

Key Supply Chain Trends That Will Impact Our Region



Annual Meeting
Minneapolis, Minnesota
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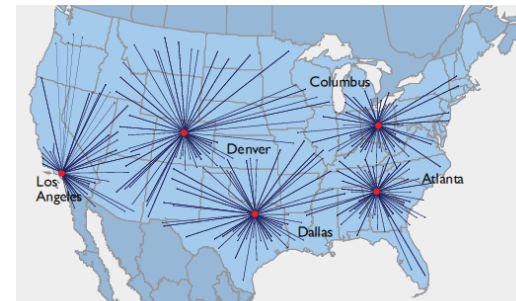
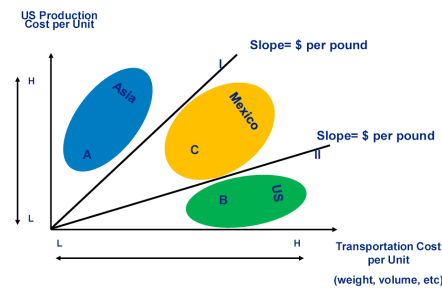
American Society of Landscape Architects – MN Chapter



Logistics Leadership since 1904

Presentation Flow

- **Supply Chain Logistics Industry**
 - ✓ Why do we care about supply chain?
 - ✓ Business Strategy Implications
- **5 Key Trends**
 - ✓ Fuel Pricing
 - ✓ Truck & Rail Capacity
 - ✓ Domestic Networks + New Mantra
 - ✓ Global Sourcing + Near Sourcing
 - ✓ Green / Sustainability



Why Care About Supply Chain Logistics / Transportation

Touches Everything We Do
% of Economy

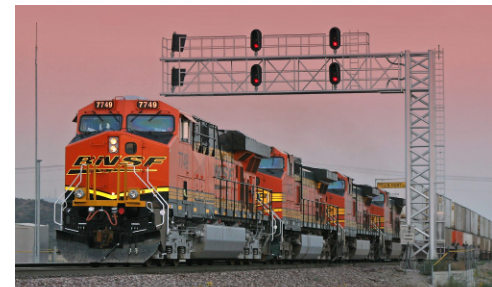
8.3% Logistics

\$3.78 per person in U.S.

vs.

17.3% Healthcare

\$7.89 per person in U.S.



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Why Care About Supply Chain Logistics / Transportation

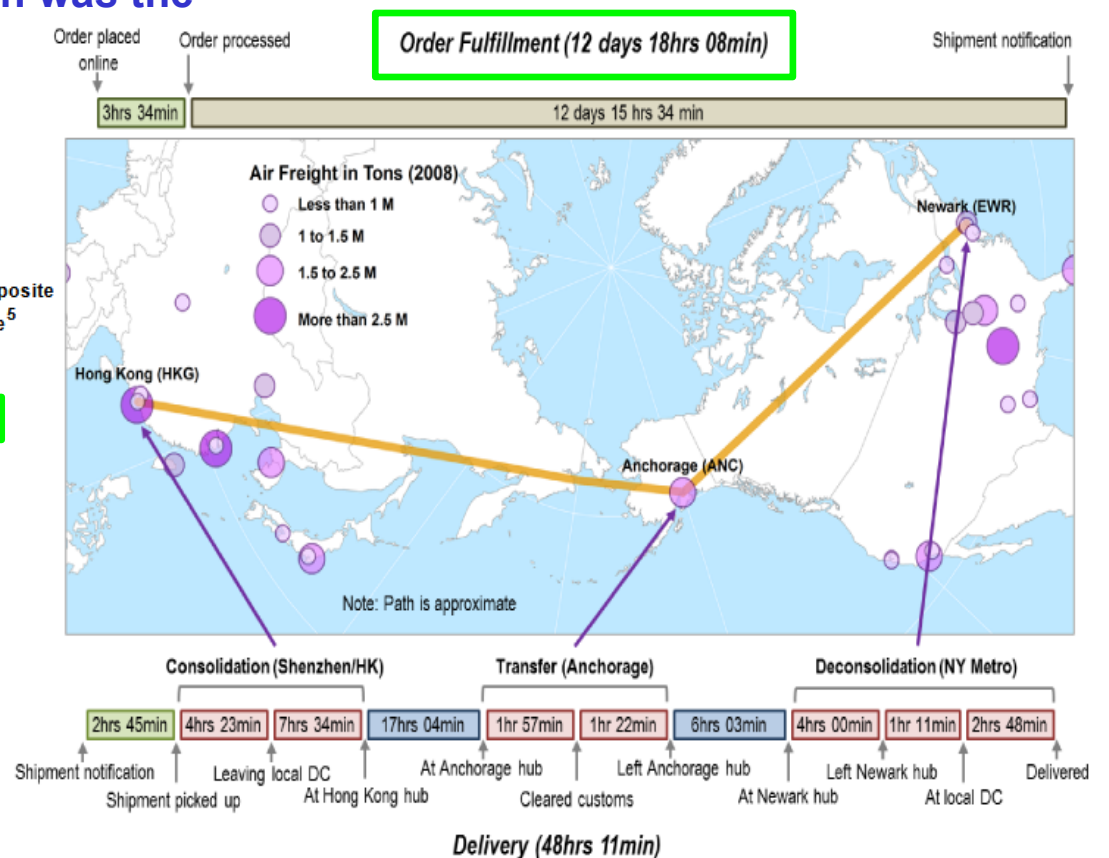
Strategic Advantage - Supply Chain Execution

Apple iPod Global Supply Chain – leading edge technology would be wasted if time to market was too long!!!

Steve Jobs said supply chain was the key to Apple's success....!!!

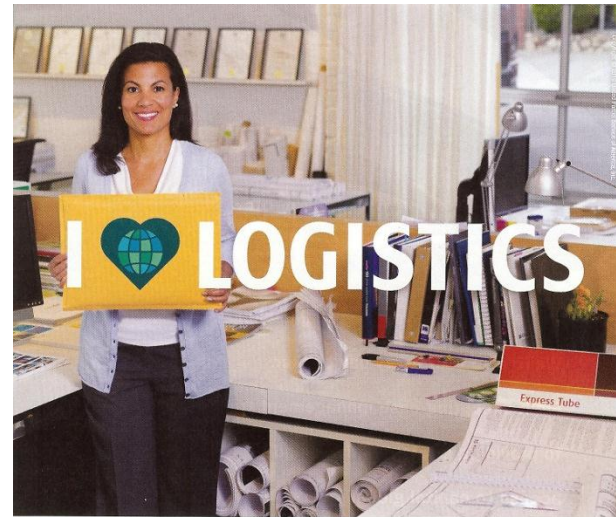
The Gartner Supply Chain Top 25 for 2011

Rank	Company	Peer Opinion ¹ (156 Voters) (25%)	Gartner Opinion ¹ (32 Voters) (25%)	Three-Year Weighted ROA ² (25%)	Inventory Turns ³ (15%)	Three-Year Weighted Composite Revenue Growth ⁴ (10%)	Score ⁵
1	Apple	2,950	536	17.9%	49.3	40.9%	8.50
2	Dell	1,909	457	6.6%	38.9	4.1%	5.14
3	P&G	1,726	660	9.6%	5.6	2.4%	5.13
4	Research In Motion (RIM)	550	215	25.1%	17.7	43.9%	5.10
5	Amazon	2,267	402	6.6%	11.2	34.0%	5.07



Why Care About Supply Chain Logistics / Transportation

UPS's new branding campaign has pulled back the curtain and introduced the consuming public to the importance of supply chain logistics in their lives and the economy



The new logistics is global. You can create a design in your office, get it prototyped in China, and have it back on your desk within days to show your client. As the world's largest customs broker and one of the world's largest airlines, UPS can shrink the world for you. In fact, UPS clears more shipments through customs than any company on earth. That's a new kind of speed-to-market. That's a new kind of logistics. thenewlogistics.com



The new logistics is technology that advances your business. In the hi-tech industry you have to be fast, efficient and source globally. Not a problem: UPS technology plugs directly into your systems, streamlining everything. You can prepare shipments in seconds rather than minutes. Simplify customs clearance with paperless solutions. Keep customers updated automatically. Put the new logistics to work for you. thenewlogistics.com



Learn more about how UPS can help you keep your operations running smoothly. Scan this QR code to view a case study. If you don't have a QR code reader, visit getcanills.com from your mobile browser.



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Fuel Prices

Will go up!

And Stay Up and Impact All Supply Chains

- Transportation Rates
- Sourcing Locations
- Domestic & Global Distribution Networks
- Product Development & Packaging Systems
- Inventory Levels and Demand Planning

Customer Expectations Will Be Impacted



Fuel Prices

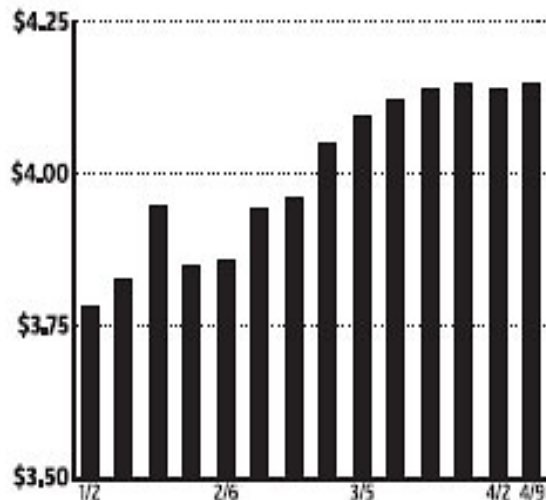
We all know what happened in 2008, but notice 2010 & 2011: + 41% in 12 months! →

Diesel fuel powers the supply chain sector

Price Today \$4.14 avg.

U.S. DIESEL PRICES

■ Weekly U.S. diesel prices

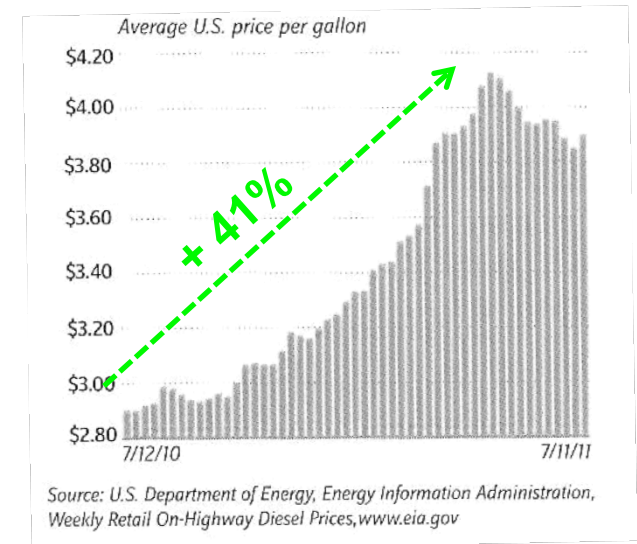
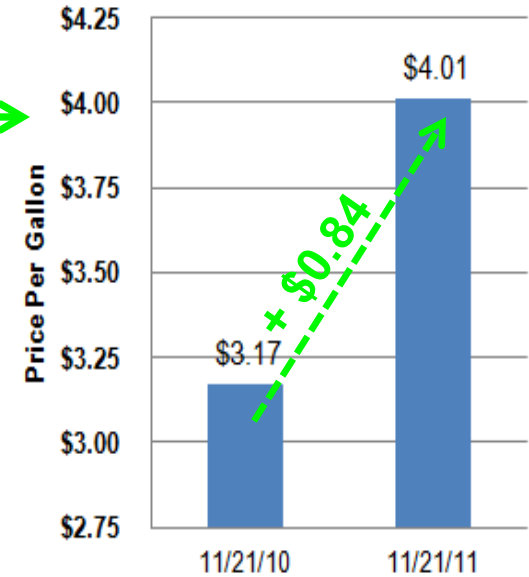


