WHAT HAPPENED WHILE IT WAS DOWN?

THE COLUMBIA-SNAKE RIVER EXTENDED LOCK OUTAGE

PRESENTATION TO THE WASHINGTON TRANSPORTATION COMMISSION

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Freight Policy Transportation Institute

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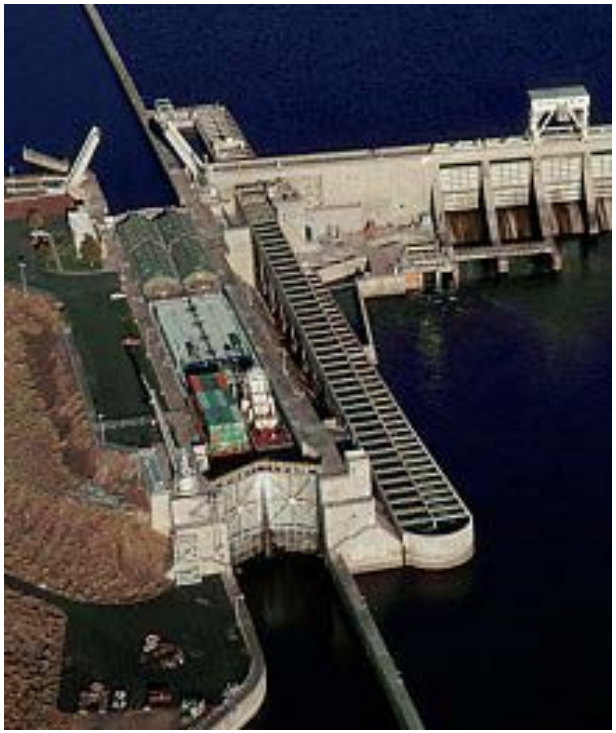
Transportation Disruption Study

- Purpose
  - Evaluate the economic and environmental impacts
  - Determine
    - Historical use of the river system
    - Preparations of industry and government entities
    - Impacts of the outage
    - Return of traffic to the river system
  - Produce a guide for other planned disruptions

