

1 Executive Summary

The purpose of this study was to conduct an historical cost analysis of US rail intermodal traffic over the past twenty years. In addition, it was to quantify anticipated cost increases over the next twenty years. The consultant was to also provide a qualitative assessment of the industry's current situation and the underlying components that could affect the system's performance.

1.1 Rail Cost History Study

The decision was made to focus on a rail cost history -- to the exclusion of other factors. Rail cost is the largest non-vessel cost for steamship lines, and indexed data was available for the 40-year study period. Other components of point-to-point line profitability (i.e., rates, terminal expenses and vessel costs) are not able to be compared in a similar method.

The quantitative study focused on two corridors: Los Angeles/Long Beach to Chicago and Los Angeles/Long Beach to New York. These corridors were selected because they represent the two largest concentrations of international intermodal volume with the smallest chance of service variables affecting the result.

Using 1985 as the base year (1985=1.00) the study showed that over forty years, actual and projected increases were in the range of 77% to 98%. There are two primary reasons for this result.

- There was a period of drastically reduced costs in the period from 1985 to 1995. In 1995, every respondent enjoyed rates that were lower than the rate they were charged in either 1990 or 1985. General trade growth – accompanied by new vessel capacity – made it possible for every line to negotiate lower rail rates in exchange for higher volume.
- Subsequent to 1995, many new lines emerged as competitors to established lines. Many of these lines had very high rates in the 1985-1995 time period because their base volume was inconsequential. Their growth enabled them to achieve rate reductions in a tightening market.

In both corridors, roundtrip rates (eastbound import load/westbound empty return) increased at a faster rate than the eastbound import loaded rate by itself. This reflects the market trend of westbound, backhaul empty rates increasing at a faster rate than headhaul import rates. There are several reasons for this market phenomenon.

- Since the late 1990s, intermodal exports over the west coast have generally disappeared. Westbound domestic cabotage container repositioning, unable to compete with the 53-foot domestic equipment, has also disappeared. Steamship lines now reposition at least 75% (of eastbound volume) back empty westbound.

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- Railroads have adopted a pricing strategy of raising the roundtrip yield – while allowing lines to think they got a “good deal” on the eastbound import rates.

In order to eliminate the statistical distortion of the rate decreases prior to 2000, expected cost increases for the period of 2005 to 2025 were examined separately. For this period, average expected annual price increase ranged between 2.5% and 3.5%. These numbers are slightly below – but not broadly inconsistent with Wall Street’s expectations for future intermodal price increases. There are several aspects to consider.

- Intermodal is now the largest railroad commodity – and is no longer the least profitable railroad commodity segment. In fact, intermodal is very close to earning its cost of capital today, so railroads can continue to invest without significant rate increases.
- Steamship lines may be projecting their customer experience with their suppliers. It would appear that the lines retain their belief that larger volumes can always be leveraged for lower rates – and trade is growing at 10%+ annually.
- Over time, west coast transloading may reduce international intermodal unit volume – causing railroads to take price action.

1.2 Present Situation of US Intermodal Network

Although there have been several severe interruptions in the past four years, it is not universally accepted that the west coast is in crisis. Over the last twenty years southern California has far surpassed all the other US ports. The reasons for this success include the following:

- Land was made available for acquisition and development so that steamship lines could develop their own facilities.
- The local population is the largest on the west coast.
- As double-stack transportation developed, LA’s network advantage in terms of capacity, speed and clearance were significant. It also had three railroads competing for business.

Twenty years ago double-stack emerged from southern California and it changed the industry. Five years ago, a new revolution was started there -- transloading. Rather than move containers intact from Asian origin to US destination, cargo is initially loaded only as far as LA. Upon arrival in southern California, the cargo is only then assigned to its final destination. This practice allows retailers to defer inventory deployment – and reduce actual inventory levels by 20-25%. The result has been a significant decrease in the percentage of west coast discharge imports moving by intermodal.

Nevertheless, southern California has seen several traumatic events in the past 12 months causing significant traffic flow disruption.

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On the US East coast, the Port of New York has also struggled to accommodate growth of 8-10% per year. Rail intermodal into the US Midwest is growing by 15-20% per year. Throughout the country, there is concern about how the increased volume of trade will be accommodated.

On the west coast, there does not appear to be any current threat to widespread diversion from southern California. There does not appear to be any major threat from the existing ports; nor do the economic factors supporting southern California's dominance show signs of lessening.

Since intermodal will not disappear, there are some west coast items to watch.

- Service through Lazaro Cardenas may offer a direct intermodal service into the US Gulf (now that the merger of KCS and TFM is final.) This may offer a competitive service to points in Texas – and as far away as Kansas City and Atlanta.
- Prince Rupert, BC, in partnership with Maher Terminals, is planning to create a major container terminal that will serve intermodal cargo only. (It has to – there is no local population and it is almost 1,000 miles north of Seattle.)
- The Union Pacific and Hutchison Port Holdings are reportedly considering building a new terminal about 125 miles south of Los Angeles. If this project takes place, it will need to re/construct 150-200 miles of railroad to connect to the UP mainline in Yuma, AZ. This could cost almost \$1 billion by itself.
- Major ports may create additional capacity by relocating non-container business to smaller, regional ports that are not focused on liner shipping (e.g., Port of Hueneme.)
- Steamship lines may discharge container cargo on the west coast of Mexico for rail movement to a Mexican east coast port for roll-on-roll-off service to US gulf and east coast ports. (Note: The Panama Canal Railway Company was not considered a viable alternative for this type of service due to Panama's distance from the United States.)

The east coast has similar challenges. The major port complexes: New York/New Jersey, Hampton Roads, Charleston, Savannah and Miami are all suffering congestion and land scarcity. Jacksonville and Baltimore have some capacity. Philadelphia and Boston are not considered viable due to continued labor recalcitrance. The Gulf coast ports seem to have some potential for expansion; however, Houston – which represents over 60% of all Gulf volume -- has significant congestion problems.

International trade in the United States has been forecast to triple in the next twenty years. This expansion, which is greater than the economy, will pose significant problems for the surface freight transportation industry. In many port locales, environmental and other anti-growth groups are frequently challenging the unquestioned benefit of being an international trade gateway. Highway capacity is increasingly a problem in port areas. Southern California has focused attention on other alternatives such as:

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- Extending hours of marine terminals to allow volume to be spread over a greater portion of the day.
- Increasing the use of on-dock rail to reduce the amount of traffic being drayed to Los Angeles.
- Running a short-haul shuttle train between the port and the distribution center area.
- Change the on-dock paradigm from a carefully stowed train to a conveyor belt of containers that would be resorted further inland.

Many of these solutions require rail solutions. Although railroads suffer from congestion, they also appear to have unused capacity. Intermodal has become the largest commodity, and there is some question if certain commodities – grain and coal – will suffer traffic declines from macroeconomic factors.

1.3 Regulatory Impact

Regulatory impact could impact the intermodal market in several ways.