Source: U.S. Energy Information Administration, www.eia.gov



Diesel Fuel Price

Last 12 Months

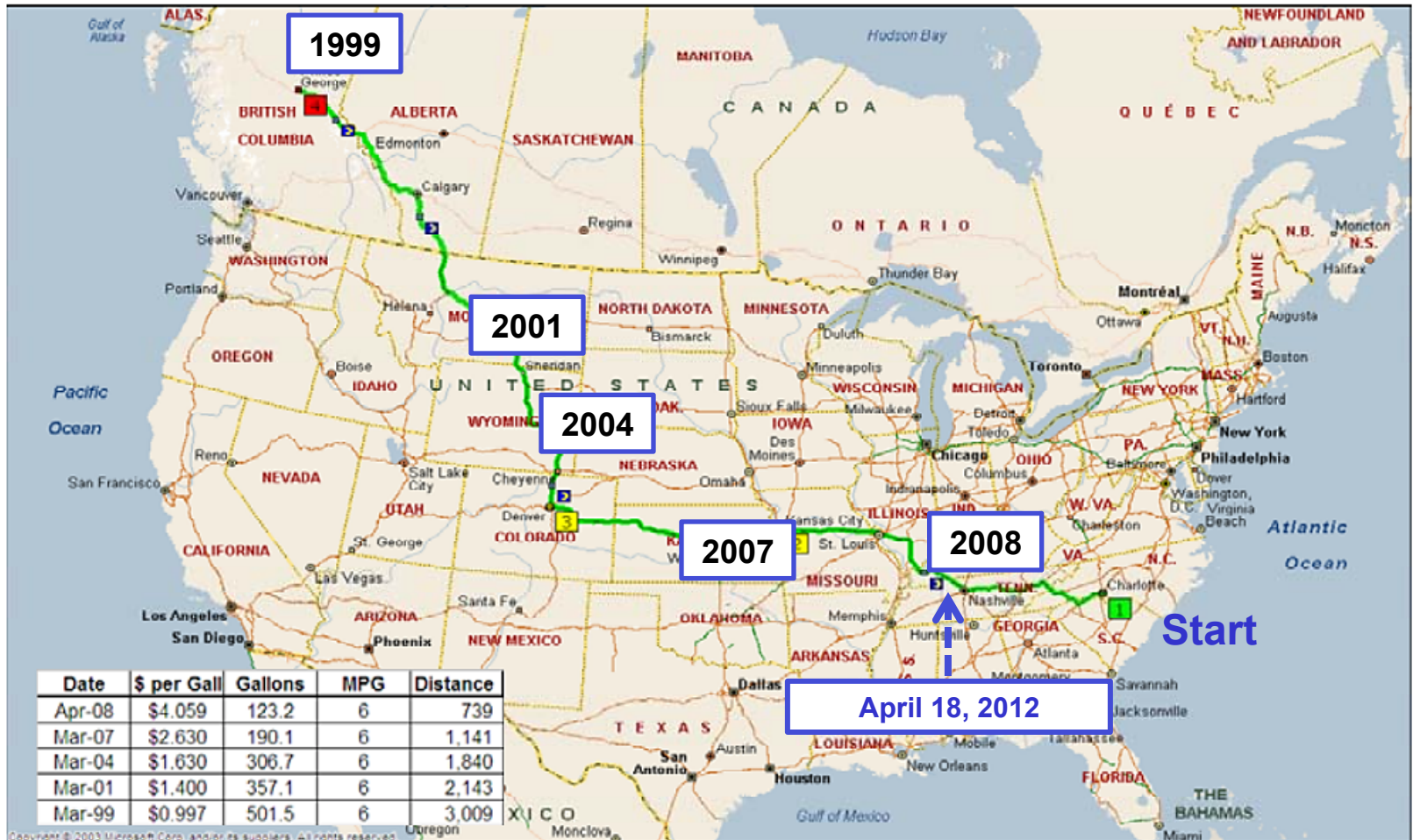


Source: U.S. Department of Energy, Energy Information Administration, Weekly Retail On-Highway Diesel Prices, www.eia.gov



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How far a Truck travels on \$500 of Diesel Fuel



Transport Capital Partners, LLC

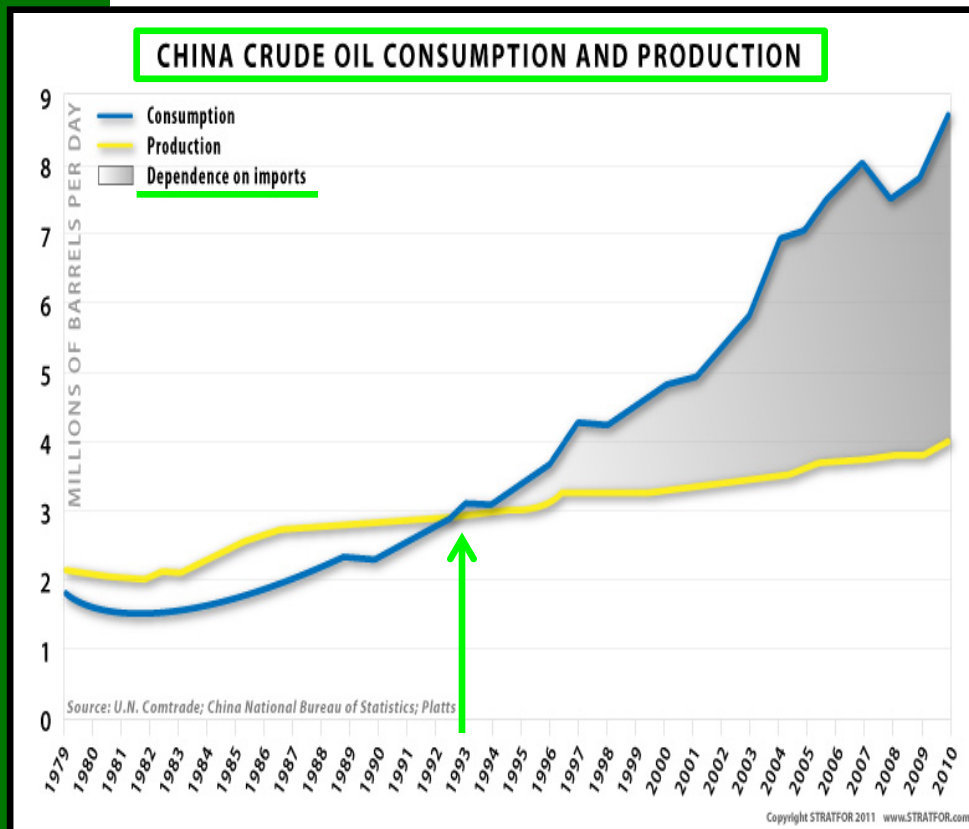
Source: Stifel Nicolaus – State of Trucking Industry, 2/24/09



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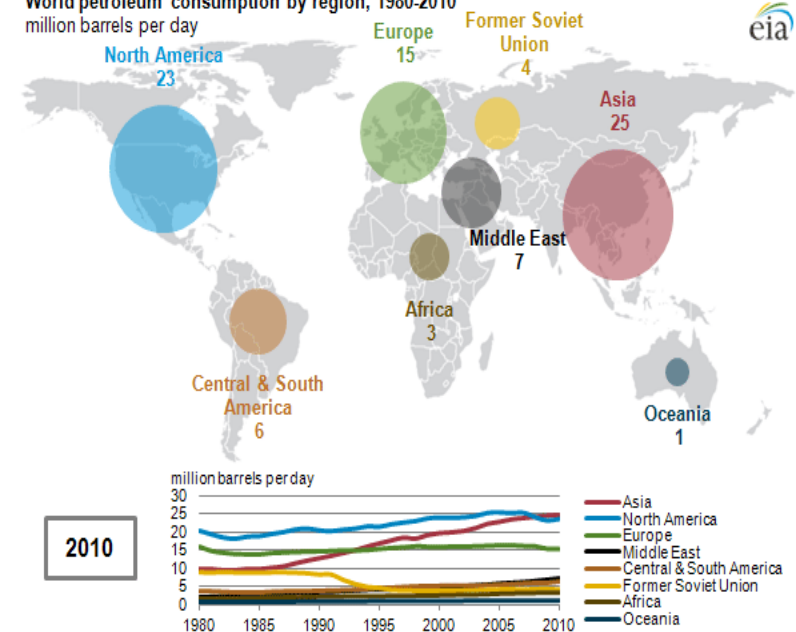
Crude Oil Supply Growing Global Demand

Asia is World's Largest Petroleum User
China's economy continues to consume more oil per year adding to world demand. India and other developing economies also need to be considered!

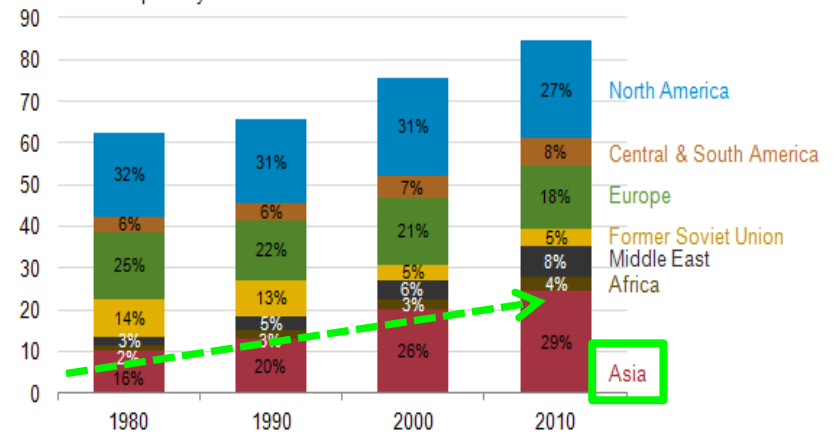


Trend - Fuel pricing

World petroleum consumption by region, 1980-2010
million barrels per day



World petroleum consumption by region, 1980-2010
million barrels per day



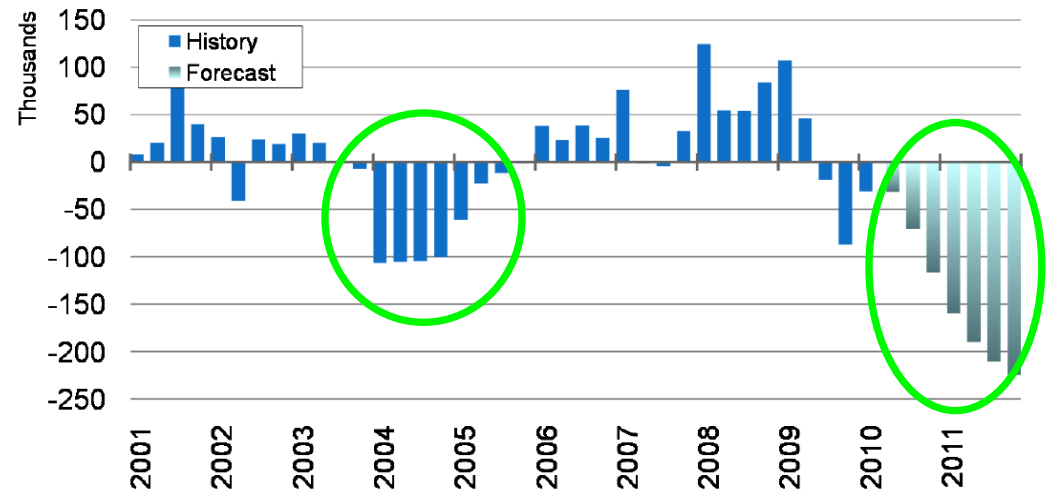
Trucking Industry Capacity Reductions

Truck Driver Shortage Shipping delays & higher prices

- ✓ Still a major factor – recession merely lull in storm.
- ✓ **Insurance does not allow drivers under age 25.**
- ✓ **Driver labor pool averages 5 years older than general labor pool; retirements will hurt industry.**