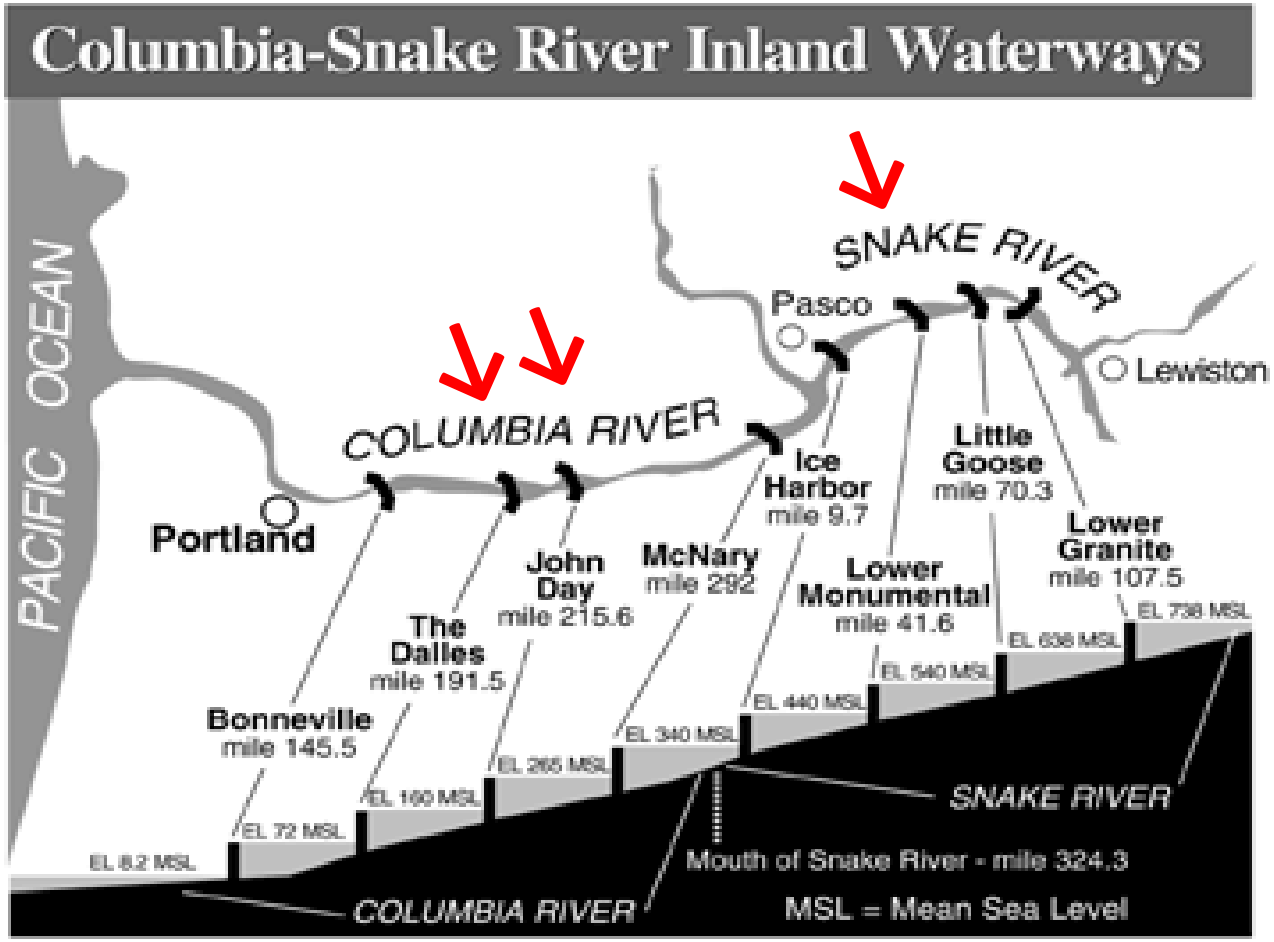


Columbia-Snake River Extended Lock Closure (Dec 2010 – Mar 2011)

Planned outage to rehabilitate an aging infrastructure

Replaced downstream gates for three locks

15 weeks



Annual Downbound and Upbound Tonnage of All Commodities, 1991-2010

Source: U.S. Army Corps of Engineers Monthly Lock Tonnage Reports

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Major Commodities Moving on the Columbia-Snake River System

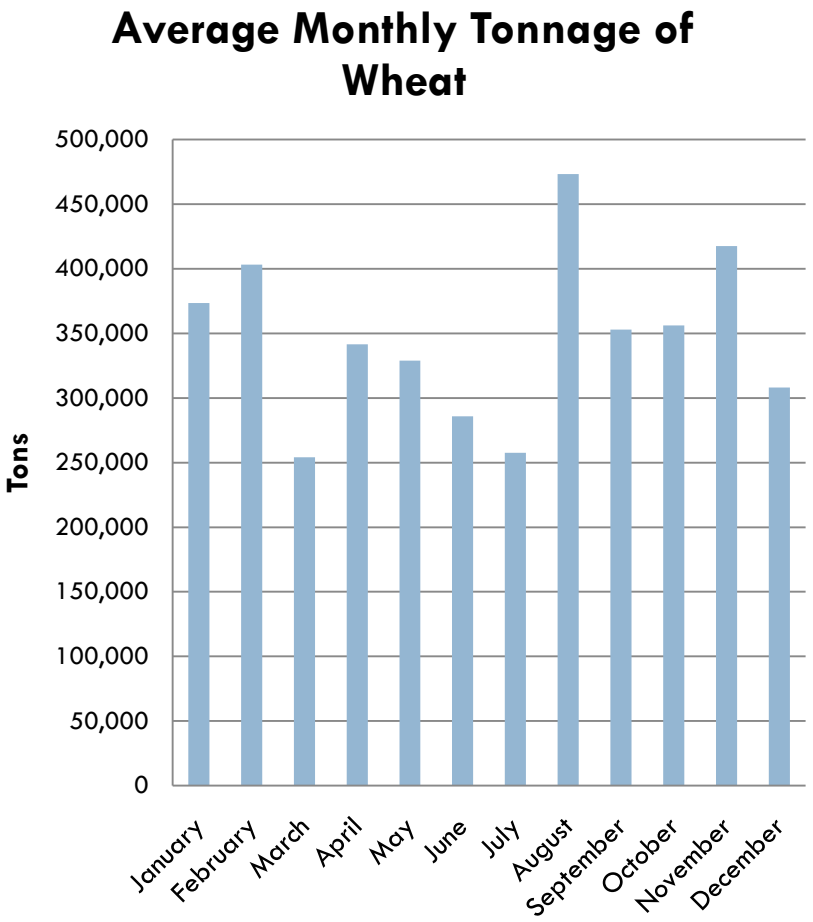
Downriver

- Wheat
- Forest products
- Sand, gravel and stone
- Rye, barley, rice, sorghum and oats
- Vegetable products
- Paper and allied products

