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Introduction

During 2006, the growth in the U.S. economy was on par with the pace set in 2005, increasing about 3.5 percent. The growth in the business logistics system was tempered somewhat from the 2005 record increase, but still rose over 11 percent in 2006. Business logistics costs were \$1,305 billion and rose from 9.4 to 9.9 percent of the nominal Gross Domestic Product (GDP). This is an increase of \$130 billion over 2005 and another record high for logistics costs (*Slide 1*). The overall economy continued its moderating trend in 2006 with significant slowdowns in the housing and automobile sectors. The fourth quarter, in particular was hit hard by an almost 20 percent drop in residential investment. As our demand waned here in the U.S., the demand for our exports grew fueling growth in freight volume for all modes except trucks.

The volume of freight being moved is meeting and even exceeding estimates. U.S. ports handled an additional 2.1 million TEUs (Twenty-foot Equivalent Units), up 8 percent in 2006 and 30 percent in the last three years. Railroads handled a record 9.4 million containers, and strong demand for air freight services to and from Asia pushed air freight ton-miles up 4.6 percent in 2006.

Revenues, on the other hand, were not quite as strong. Weakened demand and excess capacity in the trucking sector led to intense competition for available freight and held down rates for most modes. However, high fuel prices pushed up fuel surcharges which accounts for much of the rise in industry revenues.

Higher transportation costs and higher inventory carrying costs combined with moderating growth in the overall economy pushed us to just to the edge of double digit logistics as a percent of GDP. Logistics as a percent of our nominal GDP is steadily rising back up to 10 percent, just missing the mark this year (*Slide 2*). Logistics costs are continuing to grow at a faster pace than the overall economy. The last time business logistics represented over 10 percent of GDP was in 2000, when our economy was facing some of the same pressures it now

faces: rapidly rising and volatile fuel prices and some signs of a looming recession. Just as now, the Federal Reserve responded by raising interest rates. Inventory levels have been on the rise and have contributed to higher inventory carrying costs and a booming warehouse industry. There are already signs in 2007 that freight levels are rebounding and capacity is getting tighter and at the same time the overall economy is slowing, putting even more upward pressure on logistics costs.

Agenda

Here is the agenda. First I am going to cover in detail the cost of the U.S. business logistics system in 2006 in twelve line items of detail. Then I will review the trends in transportation costs, inventory carrying costs, and total logistics costs for the last two decades (*Slide 3*).

The story this year is in the underlying drivers of business logistics costs and the changes in the ways we are managing our supply chains. There was no single defining event, such as Katrina or soaring fuel prices, to explain the trends. Fuel prices did have a marked impact on the industry in 2006, despite the fact that overall they had moderated for much of the year. Revenues for all modes remained intact, but grew largely because of fuel surcharges. Smaller carriers felt the pinch more than larger carriers because more competition for less available freight meant many were not able to pass through fuel charges and remain competitive. Weak demand in some sectors led to inventory buildups, while changing approaches to managing inventory also impacted the level of inventory in the system, as well as where it is held in the supply chain. Obviously much higher interest rates magnified the impact of higher inventory levels. Many factors combined to give us a breather while new infrastructure capacity came on line, easing some of the strains on our maxed out transportation system. I will discuss the impacts of these factors and what to expect as we move through 2007.

The Business Logistics System—2006

During 2006 the cost of our business logistics system increased to \$1.31 trillion, or the equivalent of 9.9 percent of nominal Gross Domestic Product (GDP). Total logistics costs have gone up 63 percent during the last decade. Transportation costs, mostly trucking, accounted for much of the rise in 2006, yet, for the third year in a row, inventory carrying costs have risen faster than transportation costs. In 2006 inventory carrying costs jumped 13.5 percent while transportation costs were up 9.4 percent over 2005 levels. The increase was due to both significantly higher interest rates than last year and a rise in inventories. The average investment in all business inventories in agriculture, mining, construction, services, manufacturing, wholesale, and retail trade was almost \$1.9 trillion, surpassing last year's level by \$109 billion (*Slide 4*). This is significant because we are seeing changes in the way we are handling inventory in the system that are resulting in higher levels of inventory overall.

The strategy in the past has been to remove excess inventory from the system, slimming inventories to bare minimum levels in the era of just-in-time manufacturing. We demanded reliable transportation services that could deliver when promised, making it possible for firms to reduce inventories and implement streamlined supply chain management practices. This is borne out in the pronounced downward trend in the U.S. inventory-to-sales ratio for the past 15 years (*Slide 5*). It has declined from 1.56 in January of 1992 to 1.28 at the end of 2006. The uncertainties of today's global and increasingly diversified supply chain are dampening this trend as firms hold buffer inventories to hedge against uncertain delivery times or supply disruptions, and to still be able to deliver to manufacturers and retailers in a just in time fashion. After a sustained period of historically low ratios, the inventory-to-sales ratio trend has flattened and even climbed upward, hovering at about the same level for the last three years (*Slide 5 inset box*).

The cost of carrying inventory during 2006 includes interest at the annualized commercial paper rate of 5.0 percent, which is a 52 percent jump over 2005 levels and three and a half times the 2003 level. Monthly commercial paper rates hit an annualized rate of 5 percent mid-2006 and have remained at that level even in to 2007 (*Slide 6*).

Taxes, obsolescence, depreciation, and insurance were up less than 3 percent in 2006. After a long period of rapidly rising insurance costs, insurance rates have finally settled again. Insurance rates are generally much higher than they were five years ago. Although inventory levels are higher than a year ago, there have been no signs that inventory turnover rates have changed. More inventory is just moving through the system.

The cost of warehousing was up dramatically in 2006. The demand for warehousing and the ancillary services provided has surged worldwide in recent years. Manufacturers and retailers have sought to optimize their supply chains and increase flexibility to adapt to ever-changing sources of supply. Warehouses are increasingly being used as value added centers or processing centers where some steps in the supply chain such as packaging, light assembly, RFID tagging, and sorting are done. Warehouses are holding the higher levels of strategic reserves of goods used by supplier to meet surges in demand or to respond to disruptions in the supply chain. Retailers like Wal-Mart have significantly reduced the amount of inventory they carry in their distribution centers and stores by pushing that responsibility back on their suppliers. Headlines proclaiming historically low inventories held by mega-retailers are not indicative of actual inventory reductions, but rather a shift in the placement of and delivery methods for that inventory. Suppliers now have to hold inventory in various segments of the supply chain to meet the just-when-we-need-it demand of retailers like Home Depot and Target. I have spoken with numerous suppliers for national chains who told me that their business has changed over the past year. Rather than one large shipment a day or every other day to stores, they are reporting multiple

deliveries in one day to meet their customer's requirements. This changes where they hold their inventory, as well as how they manage it. Large, regional distribution centers do not facilitate the flexibility and time sensitive deliveries these companies are making. They are moving to more local warehouse sites, serving fewer locations, but with more technology to manage the inventory. The higher demand for warehousing has also had the effect of pushing up rents for the facilities, further adding cost.

