Intermodal 101,201,301 And
A Review Of The Current
Issues And Trends

Sandhouse Gang Presentation
Northwestern University

May 07, 2013
ACKNOWLEDGEMENTS

This will be a collection of information related to the issues and trends that affect the movement of containerized goods into and throughout North America.

It will consist of a collection of slides I have created for many of my past presentations but will also include more recent information and slides created by some of my friends in the industry which includes ACT Research, The Hub Group, IMS Worldwide, the JOC and Tony Hatch.
What is the origin of my cargo? Should I go Panama or Suez? What size ship should I use? What port can handle the ship?
Shanghi – North American Ports
Prince Rupert 4678 Nautical Mi.
Vancouver 4873 Nautical Mi.
LA/LB 5633 Nautical Mi.
Lazaro Cardenas 6587 Nautical Mi.

Hong Kong – North American Ports
Prince Rupert 5335 Nautical Mi.
Vancouver 5535 Nautical Mi.
LA/LB 6289 Nautical Mi.
Lazaro Cardenas 7246 Nautical Mi.
HOW DOES IT GET THERE?
What Makes A Location More Favorable

- Large population or consumption centers
  - (LALB, NYC, Florida and the Southeast)

- Deep water for ports
  - (Prince Rupert, LALB, Norfolk and Lazaro Cardenas)

- Port infrastructure
  - (LALB, Norfolk and PANYNJ)

- Nearby Rail or Highway infrastructure
  - (LALB, PANYNJ, Norfolk and the PNW-Vancouver, Seattle & Tacoma)

- Space and/or Central Location for Dist. Complexes
  - (Chicago, St. Louis, Columbus, SEUS including Charleston, Savannah & Jacksonville)
China Shipping – 75 acres
TRAPAC – 173 acres
YML – 186 acres
APL – 292 acres
APM – 484 acres
Evergreen – 205 acres
HANJIN – 375 acres
MSC/Zim – 171 acres
Matson – 70 acres
LBCT – 101 acres
ITS – 246 acres
CUT – 108 acres
ITS – 246 acres
APM – 484 acres
P&O/NL – 84 acres

Ports of Los Angeles & Long Beach

Ron Sucik
RSE Consulting
# Rail Intermodal Facilities at West Coast Ports

<table>
<thead>
<tr>
<th>Port</th>
<th>Max. Number of Stack Trains On Spot at On-Dock or Near-Dock Terminals</th>
<th>Max. Number of Stack Trains On Spot at Off-Dock Terminals</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>LA/Long Beach</td>
<td>18</td>
<td>8</td>
<td>26</td>
</tr>
<tr>
<td>San Francisco</td>
<td>1</td>
<td>At Oakland</td>
<td></td>
</tr>
<tr>
<td>Oakland</td>
<td>4</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Portland</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Tacoma</td>
<td>5</td>
<td>At Seattle</td>
<td></td>
</tr>
<tr>
<td>Seattle</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Vancouver, BC</td>
<td>4</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal, Non-SPB Ports</strong></td>
<td><strong>20</strong></td>
<td><strong>8</strong></td>
<td><strong>27</strong></td>
</tr>
</tbody>
</table>

POLA/POLB Transportation Study (6/2001)

Ron Sucik

RSE Consulting
# U.S. Port Working Depths

## Depths at Mean Low Water (MLW)

<table>
<thead>
<tr>
<th><strong>U.S. East Coast</strong></th>
<th><strong>MLW</strong></th>
<th><strong>U.S. Gulf</strong></th>
<th><strong>MLW</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Boston</td>
<td>38’</td>
<td>Houston</td>
<td>40’</td>
</tr>
<tr>
<td>NY/NJ</td>
<td>43’</td>
<td>New Orleans</td>
<td>35’</td>
</tr>
<tr>
<td>Philadelphia</td>
<td>38’</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baltimore</td>
<td>40’</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Norfolk</td>
<td>48’</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wilmington</td>
<td>42’</td>
<td>LA/LB</td>
<td>50’</td>
</tr>
<tr>
<td>Charleston</td>
<td>47’</td>
<td>Oakland</td>
<td>50’</td>
</tr>
<tr>
<td>Savannah</td>
<td>42’</td>
<td>Portland</td>
<td>35’</td>
</tr>
<tr>
<td>Jacksonville</td>
<td>38’</td>
<td>Seattle/Tacoma</td>
<td>50’</td>
</tr>
<tr>
<td>Miami</td>
<td>39’</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
West Coast Alternatives