- Hours of service (HOS) regulations mandate how much time a driver can drive each day. The response has been for trucking companies to greatly increase driver wages. The impact of this rule has been much debated. Some believe that it will be good for domestic intermodal, because trucking companies will need to convert current over-the-road transportation to intermodal due to a shortage of drivers. Others believe that it will hurt intermodal because intermodal drayage drivers will “move up” the employment pyramid and become longhaul truckers.
- The intermodal industry has been struggling with resolving responsibility for equipment safety. Resolution of this “roadability” challenge could greatly increase intermodal cost – whether by rail or ocean.
- Environmental regulation has become an increasing challenge as environmentalists stymie capacity expansion. Greatly reduced truck emissions standards have caused motor carriers to accelerate planned 2007 tractor purchases into 2005 and 2006. This will bring in additional capacity at a faster rate and put temporary pressure on intermodal rates.
- Rail re-regulation is often discussed. Bulk and chemical shippers would welcome a return to formulaic costing that lowered the rates on their captive shipments and increased the price on intermodal. However, there does not appear to be any realistic chance of this happening.

1.4 All-Water Market

Interviews with steamship lines indicate that the proportion of east coast-destined cargo moving all-water to east coast points from Asia is now 20-25%. The cargo volume is

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expected to continue to grow with the trade. Some lines believe that all-water service is growing a bit faster than total Asia – U.S. traffic. Although, the price difference between all-water and intermodal rates continues to shrink, lines are also encouraged by all-water rates rising faster than west coast rates.

All lines expect more growth in the Gulf. Most lines are studying an all-water route direct to the Gulf from Asia. However, they all admitted that they were concerned by the port congestion in Houston – and less than enthusiastic about serving Texas points over New Orleans.

There seems to be an emerging consensus that manufacturing in Southeast Asia and the Indian Subcontinent will grow. This will give rise to service through Suez – and cause the East Coast ports' share of Asian trade to grow. (Four out of seven lines expected that Suez Canal volume would grow faster than overall Asian trade.) All ports – except the Canadian ports -- are expected to benefit from this change.

As the all-water service from Asia to the US East Coast grows, lines are deploying vessels with direct service to New York. For example, the Grand Alliance's East Coast North Express (ECN) offers 22-day service direct from Hong Kong to New York. This deployment eliminates the intermediate calls at South Atlantic and Mid Atlantic ports. There are a number of variables in comparing the intermodal and all-water route to New York. However, in a comparison of best case (East Coast) versus worst-case (West Coast) the all-water route to New York is both faster – and cheaper.

2 Historical Cost

The first part of this engagement was to examine historical costs of rail intermodal traffic over the past twenty years – as well as examine anticipated cost increases over the next twenty years.

2.1 Rationale for Rail Cost Focus

The decision was made to focus on rail cost to the exclusion of other factors. There were several reasons for this decision:

- Rail cost is the largest non-vessel cost for steamship lines.
- Although the numbers are highly confidential, they were available to be captured as an index -- over the 40-year study period. Also, the data was available in North America.
- Rail cost is comparable over the forty years in a relatively straightforward method. Although market forces have impacted rate levels, there have not been any significant changes in technology.
- Since 1985 ocean rates have dropped by 50% to 80% and vessel sizes have increased by 100% to 500%. Developing comparables is very difficult – if not impossible.
- Terminal handling expenses are not very transparent. Services purchased from a subsidiary have many transfer costs that do not consolidate until recap back at the parent enterprise. The North American deviations would be material. Similar problems exist for vessel and equipment cost.
- To extend beyond a single analytical variable would require significant study scope increase. You could no longer seek just a single vector of indexed costs. For the expenses, it would be necessary to collect three data elements for each time point: expense amount index; expense amount percentage of total; vessel size;

2.2 Rationale for Corridor Selection

The decision was made to focus on two corridors: Los Angeles/Long Beach to Chicago and Los Angeles/Long Beach to New York (actually north New Jersey.) There were several reasons for this decision:

- These corridors represent the largest intermodal corridors uniformly utilized by all steamship lines.
- These corridors form the base intermodal rates – against which other corridors have their rates established.
- For the Pacific Southwest (PSW) to Chicago there is only one route today – a single line move on either the UP or BNSF. Every steamship line moves extensive

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volume on this corridor so the sample cannot be distorted by the mix of survey respondents.

- We attempted to exclude corridors that may have rates that could fluctuate widely amongst carriers due to specific volumes, customers, or deployments. This includes the Pacific Northwest (PNW) to Chicago and west coast points to Memphis, Dallas and Kansas City.
- New York is served almost exclusively over Chicago. There is a small amount of cargo interchanged elsewhere, but it should not distort the sample significantly.
- Other east coast and southeast points were excluded because the rates could fluctuate due to specific volumes, customers, and intermodal routings. For example Atlanta is served by western railroad interchange in Chicago, Kansas City, St. Louis, Memphis and New Orleans. This makes like comparison difficult – if not impossible.

2.3 Results and Analysis

There were eight respondents, although two only replied to one corridor. The results of the survey are attached in graphical analysis. The results are summarized below.

Table #1 shows that over the forty-year study period the largest increases are in the roundtrip corridors. This could be explained by backhaul empty rates increasing at a faster rate than headhaul import rates. With the market for intermodal exports over the west coast generally disappearing –and the westbound ISO domestic container unable to compete with the 53-foot domestic standard – lines are being forced to move 75% (of eastbound volume) westbound empty. Railroads have adopted a pricing strategy of raising the roundtrip yield – without having to increase the headhaul rates in draconian fashion.

*Table #1
Summary of Cost Increases from 1985 to 2025*

From Los Angeles to	Corridor Direction	2025 Value (1985=1.00)	
		Mean	Deviation
Chicago	Eastbound	1.77	16.4%
Chicago	Roundtrip	1.97	10.6%
New York	Eastbound	1.92	8.5%
New York	Roundtrip	1.98	5.9%

Source: Confidential Interviews

Table #2 explores the statistical range of the results displayed in Table #1. The outlying results (Min – minimum value; and, Max – maximum value) illustrate that there are always carriers with rates that will be outside the range of the market. This may be the result of legacy agreements, or contractual timing. The median – which in this study is

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the middle (i.e., 4th) of 7 points -- shows a much closer clustering than the mean value displayed in the previous table.

Table #2
Statistical Summary of Cost Increases from 1985 to 2025

From Los Angeles to	Corridor Direction	2025 Value (1985=1.00)				
		Min	1Q	Median	3Q	Max
Chicago	Eastbound	1.25	1.66	1.78	1.98	2.07
Chicago	Roundtrip	1.78	1.84	1.89	2.04	2.37
New York	Eastbound	1.77	1.78	1.86	2.02	2.17
New York	Roundtrip	1.78	1.93	1.97	2.07	2.12

Source: Confidential Interviews

One of the interesting results of this study is that there was an approximately ten-year period when rates declined. Looking at the results for 1990 (See Table #3) you can see that the median on all four corridors was not very far from 1.00. Half the respondents had rates that had declined in real terms. The others had rates that increased; however, during that period, they were not necessarily major intermodal shippers – so they could not obtain lower rates for higher volumes.