Transportation costs rose 9.4 percent in 2006. Trucking, which represents the largest chunk of transportation costs, was adversely affected by the downturn in housing and motor vehicles, but still managed to show a gain. Overall traffic was up and U.S. imports and, especially exports, were very strong. Despite a softening in the economy consumer spending remained high keeping the demand for most goods strong (*Slide 7*).

Trucking costs increased by \$52 billion in 2006, an increase of 8.8 percent over 2005 levels. While many carriers still had rosy revenue reports for 2006, fuel surcharges were often the only thing that ensured revenue growth. Demand for trucking services was relatively weak in 2006, particularly in the automotive and housing construction markets. Actual tonnage carried was down 1.3 percent in 2006 for the first time in many years. Surprisingly capacity was abundant for several reasons, but only capacity in terms of equipment, not drivers. The first being soft demand and the second being a surge in new equipment, as carriers bought up inventories of trucks with 06 models with the old style engines before the new EPA engine standards went into effect in 2007. Now all new truck purchases must be equipped with engines that meet the EPA's more stringent emissions standards. Sales for Class 8 trucks should begin to return to normal levels. Recent reports indicate that supplies of the older models were all but depleted, so this was just a temporary blip. Smaller shippers, in particular, have reported that they had to work to find loads in the weak market. Many trucking companies told me that they took loads where they could get them, even if the

hauls were longer or shorter than their more traditional routes. Based on some unpublished data that was shared with me, it appears that the average length of haul for large truckload carriers dropped by about 1.5 to 2 percent percent, while the length of haul for small truckload carriers increased by over 10 percent as they scrambled to get any business available. I did talk to one mid-size regional carrier who said that his average length of haul had fallen almost 25 percent in the second half of 2006. Higher fuel costs, abundant capacity, and soft demand impacted independent owner operators disproportionately and many reported they needed to be almost 100 percent engaged just to make ends meet. Some even reported turning down a haul if they could not get a guaranteed back haul. An interesting side note is that Transportation Sales Agent has become a hot job as carriers are looking to the outside for help to fill their trucks.

The driver shortage still deepens. The added capacity in the trucking industry did not always mean available capacity. The trucking industry has a shortage right now of about 20,000 long-haul truck drivers, and the American Trucking Association still says they expect the problem to grow. Companies are still challenged to attract and then retain drivers. With the economy thriving and unemployment rates at historical lows, there is much competition for the available pool of drivers. All segments of the industry experienced increases in turnover rates, with long haul turnover up to 121 percent and short haul turnover up to 114 percent in the third quarter of 2006, the latest figures available from the American Trucking Association. Turnover rates had abated somewhat in 2005, only to pick up again towards the middle of 2006. Drivers are changing companies, following favorable wages and benefits. Reading through the annual reports of most trucking companies will show a significant rise in labor costs, with higher wage and benefits expenses. Another costly impact of the turnover rate in particular is training costs are also on the rise. Also the Federal Motor Carrier Safety Administration has released a study demonstrating a link between high driver turnover and crash rates. FMCSA concluded “that a significant relationship exists between job change rate and crash involvement” Further they recommend that

drivers who have averaged more than two jobs with different carriers each year for a period of two years or more should probably be scrutinized to determine if they present an increased risk to the company.

The hours-of-service rules continue to weigh in from a capacity perspective. The available hours for an individual driver, on average, has declined since the rules went in to effect. However, an on-line survey of truckers carried out last fall indicated that of those responding over 75 percent of qualified truck drivers admitted to deliberately violating HOS rules sometime in the past. Most were company drivers, with another 26 percent leased owner-operators, and the final 8 percent independent owner operators with their own authority. Moreover 55 percent of the drivers confessed that they were still deliberately violating the rules. The survey showed that the average days per month that a driver was violating the rules, intentionally or not, was about 5.

The lack of drivers and reduced demand for services led some carriers to report idle or underutilized equipment. Loaded miles per tractor per week declined during 2006. New truck builds declined in 2006, so it is reasonable to expect that the class 8 truck supply will gradually even out and become more in balance with freight demand. A Bear Stearns survey showed an increase in overcapacity in truckload segment from the third to fourth quarters of 2006, with 80 percent of shippers polled reporting overcapacity compared to 54 percent in the preceding quarter. In the same report, 71 percent of shippers reported overcapacity in the less than truckload (LTL) market in the fourth quarter.

Rail transportation costs went up over 12 percent in 2006, with revenues for Class I railroads showing the most gain. Railcar loadings were up 3.1 percent over 2006 and intermodal loadings were up another 5 percent. Setting yet another record high in 2006 was total freight volume, estimated at 1.77 trillion ton-miles, up 4.5 percent from the previous record set last year. The railroads were in a much more advantageous financial situation in 2006. Freight revenues

for Class I railroads were up \$5.8 billion, or 13 percent in 2006. Since 2004 the rail industry has improved its freight revenue by 28.6 percent. As with the trucking industry, a portion of the revenue gain is attributable to fuel surcharges. Another indicator of the increased health of the rail industry is the freight revenue per ton-mile figure which has risen from 2.354 cents per ton-mile two years ago to 2.84 cents in 2006—that is a gain of over 20 percent.

The downturn in housing and the automotive sectors impacted the railroads too. Carloads of lumber and wood products were down 9.1 percent or 28,188 carloads in 2006, while carloads of motor vehicles and equipment dropped by 69,815 carloads, a 6.0 percent decline. Rail is more insulated than truck to drops in these important sectors of the economy because 42 percent of rail's non-intermodal traffic is accounted for by coal. Coal carloadings were up 4.7 percent in 2006, more than offsetting the declines elsewhere. A significant trend in rail over the last five years has been the growth in North American Free Trade Act (NAFTA) traffic between Canada, the U.S., and Mexico. This traffic has contributed to the rail industry handling significantly more traffic in 2006 than ever before. For the ninth consecutive year, the railroads have set records for carloads carried. Traffic levels are forecast to continue to climb so capacity expansion will be a key issue in the future. The Association of American Railroads reports that railroads plan to spend massive amounts of private capital to add capacity where it is needed to meet the growing demand.