Trend – Truck / Rail Capacity

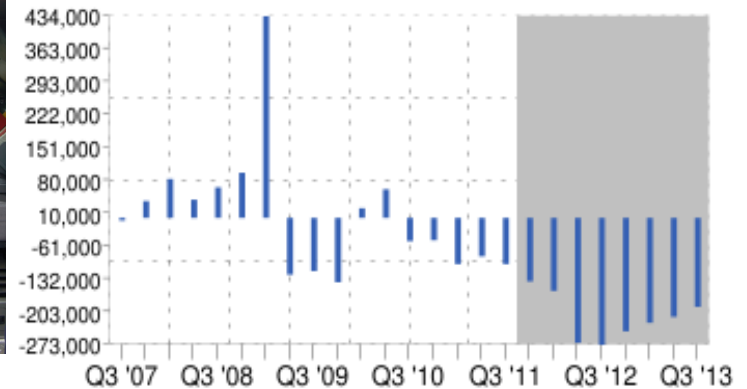
DRIVER LABOR: SHORTAGE/SURPLUS



Source: FTR Associates



Driver Shortage/Surplus no. of Drivers, Quarterly



Source: www.TruckGauge.com



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Trucking Industry Capacity Reductions

Truck Driver Shortage: 300,000+
National Media have even discovered it...!!!



Truckers Worried About the Long-Haul

Trucking Industry Expecting Huge Shortage of Drivers

BY BRANDI KRUSE
Feb. 26, 2010



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The long-haul trucking industry is looking for more than a few good men – and women.



Scott Olson/Getty Images

Trucks are driven along I-90 near downtown in Chicago, Ill., in this Jan. 2010 file photo. Despite...

Despite the weak economy and a national unemployment rate hovering just under 10 percent, trucking companies report a shortage of long-haul drivers -- a problem federal labor officials and trucking officials say will grow worse over the next 10 years.

"We expect we will have a sizable driver shortage in the less popular driving jobs," said Clayton Boyce with the American Trucking Association. "The least desirable jobs are the ones where you are driving a truck for weeks or more and never getting home."



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Shortages of trucks and truck drivers stall product deliveries

Updated 9/9/2010 6:26 PM | Comments 186 | Recommend 33 | E-mail | Save | Print | Reprints & Permissions | RSS

By Paul Davidson, USA TODAY



Enlarge By Nati Harnik, AP

American Trucking Association officials say demand is up recently after many operators slashed fleets and staff during the downturn.

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Shortages of trucks and drivers are delaying some deliveries of products and raw materials across the USA and raising freight costs.

The crunch is defying a tepid recovery and near-10% jobless rate that should supply a vast pool of unemployed construction and manufacturing workers. Shortages are likely to worsen when the economy heats up and new rules kick in later this year that will make it tougher to hire drivers with poor safety records and could limit the number of hours drivers can work, experts say.

"What's going to happen in six, 12, 18 months?" says Jon Langenfeld of research firm R.W. Baird.



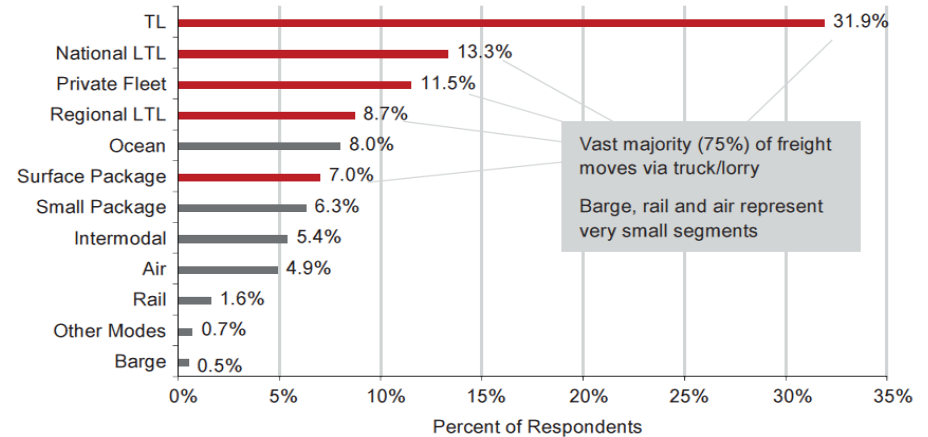
Why Do We Care About Truck Capacity Or Driver Shortage?

Freight Modal Shares
In domestic tonnage

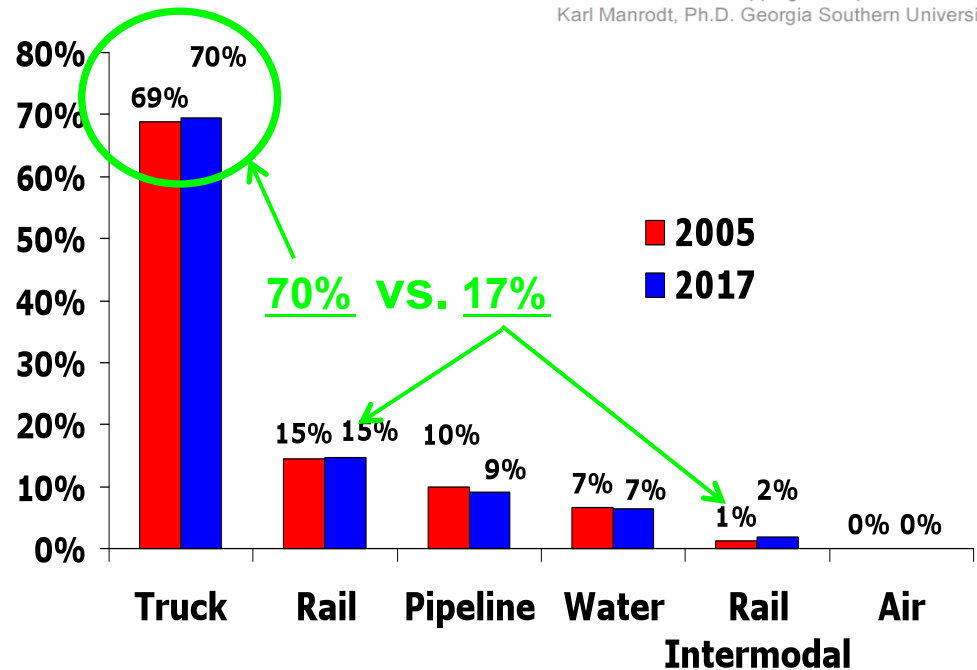
Trucking capacity issue will plaque economy for years!
Railroads cannot meet all future demand for capacity

Will drive prices up... & shipping delays up...!!!

Trucking is the most significant mode of transportation. Percent of budget spent on transportation by mode – based on global study:



Source: 2009 Global "Giants of Shipping" transportation study, Karl Manrodt, Ph.D. Georgia Southern University



Source: U.S. Freight Transportation Forecast to...2017

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Capacity Example MN Driver Shortage & Lost Business

Impact on Minnesota Outstate Plants

- ✓ Rural manufacturing plants - traditionally cheap land & available labor pool a plus
- ✓ 2007 saw a major issue with truck availability in rural areas; went away during recession.
- ✓ **Shippers forward positioned inventories to Twin Cities area for more access to trucks.**
- ✓ 2012 current growing truck shortage will create another problem for outstate plants and access to trucks.
- ✓ **When driver unloads in Twin Cities they will choose a Twin City load vs. driving 100+ miles outstate to get next load. Merely economics at play.**
- ✓ Outstate access to rail service also in play.



Transportation Implications

Shifting Traffic Patterns

Tonnage on Highways,
Railroads and Inland
Waterways 2002

**Powder River Basin
Montana Coal Fields:
Slowly Dropping Vol.**

**Will see western North
Dakota show up soon
with huge rail vol. from
oil growth**

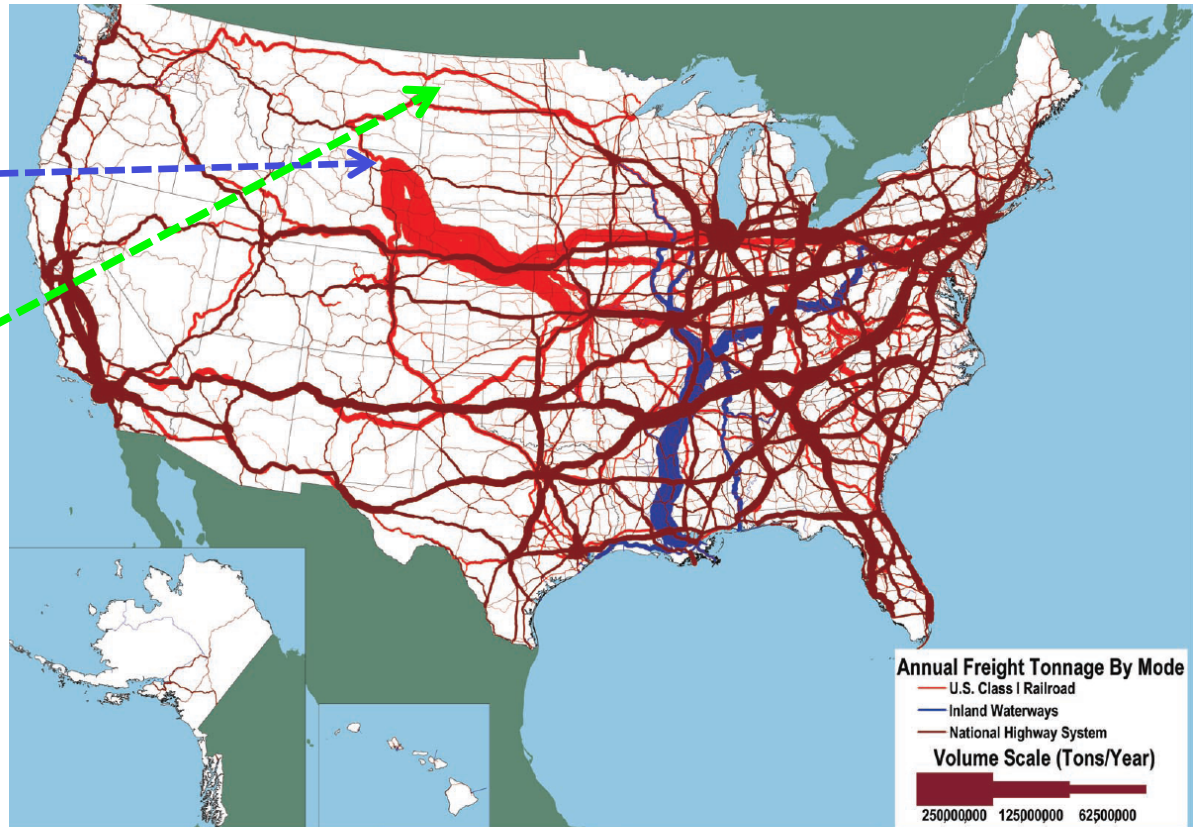
2012 Status:

2400 Cars: ND to Okla wk'ly w
crude oil

3-5 yrs: projected to grow to
4000 cars/wk

Inbound demand expected to
reach 1500+ / wk in 2012

**ND Truck demand
already impacting
Midwest availability**



ways: U.S. Department of Transportation, Federal Highway Administration, Freight Analysis Framework, Version 2.2, 2007. Rail: Based on Surface Board, Annual Carload Waybill Sample and rail freight flow assignments done by Oak Ridge National Laboratory. Inland Waterways: U.S. Army Corps of \CE), Annual Vessel Operating Activity and Lock Performance Monitoring System data, as processed for USACE by the Tennessee Valley Authority; and USACE ter Resources, Waterborne Foreign Trade Data, Water flow assignments done by Oak Ridge National Laboratory.

