>	<u>Average Age</u>
Opens:	6,197	15
Covers:	11,015	17

## Marine Assets



### Liquid Tank Barges

- More diversity than hoppers, but 2 main types
  - Clean petrochemical linehaul barges
  - Oversized petrochemical barges
- Subject to periodic Coast Guard inspection/certification

## Marine Assets

### Liquid Tank Barges

**Capacity:** 1,500 to 4,000 tons (10,000 bbls to 30,000 bbls) when loaded to a 9' draft

**Size:** 150' to 300' long, 35' to 54' wide, 10' to 13' deep

**Useful Life:** 20 - 40 years

**Hull Type:** Mix of single hull and double hull

**Cost:** \$1,500,000 to \$3,000,000 depending on size and

## Marine Assets

10,000 bbls



## Marine Assets

30,000 bbls



## Marine Assets

30,000 bbls



## Barge Size

*Question:*

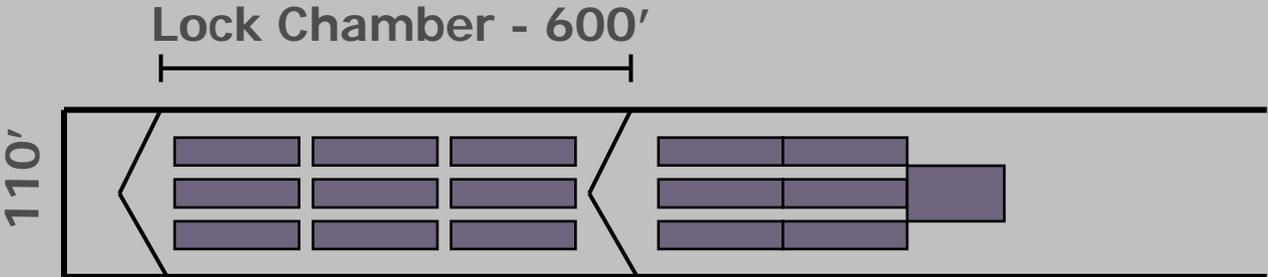
Why are barges such odd sizes?

*Answer:*

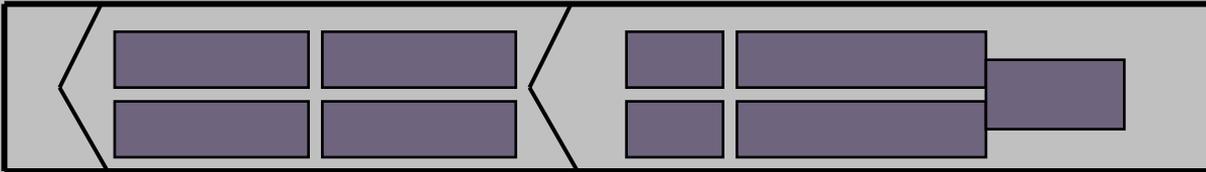
The navigable channel is maintained by the Army Corps of Engineers using Lock and Dam structures.

The standard lock chamber size limits the barge length, width and depth.

# Marine Assets



## Linehaul Tow



## Unit Tow

# Marine Assets



## Marine Assets



A TOWBOAT is a manned vessel that transports/pushes barges

- There is a large variation in:
  - size
  - power
  - construction, and
  - area of operation
  
- Generally there are 3 main groups of TOWBOATS
  - Linehaul
  - Locking River
  - Canal