- What about Prince Rupert
- What about Punta Colonet
Closest Route from Asia

Canada’s Gateway & Corridor Initiative Targets U.S. Midwest Cities
### 1997 Import TEUs

**West Coast**  
LA/LB, Oakland, Seattle, Tacoma, Vancouver  
*83.25%*

**East Coast**  
*16.75%*

- Gulf Coast: .25%
- NY/NJ/N. East: 7.97%
- South East: 8.53%

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### 2011 Import TEUs

**West Coast**  
LA/LB, Oakland, Seattle, Tacoma, Vancouver  
*71.4%*

**East Coast**  
*28.6%*

- Gulf Coast
- NY, NJ, N. East
- South East

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RSE Consulting
Events Contributing to AWEC Migration

Market Share of Imports from Asia by Coast

2002 Lockout

Labor shortages

Rail Contract Renewals

PIERS DATA
No Piers Subscription 2002 due to budget cuts.

West Coast’s Share is Falling
Continuing the Migration

Panama Canal Doubling Capacity in 2014
Suez Canal already handling largest ships
U.S. Population Concentration - 2004

- West: 11%
- California: 12%
- Midwest: 22%
- Northeast: 19%
- South: 36%
Selected States Population Change Compared to United States Population Change 1990 to 2000

- United States: 13%
- California: 14%
- Texas: 23%
- North Carolina: 21%
- South Carolina: 15%
- Georgia: 26%
- Florida: 24%
Ports LA/LB To Transloaders To Regional DC’s - 2001

Inland Rail Intact – 65.0%
Rail Transloaded – 35.0%
Hub & Spoke Concept With Logistic Parks - 2005

Inland Rail Intact – 66.5%
Rail Transloaded – 33.5%
Population density makes intermodal rail an essential part of freight movement.

- Eastern U.S. region holds 66% of the U.S. population.
- Approximately 75% of U.S. consumption takes place in the East.

Projected population growth will increase volume and capacity requirements.

Population in Major Metropolitan Areas:
- GT 10,000,000
- 5,000,000 – 10,000,000
- 2,500,000 – 5,000,000
- 1,500,000 – 2,500,000
- 1,000,000 – 1,500,000

Source: Global Insight
East Coast-West Coast TEU cost line equilibrium

Sources: Population, employment, and real estate growth forecasts by Robert Lang and Arthur Nelson of the Metropolitan Institute at Virginia Tech and Phil Hopkins of Global Insight; Business 2.0, November 2005
NS Corridor Projects
The National Gateway

Double-stack clearance for:

- I-95 Corridor between NC and Baltimore, MD via Washington, DC;
- I-70/I-76 Corridor between Washington, DC and Northwest Ohio via Pittsburgh, PA; and
- The Carolina Corridor between Wilmington, NC to Charlotte, NC.
Emma Maersk 14000 TEU Vessel

So Which U.S. Port Can Handle the Emma Class Vessels?
22 Containers Across Requires Newer Larger Cranes
Ocean Carrier Vessel Size and Capacity

- Total of available container capacity over the 10 million TEU mark in 2007. The top 20 (by capacity) steamship companies reached 10,099,145 TEU by May 6, 2008.

- AXS-Alphaliner reported container fleet net increase of 6% in 2012 to 16.335 million TEU’s.

- Fleet expected to increase 9.8% in 2013 while demand for vessel space will be 4-6% mostly 8,000+ TEU, many 12,000+ TEU.

- 5% of fleet idled at beginning of 2013.
What About All Those Empty Containers In China?
From China, it takes about 2 weeks to bring cargo to the west coast and about 4 weeks to bring it in on the east coast. (2000)
Canal Routes

- Success of AWEC services brought substantial volume to Panama Canal. This long term trade’s internal growth may use up much of capacity provided by 3rd set of lock.

- Suez route SE Asia and EC US provides opportunity to fill VLCS with Mediterranean traffic and transshipment hubs. These intermediate stops affect transit times.

- Speculation importers might forgive slow transit for slow selling merchandise but trend so far has been to keep inventories lean in times of trouble.
Panama Canal Today
3,500 TEU Vessel in Panama Canal
Panama Canal Expansion Project

Existing Locks Max Vessel: 4,400 TEU's

New Locks Max Vessel: 12,000 TEU's
Deja Vu All Over Again
November 2012

Photo credit: Ricardo Lopez, Los Angeles Times
Countdown To Disruption ???

- December 28th the ILA and USMX once again averted East Coast port disruption by extending the negotiations extension Feb 6.

- Undisclosed agreement on container royalties reached but ILA walks out on discussions Jan. 8th. They later agree to return to the negotiations Jan. 15th.