Maritime and domestic water traffic increased by 7.9 percent, or almost \$3 billion in 2006, with most of the growth in ocean freight. Our inland waterway system is not a growth sector of this industry. Aging infrastructure and deferred maintenance is taking its toll on the system and preventing it from operating optimally. The nation's ports experienced another year of high traffic levels and handled it with few, if any, major incidents. Shipping patterns have changed in response to the peak capacity problems of a few years ago.

Air freight revenue increased by \$3 billion during 2006, an increase of 7.6 percent and much lower than the over 17 percent increase measured in 2005. As with the other modes, fuel is a big driver in the expense column. The total industry consumes 19 to 20 billion gallons of fuel per year. The Air Transport Association estimates that, at current fuel price levels, a penny increase in the price of a gallon of jet fuel adds \$190-200 million to annual fuel costs. Fuel has a prominent spot on the balance sheet as the industry's top cost, and now constitutes 20 to 30 percent of industry operating expenses—outstripping even labor. Preliminary figures for the air cargo industry indicate a strong performance with overall ton-miles up 4.4 percent over 2006 and up over 22 percent since 2000. Domestic air freight accounts for about 61 percent of the total, while international about 39 percent. This sector of the industry remains strong as demand for its services grow, as over 45 percent of the value of goods imported or exported is moved by air.

Oil pipelines revenue was up about 10 percent in 2006, as both higher rates and increased volumes pushed revenue upward.

Forwarders, including 3PLs and other value added services are thriving. This is the fast growing segment in the market. Outsourced logistics is on the rise, both here and abroad. There is very strong demand for value added services and many nontraditional players have been entering the market, such as small trucking firms who see it as a differentiator. Forwarder revenue grew to \$28 billion in 2006, up from \$22 billion in 2005. It is important to note that this revenue does not include actual carrier revenue. That revenue is included in the modal revenue totals. The largest 3PLs are still enjoying phenomenal growth in both size and scope, but even stronger is the growth in mid-size 3PLs, who are catering to mid-size companies that are putting more of their logistics dollar into the contract market. Consolidations have been abundant in this industry for the past three years, reducing the number of big players and extending the reach of many. Entrance into this market space is relatively easy and new players are

emerging daily. The abundance of information available and the ability to use technology has fueled this market. Also shippers and retailers have become more educated and discriminating. Many have realized the potential for savings to be gained by using a third party provider, but in general they are a more educated customer who knows what services they want and which has the most potential for saving them money.

Notable in this market segment, however, was the bankruptcy and abrupt end to service of APX Logistics in March of 2006. APX was the largest parcel consolidator in the United States and one of the biggest contract movers of the U.S. Postal Service. At the time the company filed for the bankruptcy, it ranked 37th on the Transport Topic 3PL list of the top 50 largest logistics companies in the world. APX handled 250 million packages annually through the U.S. Postal Service, more than any other carrier. It had more than 400 trucks in its fleet, 47 distribution facilities, and more than 1,800 employees. Traffic World called it “the largest shutdown of the cargo transportation provider after the closure of the USF Red Star.” The loss of the 200,000 truckloads it carried should have been staggering, but after the initial shock and the redistribution of the parcels in the pipeline, eager new players entered the scene and took on the business.

Shipper related costs are up about five percent and logistics administration has risen about nine percent.

Here is how the performance of our business logistics system for the last two decades, between 1986 and 2006, appears graphically (*Slide 8*). After a number of years of decline, the measures have begun to move back up. Inventory carrying costs as a percentage of GDP declined about 35 percent in the last twenty years. Carrying costs have risen every year for the last five years eroding the gains. Transportation costs as a percentage of GDP have declined by only 6 percent and total logistics costs declined by 20 percent. Logistics costs as a

percentage of nominal GDP have remained below 10 percent for a sixth straight year, but have increased by over 35 percent in the last five years.

What is Driving the Numbers?

Now that we know what happened in 2006 let's look deeper at what is behind the numbers. For the sixth year in a row, and despite my prognostications to the contrary, logistics still accounts for less than 10 percent of GDP, just barely though, coming in at 9.9 percent. So where did my forecast go wrong? I forecast that transportation costs would rise again significantly in 2006, and they did, up 9.4 percent. Granted this was not the increase I was expecting, because of the sector slowdowns in some arenas, but it is still a large increase. Where capacity had been tight in the truck sector, weak demand and surge purchasing of 2006 model trucks combined to create a temporary excess capacity situation. Excess capacity led to competitive pricing to win traffic, which held revenues down. On the other hand still soaring fuel prices kept revenues up by ratcheting up fuel surcharges. The rail industry has made some significant investments in capacity in recent years and was more than ready to meet demand. Demand was strong, but conditions were not ripe for rate increases. Trucks hungry for business kept the pressure on rail rates making them very competitive for some commodities and corridors, again dampening revenues. Space on ships and containers to ship in are still in abundant supply so there were no pressures there either. Fuel was still a big driver as prices continued to stay high and were still volatile, even rising toward the end of 2006. Fuel surcharges became the major component of the revenue increases for freight carriers.

Second I predicted that despite rising interest rates, inventories would continue to grow. Again I was right, but I did not expect interest rates to climb so high and stay at over five percent. This jump of over fifty percent in interest would have been enough to drive up carrying costs on its own, but add to that higher

inventory levels and increased warehousing revenues. Carrying costs rose even more than I expected, more than making up the expected rise in transportation.

So, the two major components of the model increased as expected. Indeed, business logistics costs are up almost 11 percent! The key is that the economy has also remained strong. However, looking at the last six years, you will note that the growth in GDP outpaced the growth in logistics costs for the first three years, but for the last three years logistics costs have grown much faster than the overall economy. *(Slide 9)* The good news is that this does not necessarily mean that we are doing something wrong, rather it reflects that we are doing things differently, or put another way, managing logistics in today's complex global environment costs more.

No matter what sector of the logistics industry you work in or which link you are in the supply chain, you have been faced with daunting logistics challenges and dramatic shifts in operating paradigms. We as an industry have responded well, adapted quickly and developed new ways to manage the ever rising volume of goods to be moved. Our customers up and down the supply chain are demanding higher and higher levels of service. They are demanding a commitment to reliability and predictability, often with pinpoint accuracy. Meeting these demands in the global environment has meant rethinking the way we have done business, setting aside time-honored processes, and undoing things that were right 10 years ago. The fundamental changes we have made in the last several years are what is driving the numbers in our logistics model.

Inventory carrying costs have risen dramatically because more inventory is in the system, to ensure that customer demand can be met both in terms of actually having the product to deliver, and also having it placed in the system so that it can be delivered to meet time parameters. With so many consumer goods and parts for manufacturing sourced offshore, transit times have increased. Uncertainty has also entered into the equation as the complexity of the

movement and the number of players involved multiplies. To some extent a manufacturer or supplier in the U.S. has far less control over a freight movement today than they had five or ten years ago when there were more sources of goods and parts domestically. To mitigate these risks more products are being held in inventory. While this does raise costs, it is a sound business decision in today's environment.

