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Prospects for Untangling Rail and River Bottlenecks Here and Abroad

AG SUMMIT 14

dtn The Progressive Farmer

Strategies for Ag's Super Cycles: Reassess Your Strengths, Weaknesses, Opportunities and Threats

Ken Eriksen
Senior Vice President
@keriksen
December 9, 2014

Charting the Course

- Overall Transportation Situation
- Rail
- Barge
- Long Term Considerations

Overall Transportation Situation

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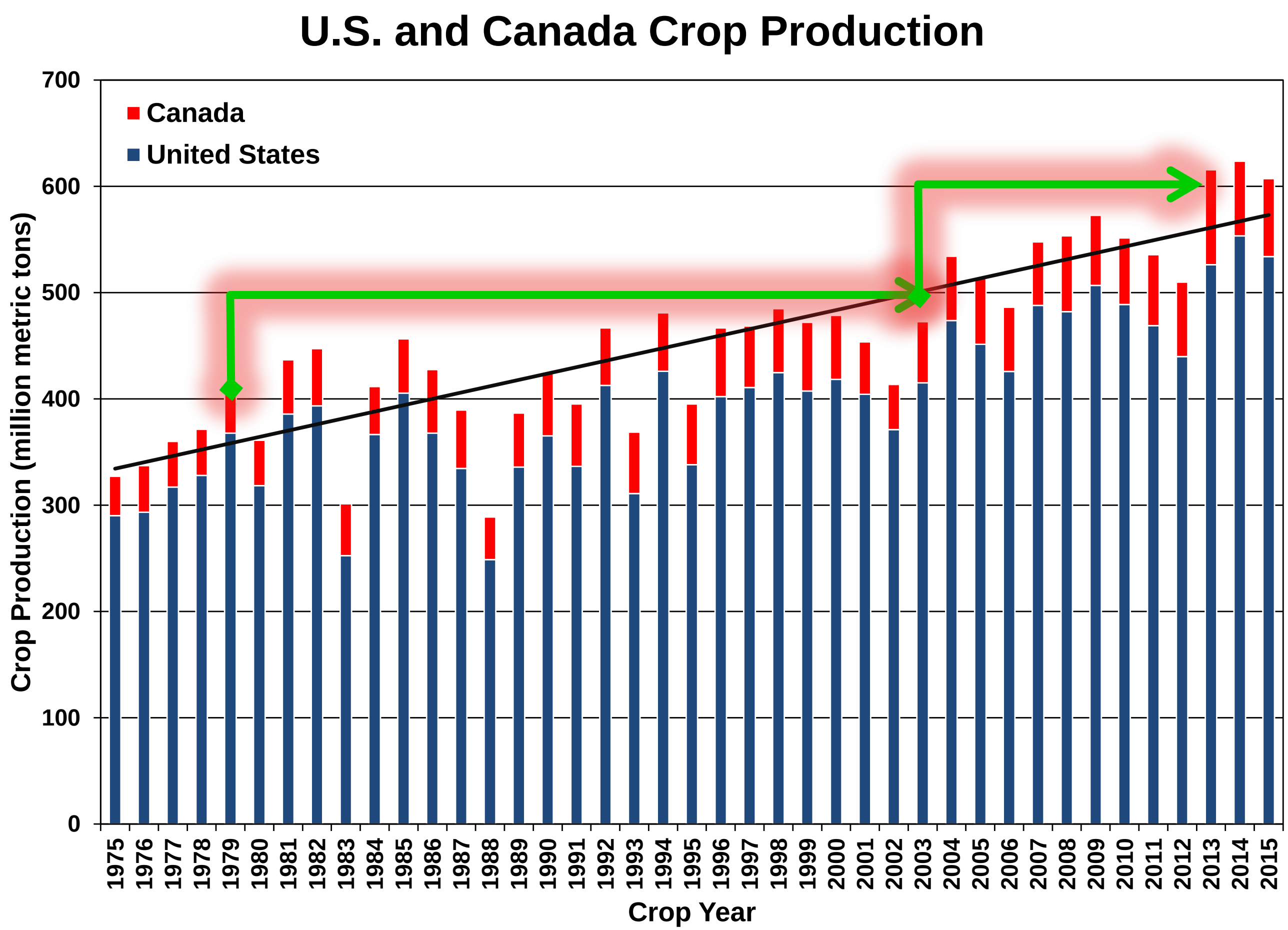
Bigger Crops . . . Something to Move



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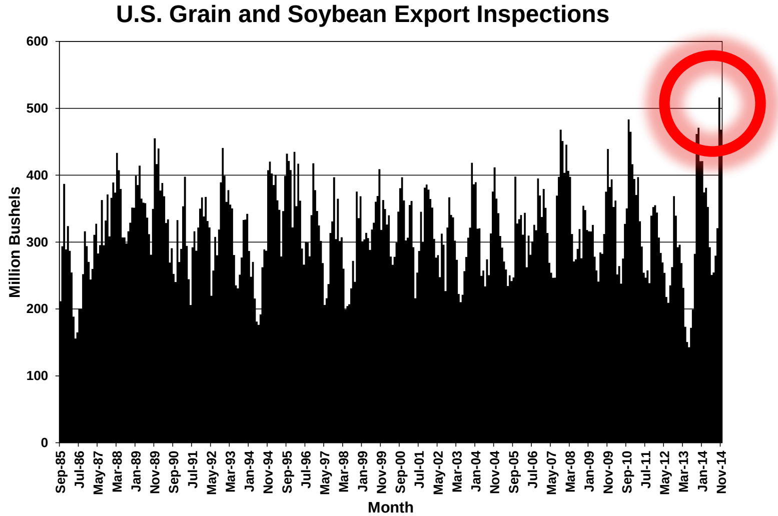
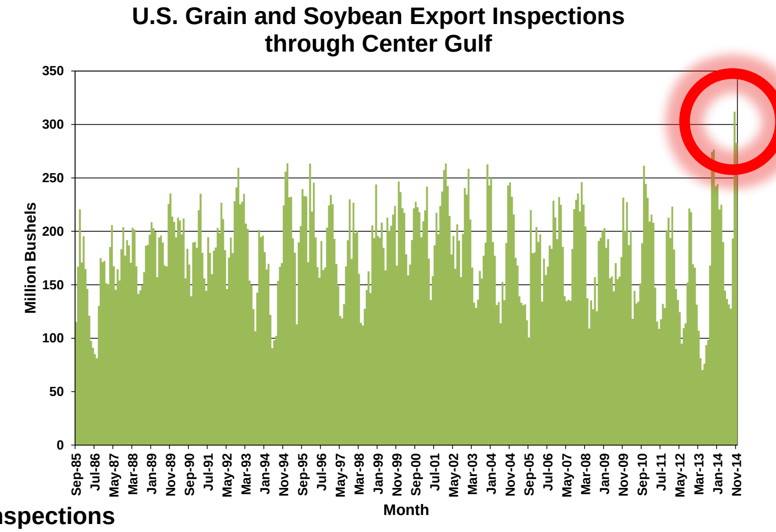
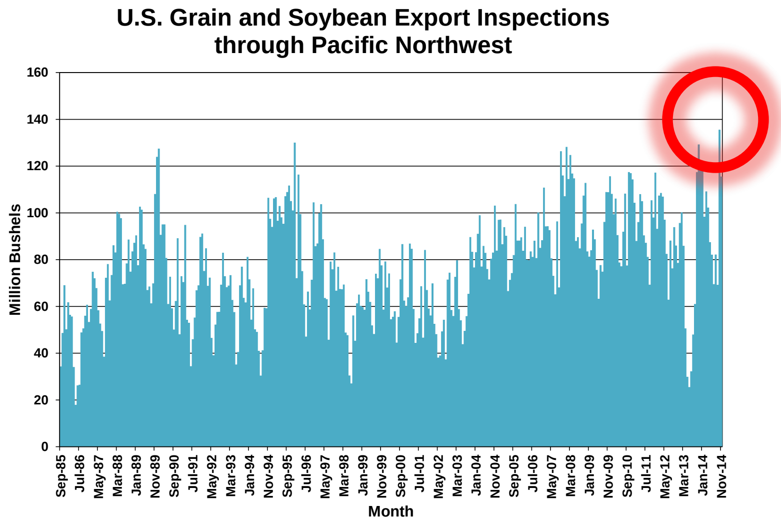
Bigger Crops . . . Someplace to Go

