A NATIONAL FORUM ON AGRICULTURE AND TRANSPORTATION LINKAGES

"Assessing the Importance of Transportation to Major Industrial Sectors of the U.S. Economy"

FORUM PROCEEDINGS

May 17-18, 2002
Ramada Plaza Suites
Fargo, North Dakota

Sponsored by:
American Association of State Highway and Transportation Officials
United States Department of Agriculture
United States Department of Transportation

Hosted by:
Upper Great Plains Transportation Institute
North Dakota State University
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Proceedings of the Forum
Held in Fargo, North Dakota
May 17-18, 2002

This work was sponsored by the American Association of State Highway and Transportation Officials in cooperation with the Federal Highway Administration, United States Department of Agriculture, and the United States Department of Transportation; and was conducted in the National Cooperative Highway Research Program, which is administered by the Transportation Research Board of the National Academies.

The forum summary is posted at the following Website:
http://www.ugpti.org

Upper Great Plains Transportation Institute
North Dakota State University

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OVERVIEW

Participants in the National Forum on Agriculture and Transportation, organized and hosted by the Upper Great Plains Transportation Institute in Fargo, North Dakota, May 17 and 18, 2002, focused on the proposition that a "competitive and complete transportation system is necessary for U.S. agriculture to maintain its competitive edge."

Forum sponsors included the American Association of State Highway and Transportation Officials, the U.S. Department of Agriculture, and the U.S. Department of Transportation, in cooperation with the Council of University Transportation Centers.

Forum presenters and participants came from government at all levels; the business sector, including representatives of producers, shippers and carriers of all modes, and the research community. The Forum keynote speakers were North Dakota Governor John Hoeven and U.S. Senator Kent Conrad.

Presentations and discussion at the forum highlighted new issues arising around agricultural transportation that are creating elements of a crisis. The new farm bill, homeland security needs, urban congestion around ports and infrastructure deterioration all point to the need for attention and action.

Overseas competitive investments, loss of rail lines and associated impacts on highway usage and condition all intensify the problem. The national economy is vulnerable to the health of the agriculture sector, and agriculture is vulnerable to the health of the transportation system.

Raw agricultural output constitutes only about 2 percent of the national gross domestic product, and the number of farms has decreased to about 1.8 million. Agriculture's share of the total U.S. economy, however, is about 7 percent, and if all related industries are included, almost 30 percent. But these figures do not tell the whole story. Other emerging sectors belong under the rubric of agriculture, or what might be called "natural resource-based industries." Agriculture is a leading source of U.S. exports and an important marketing "wedge" for other exports.

Agriculture and transportation are mutually interdependent. The agriculture sector is the largest user of transportation services in the nation. Agriculture could not respond to domestic and international needs without an efficient and effective transportation system, and agricultural products provide the volume of business that transportation modes need to develop and innovate.

U.S. production and consumption patterns are changing, with production following lower cost inputs and consumption following the national population shift to the southeast and southwest. A responsive transportation system must be available to serve as the connector and conduit for future movements.

The country depends on the services of the transportation sector, but changes that weaken the performance of that sector as it services agriculture can be seen. Both public and private providers and users need to search for improved investment commitments and levels. Investment dollars should follow the source of those dollars rather than be siphoned off for other needs. The loss of private investment in rail lines, deterioration of waterways, and trucking firm bankruptcies put even more pressure on the need for public investment.

U.S. agriculture has enjoyed an efficient transportation and marketing system that has enhanced its competitiveness in world markets. In view of improvements in competing countries' transportation and marketing infrastructure, it is important that the United States be vigilant regarding its transportation system to remain competitive. In the new global economy, system superiority is more important than product superiority. Transportation represents a critical value-added process within the agricultural supply chain.

U.S. agriculture is specialized. Each region produces a few things and imports many things. Without a high quality transportation system, each region would have to be more self-sufficient, with higher food prices, less selection, and less efficient uses of resources.

Institutional change, the way sectors and firms and business and government look at each other in their partnerships, is seen as the most cost effective approach to improve transportation capacity, with all sectors together in the need for a dynamic transportation system with new infrastructure and new information. Planning and partnerships are the path to achieving a transportation system that serves agriculture and an agriculture industry that serves the nation.

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The Agricultural Transportation in Constant Adaptation

Michael V. Martin & Richard Beilock
University of Florida

"In the absence of barriers to free movements of commodities, interregional price relationships respond to changes in supply and demand in different regions and to changes in transfer costs." *William Tomek and Kenneth Robinson in Agricultural Product Prices*

"In a very real sense, the marketing sector does not produce food; it produces food services that are essential to a modern society." *Peter Helmberger and Jean-Paul Chavas in the Economics of Agricultural Prices*

INTRODUCTION

For those directly involved in U.S. agriculture and related natural resource industries, the significance of this powerful but silent sector is well known. But because agriculture has quietly served for centuries, its contributions to our economy, social stability and environmental quality are not well understood by the public at large. This paper will briefly review the multiple contributions made by agriculture to the nation's well being. It will then offer an overview of special roles transportation plays in serving agriculture and, in turn, the greater good.

AGRICULTURE IN THE ECONOMY

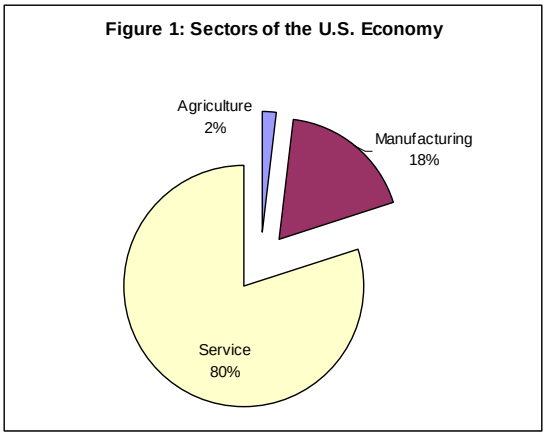
We all know the story. America's economy has moved rapidly away from agriculture as traditionally defined, toward service, hi-technology, manufacturing, etc. As indicated in Figure 1, production agriculture now contributes about 2 percent of national gross domestic product (GDP). Over time, the number of farms has declined to about 1.8 million and, in turn, farm population has decreased as well. Some would suggest that because farming now accounts for a small piece of the natural economy, agriculture is no longer an important economic sector. We energetically argue that such a suggestion is fundamentally in error. In many ways, agriculture is more important now than ever before. Let us briefly outline the core of our argument in this regard.

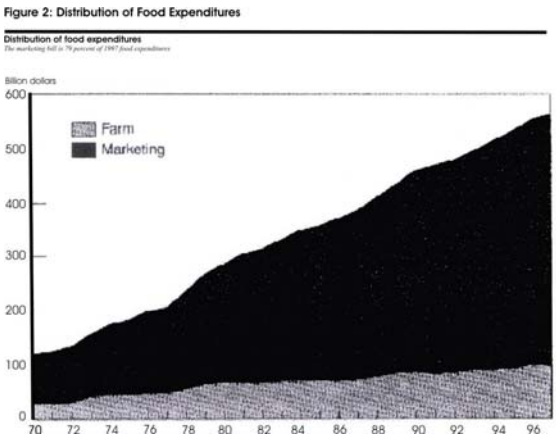
Understated measures

It appears that our means of measuring the size of the agricultural sector have not entirely kept up with its change. Most available statistics do not fully capture: (a) rapid growth in the "green" (non-food) sub sector, (b) recreational contributions of agriculture such as agro-tourism, golf (turf grass) etc., or (c) aquaculture, a growth industry in many parts of the country. Moreover, we do not recognize, through the statistics, "forestry" as part of agriculture.

It is not inappropriate to include golf courses, and landscape maintenance as part of agriculture as well. When all these "non-traditional" segments are accounted for, agriculture is actually a dynamic, growth sector in the U.S. Economy. In Florida, for example, our fastest growing industry is the commercial/landscape plant production. It is outpacing tourism, hi-tech and services.

For the sake of discussions such as this one, it would likely be useful to aggregate the data so as to describe a more inclusive "natural resource based industries" sector.





Basis for other industries

Even when one considers only food production agriculture, its economic impacts reach well beyond the farm. Figure 2 shows the relationship between the farm level and all other activities that go into producing and delivering food. It is clear that rather broad food manufacturing, wholesaling, retailing, transporting and serving industries are built in a basic production platform.

Furthermore, farmers are large users of a wide range of inputs including seed, chemicals, fertilizers, equipment, energy, consulting services, and credit.

Safe, reliable food supply

Though obvious, it's important to note that the American agricultural food system is among the world's most productive, reliable, safe and efficient. Consumers benefit from the enormous diversity of food products and their relatively low prices. The average share of disposable income spent on food is no where lower than in the Untied States. American farmers not only feed the nation, they do so with sufficient efficiency to free up a large portion of consumer income for purchase of non-food goods and services.

What is truly remarkable is that the U.S. agricultural sector has been able to keep pace with increasing demands driven by: (a) population growth both at home and abroad, (b) rising consumer incomes, and (c) ever-changing consumer tastes and preferences. And in doing so, agriculture has released substantial land and labor to other sectors thanks to incredible improvement in farm level productivity.

The fact that we can efficiently feed this nation and assist in feeding the world with a relatively small share of our economy and labor supply, should be the cause of great celebration. But it should not be taken for granted.

Exports and balance of payments

Agriculture has long been a leading source of U.S. export sales. Agricultural export sales for 2002 are projected to be near $55 billion. More significantly, agricultural trade reliably generates a positive balance of trade thereby offsetting somewhat years of overall balance of trade deficits. The U.S. consistently exports 38 percent more in agricultural commodities and products than it imports. Even in light of substantial trade distorting interventions around the world, U.S. agriculture remains highly competitive in global markets. This is a testament to the progressiveness of American farmers, the efficiency of the distribution/transportation system and the continued availability of new technologies.

Marketing "wedge" for other U.S. exports

Agricultural commodities and products were among the first traded with several countries that have become leading trading partners in a variety of other non-agricultural items. In this sense, agriculture served as a "wedge" to open wider trade relations. Certainly agriculture was the forerunner of our now broad and robust trade with Japan, Korea, China, India and a number of others. The commercial relations established as part of agricultural trade now serve many other industries.

Environmental stewardships

No doubt there are cases and examples where agricultural production has, or is having, negative impacts on the natural environment. However, on balance there is sound evidence that agriculture makes real positive contributions to environmental protection in at least three ways.

First, production techniques and practices have improved to the point that their externalities are actually positive. In central Florida, for example, adoption of new irrigation technologies has resulted in citrus producers contributing clean water to increased aquifer recharge. In the upper Midwest, adoption of "best management practices" has reduced surface water run off and sedimentation to levels below those accruing when land is left unfarmed.

Second, in many parts of the country agriculture serves as an economically and environmentally viable "buffer" between rapidly urbanizing areas and fragile eco-systems. Again, in South Florida, agriculture is a much kinder neighbor to the Everglades than condominiums.

Third, increased productivity has meant that agricultural output has risen while using even fewer acres of land. Note that even with land entering the CRP, output of crops which used to use this land has increased.

Rural socio-economic stability

While agriculture is not, and should not be, the primary engine of rural economic development, it remains a central force in the rural economies in many parts of the U.S. Every state and virtually every rural community is seeking greater economic diversity. For many rural areas agriculture is the only reasonable and viable alternative. In the Midwest and much of the south, agriculture represents the "comparative advantage" sector for many sub regions. Maintaining a prosperous agricultural sector is essential even as policymakers seek to attract other industries.

A piece of American culture

There remains a good piece of "traditional" agriculture imbedded in our national identity and self-image. Even as the U.S. has become urban-suburban, policymakers continue to focus attention on agriculture and rural issues. Americans, several generations removed from the farm, embrace the values and ethics associated with our agrarian heritage.

AGRICULTURAL TRANSPORTATION

The relationship between agriculture (broadly defined) and transportation is complex and mutually dependent. American agriculture could not have developed nor could function now without the parallel development of an adaptable, efficient transportation system serving both interstate and international commerce. As we know, agricultural markets have unique space, time and form dimensions. In each case, an efficient, effective transportation system is necessary to meet consumer demands for food and related products at the right place, at the right time, and in the right form.

Most agricultural crops are produced in a specific region(s) but are consumed broadly. Citrus fruit, for example, is produced in Florida but consumed everywhere. An efficient, flexible and responsive transportation system is essential to ensure that the special challenges of agricultural/food production and consumption are addressed. Both consumers and producers benefit from the narrow marketing margins resulting from efficient transportation.

Many agricultural products are seasonally (discretely) produced but continuously consumed. This means that an effective storage and intertemporal price mechanism is necessary. Likewise, an available transportation system is also required to address the temporal dimension of agricultural markets.

While relatively few agricultural commodities are consumed in the raw form, some transformation or processing must occur. Transportation and handling can impact product quality and safety. In Florida we ship fresh produce nationwide. Fast, clean, dependable transportation is essential if these products are to meet consumer expectations. Some products require refrigerated or atmosphere controlled transportation. In many ways the transportation system serves the space, time and form dimensions of most agricultural markets.

Transportation considerations play a significant role in determining where processing plants are located. In general, transportation costs for raw agricultural inputs are relatively high if processing tends to occur near the source of supply. If raw crops can be shipped at relatively low costs, processing will more likely locate closer to consumer centers. In this way, transportation can influence local economic development beyond the impacts of basic agricultural production.

Agricultural transportation makes other less direct but still important impacts to the economy. For example, transportation volume associated with moving agricultural and food products contribute to the "critical mass" for the system as a whole. In this way, benefits from economies of size and scope created, in part, by the transportation of agricultural crops or products, accrue to other non-agricultural shippers.

Corn and soybean shipments by barge on the Mississippi River make available low cost backhaul opportunities for other bulk commodities such as fertilizer and coal. Agricultural shipments through the Port of Portland, Oregon, serve to attract international transportation capacity and infrastructure investments that serve shippers of non-agricultural freight. Thus, efficient international transportation enhances American global competitiveness for all commerce and the shipment of agricultural freight is a large segment of the traffic necessary to sustain the system.

The U.S. agricultural transportation system is remarkably well run and responsive. The confusion which followed deregulation seems now to be well past. Shippers and consumers benefit from intramodal competition, intermodal competition and intermodal coordination.

CHANGES AHEAD

To ensure the transportation system continues to serve agriculture producers and consumers, and in turn, the national economy, several challenges must be addressed. First, agricultural production continues to change and shift. Cropping areas are being displaced by urban development. Responses to market forces result in a changing crop and product mix. The transportation and logistic system must be dynamic and flexible enough to effectively adapt to these changes.

The long-term challenge of linking distant and dispersed production regions to consumer regions will change with the on-going shift of national population to the southeast and southwest. On one hand, concentrated destinations could lead to more efficient economies of size shipments. On the other hand, transportation congestions and infrastructure which may result could have serious adverse consequences.

Second, other uses of the transportation infrastructure may create inefficiencies or a "crowding out" effect for agricultural shipping. Highway congestion, for example, can add time and cost to the efficient movement of agricultural products. In the case of perishable products, added time is added risk. A relatively modest increase in delivered (CIF) price of an agricultural product can significantly impact competitiveness. Greater competition from overseas suppliers has exacerbated the adverse affects of inefficient transportation.

Third, rail branch-line abandonment and under investment in roads and bridges threaten the viability of agriculture and the farm economy in some rural areas. In the coming years, on both the Mississippi and Columbia Rivers, reconstruction and renovation of locks and dams will be required if we are to avoid loss of agricultural exports.

Even airport congestion can become a constraint to agricultural commerce as increasing volumes of high valued products are shipped by air. In Florida, cut flowers and ornamental fish make up a growing share of the state's airfreight.

Fourth, there are significant differences in the way states regulate and tax transportation. This, of course adds cost to interstate transportation. Some level of interstate consistency in transportation policy between states must be achieved.

Fifth, technological innovation in transportation must continue to ensure that each component in the system maximizes responsiveness. The advantages of global positioning technologies, which are central to the creation of "intelligent transportation systems" (ITS), will certainly drive improvements in transportation services for all users. Technological advances in energy efficiency and alternative energy sources will be a major agenda item for transportation users and transportation providers in coming years.

Sixth, in many complex and profound ways, the transportation system which serves agriculture is intimately connected to other economic and environmental concerns. For example, the system of locks and dams on the Mississippi and Snake-Columbia Rivers is part of a regional flood control and energy production system. The on-going concern over saving the Columbia-Snake River salmons has transportation implications. Maintaining international ports and creative waterways in many instances requires dredging and other modifications to the natural hydrology. We must seek ways to balance transportation needs with environmental issues and concerns.

Seventh, as noted above, freight transportation frequently competes with other uses of the essential infrastructure. Recreational users may compete for use of the waterways. Passenger traffic may compete for use of highways,

roads and railways. Moving people may compete with moving cargo at airports and in the sky. Thus, policies and innovative approaches to multiple use coordination is essential.
Eighth, in Florida we are particularly sensitive to the relationship between increased international commerce and the introduction of new diseases and pests. The Florida climate allows for the rapid growth of many things both good and bad. Every time a tire hits the runway at Miami International Airport or a ship docks in Tampa Bay, there is the possibility of introducing a new disease, invasive plant or insect. In recent years vehicles, passenger and commercial, have been the vector for things like citrus canker. Thus, the transportation system must be managed and monitored in such a way as to minimize the introduction or movement of crop destroying organisms.

Ninth, in the post September 11 era, we have become much more cognizant of potential targets for terrorists. Undoubtedly critical parts of the transportation system, if disabled, could have profound impacts on national security and economic stability. We must be constantly diligent in protecting the security of the transportation systems.

Tenth, the consuming public has become increasingly aware of food quality issues, real or perceived. The rapid growth in genetically modified crops has resulted in calls for identity preservation and thus shipment segregation. Much of the agricultural transportation system was designed to move large volume bulk, and seemingly homogeneous commodities. In some instances, the transportation and logistics system may have to adjust to accommodate consumer's desires for quality assurance and identity preservation.

A FEW OBSERVATIONS FROM FLORIDA

States like Florida face a few agricultural transportation challenges generally not experienced in the agricultural heartland. As noted above, transportation vehicles can serve as a vector for pests and disease.

Because Florida's agriculture is so diverse, no single crop (or group of crops) utilizes a substantial amount of transportation capacity. The largest single crop, citrus, occupies about 850,000 acres and produces 13.5 million tons of output annually. In Iowa, corn and soybeans utilize 22 million acres and produce nearly 60 million tons of freight. This means individual shippers (or groups of shippers) in Florida may be in a relatively weak bargaining position when negotiating rates or access.

Along with citrus Florida produces: sod, nursery crops, grass seed, tomatoes, potatoes, peppers, strawberries, sugar cane, peanuts, cattle, dairy products, eggs, broilers, tobacco, shellfish, clams, and sweet corn. Volumes are relatively small and much of Florida's output is sold into northern fresh produce markets. This means the vast majority of shipments from Florida are by truck. Truck shipping rates are highly sensitive to backhaul traffic and energy prices among other factors.

Because Florida has several prominent ocean ports (Miami, Ft. Lauderdale, Tampa and Jacksonville), the state's agricultural shippers often have to compete for transportation services with thru traffic coming into or going out of the ports.

As suggested earlier, Florida's population is growing rapidly. Today there are 14.7 million permanent residents and approximately 3 million seasonal residents. By 2015, the permanent resident population is expected to reach 20 million. About 50 million tourists visit the state annually. In some areas (Miami-Palm Beach, Orlando, Tampa-St. Petersburg) the volume of auto passenger traffic is overwhelming highway capacity. This means that truckers frequently face costly delays.

Concerns over the fragile nature of Florida's coastal eco-system are leading to increased regulation of shipping through its ports. Any change in international commerce will have an impact on agriculture and agricultural transportation.

RESEARCH AGENDA FOR UNIVERSITIES

There are still a number of issues in agricultural transportation that call for public sector university research. The research agenda for universities is a broad one. Let me briefly suggest a few areas where universities can (continue to) make meaningful contributions. They are:

- Better understanding of the relationship between a wide range of public policy interventions and the efficiency and responsiveness of the transportation system.
- Better understanding of the role of agricultural and related transportation in the larger transportation complex.
- Develop or improve technologies for maintaining product quality and identity in light of changing consumer needs and expectations, including post-harvest handling.
- Develop technologies and strategies for improving intermodal and intramodal coordination for smaller unit shipments.
- Integration of handling and transportation into crop development and improvement research.
- Continued improvements in the application of GPS/GIS technology in the further development of ITS.
- Analysis of the impacts of transportation infrastructure investments or disinvestments on agriculture and rural community development.

Summary and Conclusion

In summary, let me re-emphasize my central messages:

- Despite how some might interpret the data agriculture remains, and will remain, a powerful part of the nation's economy, making both direct and indirect contributions.
- Contemporary and future U.S. agriculture will depend heavily on a responsive, efficient transportation system serving both domestic and global shippers and consumers.
- Agricultural traffic will continue to play a major role in sustaining and advancing America's complex transportation system.
- American agriculture continues to innovate and change. On-going shifts in production and consumption areas, along with changes in consumer expectations and demands and technology will require the transportation system to adapt and respond.

Finally, there is no doubt that the transportation system, which serves the nation's diverse and dispersed agricultural sector, will have to continually adapt to new policies, new products, new expectations and new constraints. To successfully do so, research, development and implementations will be required. Universities across the country can and should make meaningful contributions in meeting this requirement.

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General Overview and Evaluation of the Transportation Network Critical to the Agricultural Sector

Michael W. Babcock, Kansas State University
Richard Beilock, University of Florida
James Dunn, Pennsylvania State University

THE U.S. TRANSPORTATION NETWORK AND AGRICULTURE

The three transportation modes that ship U.S. food and agricultural products are trucks, railroads and water carriers. In some markets these carriers compete with each other while in others they cooperate. The railroad infrastructure (tracks, bridges and terminals) is privately owned and operated, while the highways and waterways are publicly owned and partly financed by motor and water carriers.

As indicated by Table 1, the U.S. highway system in 1999 was composed of 3.9 million miles of roads, 3.1 million of which were in rural areas. According to data published in *Transportation in America, 2000* (Eno Transportation Foundation Inc.) and *American Trucking Trends, 2000 edition* (American Trucking Association) intercity trucks transported 491 million tons of farm products and 409 million tons of food products.

Table 1

U.S. Highway Mileage, 1999
By Functional Class and Urban/Rural

Functional Class	Miles	Urban	Rural
Interstate	46,317		
Other Freeways and Expressways	9,125		
Arterial[1]	378,924		
Collector[2]	792,652		
Local[3]	2,690,222		
Total	3,917,240	846,059	3,071,181

1. Arterial highways generally handle the longer trips.
2 Collector roads collect and disperse traffic between the arterial roads and the lower system roads.
3. Local roads primarily provide direct access to residential areas, farms and other local areas.

Source: U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States: 2001*, p. 675.

The U.S. railroad industry is composed of three classes of carriers - Class I, regional and local (Table 2). In 2000, the Class I's were only 1.4 percent of the railroads but operated 71 percent of the tracks, and accounted for 88 percent of the industry's employees and 91 percent of its freight revenue. According to *Railroad Facts, 2001 edition* (Association of American Railroads) the U.S. railroad industry in 2000 originated 136 million tons (1.4 million carloads) of agricultural products and 94 million tons (1.4 million carloads) of food products.

Table 2

U.S. Railroad Industry, 2000
(Revenue in Millions of Dollars)

Type of Railroad	Number of Railroads	Miles Operated	Employment	Freight Revenue
Class I	8	120,597	168,360	$33,083
Regional	35	20,978	11,254	1,743
Local	517	28,937	12,194	1,456
Total	560	170,512	191,808	36,282

Source: Association of American Railroads, *Railroad Facts 2001 Edition*, p. 3.

The U.S. waterway system consists of 25.7 thousand miles of navigable waterways (Table 3). The largest component of the system is the Mississippi River System which is composed of the main channels and all tributaries of the Mississippi, Ohio, Illinois and Missouri Rivers. According to data published in *Waterborne Commerce of the United States, Part 5 National Summary, 1999* (U.S. Army Corps of Engineers), water carriers transported 100 million tons of food and agricultural products in domestic commerce (primarily corn, wheat and soybeans) and 188 million tons in foreign commerce (mostly exports of grain and oilseeds).

Table 3

Navigable Lengths of U.S. Waterway Routes
(Miles)

Waterway Group	Length (Miles)
Mississippi River System[1]	8,954
Atlantic Coast Waterways[2]	5,752
Gulf Coast Waterways[3]	4,294
Pacific Coast Waterways[4]	3,758
Atlantic Intracoastal Waterway[5]	1,234
Gulf Intracoastal Waterway[6]	1,137
Great Lakes	490
All Other Waterways	91
Total	25,710

1. Includes the main channels and all tributaries of the Mississippi, Ohio, Illinois and Missouri Rivers.
2. Excludes Atlantic Intracoastal Waterway from Norfolk, Virginia to Key West, Florida, but including New York State Barge Canal System.
3. Excludes Gulf Intracoastal Waterway from St. Marks River, Florida to the Mexican border.
4. Primarily the Columbia-Snake River System.
5. Includes mileage from Norfolk, Virginia to Key West, Florida.
6. Includes mileage from St. Marks River, Florida to the Mexican border.

Source: Coyle, John J., E.J. Bardi and R.J. Novack. *Transportation*, 5th Edition, p. 152.

TRANSPORTATION OF CORN, WHEAT AND SOYBEANS

Of all U.S. grains, corn has the greatest transportation demand due to its large production. Corn has the largest acreage of any grain crop and per-acre yields in some areas average as much as four times that of wheat or soybeans. According to *Transportation of U.S. Grains* published by U.S.D.A. in 1998, 217.5 million tons of corn were transported in 1995 compared to 64.6 million for wheat and 70.5 million for soybeans. Thus any discussion of U.S. grain transportation must begin with corn.

Corn

Table 4 displays U.S. corn supply and disappearance for the crop year beginning in September 1999. On the supply side, there are virtually no imports so the total 1999 supply of 11,233 million bushels is the sum of beginning stocks (1,787 million bushels) and production (9,431 million bushels). On the demand side, nearly 60 percent of the corn disappearance is accounted for by livestock feed, with both exports as well as food, alcohol and seed each accounting for about 20 percent of total disappearance. The largest food use of corn is high fructose corn syrup (HFCS), employed as a sweetener in many food products, especially soft drinks. Alcohol is blended with gasoline to produce "gasahol."

Table 4

U.S. Corn Supply and Disappearance
Crop Year Beginning September 1999
(Millions of Bushels)

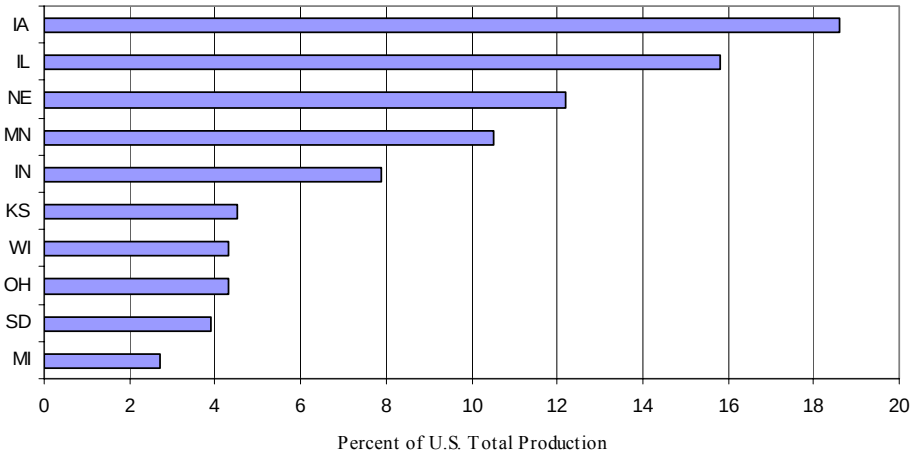
Supply		Disappearance	
Beginning Stocks	1,787	Feed and Residual	5,664
Production	9,431	Food, Alcohol and Seed	1,913
Imports	15	Exports	1,937
Total Supply	11,233	Total Disappearance	9,514

Source: U.S. Department of Agriculture, *Agricultural Statistics 2001*, p. I-25.

Although corn is produced in nearly every state, production is concentrated in the Corn Belt. Figure 1 contains the percentages of U.S. 1999 crop year corn production accounted for by the top 10 corn producing states (data for Figures 1 and 2 can be found in Appendix Table 1-A).

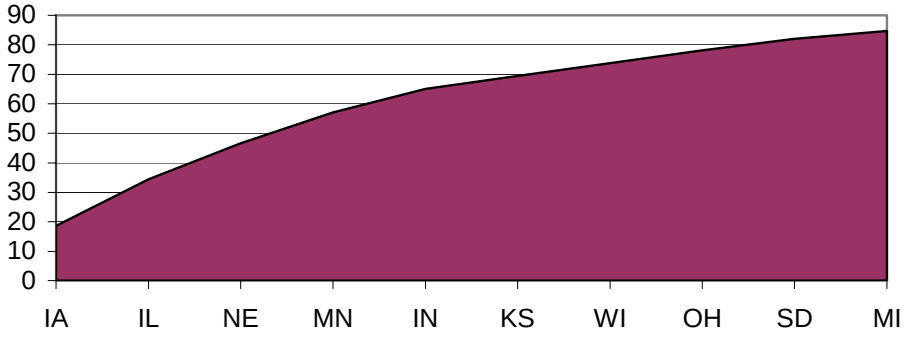
These 10 states accounted for about 85 percent of total U.S. corn production (Figure 2). However, further examination of Figure 1 reveals that the top five states of Iowa, Illinois, Nebraska, Minnesota and Indiana collectively account for about two-thirds of the national output. Most of the states in the top 10 are traditional corn producing areas. However, Kansas (usually considered a wheat state) has rapidly increased corn production in recent years and was ranked sixth in 1999 crop year production.

Figure 1
Top 10 Corn Producing States, 1999 Crop Year



Source: U.S. Department of Agriculture, *Agricultural Statistics 2001* , p. I-25.

Figure 2
Cumulative Percent of U.S. Corn Production
Top 10 States
1999 Crop Year



Source: U.S. Department of Agriculture, *Agricultural Statistics 2001* , p. I-25.

According to the U.S.D.A. study *Transportation of U.S. Grains*, the transportation of corn differs markedly between the export and domestic markets. According to the data in Figure 3 the export market is dominated by barge transportation, which accounted for 58.4 percent of the 1995 transportation of corn to export ports. This is because water transport is low cost, and because the Louisiana Gulf region is a major corn export location and many of the states with large corn output have good access to the Mississippi, Ohio and Illinois Rivers. The states in Figure 1 that fit this description are Iowa, Illinois, Minnesota, Wisconsin, Indiana and Ohio. In 1995, railroads transported about one-third of the corn moved to export ports. Since many of the corn export shipments are moved a relatively long distance, and because motor carrier costs rise with distance, trucks play a minor role in the export transportation of corn, only 8.3 percent of the exported corn bushels in 1995.

The domestic corn transportation market is completely different from that of the export market. While barge is the dominant mode in the export corn market, it accounts for only 2 percent of the corn bushels transported in the domestic market. Railroads transported about 38 percent of the corn bushels in the 1995 domestic corn transport market. Trucks are the dominant mode in the domestic market, accounting for about 60 percent of the market in 1995. The three principal domestic corn products are feed ingredients in livestock rations, HFCS and alcohol. Many of the processing plants for these corn products are located in the Corn Belt and are not served by water transport. In addition, many of the movements in the domestic corn transport market are short hauls for which motor carriers have a cost advantage.

Figure 3
Corn Transportation Market Shares, 1995

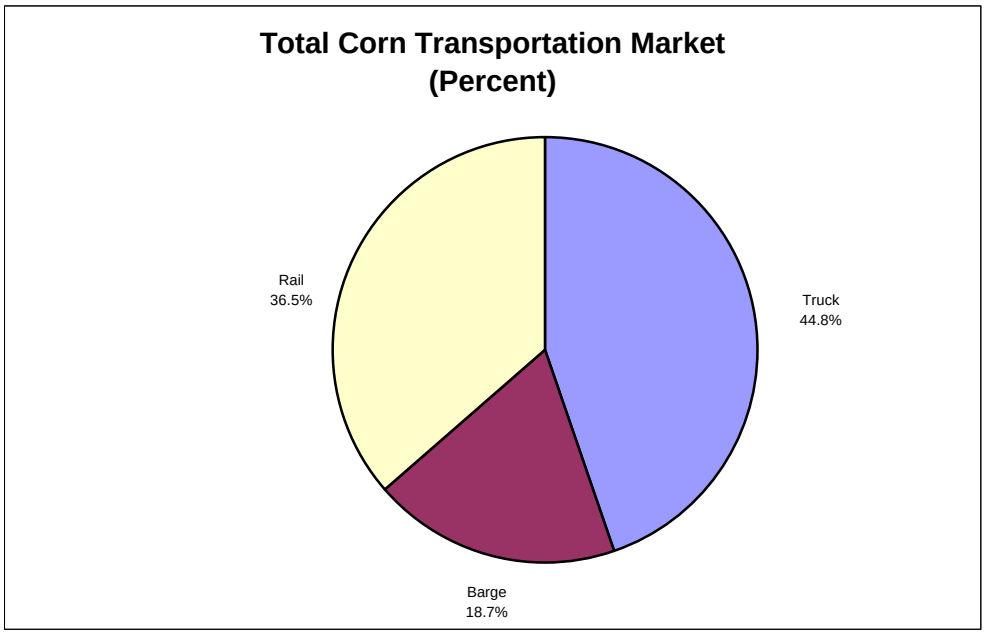
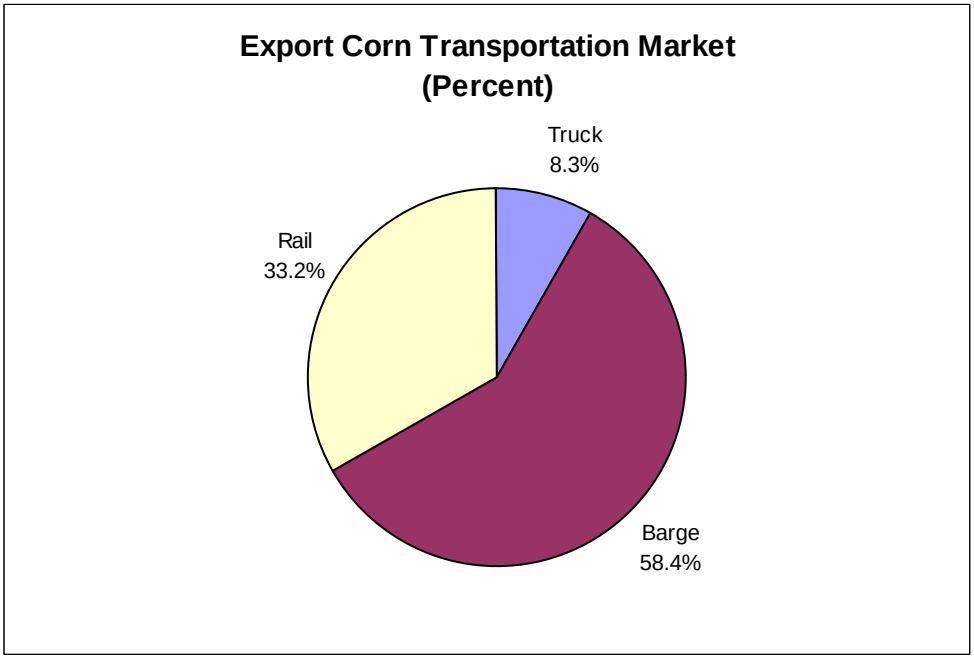
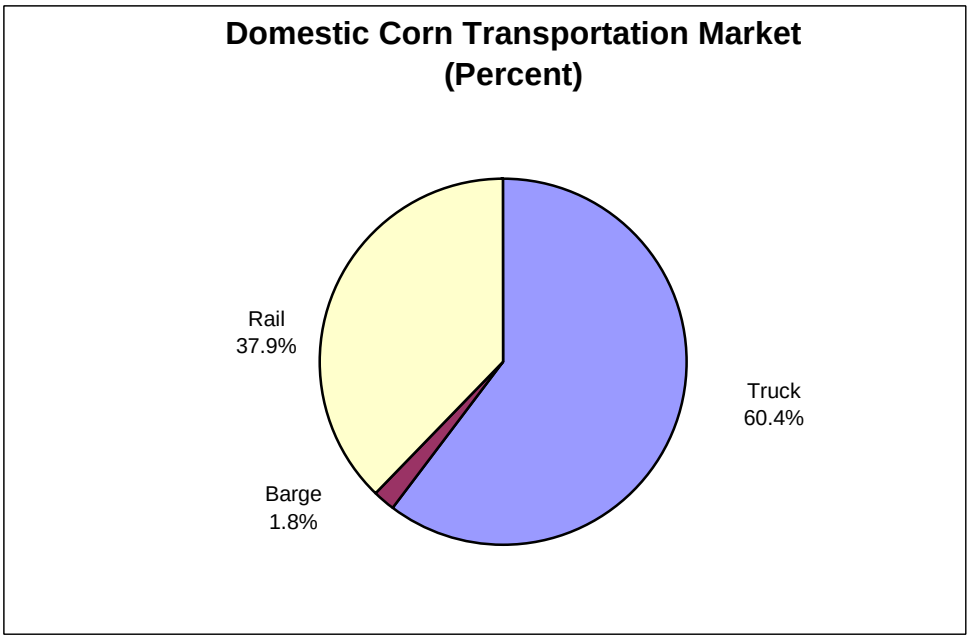


Figure 3. Continued





Source: U.S. Department of Agriculture, Agricultural Marketing Service, Transportation and Marketing, *Transportation of U.S. Grains, A Modal Share Analysis 1978-95*, p. 8.