Further retailers' decisions to keep lower levels of stocks in their stores and warehouses have pushed more inventories back down the supply chain into the hands of their suppliers (*Slide 10*). The wholesalers I talked to said that they were not holding inventory that they did not expect to move, they were just holding more of it longer than they had in the past. Inventories for retail goods were up only 2.8 percent in 2006, while inventories for wholesale trade went up 9.5 percent. This is indicative of inventory resting in a different part of the supply chain now. The growth in retail inventories slows because of the trend of retailers to cut back on their stock and foist it back on their suppliers to hold. Inventory levels have grown consistently over the past five years, but in the last two years the growth has shifted from retail to wholesale. It is important to note that for 2006 the retail trade figure was further subdued by a decline in motor vehicle-related inventories of about 3 percent. That category accounts for over 30 percent of retail inventories.

The transportation component of logistics costs continues to increase at rates not seen since this model began. The system is moving record amounts of goods every year—it has gotten to the point that reporting a record-breaking year is not news any more. Within the past five years we have experienced a wide range of failures within the system, ranging from strikes, to terrorist attacks, to weather disasters, and finally capacity and congestion issues. Logistics is finally getting the attention of C-level executives and more resources are being used to solve problems. More planning is occurring throughout the supply chain, to mitigate risk

and to incorporate solutions to alleviate the negative impact of unforeseen events.

Innovative, short-term solutions have been put in place to solve some capacity and congestion problems, faced while we grapple with the larger need for significant investment in our transportation infrastructure.

Ordering and shipping patterns have shifted to alleviate congestion and capacity constraints. I cut out a headline last fall that read “Holiday Surge Never Materializes.” On the surface that might look like a bad thing, but shipments were not down, just placed more strategically to avoid bottlenecks. Traditionally heavy shipping seasons have lengthened and even rescheduled. In the last three years three additional ports have reached 1 million TEU levels (*Slide 11*). That is 10 ports moving more than a million TEUs per year. Port operators have put considerable investment into their facilities and into optimizing flow to and from the ports. West Coast ports introduced pricing schemes aimed at distributing the load away from peak times. These plans have worked and there are far fewer stories of ships waiting offshore for a berth or goods stuck trying to get away from the ports.

Many other ports around the country are experiencing phenomenal growth. For example, loadings at Port Everglades have jumped from 429,315 TEUs in 2003 to 637, 694 TEUs in 2006, an over 48 percent increase. Similarly the Port of Baltimore has climbed over 31 percent during the last three years. The Port of Philadelphia is small compared to the top 10, but it has increased the number of TEUs carried 68 percent since 2003, up to 175,570 in 2006.

There has also been a change in the way we move goods from the ports. More ports have built or enhanced their portside railheads and are loading containers onto railcars and moving them inland before breaking them up for distribution. A significant portion of this deconsolidation is taking place far from the ports. Moving the freight quickly from the ports to deconsolidation, warehouses and

distribution centers, or to final customers has dramatically reduced congestion. Inland ports, which come in all types and sizes, are increasingly becoming an important link in the supply chain. They offer multimodal solutions and offer a wide range of value added services. The Chicago and other areas in the midsection of the country have seen the birth of transloading facilities, being used to move shipments to and from rail and truck after being redistributed or repackaged in some fashion. These facilities are often owned by carriers and are contributing to the continued growth in intermodal traffic.

The Virginia Inland Port is one example (*Slide 12*). It was built about 15 years ago in Front Royal, Virginia—more than 220 miles inland from the Hampton Roads/Norfolk ports. It is an intermodal facility with access to multiple railroads and easy access to a major truck route, Interstate 81. It serves not only Virginia, but also Maryland, Pennsylvania, West Virginia, and Ohio. It has grown rapidly in recent years as it became an alternative for processing international shipments. In 2003 it had around 14,000 movements and today it has surpassed 35,000 moves annually. Some of its primary customers included retailers like Home Depot, Family Dollar Stores, and giant food distributor SYSCO Corporation.

Five to ten years ago there was a trend to build very large mega-distribution centers and consolidate inventory in just a few spots around the country. Today these warehouses are being abandoned in favor of smaller facilities servicing fewer regionally collocated customers. This enables immediate response to supply requests and shortens delivery times. Additionally, more players are getting involved at this level. Many small local and regional carriers are entering the marketplace to provide additional services including warehousing and inventory management. I have even collected anecdotal evidence that inventory is being stored regularly in trailers and containers in open facilities throughout the system, rather than in traditional warehouses. The solutions are varied and designed with one aim in mind: meeting the demands of customers who want

quick, reliable services. Amazon's ability to have what we want where we want it, almost NOW, have permeated the expectations of customers at all levels.

Congestion and capacity issues have not really been resolved, we have just been given a breather. We still have infrastructure that needs immediate attention and long term solutions. We have not solved the truck driver crisis, nor have we added capacity to the nation's highway system.

We have a resource, sinking into disrepair, that could become a vital link in adding capacity and taking some pressure off other modes in a vital corridor in the center of the country: the inland waterway system. The inland waterway system has been underutilized for many years and that portion of the industry has not seen much growth. The nation's waterway system needs to be revitalized and used more heavily to further impact congestion problems. Water transportation could become a vital resource to meet the nation's freight demands. Although it is not very prevalent now, waterways could even handle containers. Careful planning should ensure that the waterways are poised to handle more freight and that the entire support infrastructure is present to make efficient use of the waterways. We should earmark funding to enhance our inland waterway system, modernize, and plan and build facilities to expand the range of products carried to include containers.

There is a growing inland waterway and Great Lakes crisis that does not receive much coverage. For too many years there has been a lack of resources aimed at maintaining and improving this segment of our transportation network. A single barge traveling the nation's waterways can move the same amount of cargo as 58 semi-trucks at one-tenth the cost, reducing highway congestion and saving money. Of the 257 locks on the more than 12,000 miles of inland waterways operated by the U.S. Army Corps of Engineers, nearly 50 percent are functionally obsolete. By 2020, that number will increase to 80 percent. The cost to replace the present system of locks is more than \$125 billion.