An October to Remember – Record Monthly Grain and Soybean Export Inspections







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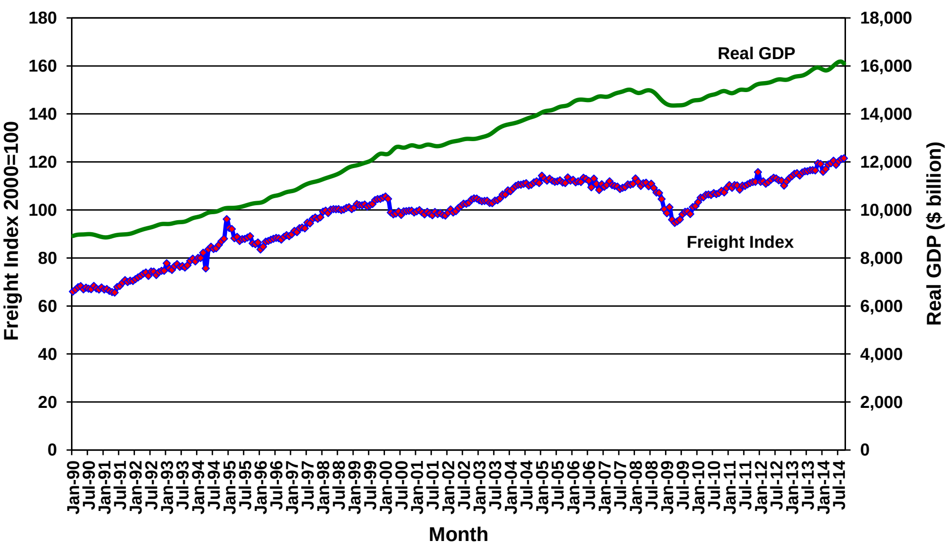
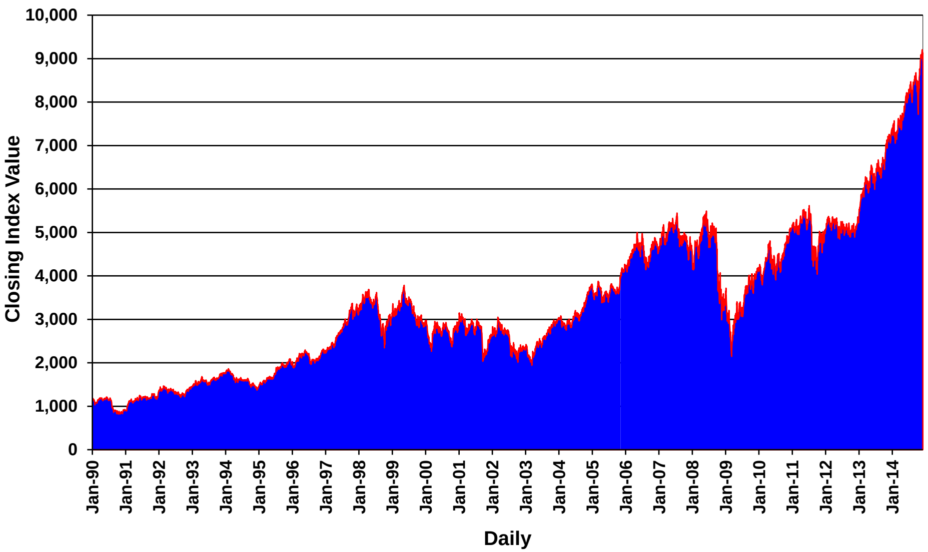
U.S. Freight Movements at All Time High
Wall Street Pleased

And this with a subdued economy. Volumes speak volumes and tightens capacity, something shareholders and Wall Street finds attractive.

Freight Transportation Services Index and Real GDP ($ billion)



Dow Jones Transport Index



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Rail Situation and Outlook

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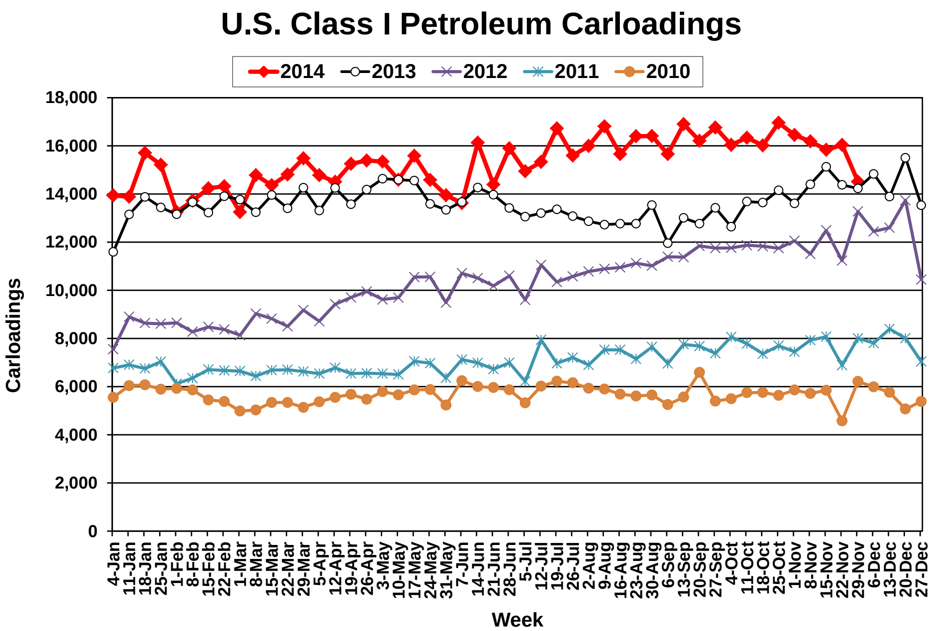
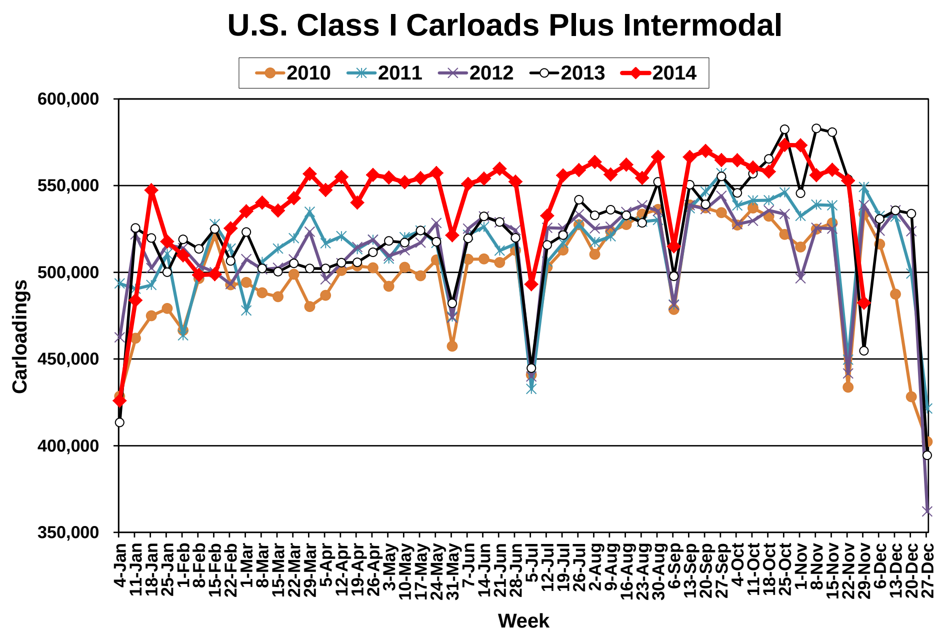
Rail Commodity Mix

Energy renaissance needs flexibility and available networks.





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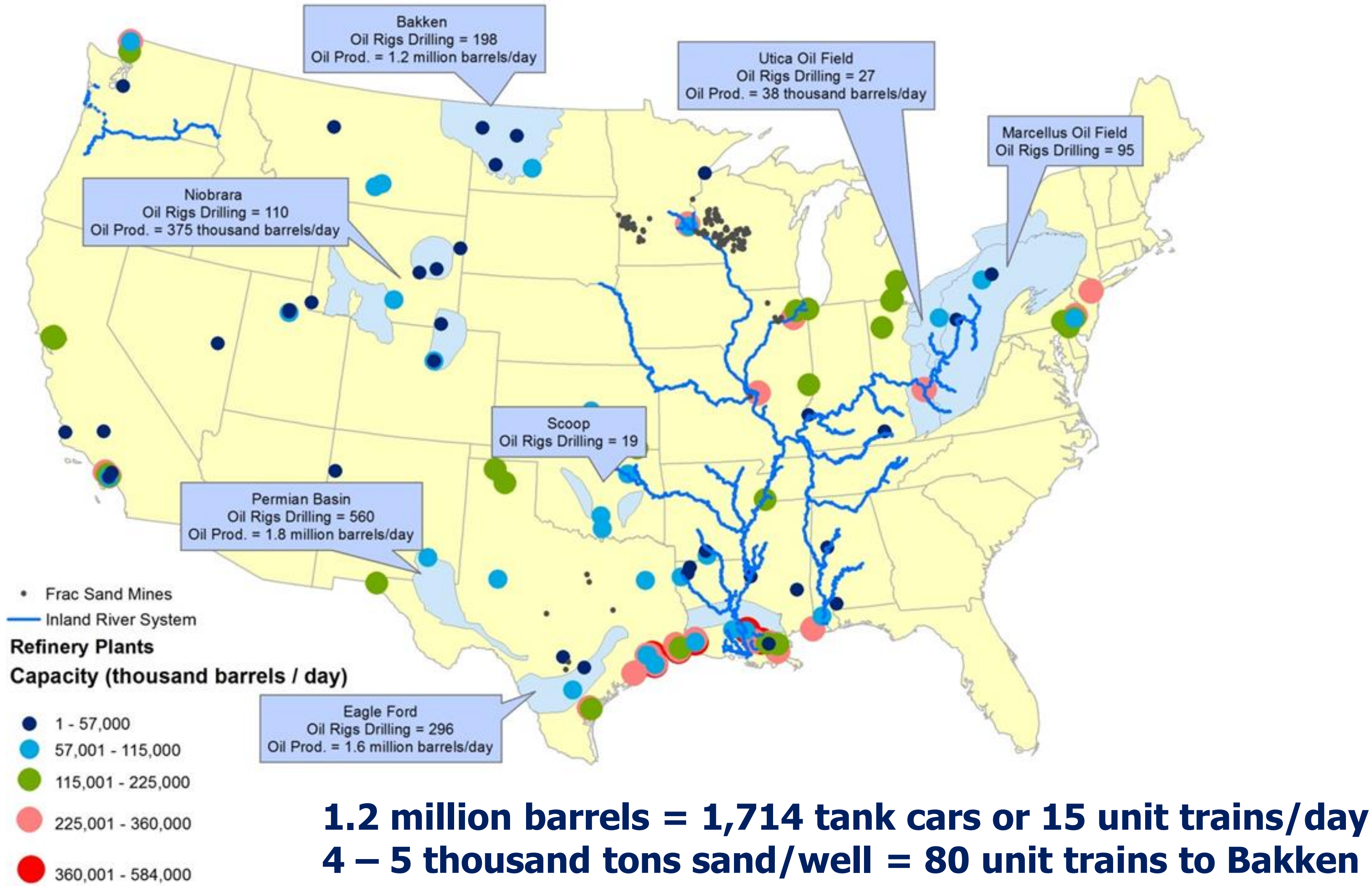
Key U.S. Shale Basin Activity and Refinery Infrastructure