## Marine Assets

### Linehaul Towboats

**Power:** 4,000 hp to 11,000 hp

**Towing Capacity:** Up to 60,000 tons (25 to 40 loaded barges)

**Cost:** \$10,000,000 to \$25,000,000 depending on power and configuration

**Useful Life:** 35 years, extendable to 50 years with major rehab at mid-life

**Crew Size:** 8 - 10 person

**Fuel Consumption:** 1 gallon per horsepower per day

**Area of Operation:** Lower Mississippi and Lower Ohio Rivers

## Marine Assets

### Linehaul Towboat



## Marine Assets

### Locking River Towboats

**Power:** 1,800 hp to 6,000 hp

**Towing Capacity:** 15,000 to 25,000 tons (9 to 16 loaded barges)

**Cost:** \$5,000,000 to \$15,000,000 depending on power and configuration

**Useful Life:** 35 years, extendable to 50 years with major rehab at mid-life

**Crew Size:** 7 - 10 person

**Fuel Consumption:** 3/4 gallon per horsepower per day

**Area of Operation:** Upper Ohio, Upper Mississippi, Tennessee and Illinois Rivers

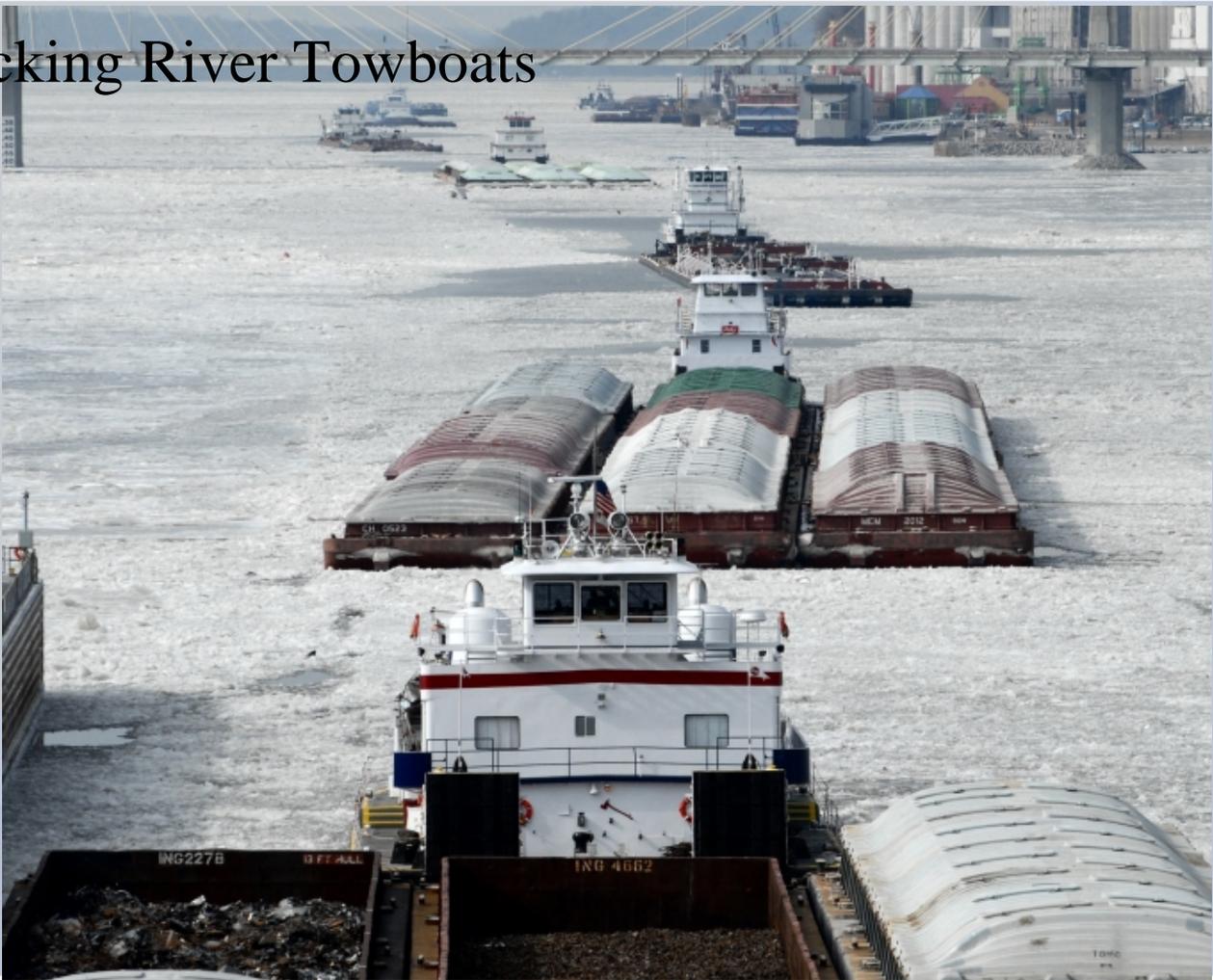
## Marine Assets

### Locking River Towboats



Marine Assets

Locking River Towboats



## Marine Assets

### Canal Towboats

**Power:** 1,000 hp to 2,000 hp

**Towing Capacity:** 3,000 to 8,000 tons (2 to 4 loaded barges)

**Cost:** \$2,000,000 to \$6,000,000 depending on power and configuration

**Useful Life:** 30 years, extendable to 45 years with major rehab at mid-life

**Crew Size:** 4 - 7 person

**Fuel Consumption:** 3/4 gallon per horsepower per day

**Area of Operation:** Gulf Intracoastal Waterways and Tributaries

# Canal Towboat



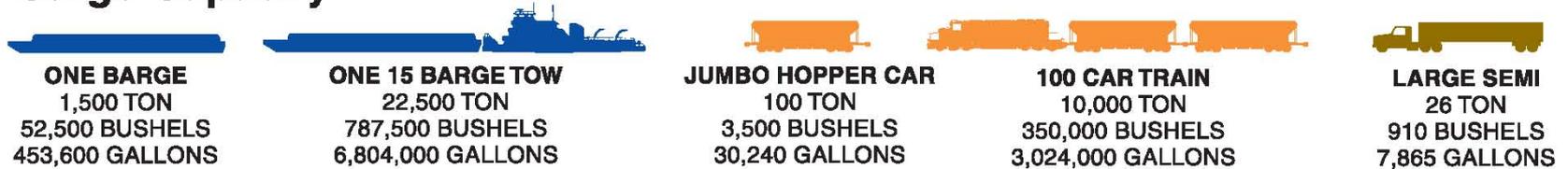
# Canal Towboat



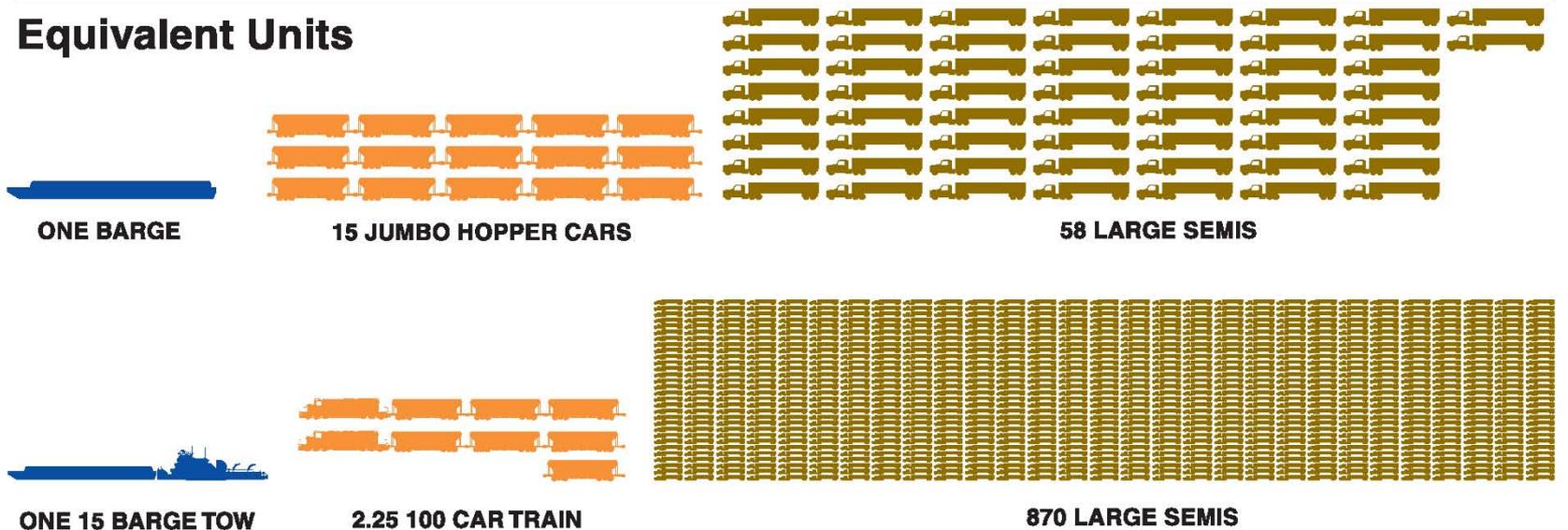
# Compare...