All three transport modes played a significant role in the 1995 total corn transport market, with railroads, motor carriers and barges respectively accounting for 36 percent, 45 percent, and 19 percent of the total corn bushels transported. Using data from the 1998 report *Transportation of U.S. Grains* published by U.S.D.A., it is possible to estimate the number of rail cars, trucks and barges required to transport corn in 1995. It is assumed that a covered hopper rail car can move 100 tons of corn; a five-axle tractor-trailer truck, 25 tons; and a covered hopper barge, 1,500 tons. The modal market shares for the 1995 corn transport market are 44.8, 36.5 and 18.7 percent for truck, rail and barge respectively. Thus, in 1995 corn transportation required 793,330 railcars, 27,184 barges and 3,896,240 trucks. To put these figures in perspective, the transportation of wheat in 1995 involved 426,920 railcars, 8,102 barges and 389,520 trucks.

Corn transportation movements can be classified in three categories. These are intrastate shipments, interstate shipments to domestic locations and interstate shipments to ports for export abroad. The largest intrastate shipments occur in states with large corn production such as Iowa, Illinois, Minnesota, Nebraska and Indiana. The destinations of these shipments are livestock feeding operations, transshipment facilities, and corn processing firm locations in these states. Since these are relatively short haul movements, they are dominated by truck transport.

Interstate corn shipments to domestic locations originate in corn surplus states in the Corn Belt and are transported to corn deficit states. However, there are also substantial interstate corn shipments between the Corn Belt states. For example, the state of Illinois ranks second in corn production but also has a very large corn processing industry. Thus Illinois receives corn by truck from adjacent Corn Belt states of Iowa, Wisconsin, Indiana and Missouri.

The major interstate corn shipments to domestic locations are summarized in Table 5 and will be discussed in terms of the major corn receiving states (destinations) of each of the major sending states (origins). Corn is shipped by rail and truck from Iowa to Arkansas, Illinois and Missouri, by rail to Texas and by truck to Nebraska.

Table 5
Major Interstate Corn Shipments to Domestic Locations

Origin State - Iowa
Major Destination States
Arkansas
Illinois
Missouri
Nebraska
Texas
Origin State - Illinois
Major Destination States
Georgia
Alabama
Arkansas
Mississippi
Iowa
Missouri
Tennessee
Origin State - Minnesota
Major Destination States
Iowa
North Dakota
Texas
Tennessee
Origin State - Nebraska
Major Destination States
Colorado
Arkansas
Kansas
Oklahoma
Texas
Missouri
California

Table 5. Continued

Origin State - Indiana
Major Destination States
Illinois
Kentucky
Ohio
Georgia
North Carolina
Alabama
Tennessee

Origin State - Ohio
Major Destination States
New York
Pennsylvania
North Carolina
Tennessee

Origin State - Kansas
Major Destination States
Oklahoma
Texas

Origin State - Missouri
Major Destination States
Arkansas
Illinois
Texas

Origin State - South Dakota
Major Destination State
Iowa

Origin State - Wisconsin
Major Destination State
Illinois

Source: Fruin, Jerry E., D.W. Halbach and Lowell D. Hill. Corn Movements in the United States. University of Illinois Bulletin 793, Agricultural Experiment Station, University of Illinois at Urbana-Champaign, September 1990.

Illinois ships corn by rail and truck to poultry feeding operations in the southern states of Georgia, Alabama, Arkansas and Mississippi. The state also ships corn by truck to the neighboring states of Missouri and Iowa. Occasional corn shipments occur by barge to Tennessee.

Minnesota ships corn by rail and truck to Iowa, North Dakota and Texas but also sometimes sends corn to Tennessee by barge.

Nebraska originates corn by rail and truck to major poultry and livestock feeding states including Colorado, Arkansas, Kansas, Oklahoma and Texas. Nebraska also ships corn by rail and truck to Missouri and by rail to California.

For shipments from the eastern Corn Belt, corn is transported from Indiana by rail and truck to Illinois, Ohio and Kentucky, by rail to Georgia, North Carolina, Alabama and Tennessee, and occasionally by barge to Alabama. Ohio ships corn by rail and truck to New York, Pennsylvania, North Carolina and Tennessee.

Kansas originates corn shipments by truck to livestock feeding operations in Oklahoma and Texas. Missouri ships corn to livestock feeding facilities in Texas by both rail and truck.

Missouri ships corn by rail and truck to poultry feeding facilities in Arkansas, and also ships corn by truck to Illinois corn processing locations.

South Dakota originates substantial corn shipments by truck to Iowa and Wisconsin ships corn by truck to Illinois.

The major corn shipments to export ports will be discussed in terms of the principal corn supplying states for each export area (see Table 6). Corn is shipped to the Toledo port area (Toledo and Huron, Ohio; Erie, Pennsylvania; and Buffalo, New York) by rail and truck from Indiana and Michigan, and by truck from Ohio. The South Atlantic ports (Baltimore, Maryland; Norfolk, Virginia; and North Charleston, South Carolina) are supplied by rail corn shipments from Indiana, Ohio and Michigan.

Corn is shipped by barge from several states to the Louisiana Gulf ports (Lake Charles, Louisiana and Mississippi River) including Minnesota, Iowa, Illinois, Wisconsin, Missouri, Kentucky, Indiana, Ohio and Louisiana. Corn is also shipped by rail from Illinois and Iowa to the Louisiana Gulf port area.

The West Coast ports receive corn shipments by rail from several Corn Belt states. The Columbia River ports (Kalama, Longview and Vancouver, Washington; Portland and Astoria, Oregon) receive corn by rail from Iowa, Minnesota, Nebraska and South Dakota. Corn is shipped by rail from Minnesota, Nebraska and South Dakota to the Puget Sound ports (Seattle and Tacoma, Washington). The California ports (Sacramento, Stockton, Long Beach, San Francisco and San Diego) receive corn by rail from Nebraska.

Table 6
Major Corn Shipments to Export Ports

Port Location - Toledo[1]
Major Corn Supplying States
Indiana
Ohio
Michigan

Port Location - South Atlantic[2]
Major Corn Supplying States
Indiana
Ohio
Michigan

Port Location - Louisiana Gulf [3]
Major Corn Supplying States
Illinois
Iowa
Minnesota
Missouri
Wisconsin
Indiana
Ohio
Kentucky
Louisiana

Port Location - Columbia River[4]
Major Corn Supplying States
Iowa
Minnesota
South Dakota
Nebraska

Port Location - Puget Sound[5]
Major Corn Supplying States
Minnesota
Nebraska
South Dakota

Port Location - California[6]
Major Corn Supplying State
Nebraska

1. The Toledo port area includes Toledo and Huron, Ohio; Erie, Pennsylvania; and Buffalo, New York.
2. The South Atlantic ports include Baltimore, Maryland; Norfolk, Virginia; and North Charleston, South Carolina.
3. The Louisiana Gulf ports include Lake Charles, Louisiana and Mississippi River
4. The Columbia River ports include Kalama, Longview and Vancouver, Washington; Portland and Astoria,Oregon.
5. The Puget Sound ports are Seattle and Tacoma, Washington.
6. The California ports are Sacramento, Stockton, Long Beach, San Francisco and San Diego.

Source: Fruin, Jerry E., D.W. Halbach and L.D. Hill. Corn Movements in the United States. University of Illinois Bulletin 793, Agricultural Experiment Station, University of Illinois at Urbana-Champaign, September 1990.

Wheat

Table 7 contains U.S. wheat supply and disappearance for the crop year beginning in June 2000. Since imports only constitute about 3 percent of total supply, the total wheat supply of 3,268 million bushels is essentially the sum of previous stock (950 million bushels) and production (2,223 million bushels). On the demand side, exports account for about 46 percent of total disappearance, with food (flour) accounting for about 39 percent. The remaining 15 percent of total disappearance is attributable to feed and seed.

Table 7

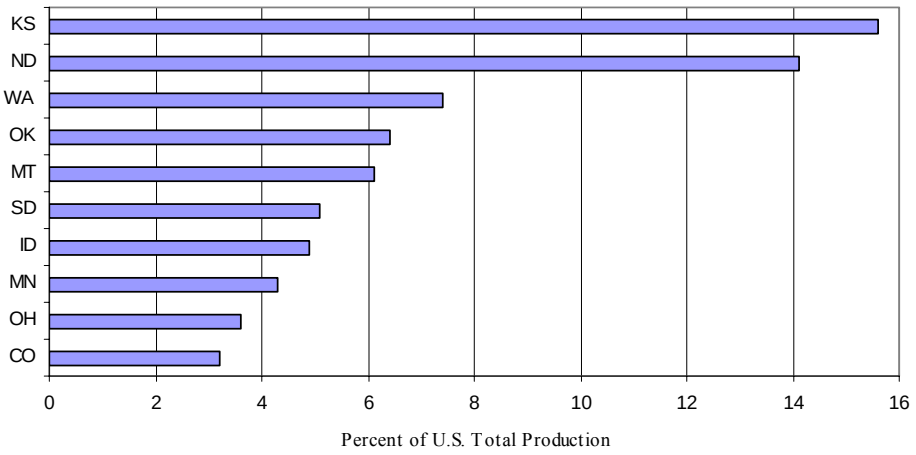
U.S. Wheat Supply and Disappearance
Crop Year Beginning June 2000
(Millions of Bushels)

Supply		Disappearance	
Previous Stock	950	Food	945
Production	2,223	Seed	84
Imports	95	Feed	300
Total Supply	3,268	Exports	1,125
		Total Disappearance	2,454

Source: U.S. Department of Agriculture, Agricultural Statistics 2001, p. I-5.

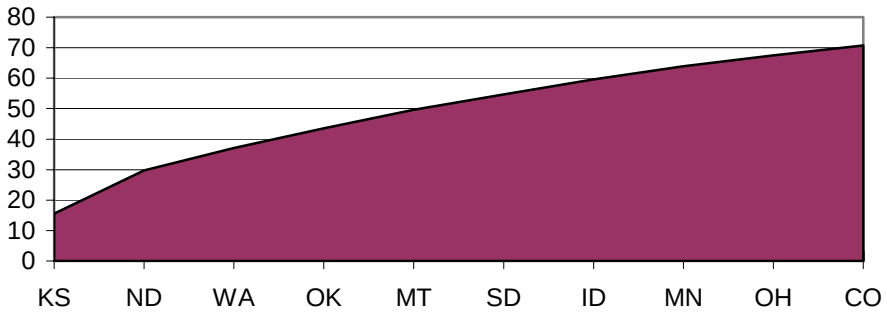
Although wheat is produced in 42 of the 50 states, the top 10 wheat-producing states accounted for about 71 percent of the national output in crop year 2000 (Figure 5). The top five states of Kansas, North Dakota, Washington, Oklahoma and Montana produced about one-half of the crop year 2000 production (Figure 4). (The data for Figures 4 and 5 can be found in Appendix Table 2-A.)

Figure 4
Top 10 Wheat Producing States, 2000 Crop Year



Source: U.S. Department of Agriculture, *Agricultural Statistics 2001* , p. I-5.

Figure 5
Cumulative Percent of U.S. Wheat Production
Top 10 States
2000 Crop Year



Source: U.S. Department of Agriculture, *Agricultural Statistics 2001* , p. I-5.

According to the U.S.D.A. report *Transportation of U.S. Grains*, railroads dominate the transportation of wheat in both the domestic and export wheat transportation markets. This result is attributable to the fact that wheat production is concentrated in the Great Plains states with little or no access to water transport. There are some exceptions such as barge transportation of white wheat on the Columbia-Snake River system, and barge transport on the Mississippi River system of soft red winter wheat production in the eastern Corn Belt and Mississippi River Valley. In addition, most wheat shipments are relatively long hauls, which place motor carriers at a cost disadvantage.

In 1995 railroads obtained about 58 percent of the export wheat transportation market, with water carriers securing a 31.6 percent share and motor carriers, 10.8 percent (Figure 6). Railroads were even more dominant in the domestic wheat transport market, accounting for 76.4 percent of the total 1995 wheat bushels transported to domestic locations. The corresponding market shares for motor and water carriers were 20.3 and 3.2 percent, respectively. Railroads accounted for about two-thirds of the total 1995 wheat transport market, while the corresponding market shares for barge and truck were 19 and 15 percent.

The largest intrastate wheat shipments tend to occur in states with the greatest wheat production such as Kansas, Minnesota, Nebraska, Oklahoma and Ohio. These shipments occur by rail and truck to flour mills and transshipment locations in these states. The percentage of intrastate shipments by motor carrier has been increasing in recent years due to construction of unit train facilities on Class I railroads in former country elevator locations. These facilities are very efficient, involving computerized loading of 100-car trains. The low per unit costs of these facilities permits them to pay a higher grain price than competing country elevators, which attracts truck shipments from farmers and country elevators within a 50 to 70 mile radius of the unit train facility. Thus intrastate shipments that formerly moved by short line railroad increasingly are being shipped by truck, which have a cost advantage for these short hauls.

The major interstate wheat shipments to domestic locations are displayed in Table 8 and are discussed in terms of the major wheat receiving states (destinations) of each of the major sending states (origins). The leading wheat production state, Kansas, ships wheat by rail and truck to flour mills and transshipment facilities in Missouri, Nebraska, Oklahoma and Texas.

North and South Dakota ship wheat by rail and truck to flour mills and transshipment locations in Minnesota. North Dakota also originates rail wheat shipments to Wisconsin. Montana ships wheat by rail and truck to Washington.

Figure 6
Wheat Transportation Market Shares, 1995

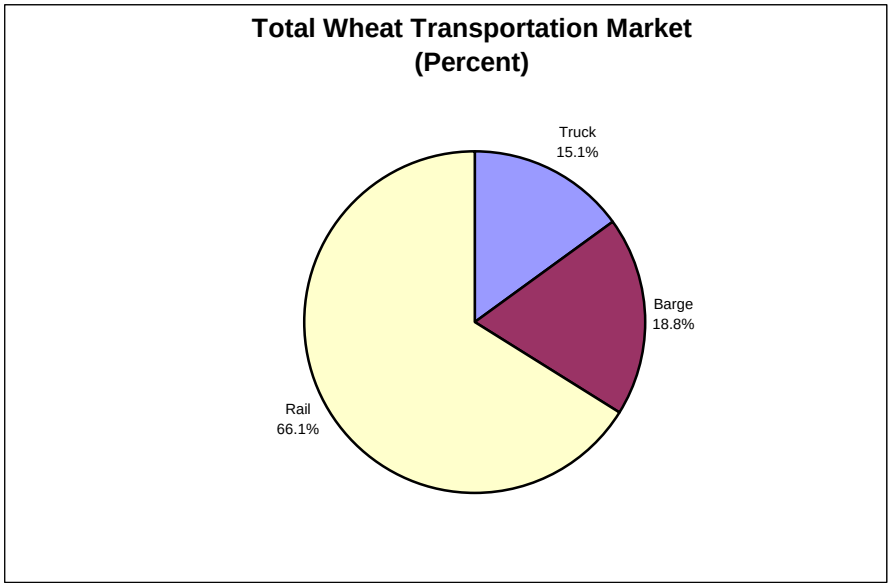
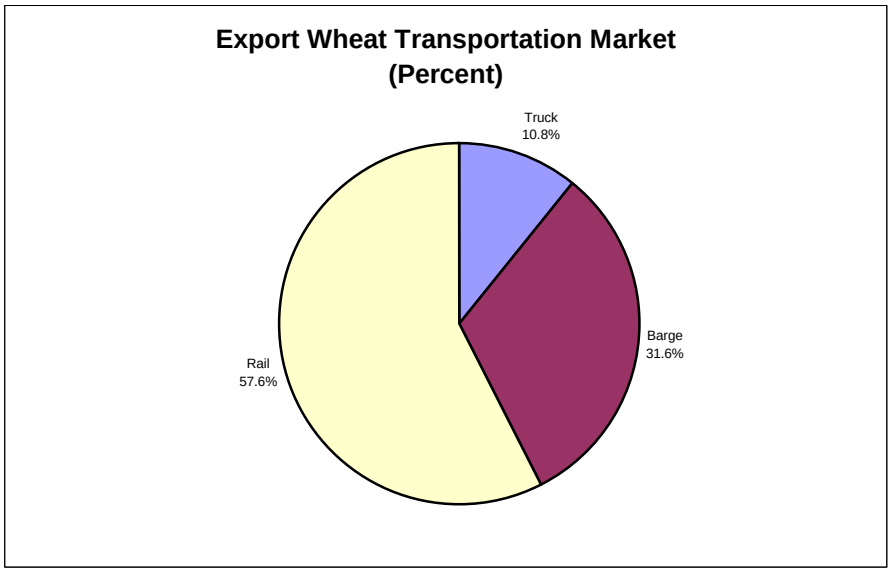
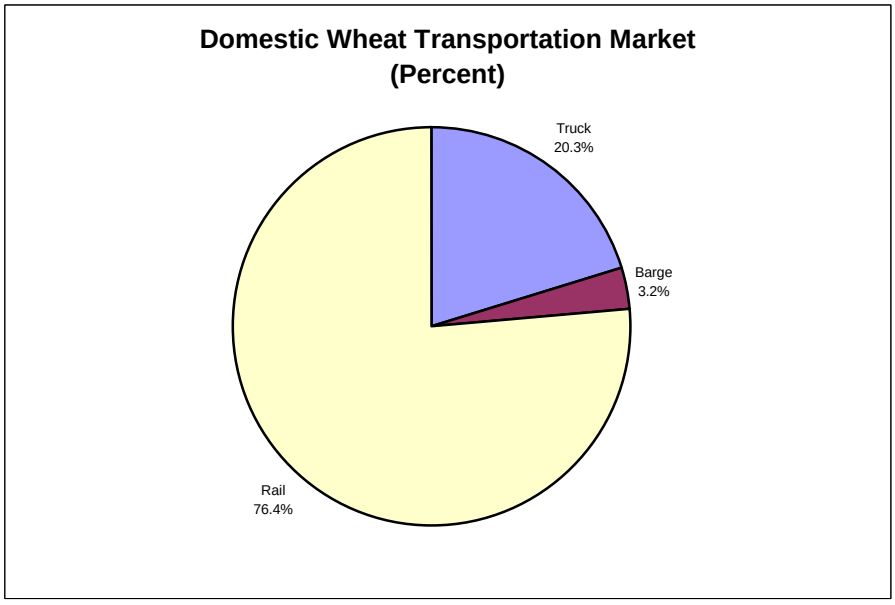


Figure 6. Continued





Source: U.S. Department of Agriculture, Agricultural Marketing Service, Transportation and Marketing, *Transportation of U.S. Grains, A Modal Share Analysis 1978-95*, p. 8.

Colorado ships wheat by rail and truck to Kansas destinations, and also ships wheat by rail and truck to Nebraska. Oklahoma ships wheat to Texas by rail and truck.

Water carrier wheat shipments to U.S. domestic locations originate in Minnesota and Wisconsin. Both states ship wheat to Buffalo, New York (a major flour milling center) via the Great Lakes. Minnesota also ships wheat by rail to New York. Wheat is shipped from Minnesota by rail and water to Tennessee. The water shipments move via the Mississippi and Tennessee rivers to Chattanooga, a major flour milling location.

The major wheat shipments to export ports are in Table 9 and will be discussed in terms of the principal wheat supplying states (origins) for each export port area (destinations). The Duluth-Superior (Duluth, Minnesota and Superior, Wisconsin) and Chicago (Milwaukee, Manitowoc and Racine, Wisconsin; Chicago, Illinois) port areas receive rail and truck wheat shipments from Minnesota, and rail wheat shipments from North Dakota.

Table 8
Major Interstate Wheat Shipments to Domestic Locations

Origin State	Major Destination States
Kansas	Missouri, Nebraska, Oklahoma, Texas
North Dakota	Minnesota, Wisconsin
Minnesota	Illinois, New York, Tennessee
Colorado	Kansas, Nebraska
South Dakota	Minnesota
Montana	Washington
Wisconsin	New York
Oklahoma	Texas

Source: Reed, Michael J. and L.D. Hill. *Wheat Movements in the United States*. University of Illinois Bulletin 795, Agricultural Experiment Station, University of Illinois at Urbana-Champaign, September 1990.

Table 9
Major Wheat Shipments to Export Ports

Port Location - Duluth, Chicago[1]
Major Wheat Supplying States
Minnesota
North Dakota
Port Location - Louisiana Gulf
Major Wheat Supplying States
Arkansas
Illinois
Minnesota
Missouri
Oklahoma
Port Location - Pacific Northwest[2]
Major Wheat Supplying States
Colorado
Idaho
Montana
North Dakota
Oregon
Washington
Port Location - Texas Gulf[3]
Major Wheat Supplying States
Kansas
Oklahoma
Texas
Port Location - Toledo
Major Wheat Supplying States
Ohio

1. Chicago - Duluth ports include Duluth, Minnesota; Superior, Wisconsin; Milwaukee, Manitowoc and Racine, Wisconsin; and Chicago, Illinois.
2. The Pacific Northwest ports include Kalama, Longview, Vancouver, Tacoma and Seattle, Washington; and Portland and Astoria, Oregon.
3. The Texas Gulf ports include Beaumont, Port Arthur, Houston, Galveston, Brownsville and Corpus Christi, Texas.

Source: Reed, Michael J. and L.D. Hill. *Wheat Movements in the United States*. University of Illinois Bulletin 795, Agricultural Experiment Station, University of Illinois at Urbana-Champaign, September 1990.

Water carriers play a much larger role in the export wheat transportation market relative to the domestic market. For example, the Louisiana Gulf port area receives barge wheat shipments from Minnesota, Illinois, Missouri, Arkansas and Oklahoma. The Pacific Northwest (PNW) ports in Oregon and Washington obtain barge wheat shipments from Idaho, Oregon and Washington on the Columbia-Snake River system. The PNW ports also receive rail wheat shipments from Colorado, Idaho, Montana, North Dakota, Oregon and Washington.

The Texas Gulf ports (Beaumont, Port Arthur, Houston, Galveston, Brownsville and Corpus Christi) obtain wheat shipments by rail from Kansas and Oklahoma, and by rail and truck from Texas.

The Toledo port area receives truck wheat shipments from Ohio.

Soybeans

Table 10 contains U.S. soybean supply and disappearance for the crop year beginning in September 2000. Since imports are practically nonexistent, total soybean supply (3,064 million bushels) is the sum of previous stock (290 million bushels) and production (2,770 million bushels). On the demand side, 1,590 million bushels (58.5 percent of total disappearance) are crushed into soybean oil and meal. The former is an ingredient in many food products and the latter is used in poultry and livestock rations. A total of 960 million bushels (35.3 percent of disappearance) was exported, and the remaining 169 million bushels was used for seed and feed.

Although soybeans were produced in 30 states in the 2000 crop year, production is concentrated in the Corn Belt states. In the 2000 crop year, the top 10 states accounted for nearly 84 percent of the national soybean production (Figure 8). The top five states (Illinois, Iowa, Minnesota, Indiana and Ohio) produced 60 percent of the U.S. soybean crop (Figure 7). (Data for Figures 7 and 8 is in Appendix Table 3-A.) Since 1985 the share of U.S. soybean production has increased in the Great Lakes states of Minnesota, Wisconsin and Michigan as well as the Northern Great Plains states (the Dakotas, Nebraska and Kansas). Conversely, U.S. soybean production shares have fallen in the Southeast (Alabama, Georgia, South Carolina and Florida) and Delta regions (Arkansas, Louisiana and Mississippi).

According to the U.S.D.A. publication *Transportation of U.S. Grains*, water carriers dominate the transportation of soybeans in the export market. This result is attributable to several factors, one of which is the relatively low cost of barge transportation. Also the Louisiana Gulf is a major soybean export area and the major soybean production states (Illinois, Iowa, Minnesota, Indiana, Ohio, Missouri and Arkansas) have good access to river transportation. As a result, barge transport accounted for two-thirds of the 1995 export soybean transport market; railroads, 22.5 percent and motor carriers, 11.6 percent (Figure 9).

The modal shares of the domestic soybean transport market are quite different from those of the export market. In 1995 motor carriers dominated the domestic soybean market with a 70 percent share of the bushels transported. The corresponding shares for railroads and water carriers were 25.1 percent and 4.6 percent, respectively. Motor carriers dominate the domestic soybean transportation market since soybeans are transported relatively short distances to soybean crushing plants, and trucks have a cost advantage relative to railroads and barges for short hauls.

For the soybean transport market as a whole, all three modes have significant shares, with motor carriers accounting for about half the bushels transported, and approximately one-fourth shares each for railroads and barges.

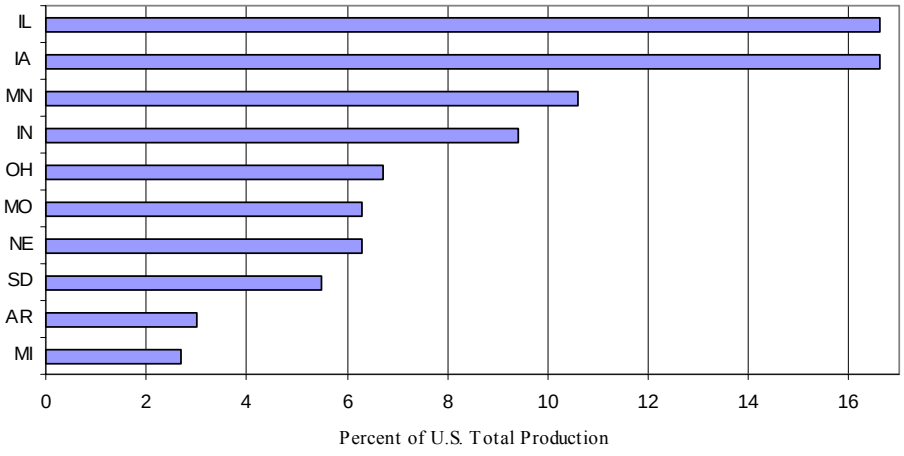
Table 10

U.S. Soybean Supply and Disappearance
Crop Year Beginning September 2000
(Millions of Bushels)

Supply		Disappearance	
Previous Stock	290	Crushed	1,590
Production	2,770	Seed, Feed and Residual	169
Imports	4	Exports	960
Total Supply	3,064	Total Disappearance	2,719

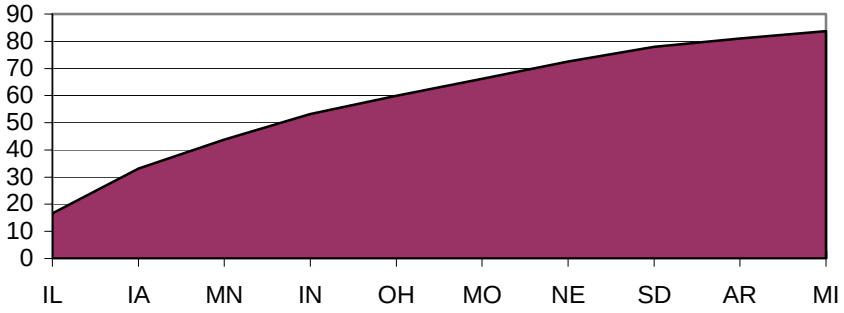
Source: U.S. Department of Agriculture, *Agricultural Statistics 2001*, p. III-14.

Figure 7
Top 10 Soybean Producing States, 2000 Crop Year



Source: U.S. Department of Agriculture, *Agricultural Statistics 2001* , p. III-15.

Figure 8
Cumulative Percent of U.S. Soybean Production
Top 10 States
2000 Crop Year



Source: U.S. Department of Agriculture, *Agricultural Statistics 2001* , p. III-15.

Figure 9
Soybean Transportation Market Shares, 1995

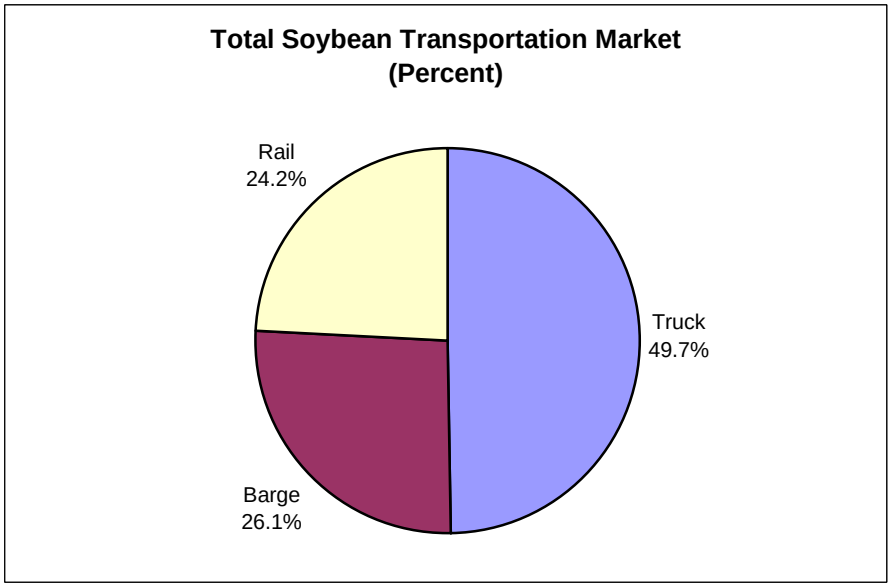
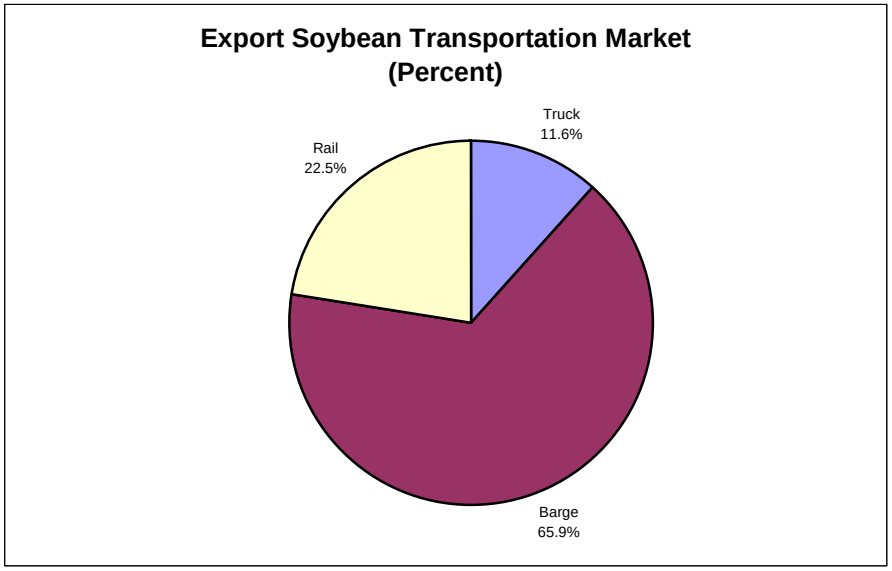
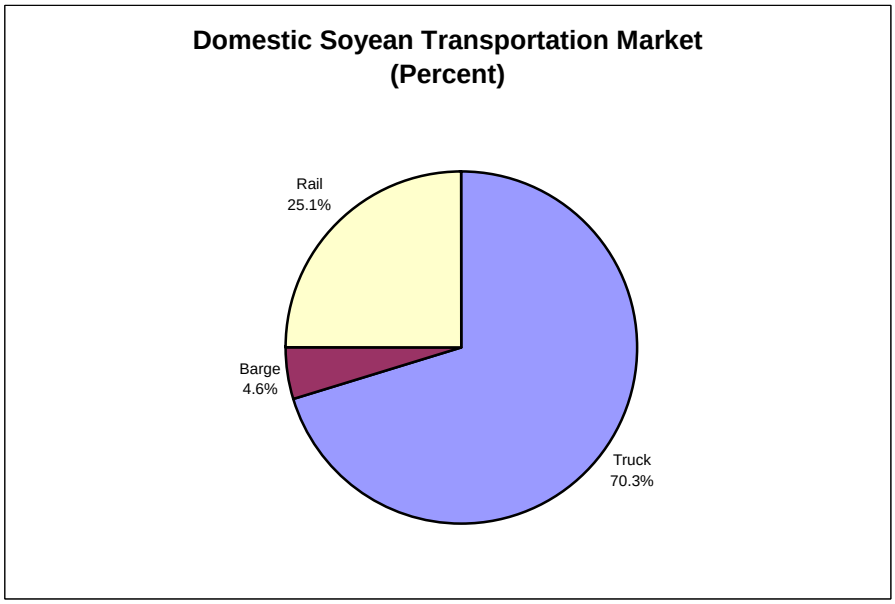


Figure 9. Continued





Source: U.S. Department of Agriculture, Agricultural Marketing Service, Transportation and Marketing, *Transportation of U.S. Grains, A Modal Share Analysis 1978-95*, p. 8.

The largest intrastate shipments of soybeans occur in the states with the largest soybean production (Illinois, Iowa, Minnesota, Indiana, Ohio, Missouri and Nebraska). Motor carriers dominate these intrastate shipments accounting for about 90 percent of the bushels transported. Motor carriers dominate the intrastate shipments since they have a cost advantage for these relatively short hauls.

In contrast to wheat and corn, domestic interstate shipments of soybeans move relatively short distances, usually from a state with large soybean production to a neighboring state. Some of these shipments are to soybean crushing plants and others are to transshipment locations. For example, Iowa ships soybeans by truck and rail to Illinois and Missouri, while Indiana originates soybean shipments by truck and rail to Illinois and Kentucky (Table 11). Soybeans are shipped by truck from Nebraska to Iowa and Kansas, and to Missouri by truck and rail. Missouri ships soybeans to Illinois by truck, and South Dakota originates soybean truck shipments to Iowa.

Table 12 contains major soybean shipments to export ports. The origins for these shipments are surplus soybean production states and/or states with important river transshipment facilities. The Louisiana Gulf is the dominant soybean export area receiving barge shipments from Illinois, Iowa, Indiana, Missouri, Ohio, Minnesota, Arkansas, Kentucky, Louisiana, Mississippi and Tennessee. The only other significant export soybean shipments are to the South Atlantic ports by rail from Indiana, Ohio and Michigan; and truck shipments from Ohio to the Toledo area ports.

Table 11
Major Interstate Soybean Shipments to Domestic Locations

Origin State	Major Destination States
Indiana	Illinois Kentucky
Iowa	Illinois Missouri
Missouri	Illinois
Nebraska	Iowa Kansas Missouri
South Dakota	Iowa

Source: Larson, Donald W., T.R. Smith and E.D. Baldwin. *Soybean Movements in the United States*. University of Illinois Bulletin 792, Agricultural Experiment Station, University of Illinois at Urbana-Champaign, September 1990.

Table 12
Major Soybean Shipments to Export Ports

Port Location - Louisiana Gulf
Major Soybean Supplying States
Arkansas
Illinois
Indiana
Iowa
Kentucky
Louisiana
Minnesota
Mississippi
Missouri
Ohio
Tennessee
Port Location - South Atlantic
Major Soybean Supplying States
Indiana
Ohio
Michigan
Port Location - Toledo
Major Soybean Supplying State
Ohio

Source: Larson, Donald W., T.R. Smith and E.D. Baldwin. *Soybean Movements in the United States*. University of Illinois Bulletin 792, Agricultural Experiment Station, University of Illinois at Urbana-Champaign, September 1990.

TRANSPORTATION OF LIVESTOCK AND POULTRY

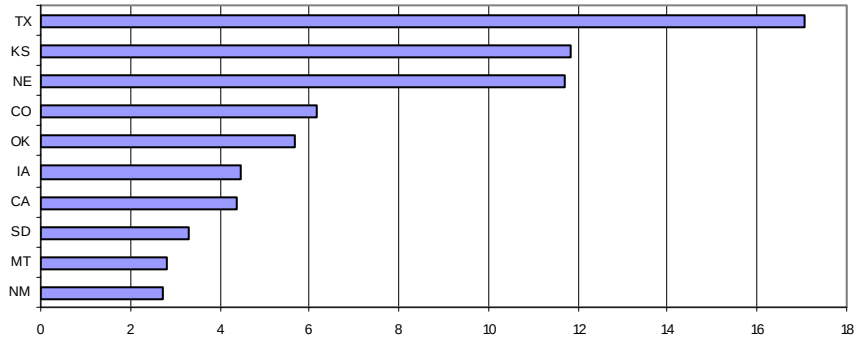
Cattle

The transportation of cattle and meat is dominated by motor carriers because cattle are shipped relatively short distances, for which trucks have a cost advantage, to locations that are not well served by rail (foraging areas, commercial feedlots and cattle processing plants). Motor carriers dominate the transportation of meat due to faster delivery times and more reliable service relative to railroads. Also both cattle and beef are highly perishable so the faster, more dependable delivery times of trucks have resulted in motor carrier dominance of both the cattle and beef transportation markets.