Upriver

- Gasoline
- Distillate fuels (diesel)
- Garbage
- Fertilizer
- Smelted products

Seasonality in Major Downriver Commodities, 2008 – 2010

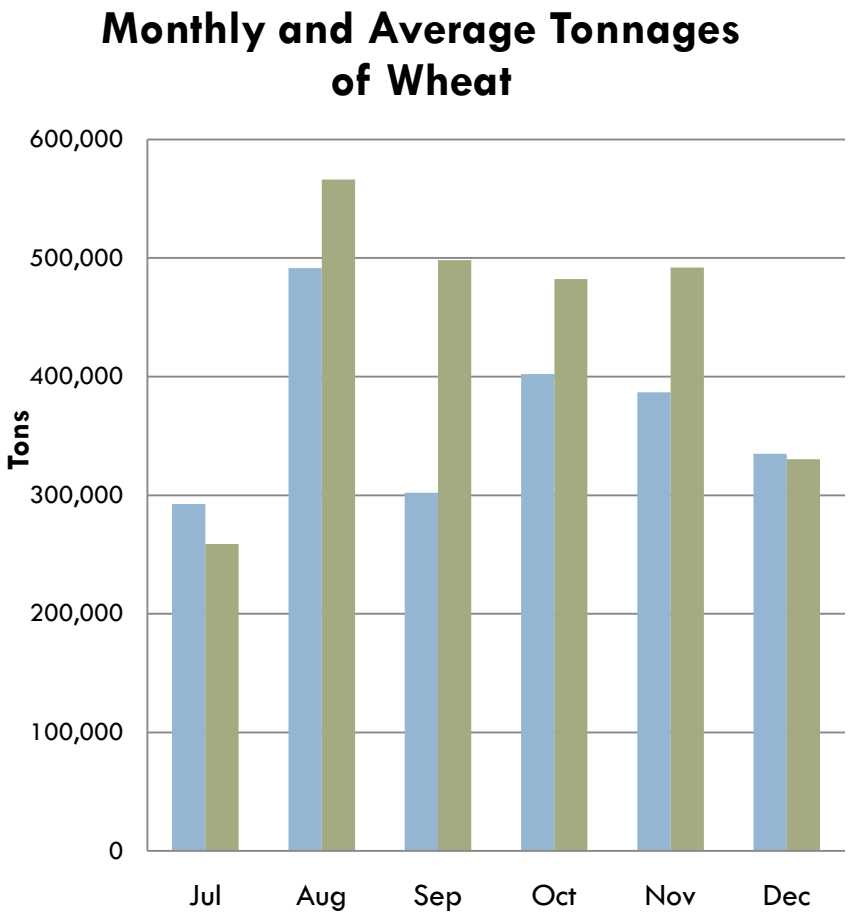


- 75 % of all downriver shipments
- Harvest in August
  - High volume shipments through the winter
- March is a low volume month
  - Routine 2 week outages

Industry Preparations for Extended Lock Outage, July – December 2010

- Phase II
  - Objectives
    - To describe the major waterborne movements prior to the extended lock outage
    - To learn how the actors prepared
  - Data Sources
    - U.S. Army Corps of Engineers' Waterborne Commerce Statistics Center
    - Shippers, government divisions, industry personnel and ports

Above Average Downriver Movements, Jul – Dec 2010



- Above average months: August – November
- December 2010: shipped almost as much as an average December
- Early shipments to preposition and fill early orders

Pacific Northwest Wheat Case Study

- Background
  - Wheat is the largest volume commodity that moves on the Columbia-Snake River
- Purpose
  - To capture the options and decisions of the wheat industry
  - To provide a baseline scenario for wheat transportation

Pacific Northwest Wheat Case Study

Annual Wheat Tonnage Shipped by Survey Respondents			
Region	**Number of Firms**	**Annual Tonnage Shipped in Bushels**	**Percentage of Total Tonnage Shipped**
Eastern Oregon	5	32,800,000	12.68%
Northern Idaho	5	40,600,000	15.69%
Southern Idaho	3	7,500,000	2.90%
Northern Washington	5	87,900,000	33.98%
Southern Washington	8	89,912,000	34.75%
Pacific Northwest	**26**	**258,712,000**	**100.0%**

Industrial Preparations

Barge Line Preparations

- Implementation of a "business interruption surcharge"
- Prepared customers and employees
  - Continued benefits
  - Layoffs for outage

Rail Line Preparations

- Prepared for an increase in cargo loads
- Advertised, identified inland markets and partnered with local ports to aid in the movement of products

Industry Impacts of the Lock Outage

- Phase III
  - Objectives
    - To learn how the actors were impacted
    - To describe the major commodity movements by rail and truck during the lock outage

  - Data Sources
    - Shippers, government divisions, industry personnel and ports
    - U.S. Army Corps of Engineers' Waterborne Commerce Statistics Center

Rail and Truck Movements, December 2010 - March 2011 (Lock Outage)