- Lunar New Year is Feb. 10th. With the two week shut down of manufacturing in China there is a surge of traffic preceding this date to restock inventory and bring in spring products.

- There is a higher probability of East Coast import traffic moving inland by motor carrier than on the West Coast. Any disruption will be more greatly felt by East Coast motor carriers.
Total Intermodal Loadings

Source: IANA Intermodal Market Trends & Statistics

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U.S. Class I Intermodal Growth

Intermodal volume, and year-over-year percentage, for the fourth quarter and full year.

- **BNSF**: 2.6% growth in 2012, down by 0.7% from 2011.
- **CSX**: 7.0% growth in 2012, up by 3.6% from 2011.
- **Norfolk Southern**: 4.6% growth in 2012, up by 3.7% from 2011.
- **Kansas City Southern**: 14.6% growth in 2012, up by 6.2% from 2011.
- **Union Pacific**: 1.8% growth in 2012, up by 1.7% from 2011.

Source: Fourth quarter earnings reports, BNSF carload data
Breakdown Of Intermodal Traffic

Annual Intermodal Traffic

- **International**
- **Dom. Trailer**
- **Dom. Container**

**Source:** IANA Reporting, ACT Research Projection
ARRIVE BY RAIL AND SHUTTLE TO THE DC
OUT THE PORT GATE
TO THE TRANSLOADER OR OTR
Transloaders Near LA/LB
Inland Empire of Ontario California
TRANSLOADING REACHING NEW HIGHS

Source TTX, IANS, Piers
Cross-Dock Operation at Cal Cartage

CACartage-25.jpg
Packing a 53 ft Domestic Container
Which Retailers Will Transload?

- Variance in the nbr. of stores and the amts. of vol. retailers might have which leads to variety of different logistic chains in the system.

- Some retailers have the volume to move intact and distribute from inland Logistic Parks.

- Others will find transloading is driven by their product density.

- Some retailers with small enough volumes will consider transloading in China in order to drop-ship the containers directly to their stores with the correct product mixes.
Alameda Corridor
Alameda Corridor Looks Like A Giant Zipper From The Air
Leaving The Port And Entering The Alameda Corridor
Alameda Trench is 25 ft. Below Grade
Alameda Corridor

[Map of the Alameda Corridor with key locations marked]
AFTER THE TRANSLOAD
DO YOU GO BACK TO THE RAIL-------- OR OVER THE ROAD

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CONTINUED POSITIVE NEWS FOR INTERMODAL

- Dollar value of intermodal $11-$12 Billion Ind.
- Trucking is over $500 Billion.
- Possibly another $10 Billion Trucking to Convert.
- Some Shippers increasing Inmdl Spending 10-15%
- 25% increase in Domestic Containers.
- Truck fleets not increasing at rate of loads.
More People – More Freight

Americans require a freight system that moves 40 tons of freight per person annually. With current population growth projections, we are looking at moving 4 Billion more tons of freight in the next 40 years.

SOURCE: U.S. CENSUS BUREAU; FRA’S NATIONAL RAIL PLAN
Chronic Problem

TRUCKER EARNING POWER LAGS U.S. AVERAGE

- Average or mean pay for tractor-trailer drivers compared with the U.S. average for all occupations. In 2011, the average tractor-trailer driver wage was $39,830 and the average U.S. wage $45,230.

Source: U.S. Bureau of Labor Statistics, Department of Labor
Class 8 Truck Population

Late Model Class 8 Population
6 Years and Under (export adjusted)
1990 - 2013f

Units (000s)

1300
1200
1100
1000
900
800
700
600

90 92 94 96 98 00 02 04 06 08 10 12

ACT Research Co., LLC: Copyright 2009
RISING FUEL COSTS ($500 WORTH OF FUEL)

<table>
<thead>
<tr>
<th>YEAR</th>
<th>$ PER GALLON</th>
<th>GALLONS</th>
<th>DISTANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>$1.23</td>
<td>407</td>
<td>2,236 mi</td>
</tr>
<tr>
<td>2004</td>
<td>$1.63</td>
<td>307</td>
<td>1,687 mi</td>
</tr>
<tr>
<td>2006</td>
<td>$2.56</td>
<td>195</td>
<td>1,075 mi</td>
</tr>
<tr>
<td>2008</td>
<td>$3.88</td>
<td>129</td>
<td>709 mi</td>
</tr>
<tr>
<td>2010</td>
<td>$2.92</td>
<td>171</td>
<td>942 mi</td>
</tr>
<tr>
<td>2012</td>
<td>$3.92</td>
<td>128</td>
<td>702 mi</td>
</tr>
</tbody>
</table>

5.5 miles per gallon
Service Improvements

Investments by the railroads are resulting in significant improvement in overall service and transit.