After calves are six to seven months old, they are shipped by truck from the farm to a foraging area where they feed on grass for two to four months. Then they are shipped by truck to commercial feedlots where they remain for four to six months. Next the cattle are shipped by truck from the feedlot to the cattle processing plant. The meat is shipped by truck (and a small share by rail) from the cattle processing plant to food distribution locations close to population centers.

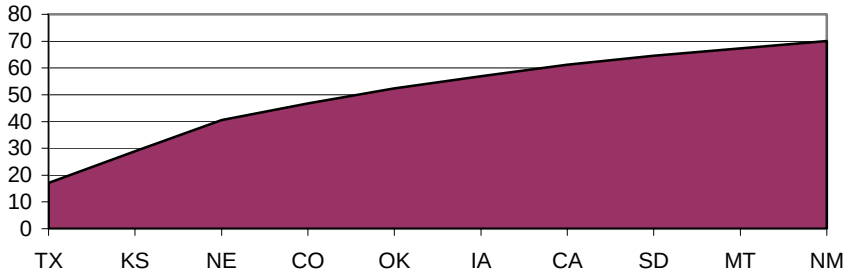
Figures 10 and 11 display year 2000 cattle marketings of the top 10 states, which as a group, account for 70 percent of U.S. total cattle marketings (Figure 11). However, an examination of Figure 10 indicates that the top five states of Texas, Kansas, Nebraska, Colorado and Oklahoma account for 54 percent of the U.S. total cattle marketings. (Appendix Table 4-A contains the data for Figures 10 and 11.) Most of the top 10 cattle marketing states are in the Great Plains states, close to large supplies of feed grains.

Figure 10
U.S. Cattle Marketings, 2000
Top 10 States



Source: U.S. Department of Agriculture, National Agricultural Statistics Service, Meat Animals Production, Diposition and Income, 2000 Summary, April 2001, pp.

Figure 11
Cumulative Percent of
U.S. Cattle Marketings, 2000
Top 10 States



Source: U.S. Department of Agriculture, National Agricultural Statistics Service, Meat Animals Production, Disposition, and Income, 2000 Summary April 2001, p. 6-7.

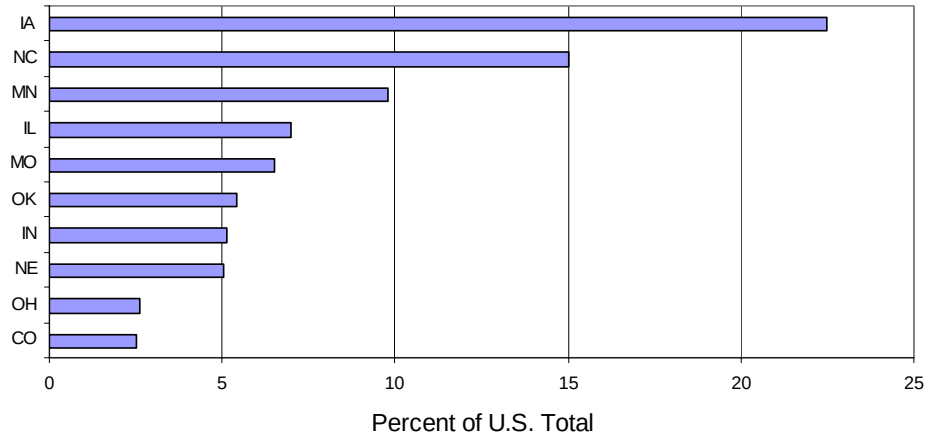
Hogs and Pigs

Motor carriers dominate the transportation of hogs, pigs and meat products for the same reasons that they dominate the transport of cattle and beef.

Pigs are born on farms (farrowing points) where they stay for a few weeks, after which they are transferred to nurseries where they remain until they weigh about 50 pounds. Then they are shipped by truck from the nursery to finishing locations where they gain additional weight to about 250 - 300 pounds. They are next shipped by trucks from finishing locations to slaughter plants, and the meat is shipped by truck to food distribution points located close to population centers.

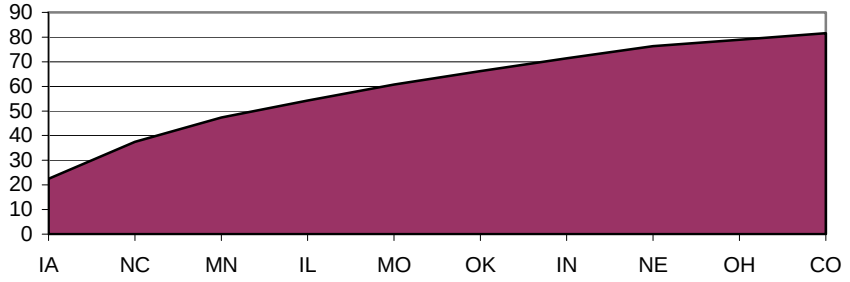
Figures 12 and 13 contain year 2000 hog and pig marketings of the top 10 states which collectively account for nearly 82 percent of total U.S. marketings (Figure 13). However, according to Figure 12, the top 5 states of Iowa, North Carolina, Minnesota, Illinois and Missouri account for about 61 percent of the total U.S. hog and pig marketings. Iowa alone had 22.5 percent (see Appendix Table 5-A). Most of the top 10 hog and pig marketing states are either large feed grain producing states or are located close to substantial feed grain supplies.

Figure 12
U.S. Hog and Pig Marketings, 2000
Top 10 States



Source: U.S. Department of Agriculture, National Agricultural Statistics Service, *Meat Animals Production, Diposition and Income, 2000 Summary*, April 2001, pp. 15-16.

Figure 13
Cumulative Percent of
Hog and Pig Marketings, 2000
Top 10 States



Source: U.S. Department of Agriculture, National Agricultural Statistics Service,
Meat Animals Production, Disposition, and Income, 2000 Summary
April 2001, pp. 15-16.

Poultry

Motor carriers dominate the initial transportation of poultry because live birds (broilers) are transported relatively short distances (100 miles or less) for which trucks have a cost advantage. Motor carriers dominate the transportation of poultry parts because of fast delivery times and the requirement of refrigerated equipment.

All broilers are grown under contract in a highly integrated supply chain. The farmer provides housing, labor and electricity and the integrator provides everything else. The farmer receives day old chicks and 49 days later the integrator sends a crew to retrieve the broilers and transport them to market. The distance between the broiler houses and the processing plant is usually less than 100 miles. With each house holding 25 to 40 thousand birds, feed is delivered 24 hours a day, 365 days per year. Turkeys are raised under a somewhat different technology, but the transportation issues are the same.

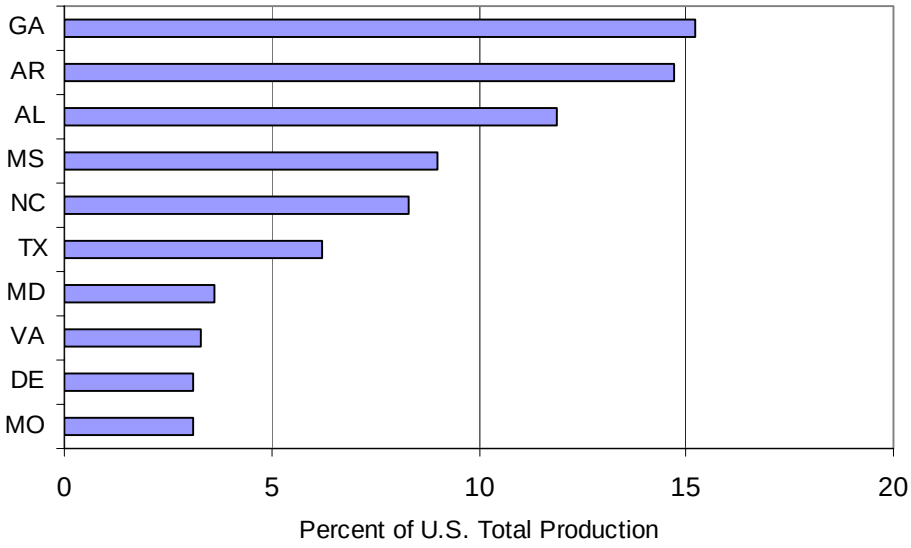
After processing, many broilers are sold as refrigerated parts such as tray packs of drumsticks or breasts. For these products the handling and transportation urgency is comparable to perishable fruits and vegetables. Therefore, a cold chain must be maintained and the meat must move to final market in a timely manner. Since broiler production is concentrated in the Southeast and Mid-Atlantic states, this means shipping refrigerated meat by truck over long distances to the western United States. These movements of frozen broiler parts are often a backhaul for produce shipped east from California and Washington since produce and meat both require refrigerated trucks. The poultry companies are trying to do further processing of broilers, by making chicken nuggets and by de-boning breast meat for sale as a convenience product. Most of these products are frozen, but some are just chilled. In either case, refrigerated truck transport to market is required.

Since the U.S. market for white meat is better than for dark meat, export markets are very important for dark meat with Russia, China and Mexico as principal destinations. For exports to Russia and China, frozen dark meat is delivered by truck to ports for export.

Figures 14 and 15 display broiler production of the top 10 states, which collectively account for 78.4 percent of total U.S. broiler output. However, examination of Figure 14 indicates that the top 5 states of Georgia, Arkansas, Alabama, Mississippi and North Carolina account for 59.1 percent of U.S. production. (Appendix Table 6-A contains the data for Figures 14 and 15.)

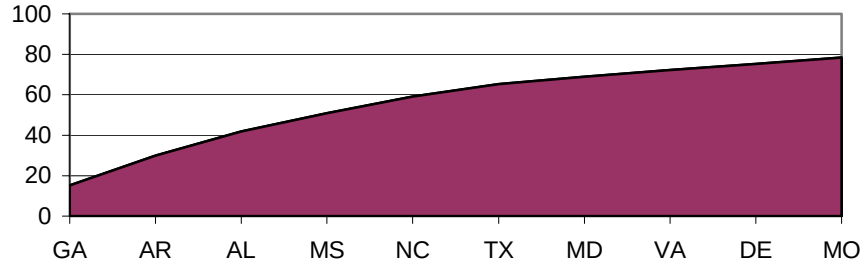
The broiler industry is located almost entirely in the South and the Delmarva Peninsula, both of which are feed deficit regions. Thus feed grains are shipped to broiler production states by rail, truck and water from the Corn Belt. Also since poultry is produced in some populous states, the transportation of feed grain, broilers and meat is adding to the traffic congestion in these areas.

Figure 14
Top 10 U.S. Broiler Production States, 1999



Source: U.S. Department of Agriculture, *Agricultural Statistics 2001*, p. VIII - 40.

Figure 15
Cumulative Percent of U.S. Broiler Production
Top 10 States, 1999



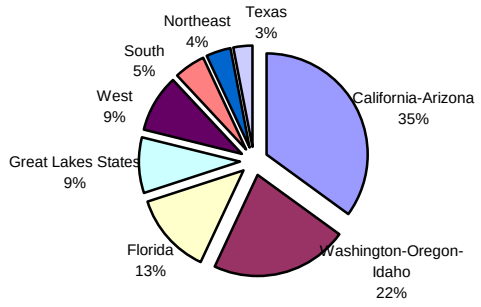
Source: U.S. Department of Agriculture, Agricultural Statistics 2001, p. VIII - 40.

TRANSPORTATION OF FRESH PRODUCE (FRUITS AND VEGETABLES)

Fresh produce includes 35 fresh fruits and vegetables. Although some produce is grown in nearly every state at some time during the year, the largest producers are California, Arizona, Washington, Oregon and Idaho in the west and Florida in the east. The U.S. also imports 15 fresh fruits and vegetables, with bananas accounting for the largest share of the shipments.

In year 2000, the California-Arizona region had the greatest produce production, accounting for 35 percent of the U.S. domestic output (Figure 16). The top 5 commodities of this region were lettuce, oranges, cantaloupes, grapes and celery. The Pacific Northwest (PNW) states of Washington and Idaho ranked second in regional produce output with 22 percent of national production. The major commodities of the PNW in year 2000 were apples, potatoes and onions. Florida accounted for 13 percent of year 2000 produce output with grapefruit, oranges, tomatoes, watermelon and sweet corn as the principal commodities. The Great Lakes states (primarily Michigan and Wisconsin) and the West states (mainly Colorado and North Dakota) both produced 9 percent of the year 2000 national produce output. The major produce commodities of these regions were potatoes, onions and apples. The South region (primarily Georgia and not including Florida) accounted for 5 percent of the U.S. total produce production in year 2000 with peaches, watermelons, apples, sweet potatoes, potatoes, tomatoes, cabbage and cucumbers as the major commodities. The Northeast region (mainly New York, New Jersey and Maine) specialized in producing potatoes, onions, cabbage and apples and accounted for 4 percent of the national output. Texas specialized in cabbage, onions, watermelons, potatoes and grapefruit, producing 3 percent of the U.S. total produce output.

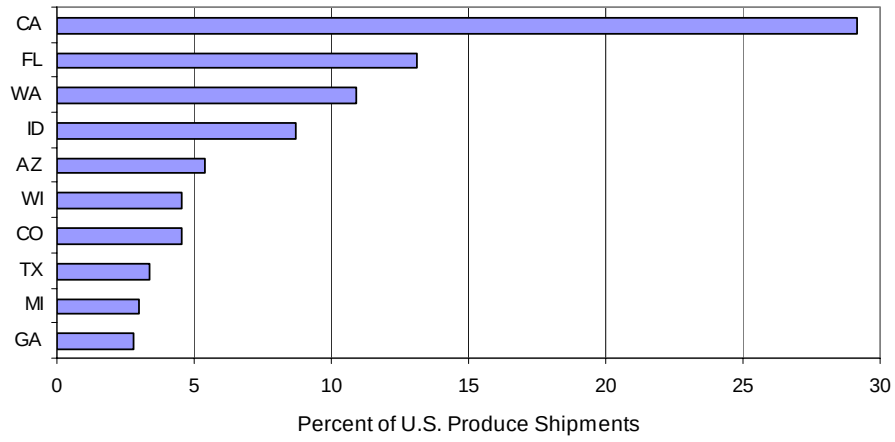
Figure 16
U.S. Domestic Produce Production, 2000
Percent by Region



Source: U.S. Department of Agriculture, Agriculture Marketing Service.
***Fresh Fruit and Vegetable Shipments*, 2001 issue.**

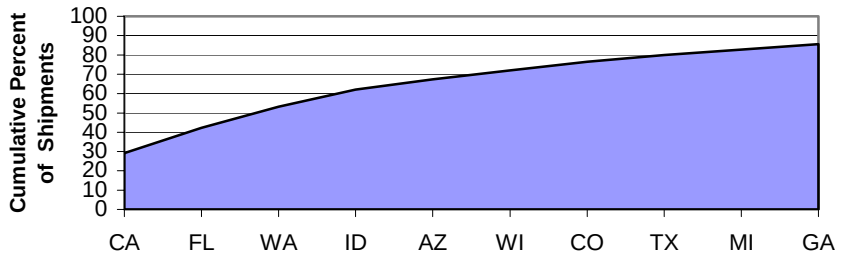
Figures 17 and 18 display year 2000 U.S. domestic produce shipments of the top 10 states, which together account for nearly 86 percent of total U.S. shipments (Figure 18). However, as revealed by Figure 17 the top 5 states (California, Florida, Washington, Idaho and Arizona) had about two-thirds of the total shipments, with California alone accounting for almost 30 percent. (The data for Figures 17 and 18 are in Appendix Table 7-A.)

Figure 17
U.S. Domestic Produce Shipments
Top 10 States, 2000



Source: U.S. Department of Agriculture, Agricultural Marketing Service. *Fresh Fruits and Vegetable Shipments*, 2001 issue.

Figure 18
Cumulative Percent of U.S. Domestic Produce Shipments
Top 10 States, 2000



Source: U.S. Department of Agriculture, Agricultural Marketing Service. Fresh Fruit and Vegetables, 2001 issue.

Table 13 contains the percent distribution of produce shipments to four U.S. consumption regions from eight U.S. production regions plus imports. For the South consumption region the top four supplying production regions are California-Arizona (30.7 percent of South produce consumption), Florida (18.4 percent), imports (13.9 percent), and Washington-Idaho-Oregon (9.8 percent). The same 4 supplying regions account for 85 percent of Northeast region consumption. The only major difference is the greater significance of imports to Northeast region consumption (25.7 percent of consumption) compared to the South consumption region (13.9 percent). For the Great Lakes consumption region, the top 4 supplying regions are California-Arizona (40.8 percent of Great Lakes produce consumption), Washington-Idaho-Oregon (12.7 percent), Great Lakes (11.8 percent) and imports (10.8 percent). The 3 major supply sources for the West consumption region account for
90 percent of the region's produce consumption, with California-Arizona accounting for 53.8 percent, imports (20.3 percent) and Washington-Idaho-Oregon (15.9 percent).

Table 13
Percent Distribution of U.S. Produce Shipments by Production and Consumption Region (Percent)

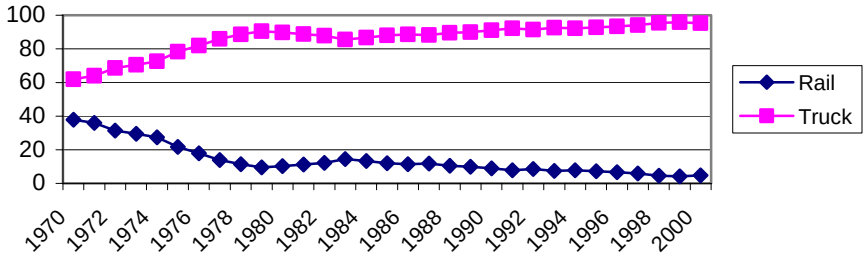
	Consumption Regions			
Production Region	**South[1]**	**Northeast[2]**	**Great Lakes[3]**	**West[4]**
California-Arizona	30.72	35.32	40.81	53.81
Florida	18.39	13.75	10.44	1.94
Imports	13.86	25.67	10.77	20.32
Washington, Oregon, Idaho	9.82	9.55	12.69	15.91
South[5]	8.81	2.27	1.75	0.13
Northeast	5.63	9.37	0.79	0.06
West[6]	5.37	0.87	7.47	4.00
Great Lakes	2.51	1.10	11.82	0.40
Texas	4.88	2.10	3.45	3.43

1. The South consumption region generally includes all the states east of the Mississippi River and south of the Ohio River, excluding Kentucky.
2. The Northeast consumption and production regions include Maine, Vermont, New Hampshire, Massachusetts, Rhode Island, Connecticut, New Jersey, Delaware, New York and Pennsylvania.
3. The Great Lakes consumption and production regions include Minnesota, Wisconsin, Michigan, Ohio, Indiana, Illinois, Kentucky, Missouri, and Iowa.
4. The West consumption region includes all western states not in the other three consumption regions.
5. The South production region is the same as the South consumption region except the production region excludes Florida.
6. The West production region includes North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, New Mexico, Colorado, Wyoming, Montana, Utah and Nevada.

Source: Beilock, Richard. *Movements of Fresh Fruits and Vegetables in the United States*. Southern Cooperative Series Bulletin S-182, August 1990.

Fresh produce is transported from production regions to consumption regions by railroad and truck. The railroad shipments are by boxcar and TOFC (Trailer-on-Flat-Car). In year 2000, about 95 percent of the U.S. fresh produce shipments were by truck. However, the current domination of produce transport by trucks was not always the case. According to Figure 19, in 1970, railroads had a 38 percent share of the U.S. fresh produce transportation market (data for Figure 19 is in Appendix Table 8-A). The railroad share declined rapidly throughout the 1970s, falling to only 9.5 percent by 1979. However, between 1979 and 1983 the railroad share of the U.S. fresh produce transportation market rose from 9.5 percent to 14.5 percent. The railroad gain in market share was attributable to improvements in TOFC technology, rising diesel fuel costs, and economic deregulation of produce transportation and TOFC. However, the railroad market share gains were transitory, as the rail share fell from 14.5 percent in 1983 to only 4.7 percent in 2000.

Figure 19
Percent of U.S. Produce Movements by Rail and Truck
1970-2000



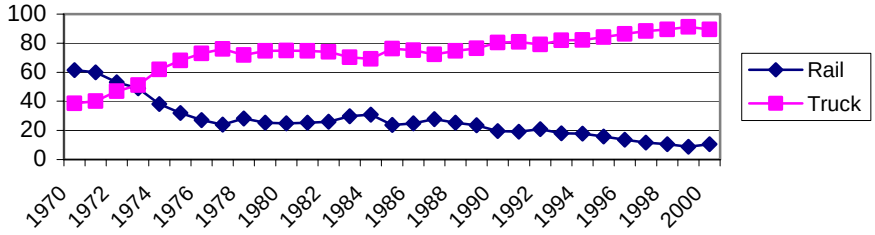
Source: U.S. Department of Agriculture, Agricultural Marketing Service, Fresh Fruit and Vegetable Shipments, various annual issues.

The pattern of railroad and truck market share changes in fresh produce shipments, from the California-Arizona and PNW (Washington, Idaho and Oregon) regions is the same as that for the U.S. That is, the railroad share fell rapidly during the 1970s, then increased somewhat in the early 1980s, followed by a gradual decline to the year 2000.

In the PNW region, railroads had a 61.5 percent share of the 1970 fresh produce shipments (see Figure 20). (The data for Figure 20 is in Appendix Table 9-A.) The railroad share fell rapidly to 25 percent by 1980, which was followed by an increase to 30.8 percent in 1984. However, by year 2000 the railroad share of PNW fresh produce shipments was only 10.6 percent.

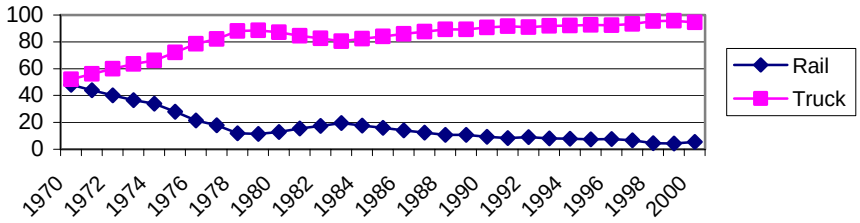
For the California-Arizona region, railroads accounted for 48 percent of the 1970 fresh produce shipments (see Figure 21). (The data for Figure 21 is in Appendix Table 10-A.) The railroad share plunged in the 1970s, reaching a nadir of 11.5 percent in 1979. However, the rail share recovered to 19.5 percent by 1983, but then resumed its gradual decline, resulting in a year 2000 market share of only 5.4 percent.

Figure 20
Percent of Washington, Oregon, and Idaho Produce Movements by Rail and Truck
1970-2000



Source: U.S. Department of Agriculture, Agricultural Marketing Service,
Fresh Fruit and Vegetable Shipments, various annual issues.

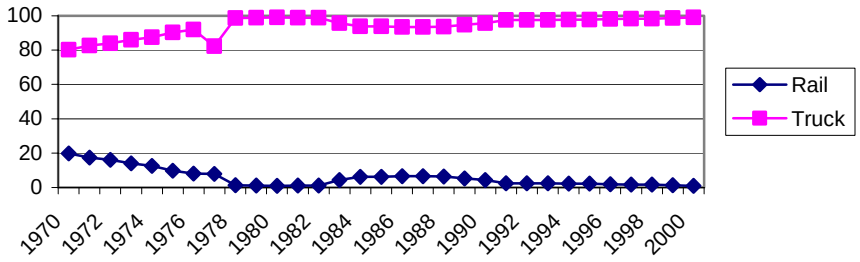
Figure 21
Percent of California-Arizona Produce Movements by Rail and Truck 1970-2000



Source: U.S. Department of Agriculture, Agricultural Marketing Service,
Fresh Fruit and Vegetable Shipments, various annual issues.

The modal market share changes in the transportation of Florida fresh produce were different from that of the California-Arizona and PNW regions. As indicated by Figure 22, railroads accounted for about 20 percent of the 1970 Florida produce shipments, but the railroad share was down to only 1.0 percent by 1980. Whereas the railroad market share increased between 1980 and 1984 in the California-Arizona and PNW regions, the railroad market share in Florida didn't begin to increase until 1983; from 1.1 percent in 1982 to 6.4 percent by 1988 (see Appendix Table 11-A). However, the railroad market share of Florida fresh produce shipments began declining in 1989 and was only 1.0 percent in year 2000.

Figure 22
Percent of Florida Produce Movements by Rail and Truck 1970-2000



Source: U.S. Department of Agriculture, Agricultural Marketing Service,
Fresh Fruitand Vegetable Shipments, various annual issues.

The PNW region has traditionally shipped more produce by rail than other regions. This is due to the nature of the commodities and the shipment distance. The PNW specializes in shipments of apples, potatoes and onions, which have relatively low per unit weight values, are able to tolerate wider temperature variations and rough handling, and have longer shelf lives compared to other produce. Because of these characteristics, these

commodities are less transportation service-sensitive and better suited to rail transport than other commodities. In addition, railroads have a cost advantage relative to trucks for the very long hauls of produce shipped from the PNW to eastern markets. For more discussion of produce transportation see *Movements of Fresh Fruits and Vegetables in the United States* by Richard Beilock.

TRANSPORTATION OF DAIRY PRODUCTS

Milk

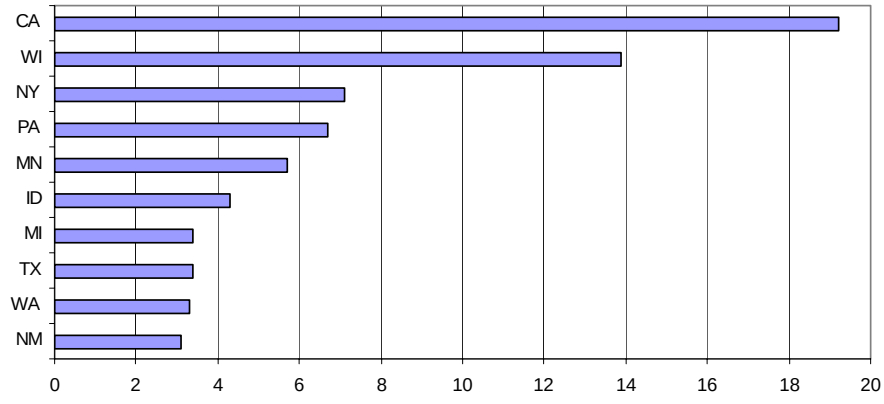
The most significant aspect of dairy products transportation is that continuous production on farms requires milk pick-up every two days. Raw milk is transported in food grade tank trucks from the farm to the milk processor. The tank trucks are insulated to maintain the low temperature of the milk once it is transferred from the farm bulk tank to the truck. The trip from the farm to the processor is usually 100 miles or less.

Since raw milk is a low value, high weight density product, it is generally processed near the farm. Exceptions occur when regional shortages require more milk for drinking than is available from local sources. The Federal Milk Marketing Orders administer a milk price structure that creates a set of regional milk prices that induce movements that would otherwise not occur. For example, milk prices are high enough in the Southeast that many large farmers in Pennsylvania ship milk to the Southeast because it is more profitable than selling milk in Pennsylvania.

After raw milk is processed into fluid milk, it is generally shipped by truck within the region in which it is processed, less than 500 miles, but farther on occasion.

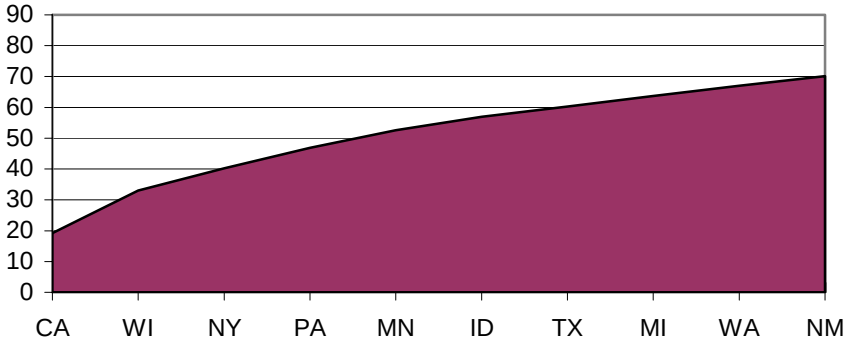
Figures 23 and 24 display U.S. milk production of the top 10 states for the year 2000 (see Appendix Table 12-A for the data for the figures). Although some milk is produced in every state, Figure 24 indicates that the top 10 states accounted for 70 percent of the total U.S. milk output. Figure 23 reveals that the top 5 milk production states (California, Wisconsin, New York, Pennsylvania and Minnesota) collectively supplied 53 percent of total U.S. milk production. Except for California, all of the top five states are Great Lakes states, while none of the top five states is located in the South.

Figure 23
Top 10 Milk Production States, 2000



Source: U.S. Department of Agriculture, NASS, Livestock Branch.

Figure 24
Cumulative Percent of U.S. Milk Production, 2000
Top 10 States



Source: U.S. Department of Agriculture, NASS, Livestock Branch.

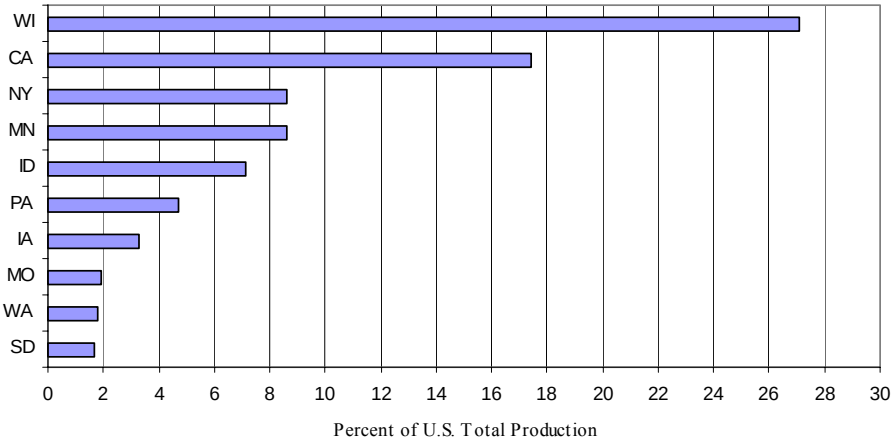
It is estimated that in the year 2000 the farm pick-up of raw milk plus transportation of fluid milk generated 5.5 million truck trips resulting in 14.9 billion ton-miles. The farm pick-up portion of these trips occurs on rural roads and secondary highways. The fluid milk would tend to move on interstate highways for much of the trip, before traveling on local roads and streets to deliver milk to supermarkets.

Cheese

Cheese is made in milk surplus states (i.e., California - Great Lakes) and shipped to milk deficit states (i.e., Southeast). Since one pound of cheese is made from 10 pounds of milk, the transportation cost saving from making cheese near milk production sources is substantial. Thus the top 6 cheese producing states are identical to the top 6 milk production states. Given this, and that cheese is a storable, transportable product, most states receive cheese by truck from distant sources. These trips average at least 1,200 miles. It is estimated that in year 2000 the transportation of cheese generated 206,000 truck trips resulting in 4.1 billion ton-miles.

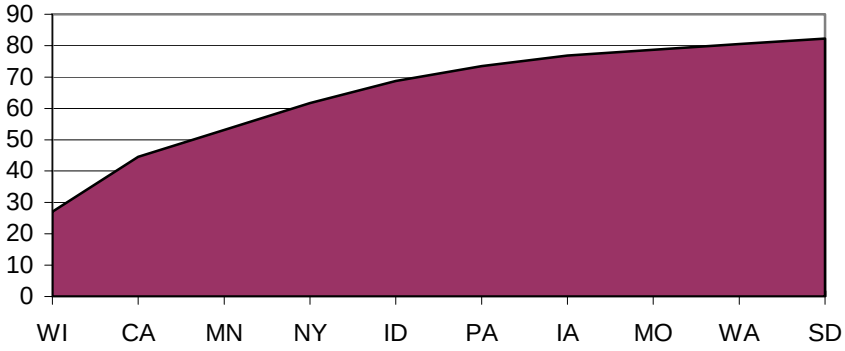
Figures 25 and 26 (data in Appendix Table 13-A) contain 1999 output of the top 10 cheese producing states. As indicated by Figure 26, the top 10 states account for 82 percent of U.S. cheese production. However, according to Figure 25, the top five states are responsible for nearly 70 percent of the national cheese output.

Figure 25
Top 10 Cheese Producting States, 2000



Source: U.S. Department of Agriculture, *Agricultural Statistics 2001* , p. VIII - 15.

Figure 26
Cumulative Percent of U.S. Cheese Production, 2000
Top 10 States



Source: U.S. Department of Agriculture, *Agricultural Statistics 2001* , p. VIII - 15.

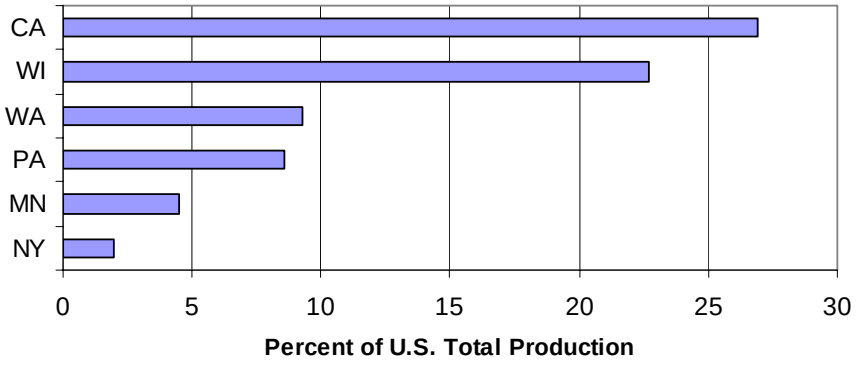
Butter

Like cheese, butter is a storable, transportable product manufactured in dairy surplus states and shipped by truck to dairy deficit states. The storability of butter allows seasonal fluctuations in milk production to be smoothed out through storage. Butter tends to be produced in the spring and consumed throughout the year. Since butter production is concentrated in the dairy surplus states, most of the country receives butter from distant locations. It is estimated that butter transportation in year 2000 required 32,000 truck trips resulting in 640 million ton-miles.

Figures 27 and 28 display 1999 output of the top six butter-producing states (data for both figures in Appendix Table 14-A). There is a high correlation between the top six butter producing states and the top six milk and cheese states. According to Figure 28 the top six states accounted for 74 percent of 1999 U.S. butter production. Figure 27 indicates that California and Wisconsin alone produced half of the national output.

Figure 27

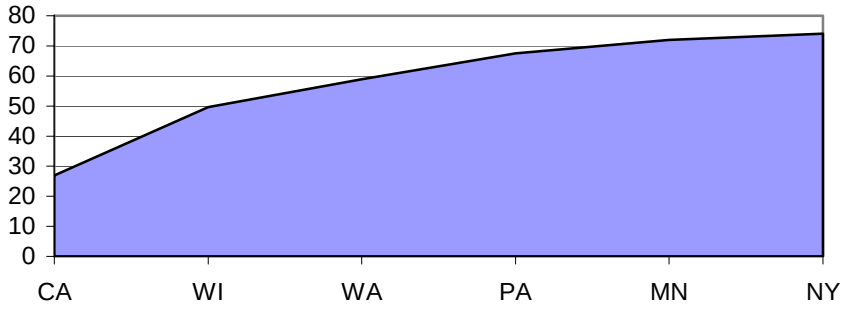
Top 6 Butter Producing States, 1999



Source: U.S. Department of Agriculture, *Agricultural Statistics 2001*, p. VIII - 15.

Figure 28

Cumulative Percent of U.S. Butter Production, 1999
Top 6 States



Source: U.S. Department of Agriculture, Agricultural Statistics 2001, p. VIII - 15.

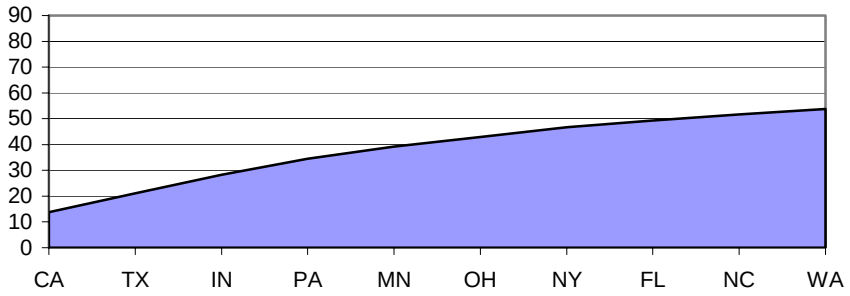
Ice Cream

The perishability of ice cream means that it is typically produced and consumed in the same region and is transported in refrigerated trucks over distances of less than 500 miles. Since ice cream is produced and consumed in local markets, the production is much less geographically concentrated than other dairy products. As indicated by Figure 29 (data in Appendix Table 15-A), the top 10 ice cream producing states only account for 54 percent of national output. In addition, some of the top 10 states are not large dairy

production states. It is estimated that the transportation of ice cream requires 194,000 truck trips that result in 970 million ton-miles.