Source: "Preliminary National Rail Plan" Fed Rail Admin., Oct 2009



Rail Industry

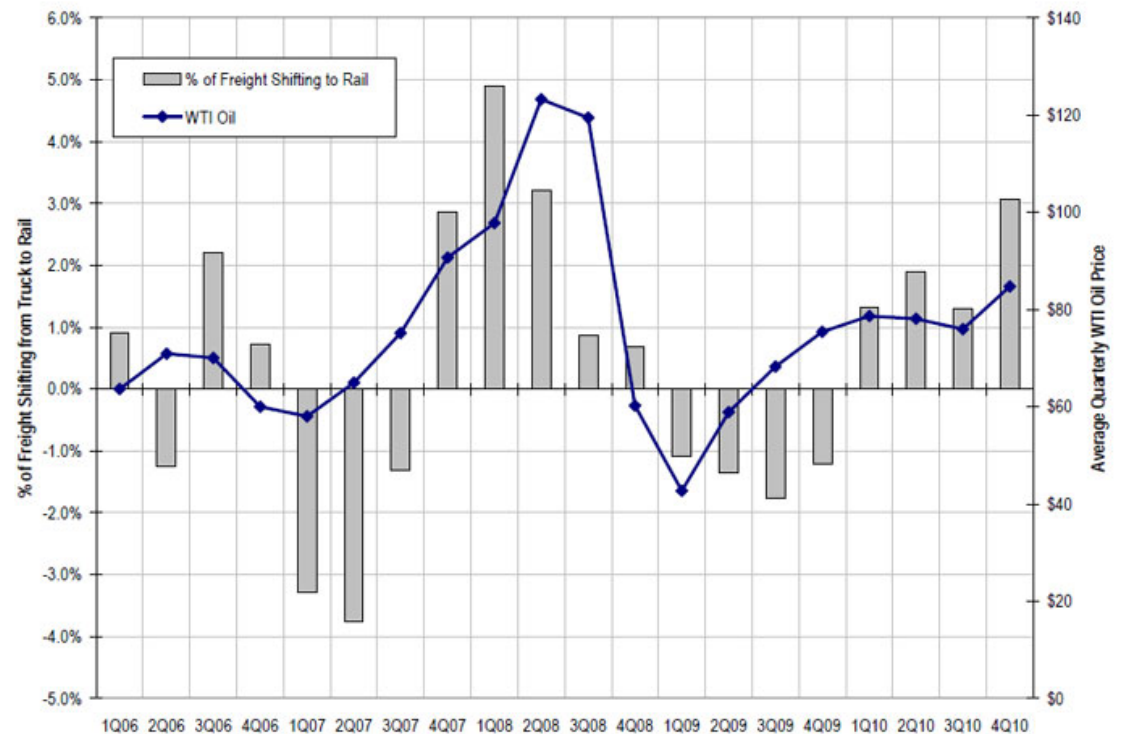
Truck to Rail Conversion vs. Oil Prices

As fuel prices rise more convert to rail

Note direct correlation

Truck driver shortage also driving more to rail

Exhibit 26. Shipper Expectations for Shifting Freight from Truck to Rail vs. WTI Oil Prices



Source: FactSet Research Systems; Wolfe Trahan & Co.



Rail Industry

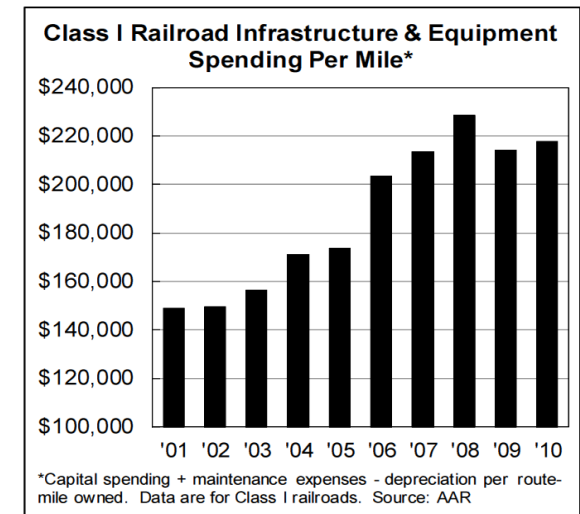
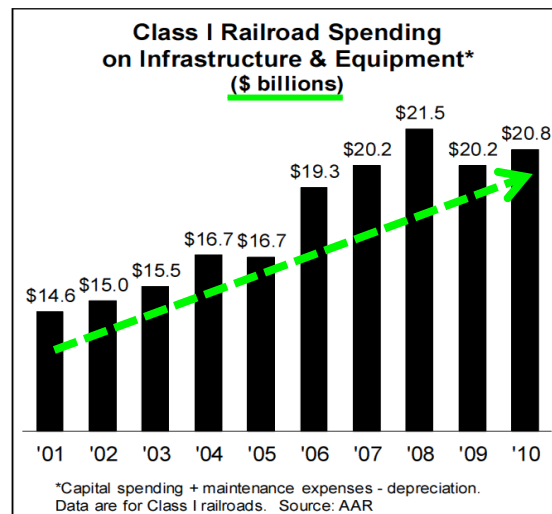
Rebirth and Major Growth

Key Realities:

- ✓ Energy efficient / lower emissions
- ✓ Lower cost, but longer lead-times
- ✓ **Were near max capacity before recession...!!!**
- ✓ Adding capacity very expensive – yet more than spending fair share on their assets...



Rail Congestion Leads To Slower Trains
 There is only so much demand that Rail can absorb & move



Rail Industry

Rail Congestion Impacts

Productivity Plateau

Last 15 year period

Rail industry will not see a major productivity improvement till another “game changing” technology arrives

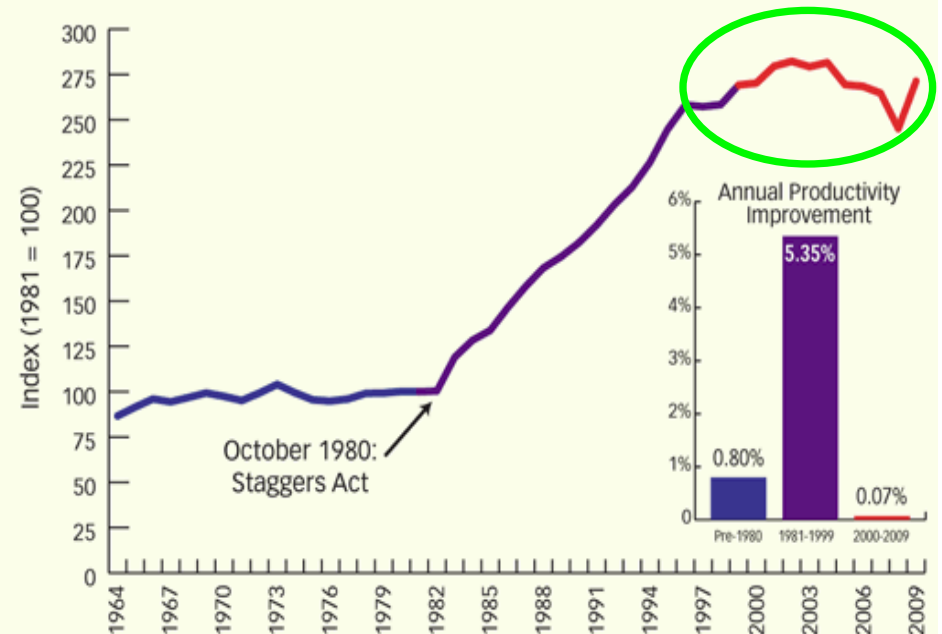
Shortage of Qualified Train Engineers & Other Personnel

Next 5 Years Critical

Typ. ex.: Canadian Pacific will lose to retirements 50% of current roster in 5 years!



[FIGURE 1] ANNUAL PRODUCTIVITY INDEX FOR THE U.S. RAIL INDUSTRY



[SOURCE: ASSOCIATION OF AMERICAN RAILROADS, 2010]

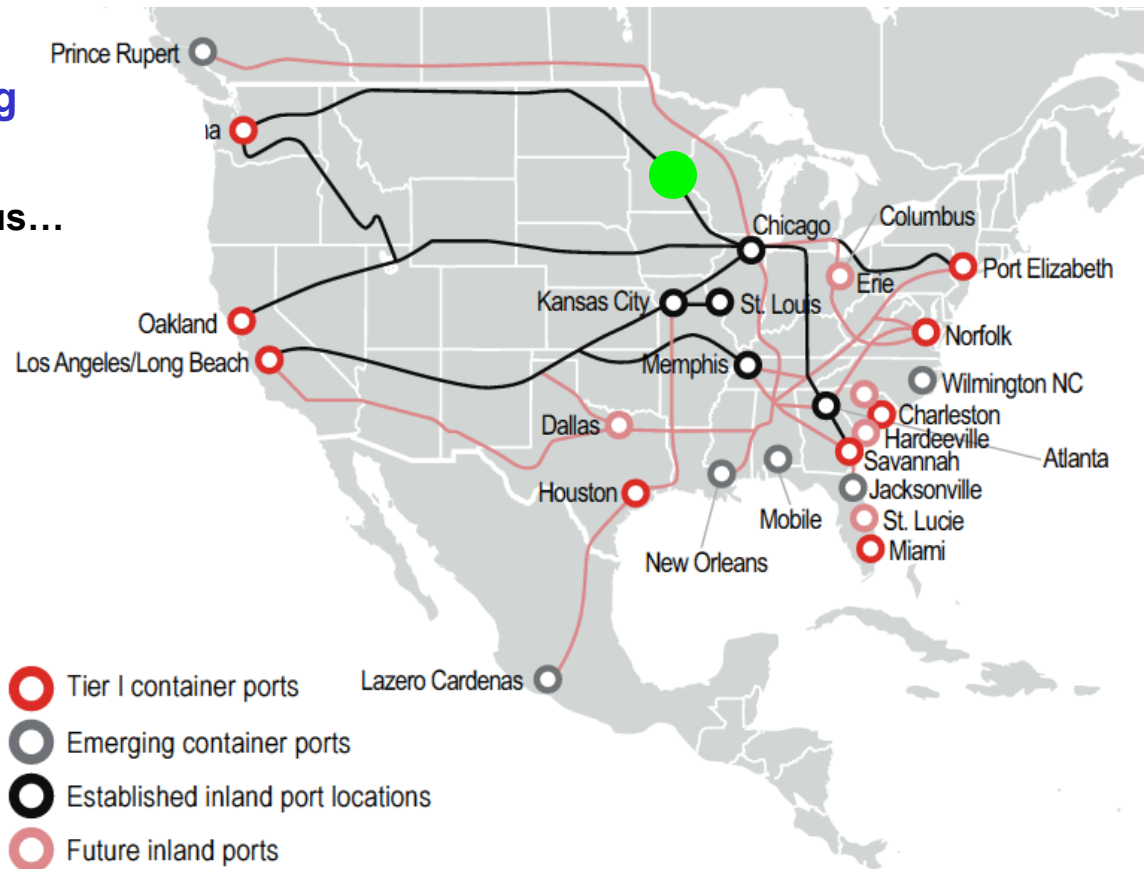
Logistics & Real Estate New Mantra

“Location, Location, Logistics”

Old mantra was “location, location, location”

**MN / Twin Cities is not
the center of the existing
logistics hubs !**

Allot is happening around us...