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Table #3
Statistical Summary of Cost Increases After 5 Years (1990)

From Los Angeles to	Corridor Direction	1990 Value (1985=1.00)				
		Min	1Q	Median	3Q	Max
Chicago	Eastbound	0.99	0.99	1.03	1.13	0.99
Chicago	Roundtrip	0.99	0.99	1.01	1.07	1.12
New York	Eastbound	0.99	1.00	1.03	1.12	0.99
New York	Roundtrip	0.97	0.99	1.00	1.03	1.12

Source: Confidential Interviews

By 1995, (See Table #4) every respondent enjoyed rates that had declined -- not only from 1990 – they were lower than the rates charged ten years previously. This was the golden age for steamship line intermodal. Just about every line was able to negotiate lower rates in exchange for higher volume. Given the trade growth at the time, this was not difficult.

There is another reason for this change. By 1995, all the railroads had migrated to a product offering where the railroad was responsible for providing the flat car and charging on a per-container rate. Previously, some steamship lines had to manage the flat cars and pay on a per-car or per-train rate. Less-than optimal rail car utilization caused their costs to be higher than anticipated, so per-container rates represented a real cost savings.

Table #4
Statistical Summary of Cost Increases After 10 Years (1995)

From Los Angeles to	Corridor Direction	1995 Value (1985=1.00)				
		Min	1Q	Median	3Q	Max
Chicago	Eastbound	0.68	0.82	0.96	1.02	1.09
Chicago	Roundtrip	0.65	0.95	0.96	0.99	1.07
New York	Eastbound	0.74	0.96	0.96	1.05	1.09
New York	Roundtrip	0.74	0.96	0.96	1.06	1.10

Source: Confidential Interviews

By 2000, (See Table #5) it had become obvious to the railroads that excess capacity was exhausted and that rates needed to rise accordingly. Although some legacy contracts remained, the median shows that rates had risen back above their 1985 levels. This also reflected railroad merger activity. UP’s acquisition of SP in the west eliminated the major price-cutter in the market. The split-up of Conrail between NS and CSX eliminated any incentive these two railroads previously had to aggressively price esoteric routings into New York.

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Table #5
Statistical Summary of Cost Increases After 15 Years (2000)

From Los Angeles to	Corridor Direction	2000 Value (1985=1.00)				
		Min	1Q	Median	3Q	Max
Chicago	Eastbound	0.78	0.90	1.04	1.10	1.13
Chicago	Roundtrip	0.75	1.03	1.09	1.10	1.15
New York	Eastbound	0.85	1.04	1.09	1.10	1.10
New York	Roundtrip	0.85	1.05	1.09	1.10	1.10

Source: Confidential Interviews

When looking at the median value for price changes over five year periods, (See Table #6) the five-year period just completed (2005) shows the highest actual values. However, the current five-year period (2010) anticipates an even higher expected percentage increase.

Table #6
Summary of Five-Year Cost Increases from 1990 to 2010

From Los Angeles to	Corridor Direction	Increase Over Rates From 5 Years Previous				
		1990	1995	2000	2005	2010
Chicago	Eastbound	0.70%	(9.40%)	8.70%	9.12%	13.05%
Chicago	Roundtrip	3.48%	(9.43%)	10.63%	10.49%	14.41%
New York	Eastbound	1.53%	(4.38%)	7.92%	8.39%	13.92%
New York	Roundtrip	1.70%	(3.90%)	7.37%	8.13%	14.89%

Source: Confidential Interviews

In order to eliminate the statistical tail originating from earlier, legacy contracts, annual expected cost increases for the period of 2005 to 2025 were examined separately. Table #7 shows that the average expected annual price increase roughly averages between 2.5% and 3.5%.

Table #7
Summary of Projected Cost Increases from 2005 to 2025

From Los Angeles to	Corridor Direction	2005 to 2025 Increase	
		Mean	Deviation
Chicago	Eastbound	2.46%	14.9%
Chicago	Roundtrip	3.42%	15.4%
New York	Eastbound	3.29%	13.1%
New York	Roundtrip	3.47%	8.9%

Source: Confidential Interviews

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Table #8 gives a little broader analysis of the statistical breakdown.

Table #8
Statistical Summary of Projected Cost Increases from 2005 to 2025

From Los Angeles to	Corridor Direction	2005 to 2025 Increase				
		Min	1Q	Median	3Q	Max
Chicago	Eastbound	2.00%	2.25%	2.50%	2.63%	3.00%
Chicago	Roundtrip	2.92%	3.09%	3.24%	3.62%	4.41%
New York	Eastbound	2.89%	2.93%	3.14%	3.59%	3.96%
New York	Roundtrip	2.92%	3.34%	3.45%	3.70%	3.82%

Source: Confidential Interviews

2.4 Future Cost Developments

How do the projected cost increases displayed in Table #7 and Table #8 compare to current industry opinion?

2.D.i Current Market Conditions

At a recent Wall Street analyst meeting, BNSF projected annual intermodal price increases of 3% for existing customers and a 7% increase from new contracts. If these are averaged out over a [typical] five-year contract, the annual increase is about 3.8%. This number is a little higher than the results returned from the survey. It also does not include inflationary cost factors.

However, BNSF is clearly the market leader in setting prices. The other railroads may lag up to 1% behind. From the steamship line interviews conducted, there is still a mentality that increased volume will translate into decreased rates. That is generally the ocean paradigm so there is a refusal to accept that the railroads might not abide.

It is unclear how much pricing power the railroads will wield in the international intermodal market. According to some analysts, intermodal is no longer the least profitable railroad commodity segment. It is the largest business, and is reportedly very close to earning its cost of capital today. With this result, railroads can continue to invest in the business without significant rate increases. Should public-private partnerships evolve to support railroad infrastructure investment, railroads may even find even “less expensive” investment capital available for their use.

2.D.ii Possible Interpretations

When considering these results, there are several factors worth considering.

- Steamship lines may be projecting their customer experience onto relationships with their underlying transportation suppliers. If rail capacity increases, some lines

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seem to think that rates may be attractive to fill the buildup. The lines may also believe that they can always get rate reductions in exchange for more committed volume.

- Some lines may also be counting on choosing contract negotiation time strategically. (Contracts do not expire in a linear fashion. There are very few up for renewal in 2005 – but more in 2006.) With the right combination of timing, lines feel that they might lock in rail rates that do not include significant increases.
- The impact of west coast transloading (discussed in Section 3.A.i) may, over time, reduce international intermodal unit volume. This may cause railroads to seek to induce renewed intact intermodal volume by price action. (There is some anecdotal evidence that some railroads are taking price action on intermodal service to the northeast because of the significant impact of all-water on intermodal volume to this market.)
- There is some indication that railroads are infatuated with opportunities in China. This may cause them to “aggressively” price rail intermodal to “greater China” steamship lines.