Figure 29

Cumulative Percent of U.S. Ice Cream Production, 1999
Top 10 States



Source: U.S. Department of Agriculture, Agricultural Statistics 2001, p. VIII - 16.

CONCLUSION

Transportation adds value. A good located where no one can use it is not really a good at all. And a good located where the need for it is not greatest will not generate the most human welfare. This is true of all goods, including agricultural products. The perishability of many types of these goods and the time-sensitive nature of the demand for them make high and consistent performance of transportation particularly crucial. We have seen that the transportation of U.S. agricultural goods involves all transport modes. The characteristics of each mode make it best suited for some aspects of these movements. Jet planes speed the season's first strawberries to Manhattan, New York restaurants while trucks bring the cream for whipping from Upper State New York, and other trucks carry the steaks from Kansas, the french fries from North Dakota, California lettuce and Florida tomatoes. Meanwhile, giant ships, laden with the bounty of our Corn Belt, sail to places like Japan and Saudi Arabia, helping them as well as our economy.

Although railroads have a small share of the fresh produce transport market, the primary role of railroads in the transportation of the agricultural products discussed in this study is transport of grain and oilseeds, especially wheat. Railroads dominate the domestic and export transportation of wheat since wheat production is concentrated in the Great Plains region that has little or no access to water transport. Also most wheat shipments are long hauls for which railroads have a cost advantage.

Water carriers play a limited role in agricultural transportation, primarily restricted to export transportation of grain and oilseeds. Barges dominate the export transportation of corn and soybeans because water transport is relatively low cost. Also the Louisiana Gulf region is a major corn and soybean export location and the large corn and soybean production states have good access to river transportation.

Motor carriers are assuming an increasing role in the transportation of grain and oilseeds. Corn and soybeans are shipped relatively short distances to processing plants and trucks have a cost advantage for these relatively short hauls. Also most corn and soybean processing plants are not served by waterways.

Motor carriers completely dominate the transportation of cattle, hogs and poultry since they are shipped relatively short distances for which trucks have a cost advantage. Also cattle and hogs are shipped to locations that are not well served by railroads such as feedlots and foraging areas. Motor carriers dominate the meat transportation market since they have faster delivery times, more reliable service, and larger supplies of refrigerated equipment than railroads.

In year 2000, 95 percent of the U.S. produce shipments moved in trucks. There are several reasons for this. Produce has a short shelf life, requires fast, reliable delivery times, and careful temperature controls best provided by motor carriers. Many types of produce can't withstand rough handling which is avoided by the relatively smooth ride provided by trucks. Some types of produce have a high value per unit weight and shippers are thus willing to pay a higher price for the superior motor carrier service.

Milk transportation is totally dominated by motor carriers. Raw milk must be picked up from farms every two days, and motor carriers are the only mode capable of providing this service. Raw milk is transported short distances to processors since it is a low value, high weight density product. Motor carriers have a cost advantage for these short hauls. Due to the perishability of fluid milk it is shipped to markets located in the same region in which it is processed. Trucks have cost and service advantages for these relatively short distance movements.

APPENDIX TABLES

Table 1-A
Top 10 Corn Producing States
1999 Crop Year
(Millions of Bushels)

State	Production	Percent of U.S. Total Production
Iowa	1,758.2	18.6%
Illinois	1,491.0	15.8
Nebraska	1,153.7	12.2
Minnesota	990.0	10.5
Indiana	748.4	7.9
Kansas	420.2	4.5
Wisconsin	407.6	4.3
Ohio	403.2	4.3
South Dakota	367.3	3.9
Michigan	253.5	2.7
Total	7,993.1	84.7
U.S. Total	9,431.0	

Source: U.S. Department of Agriculture, *Agricultural Statistics 2001*, p. I-25.

Table 2-A
Top 10 Wheat Producing States
2000 Crop Year
(Millions of Bushels)

State	Production	Percent of U.S. Total Production
Kansas	347.8	15.6%
North Dakota	313.8	14.1
Washington	164.9	7.4
Oklahoma	142.8	6.4
Montana	135.3	6.1
South Dakota	114.3	5.1
Idaho	108.5	4.9
Minnesota	96.6	4.3
Ohio	79.9	3.6
Colorado	71.4	3.2
Total	1,575.3	70.9
U.S. Total	2,223.0	

Source: U.S. Department of Agriculture, *Agricultural Statistics 2001*, p. I-5.

Table 3-A
Top 10 Soybean Producing States
2000 Crop Year
(Millions of Bushels)

State	Production	Percent of U.S. Total Production
Illinois	459.8	16.6%
Iowa	459.2	16.6
Minnesota	293.2	10.6
Indiana	259.0	9.4
Ohio	186.5	6.7
Missouri	175.0	6.3
Nebraska	173.9	6.3
South Dakota	153.0	5.5
Arkansas	83.2	3.0
Michigan	74.9	2.7
Total	2,317.7	83.7
U.S. Total	2,769.7	

Source: U.S. Department of Agriculture, *Agricultural Statistics 2001*, p. III-15.

Table 4-A
U.S. Cattle Marketings, 2000
Top 10 States
(Thousands of Head)

State	Thousands of Head	Percent of U.S. Total
Texas	8,325	17.08%
Kansas	5,760	11.82
Nebraska	5,692	11.68
Colorado	3,003	6.16
Oklahoma	2,770	5.68
Iowa	2,179	4.47
California	2,124	4.36
South Dakota	1,610	3.30
Montana	1,370	2.81
New Mexico	1,333	2.73
Total	34,166	70.09
U.S. Total	48,739	

Source: U.S. Department of Agriculture, National Agricultural Statistics Service, *Meat Animals Production, Disposition, and Income, 2000 Summary*, April 2001, p. 6-7.

Table 5-A
U.S. Hog and Pig Marketings, 2000
Top 10 States
(Thousands of Head)

State	Thousands of Head	Percent of U.S. Total
Iowa	26,645	22.50%
North Carolina	17,782	15.02
Minnesota	11,581	9.78
Illinois	8,266	6.98
Missouri	7,726	6.52
Oklahoma	6,443	5.44
Indiana	6,054	5.11
Nebraska	5,964	5.04
Ohio	3,103	2.62
Colorado	2,999	2.53
Total	96,563	81.54%
U.S. Total	118,418	

Source: U.S. Department of Agriculture, National Agricultural Statistics Service, *Meat Animals Production, Disposition, and Income, 2000 Summary*, April 2001, p. 15-16.

Table 6-A
U.S. Broiler Production, 1999
Top 10 States
(Millions of Birds)

State	Broiler Production	Percent of U.S. Total
Georgia	1,240	15.2%
Arkansas	1,196	14.7
Alabama	970	11.9
Mississippi	735	9.0
North Carolina	675	8.3
Texas	508	6.2
Maryland	294	3.6
Virginia	269	3.3
Delaware	252	3.1
Missouri	250	3.1
Total	6,389	78.4%
U.S. Total	8,146	

Source: U.S. Department of Agriculture, *Agricultural Statistics 2001*, p. VIII - 40.

Table 7-A
U.S. Domestic Produce Shipments, 2000
Top 10 States
(Thousands of Hundredweights)

State	Production	Percent of U.S. Total
California	165,215	29.2%
Florida	74,356	13.1
Washington	61,819	10.9
Idaho	49,400	8.7
Arizona	30,591	5.4
Wisconsin	25,837	4.6
Colorado	25,798	4.6
Texas	19,009	3.3
Michigan	16,831	3.0
Georgia	15,740	2.8
Total 10 States	484,596	
U.S. Total	566,075	85.6

Source: U.S. Department of Agriculture, Agricultural Marketing Service. *Fresh Fruit and Vegetable Shipments*, 2001 issue.

Table 8-A
Percent of U.S. Produce Movements by Rail and Truck
1970 - 2000

Year	Rail	Truck
1970	38.0	62.0
1971	36.0	64.0
1972	31.5	68.5
1973	29.5	70.5
1974	27.5	72.5
1975	21.8	78.2
1976	18.0	82.0
1977	14.0	86.0
1978	11.5	88.5
1979	9.5	90.5
1980	10.2	89.8
1981	11.2	88.8
1982	12.1	87.9
1983	14.5	85.5
1984	13.3	86.7
1985	12.0	88.0
1986	11.5	88.5
1987	11.8	88.2
1988	10.4	89.6
1989	10.0	90.0
1990	9.0	91.0
1991	7.9	92.1
1992	8.6	91.4
1993	7.5	92.5
1994	7.8	92.2
1995	7.2	92.8
1996	6.6	93.4
1997	5.9	94.1
1998	4.5	95.5
1999	4.1	95.9
2000	4.7	95.3

Source: U.S. Department of Agriculture, Agricultural Marketing Service, *Fresh Fruit and Vegetable Shipments*, various annual issues.

Table 9-A
Percent of Washington, Oregon, and Idaho Produce Movements by Rail and Truck
1970 - 2000

Year	Rail	Truck
1970	61.5	38.5
1971	60.0	40.0
1972	53.0	47.0
1973	49.0	51.0
1974	38.0	62.0
1975	32.0	68.0
1976	27.0	73.0
1977	24.1	75.9
1978	28.1	71.9
1979	25.4	74.6
1980	25.0	75.0
1981	25.3	74.7
1982	25.9	74.1
1983	29.8	70.2
1984	30.8	69.2
1985	23.7	76.3
1986	24.8	75.2
1987	27.7	72.3
1988	25.3	74.7
1989	23.6	76.4
1990	19.7	80.3
1991	19.2	80.8
1992	20.9	79.1
1993	18.0	82.0
1994	17.9	82.1
1995	15.8	84.2
1996	13.7	86.3
1997	11.6	88.4
1998	10.5	89.5
1999	8.9	91.1
2000	10.6	89.4

Source: U.S. Department of Agriculture, Agricultural Marketing Service, *Fresh Fruit and Vegetable Shipments*, various annual issues.

Table 10-A
Percent of California-Arizona Produce Movements by Rail and Truck
1970 - 2000

Year	Rail	Truck
1970	48.0	52.0
1971	44.0	56.0
1972	40.0	60.0
1973	36.5	63.5
1974	34.0	66.0
1975	28.0	72.0
1976	21.5	78.5
1977	18.0	82.0
1978	12.0	88.0
1979	11.5	88.5
1980	13.0	87.0
1981	15.5	84.5
1982	17.5	82.5
1983	19.5	80.5
1984	17.6	82.4
1985	15.9	84.1
1986	14.1	85.9
1987	12.5	87.5
1988	10.8	89.2
1989	10.7	89.3
1990	9.4	90.6
1991	8.4	91.6
1992	9.0	91.0
1993	8.0	92.0
1994	7.8	92.2
1995	7.5	92.5
1996	7.6	92.4
1997	6.6	93.4
1998	4.5	95.5
1999	4.4	95.6
2000	5.4	94.6

Source: U.S. Department of Agriculture, Agricultural Marketing Service, *Fresh Fruit and Vegetable Shipments*, various annual issues.

Table 11-A
Percent of Florida Produce Movements by Rail and Truck
1970 - 2000

Year	Rail	Truck
1970	19.8	80.2
1971	17.4	82.6
1972	16.0	84.0
1973	14.0	86.0
1974	12.5	87.5
1975	9.7	90.3
1976	8.1	91.9
1977	7.8	92.2
1978	1.3	98.7
1979	1.1	98.9
1980	1.0	99.0
1981	1.1	98.9
1982	1.1	98.9
1983	4.3	95.7
1984	6.2	93.8
1985	6.2	93.8
1986	6.5	93.5
1987	6.5	93.5
1988	6.4	93.6
1989	5.2	94.8
1990	4.3	95.7
1991	2.5	97.5
1992	2.4	97.6
1993	2.5	97.5
1994	2.3	97.7
1995	2.2	97.8
1996	1.8	98.2
1997	1.7	98.3
1998	1.6	98.4
1999	1.3	98.7
2000	1.0	99.0

Source: U.S. Department of Agriculture, Agricultural Marketing Service, *Fresh Fruit and Vegetable Shipments*, various annual issues.

Table 12-A
U.S. Milk Production, 2000
Top 10 States
(Billions of Pounds)

State	Milk Production	Percent of U.S. Total
California	32.2	19.2%
Wisconsin	23.3	13.9
New York	11.9	7.1
Pennsylvania	11.2	6.7
Minnesota	9.5	5.7
Idaho	7.2	4.3
Texas	5.7	3.4
Michigan	5.7	3.4
Washington	5.6	3.3
New Mexico	5.2	3.1
Total	117.5	70.1
U.S. Total	167.7	

Source: U.S. Department of Agriculture, NASS, Livestock Branch.

Table 13-A
U.S. Cheese Production, 1999
Top 10 States
(Millions of Pounds)

State	Cheese Production	Percent of U.S. Total
Wisconsin	2,149.5	27.1%
California	1,383.4	17.4
New York	682.3	8.6
Minnesota	682.2	8.6
Idaho	562.1	7.1
Pennsylvania	376.7	4.7
Iowa	259.7	3.3
Missouri	154.3	1.9
Washington	145.5	1.8
South Dakota	136.4	1.7
Total	6,532.1	82.2
U.S. Total	7,944.0	

Source: U.S. Department of Agriculture, *Agricultural Statistics 2001*, p. VIII - 15.

Table 14-A
U.S. Butter Production, 1999
Top 6 States
(Millions of Pounds)

State	Butter Production	Percent of U.S. Total
California	343	26.9%
Wisconsin	290	22.7
Washington	119	9.3
Pennsylvania	110	8.6
Minnesota	58	4.5
New York	25	2.0
Total	945	74.0
U.S. Total	1,275.0	

Source: U.S. Department of Agriculture, *Agricultural Statistics 2001*, p. VIII - 15.

Table 15-A
U.S. Ice Cream Production, 1999
Top 10 States
(Millions of Pounds)

State	Ice Cream Production	Percent of U.S. Total
California	131.4	13.8%
Texas	69.7	7.3
Indiana	68.6	7.2
Pennsylvania	59.4	6.2
Minnesota	45.0	4.7
Ohio	36.6	3.8
New York	35.5	3.7
Florida	24.5	2.6
North Carolina	21.5	2.3
Washington	20.4	2.1
Total	512.6	53.7
U.S. Total	954.1	

Source: U.S. Department of Agriculture, *Agricultural Statistics 2001*, p. VIII - 16.

The Private Sector View – A Panel Discussion

Charles "Shorty" Whittington
Agricultural Transporters Conference • Grammer Industries

Thank you for inviting me to participate in this important conference. I am president of Grammer Industries in Grammer, Indiana, and Chairman of the Agricultural Transporters Conference of the American Trucking Association. The Agricultural Transporters Conference, founded in 1995, is the only national organization representing the commercial transporters of agricultural commodities, forest, and mineral products.

My company, Grammer Industries, specializes in transporting liquid fertilizer and other agricultural-related products to the farming sector, as well as nitric acid, LP gas, CO2 and waste water. We serve customers in Indiana, Illinois, Michigan, Pennsylvania, Ohio, Kentucky and Iowa.

From my perspective, one of the primary responsibilities of this conference is looking at the economic impact agriculture, and especially agricultural transportation and the transportation infrastructure, has on the American economy. As a transporter of hazardous materials, I can assure you that since September 11 the issue of security has become a paramount one for trucking company owners such as myself, who engage in hauling such materials all year round. The issue of security and its ongoing affect on competition for federal dollars will be an issue for the trucking industry, especially in terms of potential loss of funds from the Highway Trust Fund.

America's transportation infrastructure is the envy of the world – a product of innovative engineering combined with an unsurpassed national resource endowment. The interlocking elements of the U.S. transportation system support 4.5 trillion miles of passenger travel and 3.7 trillion ton-miles of goods movement. The system includes more than 5.5 million miles of public roads, railways, waterways, and oil and gas pipelines; nearly 20,000 public and private airports, 230 million motor vehicles, railcars, aircraft, ships and recreational boats.

More than 5 million trucks travel over nearly 4 million miles of roads, while railroads carry 35 percent of total freight ton-miles over 170,000 miles of rail track. Vessels move freight over 26,000 miles of navigable waterways with 276 locks and 3,700 terminals on the Great Lakes, inland waterways, and ocean ports.

About 29 percent of the total inter-city revenue freight ton-miles are carried by trucks and other highway vehicles. There are 4 million miles of roads and streets; 600,000 bridges on the entire network. State and local governments control most of the nation's roads and bridges. The nation's Interstate highway system – completed in the 1980s – makes up just 1 percent of total highway mileage, but carries 25 percent of total vehicle miles traveled.

The cost per unit to transport freight has fallen significantly over the past two decades – the result not only of innovations in transportation, but from deregulation of the transportation sector that allowed service providers to shed inefficient services and provide service motivated by maximizing profit and minimizing cost.

Many of the economic and policy influences at work in the general economy and agricultural sector are exerting similar (positive) influences in the transportation sector. Deregulation – a policy-friendly environment – isn't just an agricultural phenomenon. It's been at work throughout the transportation sector for the past two decades. At the turn of the 1900s, nearly all Interstate transportation was subject to government economic regulation.

By 1999, the decision making process covering entry, exit, pricing, and quality of service had been significantly diminished by the federal government and turned over to the carriers and market forces. Government emphasis has shifted from economic controls over rate and entry, industry concentration, labor relations, and antitrust issues to security, safety, environment, and capability concerns.

Deregulation legislation includes the Motor Carrier Act of 1980 for trucking, the Railroad Revitalization and Regulatory Reform Act of 1976 and the Staggers Rail Act of 1980 for railroads. Other legislation included the Bus Regulatory Reform Act of 1982, the Airline Deregulation Act of 1978, and the 1984 Shipping Act for ocean carriers. Railroad deregulation began in 1976, but was accelerated with the Staggers Act of 1980. Inland barge transportation – one of the most valuable assets in the economy, has generally escaped regulation. The exception has been the introduction of a barge fuel tax imposed in the early 1980s to fund the Inland Waterway Trust Fund – a means of tapping users to build up needed funding to help finance the inevitable capital improvements as the over half-century infrastructure reaches the limits of its useful life.

Transportation is a very unique sector in the U.S. economy. It is comprised of several industries – responding to market and policy signals like any other industry. But the underlying infrastructure in many cases is either a natural resource, shares a public good characteristic, or has many competing interests for its use – certainly for its service and performance.

- Barges operate on the inland waterways. But, barge companies don't own the Mississippi, or the Illinois, the Columbia or Snake Rivers. Our rivers have multiple, valuable claims on them by the public, by environmental interests, even by the government for national security.

- Trucking companies, meanwhile, don't own the nation's highway system, and all of us have much more than a casual interest and a heavy stake in the quality and accessibility of the highways. The same is true for airlines – who don't own the airways – or shipping lines, who don't own the sea lanes or ports.

This is important, because the decisions about investments – to build, improve, overhaul or shut down – are by their very nature broad discussions involving many groups, with often-times competing agendas and points of view.

Transportation Implications

Highlighting transportation's role in 21st Century agriculture is not a subtle attempt to suggest that problems in transportation will be the weak link that holds agriculture back from the potential achievements that are possible in the years ahead. But as the world grows smaller, because distances are overcome by technological developments like e-commerce, or by more open trade policies, transportation will play a more prominent role in supporting the ability of business, including agriculture, to reach its customers quickly, efficiently, and without product quality deterioration. Therefore, it is worthwhile to examine the forces shaping transportation, and to consider how those forces may interact to improve (or inhibit) the performance of agriculture in coming decades.

As we gear up for transportation reauthorization, there are several important issues concerning transportation funding and taxation that demand our attention. As a member of the American Trucking Association, I will be supporting the continued dedication of federal highway user fee revenues to authorized transportation

purposes, as established by the Transportation Equity Act for the 21st Century. We will vigorously oppose any attempt to enact new truck user fees or to increase the rate of current fees. And, we will support language to prevent the imposition of tolls on the Interstate Highway System. However, this will not be possible if the eligibility of Highway Trust Fund monies is further expanded to allow or mandate greater use of these funds for non-highway projects and programs. Therefore, my earlier comment regarding the potential threat the issue of security may pose to the use of Highway Trust Fund money clearly is a major concern to agricultural haulers and the trucking industry as a whole. In addition, the environmental review process must be reformed to ensure that projects are not unnecessarily delayed and that available federal funds are spent efficiently.

We also believe that federal aid funds can be more effectively directed toward projects that will improve the safety and efficiency of the highway system. For example, new investments must be made to address the shortage of truck parking spaces.

Of particular interest to agricultural transportation, we will continue to obtain reform of federal regulations on truck size and weight. Current federal law does not allow the states to make common sense changes to their size and weight limits to meet local needs and bring about safer, less congested highways, lower infrastructure costs, reduced energy use and lower transportation costs. It is an issue that everyone in the agriculture sector should be concerned about and one in which we all must be more involved.

As a businessman engaged in commercial agricultural transportation, there are many challenges I face each and every day. Diesel prices, insurance costs, safety issues, security issues, weather conditions and the costs of doing business in an economy, which is still emerging from a significant downturn.

Each day is a challenge. Yet, each day, I find solutions. And, it is by working together that each challenge can be met successfully, that each of us can become more productive and profitable, and can build our businesses efficiently and serve our customers – living and working together in the greatest nation on the face of the earth.

BNSF

Brian Sweeney

I'll give some of the rail industry's perspective on agriculture and transportation – what we've done to establish ourselves and make ourselves – and also to talk about some of the changes that are going to be needed in public policy if the rail industry is going to be able to continue playing this type of role.

You will be pleased to know that a lot of the things I'm going to talk about have already been covered, some of the figures, how much grain is hauled by whom and so on. In a nut shell, agriculture products is 7.5 percent of the rail tonnage, about 6.7 percent of rail revenue. The latest data is corn is 15 percent of the tonnage, wheat is 30 percent, soybeans about 12 percent.

It will come as no surprise, I'm sure to anyone in the room, there are great swings in the influence of transportation. I used to think forecasting grain transportation was either the hardest job in the rail industry or the easiest. It is the hardest because it is almost impossible to get it right, but again it's easy because nobody expects it here. Very, very big shifts can occur within a year, from year to year. So called car shortages one year will be followed by two years of all grain in storage going to dust. So, it's a very extensive proposition for rail to keep up equipment and all things necessary.

I'll give a little overview first of what's going on with logistics in general. The key here is that logistics as a percentage of gross domestic product has declined dramatically in the 20 years since the transportation industry was deregulated. In 1980 the Staggers Act deregulated the rail industry, brought change to rail transportation. Those of us who were around back then can remember what it was like. If you wanted to raise the rate for a customer you were tied up with the ICC for a couple of years and you never wanted to lower the rate because then any competitors would tie you up for a couple of years, too. It was unbelievable to try and get anything done.

There was no investment to speak of, in fact industry spending was way down. Maintenance was deferred to the point that the Federal Railroad Administration had a category of stationary derailments. A train would derail without moving. The track would simply crumble beneath the trains. That's how bad it got. Twenty-five percent of the rail industry was at some point of bankruptcy when the Staggers Act went into effect. So there was a desperate need to do something to put rail bargaining disciplines into the railroad industry.

The different modes of transportation show that railroads are 40 percent of the ton miles, but we are about 10 percent of the revenues. Truck is 29 percent of ton miles, 80 percent of revenues. This is a shift that has been going on. For the past 20 years truck market share has gone up from about 30 percent to 50 percent, rail has gone from 48 percent to about 31 percent, barge at 21 percent to about 17 percent. According to the USDA, that's attributed to a couple of things: one is global processing becoming a much bigger part of the agriculture industry and also more farm-owned trucks, so that farmers are taking their products farther to market.

Here's what's happened with the railroads in the United States since 1980, when the Staggers Act was passed. Price, revenue, volume, productivity – moved along at a pretty even keel. Since 1980 there's been an exploding productivity of 173 percent. Volume up dramatically, revenue down, prices down. Again, that, compared with the drop in the logistics costs, is attributable to two things. One is new technology and that is a result again of capital spending. Another is new services that have come on-line, again because of that. Before deregulation, rail transportation was one size fits all, take it or leave it.

I remember about 20 years ago a guy in our sales department said that railroad sales used to be a real easy job. You take the traffic manager from the company to lunch, buy him lunch, buy him a drink, give him a cigar, tell him a dirty joke and show him the rainbow and hope they like it enough to give you part of his business. All of a sudden our sales people had to know what they were selling because we were free enough to negotiate different rate and service packages to our customers for the first time. We weren't allowed to have customer contracts before deregulations. We did not have a contract with our customer. Think about that. All of a sudden that became a big part of your job.

These productivity changes mean that's not cheap. We are the most capital intensive industry in the United States of America – 22 percent of our revenues, compared to any other industry. We're way off the scale. My company alone was spending $2.2 billion a year in the late '90s. We invested heavily in our rail system, in our equipment and they brought a lot of productivity to it. How long can this continue? How long can we keep up that level of spending?

We have a problem of the cost capital versus the return on investment. When you have to borrow the amount of money that we do for a capital program, it's not paying off particularly well. Wall Street does not like the fact that we're doing that. We've been punished quite a bit in our evaluations by analysts, in the amount of capital spending that's been required.

Where's the money been going? Ninety-five percent of it is going into right-of-way freight cars or locomotives. Right-of-way expense for rail ties and what not, bridges, locomotives, they're running about $1.5 million a piece right now. Freight cars are running about $50-60,000 a piece. I remember about 12 years ago or so the Department of Agriculture was making a big to do – they were forecasting a grain car shortage looming on the horizon. They were saying that if you think the grain car shortage in the past was bad, you ain't seen nothing yet, because the railroads are not buying grain cars. We've bought a lot of grain cars. Our capacity is up 30 percent from 1990. Bushel capacity of our grain trains is up 30 percent. And yet this does not come cheap. Two 86-car runs are about $60,000 a pop.

As I said, Wall Street doesn't like the fact that we've had to spend this much money. Here's our return on a $1,000 investment in the rail industry versus the ST 500 over that period of time. We've not been able to keep pace.

And that creates grain problems for the future when you look at projections of growth in transportation. If growth is going to continue, how are they going to be able to keep on making the investments that are required to make that happen? So, as I said, we're looking for change in public policy and how railroads are treated.

Some of the examples are in looking at public/private partnerships where there's a demonstrable public benefit to some project, for example, a regional intermodal facility. Something that will improve congestion in metropolitan areas, things of that nature. One thing in agriculture that people thought about from time to time is the potential for containerization of agricultural products. That's something where the public may want to be involved. Right now the market isn't there. The potential there just doesn't exist right now for us to spend money on it. But then again, maybe something that the public entity might want to get involved in is a partnership situation that could make that type of thing a reality.

They say public policy is a two-way street. The railroads, for a lot of years, said we don't have any public money, we're not subsidized like those other guys. Since 1993 when the new package was put together in Congress, there was money on the table for the rail industry. And the rail industry, except for, I think, the Soo Line, said, no, we're not going take the money. They left the money on the table because they were not going

to take or accept anything that looks like a subsidy because we're on this crusade. Things are changing from all the things I've shown you, there's change on our part. We're now more interested in those types of things where there's demonstrable public benefit, to see if something can be done on that basis.

It's also going to require some different thinking in the public sector. Compare the railroads in various departments of transportation to the little kids at Thanksgiving dinner who are eating at the card table down in the basement. The kids just stay down in the basement and don't make too much fuss. There's got to be another way. One partner in transportation and the other partners, assessing the issue of taxes. I was admonished for expressing the notion that the amount of money that the state spends on railroads should somehow point to the amount of money that the railroads pay in taxes into that state's transportation. This guy was just blown away that I would have such a foolish notion that there should be some sort of equality of benefit versus the costs for transportation. So there's got to be a change of thinking in that area as well.

There are also various things that we need to look at such as the best places to spend public money. One thing for agriculture would be, as I mentioned, containerization potential, upgrading some specific regional and short line railroads to handle the 286 cars. Some things to streamline the process at the borders, so that grain that is moving to export could get through faster.

In closing, I just wanted to say that we are a significant part of the agricultural industry. There needs to be more of a partnership with the public in the future if we're going to continue to be part of the growth and not become, potentially, a competitor.

CHS Cooperatives

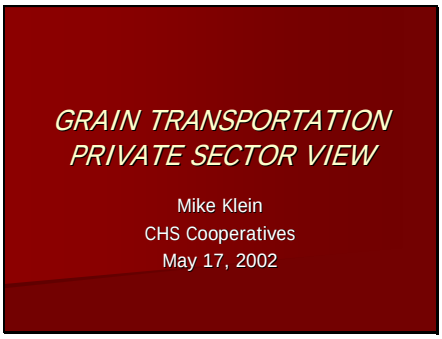
Mike Klein

A critical producer issue is cost effective transportation to help compete in the global marketplace. Producers need a transportation system that meets agriculture's long-term needs and a system that can handle growth. Producers also need increased competition in the transportation arena.

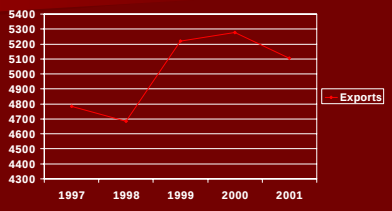
While grain exports decline, domestic use is increasing, partially due to transportation opportunities and issues.

- Mississippi River barges, for instance, are economical and environmentally friendly as they move grain into the export arena. Problems, though, are congestion and that the lock and dam system is obsolete.
- Railroads have had dynamic changes in the last 10 years with mergers and alliances. Operations have changed from 54-car units in 1990 to 110-car shuttles in 2002.
- Trucks have had moderate changes during the last 10-15 years. In 1990 they had longer hauls to rivers and lakes and in 2002 they have shorter hauls to processors, shuttle loaders and ethanol plants.

The public policy wish list asks for maintenance of a strong transportation infrastructure, developing a federal intermodal transportation plan, and creating more intermodal competition and greater overall efficiency.



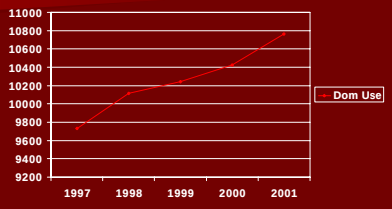
Total US Grain Exports



RAILROADS

- Dynamic changes in last 10 years
  - Mergers
  - Alliances
- Operations
  - 1990 = 54-car units
  - 2002 = 110-car shuttles

Total Domestic Use of United States Corn, Wheat, Beans



Trucks

- Moderate changes over last 10-15 years
  - 1990 = longer hauls to river and lakes
  - 2002 = shorter hauls to processors, shuttle loaders, and ethanol plants

Public Policy Wish List

- Maintain a strong transportation infrastructure
  - Develop a federal inter-modal transportation plan
  - Create more inter-modal competition
  - Create greater overall efficiency

Critical Producer Issues

- Producers must have cost-effective transportation
  - Helps compete in global marketplace
- Producers need transportation system that meets agriculture's long-term needs
- Producers need system that can handle growth
- Producers need increased competition in the transportation arena

Northern Plains Potato Growers Association

Duane Maatz

Potatoes are a multiple use product enjoyed by consumers. The Northern Plains Potato Growers Association represents northwestern Minnesota and all of North Dakota with some producers in South Dakota likely. This is the third largest area in the nation growing potatoes. Idaho is the first and Washington is second.

In our area we tend to lose 3-10 percent of the crop to rainfall, either too much or too little. Potatoes protect themselves by supporting the vine before they develop the tuber. This creates a smaller crop.

While the Northern Plains area is down in acres our crop production remains consistent.

Fall potato acres in 1995 were 1.22 million; in 1998, 1.24 million; and in 2001, 1.26 million. During those same years, North Dakota planted acres went from 125,000 to 126,000 to 118,000; Minnesota went from 83,000 to 82,000 to 59,000; Washington went from 147,000 to 165,000 to 160,000; and Idaho went from 400,000 to 415,000 to 370,000.

In those same years, the same states showed harvested acres tallied at 1.22 million acres, 1.22 million acres and 1.23 million acres.

At the same time, total fall production by hundredweight diminished. The Northern Plains had 46.1 million in 1995, 49.7 million in 1998 and 45.06 million hundredweight in 2001. Washington grew from 80.8 in 1995 to 93.2 in 1998 to 94.4 million hundredweight in 2001, and Idaho dipped from 132.6 in 1995 to 139.6 in 1998 to 128 million hundredweight in 2001. Together, the statistics show total fall production went from 443.6 in 1995 to 475.7 in 1998 to 441.8 million hundredweight in 2001.

Crop value in the Northern Plains went from $241 million in 1995, to $234 million in 1998 and $436 million in 2001 while the same time periods showed United States crop value at $2.22 billion, $2.4 billion and $511 billion.

Northern Plains potatoes are grown for four main areas:

- Processed/frozen potatoes are 57 percent of the crop while the U.S. total is about 65 percent. This is a struggling area showing a flat line or loss for most producers. This is labor intensive and has high overhead costs.
- Seed potatoes are at 22 percent of the crop. Due to drought 10-15 years ago, much of the seed market diminished.
- Fresh potato production is now at 12 percent but used to be at 50-55 percent.
- Chip potato production used to be 45 percent and is now 9 percent.

One of the reasons for less chip production is the need for a consistent size potato. Because of irrigation and sandier soils in Wisconsin and Washington, much chip production is now done there in quest of the perfect potato.

U.S. per capita consumption of potatoes has shown a steady increase from 119 pounds per person in 1978 to 144 pounds per consumer in 2000.

Our region grows enough potatoes to feed more than 31 million people. The combined population total in Minnesota and North Dakota is 5.542 million. Obviously we're not eating all the potatoes we produce. Potatoes have intense production issues with crop medicines used. Local transportation needs are heavy and costly to move the product from farm to processor to consumer. On some hauls, truck costs can be two to three times the value of the potatoes – a significant burden.

Our organization began because of the need to address issues of transporting potatoes to market. Potatoes are perishable goods and must be moved carefully by skilled people. While we originally addressed rail for our transportation, we now rely a great deal on truck transportation.

We have huge opportunities in Mexico but also significant issues. Rail might be our best transportation into Mexico.

Intermodal transportation could be of great benefit to potato growers, whether going south or north. We used to send five potatoes north for every one that came south but that is now reversed.

One of the issues we address is getting potatoes to our snowbirds in Arizona. If the truck driver doesn't change the temperature control on the truck as his truck moves from a cold to hot environment, the potato is spoiled. No product means no profit.

Northern Plains Potato Growers Association

Formerly: Red River Valley Potato Growers Association

Offices in East Grand Forks, Minnesota
Research Farms in Grand Forks and Kidder Counties, North Dakota

Statistics

Harvested Acres	1995	1998	2001
ND	125,000	122,000	107,000
MN	83,000	73,000	57,000
Washington	147,000	165,000	160,000
Idaho	400,000	413,000	368,000
US Fall Harvested	1.22	1.22	1.23 Million Ac

Our Mission

"To promote profitability and unity of the potato growers of the adjoining states of Minnesota and North Dakota through the development and promotion of quality potatoes"

Statistics

Total Production	1995	1998	2001
Northern Plains	46.1	49.7	45.06 Mil. Cwt
Washington	80.8	93.2	94.4 Mil. Cwt
Idaho	132.6	139.6	128 Mil. Cwt
Total Fall Prod.	443.6	475.7	441.8 Mil. Cwt

Statistics

Planted Acres	1995	1998	2001
ND	125,000	126,000	118,000
MN	83,000	82,000	59,000
Washington	147,000	165,000	160,000
Idaho	400,000	415,000	370,000
US Fall Potato	1.22	1.24	1.26 Million Ac

Value of the Crop

	1995	1998	2001
Northern Plains	241	234	436 Million $
US Value	2.22	2.4	511 Billion $

Northern Plains Potato Types

- **Process / Frozen 57%**

- **Fresh 12%**

- **Seed 22%**

- **Chip 9%**

Our region grows enough potatoes to feed over **31,000,000** people.

MN population	4,900,000
ND population	642,000
Combined Total	5,542,000 persons

US Per Capita Consumption

1978	119 pounds
1983	118 pounds
1988	122 pounds
1993	136 pounds
1998	142 pounds
2000	144 pounds

Do we have transportation needs?!

The Public Sector View – A Panel Discussion

Elwyn Tinklenberg, Commissioner
Minnesota Department of Transportation

1. **The bottom line test for the nation's transportation system is whether or not it supports economic growth and global competitiveness and we are facing some serious challenges.**

2. **Agriculture is a critical, and not well-understood, sector of the U.S. economy and is dependent upon transportation for its success.**

3. **The reauthorization of TEA-21 is key to maintaining and improving the efficiency and productivity of freight transportation.**

4. **This Forum will make a substantial contribution to understanding the agriculture/transportation link and to creating a stronger foundation of support of investment in transportation infrastructure.**

1. The bottom line test for the nation's transportation system is whether or not it supports economic growth and global competitiveness and we are facing some serious challenges.