Currently a big issue is dredging (*Slide 13*), as the build up of silt without mitigation has resulted in the practice of “light loading.” Lake Superior’s water level is now the lowest it has been since the mid 1920s, according to Environment Canada’s Level news, and its level has been consistently below average since 1998. Lakes Michigan and Huron’s levels are also below average, and have been since 1999. Those levels are expected to remain below average for the foreseeable future. Carriers estimate that three out of four cargo shipments moved in the past year were less than full—out of operational necessity, not lack of cargo! Lost inches mean lost efficiencies. The lost tonnage adds up fast, for the average ship each foot of light loading represents 1,212 tons of lost cargo or roughly 12,120 tons per trip, or 1.2 million tons per year. This means more trips, more fuel used, more time needed to move goods, or worse yet goods that weren’t moved. Lower water levels also present challenges for navigation and increase hazard levels.

Midwest Energy Resources Company (MERC), a coal shipper, has the capacity to annually ship 25 million tons of low-sulfur western coal to Great Lakes power plants and projected the loading of only 22 million tons in 2006 because of capacity issues. MERC says that the 1,000-foot-long vessels they typically use are losing as much as 18 inches of loaded draft. When these vessels forfeit 18 inches of draft, they leave approximately 4,500 tons of coal at their dock, or as much as 6.5 percent of their carrying capacity on each and every trip. Put into perspective, MERC loaded 412 total vessels in 2005, of which 333 vessels, or 81 percent, were 1,000-foot-long vessels. At 4,500 tons lost per loading, that amounted to almost 1.5 million tons lost, or the equivalent of one 1,000-foot-long vessel in service to the MERC terminal for six months.

The main reason dredging on the Great Lakes is inadequate to meet the needs of commerce is lack of funding. The U.S. Army Corps of Engineers' budget has been static or declining for decades. It is estimated that it will cost more than

\$200 million just to restore the Great Lakes navigation system to its previous depth.

Summary

Summarizing, U.S. business logistics costs were equal to 9.9 percent of nominal GDP in 2006. Transportation costs rose 9.4 percent in 2006, now accounting for 6 percent of nominal GDP. Costs were up for virtually every component of business logistics costs. Interest rates are much higher than in recent years, in fact they are up over 50 percent over last year's rate. Inventory growth and higher inventory rates pushed inventory carrying costs to a record level, jumping 13.5 percent in 2006. Warehousing is growing and evolving to provide more services while handling higher levels of goods (*Slides 14 and 15*).

One of the most important trends that emerged in the last couple of years is more companies viewing the big picture and trying to understand their entire supply chain, not just their link. As a result, more are trying to manage the entire chain. C-Level executives are involved and supply chain discussions now have a place in boardrooms. More companies are actively engaged in services that are non-traditional for their niche in chain. More carriers offering value added services such as warehousing or 3PL-like services. More shippers are using the resources available to them via the web to research and even chart their own shipments. Despite this 3PLs continue to flourish and grow. There seems to be plenty of room in the market space for innovators.

There has been increased dialog on the part of carriers and shippers and end customers about long term solutions to our infrastructure crisis. Major players are ready to ante-up to help foot the bill as everyone realizes that only a solution that involves all the players will succeed. This is a major shift in policy on the part of many stakeholders in our industry, we need to continue to promote private-public partnerships for solutions and push for change now.

We have seen changes in the way logistics is carried out day to day. The new face of logistics includes new ways of managing old problems, discarding old practices and processes, and daily innovation. Many of the shifts may seem small, but the results are not inconsequential. Changes in the way we handle goods at the ports have cut back on congestion and improved efficiency. Meeting customer need has increased the absolute level of inventory in the system as well as shifted where that inventory is held. More players are becoming more diversified and all links in the chain have become more educated. We will continue to see things evolving to meet the challenges ahead.

About Rosalyn A. Wilson

Rosalyn Wilson is an independent consultant with over 30 years of experience in the transportation field. She has extensive experience in research and writing; data collection and analysis; modeling and benchmarking; and management tasks such as policy formulation, business process redesign, infrastructure systems analysis, market analysis, and institutional strengthening. Much of her experience has been in the transportation and logistics industry. Her practice focuses on the analysis of the performance of various sectors of the industry and identifying and analyzing key issues facing the transportation industry. She is the co-author of *Securing Global Transportation Networks*.

Rosalyn has worked on the *State of Logistics Report*[®], originally authored by the late Bob Delaney, since 1994. In the early years of the report she contributed data and analysis to assist Bob in the preparation of the report, and in 1999 she joined Bob as co-author of the report. In 2004, she assumed full responsibility for the report.

Rosalyn recently returned to full time transportation consulting. Prior to that she spent six years with Reality Based IT Services, Ltd. (RBIS, Ltd.), an information technology security firm and subsidiary of SYS Technologies, that operates primarily in the defense and intelligence market spaces. She has also been a senior consultant with Booz Allen Hamilton's transportation group. After forming her consulting practice she continued her association with the group, in a sub-consultant role, supporting their efforts in transport, trade, and technology both domestically and internationally. She was a director at the Eno Transportation Foundation, managing several of the Foundation's major programs and publications. While at the Foundation she helped establish and direct the activities of the Eno Center for Transportation Leadership Development and served as the Administrative Director for the Council of University Transportation Centers.

Rosalyn has extensive railroad industry experience, having served in various capacities for over 11 years at the Association of American Railroads (AAR). She

designed and maintained cost indexes reflecting changes in costs associated with railroad freight service as mandated by Congress when the industry was deregulated. Ms. Wilson developed the index methodology, collected data, calculated indexes, verified and audited railroad input data, and analyzed index fluctuations. She assisted railroads in the design or modification of data collection systems to comply with AAR instructions and to meet Interstate Commerce Commission regulations. Prior to the AAR she was a transportation analyst at the U.S. Department of Labor's Bureau of Labor Statistics.

Rosalyn has written for and served as editor for many publications. She was the author of *Transportation in America*, a compendium of transportation information published annually by the Eno Transportation Foundation from 1993 through its most recent edition released in 2003. She also authored the Foundation's National Transportation Organizations and served as co-editor of the *Transportation Quarterly*. While at the AAR she compiled many of the association's data publications including the *Analysis of Class I Railroads*, the *Railroad Fact Book*, and the *Railroad Ten-Year Trends*.

About CSCMP

Serving over 9,000 members worldwide, the Council of Supply Chain Management Professionals (CSCMP) is the premier individual membership association for supply chain management professionals. Through our many publications, as well as education, career development, and networking opportunities CSCMP provides its over 9,000 members, and the entire profession, what is needed to become a more effective supply chain practitioner.