INTERMODAL SERVICE IMPROVEMENTS

<table>
<thead>
<tr>
<th>Location 1</th>
<th>Location 2</th>
<th>2007</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATLANTA</td>
<td>LOS ANGELES</td>
<td>106</td>
<td>97</td>
</tr>
<tr>
<td>ATLANTA</td>
<td>CHICAGO</td>
<td>55</td>
<td>52</td>
</tr>
<tr>
<td>JACKSONVILLE</td>
<td>TO CHICAGO</td>
<td>110</td>
<td>97</td>
</tr>
<tr>
<td>LOS ANGELES</td>
<td>TO DALLAS</td>
<td>90</td>
<td>68</td>
</tr>
<tr>
<td>STOCKTON</td>
<td>TO CHICAGO</td>
<td>129</td>
<td>83</td>
</tr>
<tr>
<td>CHICAGO</td>
<td>TO JACKSONVILLE</td>
<td>85</td>
<td>69</td>
</tr>
<tr>
<td>ATLANTA</td>
<td>TO KANSAS CITY</td>
<td>87</td>
<td>81</td>
</tr>
<tr>
<td>CHARLOTTE</td>
<td>TO CHICAGO</td>
<td>120</td>
<td>53</td>
</tr>
</tbody>
</table>

Service Improvements

Investments by the railroads are resulting in significant improvement in overall service and transit.
Modal Shift Opportunity

With improvements in service and facilities, Intermodal is becoming more competitive in shorter distances, absorbing more of the projected growth in freight.

SOURCE: FRA’S NATIONAL RAIL PLAN

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Rails Are Poised To Capture Additional Market Share

- Fed Regs will bite into truck capacity second half of year giving shippers incentive to shift more loads to rail.

- HOS effect in July cost 3% to 5% productivity.

- Truckload capacity hit four year load.

- Higher costs focus trucks on shorter length of haul.

- Trucking companies adopting regional business models focused on dedicated relationships vs. scattering trucks.

- Potential market for longer than 550 mi. is 45 million lbs/yr as rail infrastructure expands and railroads capture multistop business they currently can’t serve.
Q: Will It continue?

Crescent Corridor – Faster, more TRUCK Competitive

- New terminals form the cornerstone of this project
  - Memphis (2012)
  - Birmingham (2012)
  - Greencastle (2012)
  - Charlotte (Early 2013)
- Expansion
  - Harrisburg
  - Rutherford
- Memphis to Harrisburg transit
  - Today – 71 hours
  - Target (Day 1) – 37 hours
    - Truck – 34 hours

MEMPHIS TO HARRISBURG TRANSIT: ESTIMATED HOURS CUTOFF TO NOTIFY

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Domestic Intermodal Volume

Domestic Intermodal volume continued its trend over prior year levels in 2012. Full year 2012 represented nearly a 6% increase over 2011.

SOURCE: INTERMODAL ASSOCIATION OF NORTH AMERICA
Raildeck Container
Container On Flat Car (COFC)

- C.R. England now operates 300 reefer containers (introduced in late 2010)
- Entire fleet of lightweight daycabs has been purchased
### Intermodal 53’ Container Fleets - United States (dry, for railroad)