- A report prepared recently for the American Association of State Highway and Transportation Officials on the Economic Benefits of Transportation Investment summed up the economic importance of transportation in the following terms: "In 1997, the country's roadways, rail lines, airways, waterways, and pipelines shipped 11.1 billion tons of freight valued at nearly $7 trillion. In fact, the value of all the goods shipped annually in the United States is more than four-fifths as large as the entire U.S. gross domestic product. Some 2.7 trillion ton miles of freight traffic moved over an average shipment length of 472 miles."
- Transportation investment boosts industry competitiveness by reducing both the costs of production and the costs of distribution and contributes to the strength of local, regional and state economies.
- The U.S. transportation system has been an essential contributor to the success of the U.S. economy but looking both to the past and the future the challenge is clear.
- Many of the ports rooted currently in use were established in the colonial era and waterways in the mid-19th century. Our rail corridors were laid out in the late 19th century; the highway system was planned in the first half of the 20th century; and airports are now frozen in the second half of the 20th century. Past investment cannot be expected to meet the needs of the 21st century.
- Moderate economic growth will double the volume of import/export tonnage and increase domestic freight tonnage by 70% over the next twenty years. Both the trucking and freight rail industries have thrived since deregulation in the early '80s, not only increasing the volume and value of freight moved but decreasing costs to their customers. The rising level of international trade has involved the doubling, tripling and quadrupling of the number of containers that can be carried by a single ship. The value of cargo moving by air has skyrocketed. Cyber business has not reduced freight movement but has expanded, multiplied and transformed its' warehouses have moved onto the roads and truck deliveries are made into every neighborhood.
- The transportation system of the future will have to handle freight movement that is much greater in volume and much more complicated in its execution.

2. ***Agriculture is a critical, and not well understood, sector of the U.S. economy and dependent upon transportation for its success.***

- Agriculture accounts for about 7 percent of the gross domestic product, contributed nearly $50 billion to U.S. exports in 1999 and generates more than 10 million jobs in farming, production and processing. Viewed broadly, agriculture is an important and often key sector in the economies of every state. Minnesota, for example, is first in the nation in sugar beet production, second in sweet corn for processing, green beans for processing, turkeys raised and manufactured American cheese.
- The agriculture sector is the largest user of freight transportation services. If you combine the movement of commodities with processed products and inputs such as fertilizer and machinery it uses nearly one-third of all freight transportation services provided in this country.
- All of the freight modes are important to agriculture. In the aggregate, trucks move about 45% of ton-miles moved, rail 32% and water 12 % of the total, but the shares can be very different for different categories of freight.

3. ***The reauthorization of TEA-21 is key to maintaining and improving the efficiency and productivity of freight transportation.***

- State DOTs in the aggregate build, own, maintain and operate the largest and most important element of the nation's freight transportation infrastructure – the highway system. Short-changing highway investment will not be to the benefit of anyone involved with freight transportation in any mode.
- The American Association of State Highway and Transportation Officials has developed a comprehensive set of proposals for TEA-21 Reauthorization. AASHTO's most basic TEA-21 recommendations are critical to freight transportation – full funding fully guaranteed with the flexibility to make the needed investments through an efficient process. Beyond that it is essential that the highway system have strong links with other elements of the freight transportation system and that the other elements perform as efficiently and productively as possible. AASHTO's recommendations that follow deal with both core and linkage issues.

AASHTO's priority objectives for TEA-21 reauthorization are to:

- Grow the program over six years with highways increasing from $34 billion to $41 billion and proportional increases in transit.
- Maintain funding guarantees provided by the firewalls and Revenue Aligned Budget Authority, which should be fixed to prevent major year-to-year swings.
- Retain the basic program structure both in terms of the allocation of authority and the basic programs.
- Increase flexibility to make it possible to meet the priority needs, including security, safety, congestion relief, system preservation, capacity expansion and more efficient freight movement.
- Improve environmental stewardship while expediting project delivery. All of these priorities have a direct bearing on the core issues of this Forum. To underline several:

If we do nothing to increase the amount of funding available for investment we will fall farther and farther behind. The "Do Nothing" option will result in a 9 percent nominal increase in revenue but in real terms it will produce a 26 percent decline in buying power between 1996 and 2009. To prevent that decline AASHTO is analyzing ways to increase highway trust fund revenues and exploring the possibility of creating a Transportation Finance Corporation that could generate billions of dollars of transportation investment through the issuance of tax credit bonds.

Congestion relief and increasing reliability and predictability on the roads is not simply a matter of convenience, it involves huge cost savings. It has been estimated that each hour of a long-haul truck trip costs $200 and each hour of unexpected delay costs twice that. If we don't reduce congestion and improve reliability, the costs will greatly outweigh what we might think we are saving.

- Capacity has not come close to keeping up with growth. The U.S. population grew by 100 million over the last 40 years, and is expected to grow by 100 million more over the next 40. Highway travel tripled since 1960, and is currently growing at approximately twice the rate of population, but capacity increases in recent years have been in the low single digits.
- Security and safety may be viewed by some as tangential to transportation but they should be core objectives. A transportation system that is vulnerable to serious disruption resulting from terrorist attacks or other emergencies will not serve the nation well in this century and we cannot continue to sustain the
- Human and financial costs resulting from the more than 40,000 deaths on the highways every year.
- AASHTO's freight policy recommendations cover capacity building at the national, state and local levels; innovative financing; improved freight corridors and connections to trade gateways; and, clarifying eligibility for freight projects.

AASHTO Reauthorization Policy Overview

- The national economy and our quality of life depend on good highways and transit.
- Federal transportation aid has enabled states and local governments to fund the system needed.
- TEA-21 resources are being invested well and are making a difference in every state.
- The current program structure, which features state and local planning and decision making, flexibility, and an intermodal approach, is working well and should be retained.
- Security will require resources to reduce vulnerabilities, and improve emergency response and communications.
- Huge safety, preservation and capacity needs exist which will require more resources, funding guarantees, and financing innovation.
- Congestion relief can be provided through investments in operations and technology.
- Environmental stewardship will emphasize responsive design; programmatic approaches to meet clean air, water and wildlife goals; enhancements; and land use coordination.
- Streamlining environmental review is needed to speed up program delivery.
- Funding research and technology transfer will accelerate deployment of better solutions.

4. This Forum will make a substantial contribution to understanding the agriculture/transportation link and to creating a stronger foundation of support for investment in transportation infrastructure.

If this Forum can come close to accomplishing its four main goals it will have been invaluable. Those goals are to:

- Expand and strengthen understanding of the importance of agriculture to the economy and the importance of transportation to agriculture.
- Show how the transportation system contributes to the success of the agricultural industry.
- Help public sector transportation policy makers and program managers develop a base for decisions that make transportation respond to agricultural needs.

- Develop a foundation for partnership between people in the agriculture and transportation communities to increase investment in transportation.

State DOTs are putting much more emphasis on freight transportation.

- The era when "excess capacity" made it possible for freight to move among passengers with relative ease and efficiency is over. More attention must be paid to freight not only to improve the efficiency of freight transportation but also to address the problem of passenger transportation congestion.
- Many states are devoting more effort to freight transportation through state freight studies and plans, corridor initiatives (such as I-95, I-81, I-10, I-5/FAST, I-25, and regional efforts such as the Latin American Trade and Transportation Study and the Western Transportation and Trade Network) and investment in specific projects.
- In Minnesota we completed the "Interregional Corridor Study" in 1999 to guide the management of key transportation links between the State's regional trade centers. The improvement and protection of these connections between regional trade centers is part of a strategy to enhance the economic competitiveness of the state.
- Minnesota has also created a freight advisory council to link government and business efforts and interests in the area of transportation.

What these experiences tell us is that freight transportation, and within it agricultural transportation, is a matter of making connections. Some of these connections are physical such as those between a port and a highway or between the producers of Minnesota and the processors in other states. Some of these are institutional such as the connection between public investments and private business. Some can be very abstract, such as seeing how the dispersed pieces of the economy and the transportation system create a national system that benefits everyone. Over the next day-and-a-half, one of the most important things we can do is identify the critical connections that must be made to make transportation work well for agriculture.

I hope that we come out of this Forum with both a thinking agenda and an action agenda.

David A. Galt
Montana Department of Transportation

Introduction

I am Dave Galt and I serve as the Director of Montana's Department of Transportation. I want to thank the Upper Great Plains Transportation Institute for sponsoring this important forum. I also want to recognize North Dakota's Senator Conrad for his efforts to improve federal highway program funding for 2003, in light of the impact of negative RABA. Senator Conrad is a friend of transportation and, like Montana's Congressional delegation, he understands the importance of transportation for a rural state. The importance of transportation for the agriculture sectors of our economy cannot be overstated. It gets our commodities to market, it provides our citizens with reasonably priced access to manufactured goods and agricultural products, and it links our citizens to family, friends and community services. This forum is especially important because it looks at the linkage between agriculture and transportation in the year before the current highway program, TEA-21, must be reauthorized.

Importance of Linkage between Agriculture and Transportation

Montana is an "Ag" state. The export of agricultural commodities has been a cornerstone of Montana's economy for the last century and it will remain so in this century. Within the nation, the states with the highest proportion of their gross state product based on agriculture are those states located in the Northern Rockies and the Great Plains including North Dakota and Montana. The agricultural products from this region feed the nation and the world and contribute to the one bright spot in America's trade balance – the trade surplus in agricultural exports.

While the export of agricultural products is essential for the economy of this region, the biggest issue facing shippers is the distance our products must cross. We are totally dependent on reliable, low cost transportation to move our commodities to international ports and to major population centers. Overcoming distance in the export of our agricultural products continues to be challenging although we have seen the nature of that challenge change over time.

Issues

Let me share with you some of the regional trends we have seen in agriculture transportation over the last decade.

We have seen the length of the highway hauls for grain trucks get longer between fields and terminals. This is because 110 unit-train loading facilities are replacing the 52 and 76 car facilities. While the average highway haul distance to 52 car facilities was 25 to 40 miles, the average haul distance to 110 car facilities is 50 to 150 miles, and the 110 car facilities are rapidly replacing the smaller facilities.

We have also seen the consolidation of major rail lines reduce competition in our states, with consolidation followed by higher shipping costs and rail car shortages for our grain. Let me be specific on what this means. Grain producers in Montana routinely pay approximately 30 percent more to ship their grain to market than states where there is competition between rail-lines, even in those cases where the haul distances for Montana grain are shorter. This amounts to about a $50 million per year premium that is borne by Montana grain shippers simply because there is no rail competition except in the southwestern corner of the state. Also, when the per bushel grain prices on world markets go up for these captive rail customers, we have seen their rail

transportation rates follow suit. These pricing trends put this important agricultural sector into the position of not being able to pass increased transportation rates on to the customer. The lack of rail competition also contributes to the lack of reliable rail car availability.

Taken together, this lack of competition contributes to greater use of Montana's highway system in order to get competitive rates for moving Montana grain to market. For example, the Scoular Grain Elevator on the Union Pacific line in Butte is the only Class I rail competitor for the Burlington Northern Santa Fe Railway (BNSF) in Montana. Over the last several years, as much as 20 percent of the grain shipped from this elevator originates in far eastern Montana and western North Dakota. This is a trip of 400-500 highway miles, but one that shippers believe is economically worth it in order to get their grain onto the Union Pacific Railroad. One could conclude that Montana's highway system is the only available route to rail competition available to our grain growers.

Since more traffic is now moving on the remaining rail lines, we have also seen significant disruption of the small communities that the railroads cut through. Along Montana's Hi-Line communities approximately 20 trains a day block streets and roads that connect neighborhoods. We do not dispute that the towns grew up around the railroad, but the disruption in traffic movements these agricultural communities are experiencing impacts health and safety and their way of life.

As regards our beef industry, Montana ships about 1.2 million pounds of beef cattle to market annually. These cattle are shipped live by truck to feedlots or slaughter houses in other states. This industry accounts for nearly a billion dollars of personal income in the state and is dependent on the quality and reliability of our arterial highways. In recent years we have seen a significant number of feeder cattle exported to Canada moving via our north-south arterial highways. Through the Restricted Feeder Program, Montana exported an average of 118, 500 head each year for the last three years over the six-month period of October 1 through March 31. This trade movement is expected to continue to grow and it is again dependent on an efficient and reliable highway system.

While we are discussing the linkage between transportation and agriculture I also want to mention the health benefits our northern states' citizens receive by having reasonably priced access to fresh produce throughout the entire year. Although we have the luxury of taking it for granted, it really is the quality of our highway system that allows fresh oranges, lettuce and tomatoes to be on the grocery shelves of Fargo, North Dakota, or Glendive, Montana, at prices that are comparable to those in California or Florida.

With the remainder of my time I would like to share ideas for how to meet the challenge of improving and strengthening transportation for the benefit of our agriculturalists. The goal is to improve the reliability and efficiency of the transportation system for the economical transport of agricultural products. Transportation efficiencies will serve the agricultural economies of North Dakota, Montana and Minnesota. In addition, greater transportation efficiencies also serve the nation's quality of life and our foreign trade balances, which are positively offset from the export of U.S. agricultural commodities.

RECOMMENDATIONS

I. Improve Railroad Competition and Customer Service

Clearly, competition must be enhanced for those captive agricultural shippers without access to competitive rail service. After decades of consolidation it is important now to take the needed steps to ensure our shippers are not unfairly disadvantaged. Towards this end, I am urging support for the provisions of Senate Bill 2245 that was recently introduced by Senator Conrad Burns of Montana to begin addressing issues of rail competition.

First, S. 2245 creates a streamlined process to resolve rate and service disputes by establishing a procedure for final offers of arbitration. This provision will provide a timely and low cost approach to resolving disputes, which under the Surface Transportation Board have been too time consuming and costly to be a realistic dispute resolution process for most rail customers.

S. 2245 also prohibits the creation of "paper barriers" to competition such as contractual restrictions with Class I railroads that prevent short lines and regional carriers from interchanging traffic with more than one Class I carrier. This provision would prohibit new paper barriers and phase out existing ones while providing those impacted by this practice the means to petition for their elimination. This provision addresses the complaint that short lines and regional railroads have been precluded from offering more competitive alternatives within the existing system.

Lastly, S. 2245 would increase competition by offering trackage rights to unit train traffic over facilities owned by another rail carrier at a negotiated rate. This is not a new concept. As a provision of its merger with the Southern Pacific Railroad, the Union Pacific (UP) had to allow trackage rights on more than 4,000 miles of UP line in the West. Both the UP and BNSF have testified to the success of this trackage rights program on a large scale. Given its success, the marketplace should be the determinate of whether trackage rights make sense, not a government regulatory body. We believe there is an opportunity here for the rail facility owners, alternative carriers and the shippers.

While ideas abound on how to improve shipper service and eliminate barriers to competition among rail carriers, S. 2245 takes three of the most useful ideas and would advance them into provisions of law. The shippers of North Dakota as well as those of Montana need this bill and I would urge support as it progresses through the Senate.

II. Improve Motor Carrier Efficiency

Because motor carrier efficiency also needs to be improved, I also respectfully suggest that the freeze on longer combination vehicles be revisited.

Montana State University Professor Jerry Stephens conducted a study of the impact of potential changes in truck weight regulations on Montana's economy. Professor Stephens looked at the many different truck configurations currently used to move commodities including grain. Because some configurations take many more trips to move the same amount of grain, there are economic implications of the configuration used. Among other results, this study concluded that if nine axle Rocky Mountain Doubles were used to move Montana's wheat, the number of trips would be reduced for a $440,000 annual reduction in transport costs compared against only a $290,000 increase in infrastructure costs. We have an interest in the economic

viability of our agriculture producers. Transportation is linked to the economic success of western agriculture.

Consequently, we need to find a way to allow the western states to improve the efficiency of their motor carrier fleets without threatening to impose such changes on other states and regions where it makes no sense or where there is no support for changes to the current "LCV freeze."

As we well know, the LCV freeze enacted in ISTEA, prohibited states from allowing any expansion of LCV operations – either in terms of routes on which they operate or the vehicle weights and dimensions allowed on the National Network of Highways. But, treating the freeze as a third rail that cannot be touched has created its own problems and prevented other problems from ever being solved. For example, the freeze has forced heavier and longer trucks on to roads that were not designed for them. There are also examples of recently completed truck bypasses that were built to move trucks out of cities, where the trucks the road was built to handle cannot travel. I believe we need to put everything on the table and look at the issue again. We should start from the premise that highway safety should be improved, that air quality should be enhanced, that all users should pay their share of highway system costs and that those shippers that have to cover long distances should be able to do so with the maximum economic efficiency. I personally believe there is a balanced and appropriate approach to revisiting the LCV freeze that will not pit one state or region against another and will also respect everyone's concern for highway safety.

While there are many potential approaches, one that is worth considering would give the Secretary of Transportation the authority to establish a pilot study for two or more states to harmonize their truck size and weights across state lines for a several year period while studying safety, highway system impacts, air quality impacts and any effects on the region's economy. This approach is cautious and deliberate and would provide information for Congressional consideration.

III. Ensure the TEA-21 Reauthorization Treats Rural States Fairly

I will close my remarks today urging that the next highway program authorization increase federal highway investments in rural, agricultural states. A long-standing objective of the Federal Highway Program has been to ensure the entire country is connected for a reason echoed in the theme of this forum – the importance of getting the products from one area of the country to the markets or ports in another. To achieve this, highways bridge vast distances in the Great Plains and Rocky Mountain states. These vast Interstate and National Highways allow the continuous flow of people and goods between the country's large metropolitan areas. Also important in achieving national economic vitality is the quality of the transportation systems that access the agricultural resources of the rural west. The agricultural production of this region feeds the nation. Consequently, from the perspective of agriculture alone, federal highway investment in this region benefits the entire nation as it ensures plentiful and reasonably priced food nationwide.

In the upcoming reauthorization, I urge the Congressional delegations of the Upper Great Plains and Rocky Mountain States to do everything possible to increase Federal Highway Program funding generally, and especially increase funds available to the rural agricultural states in this region.

[*Gene Griffin: What we'd like to do is the same thing we did before lunch, and then we'll open it up for Q & A, among our provocateurs up here. So, with that I'd like to begin with Jim Caron, the public sector's view, from USDA's perspective.*]

Jim Caron
U.S. Department of Agriculture

Thank you very much Gene.

Barbara Robinson apologizes for having to leave to return to Washington. She did have about a half hour presentation on agricultural transportation issues which she was looking forward to giving. Unfortunately, while we were saying our goodbyes, she got into the taxi and kept the copy of her presentation. So, I will probably be one of the more popular panelists here today as my presentation will barely run over a minute and a half.

I think the private sector people who spoke just before lunch probably laid out the issues as well as anyone could. For agriculture, there is a big concern about the amount of bulk agricultural products which are moving by truck today. On the face of it, there is little concern because trucking in this country is very efficient. However, when one considers the additional cost of truck transport as compared to rail transport, the amount of congestion this creates in some cases; and the wear and tear on our road network, truck transport is not the best alternative for bulk products like grain. We are very concerned that grain shippers are not served as well by the rail network as they used to be.

Hours-of-service laws were brought up in the previous panel – that is, the amount of hours a truck driver can safely be behind the wheel over a given period and not break the law. I think we all have concern for road safety especially on the interstates when we face down those big, long-haul truckers. We think it is less of a problem in areas where agricultural producers are simply trying to get their product to a local elevator, processor, or market. Often those distances involve 100 to 200 miles and there is considerable wait time between hauls. For this reason, the USDA has sought, and will continue to seek, hours-of-service exemptions for those drivers hauling agricultural products those shorter distances.

In terms of barge transportation, I don't think there is any more concern for any other mode than this one. I also don't think there is going to be any quick resolution to the problem of how to improve the locks and dams on the Mississippi. USDA is trying to provide the best information to the various interests who have a stake in those improvements. We have a number of studies going on right now to elicit the best information concerning barge costs and how that impacts the price of grain delivered in New Orleans. We hope to have those studies available publicly shortly and you should be hearing about some of that research later during this conference.

The other big concern is rail policy and rail operations which I alluded to earlier. There are many issues here, certainly too many to cover in this short time. Some of those issues have been covered earlier. Two of those issues which concern us most are inverse pricing by the railroads, and the amount of elevators which are not today served directly by the railroads.

Well, I think I may have used up my minute and a half by now. We will have time for questions at the end and have an opportunity to discuss some of these issues in some depth in a few minutes. I'm sure you all agree this has turned out to be a fine conference and the discussion has been excellent. Thank you.

Gene Griffin: Thank you, Jim. We'll continue in the order of how they're listed in the program, so the next person to speak will be Dave Sprynczynatyk, North Dakota Director of Transportation.

David Sprynczynatyk
North Dakota Department of Transportation

Good morning. I am David Sprynczynatyk, Director of the North Dakota Department of Transportation. I am delighted to have the opportunity to be with you today.

This forum concerns two issues of the highest importance to North Dakota – transportation and agriculture – to focusing on linkages between the two. I am particularly pleased that the American Association of State Highway and Transportation Officials (AASHTO) chose to hold this conference in North Dakota, the heartland of agricultural production in this country.

Before I begin my formal remarks, there are several people here today who deserve particular thanks for making this event possible: First, Brad Mallory, the Secretary of Transportation of Pennsylvania, who currently serves as AASHTO's President; also, John Horsley, the Executive Director of AASHTO, who recognized the value of this event and was instrumental in making it happen; and particular thanks to Gene Griffin of North Dakota State University, who is the individual most responsible for coordinating this important event.

I also commend our Governor, John Hoeven, and our senior Senator, Kent Conrad, for participating in this important conference. Their appearances underscore the importance of the issues we are discussing here today.

Transportation and agriculture are two important components of the American economy. We need them both to work well, and work well together, to further prosperity for the United States in today's global economy. We particularly need them both to work well here in North Dakota, where agriculture is the largest and most important sector of our state's economy.

In the balance of my remarks today, I'll first cover several transportation issues that are of direct concern to the North Dakota farm economy. Then I'll turn to several broader points about the importance of transportation investment to North Dakota.

Some Trends in Agricultural Transportation

American farmers are among the most productive and cost-effective producers in the world. An economically produced product, however, is of no value to the consumers unless it can be delivered at a reasonable cost. A key ingredient to taking advantage of American farmers' cost-effective ingenuity is a highly efficient and reliable transportation system.

Agriculture in North Dakota has changed drastically over the last 30 years. I recall as a boy growing up in the small community of Wilton, North Dakota, and working summers driving truck, hauling grain from the fields to the elevators. Farmers typically moved their grain in small tractor-drawn trailers or small single axle trucks. The average haul was about five to six miles to an elevator with a railroad siding. Since that time, North Dakota has lost over 1,400 miles of rail system. Consolidation of elevators has accelerated.

Today we see the rail industry moving towards 110-car shuttle and unit trains, and massive shuttle loading facilities led by cooperatively owned satellite elevators from within the production area. It is foreseeable that within the next 10 years there may only be 35 to 40 major railroad loading facilities within the state of North Dakota compared to over 1,100 60 years ago. The past rail abandonments and the move towards these unit and shuttle facilities has greatly increased the distance that farmers haul their crops for final transportation to

market. In order to take advantage of the economy-of-scale, farmers have had to update their equipment for hauling grain. A large amount of today's production now flows to elevators via five-axle semis. At the same time, railroads have reduced the number of loading transfer sites within their transportation system. These changes have been necessary in order for the two industries to remain competitive and distribute North Dakota production to the rest of the nation and to the world beyond. The overall effect, however, has made publicly funded highway improvements more important than ever in the overall distribution scheme.

Underscoring this trend are the annual problems that North Dakota farmers face with respect to spring load restrictions. One North Dakota grain elevator operator, who handles fertilizer in the spring of the year, recently told me that there is approximately $120,000 of additional cost to his elevator as a result of load restrictions. That cost is, of course, passed on to the elevator's customers.

We've also conducted a study with the Upper Great Plains Transportation Institute at North Dakota State University regarding load restrictions and grain shipments. That study pointed out that a five-axle farm truck which can hold 800 bushels of grain, making a 100-mile trip, will pay an extra 29 cents per bushel with just a minimum load restriction during the spring thaw period. On that 100-mile trip, that's an additional $230. That's an extremely heavy additional cost for the farmer and farm communities.

So, it is clear that improving the highway system can be of particular value to agriculture, as well as to all of our citizens.

Benefits of Highway Investment

While our focus today is on agriculture and transportation links, let me briefly touch upon some of the broader benefits of public investment in highways. Good highways facilitate safe transportation, economic growth, personal mobility, and an improved quality of life. Transportation investments generate jobs both directly, in construction, and indirectly, by making our economy more efficient and internationally competitive.
The level of investment needed to attain and maintain these and other benefits is substantial. In the seventies, eighties, and early nineties, the roadway system of North Dakota lost ground at a considerable pace as pavement age and changes in patterns of commodity movements put stress on the transportation system that outpaced funding.

Then, in 1998, came the Transportation Equity Act for the 21st Century, commonly known as TEA-21. TEA-21 significantly increased the nation's investment in maintaining and improving highways and other transportation. That was excellent, long overdue legislation.

This very recent, short-term trend of increasing highway investment has been threatened this year due to a technical mechanism in TEA-21 known as Revenue Aligned Budget Authority (RABA). That provision threatened to set FY 2003 highway program levels at nearly 30% below this year's levels. Fortunately, with a lot of hard work from Governors, including Governor Hoeven, from State DOTs and AASHTO, and with strong effort from many in the Congress, including our Congressional Delegation, it is now clear that legislation will be enacted that will prevent most of the threatened reduction. In fact, we are now anticipating a much smaller reduction.

We in North Dakota particularly appreciate Senator Conrad's work on this issue. On February 20, Senator Conrad brought the Senate Budget Committee to Bismarck, North Dakota, for a hearing. That hearing enabled the NDDOT, the Associated General Contractors of North Dakota, and local governmental entities to explain

the impact on our state of a reduced highway program for 2003. We appreciate all that the Senator has done since then to create room in the budget to avert disastrous highway program cuts.
But one point I'd really like to stress today is that, even with the increased funding of recent years, more is needed and we all need to work to continue to increase Federal transportation investment.

The situation in North Dakota makes a particularly compelling case for increased Federal funds. The North Dakota DOT, in conjunction with political subdivisions within the State, recently undertook a needs analysis of the roads and bridges in our jurisdictions. Just at the state level, our highway system, which has a current investment value of $8.5 billion, is falling behind $93 million each year in maintenance and reconstruction programs. So, we need to increase funding just to reduce the rate at which we are losing ground.

And the Federal Government has a critically important role to play in maintaining and improving the highway system in rural agricultural states like North Dakota – and it should play that role. I have already made clear that highway investments in states like ours help get agricultural products to market. That is not just in the interest of the producing state. North Dakota's production, by increasing agricultural exports, helps hold down the deficit in our nation's balance of trade. In addition, without good Interstate, the National Highway System and arterial routes in rural states, citizens in our major metro areas would have more difficulty moving people and goods between the West Coast, the Midwest, and East Coast.

Increased Funding Is Warranted

In closing, for the reasons I've mentioned, and for others as well, it is in the national interest for the Federal Government to increase its investment in surface transportation, particularly including highways. I hope all of you will, like me, be active in working together to achieve the needed increases. Our highway system has been and will continue to be the backbone of our agricultural economy. With the changes that we've seen in the last 30 years, there will be increased emphasis and need for a strong highway investment.

Thank you again for the opportunity to be here today. If there is time, and if the program allows, I'd be pleased to respond to questions.

Gene Griffin: Thank you, Dave.

Our third panelist this afternoon is Sandy Straehl from the Montana Department of Transportation, who on the last moment's notice, was kind enough to come out and visit us and we really appreciate that. Sandy, it's all yours.

Sandy Straehl
Montana Department of Transportation

Thanks Gene.

I've heard some great stories and jokes today at the beginning of peoples' presentations that I will be using, at other conferences. I really appreciate all the good humor. Rather than a story, I'm going to start my presentation, actually with a couple plugs. I'm going to plug the good work of the Upper Great Plains Transportation Institute, not only for putting this forum together, but I also want to compliment them for the kind of products that we've seen come out of the Upper Great Plains Transportation Institute over the years.

These products have not only been useful, but have really provided us with a model of things that we could institute and implement back in Montana. And so, Gene you've done a great job. And this is just an example of that.

I think that the other thing that I want to plug is all of the good work that's going on in the Department of Transportation in North Dakota. I had an opportunity to have lunch today with a couple of your fellows and some of the stuff that they're doing here in North Dakota is going to have very broad application for any state that wants to make the most of their staff and be as efficient as possible. There are a lot of folks from North Dakota Department of Transportation that have been able to attend this conference, and I just advise you to maybe spend a couple of minutes and ask them what's going on in North Dakota.

Also, my friend Leo Penne is in the audience. And the AASHTO policy paper on freight is now available and I encourage all of you to take a look at it. It's not necessarily directed at the linkage between freight and agricultural production but in fact, the kind of policy positions and directions that AASHTO is encouraging for the next reauthorization will help agricultural movements as well as any kind of freight movements in the country, so this is available to you too.

Now with that said, what I really need to do most importantly, is thank Senator Conrad. I know his staff is here and without Senator Conrad, I don't think there would have really been much energy behind trying to push that envelope for RABA for 2003. A lot of the effort really came out of Senator Conrad's office so we sincerely thank you. There is no question of the leadership on that.

Now the forum is especially important, because as we all know, and behind all of this discussion really is the fact that the current program, TEA-21, will be reauthorized next year. And so, the discussions we are having and the issues that will be raised, may in fact have implications in terms of what that reauthorization looks like. I will provide you with a little bit of background on Montana's trends and agricultural movements this afternoon. And discuss a couple of specific things that we are suggesting for consideration in the next highway program reauthorization.

Montana is an "Ag" state. The export of our agricultural commodities is the cornerstone of our economy in the last century and will be the cornerstone in the next century. In the U.S., the states with the highest proportion of their gross state product based on agriculture are those states located in the northern Rockies and the Great Plains. That includes the Dakotas and Montana. While the export of agricultural products is essential for the economy of this region, the biggest issue facing shippers is the distance our products must travel to get to market. We are totally dependent on reliable, low-cost transportation to move our commodities to international ports and to major population centers.

Let me share a couple of the regional trends we've seen over the last decade – and these aren't new ideas. You've heard them before today. We have seen the length of the highway hauls for grain trucks get longer and longer between the fields and the terminals. This is because of the 100-car unit train loading facilities replacing the 52 and the 76 car facilities. With a 52-car facility, the average haul was between 25 to 40 miles. That's still significantly longer than in other parts of the country. But in Montana, the distance for the average haul to the 110-car facilities is now between 50 and 150 miles and the 100- and 110-car facilities are rapidly replacing the small grain terminals.

We have also seen the consolidation of major rail lines reduce competition in our states. Consolidation has been followed by rail car shortages for our grain. To be specific, grain producers in Montana routinely pay approximately 30 percent more to ship their grain to market than do shippers in states where there's competition between rail lines. This is true even in those cases where the haul distances for Montana grain are

shorter. This amounts to approximately a $50 million per year premium that is born by Montana grain shippers simply because there is no rail competition except in the southwestern corner of the state. This lack of rail competition contributes to greater use of Montana's highway system in order to get to competitive points for moving Montana grain out of state.

For example, the Schuler Grain Elevator on the Union Pacific Line in Butte is the only Class One rail competitor for the Burlington Northern Santa Fe. Over the last few years, as much as 20 percent of the grain shipped from this elevator originates in far-eastern Montana and western North Dakota. This is a trip of 400-500 highway miles, but one that shippers believe is economically worth it in order to get their grain onto the UP railroad. From this, one could conclude that Montana's highway system is the only available route to rail competition available to our grain growers.

As regards our beef industry, Montana ships about 1.2 million pounds of beef cattle to market annually. These cattle are shipped live by truck to feeder lots or slaughterhouses in other states and provinces. This industry accounts for nearly a billion dollars of personal income in the state and is dependent on the quality and reliability of our arterial roads. In recent years we have seen a significant number of feeder cattle exported to Canada moving via our north/south highways. Through the restricted feeder program, Montana exported an average of 118,500 head in each of the last three years in a six-month period of each of those years. This trade movement is expected to continue and again it is dependent on a good highway system that is reliable, that in fact, is in good repair.

With the remainder of the time, I would like to share a couple of ideas of how to meet the challenge of improving and strengthening transportation for the benefit of our agriculturalists. First of all, we feel that competition must be enhanced for captive agricultural shippers without access to competitive rail service. After decades of consolidation it is important now to take the needed steps to ensure that our shippers are not unfairly disadvantaged. Towards this end, we are urging support for the provisions of Senate Bill 2245 that was recently introduced by Senator Conrad Burns of Montana, to begin addressing issues of rail competition.

First, Senate Bill 2245 creates a streamlined process to resolve rate and service disputes by establishing a procedure for final offers of arbitration. This provision would provide a timely and low-cost approach resolving disputes, which, under the Surface Transportation Board, have been too time consuming and too costly to be a realistic process for most rail customers. Senate Bill 2245 also prohibits the creation of paper barriers to competition. Paper barriers are such things as contractual restrictions with Class One railroads that prevent short lines and regional carriers from interchanging traffic with more than one Class One carrier. This provision would prohibit new paper barriers and phase out existing ones, while providing those impacted by this practice the means to petition for their elimination.

Lastly, Senate Bill 2245 would increase competition by offering trackage rights to unit train traffic over facilities owned by another rail carrier at a negotiated rate. This is not a new concept. As a provision of its merger with the Southern Pacific Railroad, the UP had to allow trackage rights on over 4,000 miles of UP line in the west. Both the UP and BNSF have testified to the success of this trackage rights program. Given its success, the marketplace should be the determinant of whether trackage rights make sense not a government regulatory body. We believe there is a positive opportunity here for the rail facility owners, for alternative carriers and for the shippers. While ideas abound on how to improve shipper service and eliminate barriers to competition among rail carriers, Senate Bill 2245 takes three of the most useful ideas and would advance them into law for immediate relief.

The shippers of North Dakota as well as those of Montana need this bill because essentially they are captive to a single Class One rail line and I would urge you to actively support it. Secondly, we believe strongly that motor carrier efficiency also needs to be improved. We respectfully suggest that the freeze on longer combination vehicles be revisited. Montana State University Professor Jerry Stephens conducted a study of the impact on the potential changes in truck weight regulations on Montana's economy. Professor Stephens looked at the many different truck configurations currently used to move commodities including grain. Because some configurations need many more trips to move the same amount of grain there are economic implications of the configuration. Among other results, this study concluded that if nine axle Rocky Mountain Doubles were used to move Montana's wheat, the number of trips would be reduced and the savings in transport costs would be roughly twice any increase in infrastructure degradation costs.

We have an interest in the economic viability of our agricultural producers — and transportation is linked to the economic success of western agriculture. Consequently, we need to find a way to allow the western states to improve the efficiency of their motor carrier fleets without threatening to impose such changes on other states and regions where it makes no sense, or where there is no support for the changes in the current LCD freeze. As we well know, the LCD freeze enacted in ISTEA prohibited states from allowing any expansion of LCD operations, either in terms of routes in which they operate for the vehicle weights and dimensions on the national network.

But treating the freeze as a third rail that cannot be touched has created its own problems and prevented other problems from ever being solved. For example, the freeze has forced heavier and longer trucks onto roads that were not designed for them. There are also examples of recently completed truck bypasses that were built to move large trucks out of cities where these trucks cannot travel. We believe it's time to put everything on the table and look at the issue again. We should start from the premise that highway safety should be improved. That air quality should be enhanced. That all users should pay their fair share of the highway system costs. And, that those shippers who have to cover long distances, such as those in the west, should be able to do so with a maximum of economic efficiency.

We believe there is a balance and an appropriate approach to revisiting the LCD freeze that will not pit one state or region against another and will also respect everyone's concern for highway safety. While there are many potential approaches, one that is worth considering would give the Secretary of Transportation the authority to establish a pilot study for two or more states to harmonize their truck size and weights across state lines for a several year period while studying safety, highway system impacts, air quality impacts and any effect on the region's economy. This approach is cautious, it's deliberate and it would in fact provide information for further deliberation.

Lastly, I will close my remarks today by urging that the next highway program increase federal highway investments in rural agricultural states, as well the nation overall. A long-standing objective of the highway program has been to ensure the entire country is connected for a reason, echoed in the theme of this forum; the importance of getting products from one area of the country to the markets or the ports of another. To achieve this, highways bridge vast distances in the Great Plains and the Rocky Mountains. These vast interstate national highways allow the continuous flow of people and goods between the country's large metropolitan centers. Also, in achieving national economic vitality, it's important that the transportation systems in these rural areas provide for access to the agricultural products that come from them.