3 Market Analysis

3.1 Present Situation of US Intermodal Network

The present situation of the US intermodal network lacks a clear quantitative expression, so assessment has been left to qualitative anecdotes. Consider these two extremes:

- Robert Rich, President of Roar Logistics (a Buffalo, NY based intermodal marketing company) recently stated “There’s only two ways to get to the West Coast by rail, and both UP and BNSF are very constrained right now. We’re having to put more freight over the road because of that.”
- Steve Branscum, BNSF’s Group Vice President of Consumer Products (which includes Intermodal), speaking to a group in Los Angeles last October, said that he did not consider the railroads to have capacity problems. He blamed the problems that forced the BNSF to impose customer allocations on low port productivity. (At the same time, he called on steamship lines to permanently divert vessel strings to the Pacific Northwest.)

A steamship executive once observed that there are only two ports that a line must call: Los Angeles and New York. And those two locations are both major intermodal trouble spots.

3.A.i Los Angeles/Long Beach

Almost fifty years ago, when Matson started containerization on the west coast, Oakland was the hub of activity. Since that time – and especially over the last twenty years – southern California has far surpassed all the other US ports. There were many reasons for this.

- The San Pedro ports had land available for acquisition and development. Steamship lines seeking to develop their own facilities – either through wholly-owned subsidiaries or in joint development with terminal operating companies – were accommodated. This was especially important as vessel size increased and weekly services became plentiful. As lines built ever-larger terminals, it was necessary for them to commit their discretionary intermodal cargo here in order to make the minimum guarantees contained in their leases.
- The LA Basin is the largest population base on the west coast, so the largest proportion of local consumption cargo was also based here.

As mini-landbridge cargo developed in importance, LA also had distinct rail advantages.

- LA has the best rail network in terms of capacity and speed to the US Midwest and Gulf. This was a legacy of how the passenger networks developed in the early 1900s. The routes to the Midwest were the best combination of multiple track, grade and clearance. As doublestack developed, these networks had the necessary rail clearance (20’2”) to accommodate two high-cube containers.

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- Southern California had three Class 1 railroads serving them: ATSF, SP and UP. When combined with their network capacity this resulted in price competition that was lacking at other west coast ports. The SP, which had experienced two decades of financial difficulty prior to its acquisition by UP, was a notorious price leader. And, despite their claims to not engage in price wars, both ATSF and UP priced aggressively against perceived SP rates. (In some cases, ATSF and UP rates were *lower* than the SP's.)
- The railroads had adequate terminal capacity to handle intermodal containers. The ports recognized the importance of intermodal early, and built the ICTF (Intermodal Container Transfer Facility) in the early 1980s. They offered it to all three railroads; however, only the SP took advantage of this offer. (They had no money and no terminal capacity.) The ATSF (Hobart) and UP (East LA) felt they had sufficient terminal capacity and were intimidated by possible ILWU labor infiltration.

Twenty years ago double-stack was first deployed from southern California and it led an industry revolution. In the last five years, southern California has led another intermodal paradigm shift – the rise of transloading.

When double-stack transportation started, containers were loaded in Asia for intact movement to their destination – either intermodal or local. China was still an emerging economic power so China cargo was mostly trucked to Hong Kong for transloading. The introduction of the 45-foot marine container helped accommodate this trend. Containers for inland were transferred from the vessel to the rail and moved intact to destination.

Five years ago, several major forces created a “perfect storm” that caused this to change.

- The Ocean Shipping Reform Act (OSRA) enabled confidential contracting between carriers and customers. West coast rates – which had been held artificially high by the conferences as a benchmark – quickly plummeted.
- The standard domestic piece of equipment became the 53-foot trailer. 53-foot domestic containers followed; however, they were limited by rail car configuration to no more than 50% of the fleet. Engineers could not figure out how to make a double-stack car that could accommodate more than a 48-foot container on the bottom. (53-foot containers were only loaded on top.) However, once that problem was solved (around 2003) the 53-foot container became the standard.
- Southern California became the transloading center. It had the local population as well as land available in the Inland Empire – and a fairly reliable, low-cost, non-union workforce. The population was important for two reasons. Not only did it support demand for imported goods – but domestic as well. The inbound domestic market ensured a continual flow of inbound 53-foot equipment that required reloading back east.

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- The construction of the Alameda Corridor was financed by the imposition of a \$30 fee on all intermodal cargo. Since this fee does not apply to transloaded cargo it was a further cost savings.
- Transloading in the US – instead of intact loading in Asia – allows retailers to defer inventory deployment. Researchers estimate that this strategy allows retailers to reduce inventory by 20-25%. The cost savings vary by the value of the inventory and the owner’s cost of capital.

Over the past five years, the impact of transloading has been significant. The most significant has been on the decreasing percentage of west coast discharge imports moving by intermodal.

Table #9 shows that the percentage of intact intermodal cargo in 40-foot and 45-foot containers has been dropping. This is clearly the impact of increased transloading. Meanwhile, the percentage of intermodal cargo in 20-foot containers has remained constant. Since the commodities carried in 20-foot containers are heavy and dense, they are not suitable for domestic transloading.

Table #9
Percent of Vessel Discharge Moving by Inland Intermodal

Year	PNW Discharge			PSW Discharge			Combined Discharge		
	20-ft	40-ft	45-ft	20-ft	40-ft	45-ft	20-ft	40-ft	45-ft
2000	95.0%	79.3%	99.8%	46.3%	40.5%	62.6%	54.2%	46.8%	70.2%
2001	94.4%	75.9%	84.6%	48.3%	43.4%	57.6%	55.0%	48.0%	62.7%
2002	91.7%	74.8%	64.7%	47.5%	42.5%	46.6%	54.6%	47.2%	49.7%
2003	90.4%	72.1%	55.6%	46.0%	41.2%	43.1%	53.5%	45.7%	45.2%
2004	93.8%	68.8%	58.6%	46.7%	41.7%	42.6%	54.6%	45.7%	45.2%

Source: Pacific Maritime Association and Intermodal Association of North America

Note: 2004 for quarters 1-3; all other years for full year

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Table #10 identifies the capacity of standard equipment types.

**Table #10
Equipment Capacity**

Equipment	Feet ³	Width		Height	
		Unit	Door	Unit	Door
20' Standard Container	1,169	8'	90"	8'	92"
40' Standard Container	2,395	8'6"	90"	8'	92"
40' High Cube Container	2,714	9'6"	102"	8'	92"
45' Marine Container	3,050	9'6"	102.5"	8'	92"
48' Domestic Container (1995)	3,470	9'6"	106.5"	8'6"	98"
48' Domestic Container (2005)	3,486	9'6"	107"	8'6"	98"
53' Domestic Container	3,954	9'6"	109.5"	8'6"	98"
45' Trailer Standard	3,000	9'6"	102"	8'	92"
45' Trailer High Cube	3,250	9'6"	106.5"	8'6"	98"
48' Trailer	3,530	9'6"	106.5"	8'6"	98"

Source: Hub Group

Table #11 quantifies the rapid establishment of 53-foot equipment as spine cars could handle the domestic 53-Foot trailers in 2000. The development of 53-foot double-stack wells has resulted in the container percentage doubling in four years.