1.2 million barrels = 1,714 tank cars or 15 unit trains/day
4 – 5 thousand tons sand/well = 80 unit trains to Bakken

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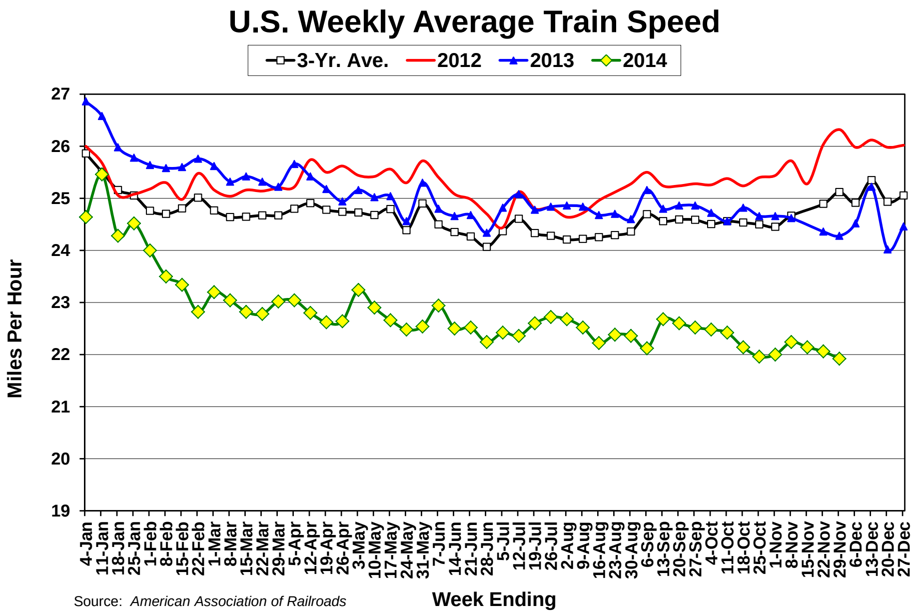
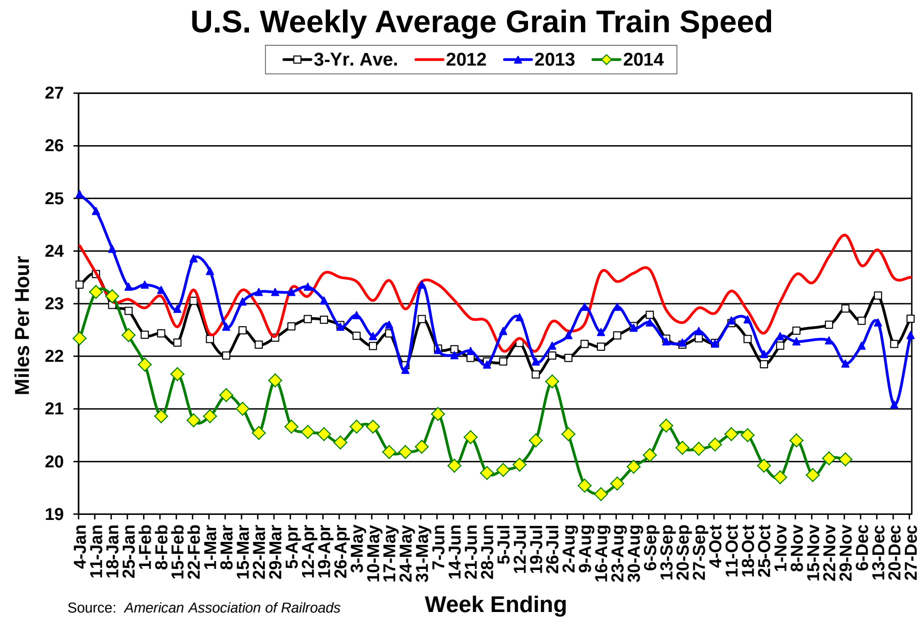
Key Rail Metrics Not Keeping Pace

Train speeds running three mph behind, not finding momentum



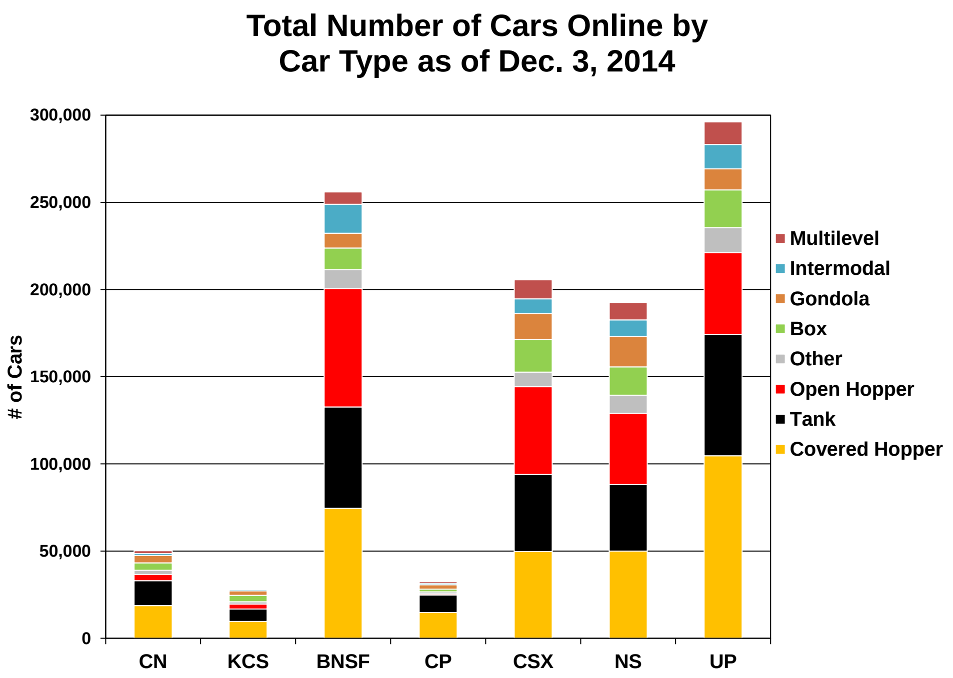
Source: *American Association of Railroads*