The agricultural production of this region feeds the nation. Consequently, from the perspective of agriculture alone, federal highway investment in this region benefits the entire country. It ensures plentiful and reasonably priced food for all. In the upcoming reauthorization, we urge the congressional delegations of the Upper Great Plains and Rocky Mountain states to do everything possible to increase federal highway program

funding. And especially increase funds available to the rural agricultural states in this region. While I'm not Dave Galt, who is my boss and was originally scheduled to be here, and very passionate about these things, I'll try my best to answer any questions.

Gene Griffin: Thank you very much, Sandy. I appreciate it. With that I think I'd like to turn it over to our panel. And maybe, this time we'll start with John Horsley.

John Horsley, AASHTO: First of all I want to thank Dave Sprynczynatyk and you Gene for hosting this event. We thought it was very important to hold this agriculture event in the heartland. Dave and Gene stepped up and said why not Fargo, and we gladly agreed. We look forward to hearing from Senator Kent Conrad tomorrow. And we are also delighted to hear from North Dakota's governor John Hoeven.

Let me turn back to this captive shipper issue, the consolidation issue. The dynamics that I heard described was that in order to get economies of scale and make rail service viable, railroads are consolidating their service at fewer and fewer points, by consolidating the number of grain elevators they will stop at. That does two things. It makes rail service more efficient and reduces rail cost. But it forces more grain to be moved greater distances by trucks over county and state roads in order to get to those consolidated points of rail service. To handle these higher volumes of truck traffic you have to beef up the weight bearing capabilities of these roads and this increases costs at the county and state levels.

What this brings me to is a question about reauthorization. In terms of getting the best utility for the dollars in the next bill, should we invest more in county and state highways to accommodate this shifting load, or help the railroads out?

Sandy Straehl: I'll go first. First of all, I do think there's a trust fund relationship that I hope Congress will respect in the next bill. There is money that is being paid into the trust fund right now that Burlington Northern referred to this morning, the 4.3 cents for deficit reduction. Perhaps something to consider, and I think it's not inconsistent with AASHTO policy, is that that 4.3 cents could in fact, perhaps be used for something besides deficit reduction. Perhaps that could be used for something like capitalizing some kind of a bonding program to help with funding or financing for infrastructure for the rail lines.

But I believe that from the perspective of the users of the highway system, that there is a trust relationship there. The users of the highway system pay into the maintenance of that system, to use highway trust fund monies to support the rail lines, I think is a major shift in a historic relationship that's been in place for quite a long time. And I think that that kind of shift would be very difficult for my state to support.

Dave Sprynczynatyk: I wish there was an easy answer to your question, because what we're seeing here is obviously a shift to the highway system and the impact on the highway system and the need to do more for the highway system but at the same time, we're seeing increased requests and requirements for trying to develop our short line system in certain areas. And, I don't know what the right answer is. I respect the fact that there's a long standing relationship with the trust fund but when I look at it from a bigger picture, and this is one of the things I mentioned earlier, we just completed a statewide strategic transportation plan —when we address it from the standpoint of transportation for North Dakota, we're looking at all modes of transportation and we're

trying to figure out how do we satisfy that requirement, not just on a highway network but also on the railroad network as well. And as I said, I wish there was an easy answer. I wish we could find it, but somehow we have to strike that delicate balance, try to assure that our people can quite frankly, safely move themselves as well as their goods. I don't have the answer.

Sandy Straehl: There's something else that hasn't been mentioned today. And it was in, I think it's in Dave Galt's written remarks, but it was dropped from my spoken comments. One of the things that we've seen happen along on these major Class One rail lines, that are consolidating, is the double-tracking, where because the railway is owned by a private entity, there's not the kind of environmental review that goes on when a comparable expansion happens on a publicly owned roadway. And so a lot of our smaller communities, which have grown up around these Class One east-west rail lines, suddenly wake up one morning and find that double-tracks are being laid. And not too much later they find out that there are 30-40 trains a day going through their communities, and it is literally impossible for large parts of the day to get across town, or to get from between the schools and hospitals. And so there's a lot of surface transportation disruption that's going on on the roadways of our small towns and I know it's a concern in Nebraska as well as Montana. I'd imagine it's a concern in North Dakota too.

But it's extraordinary, the kind of disruption on small community life that goes on with those cross-continental movements. And, I don't know where that comes in. What we're doing now is looking at a statewide needs study just for rail grade separation needs. We are taking a look at things like public safety, in terms of access to emergency services among other things so that we can actually start prioritizing those needs and start building some of the grade separations in our small towns where they're needed. But the intersection between the rail system and the highway system is something that will probably continue to evolve in the direction of consolidation on the rail side.

Gene Griffin: Thank you. Maybe we can move on to Sarah Kuehl.

Sarah Kuehl, Senator Conrad's Office: I think the one consistent message we've heard from every panelist both on this panel and the previous panel, is that we need more federal infrastructure dollars for transportation. And as everybody here is well aware, federal transportation infrastructure funding is driven by highway user fees. We've seen projections from the Congressional Budget Office and the treasury department that over the next 10 years, while fees from these user fees will increase, they will probably not increase to the degree to which everybody would like to see in terms of increasing investment dollars for transportation infrastructure. And as probably everybody knows here, the easiest vote to take in Washington, D.C., is to cut a tax or to cut a fee. And the hardest vote to take is to increase a tax or increase a fee.

So we're left with this challenge of how to increase funding, without increasing fees or taxes. So I have a couple of questions for our panelists. And the first is, how have you met the challenge in your own state of finding additional funding for transportation projects? And what message would you like us to deliver to our bosses back in Washington D.C.? What the failure to increase intermodal transportation investment and rural agricultural areas will be?

Dave Sprynczynatyk: Well the first part of your question, what North Dakota's done in the last several years — I think it was five years ago now, the legislature increased the gas tax and that was done initially as a temporary increase but then the legislature came back two years later, they actually made that a permanent increase. And then, last year what the legislature did is it increased the motor vehicle registration fees in the state. And between the increase in gas tax and motor vehicle registration fees, we've been able to provide additional funding, but quite frankly, somewhere along the line we're going to have to figure out how to do more. In North Dakota we've got the other problem of flooding in the last several years, and that has had a

tremendous toll on our ability to use the resources, the financial resources available to us from the federal government as well as the state, and having to address certain areas. The one I think most everyone's heard of, is Devil's Lake. Sarah, what was the second question you had?

Sarah Kuehl: I guess the second question, is what message can we take back to Washington, D.C., of what the failure to increase investments in highways and in transportation and in rural agriculture areas will be?

Dave Sprynczynatyk: Well, I think that part of the answer to that question lies in the fact that as our system continues to deteriorate and we can't keep up with what the needs are, and I think we've clearly identified the needs, we're going to have to do things that are going to add cost to the traveling public, whether it's people that are traveling for personal reasons or whether they're shipping freight and trying to move goods across the state, across the country. As I pointed out, you know one of the things we're doing now is increasing the amount of load restrictions in the spring. And as we add more miles to the list of roads that are restricted, it adds a direct cost to the people that normally ship their product or bring in things that they need to produce their goods. So, you know I think the message clearly has to be that you know, as we fall further and further behind we're going to see increased cost to both the business community as well as to the individual traveler. So one way or the other, it's an expense.

Sandy Straehl: Sarah, let me take a whack at it from Montana's perspective. Your first question on how you make the dollars go further or how do you get more dollars? Montana had a very, very large fuel tax increase during the ISTEA years that has given us a positive cash balance, so much so that we were able to actually afford taking over maintenance responsibility on about 2,500 miles of our secondary roads, which were previously under county jurisdiction. And that was because the counties' revenue base had been frozen, they hadn't been able to raise property taxes so the maintenance was falling to the point where you couldn't just maintain the road any more, you had to reconstruct the road. And that sort of gets to the second question that you had: what are the implications? The implications are that if you don't have a dollar to spend on keeping the roads in shape now, it's going to cost you a heck of a lot in the future or you're not going to be able to provide the service.

And I think Dave's comment about not being able to provide the service by increased load restrictions is part of the answer. Closing down bridges and rationalizing a system. The rationalization of a system and their elimination of public ownership on roadways is not going to be a happy discussion in any place that it would have to occur. Now one of the things we do, that we have found to be very beneficial, and I know every state does this so much so that it's not even something that normally comes on your screen, but the partnering that goes on in states between the local governments and the states, and the private sector and across state lines to put together a funding package for a project. I did a presentation for Pat Saindon, our planning administrator for a meeting that she just went to at the forest service offices in Missoula and the whole thing was on partnering. And we just did a laundry list of all the partnered projects that we have put together in the past two or three years and we had to limit it to only 20, because in fact, there are probably 50. And some of these are multi-million dollar projects where you've got packages of money coming in from all sorts of different directions and it ends up being a patchwork quilt of different funding sources. So one of the things that we've been able to do a lot of successfully, I think is to partner.

We've got joint facilities for operating scale houses between Wyoming and Montana. One's being planned. There's one in operation between Montana and Alberta. We have joint weigh stations that are, not weigh stations, but rest areas that are planned and developed and are coming off the assembly line between Idaho, the Forest Service and Montana. We do a lot of public/private partnering, where the local government uses the authority of the local government to assess impact fees, essentially on developers. We use that money as a revenue stream to bring in and do the capacity expansions in those areas where the capacity expansion

benefits the developer. So, it's like there's a lot of partnering going on for expansion and improvement but I think that the implications on what happens if you don't have sufficient funds to maintain the system is that you lose the system and to replace a system would take more money than anyone will ever see. So you need to ensure the Federal-aid program supports the needs of the highway system. You can't allow this asset to degrade. From our perspective, we feel if money is short it should be focused on the core activities of the Federal-aid program–the maintenance and improvement of highways and bridges.

Gene Griffin: OK. Can we have one last question from DaveTurk.

Dave Turk, Senator Conrad's Office: I'll have a quick one here. On behalf of the academics in the audience I'd just like to ask you policy makers on both the state and federal level, what message would you send to the academics? How are they doing? What areas of research could they go into, or areas of technological research that would be helpful from your perspective in making some of these public policy choices that need to be made?

Jim Caron: There has been some shift in our research needs from the standpoint of people involved in forming public policy. If you remember earlier, we were shown some data on the various modes – rail, truck, barge – and how much grain was carried by each mode. That data has typically been supplied by USDA and the last time the study was completed was in 1995. While we are looking to update that data shortly, we are also looking to develop a process so that information can easily be recreated on an annual basis.

In the Agricultural Marketing Service, we have historically been known for our market news services which deliver good market price data, on a daily basis in many cases. More transportation rate information is currently being produced by our office and those reports are growing all the time. While we do think the research component is extemely useful, we will rely more and more on delivering useful data to people who ship product every day. There is also a need for better information about our competitors and we need to provide that more regularly and not just a study at a time. Quarterly reports on the transportation costs of our competitors–Argentina, Brazil, Australia–to name just a few, are essential if we are going to compete with them in the market.

Another area of research I might mention that currently is being done is on new ways to ship grain, that is, the use of containers for exporting. While there currently is only about 1 to 2 percent of grain exports moving by containers to foreign markets, this market segment is growing rapidly. The United States does have a high cost of production but it also has some of the most unique types of very high-valued grains and soybeans. We can market these high-valued grains by preserving their identity using containers and we can do it successfully. Even though many times the cost of containerized shipping is five to 10 times more than bulk shipping, it is still low compared to the high value of our grain.

I hope these two examples give the research community some ideas on the directions policymakers and shippers are looking for in the future. Thank you.

Gene Griffin: A couple other quick responses. We're really running late, so if you can keep it short.

Dave Sprynczynatyk: OK, just a quick response. Number one. The best advice that I can give to the academic community, is if you will "get in bed" with your state DOT and the MPOs. We in North Dakota have an outstanding relationship with North Dakota State University and the Upper Great Plains Transportation Institute. And having that relationship, really helps us to get the research done and answer the questions that are most applicable to our situation right here in North Dakota. So I think that's the first thing. Intermodal is mentioned. That's an area in agricultural areas I think we need to address more closely. We're trying to do that. With NDSU, I shouldn't say we're trying, we are doing that. And as far as research, we need to look at areas that extend the life of our system as much as possible. And I think that's something that I hope that we can be doing in the next several years.

Gene Griffin: Thank you very much. Let's give both of these folks some applause. Rather than having a break, I think we're far enough behind. We really need to move into the next session.

Agriculture and Transportation: Two Vital Components of a Strong Global Economy

North Dakota Governor John Hoeven

As Governor of the State of North Dakota, I'd like to welcome and thank the attendees for gathering here at this important forum. I'd like to thank specifically AASHTO President Brad Mallory and AASHTO Executive President John Horsley, as well as Gene Griffin of North Dakota State University, Upper Great Plains Transportation Institute, for taking a lead role in bringing about the important topics presented at this forum.

Agriculture has evolved probably more than any other industry in America today. When our forefathers conceived this country, the primary industry in America was agriculture. Today, only two percent of the country's population is active farmers, while one-third of the American work force is involved in agriculture food and fiber production and distribution.

This has primarily been made possible because of the great increases in production that the farming industry has been able to make. North Dakota has been part of the agriculture revolution. Out state used to be known only as the leader in spring wheat production. We are known as the "bread basket" state. Now we are also the leader in numerous other crops.

While we are still the leader in hard red spring wheat production, we are also the world leader in durum, barley, sunflowers, canola, flaxseed, pinto beans, other dry edible beans, and honey.

In the past, our state was an exporter of all these raw food products. Over the last 20 years, however, our state has made great strides in value added products such as canola oil, sunflower oil, frozen potato products, and pasta.

It's a little known fact that North Dakota is the number two pasta producer in the world today. The move to value-added food products has changed the reliance of the agricultural industry on transportation. Value-added crops brought new challenges to the ag producers: the most important being concepts of just-in-time delivery, contract farming calling for specific delivery dates for the raw product to the processing plant.

With this change in farm delivery concept came a new realization of the financial pain caused by spring load restrictions and an increased hope for intermodal container service in order to deliver specific food and raw products to a global economy.

Our government has a key role in the success of the national and global economy. Government must supply the infrastructure, we must build the roads, and reduce transportation costs through better load restriction policies, and we must also work to advance more uniform and logical truck size and weight rules.

Government also has a role in freight and tariff agreements to promote the flow of agricultural products seamlessly from country to country. In addition, September 11 created increased roles for government to coordinate security and safety for the flow of food products.

Here in the Midwest, transportation is even more of a challenge to producers to access the global economy.

First of all, when looking at the globe, one quickly realizes that being at the center of the continent increases the distance to transoceanic freight shippers.

Here in the Midwest we also see a lack of real competition in rail carriers. Our state has lost over 1,400 miles of rail line since 1980. We are supplied with rail service primarily by the Burlington Northern Santa Fe Railway Company for east-west movements, with some north-south movements also being provided by the Canadian Pacific Railway.

Meanwhile the rail industry in itself has looked to reduce the number of loading points in order to simplify its system and maximize its operating profits.

States in the Midwest also act as bridge states for other seaboard states that look to have access to states on the other side of the continent.

In order for the states in the Midwest to supply transportation infrastructure in this bridge environment, Midwestern states do need to have a substantial share of national transportation dollars. And as Dave Sprynczynatyk mentioned, northern Midwestern states also have the challenges of spring load restrictions caused by weak subgrades after our harsh winters.

These spring load restrictions act as a barrier to the flow of products in the same way as congested roadways do for heavily populated states. They add to the cost of each product and add to the landed price for product that reaches the consumer.

As one of the 50 governors of the National Governors Association I was proud to sign on with the vast majority in the endorsement for the reinstatement of the 2003 Highway Transportation Program at the same level as 2002.

The National Governors Association is also making strides in several other areas such as its "Initiative for state leadership in the 21st Century." The NGA has advanced the concept that the future United States economic strength will depend upon the ability of each state to compete successfully in the global economy.

The NGA points out that the individual state economies are the economic engines of America. In order for states such as ours and others of the United States to provide the economic stimulus to the country, transportation is of extreme importance.

As AASHTO continues to work on its reauthorization efforts for the next six-year highway bill, I urge them to continue to fight for a growing transportation program.

I applaud AASHTO for its efforts to look for innovative financing mechanisms to grow the highway program. I've been impressed with AASHTO's work in the resolution of the ethanol subsidy issue and its impact on the trust fund.

Ethanol is a key component to America's energy plan, and Midwestern states have much to gain from the expansion of the use of this environmentally friendly energy source.

I'm, also excited that ethanol is the most logical replacement for MTBE additives which had been used for pollution reduction in populated areas. Once again, agriculture will be a key resource in helping to better the lives of the populated areas of this country as well as in the rest of the world.

As governor of the state of North Dakota, I am advocating that the ethanol subsidy continue in order to advance this important energy source. I do believe, however, that the ethanol subsidy should be a general fund issue rather than a highway trust fund issue. And again I ask AASHTO to continue to look for options and resolution of the ethanol highway trust fund relationship.

Again I would like to applaud the attendees of this forum and I would like to finish by affirming the importance of agriculture and transportation as two of the most important components to a strong U.S. and global economy. Enjoy your stay in our great state.

Afternoon Session 1: Following the Agricultural Value/Supply Chain

Jim Caron, USDA, presiding

Positioning Transportation within the Agriculture Supply Chain

Steve Zell, IBM, Supply Chain Solutions

Multiple entities with IBM strive to develop/utilize innovative supply chain solutions. Headlining the IBM supply chain solution stakeholders are IBM consulting, IBM Integrated Supply Chain, research and development, and IT products.

The interconnected transaction system includes integration, optimization and collaboration. This leads to cost saving, optimizing processes across operations, and planning and execution across the supply chain.

Transportation represents critical linkages within agriculture supply chains from grower, to processing and packaging to the store to the broker to the consumer. In this link transportation directly impacts information "capture points" that can or should be provided; effective demand planning assisting in efficient managing of resources to meet the customer requirements; event driven workflow management; inherent changes/disruptions that need to be accommodated and efficiency that enhances responsiveness and speed.

Therefore, transportation management is a critical element in optimizing the agriculture supply chain. Service times, logistics costs, lead times and inventory must all be monitored.

Customers are also looking to their transportation supplier for increased offerings/services designed to reduce overall supply chain costs and improve services. In an example of shipping Canadian wheat to overseas destinations, shipping time is much shorter for containerized versus bulk systems.

Specialized organizations are focusing on improving key business process/operations to develop supply chain efficiency. Efficient Foodservice Response™ outlines five strategies that may achieve up to $14.3 billion in annual supply chain savings. Collaborative Planning, Forecasting and Replenishment® will improve efficiencies, increase sales, reduce fixed assets and working capital and reduce inventory for the entire supply chain while satisfying customer need. Advanced transportation solutions often encompass many variables to develop a strategic competitive advantage.

Vastera facilitates efficient global trade management through a variety of solution offerings including a net landed cost optimizer. Advantages are that customers know the total landed cost at the time of the order. Landed cost includes a number of shipping decisions while landed cost enables address centralization and networking. Export considerations and costs are also included.

RFID streamlines the data management associated with the shipping process by reducing errors, training, personnel, equipment and leveraging the information. RFID "tags" can store data.

Transportation then, represents a critical value added process within the agriculture supply chain.

Positioning Transportation within the Agriculture Supply Chain

for the
Upper Great Plains
Transportation Institute

May 17, 2002

Steve Zell, CPIM, CIRM
Supply Chain Solutions
610.320.7320
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Agenda

- Supply Chain Solutions: IBM's Participation/Resources
- ***Transportation/Supply Chain: Value Proposition Management***
- Trends and Directions
- Case Studies
- Summary

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Agenda

- ***Supply Chain Solutions: IBM's Participation/Resources***
- Transportation/Supply Chain: Value Proposition Management
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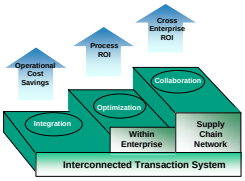
2

Deriving value from TM/SCM initiatives can often be logically categorized in progressive phases.



Examples:
1. Cost Saving: Single operation becomes more efficient
2. Business Process ROI: Optimize processes across operations
3. Collaboration: Plan/execute across the supply chain

5

Multiple 'entities' within IBM strive to develop/utilize innovative supply chain solutions.

IBM Supply Chain Solution 'Stakeholders'

IBM Consulting
- Assessments
- Project Management (Planning through implementation)
- 'Hosted Offerings' such as continuous replenishment
- Partnerships with SCM application software providers

IBM Integrated Supply Chain
- Global Supply Chains
- Electronics Industry 'Mission Critical'

Research & Development
- Patent Leadership
- Innovative Technology (i.e., RFID)
- Innovative Software (i.e., optimizing simulation)

IT Products
- Customize for SCM solutions
- Hardware
- Software application integration

3

Transportation represents critical linkages within agriculture supply chains.

Visibility

Transportation directly impacts:

- Visibility: Information 'capture points' can/should be provided
  - Planning: Effective demand planning assists in efficiently managing resources to meet the customer requirements
  - Execution: Event driven workflow management
- Variability: Inherent changes/disruptions need to be accommodated
- Velocity: Efficiency enhances responsiveness and speed

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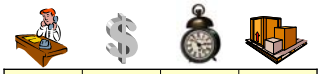
Therefore, transportation management is a critical element in optimizing the agriculture supply chain.



Service Levels	Logistics Costs	Lead Times	Inventory
• Mutual goals between carrier and company forming partnerships • Superior customer service equals the perfect order • 100% error-free delivery within time-definite windows	• Effective negotiation strategies resulting in reduced rates • Optimal load consolidation will lower cost per load • Utilizing continuous moves can reduce freight costs	• Alternative modes can reduce transit time • In-transit routing of shipments • Product postponement strategies allow for faster transit and shorter lead times	• JIT service reduces need for inventory in channel • Joint business-customer forecasting improves the accuracy of the production plan • Consistent transit times reduce safety stock needs

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Agenda

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Customers are also looking to their transportation supplier for increased offerings/services designed to reduce overall supply chain costs and improve service.

Some examples:

- Partnerships with carriers designed to mutually drive out costs of doing business
- Guaranteed "time definite" deliveries
- Ability to track and trace in real-time
- Proactive notification of transit delay
- Real-time delivery signature
- Invoice-less freight payment
- Automatic claims processing
- Quality programs emphasizing successful execution of services and to point out areas for improvement

8

Specialized organizations are focusing on improving key business processes/operations to develop supply chain efficiency.

EFR outlines five strategies that may achieve up to $14.3 billion in annual supply chain savings:

1. Equitable Alliances
2. Supply Chain Demand Forecasting
3. Electronic Commerce
4. Logistics Optimization
   - Direct shipment
   - Slow-mover consolidation
   - Shared distribution
   - Coordinated transport
   - Cross-docking
5. Foodservice Category Management

EFR
Efficient Foodservice Response
www.efr-central.com

CPFR
Collaboration, Planning, Forecasting, and Replenishment
www.cpfr.org

CPFR will improve efficiencies, increase sales, reduce fixed assets and working capital, and reduce inventory for the entire supply chain while satisfying customer need.

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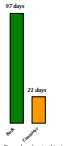
Example: There is significant variability (and potential improvements) in delivery times and costs for this shipping comparison.

Shipping Time Much Shorter for Containerized Versus Bulk Systems

Bulk Handling System		*Container System*	
Farm storage		Farm storage	
Local delivery	1	Local Delivery	1
Primary elevator	40	Intermodal terminal	2
Rail hopper cars	11	Double-stack train	2
Export terminal	19	Intermodal port	2
Bulk shipment	15	Container ship	11
Import terminal	10	Intermodal port	2
Local delivery	1	Local delivery	1
Total day	97	Total days	21

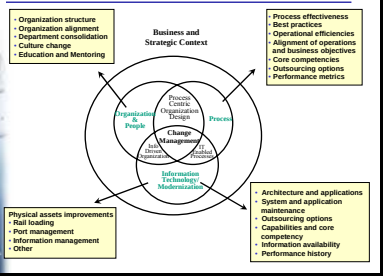


Source: Barry Prentice, *Re-engineering Grain Logistics: Bulk Handling Versus Containerization*, Proceedings of the 40th Annual Meeting of the Transportation Research Forum, Oct. 1998

Example refers to shipping Canadian wheat to overseas destinations

9

Advanced Transportation Solutions often encompass many variables to develop strategic competitive advantage.



Example: Vastera facilitates efficient Global Trade Management through a variety of solution offerings including a net landed cost optimizer (LCO)

- **Customers know total landed cost at time of order**
- **Landed Cost included in decisions on:**
  - Supply Chain Optimization
  - Manufacturing and Fulfillment Center Location Selection
  - Vendor Selection
  - Product Pricing
  - Emerging Market Program Planning
  - Payment and Delivery Terms
  - Freight Mode and Service Level Trade-offs
  - Premium Freight Control
- **Landed Cost Enablers**
  - Centralized Freight and Broker Contracts
  - Centralized Duty and Tax Information
  - Network of in-country trade experts
- **Export considerations/costs**
  - Duty
  - Brokerage
  - Taxes
  - Excise Taxes/Special Fees

13

A & P

Business Description

Founded in 1859, The Great Atlantic & Pacific Team Company (A & P), Inc. is one of America's top ten supermarket chains. The company operates in 15 states, the District of Columbia and Canada under the following trade names: A&P, Waldbaum's, Super Fresh, Farmer Jack, Sav-A-Center, Super Foodmart, Food Emporium, Kohl's, Dominion, Food Basics, The Barn Markets, and Ultra Food & Drug. A&P also makes private-brand products under the America's Choice and Master Choice moinkers and sells its Eight O'Clock, Bokar, and Royale coffee brands in its own and others' stores.

Business Opportunities

A & P initiated Project Great Renewal, a major investment over four yeas to develop a state-of-the-art supply chain and business process infrastructure. Improved logistics is central to this project and A & P plans to address the following issues through this initiative:

- Escalating transportation costs
- Lack of coordination across divisions
- Poor fleet and asset utilization
- Lack of standardization of business processes
- Inability to track vendor performance
- Poor carrier communication and planning

Business Solution

With Manugistics collaborative logistics solution, A & P will enhance product flow to DCs, improve the complex routing of multi-point freight movements and enhance communication with carriers through Web-enabled collaboration. This solution enables an enterprise, its manufacturers, and its carriers to electronically communicate in an interactive environment in order to maximize transportation performance, yielding reduced costs, increased asset utilization, increased revenues, and improved service.

Business Opportunities

While it is too early to obtain actual metrics, **A & P project savings in the millions of dollars** and will realize the following benefits from Manugistics' collaborative logistics solution:

- **Control of all inbound freight movements from a centralized locations**
- **Ability to communicate shipment information to carriers via the Web, replacing expensive EDI transactions or inefficient phone calls**
- **Dollar savings by increasing the size of shipments, capturing and consolidating inbound movements and performing better carrier selection and performance analysis**
- **Increase capacity of A & P's fleet and distribution centers**

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Example: RFID streamlines the data management associated with the shipping process by reducing errors, training, personnel, equipment and leveraging the information.

Grower	Process/ Package	Aggregate/ Store	Retailer/ Broker	Consumer
• Field or Identifier • Quantity • Date/time • Other	• Product Delivery Info • Driver specific information • Other	• Product Movements • Inbound/ outbound shipments • Other	• Inv. Levels • Inbound receipts • Other	

RFID 'tags' can store data which can be captured automatically at various capture points In the supply chain. The RFID tags can be attached to the container providing shipment Information for the product and invoice processes,.

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Brown & Williamson

Business Description

Brown & Williamson Tobacco Corporation is the nation's third largest manufacturer of tobacco products. Led by flagship menthol brand Kool, the unit of British American Tobacco makes more than 20 brands (including bargain GPC and premium smoke lucky Strike) for sale in the US and Asia. Brown & Williamson trails only behind Philip Morris and R.J. Reynolds, with about 13% of the market. The firm also makes specialty tobacco products.

Business Opportunities

Brown & Williamson's distribution network consists of a number of global destinations with numerous carriers, forwarders, brokers and customs agencies. The effort required to coordinate both national and international shipments is immense, and the potential savings associated with optimizing them is equally impressive.

"We ship product to a number of international destinations," said Ron Dawson, Director of Strategic Supply Chain Programs & Systems for Brown & Williamson. "Our ability to quickly and effectively move goods to their ultimate destination is critical to our success."

Business Solution

Brown & Williamson selected a combined Manugistics – Vastera solution to optimize its movement of goods around the world. The combined solution provides improved transportation planning, increased shipment visibility, more proactive resolution of transportation issues, as well more effective management of transactions that cross international borders.

Solution components include:

- Manugistics NetWORKS Transport, NetWORKS Carrier, and NetWORKS Freight Pay
- Vastera's TrendSphere

Business Benefits

As a result of this solution, Brown & Williamson is seeing reduced costs associated with international shipments by:

- Selecting optimal transportation routes and carriers based upon costs, lead times and service levels
- Generating the required country specific shipping documents
- Performing regulatory compliance checks
- Electronically filing information with customs agencies

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Agenda

- Supply Chain Solutions: IBM's Participation/Resources
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Coors

Business Description

Adolph Coors Company is the third-largest brewer in the US (after Anheuser-Busch and Philip Morris' Miller Brewing). Coors Light, nicknamed "The Silver Bullet," is its top brand and the #4 US beer. Long thought of as a single-product, regional brewer, Coors has introduced a variety of new beers; it now makes about a dozen beers, including Blue Moor Belgian White Ale, George Killian's Irish Red Lager, and Keystone. It also makes Zima, a clear, malt-based brew, and Coors Non-Alcoholic. Coors' sales almost entirely from the US, though its products are also sold in over 30 countries.

Business Opportunities

Coors identified four key business objectives as the basis of their business case for a global transportation solution:

- Automation of optimal carrier assignment based upon rate levels, carrier capacity, carrier commitments, service levels, service regions and available equipment types
- Automated creation of transportation plan
- Provide ability to automate carrier communication through electronic media including load tendering and shipment status messages
- Provide ability to automate rate, carrier and location interfaces

Business Solution

Coors selected **Manugistics' Transportation Optimization solution** for inbound and outbound planning. The project will be broken into three phases:

- Phase I for outbound optimization of domestic rail, truck and intermodal transport
- Phase II for outbound optimization of global multi-let shipments
- Phase III for global inbound optimization and reverse flow logistics

Business Benefits

Coors has recently gone live after less than 6 months on the first of the three phases of their transportation optimization project.:

- **Phase I go-live was delivered on time and under budget**
- **Coors estimates their cost savings for this project was in excess of $200,000 PRIOR to go-live, due to carriers voluntarily re-negotiating their rates (lowering their rates) for Coors**
- **Savings registered after go-live exceeded $113,000 as of week 3**

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Del Monte Fresh Produce has explicitly stated that transportation savings contributed to record first quarter profits.

- Operating profits increased from $60.2 million to a record $78 million led by improved pricing and reduced sea transportation costs.
- On April 24 Del Monte announced a major transportation initiative utilizing i2's transportation suite.

  The project is intended to facilitate collaboration across its carriers and customers throughout the following processes:
  - Transportation procurement
  - Transportation planning
  - Execution
- Explicitly mentioned are desired attributes to lower costs and maintain delivery requirements:
  - Speed
  - Visibility

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22

Kraft is implementing a broad ranges of global supply chain solutions utilizing Manugistics software.

- Using Manugistics Transportation Planning and Optimization solutions
- Centralized transportation management
- Planning 90% of the total outbound transportation volume through Manugistics NW Transport
- Expanding current template for inbound transportation management
- 600,000 shipments will be managed annually through NWT
- Currently managing 63 ship locations
- EDI communication to 133 carriers
- $1 billion dollar annual transportation spend

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These are some of the benefits/accomplishments associated with the North American operations.

- Deployed NW Transport for management of 63 locations
- Template for expanding inbound transportation management
- Simplified rate structures
- Changed routing guide philosophy
- Reviewed capacity requirements for all lanes
- EDI active with 133 carriers
- Implemented exception based execution practices

Timeline 2001-2002

June	August			Sept.	Nov.	April
Contract Signed	Core Team Training	Development Complete	Business Modeling Complete	Beta Sites	Installation	Project Complete

63 Sites installed within 180 days.

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In summary transportation represents a critical value add process within the agriculture supply chain.

Therefore the operative question becomes:

"How does investment in transportation projects be facilitated?

Solution Framework

Objectives → Strategy → Operations/ Business Processes → Enabling Technology

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When considering the myriad of opportunities to define your objectives and strategy, it is beneficial to categorize them based on relative payback and ease of implementation.

Transportation Opportunities

Ease of Implementation	Small	Medium	Large
Difficult	• Automatic Carrier Selection	• Rate Management System • Centralized Dispatch and Routing System	• Integrated Logistics Systems
Medium	• On-line Carrier Availability, Tendering and Delivery Info	• Establishment of Partnerships with Carrier Core Base • Measurement of KPIs in real time	• Inter-Enterprise Shipment Planning System
Easy	• Historical Database • Carrier Performance Measurement	• Dynamic Mod Selection • Analysis of Historical Cost	• Transportation Organizational Changes • Develop TQM process

Relative Payback

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IBM provides a "Method Blue" project methodology that provides guidelines on what must be done and how to do the work.

Domains

A Domain is a logical grouping of cross phase Work Products – from a methodology point of view

Phases

A Phase is a logical grouping of cross domain Work Products from a sequence point of view

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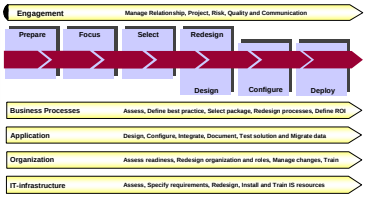
Some of the tasks associated with the domains are shown below.



28

Some of the tasks associated with the phases are shown below.

Phase	Task
Prepare	▪ Assess critical processes, readiness for change, current IT infrastructure and application portfolio ▪ Specify high level requirements and future capabilities ▪ Identify gaps between the current and future systems
Focus	▪ Focus on closing identified Gaps ▪ Define future processes based on Industry Best practices ▪ Identify IT infrastructure and organizational design support
Select	▪ Select or validate the package solution that best suits the business requirements ▪ Prepare a business case with costs and benefits
Redesign /Design	▪ Assist client in redesigning the processes and organization and in matching processes to package functionality ▪ Focused package training for clients so they can assist in the documentation of future system processes
Configure	▪ Develop, integrate and test the final configuration ▪ Develop end-user training specifications ▪ Plan the production, cut-over and post-live support
Deploy	▪ Prepare the package, IT infrastructure and organization for going live ▪ Educate and train users, setup and operate Help Desk and provide end-user support

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Excel Corporation

Jon Meier

Excel data from the Excel® network shows plant locations across the country, the customer base with saturation points, statistics, historical and current/future trends.

Among the statistics, there are annually 172K truck shipments and 68 percent of the beef market share goes to Mexico. Historical trends of JIT delivery, rail to truck, vacuum packaging, carcass swinging to box and the global market are moving to have products case ready, shipped by intermodal and expedited rail, and an e-commerce collaboration. In addition, trucks can be monitored more effectively.

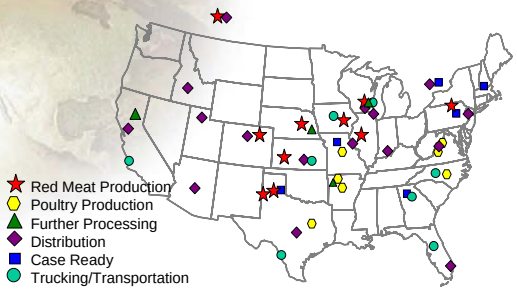
The strategy is to maximize our distribution capabilities in order to achieve a competitive advantage in servicing all customers and providing innovative solutions to our targeted customers.

The motor carrier industry has numerous challenging issues including driver turnover, fuel and insurance costs, unloading expenses, used truck values, quality and quantity of drivers, bankruptcies and a volatile economy.

The Department of Transportation can help by investing in highways and bridges, developing and enforcing state uniformity, weigh scales, rest areas, quality of driver and criminal background checks, an increase in gross weight limits and help in controlling supply chain costs such as unloading.