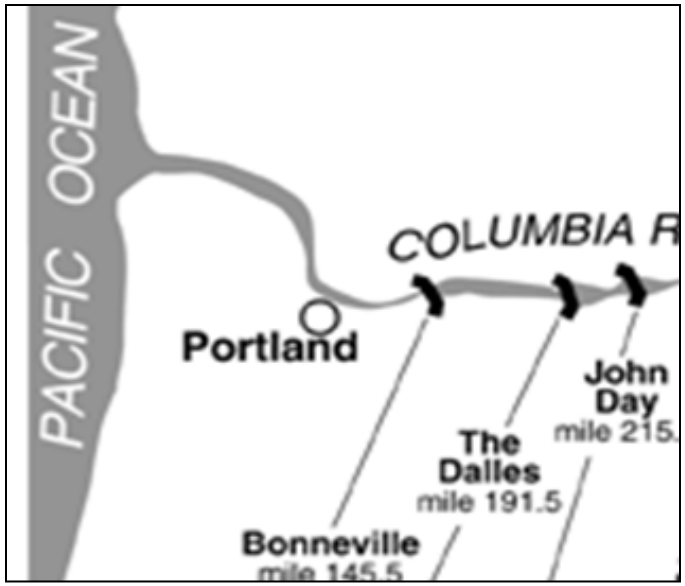
- Data Sources
  - Industry representatives
- Most notable finding: most products were transported by truck or a combination of truck and rail
  - Most industries planned to only use rail
    - Inexpensive and can transport large volumes
  - Due to the convenience of truck
  - Industries chose to send their goods to alternative markets
  - Short distances and small loads

Rail and Truck Movements, December 2010 - March 2011 (Lock Outage)

Commodity	Mode	Tonnage
Gasoline	Truck and Rail	184,192
Distillate Fuels	Truck and Rail	276,287
Fertilizers	Rail	1,500
Forest Products	Truck and Rail	58,283
Sand, Gravel and Stone	---	0
Iron Ore and Steel Waste	Rail	9,000
Smelted Products	---	-
Wheat	Truck and Rail	45,648
Corn, Rye, Barley, Rice and Oats	Truck	212
Agricultural Products	Truck and Rail	31,194
Waste Materials	Truck	68,250

Barge Movements, December 2010 – March 2011 (Lock Outage)

- **A portion of the river worked**: from the pool west of The Dalles to Portland
  - Bonneville Lock and Dam
- Downriver:
  - A total of 377,000 tons were shipped downriver
    - 79% below average
  - 4 major commodities
    - Wheat; forest products; sand, gravel and stone; and smelted products



- Manufactured equipment and machinery traveled upriver
  - Gate leaves constructed for The Dalles Lock and Dam

Bushels of Wheat Shipped by Survey Respondents, Dec 2010 – Mar 2011

Region	Total Bushels Shipped	Typical Percentage of Bushels Shipped	Actual Percentage of Bushels Shipped
Eastern Oregon	9,680,000	12%	27%
Northern Idaho	2,430,000	16%	7%
Southern Idaho	1,620,000	3%	5%
No. Washington	20,320,000	34%	57%
So. Washington	1,430,000	35%	4%
Pacific Northwest	35,480,000	100%	100%

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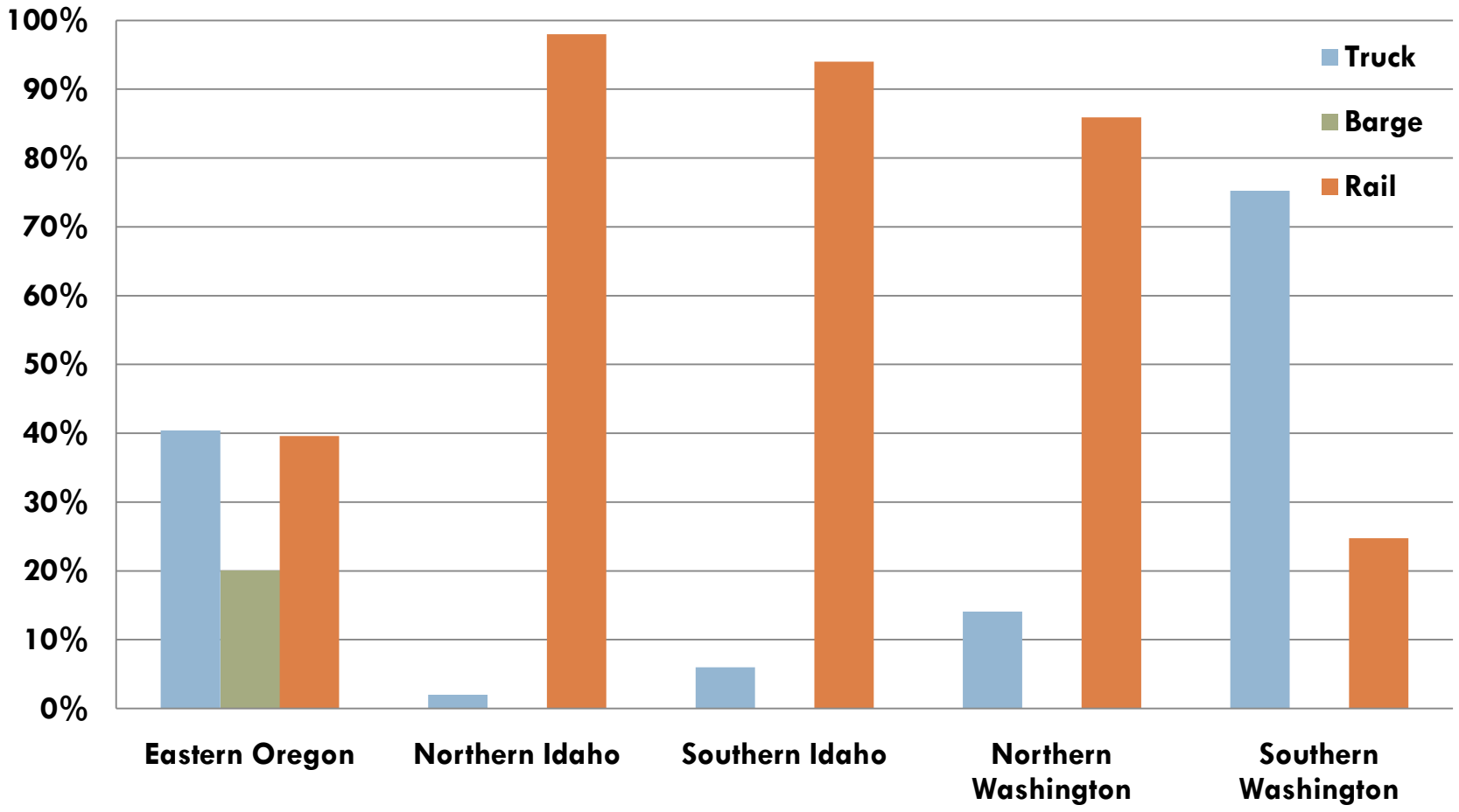
Percentage of Wheat Shipped via Various Modes, Dec 2010 – Mar 2011