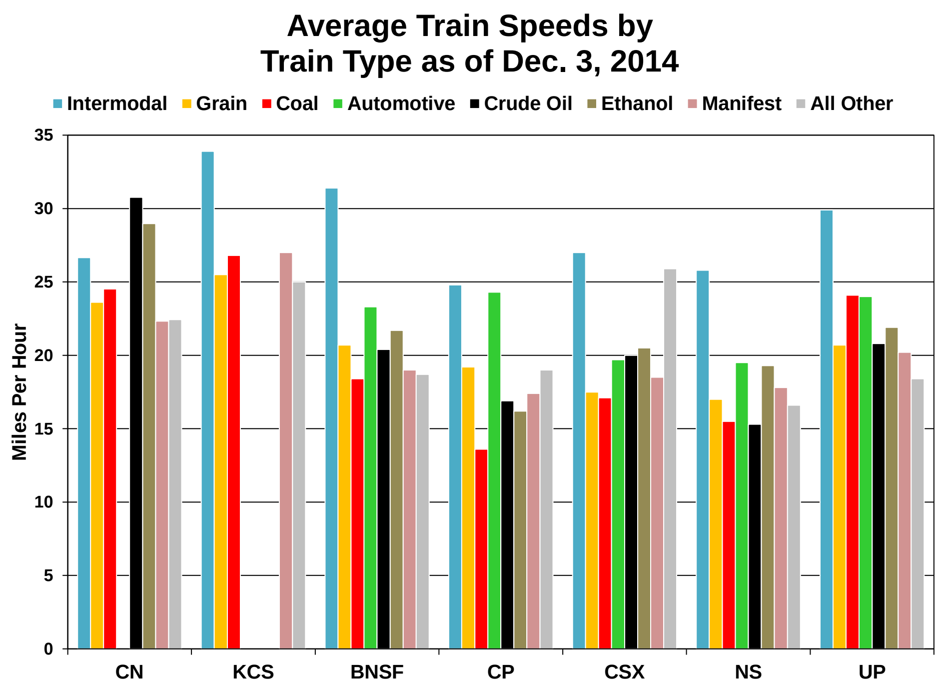


Source: *American Association of Railroads*

Surface Transportation Board Submission Requirements

Cars on Line and Train Speed Vary by Railroad, Car Type and Commodity





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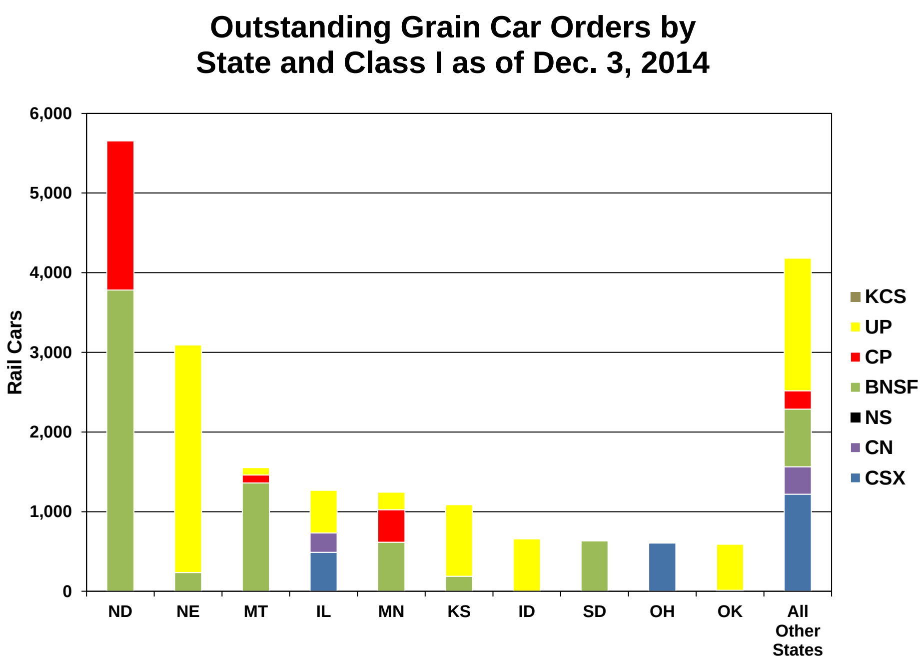
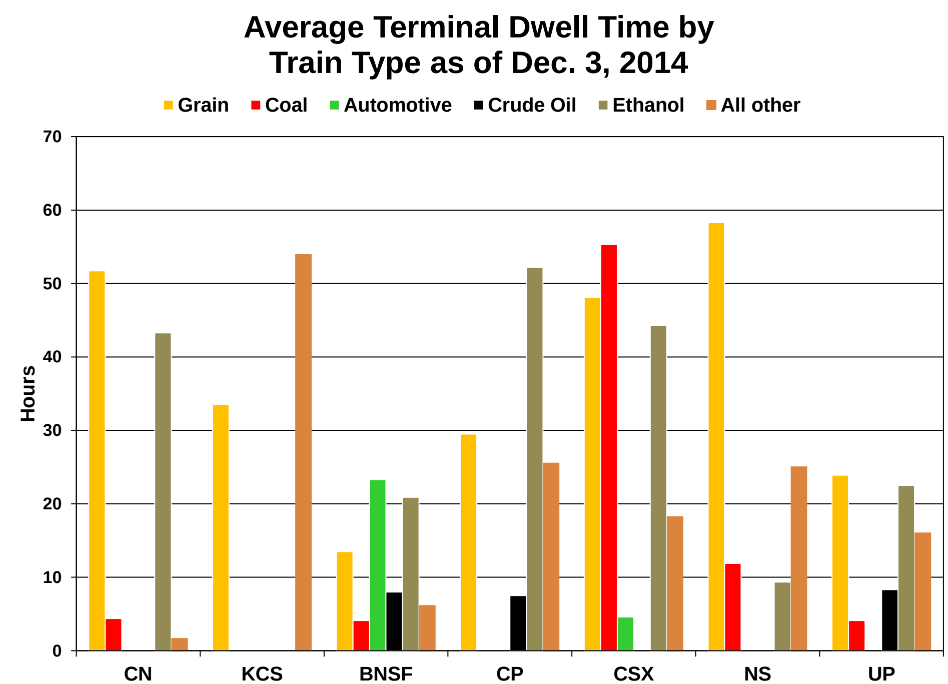
Surface Transportation Board Submission Requirements

North Dakota and Nebraska Backed Up, Grain Dominates Terminal Dwell Tim





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Inland Barge Situation and Outlook

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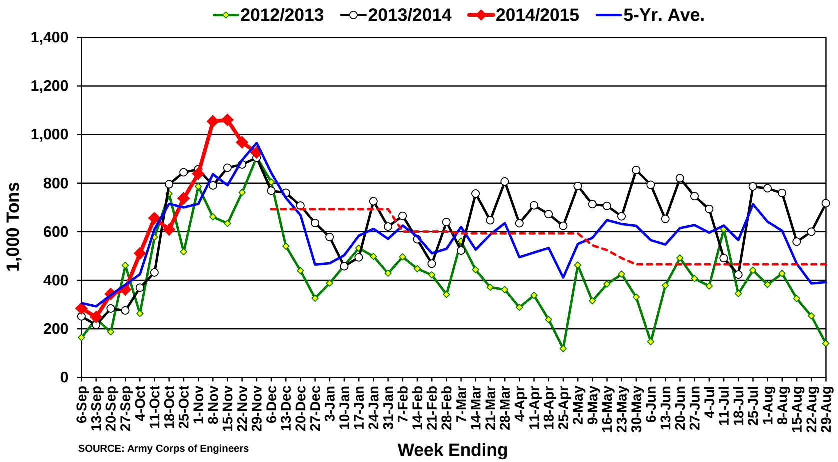
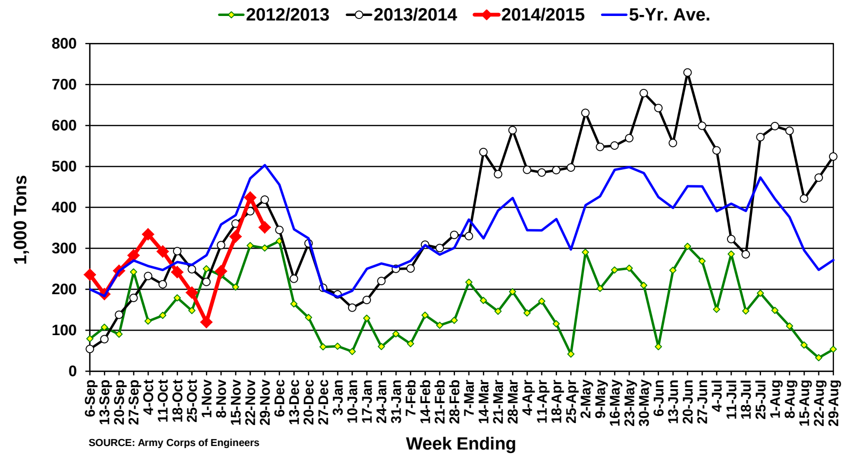
Grain Barge Lockings Multi-Year High – Something to be Moved, Someplace to Go

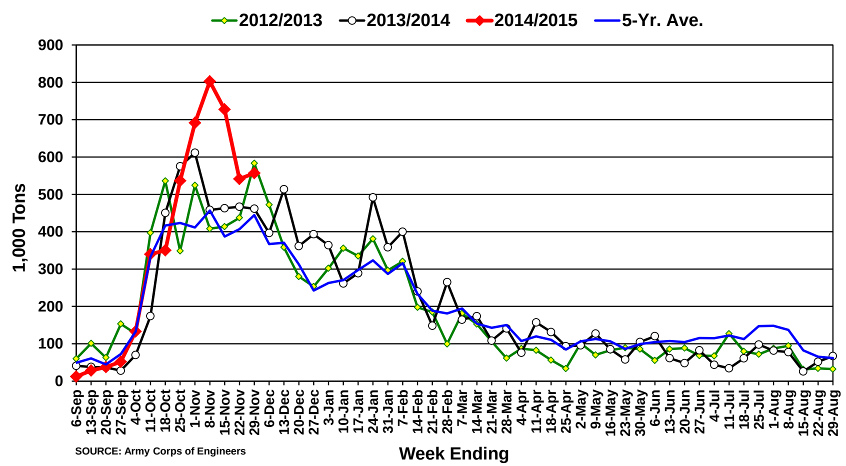
Weekly Grain Barge Movements through Key Locks and Dam