AASHTO AG Transportation Forum
Fargo, ND
May 17,2002

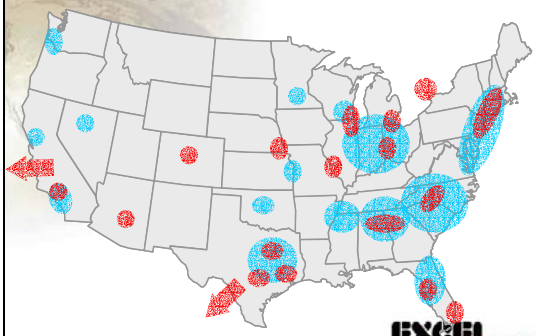
The EXCEL Network



TODAY'S TOPICS

I. Excel Corporation Summary
II. Motor Carrier Summary
III. How Can The DOT Help?

CUSTOMER SATURATION



Excel Summary

I. Plant Locations
II. Customer Base
III. Statistics
IV. Historical Trends
V. Current/Future Trends

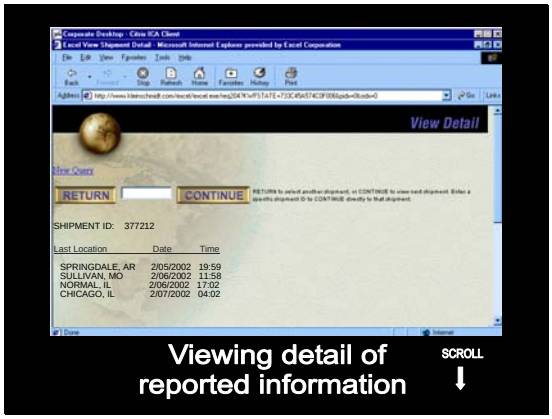
EXCEL STATISTICS

(Annual)

I. Slaughter
  A. 8 Million Cattle
  B. 9 Million Hogs
II. 172K Truck Shipments
III. Market Share
  A. US - 21%
  B. Japan - 21%
  C. Mexico - 68%
  D. Canada – 30%
IV. Volume by Mode
  A. 96 % Truck Shipments (85% in LBS)
  B. 4% Rail (15% in LBS)

Historical Trends

- JIT Delivery
- Rail to Truck
- Vacuum Packaging
- Carcass (Swinging) to Box
- Global Market



Current/Future Trends

- Case Ready
- Inter-modal
- Expedited Rail
- Collaboration (E-Com)
  - Shipment Tracking
  - Continuous Moves

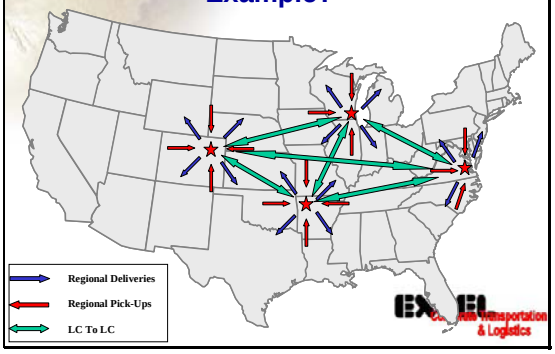
Distribution/Logistics FY 02/03 Strategic Planning Process

Where's My Truck?

Strategy

Maximize our distribution capabilities to achieve a competitive advantage in servicing all customers and providing innovative solutions to our targeted customers.

Logistic Centers Example?



How Can The DOT Help?

- Invest in the Highways & Bridges
  - Road Construction Safety
- State Uniformity
  - NJ limiting use of 53 Ft. Trailers on secondary roads
  - California Bridge Laws
  - NYC Fines on 53 Ft. Trailers
- Weigh Scales
  - Universal System
  - Level the playing field if used for enforcement

Motor Carrier Industry

I. Issues Facing the Industry
II. Historical Trends
III. Future Trends

How Can The DOT Help?

- Rest Areas
  - Need More
  - 24 Hour Access
  - Safer
  - Upkeep
- Quality of Driver-Criminal Background Checks
  - NCIC Available to the Trucking Industry
- Increase Gross Weight Limits
- Help Control M/C Supply Chain Costs
  - Unloading

Issues Facing the Transportation Industry (Perfect Storm)

A. Driver Turnover
B. Fuel
C. Insurance
D. Unloading Expense
E. Used Truck Values
F. Drivers (Quality/Quantity)
G. Bankruptcies
H. Volatile Economy

THANKS!

The Food Industry Embraces Value Chains

Don Senechal, The Hale Group

In today's global food industry, system superiority is more important than product superiority. In the past, the basis of competition was product versus product. But in the future, the basis of competition will be supply chain versus supply chain.

Therefore, winning business models recognize supply chain needs, the critical need for structure, systems and knowledge, that people are key in the relational mode, and that teams and process win over individual heroics.

Today's food supply chain must deal with safety and security issues of food-borne pathogens, nuclear contaminants, chemical contaminants and biological agents. The new reality in food service is that it is no longer just products and/or services.

Business needs help in reducing costs, reducing investment and driving sales.

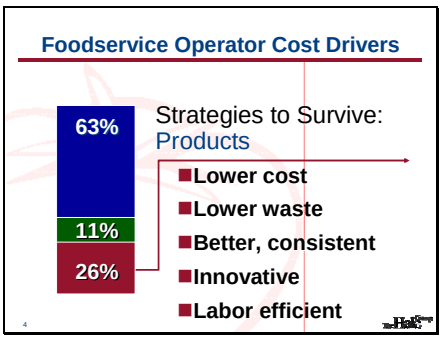
Technology, by identifying the need, can unlock efficiencies but the question is – how will adoption of technology be accelerated. Value-added offerings impact operators' top and/or bottom lines in business relationships, products, services and systems.

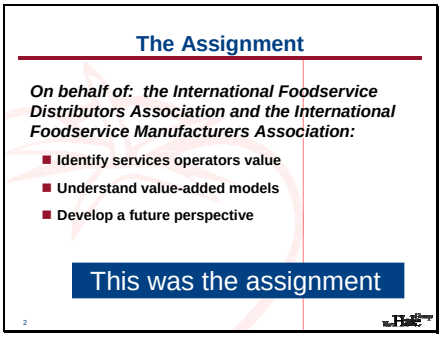
In successful marketing, the lead decision maker has a critical role. In the 1970s and 1980s, the product was the lead. In the 1980s and 1990s, the menu led and from the 1990s and beyond, the consumer is the lead decision maker. This forces a shift in the basis of competition from product and transactional to offering and relational.

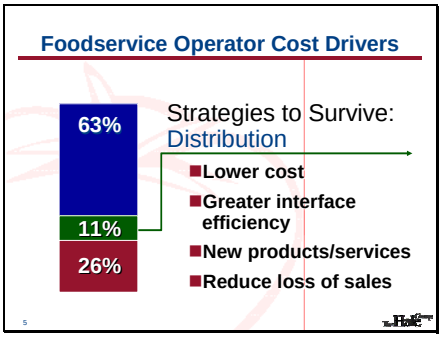
A value-added offering coordinates activities, structures approach or process, predetermines account and/or segment and brings a predetermined result. The problem comes when terminology is not understood. The operator and customer may not have the same view of bundling a product, packaging or services. In the value-added business model there is commodity price protection along with seamless implementation of operationally complex systems.

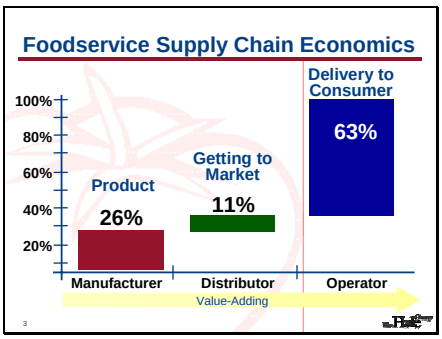
Several stakeholders are part of the value chain analysis including agricultural input suppliers; agricultural producers; handlers, merchandisers and other intermediaries; initial stage(s) processors; finished goods manufacturers; the distribution system, and consumer needs and desires. These, in turn, play to the value chain needs evaluation dealing with raw materials, key costs, and economical satisfaction of consumer needs and desires.

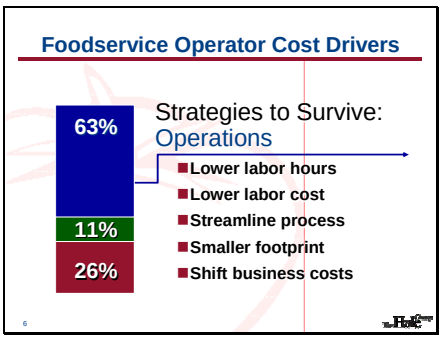

The Hale Group
The Food Industry Embraces Value Chains
Presented to: National Forum on Agriculture and Transportation Linkages
May 17, 2002


Foodservice Operator Cost Drivers
63%
11%
26%
Strategies to Survive:
Products
Lower cost
Lower waste
Better, consistent
Innovative
Labor efficient
4


The Assignment
On behalf of: the International Foodservice Distributors Association and the International Foodservice Manufacturers Association:
Identify services operators value
Understand value-added models
Develop a future perspective
This was the assignment
2


Foodservice Operator Cost Drivers
63%
11%
26%
Strategies to Survive:
Distribution
Lower cost
Greater interface efficiency
New products/services
Reduce loss of sales
5


Foodservice Supply Chain Economics
100%
80%
60%
40%
20%
Product
26%
Getting to Market
11%
Delivery to Consumer
63%
Manufacturer
Distributor
Operator
Value-Adding
3


Foodservice Operator Cost Drivers
63%
11%
26%
Strategies to Survive:
Operations
Lower labor hours
Lower labor cost
Streamline process
Smaller footprint
Shift business costs
6

The New Reality

It's no longer just products and/or services . . .

- **Help me reduce my costs!**
- **Help me reduce my investment!**
- **Help me drive my sales!**

7

Technology

Identified Need

Technology Will Unlock Efficiencies

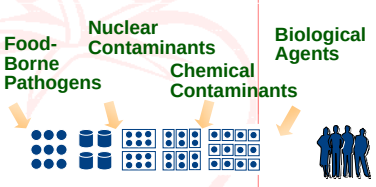
Question

How Will Adoption Accelerate?

10

Food Safety / Security

Today's Food Supply Chain



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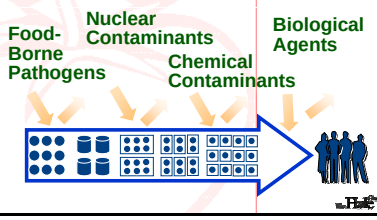
Value-Added Opportunity

Value-added offerings impacting operators' top and/or bottom lines

11

Food Safety / Security

Protected Food Supply Chain



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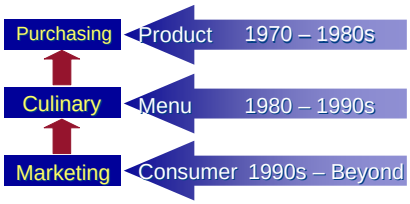
Lead Decision Maker Changing



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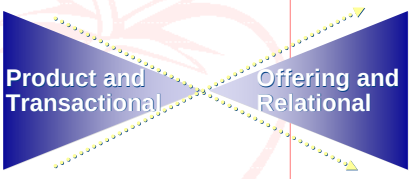
Shifts from Tangible to Intangible

Basis of competition shifts . . .



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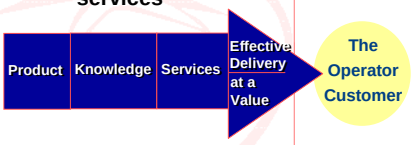
Terminology Not Understood

An Offering . . .

- **Bundling product, packaging, services**



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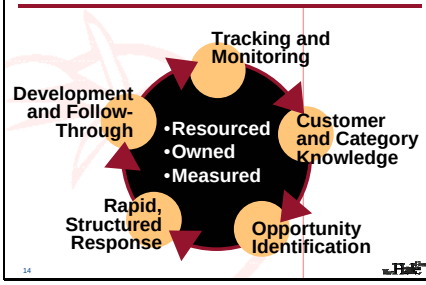
Models Have Structure & Process



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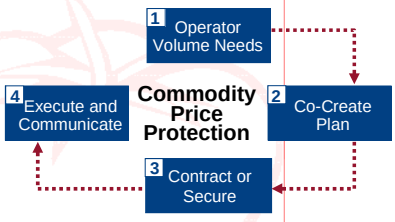
Value-Added Business Model



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Models Have Structure & Process

A Value-Added Offering . . .

- ***coordinated*** **activities**
- ***structured approach*** **or process**
- ***predetermined account*** **and/or segment**
- ***predetermined result***

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Value-Added Business Model

Commodity Price Protection

Benefits: Supplier	Benefits: Operator
Guaranteed volumes	Cost stability
Reduced volatility	Locked-in margins
Customer loyalty	Vendor loyalty

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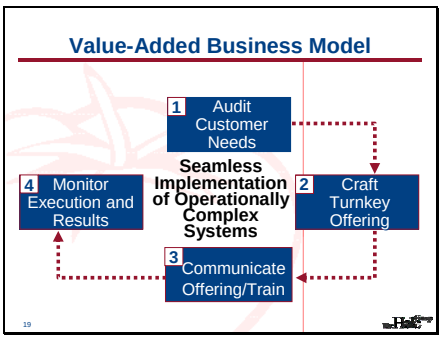
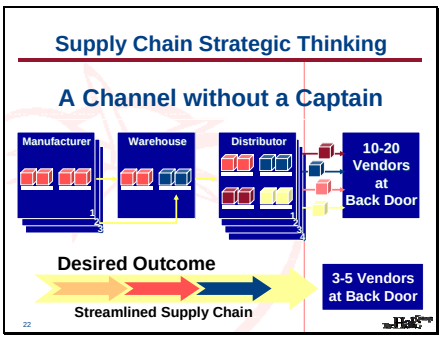
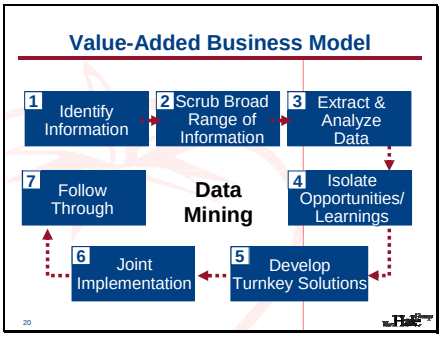
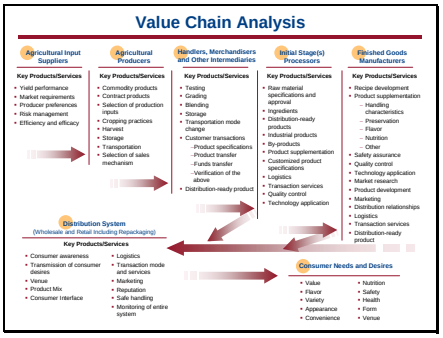
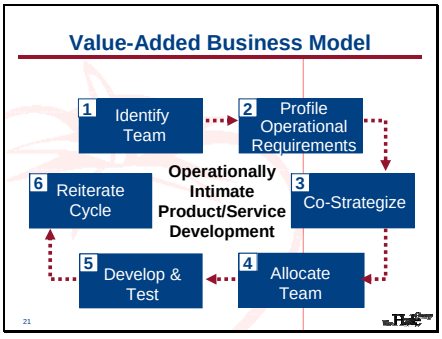
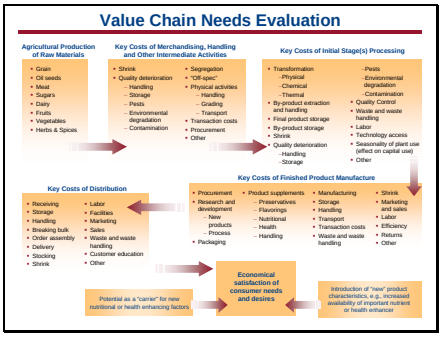

Value-Added Business Model
1 Audit Customer Needs
2 Craft Turnkey Offering
3 Communicate Offering/Train
4 Monitor Execution and Results
Seamless Implementation of Operationally Complex Systems
19


Supply Chain Strategic Thinking
A Channel without a Captain
Manufacturer
Warehouse
Distributor
10-20 Vendors at Back Door
Desired Outcome
3-5 Vendors at Back Door
Streamlined Supply Chain
22


Value-Added Business Model
1 Identify Information
2 Scrub Broad Range of Information
3 Extract & Analyze Data
4 Isolate Opportunities/ Learnings
5 Develop Turnkey Solutions
6 Joint Implementation
7 Follow Through
Data Mining
20


Value Chain Analysis
Agricultural Input Suppliers
Agricultural Producers
Handlers, Merchandisers and Other Intermediaries
Initial Stage(s) Processors
Finished Goods Manufacturers
Key Products/Services
Distribution System
(Wholesale and Retail Including Repackaging)
Consumer Needs and Desires


Value-Added Business Model
1 Identify Team
2 Profile Operational Requirements
3 Co-Strategize
4 Allocate Team
5 Develop & Test
6 Reiterate Cycle
Operationally Intimate Product/Service Development
21


Value Chain Needs Evaluation
Agricultural Production of Raw Materials
Key Costs of Merchandising, Handling and Other Intermediate Activities
Key Costs of Initial Stage(s) Processing
Key Costs of Distribution
Key Costs of Finished Product Manufacture
Economical satisfaction of consumer needs and desires

Conclusion

System superiority is more important than product superiority

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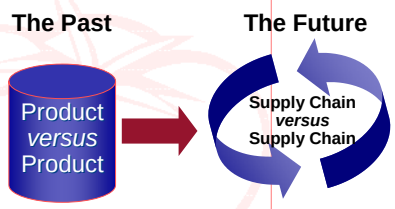
Conclusion: Basis of Competition



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Conclusion

Basis of Competition
Tangible to Intangible

26

Conclusion

Winning business models recognize:

- Supply-chain needs
- Structure, systems and knowledge critical
- In relational mode, people the key
- Teams and process win over individual heroics

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Midwest Dairy Association

Gary Hoffman

Let me start with a short introduction and some comments about Midwest Dairy Association. I was born and raised on a dairy farm, and with the exception of a few years when I attended college, I have been involved in the dairy industry all my life. I ran a 100-cow dairy for 24 years. I was head of the dairy inspection program for the North Dakota Department of Agriculture for several years and I've worked for Midwest Dairy Association for the last nine years.

Who is Midwest Dairy Association? We are an eight-state regional dairy promotion organization. States we cover are North Dakota, South Dakota, Minnesota, Iowa, Kansas, Missouri, Illinois, Arkansas and the eastern part of Oklahoma. Within our MDA boundaries we have 16,000 dairy producers and 33 million consumers.

Our mission is to create demand for dairy products through our well known "Ah, the Power of Cheese" and our "Got Milk?" ad campaigns.

As you can see, the importance of a sophisticated transportation system in North Dakota, our MDA area, and across the nation is very important to our dairy producers and dairy processors.

Let me give you a few examples of how transportation impacts our industry. As a dairy producer, it's very important to have a reliable transportation system in place. In our small 100-cow dairy herd we purchased dairy quality alfalfa from hay producers in North Dakota, South Dakota and occasionally from Canadian producers if we couldn't get the quality we needed locally. Soybean meal purchases and other concentrates usually came in semi-load lots directly from the milling plant in North Dakota or Minnesota. Corn or other grains were purchased and trucked in from local grain producers.

On average, that meant about 700 tons of hay and about 600 tons of concentrates and grain per year for our dairy. On some of today's larger 1,000 to 3,000 cow dairies you can multiply these numbers and see why a good transportation system is needed. It is just as important to have a good system to move milk from the farm to the processor. As dairies get larger, more milk hauling companies are moving from single axle trucks to tandem axles and to semi-tankers capable of hauling 50,000 pounds of milk. Some farms have had to improve their private driveways to accommodate these larger trucks. Also, FDA regulations require that Grade A milk be picked up and transported to a processor every two days.

In my previous life as head of the dairy inspection program we licensed over 150 truckers to haul milk from the farm to a processing plant. You can imagine the number of milk haulers in our MDA area. In North Dakota we also licensed 140 dairy distributors. These are the people who move dairy products from the processor to a food retailer in our small rural North Dakota communities. Again, as dairy processors get bigger and their marketing territories get bigger their ability to transport product long distances becomes critical to their operations. One North Dakota processor I talked to recently runs 100 tractor-trailer rigs distributing dairy products to outlets in a five-state area.

In summary, I gave you some personal examples of how transportation was important in our dairy and how a good transportation system is important to processors in this state. As you know, North Dakota is not known for its dairies. North Dakota is just a small player when you look at our MDA area. Minnesota's dairy industry is 10 times larger than North Dakota in producer numbers, processing plants and dairy related spin offs. The South Dakota dairy industry is larger than North Dakota's industry. South Dakota has some lofty goals to grow their industry in the next five years.

My point is, when you take the numbers I gave you and multiply it times the 16,000 producers we have in the MDA area, and the number of consumers we have in our regional area that we want to sell dairy products to, it is very important that we have the infrastructure and transportation system in place to meet the mission that our producers have laid out for us.

Afternoon Session 2: The International Dimension – It's a Global Environment

Bruce Lambert, FHWA, presiding

Transportation's Role in Competing in Global Agricultural Markets

Stephen Fuller and Tun-Hsiang Yul

Introduction

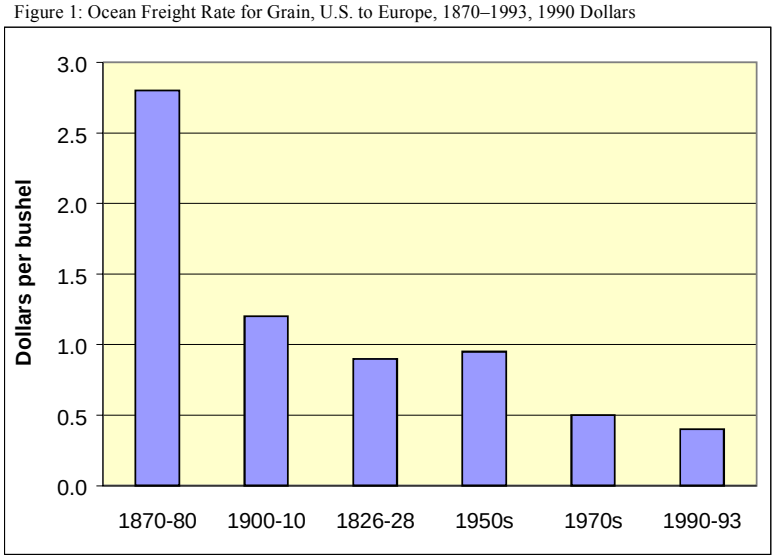
International agricultural trade accounts for about one-third of total U.S. agricultural production and approximately 25 percent of farm cash receipts (Kennedy and Rosson, 2002). Because transportation links agriculture to these international markets, the economic well-being of U.S. agriculture and agribusiness is closely tied to the efficiency and viability of the domestic and international transportation systems. Further, during the past decade, globalization of agricultural markets has increased via trade liberalization, thereby increasing competition and the role that transportation can play in determining international competitiveness.

In this paper, we address the effect of transportation on international agricultural competitiveness. Initially, brief attention is given to the historic role of transportation in fostering regional specialization and the associated agricultural production efficiencies. Next, discussion is offered regarding the concept of "international competitiveness" and how transportation fits within this concept. This is followed by an overview of the agricultural transportation and logistics systems, involved transportation modes and the role of the transportation sector and government in provision of an efficient transportation and logistics network. Discussion is also offered regarding trends in U.S. agricultural exports and its implications for transportation and international competitiveness. Finally, a case study into transportation system improvements in South America and their affect on competitiveness in world grain markets is presented. This is followed by a summary of major observations.

Transportation and Economic Development

Revolutionary improvements in transportation are often cited when explaining economic development in a long-term perspective. Lundgren (1996) offers an interesting overview of developments in maritime transport and its implications for seaborne grain trade noting that current rates on international grain commerce are about 15 percent of historical rates in the 1870s (Figure 1). Lundgren shows how declining seaborne grain rates helped foster the industrial revolution in western Europe in the 19th and early 20th centuries and the impetus this provided for grain production in North and South America. Declining transport costs, in combination with economies of scale facilitated economic growth and geographic specialization, which in turn allowed countries to exploit factor endowments that enabled low-cost, efficient agricultural production. Lundgren observes that reductions in seaborne transport costs are central to explaining regional location of world agricultural production and associated production efficiencies.

Figure 1: Ocean Freight Rate for Grain, U.S. to Europe, 1870–1993, 1990 Dollars



Source: Lundgren, 1996

Transportation and International Competitiveness

Agricultural economists have forwarded a variety of definitions for international competitiveness. Tweeten (1992) defines competitiveness as "a nation's ability to maintain or gain market share by exploiting productivity from technology or other sources." Others have preferred to tie competitiveness to industries and the ability to profitably create and deliver value at prices equal to or lower than those offered by other sellers (Harrison and Kennedy, 1997). In this context, Cook and Bredahl (1991) define competitiveness as the ability to deliver goods and services at the time, place, and form sought by buyers at prices as or better than other suppliers while earning at least opportunity costs on employed resources. Porter (1990) observes that competitiveness results when superior value is extended by offering lower prices than competitors for equivalent benefits or by providing unique benefits that more than offset a higher price. The strategic management school defines competitiveness as the ability to profitably create and deliver value through cost leadership or product differentiation.

There is commonality among these definitions of agricultural competitiveness that signify an important role for transportation and logistics. In particular, the need to deliver products to destination markets at prices that are lower than competing suppliers or by providing product quality that more than offsets a higher product price are aspects of competitiveness that are highly dependent on transportation and logistics. Thus, the cost of transportation and logistics service and the quality of this service affect international competitiveness.

The above definitions indicate competitiveness is determined by the efficiency associated with the exporting sector or industry. That is, for the U.S. to be a competitive supplier or competitor in world agricultural markets it must be an efficient producer and/or manufacturer of agricultural products. An efficient agricultural sector would appear to be a necessary condition for international competitiveness, but not the sufficient condition to guarantee competitiveness. Recent studies imply that selected world regions have a producing agriculture that rivals or exceeds the efficiency of the U.S. but lacks adequate transportation and marketing infrastructure to facilitate international competitiveness (Schnepf, Dohlman and Bolling, 2001). Hence, efficiency in agricultural production and processing would appear to represent the necessary condition for competitiveness while a transportation and logistics system that transfers the commodity/product from buyer

to seller in an efficient and timely manner would represent the sufficient condition for international competitiveness.

The role of transportation and need for efficiency to maintain competitiveness is noted by a recent USDOT (1999) study which used input-output methods to identify the extent transportation costs are incorporated into the output of various sectors. Their study shows the agricultural sector to be the most intensive user (comparatively large transport input per dollar of sector output) of transportation service. Results show a $1 increase in final demand for agricultural products will require nearly $0.15 of transportation service, the highest transportation requirement of any sector (Table 1). It follows that transportation costs embodied in agricultural product prices are comparatively great. And, as a result, transport costs have a comparatively important affect on agricultural product prices in destination markets and the shipping regions competitiveness in these markets. The DOT study suggests transportation may have a greater influence on the competitiveness of U.S. products in international markets than previously recognized and the benefits from transportation infrastructure improvements may be underestimated.

Additional observations also imply the importance of transportation to international agricultural competitiveness. In particular, the USDA (1987) notes that transportation costs represent about 30 percent of the landed costs for many of the U.S.'s agricultural exports, and effective management of transportation functions contribute significantly to the maintenance and expansion of foreign markets for U.S. products (Table 1). Many agricultural exports are bulky and comparatively low-valued while others are perishable and require special transportation services, hence, transportation costs become an important component of the destination market price and the commodity or product's international competitiveness.

Table 1. Transportation Costs in Agricultural Product Prices

Domestic Market: $1 of agricultural output requires $.15 of transport services[1]
Foreign Market: 30% of destination price is due to transport services[2]

Source: 1) USDOT, 1999
2) USDA, 1987

Agricultural Transportation System and its Efficiency

From a firm perspective, efficient transfer of agricultural commodities/products across space and time is facilitated by logistics management which may involve all functions from originating the commodity at the producer level to marketing and transport of the product to the end user. These activities, when taken together, are often referred to as supply chain management. The goal of this process is to produce a coordinated, seamless, flexible and continuous system that facilitates efficient transfer of agricultural commodities and products across space and time.

For agricultural commodities and products, logistics and transportation management is particularly onerous. Because agricultural production is seasonal, often perishable and typically dispersed across wide geographic regions, the task of assembling commodities from millions of farms over thousands of miles of rural road and interstate connectors, to thousands of storage warehouses and processors and ultimately to ports and the foreign market destination can be troublesome. Supply uncertainties that stem from biological factors as well as logistical uncertainties and demand variability compound management of the agricultural commodity/product pipeline (Wilson, Carlson and Dahl, 2001). Because of the nature of agricultural commodities/products and their characteristics (geographical dispersion, perishable, seasonal, solid, liquid)

and the numerous activities which must be accomplished to place the desired product at the right place and time, an efficient intermodal transfer system is critical as are efficient and coordinated truck, railroad, barge, ship and air freight transport systems.

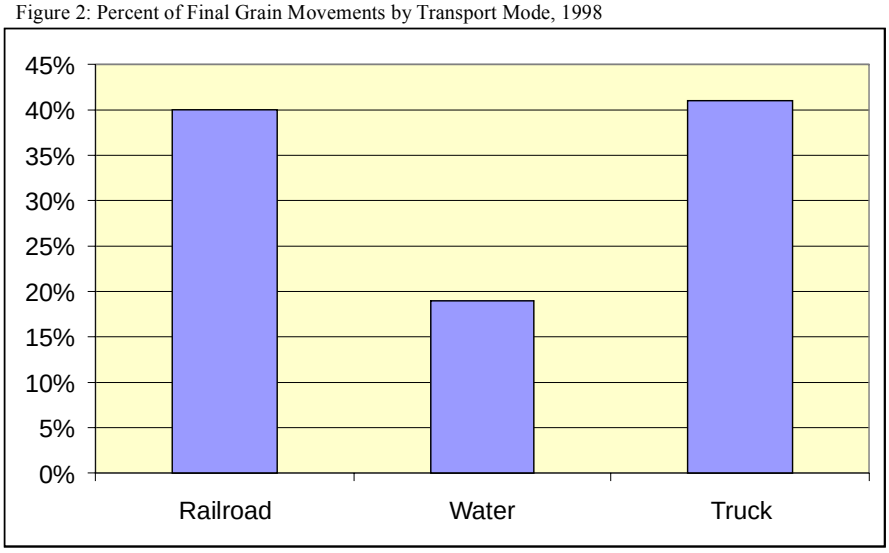
The role of the various land-based modes in transfer of agricultural commodities and products is not precisely known, however, selected studies offer some insight. U.S. Department of Transportation data (1993) show field crops, a major export of U.S. agriculture, is highly dependent on railroad (44%) and water (28%) transport and less dependent on motor carriers (17%), whereas livestock, poultry, meat, dairy products, and horticultural products are highly dependent on trucks (>90%) as are the transport of highly processed agricultural products (Table 2). A USDA study (1998) examined the role of truck, railroad and barge modes in grain transport and showed increased tonnages hauled by all modes but with an increasing share transported by truck. In 1995, motor carriers transported 41 percent of final grain movements while railroads and barges transported 40 and 19 percent, respectively (Figure 2). Trucks increasing role was attributed to expanded grain processing activities and off-farm grain use which favored truck transportation. The USDA study concludes that grain exports are largely dependent on rail and barge modes and adequate rail, barge and truck transportation infrastructure are essential to support domestic and export market expansion. Other studies into transportation dependency of rural regions in the northern Great Plains show the importance of truck in accessing nearby destinations that process agricultural products for export markets, but dependency on rail and to a lesser extent barge, for accessing ports with products moving in bulk. It follows that the truck, rail and barge modes play an important role in efficiently moving agricultural commodities and products to export as does an efficient intermodal transfer and port system.

Table 2. Role of Transportation Modes in Haulage of Selected Agricultural Products (% of ton-miles generated)

Mode	Field Crops	Fruits & Vegetables	Meat & Poultry	Grain Mill Products
Railroad	44%	4%	10%	48%
Water	28%	0%	0%	3%
Truck	17%	90%	87%	46%

Source: USDOT (1993) Bureau of Transport Statistics, Commodity Flow Survey

Figure 2: Percent of Final Grain Movements by Transport Mode, 1998



Source: USDA, 1998

A vital and efficient transportation system will evolve in market economies where incentives to adopt new, efficiency-enhancing technology exist and competitive pressures prevail throughout the system to assure efficiencies are passed to market participants. In addition to operational efficiency, there is need for price signals that efficiently allocate transportation capital to those ends with the greatest needs and offer signals to transportation system users to invest for purposes of enhancing transportation efficiency.

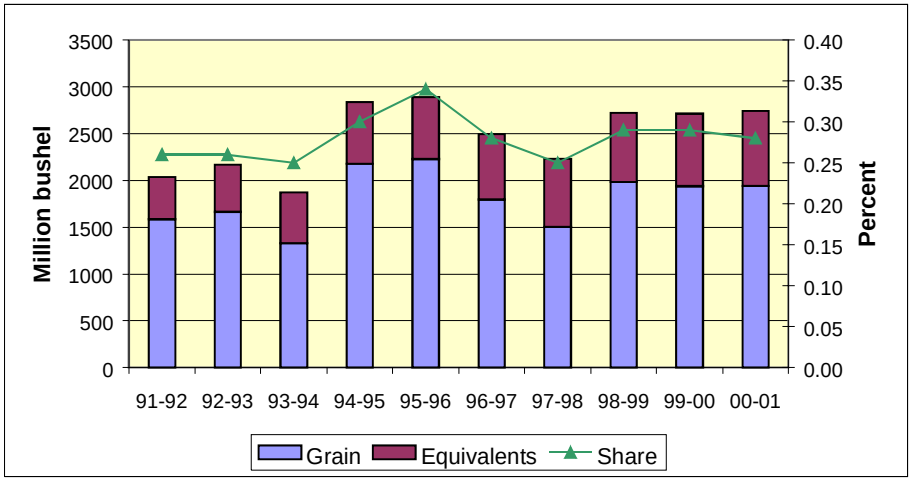
Although a market-oriented economy is important to generating an efficient transport system it is significant that transportation activity is greatly influenced by government policies and its investment in transport infrastructure. Road and highway infrastructure are largely investments of local, state and federal governments while inland waterway and port infrastructure are often a marriage of private and public expenditures. Government policy as it relates to expansion of public infrastructure, pricing and management of transportation infrastructure, regulatory policies and support of technological improvements affect capacity and efficiency of private sector users. Contemporary issues that relate to truck size and weight, truck safety, rail mergers, maritime regulation, and port dredging are examples of government policy issues which bear on transportation and logistical efficiency, and international competitiveness. Further, the transportation and agricultural sectors are influenced by government policies as they relate to clean air regulation, urban sprawl and congestion, reduction of greenhouse gases, and energy as well as trade policy issues, and macroeconomic policies (exchange rates), hence the importance of government and its affect on the transportation sector and international competitiveness.

Agricultural Exports and Transportation System

Historically, U.S. field crop production has been extremely dependent on international markets. Currently, about 45 percent of wheat, cotton, and rice disappearance is dependent on foreign buyers, while 22 percent of coarse grain disappearance is attributed to exports as is one-third of soybean's annual disappearance (Figures 3, 4 and 5). Much of this production is located at extended distances from ports, thus dependence on an efficient transportation and marketing system for movement to port. The Cornbelt, the principal production region for U.S. corn and soybeans, averages about 1,100 miles (1,775 km) from lower Mississippi river ports, the principal export location for these commodities. Fortunately, much of this region is served by an extensive inland waterway system (Mississippi, Illinois and Ohio rivers) that facilitates low-cost barge transport with

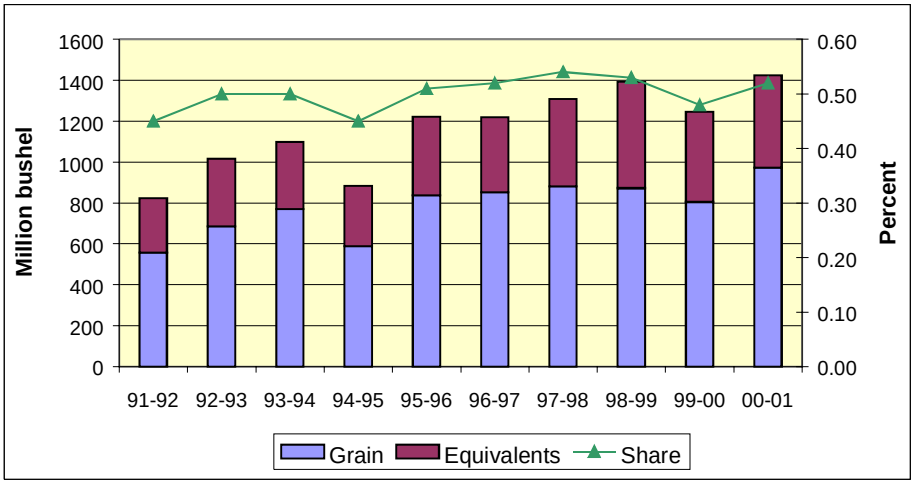
linking rates ranging from $8 to $12/ton. Also, dependent on long-haul transportation is grain production in the central and northern plains (wheat), and western Cornbelt (corn) which access international markets through Texas Gulf and Pacific Northwest ports at distances ranging from 1,000 to 1,400 miles (1,600 to 2,300 km). Railroads are central to this overland transportation with many movements accommodated by unit and shuttle trains with associated rates ranging from $16 to $42/ton. Also, of increasing importance are overland railroad shipments of corn from western corn belt states to U.S.-Mexico border crossing locations at rates averaging about $27/ton. An important link in the export grain transportation system is U.S. ports and the subsequent shipment via ocean vessels. Rabobank reports U.S. port charges to be some of the lowest with an average of $4/ton. The ocean grain carriage market is highly volatile with rates to major destinations ranging from $9 to $22/ton. A recent study into ocean grain shipping indicates least-cost vessel size has increased about 45 percent over the past two decades and efficient port infrastructure and its ability to accommodate the increasingly large, more efficient bulk carriers is critical to maintaining exporting countries' competitiveness in world grain markets (Jonnala, Fuller and Bessler, 2002).