**Table #11
53-Foot Equipment Percent of Domestic Intermodal Market**

Year	Containers		Trailers	
	Eastbound	Westbound	Eastbound	Westbound
2000	30.6%	31.8%	45.8%	43.7%
2001	39.1%	40.9%	49.7%	42.8%
2002	45.6%	47.9%	53.4%	51.3%
2003	55.7%	56.0%	58.7%	58.0%
2004	61.3%	61.3%	63.1%	63.9%

Source: Intermodal Association of North America

Note: Domestic intermodal market classified as 48-foot and 53-foot equipment

This is indicative of a new paradigm for many steamship lines. The growth of imports, along with the collapse of the export market has put lines into a load-empty cycle, with transloading making the empty available weeks earlier. Table #12 analyzes the increase in empties as a percentage of west coast vessel loadback.

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Table #12
Percent of Outbound Vessel Space Consumed by Empty Containers

Year	20-ft	40-ft	45-ft
2000	34.3%	43.5%	54.8%
2001	38.2%	43.8%	61.7%
2002	42.7%	49.4%	63.4%
2003	46.5%	52.5%	68.4%
2004	48.2%	54.1%	67.8%

Source: Pacific Maritime Association

Note: 2004 for quarters 1-3; all other years for full year

Unfortunately, southern California has seen several traumatic events in the past 12 months. In the summer of 2004, labor shortages caused vessels to backup – often encountering delays of up to eight days. (In October, the vessel backlog reached 84.) The problems – while improved -- are still unresolved.

- Because the ILWU controls worker dispatch, it is still difficult to get gangs working the entire shift.
- Although the number of permanent employees has been increased, this has been done largely by upgrading casual workers. It has been difficult to replace these workers because the candidates have other employment – which they are hesitant to leave until they are sure of the sustainability of longshore employment. (Casuals do not enjoy full benefits, such as medical.)

In January 2005, heavy rains and resultant flooding caused the Union Pacific mainlines to be washed out. The resulting restrictions on intermodal business would have been disastrous had they occurred in July. Rail infrastructure challenges will probably continue to grow. Cajon Pass, the BNSF route out of the LA Basin will become increasingly congested as business grows. The UP utilizes the same route, but it has other routes that it will expand.

The rail network is challenged because passenger and commuter rail uses some of the same network as freight. Some experts believe that the rail infrastructure in southern California needs to be increased by 400% to handle the envisioned growth in the next 20 years. This traffic is expected to increase at an even faster rate than the import trade. At this time, it is unclear how the several billion dollars of infrastructure investment will be financed.

3.A.ii New York/New Jersey

The Port of New York has continually struggled to accommodate growth. Their marine terminal space is expanding, however, they have had to manage construction simultaneously with operation. Overall the Port's business is growing 8-10% per year; however, rail intermodal is growing by 15-20% per year.

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Reverse inland point intermodal (RIPI) of Asian imports is increasing. Most lines limit the geographical extent of RIPI into the Ohio Valley; however, some lines will serve as far as Chicago. The rail cost to Chicago from New York is generally about \$100 to \$200 less than moving it from the west coast.

The port is challenged by rail infrastructure shortfall.

- They have identified the need for \$600 million in on-dock rail investment. Most of this is being done through ExpressRail – a facility operated by Maher. Drayage to off-dock facilities is expensive, so most intermodal moves on-dock.
- The rail network serving New York has capacity challenges. Ironically, the Conrail split-up between Norfolk Southern and CSX reduced the overall capacity in the Port by reducing redundancy. It is unclear how the railroads intend to reduce critical bottlenecks to accommodate business growth.

The Port has aggressively addressed the need for accommodating intermodal cargo and has developed the Port Inland Distribution Network (PIDN.) The most well known aspect of the PIDN has been an inland barge service to Albany, NY that the Port has subsidized.

While New York does not have the distribution concentration like southern California, it has seen some development south (30 miles) and west (60 miles) of the Port. They are committed to finding space for new distribution centers closer to the port – with good access. There have been studies conducted to build dedicated truckways between the facilities and the marine terminals. Land is available for development on “brownfield” sites. (This is land with some form of pollution contamination that is not suitable for housing -- but acceptable for distribution centers – and eligible for special federal funding.)

New York has the same domestic equipment imbalance as Los Angeles to support transloading. Domestic equipment balance is heavily inbound, so there is plenty of equipment to support reloading with transloaded import cargo.

3.2 Other Ports

There is a great deal of concern about how North American ports will handle the increased volume of trade. In fact the expected annual increase of growth of trade is equal to or greater than the total annual volume of such major ports as: Oakland, CA, Tacoma, WA, Charleston, SC, Hampton Roads, VA, Savannah, GA, or Seattle, WA.

What are the opportunities?

3.B.i West Coast

There does not appear to be any indication of widespread diversion from southern California. First, there does not appear to be any major threat from the existing ports.

- Oakland is geographically disadvantaged in the rail network. There is also very little rail or marine terminal capacity to handle first call import discharge.
- Tacoma and Seattle have expanded marine terminal capacity, and as long as loading is done on-dock, BNSF has additional network capacity. UP would be hard pressed to expand intermodal through this gateway. (They might be able to handle some through Portland, but lines seem disinclined to make this an import gateway.)
- Vancouver, BC has some expansion plans, but the rail networks for CN and CP seem disinclined (CN) or unable (CP) to handle significantly larger volumes.

Furthermore, the economic factors driving southern California's dominance show no signs of abating.

- The ability to turn the box quickly – without having to move it inland – continues to increase in attractiveness. A marine box moving inland can take 4-10 weeks to return. With leasing companies enjoying a period of pricing strength, the inventory impact is significant.
- The 53-foot container is significantly different from the 48-foot container. When compared to the latter, the former's cube difference has made it attractive to transload eastbound – while almost making it impossible for the 40-foot marine box to compete on westbound domestic repositioning.
- The new, 8,000 TEU vessels will need to make fewer port calls. For example, China Shipping is now running 8,500 TEU vessels in a shuttle between Shanghai and Los Angeles. Hanjin plans a similar deployment with the 7,500 TEU vessels it is taking delivery of. No other port could take such single calls.
- The deployment of local cargo in Oakland and the Pacific Northwest has caused terminal congestion problems in these locations because the terminals were never intended to accommodate import storage.

Intermodal will not disappear. Steamship lines marketing to beneficial cargo owners will continue to offer a full range of destinations.

In the immediate future, there is one west coast port to consider. Now that the merger of KCS and TFM is approved, Lazaro Cardenas offers a direct intermodal service into the US Gulf. This may offer a competitive service to points in Texas – and as far away as Kansas City and Atlanta.

3.B.ii East and Gulf Coast

The east coast has suffered an embarrassment of riches from the growth of all-water cargo from Asia – along with other trade growth. However, the problems of progress are becoming apparent.

- The major port complexes: New York/New Jersey, Hampton Roads, Charleston, Savannah and Miami are all suffering congestion and land scarcity. All are considering how to expand. Hampton Roads and Savannah – unlike the others – have potential land available.
- Jacksonville and Baltimore have some capacity.
- Philadelphia and Boston are not considered viable due to continued labor recalcitrance.