Weekly Corn Barge Movements through Key Locks and Dam



Weekly Soybean Barge Movements through Key Locks and Dam



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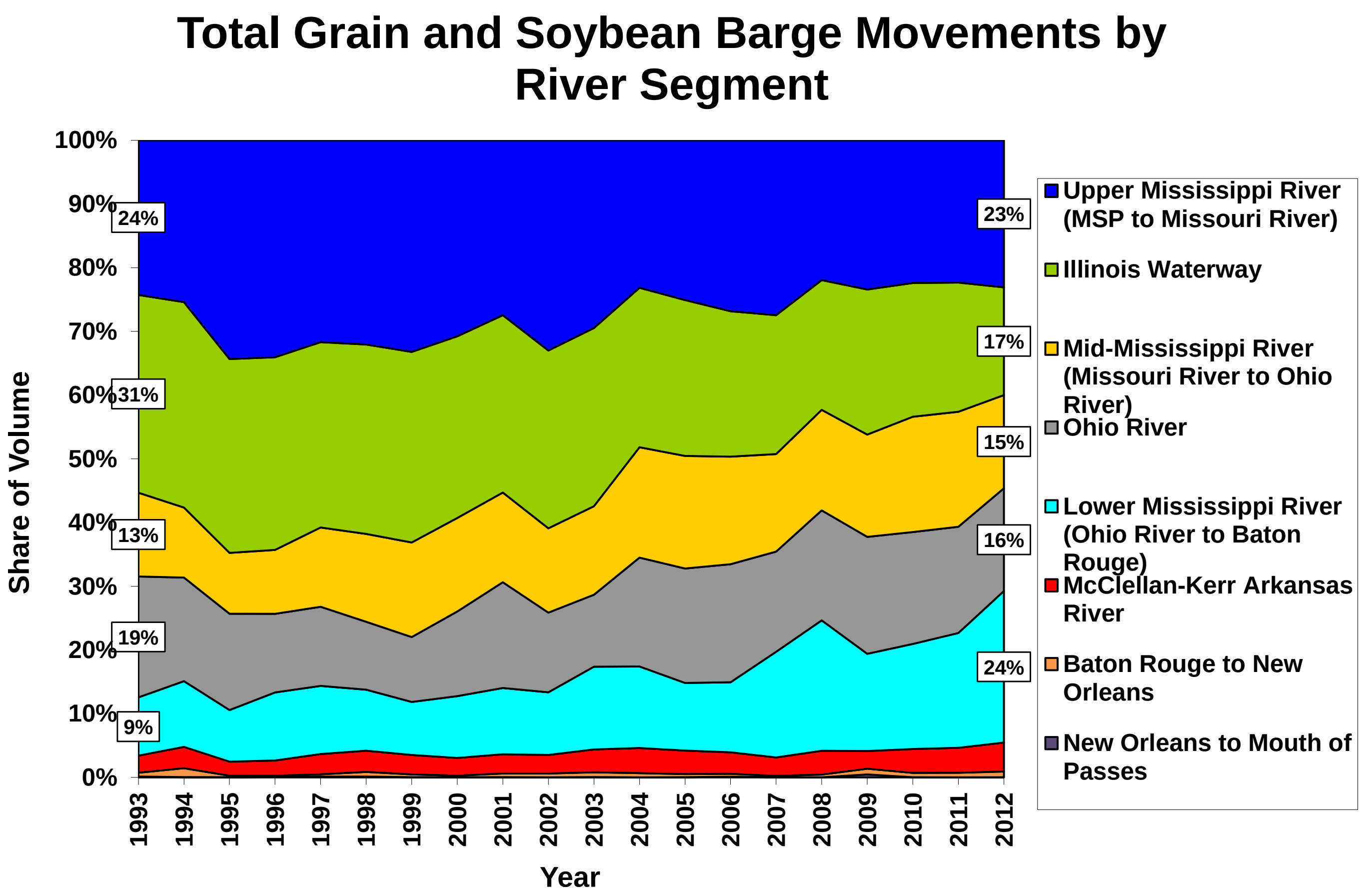
Shifting Barge Loading Patterns – North to South; Upper to Lower



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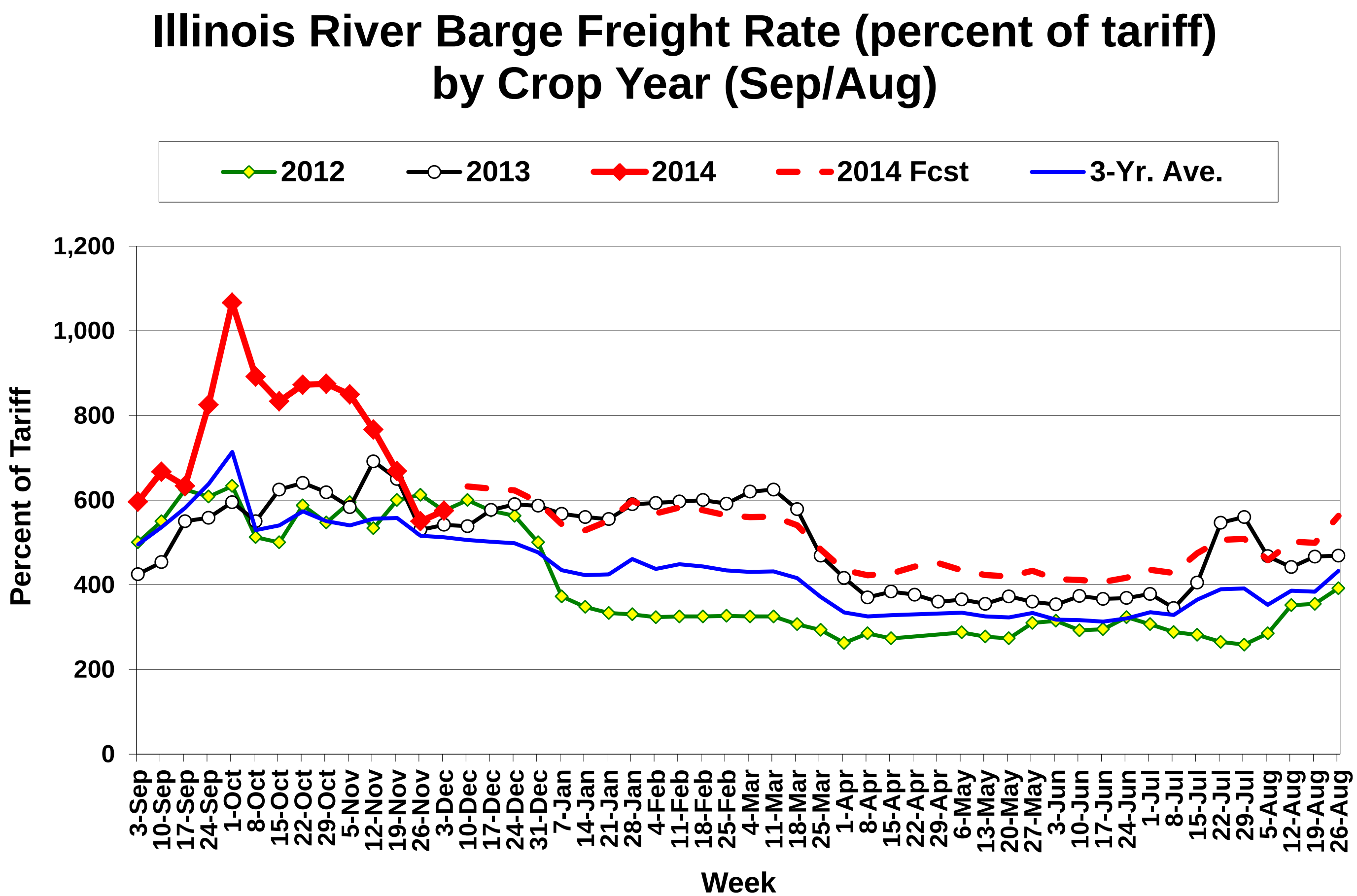
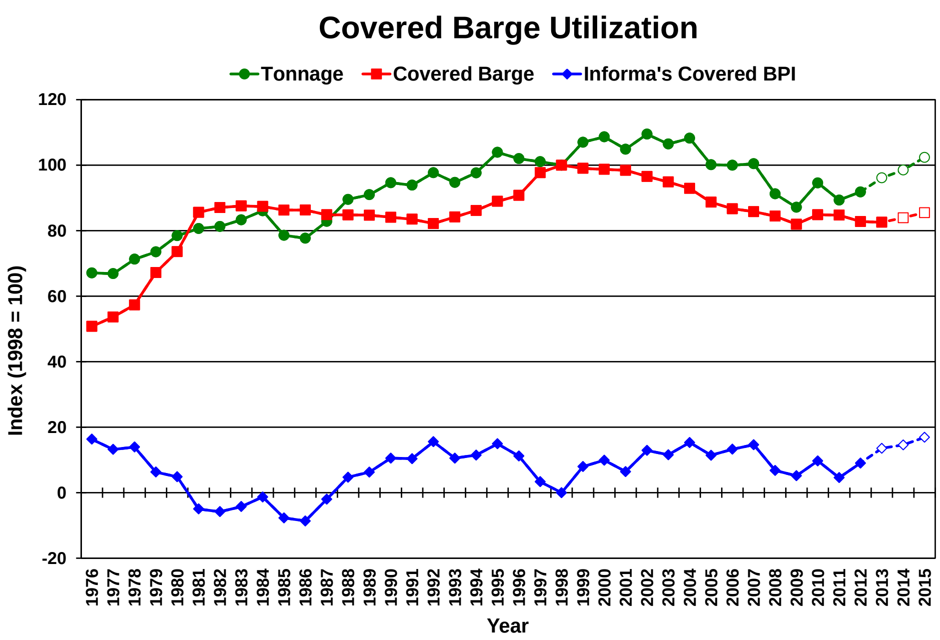
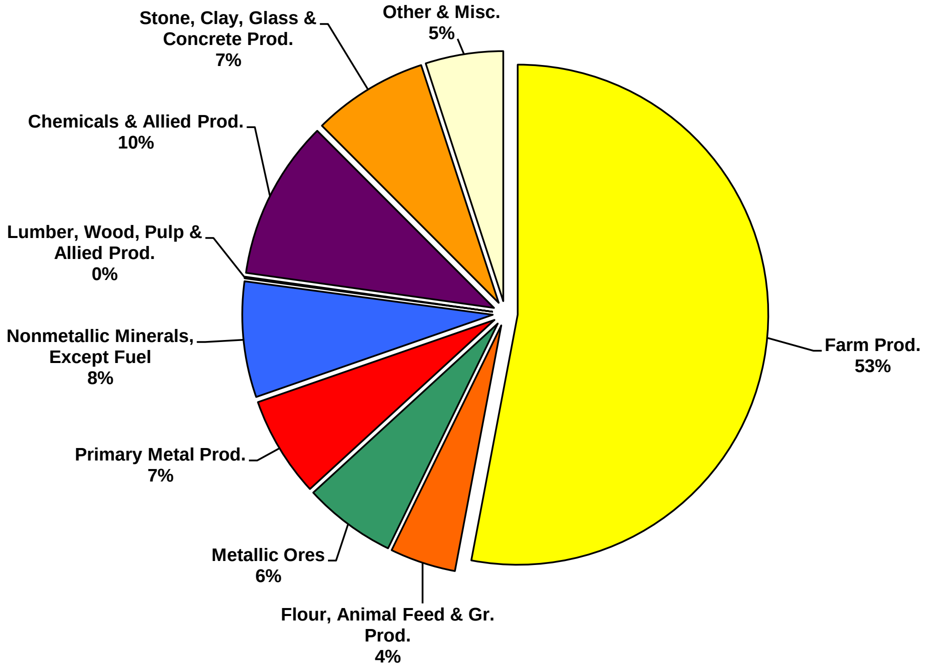
Barge Freight Rates Remain Firm