Percentage of Wheat Shipped Via Various Transportation Modes

Region	Average Truck	Outage Truck	Average Barge	Outage Barge	Average Rail	Outage Rail
Eastern Oregon	1.0%	40.4%	91.8%	20.0%	7.2%	39.6%
Northern Idaho	0.3%	2.0%	78.9%	0.0%	20.8%	98.0%
Southern Idaho	33.3%	6.0%	21.7%	0.0%	45.0%	94.0%
No. Washington	14.0%	14.1%	14.6%	0.0%	71.4%	85.9%
So. Washington	0.9%	75.3%	97.5%	0.0%	1.6%	24.8%

December - March

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Shipping Rates for Wheat by Survey Respondents, Dec 2010 – Mar 2011

Region	Average Rate in Cents per Bushel (to Portland)		
	Truck	Truck-Barge	Rail
Eastern Oregon	$0.56	$0.30	$0.54
Northern Idaho	$1.50	-	$0.74
Southern Idaho	$0.76	-	$0.90
No. Washington	$0.45	-	$0.55
So. Washington	$1.34	-	$0.58
Pacific Northwest	$0.92	$0.30	$0.66

Rates before the lock outage:

Truck - $0.89 (3.4% ↑)

Rail - $0.65 (1.5% ↑)

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Wheat Industry Impacts

- Wheat Industry
  - Increased truck and rail shipments
    - Total shipments decreased by 1.6 million bushels
      - High prices and demand during Fall 2010
      - Waited for locks to open
    - Some firms expressed concern with rail service
  - 4 elevators halted all wheat shipments
    - Truck and rail were too expensive
    - Shipped in anticipation of lock outage
      - Barge shipments in summer and fall: 32% above average

Shipping Impacts and Activities

Barge Line Impacts

- Laid off employees
- Reduced employees' work hours
- Continued service below The Dalles
- Barging tugs were called to Portland

Rail Line Impacts

- Increased cargo loads (going east and west)
- Increased employees' hours to handle large loads and increased railcar numbers
- Increased fuel and employees' costs