Source: Iowa Department of Transportation - 800 Lincoln Way - Ames, IA 50010 - 515-239-1372

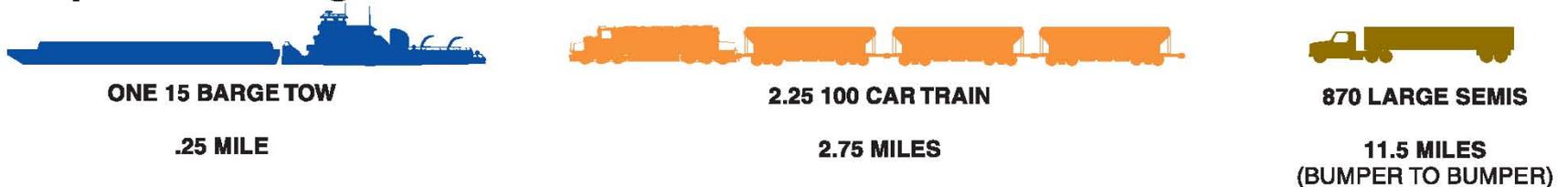
## Cargo Capacity



## Equivalent Units

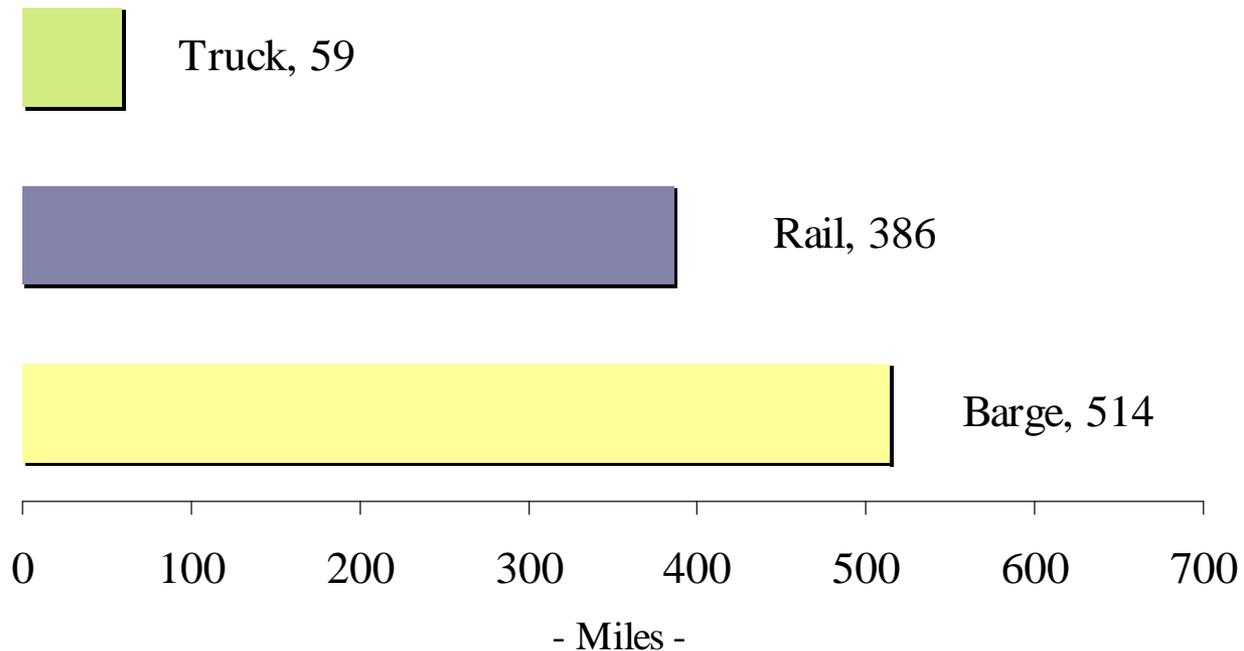


## Equivalent Lengths



## Water transportation is efficient

One gallon of fuel can move one ton of freight



## Water transportation is environmentally friendly

Pounds of emissions produced moving one ton of freight  
1,000 miles

Mode	Hydro-Carbons	Carbon Monoxide	Nitrogen Oxides
Barge	0.09	0.2	0.53
Rail	0.46	0.64	1.83
Truck	0.63	1.9	10.17

Source: Environmental Protection Agency, Emission Control Lab

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## Today's Barge Industry

### Economic Impact of Barge Transportation

- More than 33,000 people employed aboard tugs and towboats
- 30,000 people employed by shipyards
- Almost 500,000 workers in industries that rely on raw materials delivered by barge
- Industry contributes over \$5 billion a year to nation's economy
- Industry pays combined yearly total of more than \$750 million in payroll and corporate income taxes

## Today's Barge Industry

### Number and Type of Barges Operated

(December 2006)