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A N N U A L

STATE OF LOGISTICS

R E P O R T

18th Annual State of Logistics Report®

The New Face of Logistics

June 6, 2007

**Presenter
Rosalyn Wilson**

The U.S. Business Logistics System Cost is the Equivalent of 9.9 Percent of Current GDP in 2006

	\$ Billions
Carrying Costs - \$ 1.857 Trillion All Business Inventory	
Interest	93
Taxes, Obsolescence, Depreciation, Insurance	252
Warehousing	101
	Subtotal 446
Transportation Costs	
Motor Carriers:	
Truck - Intercity	432
Truck - Local	203
	Subtotal 635
Other Carriers:	
Railroads	54
Water (International 32 Domestic 5)	37
Oil Pipelines	10
Air (International 15 Domestic 23)	38
Forwarders	27
	Subtotal 166
Shipper Related Costs	8
Logistics Administration	50
TOTAL LOGISTICS COST	1,305

Logistics Cost As A Percent of GDP

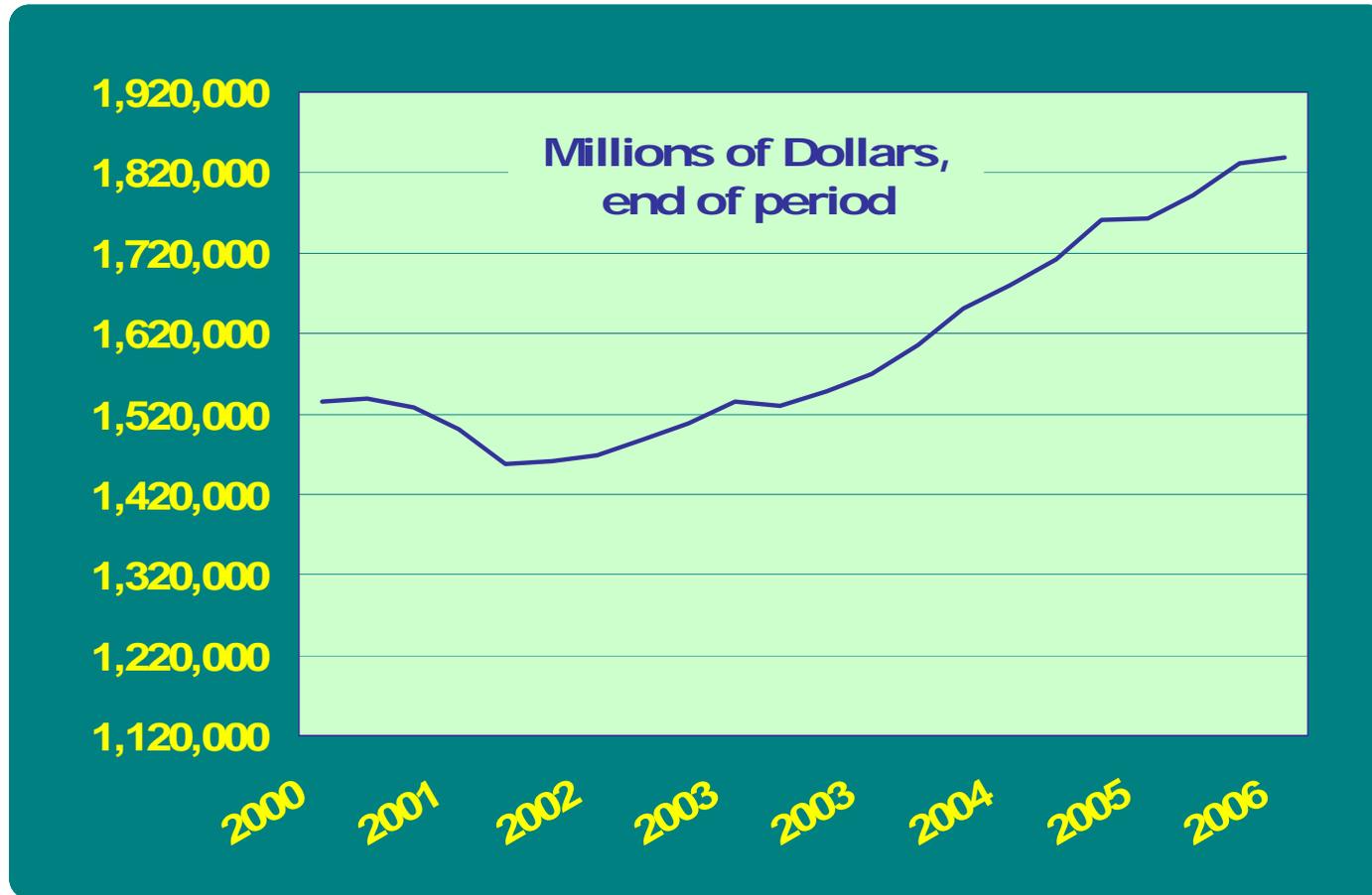


Agenda

1. The cost of the U.S. business logistics system in 2006
2. Trends
3. Summary, questions and clarifications
4. Panel Discussion



Total Business Inventories Rose 6.2 Percent in 2006



Source: U.S. Department of Commerce, Census Bureau

The Inventory to Sales Ratio Has Been Declining for Last 15 Years



Source: U.S. Department of Commerce, Census Bureau

Average Commercial Paper Rates Rise Over 52 Percent In 2006 Driving Up Carrying Costs