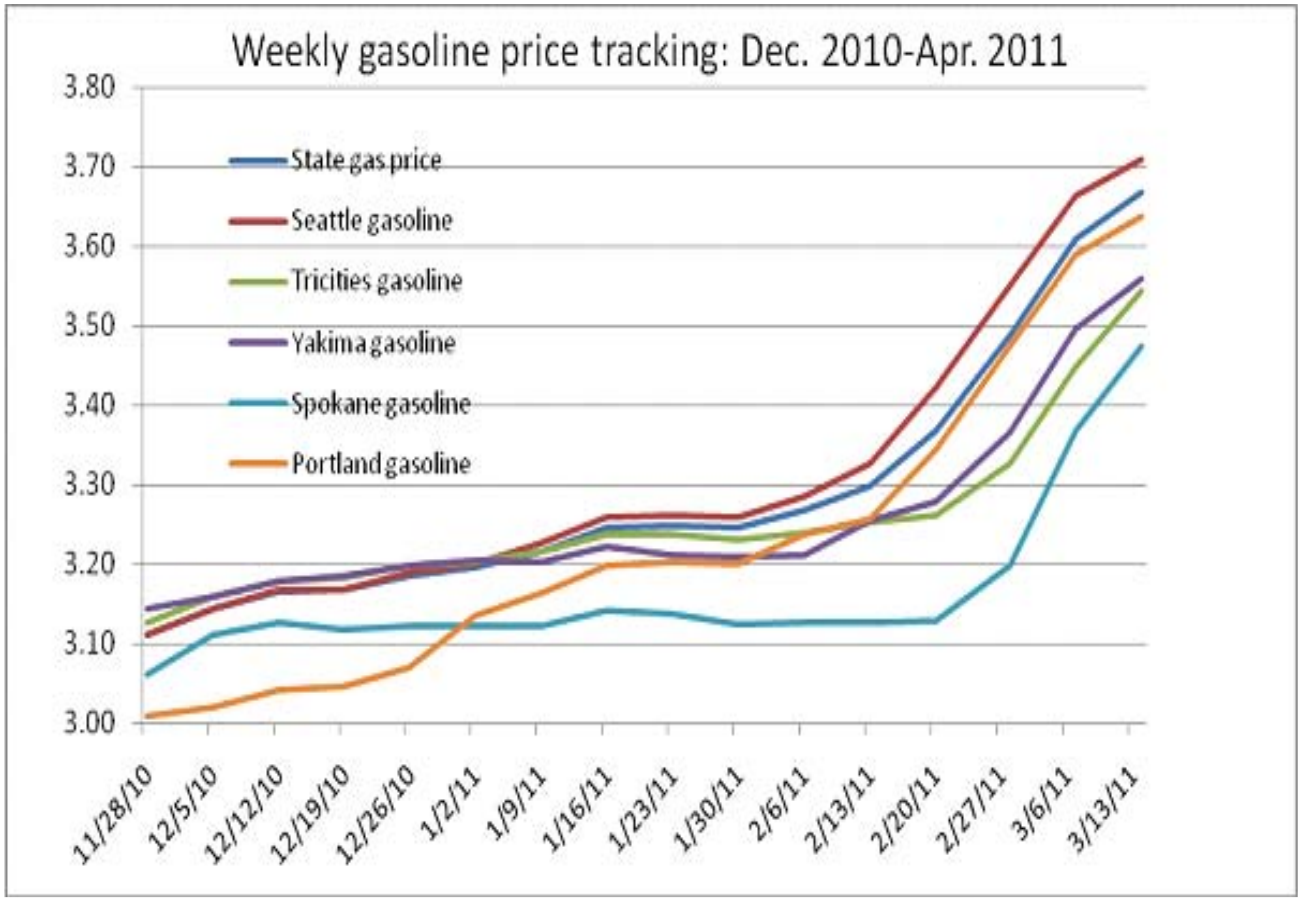
Industrial Impacts and Activities

- Petroleum companies
  - Reserved about procedures: proprietary information
  - Shipped about 60% of product by tanker truck
    - More economical and convenient than rail
    - No pipeline use
    - "Smooth sailing"
    - No reported fuel shortages, price gouging or price hikes due to the lock outage

Weekly Gasoline Prices, December 2010 – March 2011

All prices in the Pacific Northwest rose in unison.

Rising gas prices were not an effect of the lock outage, but rather a result of unrest in the Middle East.