Domestic Network Design

Increase In Locations

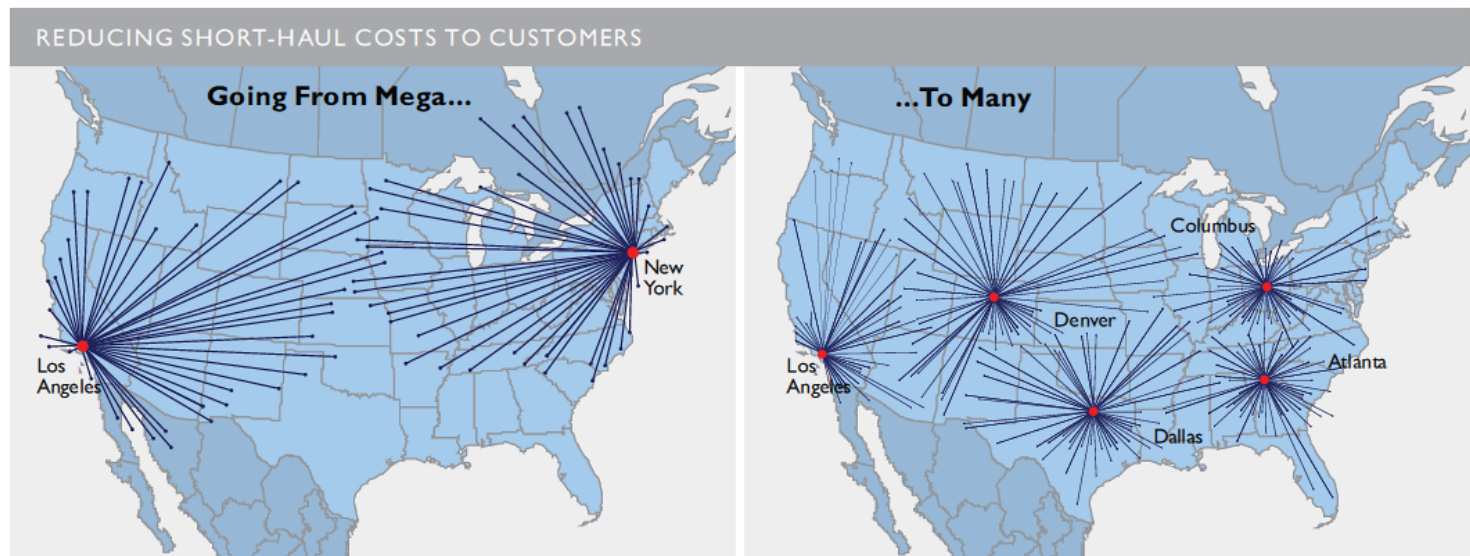
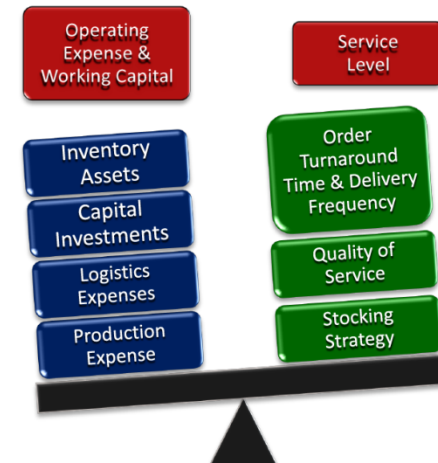
Last 20 yrs trend - fewer & bigger warehouses: 3 - 5 Total

- ✓ JIT, ERP, TQM, Lean Impacts
- ✓ Lower fuel costs helped allowed

Today, attention given to increasing number of warehouses: 6-10 Locations Network

- ✓ Impact of higher local delivery cost (vs. long haul cost) is changing networks.
- ✓ Trend also towards smaller warehouses.

Distribution Network Optimization - The Great Balancing Act



Source: New Age of Trade. Cushman & Wakefield, 2009

Domestic Network Design

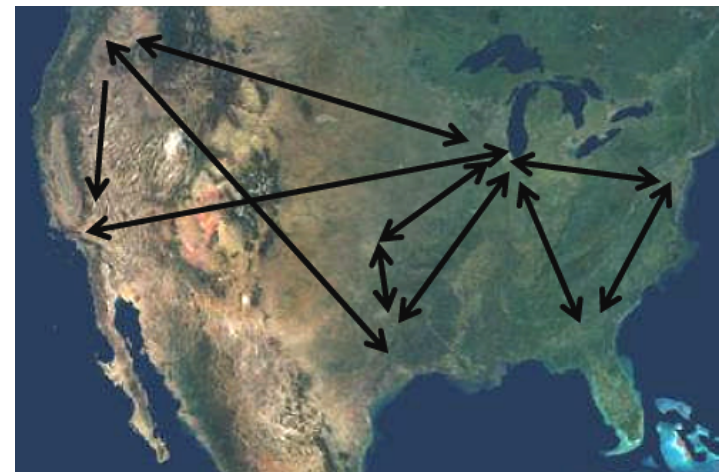
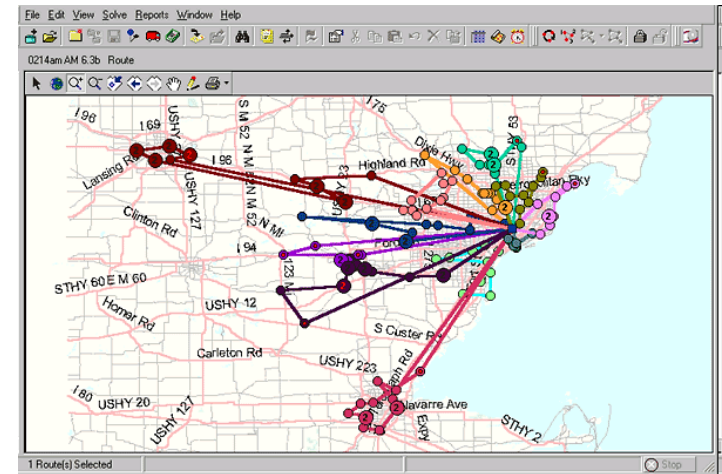
Fuel Impacts, Congestion, etc. Pushing Towards More Locations

Local Delivery – Higher Cost

- ✓ Congestion
- ✓ Less efficient time & fuel utilization
- ✓ Dock time: waiting & unloading / loading
- ✓ Hourly Cost (vs. fixed per mile)
- ✓ More safety incidents

Long Haul – Less Expensive in Comparison

- ✓ Less Congestion to fight
- ✓ Engines running at peak efficiency
- ✓ No dock wasted time
- ✓ Fixed per mile cost (vs. variable hourly)
- ✓ Less safety situations on open road
- ✓ Lane Selection - Trucking companies very selective in lanes they will run to reduce “deadhead” miles driven and keep equipment moving.



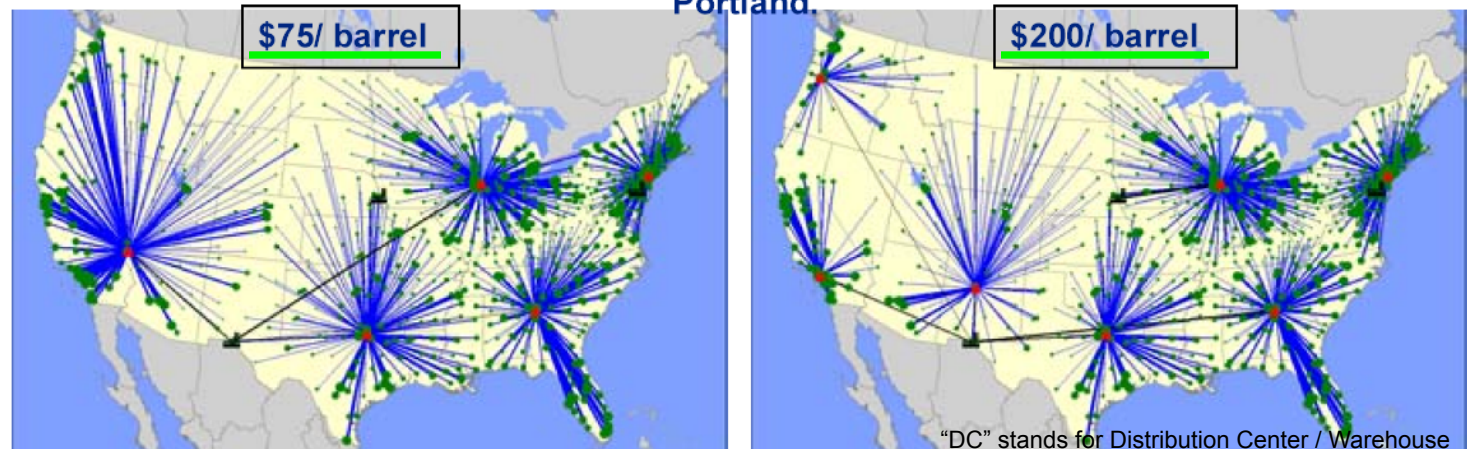
Network Design

“More is Less”

Oil price vs. inventory carrying and facility costs



Moving from \$125/ barrel to \$150/ barrel changes the optimal number of DC's from 5 to 7. In particular, you can think of Las Vegas being replaced by Los Angeles, Albuquerque, and Portland.