All of these ports suffer from intermodal shortfalls. Both NS and CSX have adopted strategies of “less is more.” In other words, if you can’t manage the business you have, shrink the volume until you reach a level that you can manage. Shorthaul corridors – such as those served over east coast ports have continued to be “demarketed.”

Halifax – a far stretch for Asian cargo – is suffering from the CN’s insistence on balanced and steady state traffic volume. CP’s operating problems have impacted Montreal.

The Gulf coast ports seem to have some potential for expansion; however, Houston – which represents over 60% of all Gulf volume -- has significant congestion problems. It remains to be seen whether initiatives in New Orleans and Corpus Christi can develop into viable container ports.

3.3 Future Infrastructure Expansion

International trade in the United States has been forecast to triple in the next twenty years. This expansion, which is greater than the economy, will pose significant problems for the surface freight transportation industry. It is worthwhile to look at the two major container gateways – LA and New York to consider the alternatives.

3.C.i Current Gateways

In both of these locales, the unquestioned benefit of being an international trade gateway is increasingly being challenged. Many organizations are arguing that there are a great many externalities that impact the region in many negative ways. They maintain that the benefits of trade must be balanced against the environmental and infrastructure costs. Some have gone so far to claim that their region is subsidizing economic activity in other states.

These issues are increasingly being fought on environmental grounds because of existing federal rules and regulations. Many expansion projects have been delayed – or even

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cancelled – as a result of local challenges to the environmental impact assessment (EIA) process. These problems are not limited to ports in California. Ports throughout the United States – on all three coasts – and railroads have had projects come under attack.

Part of the problem has been past generosity. Historically, project objections could often be mitigated by financial inducements. For example, the Alameda Corridor had to make significant additional payments to the cities through which it was built. The problem is that the ports and railroads can no longer such munificent payments. Unfortunately, expectations have been set and they are being challenged to continue them.

A large part of the problem is highway capacity. With the completion of the Interstate Highway System, the focus of the federal government has transitioned from one of construction to one of operation and maintenance. In LA this problem highlights the I-710 freeway, which connects the ports of Los Angeles and Long Beach with the rest of the interstate highway system. Estimates for rebuilding this route are from \$4-6 billion.

3.C.ii Southern California

This has focused attention on other alternatives. Looking at southern California we can see almost all of the possibilities that are under consideration throughout the United States.

- Extending hours of marine terminals would allow volume to be spread over a greater portion of the day. This is going into effect; however, the extent to which this will help has been debated. There is concern that many cargo recipients do not receive cargo on a 7/24 basis.
- Increasing the use of on-dock rail would reduce the amount of traffic being drayed to Los Angeles. However, there are many reasons for this traffic moving off-dock and they are not easily solved. (e.g., Vessel alliances, customer request, late customs clearance, etc.)
- The BNSF maintains if they could build an ICTF near the ports that many of the on-dock benefits could be realized. But there is not a great deal of land available.

All of these proposals address the problem in an incremental manner. There are two interesting possibilities that would entail structural change.

- One idea is to develop shuttle train service between the port and Inland Empire for all the distribution center cargo. This would greatly reduce truck traffic; however, it will be impossible to perform without economic subsidy. It is difficult to contemplate where the funding would come from.
- Another possibility is to change the on-dock paradigm from a carefully stowed train to a conveyor belt of containers that would be resorted further inland. This conveyer belt would handle inland intermodal as well as shorthaul cargo. One of the benefits of such an approach is that marine terminals could reclaim the significant amount of property (up to 25% of currently utilized land) that is devoted

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to on-dock rail operations that could be used for other purpose in a simplified operation. This is very attractive given the next generation of vessels that is being deployed in the trans-Pacific. Unfortunately, the ILWU's insistence to "follow this work" makes it problematic.

3.C.iii Rail

The rail industry has a network that is a study in contrasts. Although they suffer from congestion – which is requiring investment -- they also appear to have unused capacity. Although intermodal has become the largest commodity, it must still compete with certain commodities – grain foremost – in many key international traffic transportation corridors.

However, there has been some question as to whether the significant export markets envisioned for coal and grain will continue to exist. Export coal has been a major disappointment, as Australia has become the predominant producer for Asia. (Major export coal terminals in California and Vancouver today set empty.) Grain is under challenge from markets such as Brazil. If this source of network contention disappears, railroads will be able to handle much greater intermodal volume. Not only will these bulk trains disappear – but the [intermodal] replacement trains will also be faster – and enable greater network capacity.

Many railroads are trying to follow the example of the CN's scheduled railroad operation. This model requires customers to commit to specific volume on specific days. The railroad does not hold itself out as an unlimited carrier. This is a fairly radical approach because more business is not necessarily desirable. Against the predictions of doom from many, CN has started to implement this "Intermodal Excellence" (IMX) concept in intermodal. While it has helped solve fluidity problems on the railroad, it has caused some congestion at marine terminals in Halifax and Vancouver.

This approach has been adopted by most railroads in various forms. Railroads have also become much more pro-active in imposing traffic restrictions when operational problems seem to be mounting. This imposes a burden on shippers and other parts of the network, but it has allowed the railroads to preserve some operational equilibrium.

Just like the ports, the railroads have experienced terminal congestion. Their approach has been to radically transform longstanding industry practices in their efforts to reduce terminal dwell time. Railroads have reduced freetime and dramatically increased the storage rates for exceeding freetime. Notification has become a real-time occurrence with no allowance for exception. Reservations for pickup and delivery are being introduced along with traffic allocations. (The ports have taken notice of the railroads' success and have started publicly talking about the need to establish the same practices.)

3.C.iv New Projects

It seems likely that new capacity will be developed by joint initiatives of rail and ports. The result would be a “new” port in a rather out-of-the-way location that handles nothing but intermodal cargo. Such a port could be devoted to container throughput – rather than storage for local traffic. This is really just a modification of the Pacific Northwest model that existed from 1986 through 2000. (Although a great deal of the local forest product export has disappeared.)

There are two significant projects underway.

- A project in Prince Rupert, BC has been publicly acknowledged. The Port, in partnership with Maher Terminals, is planning on reconfiguring Fairview terminal to create a major container terminal. This terminal, located 800 miles north of Vancouver, is intended to carry intermodal cargo to the US Midwest and east coast by the CN – with empties returned. The rail routing was made feasible by CN’s recent acquisition of BC Rail. This project, which was considered preposterous just two or three years ago is now acknowledged to be highly likely. Most steamship lines have considered how they might handle traffic through this gateway.
- Another project, which is still in the conjecture phase is a joint venture by UP and Hutchison Port Holdings about building a new terminal about 125 miles south of Los Angeles. Nothing publicly has been divulged other than agreements to study the opportunity. There are several sites reportedly under consideration, but Punta Colonet is rumored to be the leading contender due to its deep harbor and large supply of waterfront property.

This is not a new idea. Mexican ports have long been considered possibilities, however, they all lack the infrastructure necessary to handle 8,000 TEU vessels. In fact, Hutchison operates the Port of Ensenada, about 30 miles north of the envisioned site. The challenge has been the lack of US intermodal connectivity.