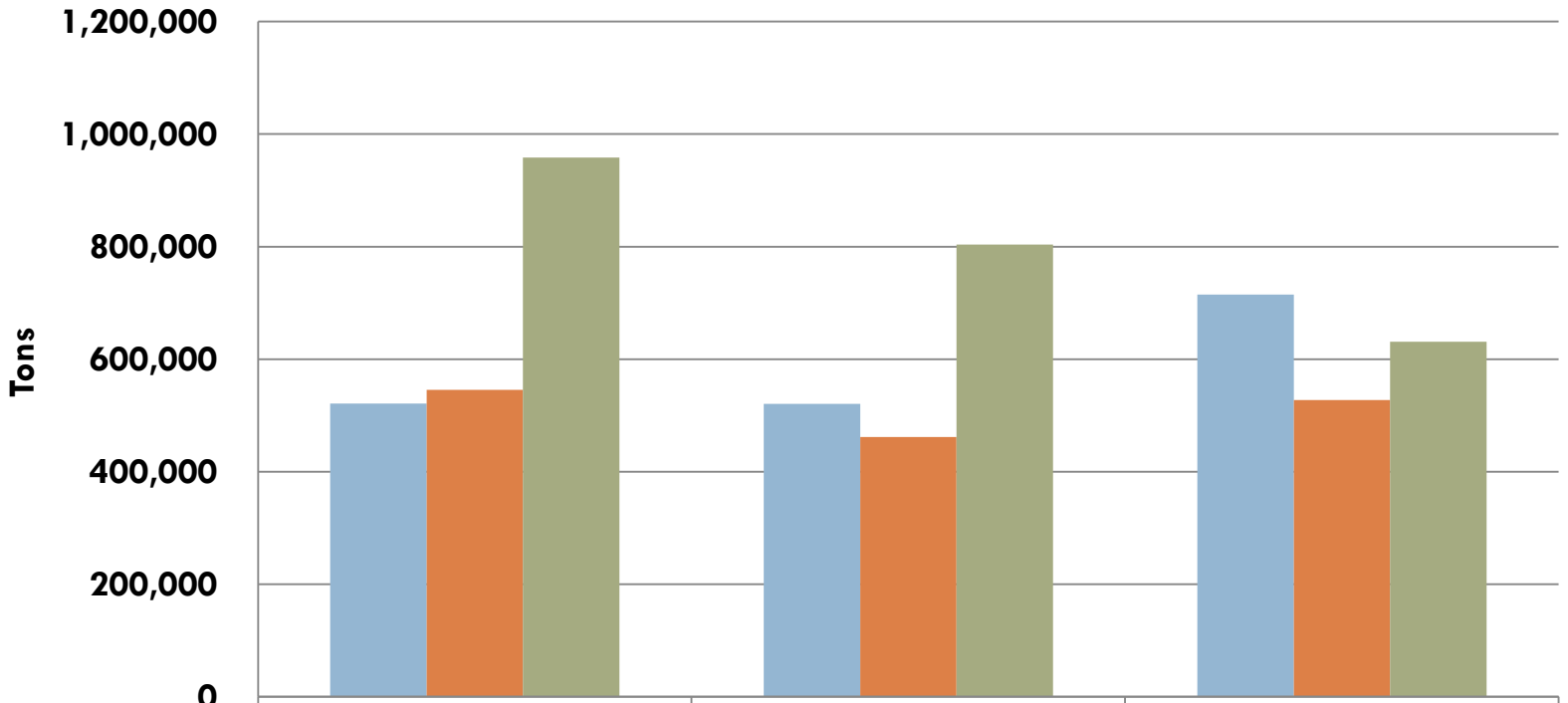


Industrial Impacts and Activities

- Forestry Industry
  - Truck and rail transportation (15% by rail)
  - Paper firms used forest products from Eastern Washington and from local sources
  - Barge lines were able to continue shipments
    - From Bingen, WA
  - Barge shipments during the summer and fall were 75% above average
    - Allowed a build up of inventories