Source: Board of Governors of the Federal Reserve System

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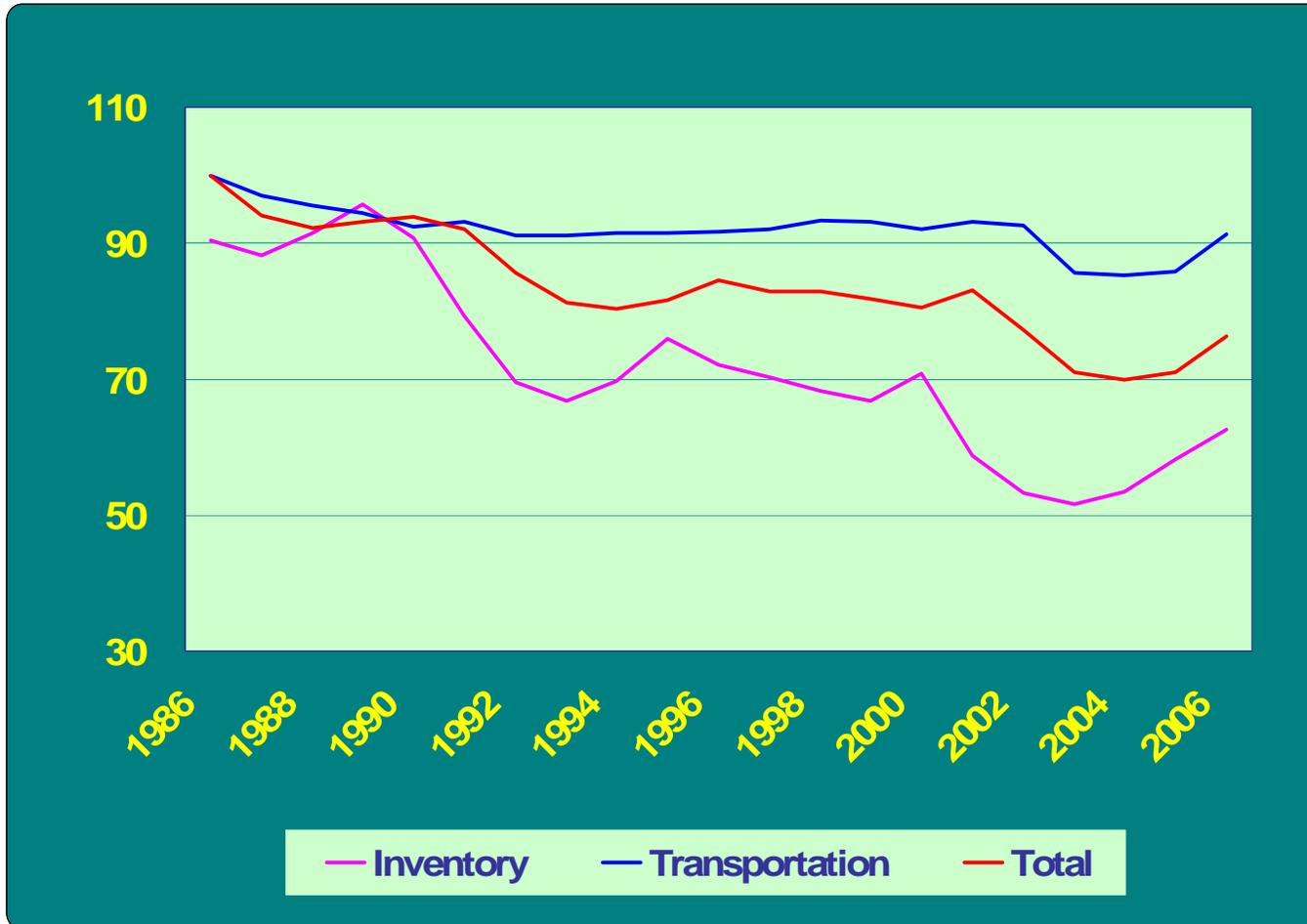
Subtotal 166

**\$809
up 9.4%**

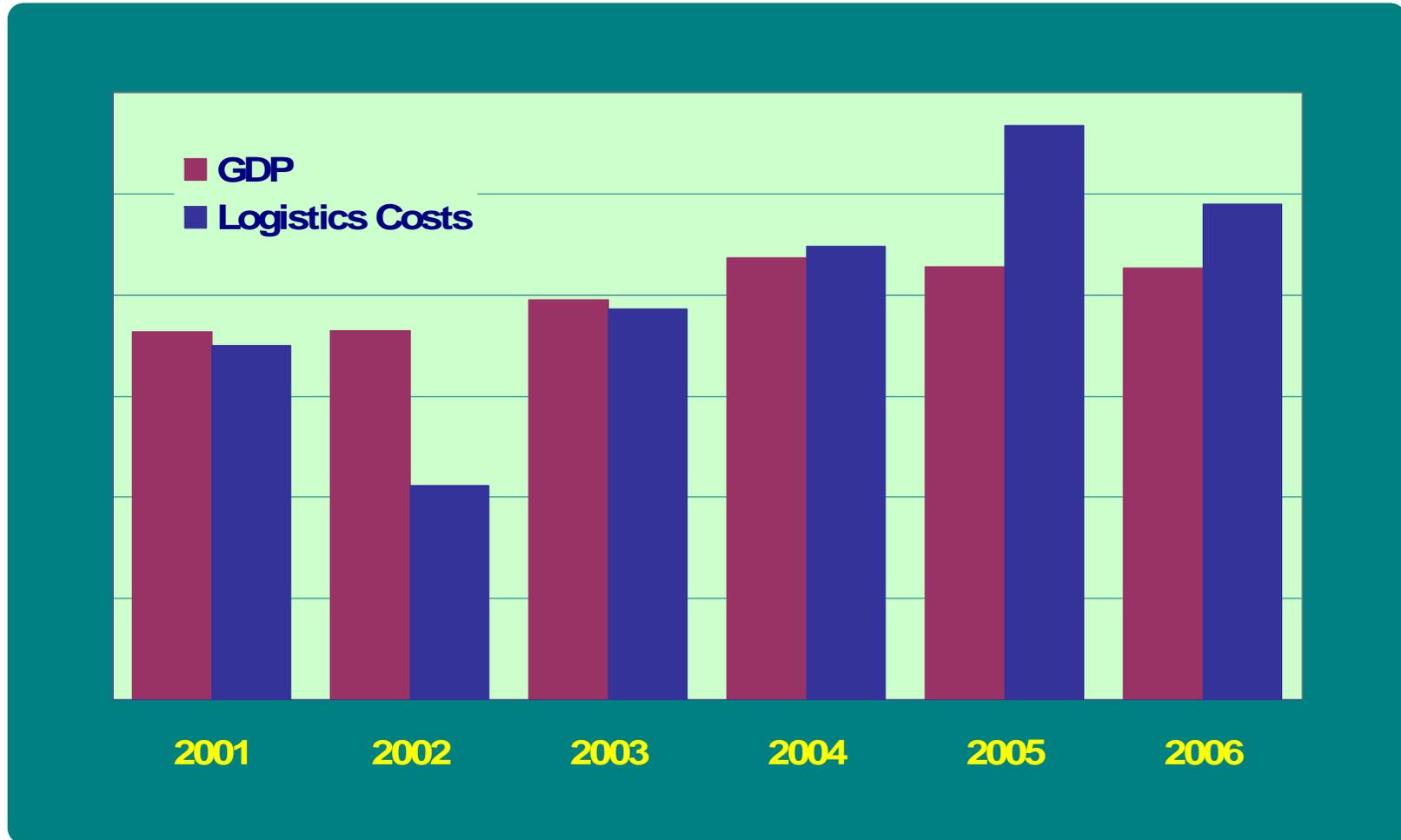
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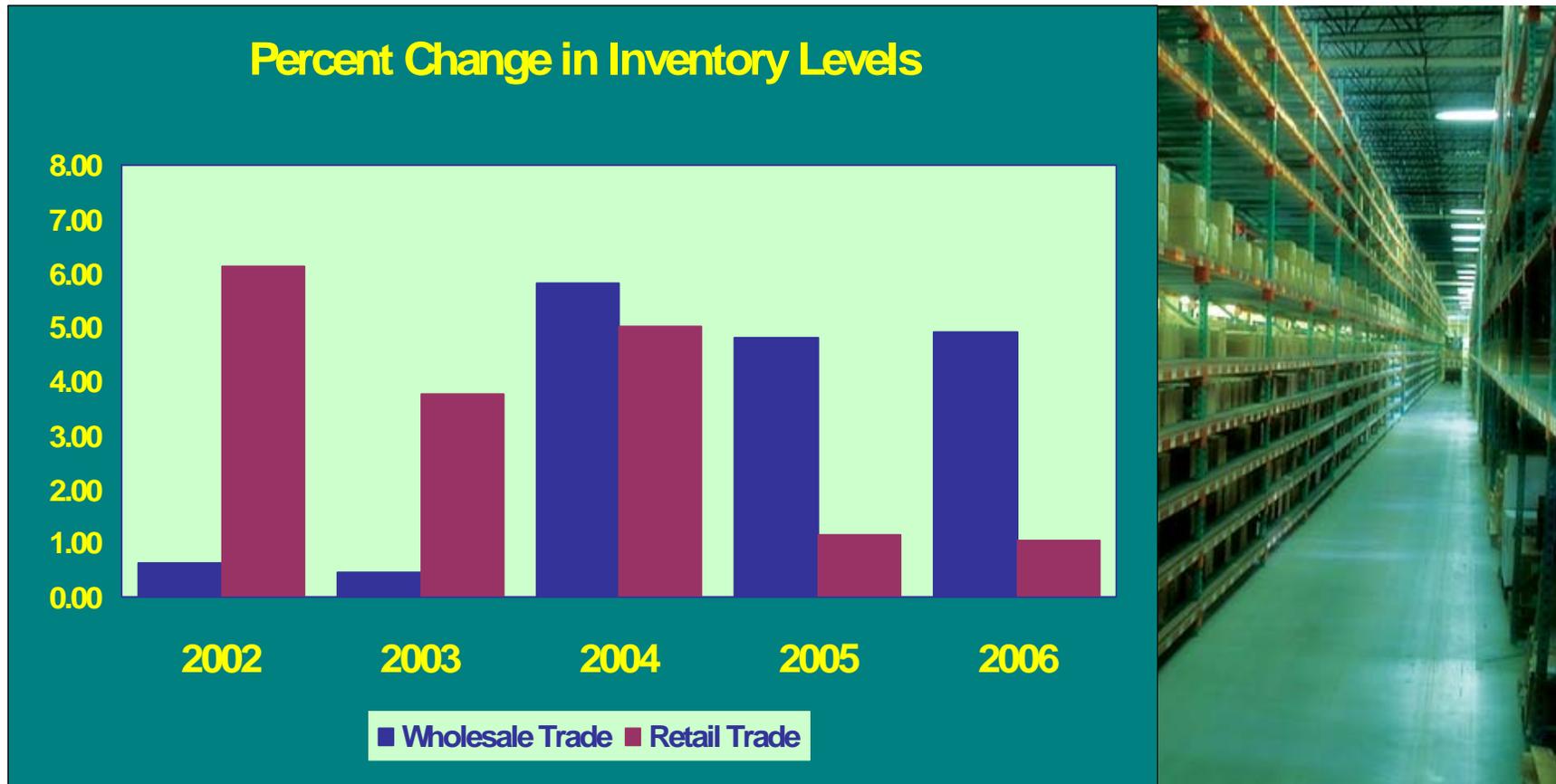
Index of Logistics Costs as a Percent of GDP 1986 - 2006