If this project takes place, it will need to re/construct 150-200 miles of railroad to connect to the UP mainline in Yuma, AZ. This could cost almost \$1 billion by itself. Clearances sufficient for doublestack would require a great deal of construction on existing right-of way. The UP “Sunset” route between LA and El Paso is predominantly a single-track railroad that would also require extensive expansion to handle envisioned traffic growth – even without the addition of Mexican discharge volume.

While these two ports are the only current examples of intermodal-only ports, it seems likely that the development of other such enterprises would follow. However, the environmental hurdles of starting a new port are formidable in the United States. Lead times of 15 years would not be unusual.

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Another possibility is the relocation of non-container business from major ports to smaller, regional ports that are not focused on liner shipping. A prime example of this phenomenon is the Port of Hueneme -- the only deep-water harbor between Los Angeles and the San Francisco Bay area. This port has become a leading general cargo facility by serving the import and export of automobiles, fresh fruit and produce, and forest products. Many of their customers relocated from Los Angeles and Long Beach. Other ports on all three coasts can expect similar initiatives.

There has been some consideration of whether true land-bridge service can develop. At one time the Panama Canal Railway Company (PCRC) was considered a possible provider of this service. While PCRC may perform some niche services in this category, its economic prospects are limited by the two additional container terminal lifts at either end of the Panama Canal. (Panama is considered too far south.)

A more intriguing option would be for lines to discharge container cargo on the west coast of Mexico for rail movement to a Mexican east coast port. There it would be loaded on a roll-on-roll-off vessel serving US gulf and east coast ports. These Ro/Ro vessels would serve smaller, less-utilized ports. The handling costs would be much less because two Ro/Ro movements would replace two container lift-on/lift-off handlings. Both TFM and FXE are reported to be considering such opportunities. (There is some consideration of using barge service too.)

3.4 Regulatory Impact

Regulatory impact on intermodal could impact the market in several ways.

3.D.i Hours of Service

After remaining unchanged for more than 60 years, the Federal Motor Carrier Safety Administration (FMCSA) issued new hours of service (HOS) new regulations, which took effect January 4, 2004. These new rules addressed driver fatigue concerns while at the same time trying to reflect operational realities of motor carrier transportation.

The rules were only in effect for about six months, before a decision by the U.S. Court of Appeals for the District of Columbia Circuit directed the Agency to consider more specifically the 2003 rule's impact on the health of drivers. The 2003 HOS rule remains in effect until no later than September 30, 2005, according to the Surface Transportation Extension act of 2004, by which time FMCSA intends to complete its re-examination

On January 24, 2005, FMCSA published a notice of proposed rulemaking (NPRM) in the Federal Register, beginning a 45-day comment period during which the Agency is urging input from truck drivers, motor carriers, law enforcement officials, safety advocates and

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others on the current HOS regulations. It appears that FMCSA intends to keep the regulations unchanged.

Under the new HOS rules, drivers will not be able to drive as much as they previously did. The response has been for trucking companies to increase driver wages – by up to \$4-5,000 more a year. This is on top of increases of \$2-3,000 in 2004.

The impact of this rule has been much debated.

- Some believe that it will be good for domestic intermodal, because trucking companies will need to convert current over-the-road transportation to intermodal due to a shortage of drivers. Such a change could make the intermodal product more expensive (due to increased demand) and displace international intermodal with domestic.
- Others believe that it will hurt intermodal because intermodal drayage drivers will “move up” the employment pyramid and become longhaul truckers. This will cause intermodal costs to increase and make intermodal less competitive with truck. In this case, domestic traffic would decrease, and railroads would need to rely more on international traffic.
- One of the major changes in the HOS regulations was that time spent waiting in lines is now counted against the daily allowable time. (It eliminated the distinction between time on-duty/working and on-duty/not working.) This has made terminal dwell a critical component of determining drayage rates. The growth of all-water service has required draymen to pickup loads at marine terminals instead of rail terminals. Marine terminals are notorious for long delays, and drayage rates have been increased to reflect this expense. The impact could eliminate the slight cost benefit that all-water has over trans-continental intermodal.

3.D.ii Roadability

The intermodal industry has been struggling with the issue of equipment that is safe for highway movement. Motor carriers pulling intermodal containers on chassis are obliged, as a condition of doing business with water and rail carriers, to pull the trailing equipment provided to them by those other parties. This has proven problematic because, in many cases, the equipment provided is unsafe -- or in poor condition. If an intermodal trucker is subsequently cited in a roadside safety inspection, they are liable for the penalties on the chassis, for which they have no maintenance or management control. Although the driver might rebill the cost of the ticket, it might increase their insurance rates – which is already a major problem.

This issue is not clearly delineated in current federal regulations. There has been a great deal of dispute between the equipment owners (the steamship lines), the terminal operators and the truckers. In the absence of a private sector solution, there was concern that the federal government might impose a solution that could be devastating to the

intermodal industry. The impact would be to increase the cost of intermodal equipment – and probably increase terminal congestion. It is unclear whether this would impact rail or marine terminal operations more.

In the last two months, the Intermodal Association of North America (IANA) has proposed a compromise situation. If, as expected, the systematic maintenance check (SMC) becomes adopted, then the threat of federal intervention will be greatly reduced.

3.D.iii Environment

Environmental regulation has become an increasingly challenging area for transportation. Capacity expansion has always been stymied by environmental objections. When the administration proposed the surface transportation reauthorization of TEA21, in The Safe, Accountable, Flexible, and Efficient Transportation Equity Act of 2003 (SAFETEA) it included provisions for expediting the environmental review. Reauthorization has still not passed. Its sixth extension expires May 31, 2005.

The reduction of review could enable terminal capacity and other critical infrastructure to come on line faster – and at less expense. This would increase intermodal volume and might make linehaul rates increase at a slower rate than might otherwise happen.

While these impacts are still hypothetical, what is not are Environmental Protection Agency (EPA) requiring greatly reduced truck emissions starting in 2007. This is the second increment of heightened emissions control that was mandated under The Clean Air Act. In 2002, the first phase caused some initial operating problems – and increased the cost of tractors. To avoid these problems and expense, many motor carriers are pushing their planned 2007 tractor purchases into 2005 and 2006.

This will bring in additional capacity at a faster rate. (Purchases are expected to be 33% higher in 2005 than in 2004.) This may put temporary pressure on intermodal rates.

3.D.iv Rail Re-regulation

There is often talk about the railroads enjoying too much market dominance. Some contain that there are duopolies in the west, east and Canada that require government intervention.

The result could be re-regulation. Some bulk and chemical shippers would welcome a return to formulaic costing that failed to take price elasticity into account. Such a renewed regulatory approach would lower the rates on captive shipments and increase the price on intermodal. While such proposals are periodically discussed, there does not appear to be any realistic chance of them becoming law.

3.5 All-Water Market

Seven steamship lines were interviewed on their feelings about the all-water market.