Covered Barge Market
Grain Reigns



Covered Barge Tonnage Composition



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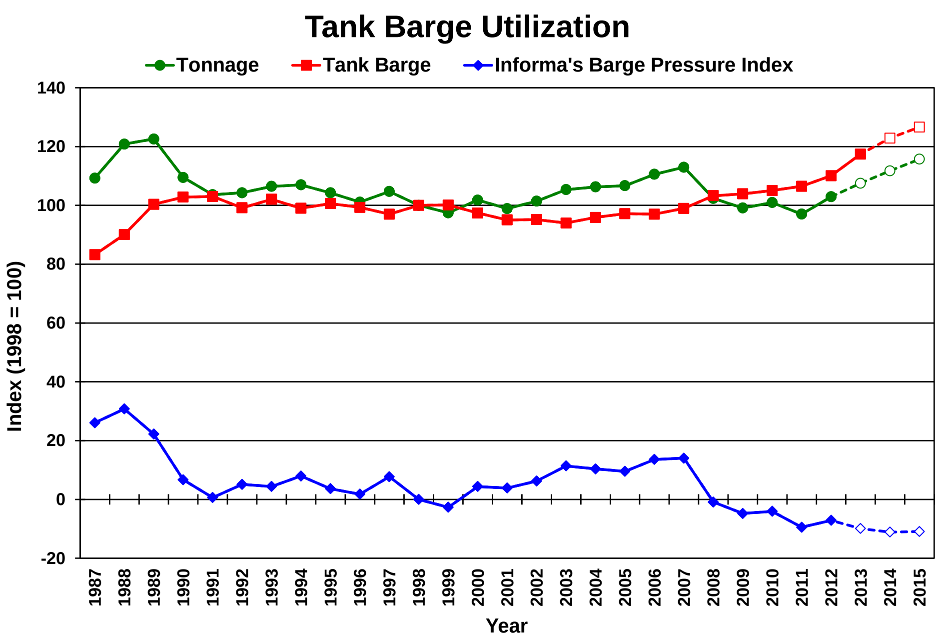
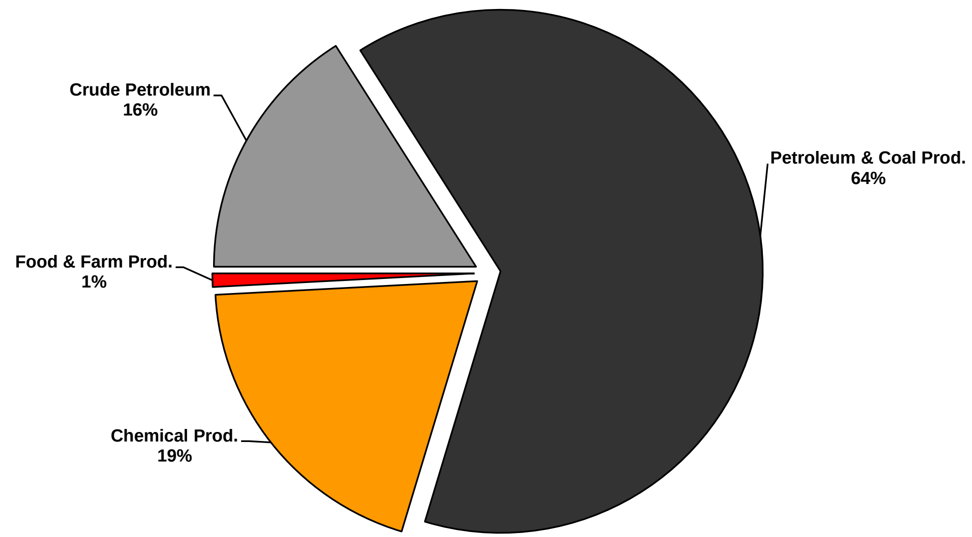
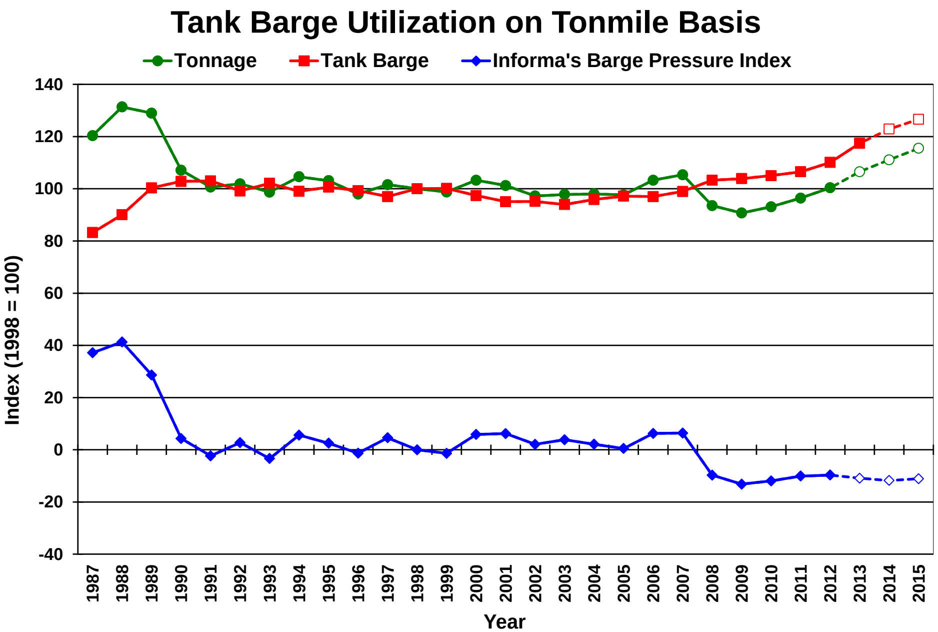
Tank Barge Fleet
Rising Crude Volumes – *Black Gold*

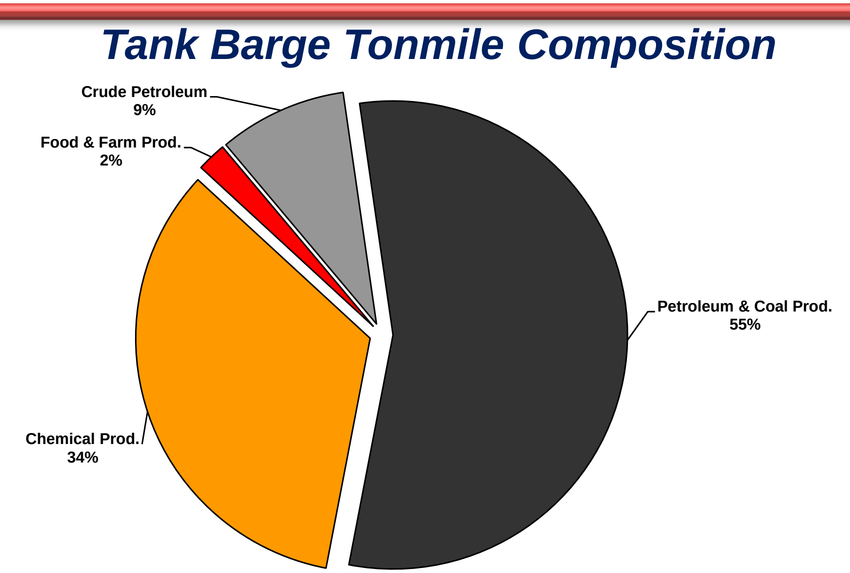


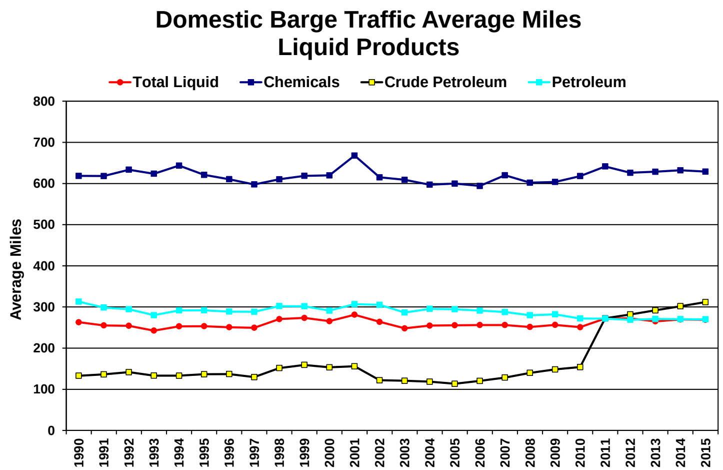
Tank Barge Tonnage Composition



Tank Barge Fleet – *Distance Matters!*







Informa Economics, Inc., *Barge Fleet Profile*

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Long Term Considerations

Funding Highway Needs

- Road Conditions
  - 32% of major roads are in poor or mediocre condition
  - 42% of major urban highways are congested
- Estimated cost to maintain at existing condition: $101 billion capital investment / year
- Estimated cost to improve highway conditions: $170 billion / year
- Total Federal, State and local spending on highway capital investments: $91 billion / year