GDP Growth and Logistics Cost Growth



Retailers Are Pushing Inventories Back Down the Supply Chain



Source: U.S. Department of Commerce, Bureau of Economic Analysis

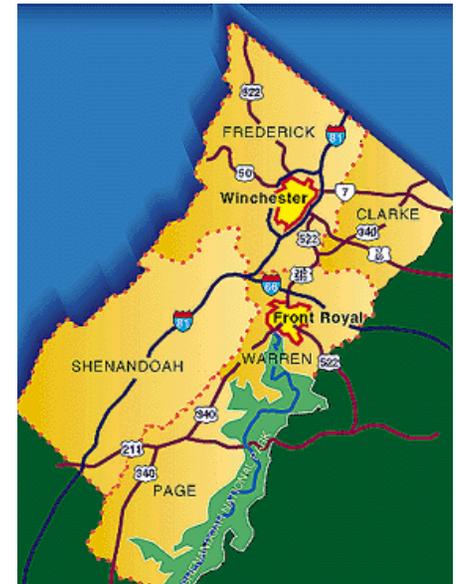
Traffic is Being Routed Through More Ports



Ports	2006	2005	2004	2003
Los Angeles	5,719,497	4,867,073	4,897,346	4,709,339
Long Beach	4,792,722	4,395,942	3,716,775	3,114,221
New York	3,672,643	3,390,308	3,146,569	2,819,407
Savannah	1,602,339	1,482,728	1,287,550	1,130,581
Charleston, SC	1,510,869	1,511,935	1,401,522	1,252,674
Norfolk	1,419,327	1,318,831	1,200,244	1,095,579
Oakland	1,410,533	1,372,231	1,192,487	1,070,474
Houston	1,289,841	1,231,186	1,090,571	943,459
Seattle	1,223,266	1,339,641	1,044,270	818,684
Tacoma	1,095,316	1,154,350	937,202	936,951
All U.S. Ports	28,555,590	26,444,652	24,187,570	21,853,267

Source: Journal of Commerce PIERS Database

Inland Ports Are Becoming A Vital Link in the Supply Chain



Virginia Inland Port

- Located 220 miles from Hampton Roads
- Handling over 35,000 movements annually
- Major customers include Home Depot and SYSCO Corp.

Inland Shipping Dredging Crisis

- Federal funding inadequate for decades
- \$200 million plus needed to clear backlog
- “Light loading” rule of the day, 4 out of 5 cargos carried in last five years not full
- For an average ship, for every foot not loaded they lose
 - 1,212 tons per foot or 12,120 tons per trip
 - or
 - 1.2 million tons that cannot be moved each year



Summary

- **2006 Logistics Costs rose to \$1,857 billion**
- **Logistics cost were equivalent to 9.9 percent of GDP in 2006**
- **Transportation costs rose 9.4 percent and now account for 6.1 percent of nominal GDP**
- **Inventory carrying costs rose 13.5 percent and now account for 3.4 percent of nominal GDP – both increased inventories and higher interest rates contributed**

Summary

- **Fuel surcharges were a major component of Increased revenues for carriers**
- **All participants in the supply chain are more knowledgeable and more interested in participating in their supply chain solutions**
- **Innovation, even in small increments, is the key to meeting the challenges ahead**