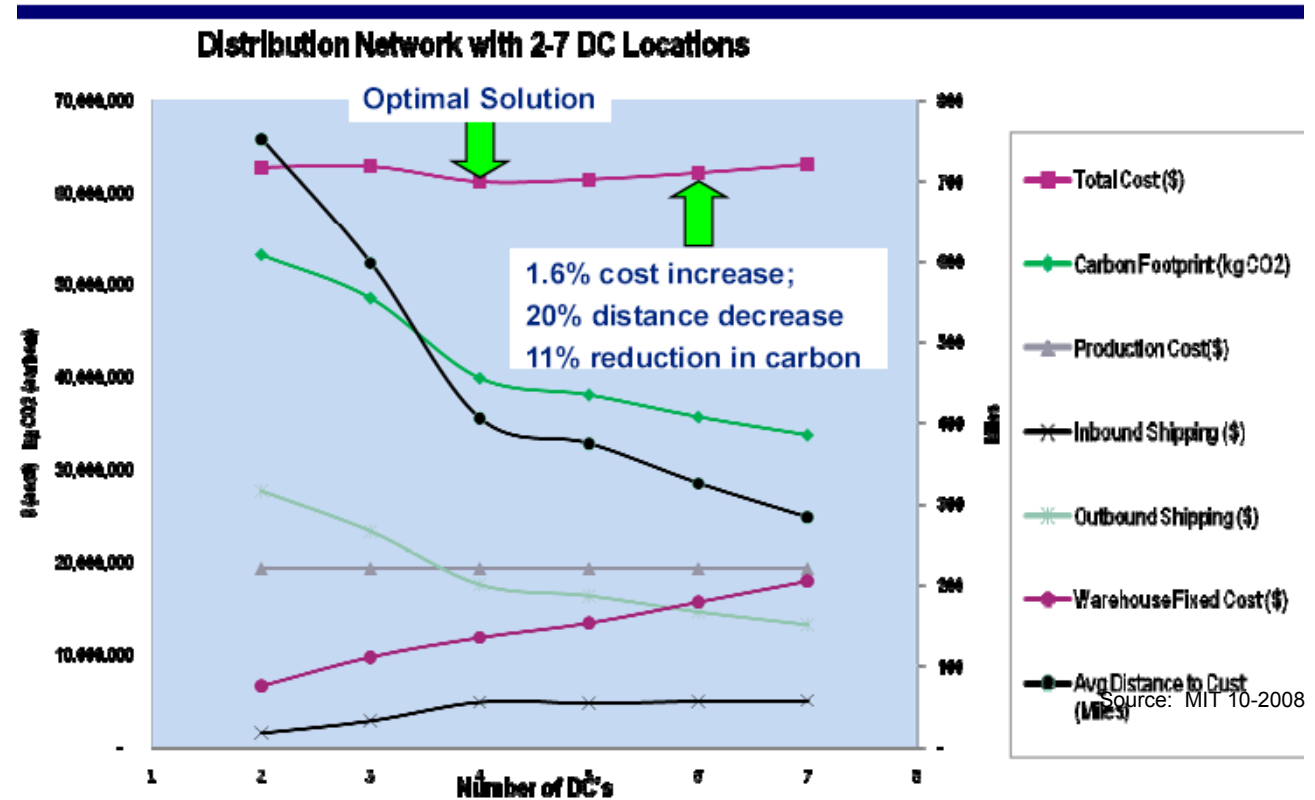
Network Design

“More is Less”

Typ. Network Costs + *Carbon Footprint Reduction*

Even More DC's result in less carbon!

Trade-Off Curve between number of DC's, costs, service and carbon footprint

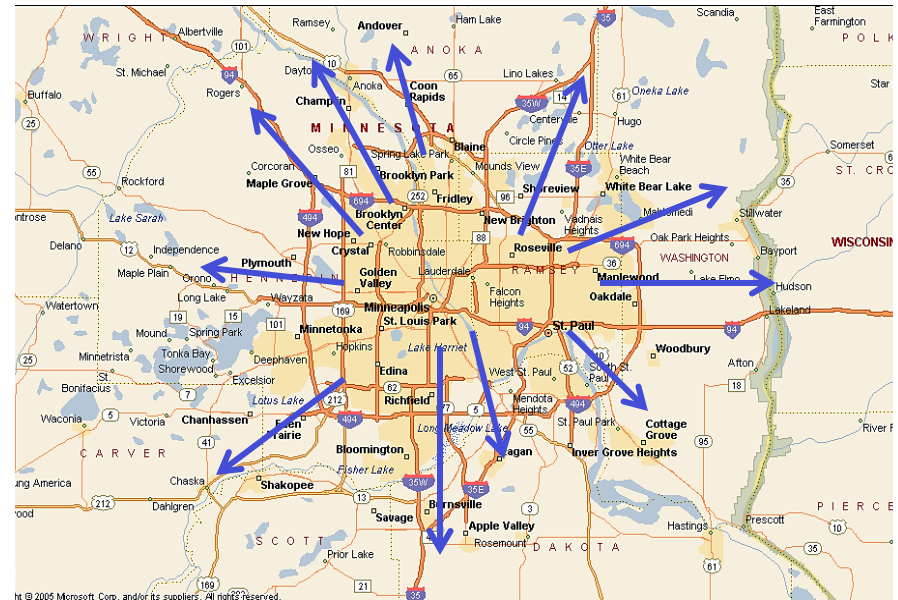


Urban Land Prices Pushing Logistics Campuses Further Out

To Suburban Edge

- ✓ Adding increased transportation time, cost & congestion
- ✓ 500% land price increases on sites near freeway rung system closer to urban center

Big campuses can't be too close to urban centers, but can't be too far out either due to fuel costs



The Sky's the Limit

Existing Warehouse Stock Upgrades

Raising the Roof To Stay Closer To Urban Core

- ✓ As real estate prices go up and close-in locations disappear conversion of low height warehouses to tall structures will grow in practice
- ✓ Cheaper than new construction
- ✓ Photos: Albertson 600,000 sq. ft. DC Chicago – **18' up to 38'**



A. Epstein and Sons International, Inc. Chicago

Experts in field:
<http://www.rooflifters.com/>



Offshore Sourcing Implications Changed U.S. Distribution Patterns & More DC / Warehouse Space Needed

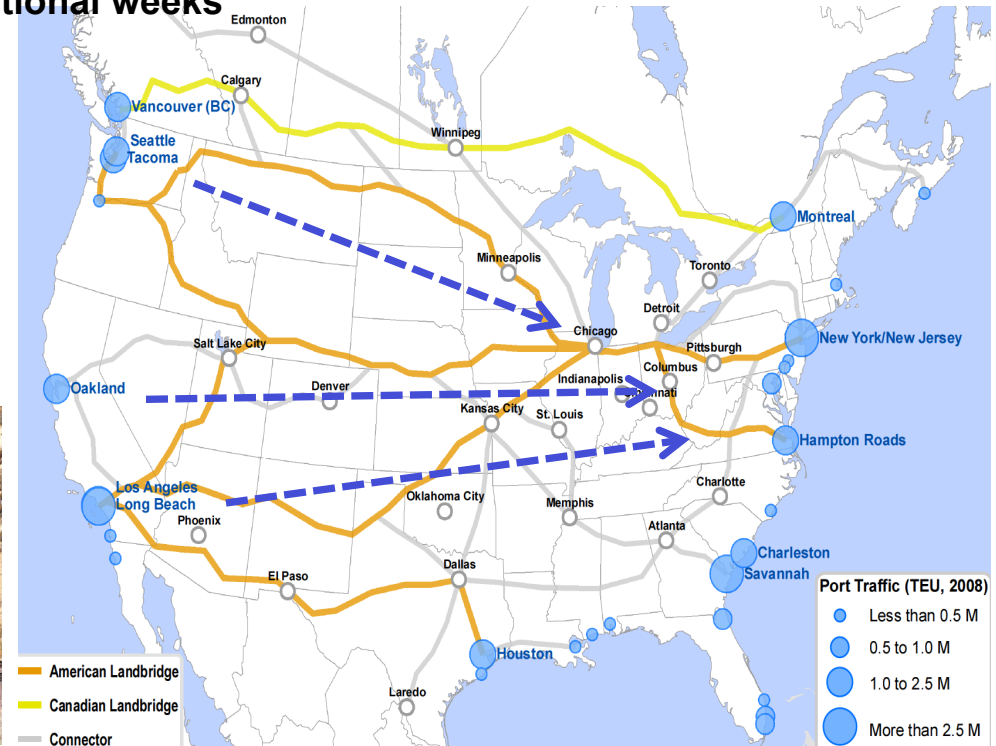
1+ month of inventory added to system to cover travel times

- ✓ Distance adds time; More safety stock required
- ✓ **2008-2012: Slower containership speeds for fuel efficiency adding additional time and inventory to system; 1-3 additional weeks**



Offshore Implications Landbridges Evolved

To haul import containers by rail from west coast to markets in mid & eastern parts of U.S.



Landbridge Changing Economics All Water (vs. Rail) to East Coast

Line Moving West

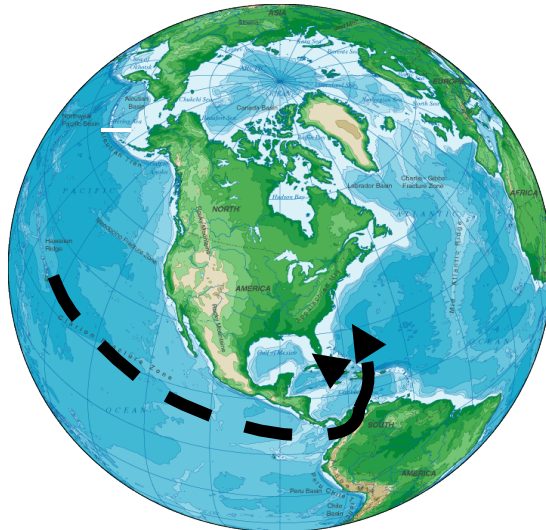
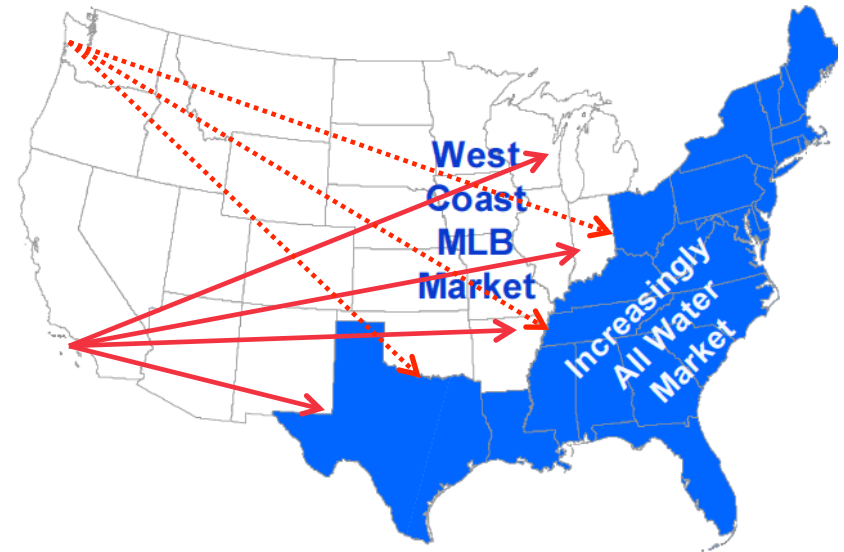
- ✓ All water usually cheaper
- ✓ Trend started only 3 years ago.

Panama Canal Today's New Ships Too Wide For Existing Lock Widths

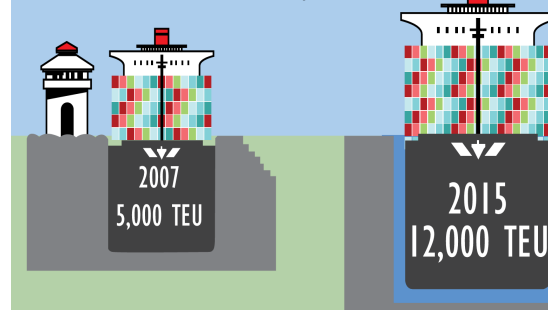
Expansion Completion in 2014

25% of U.S. Imports flowed thru in 2008

Impact on landbridges in serious debate today



Third Lane Panama Canal Expansion Size



6-12" Clearance!