Funding Bridge Needs

- Bridge Conditions
  - 11% (one in nine) are structurally deficit
  - 25% are functionally obsolete
  - Average age is 42 years old
  - 30% of bridges have exceeded their 50 year design life
- FHWA estimates costs to repair or replace deficient bridges $76 billion
- FHWA estimates in order to eliminate bridge backlog by 2028, would require about $20.5 billion / year, current investment is $12.8 billion / year

Funding Highway Needs

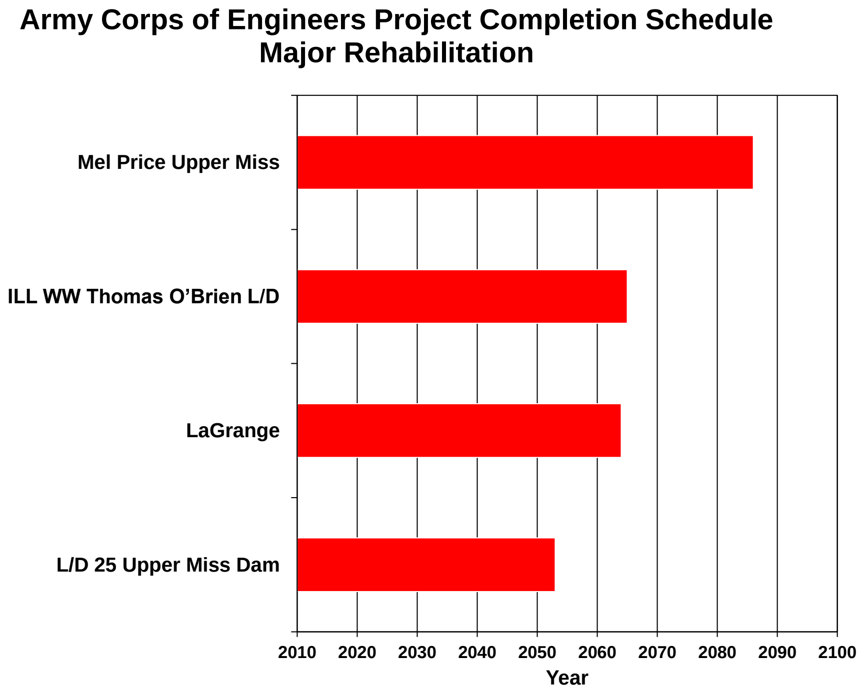
- Over the past 10 years, Highway Trust Fund outlays have exceeded revenues by $52 billion dollars (typically from the General Fund)
- That gap is projected to reach $167 billion dollars over the next 10 years
- State Alternatives:
  - Raise Taxes
    - Raise state fuel tax at the pump (MD, WY, MA, VY, NH) or wholesale (PA)
    - Dedicated sales taxes (VA, AK)
  - Issue Public Bonds
    - Repaid on toll revenues (OH, MA)
  - Long-Term Loans
    - Transportation Infrastructure Finance and Innovation Act (TIFIA)
      - Requirements: Total cost > $50 million (bundle projects) >25 million in rural areas (rural areas are eligible for interest rates ½ those in urban areas)

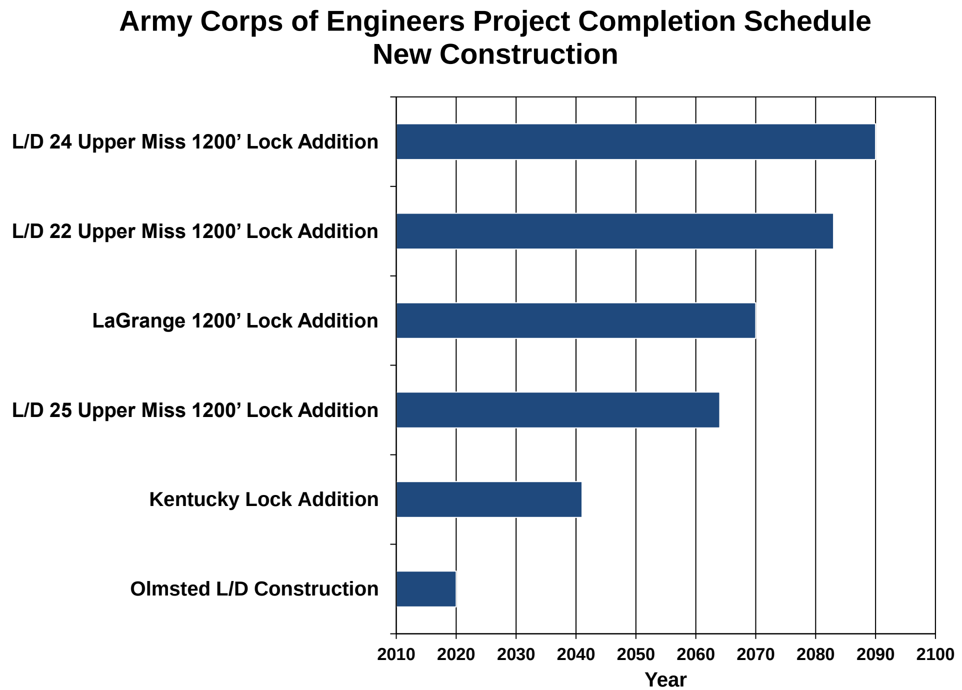
Funding Inland Navigation

- Inland river navigation covers 12,000 miles, 200 locks
- 566 million tons of freight per year, $152 billion in value
- Inland Waterways Trust Fund:
  - Generates about $85 million per year (20 cent fuel tax on barge operators)
  - Estimated total capital investment needs over next 20 years: $18 billion or $900 million per year
  - If Federal funding continues at existing levels, the 22 planned major construction and rehab projects will not be completed until 2090

Long-Term Problem on the Rivers

Army Corps of Engineers Project Completion Schedule for Select Locks





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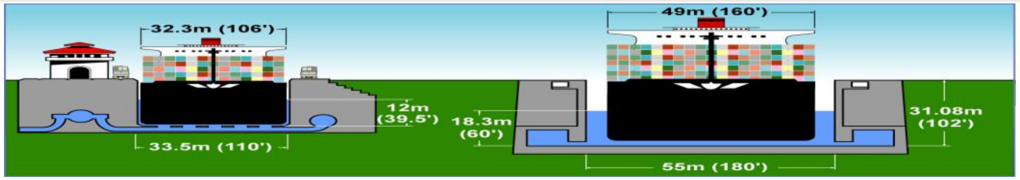
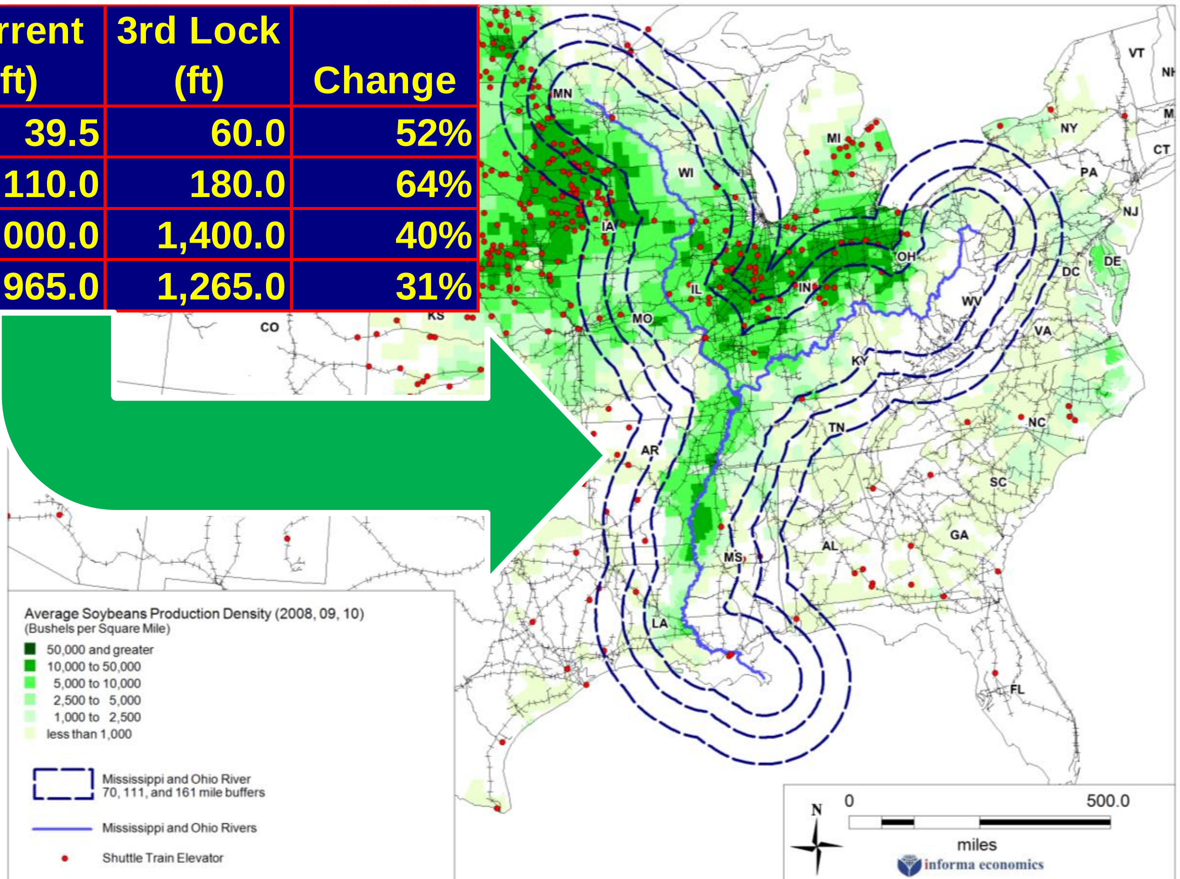
Modal Developments beyond the Borders: Panama Canal – Long Term Opportunity



Dimension	Current (ft)	3rd Lock (ft)	Change
Draft	39.5	60.0	52%
Width	110.0	180.0	64%
Length	1,000.0	1,400.0	40%
Ship Length	965.0	1,265.0	31%



Soybean Planted Acreage Impact

- 70 miles
  - 26.7 mil.
- 111 miles
  - 27.9 mil.
- 161 miles
  - 49.6 mil.