3.E.i Market Share

Interviews with steamship lines indicate that the proportion of cargo moving all-water to east coast points from Asia is now 20-25%. The cargo volume will continue to grow with the trade. Some lines believe that all-water service is growing a bit faster than total Asia – U.S. traffic. One line executive commented “Customers find that all-water offers higher certainty and reliability of delivery lead time. Transit time is of course longer, but it’s more predictable. It costs them slightly less too.” Although, the price difference between all-water and intermodal rates continues to shrink, lines are also encouraged by all-water rates rising faster than west coast rates.

Market mix also helps as major retailers open new distribution centers on the east and gulf coasts. Interviewees were split as to whether distribution centers are largely built out in Southern California and New Jersey. One executive commented “Southern California is a disaster area, the customers will bring the growth in to the U.S. on other routes.” However, another commented “Why would you want to serve your two largest markets from a remote location ... have you seen the I-5 lately?”

All lines expected more growth in the Gulf. In the past, major retailers have followed Wal-Mart’s distribution patterns, so Wal-Marts \$80 million facility in Houston is expected to generate additional business in this location. Most lines admitted to studying an all-water route direct to the Gulf from Asia. However, they all admitted that they were concerned by the port congestion in Houston – and less than enthusiastic about serving Texas points over New Orleans.

Intermodal penetration from all-water is expected to remain minimal. No significant volumes move further inland than the Ohio Valley and Tennessee/Alabama. (The latter are attractive prospects for Gulf service if and when that occurs.) Northbound intermodal to the Midwest from Gulf ports is considered too expensive.

Westbound (export) volume, as a percentage of imports, is down. The rates are so low that solicitation has almost ceased to be a sales function. As one executive explained “Westbound doesn’t drive anything anymore. We feel like it is best to just give westbound solicitation to our equipment control group. If there happens to be a load available going our way, fine, we’ll take it. If not, we’re better off just letting the box go empty.”

There also appears to be equipment crossover from intermodal to all-water. Table #13 shows that eastbound volume is significantly higher than westbound for most equipment types and sizes.

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**Table #13
Eastbound Intermodal Compared to Westbound Intermodal**

Year	Containers					Trailers	
	20-ft	40-ft	45-ft	48-ft	53-ft	48-ft	53-ft
2000	101.8%	114.2%	120.7%	108.8%	102.9%	90.8%	98.9%
2001	108.0%	115.6%	116.3%	109.0%	101.3%	84.7%	111.9%
2002	110.8%	117.8%	110.0%	111.2%	101.5%	91.6%	99.4%
2003	108.6%	112.7%	107.5%	108.7%	107.4%	95.7%	98.3%
2004	107.9%	109.4%	102.1%	103.4%	103.0%	100.8%	97.3%

Source: Intermodal Association of North America

Table #14 shows the containers that never return for US west coast vessel loadback. While a small percentage might be off-hired leased boxes, a great number of them have been loaded from the US East coast to Europe and Asia.

**Table #14
US West Coast Vessel Loadback Shortfall**

Year	Containers			Percent of Discharge		
	20-ft	40-ft	45-ft	20-ft	40-ft	45-ft
2000	56,820	198,835	7,898	6.3%	6.9%	4.2%
2001	78,990	206,019	9,076	8.9%	7.3%	4.1%
2002	96,075	291,486	11,784	10.0%	9.3%	4.7%
2003	54,721	143,421	5,432	5.4%	4.1%	1.9%
2004	78,574	200,189	10,423	9.2%	7.2%	4.4%

Source: Pacific Maritime Association

3.E.ii The Suez Option

There seems to be an emerging consensus that manufacturing in Southeast Asia and the Indian Subcontinent will grow. Despite the significant growth of India's service economy, the lack of manufacturing is felt to be a shortcoming that must be overcome. This will give rise to service through Suez – and cause the East Coast ports' share of Asian trade to grow.

Four out of seven lines expected that Suez Canal volume would grow faster than overall Asian trade. All ports – except the Canadian ports -- are expected to benefit from this change.

Most interviewees felt that it was not yet feasible for a China to US East Coast service to transit Suez instead of Panama. However, all lines were studying it – especially since the new Panama Canal toll increases. One or two lines mentioned that a Suez service could emerge from a deployment that utilized large vessels in a service that connected China with the US East Coast with possible intermediate stops amongst: the Gulf, Med and

LeHavre. This would increase transit time but it would allow for the vessel to connect several trades to the US East Coast; however, it is doubtful if more than 25% would be China to New York.

3.E.iii Impact of the Panama Canal

Lines were not uniform in an overwhelming desire for large ships. This was largely driven by several factors:

- As the larger ships are deployed, this will free up lots of smaller ships for the all-water trade.
- There is grave concern about how many ports will be able to handle these ships. One executive pointed out “Even Savannah is now out of space, both dock and storage. We never expected that before 2010.”
- Many mentioned dredging issues in New York – along with overall capacity –.
- The impact of larger vessels on deployment schedule is becoming understood. One executive observed “We have five large vessels in a deployment that we could probably do with four 4,000 EU vessels. We just can’t get these whales in and out of port as fast as we like – and thought we could.”

The question of Caribbean transloading to/from other east coast points was thought to be unlikely. While most interviewees were impressed with the operational discipline of MSC’s rather complex transshipment hub in Freeport, most seemed desirous of avoiding it. One executive pointed out “Intermediate handling is too expensive and it is unpopular with the shippers.” The feeling is that direct service to certain East Coast ports can be provided with 4,000 TEU vessels and alliances.

3.E.iv East Coast Transit from Asia

As the all-water service from Asia to the US East Coast grows, lines are deploying vessels with direct service to New York. For example, the Grand Alliance’s East Coast North Express (ECN) offers 22-day service direct from Hong Kong to New York. This deployment eliminates the intermediate calls at South Atlantic and Mid Atlantic ports.

Table#15 examines transit times from Hong Kong to New York.

For intermodal transit over the west coast:

- Vessel transit is about 12 days for direct service from Hong Kong to southern California. It is several days longer with intermediate stops. (Last summer, with vessels unable to berth, transit reached 19 days.)
- Vessel discharge is occurring over an increasingly longer spectrum. A container might be amongst the first discharge (0 days) or be five days in discharging with a 7,000+ TEU vessel. (Last summer, with labor shortages, discharge extended to eight days in some cases.)

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- Best-case intermodal transit is now about six days; however, it can take up to 12 days with terminal and linehaul delays.
- The result is a two-week spread 17 days (best case) versus 31 days (worst case.)

For all-water transit over the east coast:

- Vessel transit is about 22 days for direct service from Hong Kong to New York. It is several days longer with intermediate stops.
- Since the vessel size is smaller, discharge is shorter. A container might be amongst the first discharge (0 days) or be two days in discharging with a 4,000 TEU vessel.
- There is no intermodal transit.
- The result is a one-week spread 22 days (best case) versus 29 days (worst case.)

Table #15
Hong Kong to New York Transit Options

Time Component	West Coast		East Coast	
	Best	Worst	Best	Worst
Ocean	11	14	22	26
Vessel Discharge	0	5	0	2
Intermodal	6	12	0	0
Total	17	31	22	29

However, in a comparison of best case (East Coast) versus worst-case (West Coast) the all-water route to New York is both faster – and cheaper.