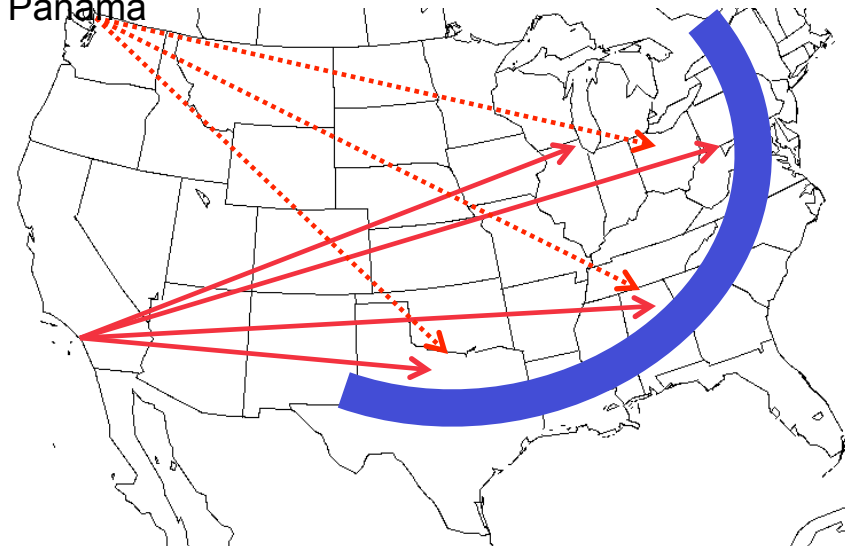
Domestic Import Transportation Landbridge Changing Economics Again

West Coast Ports Benefiting From Many Impacts in 2010-2012

- ✓ Reflects improved intermodal rail service.
- ✓ Impact of “slow-steaming” by the container ships adds time to ocean portion that must be saved on landbridge portion.
- ✓ No one knows how long this reversed trend may continue, especially once the wider Panama Canal opens in 2014.

Mini Landbridge Impact: Line Moving East Again

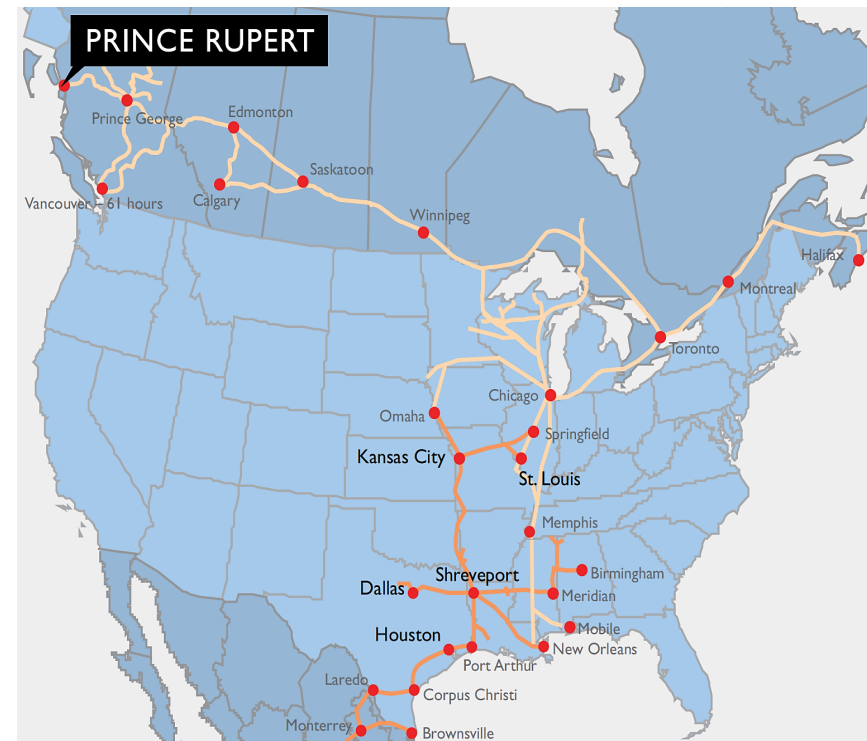
- ✓ Probably only till 2014



New Port Competition Canada's Prince Rupert

2 Days Closer to Asia

- ✓ Congestion + clean air mandates at LA Ports forcing many to look at alternative west coast ports and inland routes
- ✓ **Being 2 days closer to Asia means that by the time a ship reaches LA Ports the container is already in the Midwest..!!**
- ✓ U.S. Congress looking into unfair trade practice if Prince Rupert received Canadian support
- ✓ **Could MN benefit from this traffic flow?**

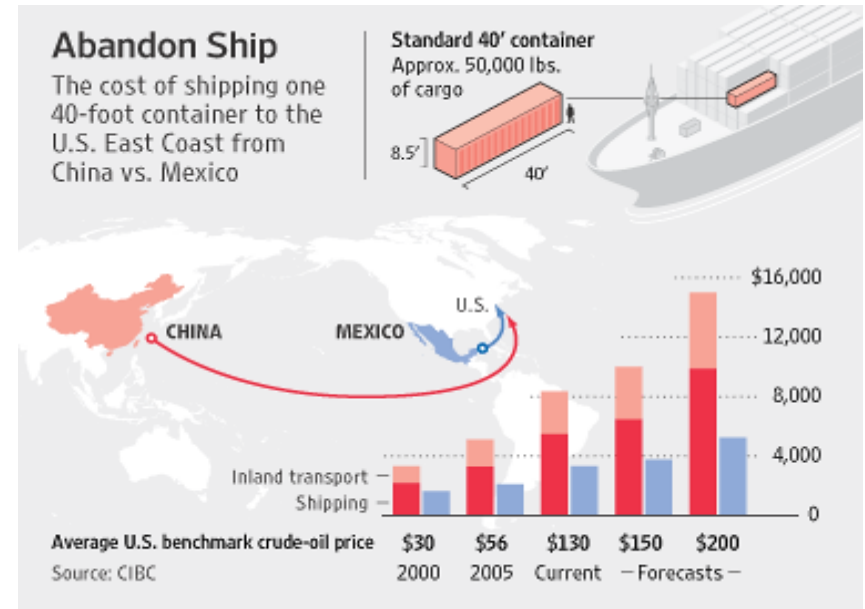


U.S. Imports: System Jolt

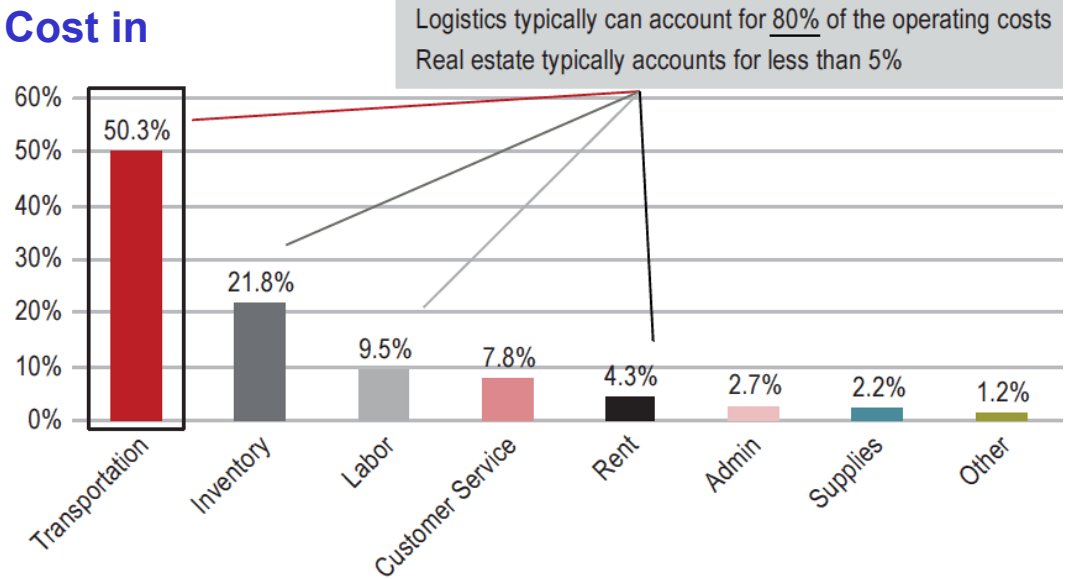
Fuel Cost Impacts On Sourcing

Mexico vs. China

Can long supply chains still be cost effective?