  (*two-thirds U.S.*)

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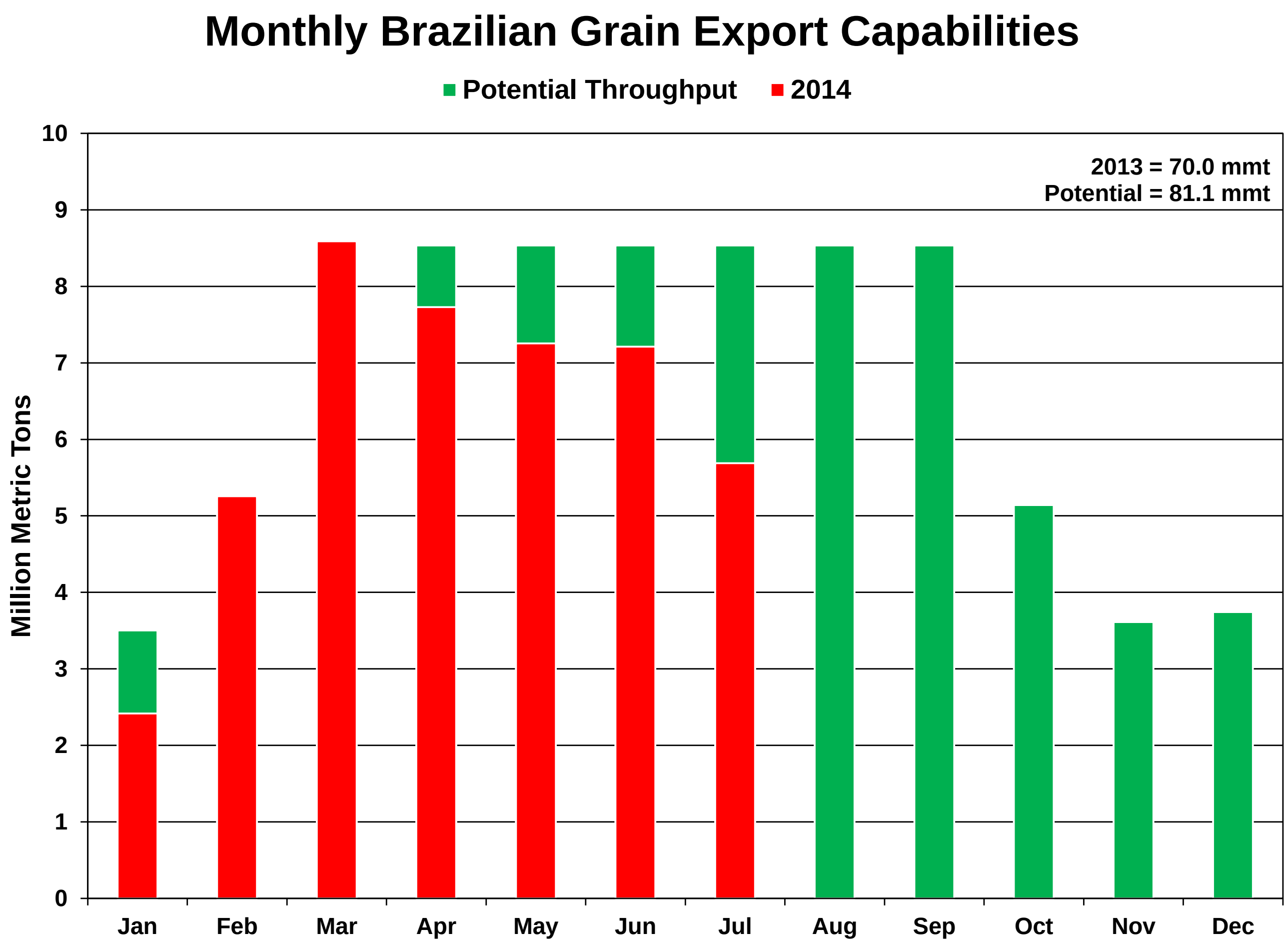
BRAZIL: About the Spout – Sustained Export Grain Flows; More Spouts Coming On-Line



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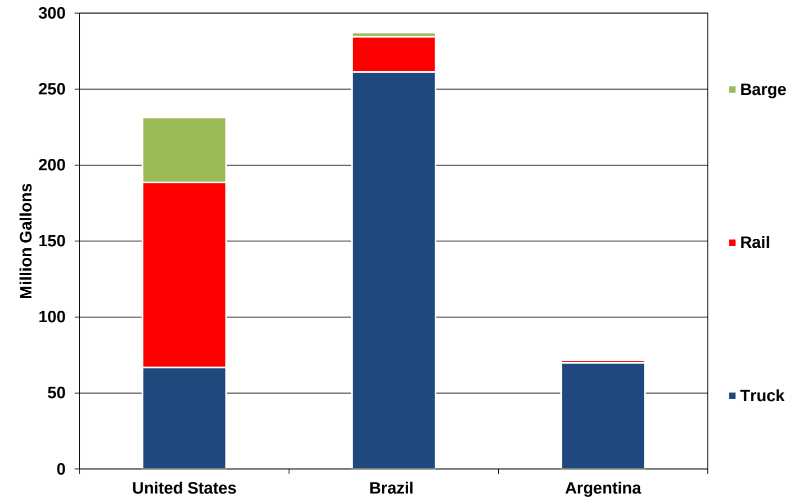
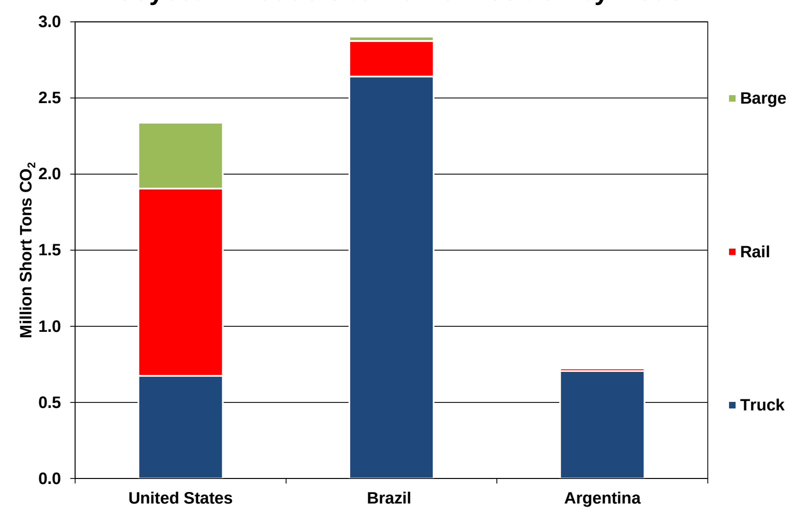
Sustainability Looks Different When Factoring Modal Conditions

- U.S. and Brazilian Soybean Production and Exports on Equalizing
  - Both send about 60% of exports to China
  - Each sends slightly varying volumes to different markets
- Brazil Modal Share becoming Comparable to U.S.
  - Truck is the discrepancy – Brazil hauling nearly 5 times further than U.S.
- Brazil Highly Dependent on Truck to Final Market Position
  - Trucking in Brazil alone:
    - Generates 75% of total ton-miles
    - Consumes more than 90% of fuel burned
    - Emits nearly 93% of all CO_2
- Compared to the U.S., Brazil:
  - Consumes 15% more fuel
  - Emits 17% more CO_2
  - All together, one Panamax ship filled with soybeans from Brazil emits 30% more CO_2

Total Fuel Consumed Transporting Soybeans and Soybean Products to Market Position by Mode



CO_2 Emissions Transporting Soybeans and Soybean Products to Market Position by Mode



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Key Takeaways

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Key Takeaways

- Global commodity demand strong, especially for agricultural commodities
- Greater efficiencies warranted throughout logistics chain
- North American commodity flows being challenged on broad commodity mix, new lanes of shipment and rapidly changing transport and logistics model
- U.S. transports changing structurally, and with it comes regulatory and oversight implications
- U.S. inland towboat and towing industry facing certain constraints
- Railroads investing, but will it be enough?
- Brazil being pulled into higher efficient modal options: waterways key to economic competitiveness and environmental stewardship

Action Items Addressing S.W.O.T.

- Conduct Global U.S. Grain Export Competitiveness Study
- Develop Grain Market Optimization Assessment Tool
  - Evaluate Issues
    - Rail rate spikes and service disruptions
    - Lock and dam closures
    - Facility expansion/contraction (new export terminals, shuttle facilities, etc.)
    - Regional production impacts (drought or flood impacts)
    - Government policy changes (truck weight limits, hours of service, etc.)
- Monitor Panama Canal Expansion Impacts
- Evaluate Long-Term Port Changes and Impacts to Agriculture

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