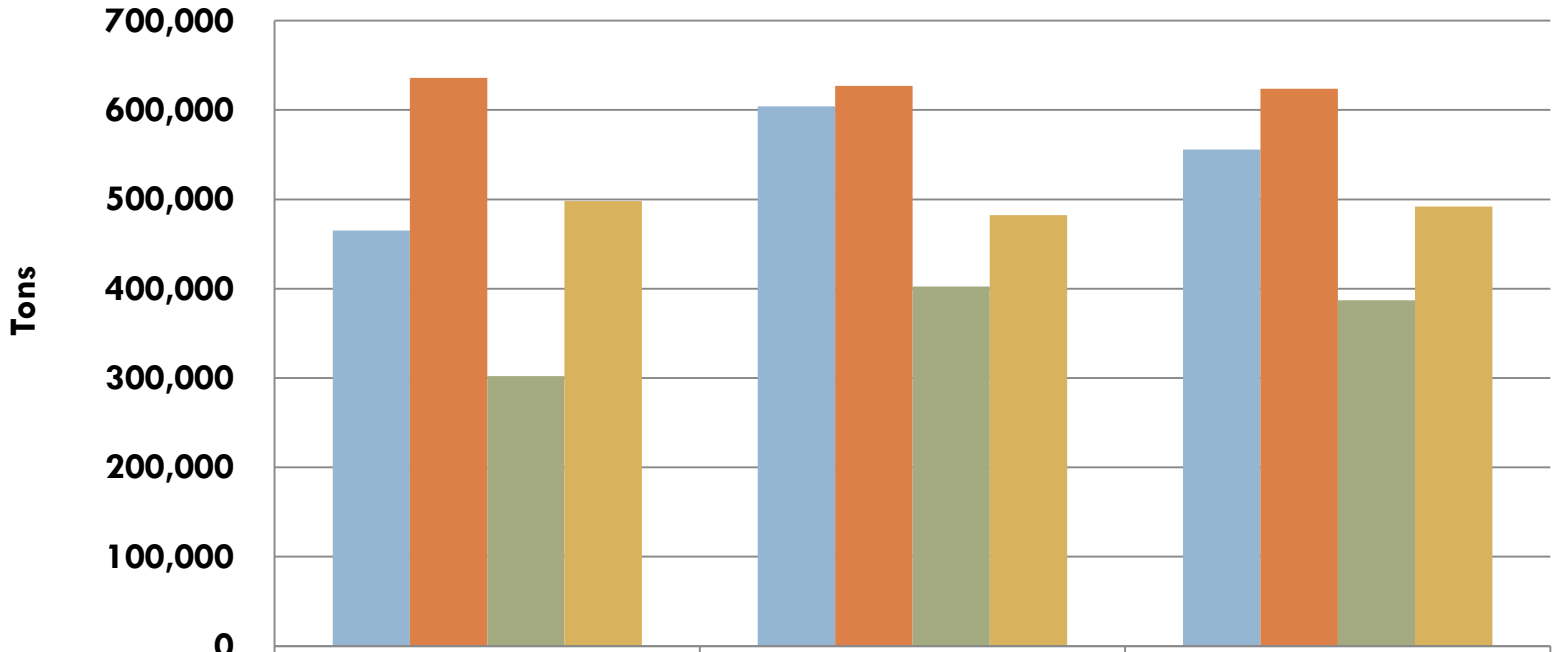


Return of Traffic to the River



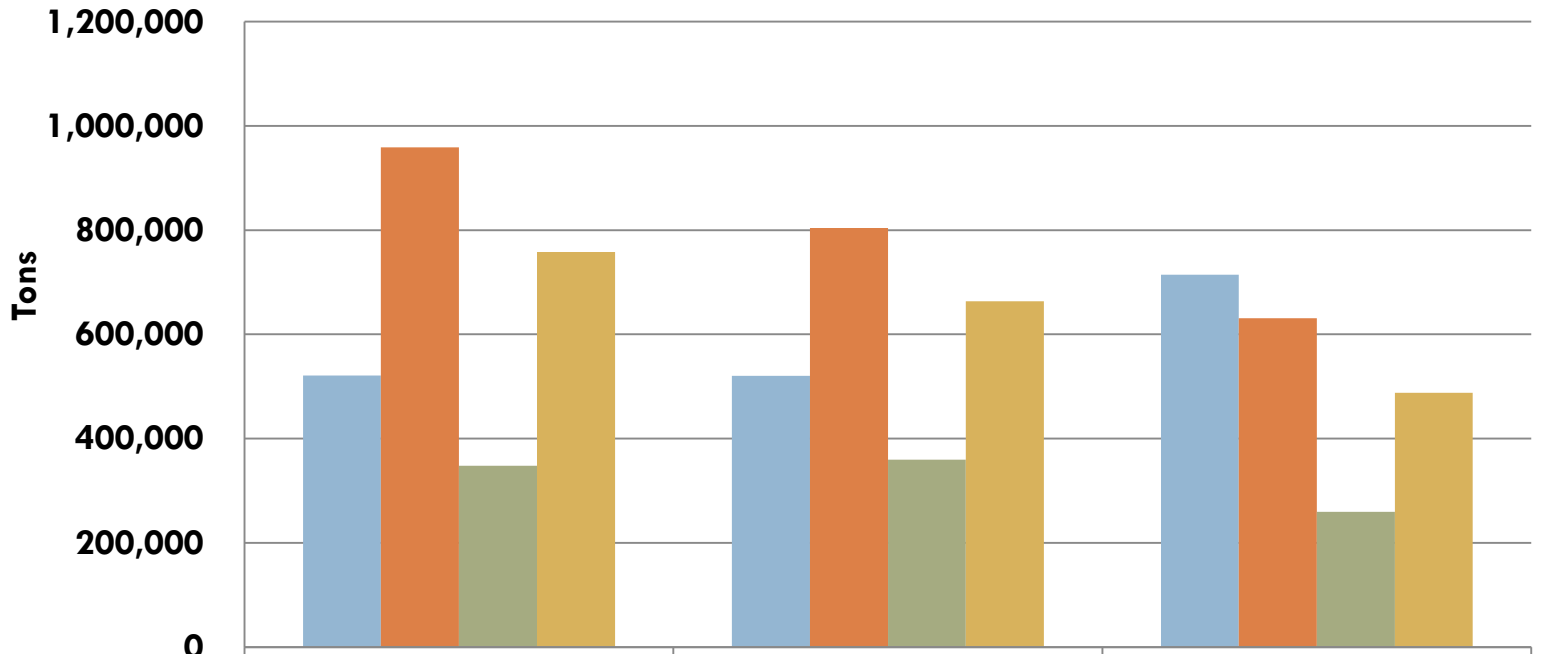
	April	May	June
Historical Average	521,238	520,275	714,720
Pre Lock Outage	545,431	461,400	527,255
Post Lock Outage	958,523	803,900	631,083

Monthly Tonnage Shipped Downriver Pre Lock Outage



	September	October	November
Historical Total Average	464,998	604,044	555,725
Pre Outage Total	635,894	627,164	623,601
Historal Wheat Average	301,995	402,270	386,875
Pre Outage Wheat	498,162	482,300	491,955

Monthly Tonnage Shipped Downriver Post Lock Outage



	April	May	June
Historical Total Average	521,238	520,275	714,720
Post Outage Total	958,523	803,900	631,083
Historal Wheat Average	347,833	359,607	259,631
Post Outage Wheat	758,085	663,230	488,100

The Rest of the Story

- Continue to document the return of traffic to the river
- Calculate total costs to shippers and commodity industries
- Calculate energy and emission impacts of lock outage