<table>
<thead>
<tr>
<th>Unit Count</th>
<th>Company Name</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>59,000</td>
<td>JBHU - JB Hunt</td>
<td>(+4500 from last year)</td>
</tr>
<tr>
<td>24,000</td>
<td>HGIU, HGWU, UPHU, NHUU, NHWU, HUNU - Hub Group</td>
<td>(+1000 from last year)</td>
</tr>
<tr>
<td>18,000</td>
<td>PACU - Pacer</td>
<td>(unchanged)</td>
</tr>
<tr>
<td>14,200</td>
<td>SNLU - Schneider</td>
<td>(+2400 from last year) (does not include IMDL trailers)</td>
</tr>
<tr>
<td>8710</td>
<td>SWRU - Swift</td>
<td>(+2500 from last year)</td>
</tr>
<tr>
<td>5000</td>
<td>UPSU - UPS</td>
<td>(+1500 from last year)</td>
</tr>
<tr>
<td>1000</td>
<td>APDU - APL Logistics</td>
<td>(unchanged)</td>
</tr>
<tr>
<td>1000</td>
<td>RBTU - CH Robinson</td>
<td>(+200 from last year)</td>
</tr>
<tr>
<td>850</td>
<td>CFQU - COFC Logistics</td>
<td>(500 new build, 350 BRLN)</td>
</tr>
<tr>
<td>600</td>
<td>UTLU - Universal Logistics</td>
<td>(unchanged)</td>
</tr>
<tr>
<td>400</td>
<td>MTLU - Marten</td>
<td>(+200 from last year)</td>
</tr>
<tr>
<td>350</td>
<td>DRTU - Dart</td>
<td>(unchanged)</td>
</tr>
<tr>
<td>200</td>
<td>MLHU - Matson Logistics</td>
<td>(fleet started July last year)</td>
</tr>
<tr>
<td>133,310</td>
<td>total managed by United States, Motor Carrier &amp; 3PL</td>
<td></td>
</tr>
<tr>
<td>31,000</td>
<td>EMHU - UP/NS/CP</td>
<td>(unchanged)</td>
</tr>
<tr>
<td>32,000</td>
<td>UMAX - UP/CSX</td>
<td>(+1000 from last year)</td>
</tr>
<tr>
<td>4000</td>
<td>CSXU - CSX</td>
<td>(unchanged)</td>
</tr>
<tr>
<td>500</td>
<td>TMXU - NS Thoroughbred Direct</td>
<td>(+300 last year)</td>
</tr>
<tr>
<td>200</td>
<td>KCMU - Kansas City Southern</td>
<td>(being re-stenciled to TMXL)</td>
</tr>
<tr>
<td>400</td>
<td>XFEU - Floric</td>
<td>data as of Feb 4, 2013 - researched by Jason Hilsenbeck, owner of LoadMatch &amp; DRAYAGE.com</td>
</tr>
<tr>
<td>68,100</td>
<td>total managed by United States, Railroad</td>
<td></td>
</tr>
<tr>
<td><strong>201,410</strong></td>
<td>total managed by United States, Railroad + Motor Carrier &amp; 3PL</td>
<td><strong>+14,500 since last year</strong></td>
</tr>
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</table>
Top Three Truckload Carriers Own 39% of U.S. Domestic Containers

<table>
<thead>
<tr>
<th>LTL RANKING (IN TOP 50)</th>
<th>COMPANY</th>
<th>2010</th>
<th>ADDS</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (4)</td>
<td>J.B. HUNT TRANSPORT SERVICES</td>
<td>$4,527</td>
<td>4,216</td>
<td>30,879</td>
</tr>
<tr>
<td>2 (6)</td>
<td>SWIFT TRANSPORTATION</td>
<td>$3,334</td>
<td>9,885</td>
<td>31,310</td>
</tr>
<tr>
<td>3 (7)</td>
<td>SCHNEIDER NATIONAL</td>
<td>$3,170</td>
<td>4,864</td>
<td>22,764</td>
</tr>
<tr>
<td>4 (8)</td>
<td>LANDSTAR SYSTEM</td>
<td>$2,789</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 (9)</td>
<td>WERNER ENTERPRISES</td>
<td>$2,003</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 (13)</td>
<td>U.S. XPRESS ENTERPRISES</td>
<td>$1,670</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 (15)</td>
<td>PRIME</td>
<td>$1,206</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 (16)</td>
<td>C.R. ENGLAND</td>
<td>$1,047</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 (17)</td>
<td>GREATWIDE LOGISTICS</td>
<td>$1,046</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 (19)</td>
<td>KENAN ADVANTAGE GROUP</td>
<td>$988</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Source:** SI Consulting Group

**PROVIDER**  **2010**  **ADDS**  **2011**

- EMP  26,663  4,216  30,879
- UMAX  21,425  9,885  31,310
- HUB GROUP 17,900  4,864  22,764
- JB HUNT 45,700  8,800  54,500
- PACER  16,216  2,000  18,216
- SCHNEIDER 12,250  775  13,025
- SWIFT  4,800  1,600  6,400
- UPS  0  3,500  3,500
- OTHER  5,300  2,200  7,750
- **TOTAL** 150,254  37,840  188,344
WHAT TO TAKE HOME

- Domestic container loadings still carry the day.
- RR service and infrastructure improvements.
- Truck capacity & drivers remain tight.
- Over 215,000 DomCons now in fleet.
- FMCSA denies ATA request to delay HOS.
- Denial will cost transportation industry $320 million to prepare for something that may be overruled after court hearing.
Thank You For Your Time

Ron Sucik

RSE Consulting