<u>Type of Barge</u>	<u>Number</u>	<u>Percent</u>
Open	6,197	31%
Cover	11,015	55%
Tank	2,809	14%
Total	20,021	100%

## Today's Barge Industry

### Industry Volume and Mix

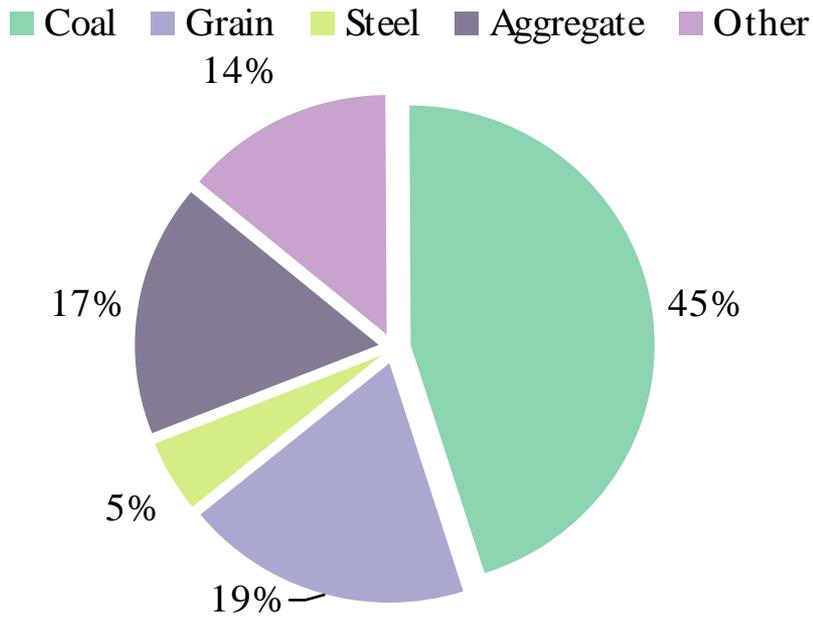
(million of tons transported in 2005)

Coal	176
Petroleum	75
Chemicals	37
Crude Materials	100
Manufactured Goods	30
Food & Farm Products	65
Manufactured Equipment	1
Other	0
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Total	484