Transportation Often Largest Cost in the Global Supply Chain



Source: Exchange Inc.: Logistics Cost & Service Report

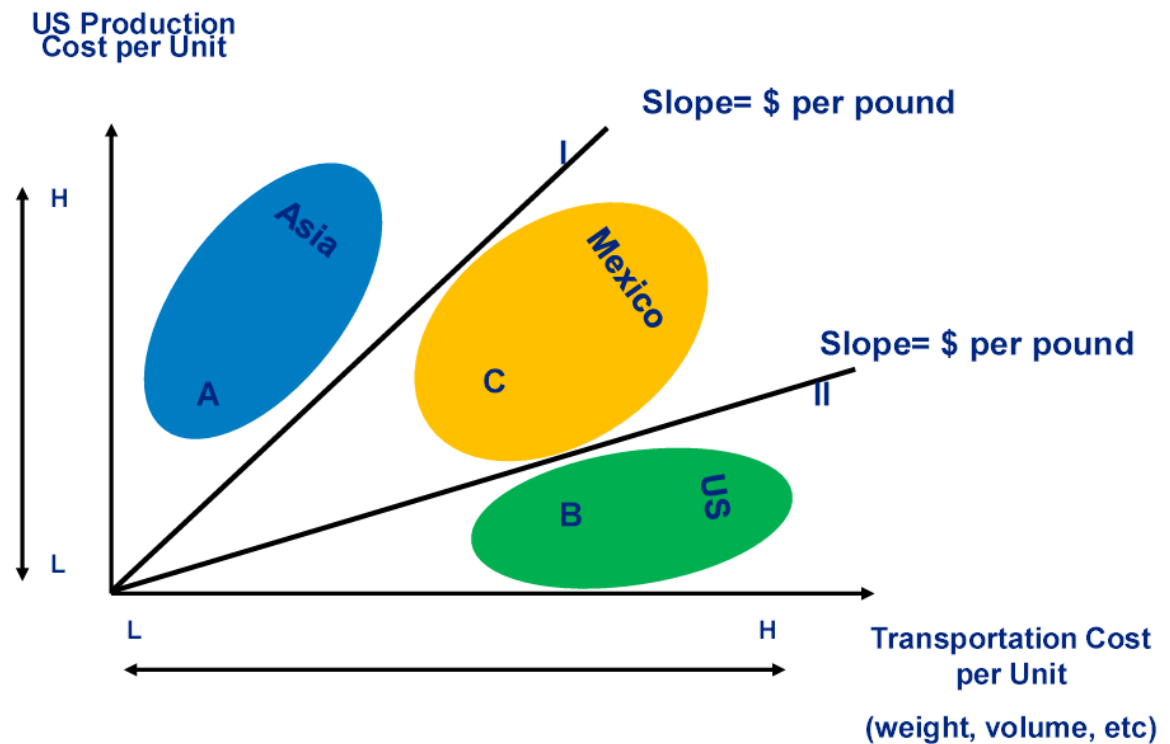


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Global Sourcing Network

Re-evaluation More Important

When to move from off-shoring to in-shoring & near-sourcing



Source: MIT 10-2008



Global Sourcing Network

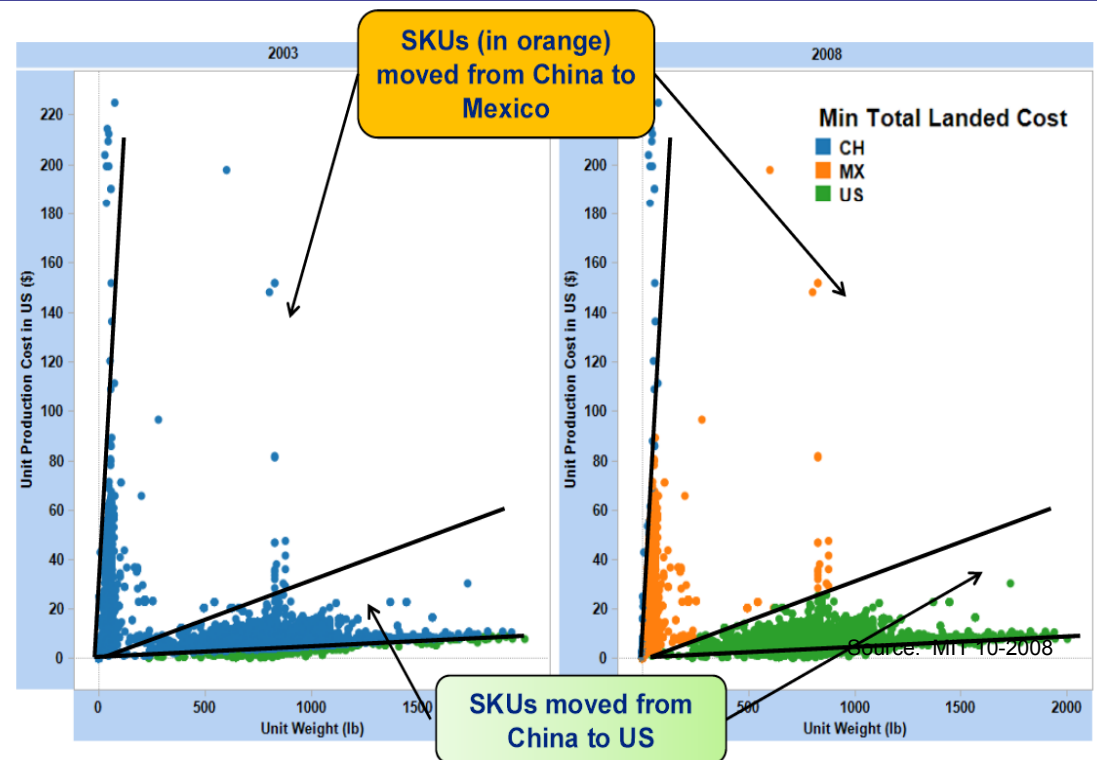
Case Study 1

Impact of fuel prices and rising Asian labor cost

Sourcing Strategies: 2003 and 2008

Sourcing Parameters

- 37,000 SKUs
- Large range of Production Costs
 - ▶ \$0.01 to \$300 per unit if production is in the US
- Large Range of Weights
 - ▶ 0.01 to 5,000 pounds per unit
- Manufacturing options
 - ▶ US –Atlanta; Mexico – Monterey; China- Shanghai
- Combination of transport modes
 - ▶ Ocean; Rail; Truck Load



Near Sourcing & Made In America

Factors influencing re-evaluation of offshore manufacturing:

- ✓ Fuel costs
- ✓ Complexity of supply chains and visibility issue
- ✓ Long lead times / excess inventory required
- ✓ Larger carbon footprints – “Green” movement impact
- ✓ Product Quality Controls
- ✓ Available labor pools in select countries: price & capacity
- ✓ Impact in China from growing internal consumer market (vs. export market)

Some European companies already set-up Manufacturing in USA

- ✓ Skilled labor force
- ✓ Automated manufacturing technology
- ✓ Strong transportation infrastructure
- ✓ Proximity to world’s largest market
- ✓ Political stability

NOTE: This even before the current Euro
Financial Crisis



Green Initiatives

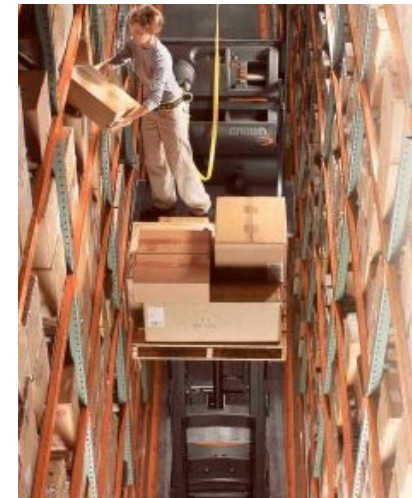
Performance Measures - 2 Examples

1. *100% Order Accuracy*
2. *Zero Customer Order Complaints*

Velocity of the Supply Chain a key traditionally

- ✓ **Traditional Focus** – Customer Satisfaction. Do whatever it takes to make customer happy! Order minimums are no problem... delivery ASAP!
- ✓ **Green Focus** – to avoid redelivery to keep carbon emissions low. Increasing order minimums to reduce delivery frequency and longer order lead times to facilitate transportation consolidation.

Impact on supply chain velocity...
slowing the velocity...!!!

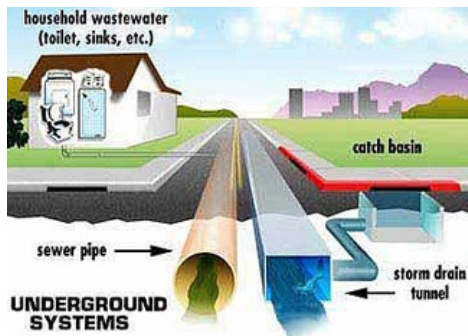


Facility Design

Gray + Green Infrastructure

Cities starting to treat & regulate street trees like sewers and roads.

- ✓ To handle urban heat, stormwater, and improve real estate values thus higher property tax values.



← Gray Infrastructure →

← Green Infrastructure →

Green Urban Infrastructure

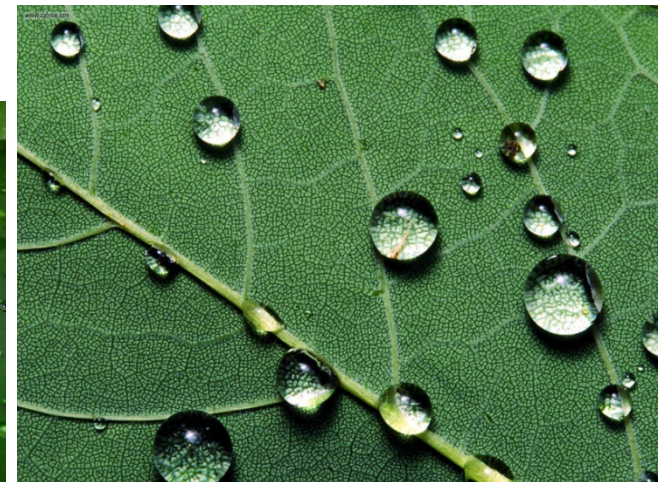
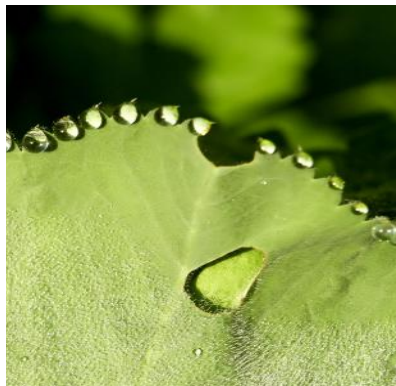
Why Trees Will Be In Your Future

Trees and Stormwater Management

- ✓ **Mature tree's leaves & branches hold 80% of 1" rain in 24 hrs.** In Minneapolis this represents 90% of all storms!

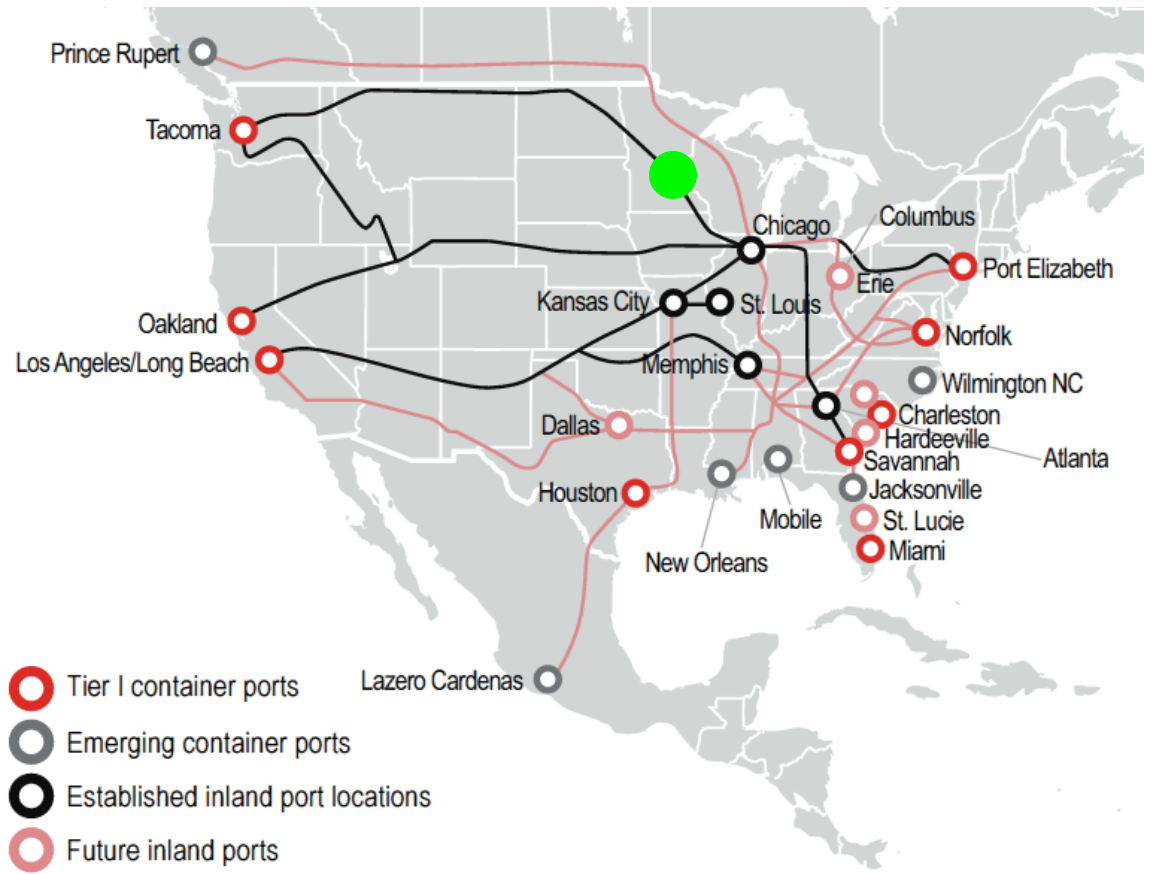
New planting technologies allow more:

- ✓ **Tree root growth** - thus bigger trees
- ✓ **Stormwater** - holding & recycling
- ✓ **Gray Infrastructure** – reducing stormwater prolongs life of sewers and pipes. Cities today can't afford to replace current old and wearing out systems
- ✓ **Shade** - more due to bigger tree growth reducing urban heat island impact
- ✓ **Increased property values**



And Finally...
Keep in Mind the New Mantra

“Location, Location, Logistics”
This has Serious Implications



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Location, Location, Logistics

Growing Congestion Almost No Matter What We Do

Challenge in Funding Priorities

Health – Education – Transportation – etc.

Lack of Public Understanding

Impact of short-term nature of political process today



Location, Location, Logistics

Infrastructure Importance

No Long Term Visioning Anymore
Like Pres. Kennedy's Moon Vision

Yet traffic density will continue to grow
even with transit helping to slow the
process somewhat

Logistics will slow down and raise
prices for all products

If President Eisenhower
was alive today:

*"Do You Think We Could
Build The Interstate System
Today...???"*



Key Supply Chain Trends That Will Impact Our Region



Annual Meeting
Minneapolis, Minnesota
April 18, 2012

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