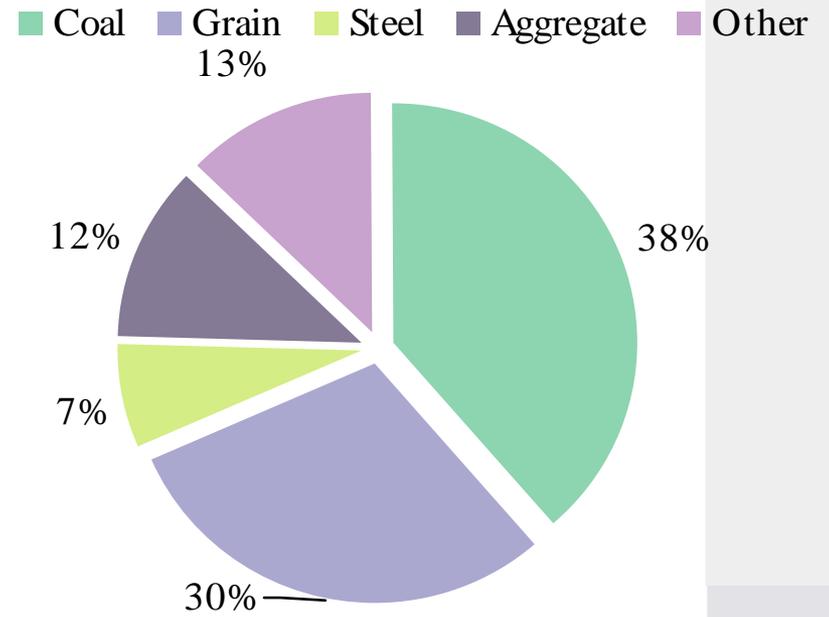
# Today's Barge Industry

## Dry Cargo Barge Market

Tons



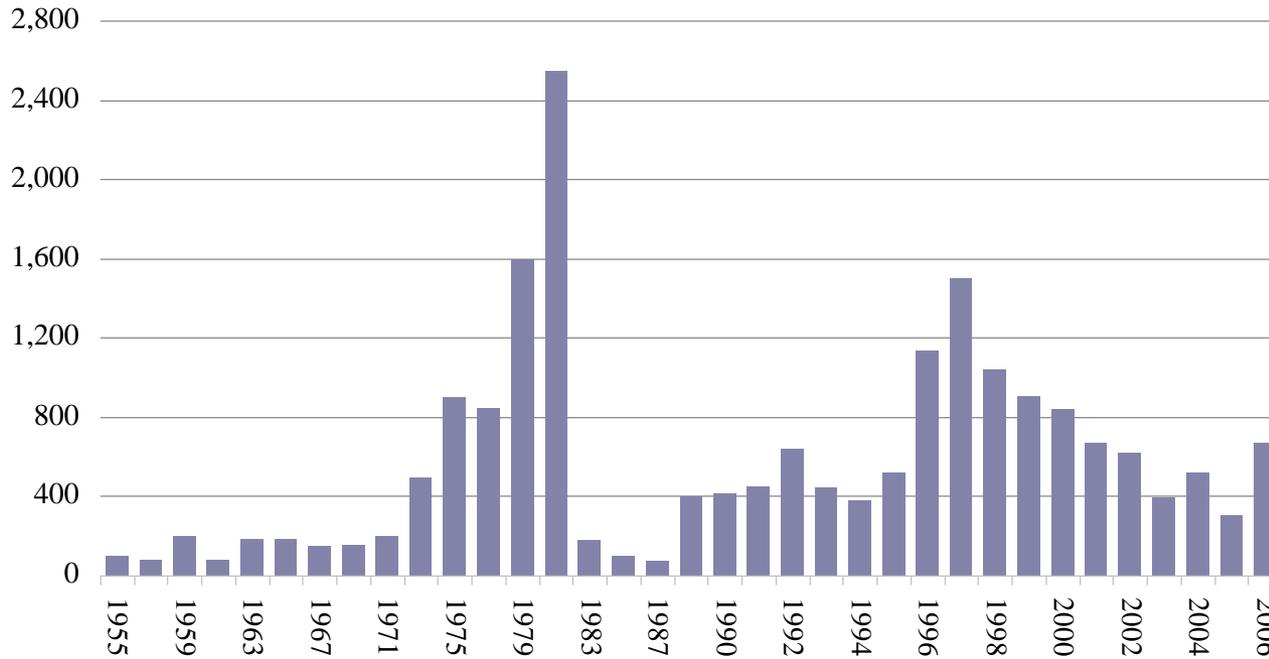
Barge Days



*Other includes Alumina, Salt, Cement, Fertilizer, Forest Products, etc.*

## Today's Barge Industry

### History of Hopper Barge Construction: 1955 – 2006



## Today's Barge Industry

Today's barge industry is challenged by several issues

- Waterways Infrastructure
- Regulatory Challenge
- Safety and Stewardship

117 out of 257 Locks are over  
50 years old

7 were built in the 1800s



## O&M Priorities: An Industry Perspective

Although service interruptions have been manageable so far, O&M related outages continue to concern the Barge Industry and its customers



Concrete deterioration at Chickamauga



Crumbling lock wall, Lower Mon 3, opened in 1907



Leaking spare miter gates, Upper Miss Lock 19



PATENTED  
BY  
EDWARD SCHILDHAUER  
NO. 203007  
FEBRUARY 1901

**DANGER**

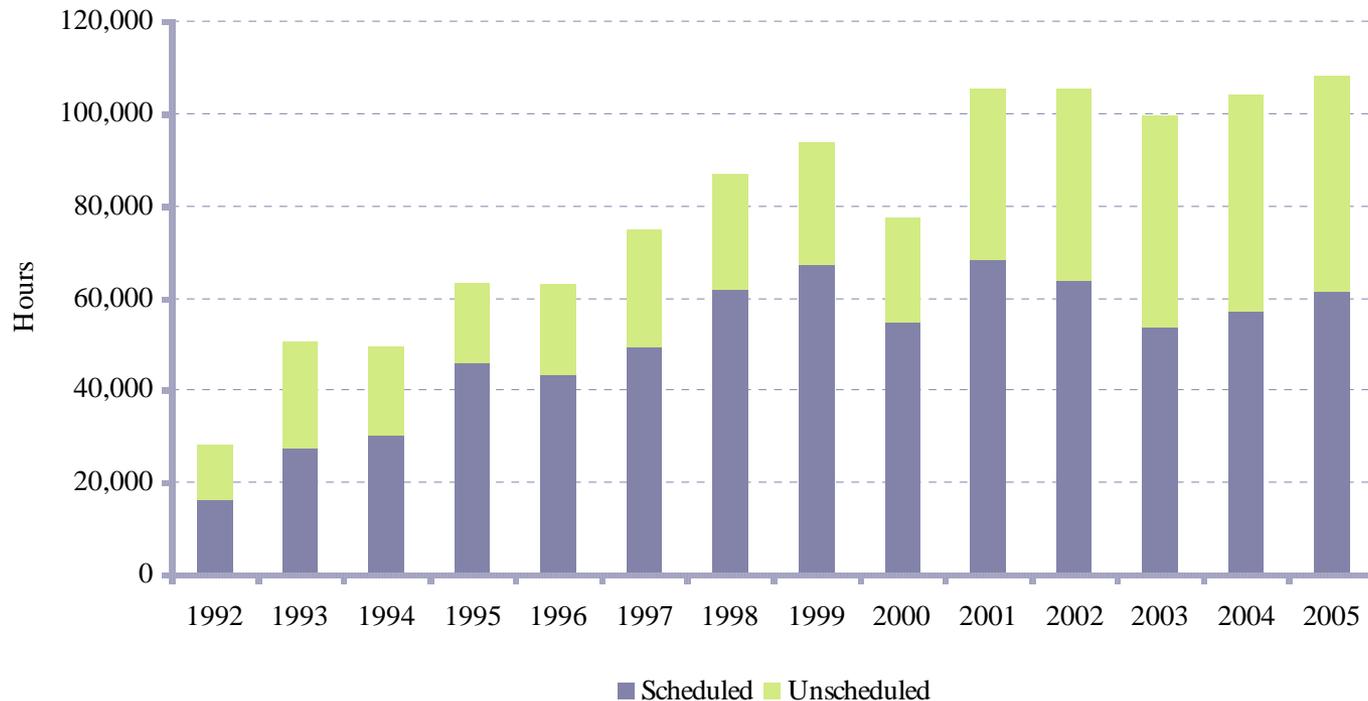




## O&M Priorities: An Industry Perspective

*Unscheduled* outages have also become more frequent

Navigation Lock Unavailability – 1992 to 2005  
Total Hours - Scheduled vs. Unscheduled without ice



## Regulatory Challenge

### Marine Engine Emissions

- EPA has issued proposed rules for new and “overhauled” engines

### Vessel Discharge Regulations

- Last year, federal court (California) vacated existing vessel discharge exclusion of 40 CFR 122.3(a) effective September 30, 2008

### Vessel Inspection

- The Coast Guard is developing a vessel inspection program for towboats

## Regulatory Challenge

### WRDA - Water Resources Development Act

- Would authorize Upper Miss/Illinois River Modernization
- Also authorizes projects on Gulf Intracoastal Waterway at Bayou Sorrel and Matagorda Bay

### Oberstar Proposes “Maritime Safety Administration”

- All marine safety functions currently under USCG would be transferred to new agency in DOT called the “Maritime Safety Administration”

## Regulatory Challenge

### TWIC - Transportation Worker Identification Credential

- September 25, 2008 deadline to get cards

### Medical & Physical Evaluation Guidelines for Merchant Mariners

- Coast Guard NVIC (draft) initially published summer '06

### Crew Travel Time

- Coast Guard previously considered crew travel time a “neutral time” (GMOC Policy Letter 4-00)

## Today's Barge Industry

### Safety Challenge

- Industry is actively involved with several public and private initiatives to further improve safety along the inland waterways:
  - Safety Partnerships
  - Responsible Carrier
  - Simulator Training



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## Margin Drivers

What are the major variables for direct cost?

- Labor
- Fuel
- External Services (e.g., cleaning, shifting, etc.)
- River operating conditions
- Ratability of shipments
- Equipment utilization level

### How are barge rates calculated?

- Most spot rates are market driven with a floor near carrier's variable operating costs
- Long-term contract rates are also market driven, but set at a level which generates a satisfactory return on investment
- For both spot and term contract bids, a distinction is made between fronthaul and backhaul movements, to optimize round-trip revenues and earnings

## Margin Drivers

What are the keys to improved equipment productivity?

- 1) Faster loadings and unloadings
- 2) Heavier loads per barge; bigger barges
- 3) Complete removal of cargo from barge so as to avoid cleaning expense and time
- 4) Reliable schedules and forecasts
- 5) Ratable shipments; less seasonality
- 6) Balanced traffic flows