Figure 3: Corn Exports and Corn Equivalents in Meat and Gluten Feed/Meal and Percent of Total Disappearance, 1991-2001



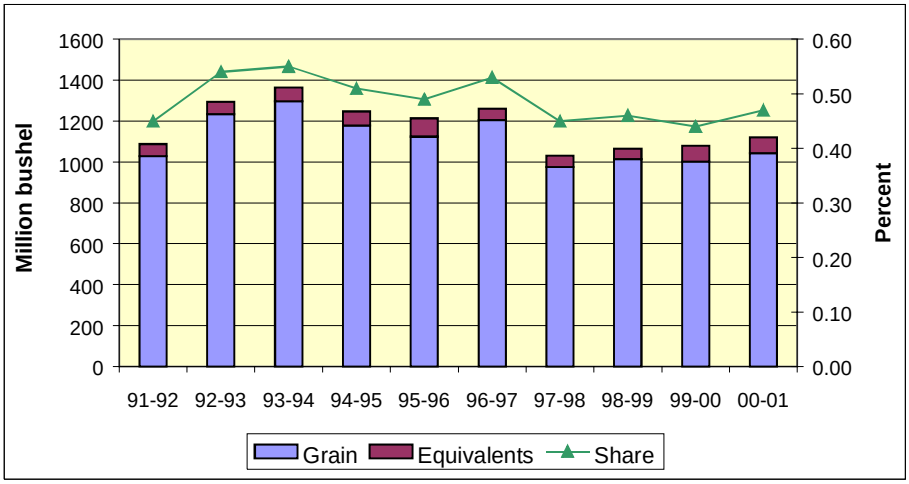
Source: Hudson, 2001

Figure 4: Soybean Exports and Soybean Equivalents in Meat and Meal and Percent of Total Disappearance, 1991-2001



Source: Hudson, 2001

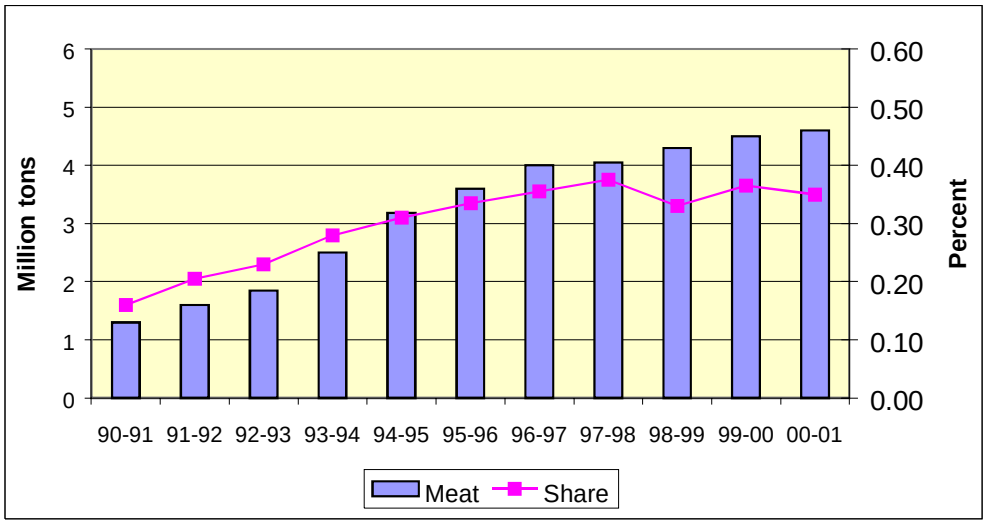
Figure 5: Wheat Exports and Wheat Equivalents in Meat and Flour and Percent of Total Disappearance, 1991-2001



Source: Hudson, 2001

Over the past decade, U.S. grain exports have been comparatively static and, accordingly, U.S. producing agriculture's concern regarding their international competitiveness. Hudson (2001) shows, however, that U.S. grain exports have not been static over the past decade when meat and processed grain products are converted into grain-equivalents. During the past decade, U.S. meat exports have increased over 300 percent to about 4.7 million metric tons while the U.S. export share of the world meat market has increased from 10 percent to 35 percent (Figure 6). Hudson estimates that the U.S.'s increased meat exports are equivalent to about 400 million bushels of corn exports and when corn gluten and other manufactured corn products are included, up to one- third of annual corn disappearance can be attributed to exports. Similarly, Hudson shows that about half of soybean production is exported when meat-equivalent and meal are considered. This observation suggests that U.S.'s agricultural export product mix is changing and this has been facilitated by efficient containerized and break-bulk transportation systems.

Figure 6: U.S. Meat Exports and U.S. Export Share of World Meat Trade



Source: Hudson, 2001

It is estimated that 20 percent of U.S. exports are high-value, perishable agricultural products which are largely comprised of meat, and fresh fruits and vegetables (USDA, 1999). These exports have been made feasible by development of transportation technology that features containers equipped with refrigeration and, in some cases, controlled atmosphere technologies which expand product shelf life and the types of perishables that may be shipped. In addition, advancements in container ship technology facilitate increasingly large vessels with new deployments on major routes carrying up to + 6000 TEU's (container with dimensions of 20 feet x 8 feet x 8 feet) at costs which are about 50 percent lower than earlier, smaller container vessels. These transportation advancements have extended the marketing reach of the U.S.'s perishable, high-value products to international markets by reducing delivery time, maintaining product quality and reducing costs (USDA, 1999).

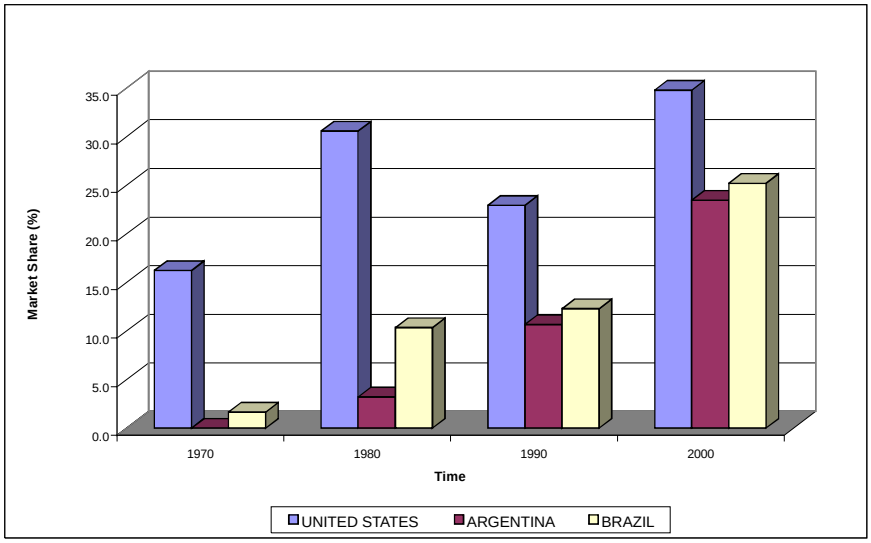
Containerization is also playing a role in the international grain trade with containers of U.S. high value oilseeds and grain now moving to U.S. container ports (primarily west coast) for shipment to foreign ports and ultimately the foreign buyer's facility (primarily Asia). The development of double-stack container trains has aided the feasibility of international containerized service by lowering costs and increasing efficiency and timeliness. Containerization of U.S. cotton exports has been a long-standing means of transportation for cotton exporters and is also central for manufactured feeds and grain products, beans and lentils. As U.S. agriculture adopts increasingly advanced production systems and products, containerization offers a means to add value through an alternative handling and transportation system that facilitates identity preservation (Vachal and Reichert, 2001). Producing agriculture may attain higher profits from containerized movements of product by reducing inventory costs, decreasing transit times, and receiving premiums for a higher quality product in the international market, hence an improvement in international competitiveness.

A Case Study into International Competitiveness: South America in World Grain Markets

Agriculture in the United States has been the beneficiary of many resource endowments including good soils, favorable climate, inland river systems that facilitate inexpensive transportation and deepwater ports. Government-sponsored institutions, in combination with the market-oriented economy, have fostered agricultural entrepreneurs that have adopted cost-reducing technology that has generated efficient and plentiful agricultural production. And, this efficient agricultural production, in combination with a well-developed transportation and marketing system has positioned the U.S. as a leading agricultural producer and exporter of soybeans, corn, cotton, wheat, sorghum and rice (Schnepf, Dohlman and Bolling, 2001).

In the past decade, Argentina and Brazil have commenced to draw upon their wide array of agricultural resources and spurred by government reforms, private investment and new technologies have generated sharp increases in crop production. This expanded production has yielded gains in international competitiveness, especially in the corn and soybean sectors. Soybean production in Argentina and Brazil increased over 132 percent during the past decade while U.S. production increased about 42 percent. From a global market share perspective, the U.S.'s share of the world soybean and soybean product market has declined from about 80 percent during the 1960s to 39 percent in 1989-91 and about 35 percent in 1999-2001. Currently, Argentina and Brazil's international soybean market share is over 50 percent. Argentina's corn and wheat production and exports have also made significant gains during the 1990s that coincides with the decline in the U.S.'s export share (USDA, 2001; Schnepf, Dohlman and Bolling, 2001) (Figure 7).

Figure 7. Share of International Soybean Market Hel by U.S., Argentina and Brazil



Source: Fuller et al., 2001

Overview of South American Crop Production and Transportation

The combined total land area of Argentina and Brazil is about 22 percent larger than the U.S., but, the areas involved in agricultural activities (419 million hectares) are similar. However, in the U.S. about 177 million hectares are involved in field crop production whereas in Argentina and Brazil only 78 million hectares are cultivated in field crop production. Huge areas in Brazil and Argentina are under permanent pasture that is

supporting grass-fed, cattle sectors. Much of the pasture in these countries is a component of crop rotations with significant portions located within their field-crop production regions. Hence, with proper incentives, expanded grain and oilseed production is possible. Most importantly, is Brazil's vast *Cerrado* savanna, an area in center-west Brazil estimated to include 100 to 136 million hectares that are suited for modern mechanized crop agriculture (Figure 8). It is estimated that about 85 million hectares have not been developed for crop production, hence a region available for production that exceeds that annually planted to corn, soybeans, wheat and rice in the United States. Much of this savanna region is a tropical grassland that includes small twisted trees interspersed with short grass that can easily be converted to agricultural use.

Figure 8. Cerrados: Brazil's New Land Frontier

Source: Fuller et al., 2001

Brazil

In Brazil, field-crop production is concentrated in the historically-important south and increasingly in the expanding center-west regions. The south (Parana, Sao Paulo) currently produces about half (45%) of Brazil's soybean production with most production within 350 to 600 km of Atlantic coast ports. Most of the remaining production (50%) is located in the new production region in center-west Brazil where the epicenter of production is Mato Grosso, a state whose production centers lie from 1,650 to 2,200 km from Atlantic coasts. Other soybean producing states in the center-west are Goias and Mato Grosso do Sul whose distances to Atlantic coast ports range from 800 to 1,100 kms. Virtually all of Brazil's soybean and soybean exports are via Atlantic coast ports with three-fourths of the exports from Paranagua, Rio Grande and Santos. No precise information is available on the carriage of soybeans to port by various modes, however, it is estimated that in the south production region at least 60 percent is transported by truck and in the remote center-west region an estimated 90 percent is transported by truck (Figure 9).

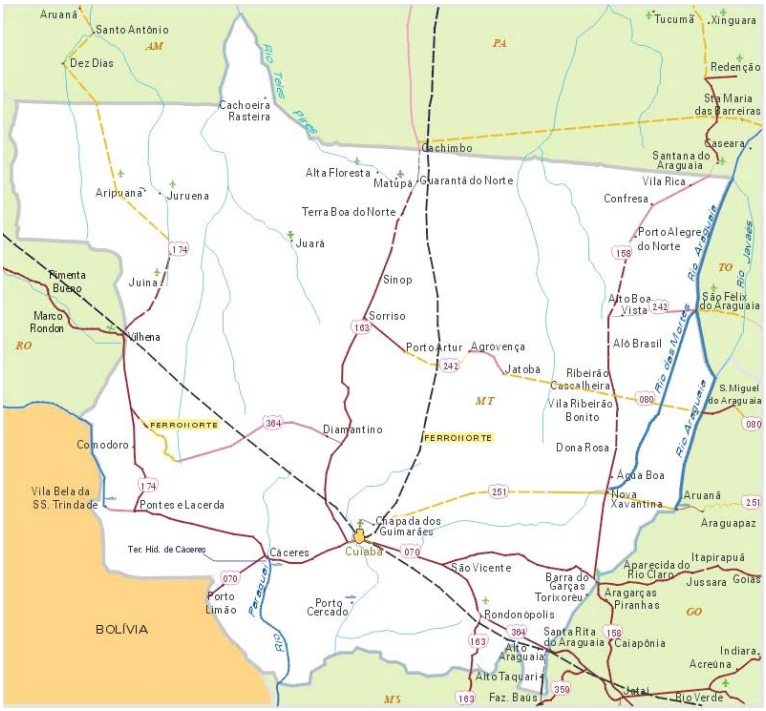
Figure 9. Map of Brazil

Source: Fuller et al., 2001

Unfortunately, only nine percent of Brazil's road system is paved and because of heavy reliance on trucking, the inadequate highway infrastructure creates traffic bottlenecks and severe delays. High trucking rates during the harvest quarter are due to increases in transportation demands at harvest and the peak export activity during this period with associated port and road congestion. During the four months extending from April through July, about two-thirds of Brazil's soybeans are typically exported. The harvest-time peak in export activity would appear to result from comparatively small amounts of storage capacity at inland locations.

In the traditional producing region in south and southeast Brazil, current truck rates (2001) range from $15/ton to over $24/ton in the harvest season for hauls to Atlantic ports that average 450 kilometers. In Goias and Mato Grosso do Sol in the center-west region, the distance to port ranges from 850 to 1,100 km with associated truck rates averaging about $25/ton in the non-peak period to over $30/ton during harvest. Mato Grosso, the largest soybean producing state in Brazil, is connected by a single paved highway (Highway BR-364) to Atlantic coast ports. Soybean production in Mato Grosso is largely located in the southeast (33%), central (42%), and west central (24 %) regions where average distance to port ranges from 1,650 to 2,200 kms. In the southeast Mato Grosso region, truck rates to Atlantic coast ports (1,650 km) average about $40/ton during the non-peak period and $44/ton during the harvest quarter, whereas, in the west central Mato Grosso region (2,200 km) rates range from $51 to $55/ton (Figure 10).

Figure 10. Map of Mato Grasso



Source: Fuller et al., 2001

Argentina

Argentina is endowed with a productive, fertile land area that is located within a 500 km radius of Buenos Aires that is known as the Argentine Pampas. The Pampas produces the majority of the country's cereal, oilseed and cattle. The proximity of the Pampas to the Argentine coast and the inland river ports (lower Parana river) favors the export of its grain and oilseed. The Pampas includes about 50 million hectares which are largely located in the provinces of Buenos Aires, Cordoba and Santa Fe. Because of Argentina's large area of high quality land resources and small population, most of its grain and oilseed production is exported (Figure 11).

Port elevators are a critical link in Argentina's grain and soybean marketing chain since comparatively large portions of annual production are exported. Argentina's most active export range is in the lower Parana river. Export facilities extend from the mouth of the Parana river near Buenos Aires to Santa Fe, a distance of about 590 km, however, the most intense export activity is near Rosario which is 420 km above Buenos Aires. It is estimated that about 70 percent of Argentinian corn exports, 30 percent of its wheat exports and up to 90 percent of its soybean and soybean products exit via lower Parana river ports. Much of the remaining exports are via Atlantic coast facilities at Bahia Blanca and Necochea (Figure 11).

Figure 11. Map of Argentina

Source: Fuller et al., 2001

In contrast to the United States and much of Brazil, Argentinian grain and soybean production is in close proximity to port elevators. For example, lower Parana river ports, the principal outlet for Argentinian corn, soybean and soybean products are within 250 km of Argentina's most intensive corn producing region and about 200 km from the center of Argentina's primary soybean producing region. Further, Bahia Blanca and Necochea, the principal export locations for wheat are within 250 km of Argentina's southern wheat production region while Parana River ports are about 200 km from the heart of the country's northern wheat production region.

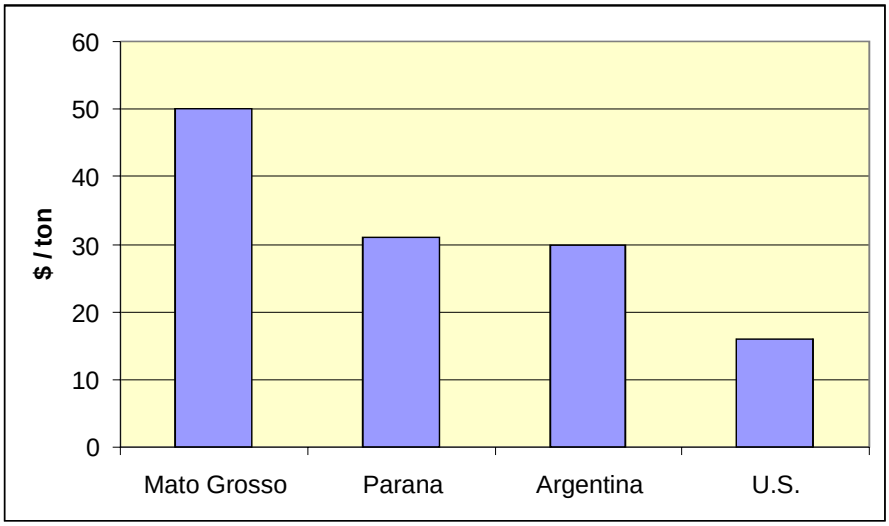
Grain transportation in Argentina is very dependent on the highway system since up to 85 percent of all grain is transported by motor carriers: the estimated average distance of haul by Argentinian grain truckers is 250 km. Commercial truckers and trucks operated by country elevators transport most grain from farms to country elevators, processors and exporters at harvest since few farmers have trucks. Assembly from farm to country elevator is over dirt roads which are impassable during extended periods of rainfall while hauls to port are over a privatized highway system where traffic is dense, lanes are narrow and tolls are high. Because of modest on-farm storage capacity in Argentina, most grain is transported from farms during harvest. As such, truck queues at country elevators and ports usually involve a one-day wait and many require waits that extend for 2 to 4 days. Some port elevators charge trucks a fee to guarantee unloading within a 24-hour period. During the peak transportation period, truck rates often increase 20 to 30 percent. Representative truck rates at distances of 100, 200 and 300 km are $9, $14 and $19/ton, respectively. When truck routes include travel over dirt roads, rates often increase about 20 percent.

Railroads in Argentina transport about 15 percent of grain traffic at an average distance of 360 km. Argentine railroads operate comparatively low horsepower locomotives and small grain cars that typically carry 30 to 50 tons in grain trains that include 30 to 40 cars. The leading grain carrying railroad transports about 2.5 million tons of grain and oilseed an average distance of 370 km at an average rate of about $14/ton.

International Competitiveness: A USDA Assessment

As a measure of international competitiveness, the USDA has evaluated crop production costs and representative marketing and transportation costs over time in the United States, Argentina and Brazil. During 1998-1999, internal marketing and transport costs for soybeans destined for export averaged two to three times higher in Brazil and Argentina than in the United States, reducing farm-level prices. Based on average farm-to-port distances, these costs averaged about $50 per ton ($1.36/bushel) from Mato Grosso, $31/ton from Parana and $30/ton for Argentine producers. In 1998, the transportation and marketing costs were equal to about one-quarter of the port price. In the U.S., these representative costs were estimated to be $16/ton (USDA, 2001) (Figure 12).

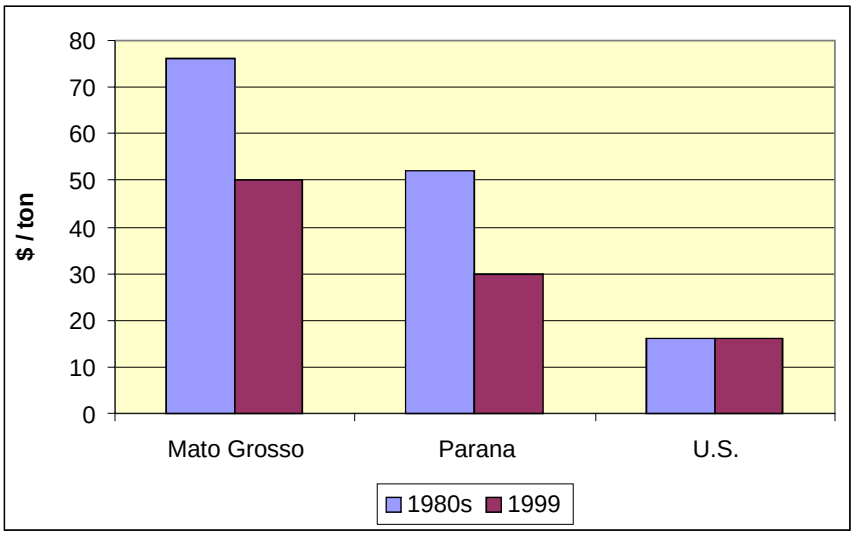
Figure 12. Producer-to-Port, Soybean Price Spread, 1998-1999



Source: Schnepf et al., 2001

Since the mid-1980s the USDA shows that the producer-to-port price spread has averaged from $16 to $18/ton whereas in Brazil and Argentina, important efficiencies have been gained. For example, in Brazil, the Mato Grosso producer experienced an average producer-to-port price spread of $76/ton as compared to the current $50/ton, while in Parana the producer-to-port price spread has fallen from $52/ton to about $30/ton (USDA, 2001) (Figure 13).

Figure 13. Change in Producer-to-Port Price Spread



Source: Schnepf et al., 2001

Included in Table 3 is a hypothetical assessment of "export cost competitiveness" for soybean production in the U.S., Argentina, and Parana and Mato Grosso in Brazil (Schnepf, Dohlman and Bolling, 2001). In general, the USDA shows that the lower crop production costs in Argentina and Brazil tend to be offset by comparatively expensive marketing and transportation activities that link the production region to port area. Brazil and Argentina are estimated to be the low-cost soybean producer with total production costs in Parana, Mato Grosso and Argentina estimated to be 81, 76 and 77 percent, respectively, of total U.S. production costs. When internal transport and marketing costs are considered, the cost advantage of South American production is partially offset with estimated costs in Parana, Mato Grosso and Argentina equal to 90, 94 and 85 percent of U.S. production, marketing and transportation costs. And, finally when transport costs to foreign destinations are considered, the total costs for Parana, Mato Grosso and Argentina are 94, 11, 98 and 88 percent of total production, marketing and transport costs of the United States. The USDA study notes that the gap between ocean shipping rates from the United States and Brazil to Rotterdam have remained constant over the past 15 years while for Argentina, the spread has narrowed from about $26/ton to $18/ton during the latter 1990s (USDA, 2001).

Table 3. Assessment of Soybeans Export Cost Competitiveness

Cost item	U.S. Heartland	Brazil				Argentina	
		Parana		Mato Grosso		Buenos Aires/ Santa Fe	
	$/bu.	$/bu	% of U.S. cost	$/bu.	% of U.S. cost	$/bu.	% of U.S. cost
Production costs:							
Variable costs	1.71	2.78		3.17		1.90	
Fixed costs	3.40	1.38		0.72		2.02	
Total production costs	**5.11**	**4.16**	**81**	**3.89**	**76**	**3.92**	**77**
Internal transport & marketing	0.43	0.85		1.34		0.81	
Cost at border	**5.54**	**5.01**	**90**	**5.23**	**94**	**4.73**	**85**
Freight costs to Rotterdam	0.38	0.57		0.57		0.49	
Price at Rotterdam	**5.92**	**5.58**	**94**	**5.80**	**98**	**5.22**	**88**

Source: Schnepf, Dohlman and Bolling, 2001

Selected Improvements in South America's Marketing and Transport Sector

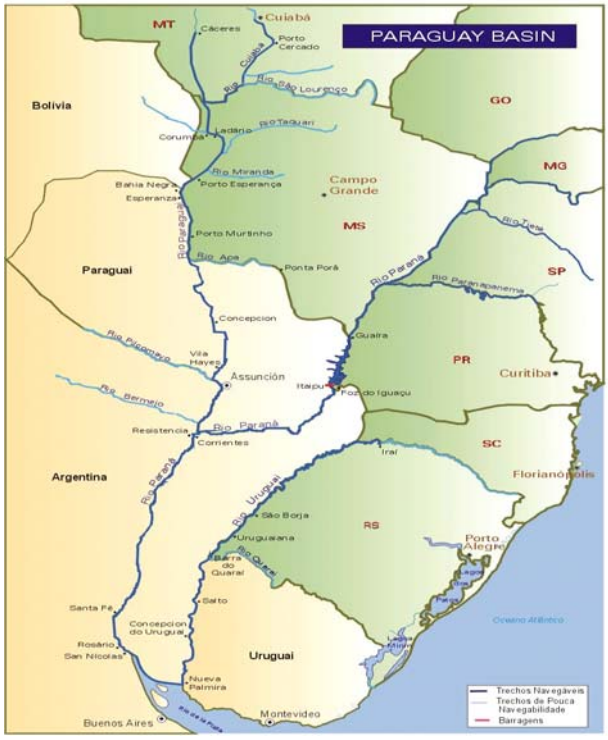
In this section, recent and anticipated improvements in South America's transportation and marketing system are briefly discussed and analysis carried out to evaluate the affect on South America and the United States (Fuller, Yu, Fellin, Lalor, and Krajewski, 2001).

This case study examines the role of selected transportation investments in South America and its affect on the international competitiveness of South America and the United States in the world corn and soybean markets (Fuller, Yu, Fellin, Lalor and Krajewski, 2001). The analysis is carried out with spatial, inter-temporal equilibrium models of the international corn and soybean sectors. The spatial models incorporate regional U.S. grain demands/supplies and the associated transport and marketing network as well as South America's regional grain demands/supplies and its transport and marketing network before and after improvements in marketing and transportation infrastructure.

Port facilities are an important link in a country's export system. In the early 1990s, both Brazil and Argentina had comparatively inefficient grain port handling systems with estimated charges of $8 to $12/ton. After port privatization and modernization in Argentina, port charges declined to about $4/ton, a representative charge for U.S. operations. Brazil's representative port costs are estimated to have declined to $6/ton with expectations of $4/ton costs in the near future.

Improvements in the navigability of Argentina's *lower Parana River* and the *Parana-Paraguay Waterway* are linked and, therefore, are evaluated simultaneously. Before dredging and the addition of associated navigational improvements in the lower portion of the Parana River, effective draft for ocean-going vessels had been limited to 24 feet at Rosario and 20 feet at Santa Fe. After canal dredging and widening at selected sections of the river in the late 1990s, the effective draft at Rosario and Santa Fe became 32 and 22 feet, respectively. It is estimated that ship rates were reduced approximately $5/ton as a result of the channelization (Figure 14).

Figure 14. Map of Parana-Paraguay Waterway



Source: Fuller et al., 2001

In addition to the port improvements in the *lower Parana River,* Argentina and other South American countries have made improvements to the upper portion of the *Parana-Paraguay Waterway* which extends northward through Paraguay into center-west Brazil. It is estimated that barge rates from northern Argentina to lower Parana river ports have declined from $.75 to $1/ton as a result of improved navigational aids and at Asuncion, Paraguay the rates have declined an estimated $1.75/ton. Initial plans for the *Parana-Paraguay Waterway* in Brazil included its extension to Caceres in southwest Mato Grosso, however, because of environmental concerns that center on the Pantanal in northwest Mato Grosso do Sul, most improvements have been limited to 12 locations below Corumba, a site on the Paraguay river that is about 670 km south of Caceres. Improvements below Corumba are estimated to have lowered barge rates from Corumba to lower Parana river ports about $5/ton. Corumba is located in southwest Brazil near the Bolivian border.

The *Madeira-Amazon Waterway* connects west central Mato Grosso soybean production to a barge-to-ocean vessel transfer facility at Itacoatira, a port on the Amazon River. The waterway was initiated in 1997 and is believed to represent an improved marketing alternative for west central Mato Grosso. Shipping to Atlantic coast ports by truck has often been the best alternative with estimated truck rates of $54/ton. In contrast, trucking to Porto Velho on the Madeira River, where soybeans are loaded to barge and then shipped to Itacoatira, have estimated costs of about $42/ton, a savings of $12/ton. This infrastructure improvement was a joint activity of Grupo Andre Maggi, S.A., a land-holding company in west-central Mato Grosso and the state of Amazonas (Figure 15).

Figure 15. Map of Brazil's Waterway Network

Source: Fuller et al., 2001

Private investors with assistance from the Brazilian government are constructing *Ferronorte*, a railroad that will eventually link central and western regions of Brazil to the port at Santos. The Ferronorte currently extends northwest from Santos (Atlantic port) through the north portion of Sao Paulo into southeast Mato Grosso. Plans include a westward extension to Cuiaba (south central) and eventually Porto Velho (Madeira River) and Santarem (Amazon River). Current rates from southeast Mato Grosso are about $26/ton but could decline to $23.50/ton if expected railroad efficiencies are attained. The Ferronorte, when extended to south central Mato Grosso, is expected to have a rate of $33/ton to Santos, a major Atlantic port.

Railroad privatization in Argentina and Brazil may have an important effect on rail rates in selected regions, however, to this point in time modest rate reductions have been experienced. A comparison of pre- and post-deregulation rates show rate declines of about 10 percent.

The government of Brazil is currently improving and paving *Highway BR-163*, a highway linking Mato Grosso to Santarem, an Amazon river port that is being developed to serve ocean-going vessels. It is estimated that this route would reduce distance to port by 500 km for selected Mato Grosso regions.

The estimated gains and losses of the various soybean exporters presented in Table 4 reflect the $4/ton reduction in South American port facility costs, the lower ship rates ($5/ton) that result from dredging and improvement of lower Parana river ports, reductions in Parana-Paraguay Waterway barge costs ($0.53 to $5/ton) that follow from its improved navigability, extension of the Ferronorte railroad into south central Mato Grosso with associated transportation cost reductions for selected regions ($0.0 to $3.50/ton), transportation cost reductions for west central Mato Grosso soybean production ($14/ton) that result from development of the Maderia-Amazon Waterway, and central Mato Grosso transportation cost reductions of $13/ton resulting from construction of a highway to an Amazon river port.

Table 4. Estimated Effects of South America's Transportation and Marketing Improvements on U.S. and South American Soybean and Corn Exports, Prices, and Revenues

	Soybeans	Corn
Changes in Exports (Thousands tons)		
United States	-548.26	-815.50
Argentina	626.40	1,991.50
Brazil	483.20	
Paraguay	114.70	
Bolivia	68.20	
Changes in Prices ($/ton)		
United States	$-2.21	$-0.25
Argentina	6.94	8.72
Brazil	3.94	
Paraguay	8.04	
Bolivia	11.79	
Changes in Revenues (millions $)		
United States	$-187.30	$-101.80
Argentina	335.50	385.10
Brazil	286.70	
Paraguay	62.70	
Bolivia	34.10	

Source: Fuller, et al., 2001

Results show important gains to South American soybean producers as a result of the improved efficiency of their transportation and marketing system (Table 4). South American soybean exports increase 1.29 million tons per year, while producer revenues increase about $719 million, and the average increase in producer prices in exporting countries range from $3.94 to $11.79/ton. The large producer revenue gains in Argentina ($336 million/year) result from their comparatively large export levels, enhanced efficiency of port facilities ($4/ton) through which all exports must transit, and the large portion of Argentinian soybeans that are exported via the lower Parana river port range ($5/ton) with its improved navigability and lower ship costs. Although Argentinian producer's average increase in price is noteworthy ($6.94/ton), the greatest average gain in price is in Bolivia and Paraguay. As a result of the enhanced efficiency of Argentinian port facilities ($4/ton), dredging and improved navigability of lower Parana River ports ($5/ton), and the reduction in barge rates from Corumba to the lower Parana River port area that result from improvements in the Parana-Paraguay Waterway, Bolivian soybeans are routed to the Parana-Paraguay Waterway for export via lower Parana river ports. As a result, there are comparatively large gains in Bolivian price ($11.79/ton). Paraguay also routes its soybean production via the Parana-Paraguay Waterway and lower Parana river ports, however, its waterway barge rates decline more modestly as a result of improvements, hence, a smaller increase in its price ($8.04/ton).

Although Brazil's average increase in soybean price ($3.94/ton) is more modest than other countries, its increase in exports (0.483 million tons) and revenues ($ 287 million) are noteworthy. In the Brazil analyses, virtually all exports would have experienced the improved efficiency in port facilities ($4/ton), whereas remaining improvements are primarily confined to Mato Grosso, the remote state in central-west Brazil which has recently become the leading producer of soybeans in Brazil and the epicenter of expanded grain and cotton production. Analyses show about 45 percent of Mato Grosso soybean production would be shipped via the highway (BR-163) being constructed between central Mato Grosso and an Amazon river port. As a result of this expected improvement, soybean prices in north central Mato Grosso increase an average of $12.32/ton. Development of the Madeira-Amazon Waterway is also shown to have had an important effect on west-central Mato Grosso, where price increases an average of $13.28/ton for about one-fourth of the state's soybean production. Remaining soybean production in Mato Grosso (30 %) is trucked to elevator sites on the Ferronorte railroad where the average gain in price is about $2.24/ton: overall, average price in Mato Grosso increases about $9.20/ton.

The analyses show, as expected, that producers in regions with improved marketing and transportation system efficiency experience an increase in price, and ultimately in production and exports. And, as a result of the expanded exports, world price declines. For those regions or countries not experiencing a commensurate improvement in transportation, (e.g., United States) price declines. These analyses show South America's improved marketing and transportation efficiencies to lower world price $2.12/ton and in the United States this reduces soybean producers' revenues about $187 million per year and exports about 0.55 million tons. As a result of South America's infrastructure improvements, the U.S.'s soybean price, exports and revenues decline. In South America, the gains tend to be relatively great as compared to U.S. losses.

Argentinian corn exports are estimated to increase 1.99 million tons and producer revenues about $385 million per year as a result of improvements in its marketing and transportation infrastructure while average producer price increases $8.72/ton (Table 4). These improvements increase Argentinian exports 8.4 percent and producer prices about 10 percent. The effects of Argentinian transportation improvements on corn are relatively great as compared to soybeans because of the larger percent increase in corn price, hence the greater percent increase in production and exports. As expected, improvements in Argentinian transportation and marketing efficiency unfavorably affect the United States with exports declining 0.82 million tons while respective price and revenue reductions are $0.25/ton and $102 million per year.

These results indicate that the transportation and marketing improvements yield noteworthy gains in South America with producer revenues increasing over $1 billion/year while annual exports increase 3.3 million tons. As a result of the added efficiency and increased exports, world prices decline and the United States' projected producer revenues decline $290 million per year.

Summarizing Observations

The following observations seem relevant regarding agriculture's competitiveness in international markets and the role of the transportation and marketing system in achieving competitiveness.

- In a long-run context, developments in transportation technology and efficiency have facilitated regional specialization, efficient agricultural production and international trade in comparatively inexpensive agricultural commodities and products so as to better feed the world population.

- U.S. agriculture is dependent on international trade with 30 - 40 percent of total U.S. production and 25 percent of farm receipts reliant on these markets.

- Most definitions of international agricultural competitiveness suggest the need for efficient, high-quality agricultural production and an efficient, progressive transportation and marketing system. Efficient agricultural production represents the necessary condition for international competitiveness while a transportation and logistics system that transfers the agricultural commodity/product from buyer to seller in an efficient, timely manner represents the sufficient condition for international competitiveness.

- Transportation and logistics costs represent up to 30 percent of agricultural commodity/product price in international markets, hence their importance in determining competitiveness.

- The goal of the transportation and logistics system is to produce a coordinated, seamless, Flexible and continuous system that facilitates efficient transfer of agricultural products/commodities across time and space. This task is particularly onerous for agriculture because of its seasonal and perishable output. Further, assembling commodities from millions of farms over thousands of miles of rural road and interstate connectors to thousands of storage warehouses and processors and ultimately to ports and foreign market destinations can be troublesome. An efficient intermodal transfer system is critical as are efficient and coordinated truck, railroad, barge and ship transport systems.

- Motor carriage, railroads and barges are central to U.S. agricultural transportation with selected studies suggesting the increased role of motor carriers.

- A vital and efficient transportation system will more nearly evolve in market economies where incentives to adopt new, efficiency-enhancing technology exist and competitive pressures prevail throughout the system to assure efficiencies are passed to market participants. Government policies as they relate to the provision of public infrastructure, pricing and management of transportation infrastructure, regulatory policies and support of technological improvements also affect capacity and efficiency of the transportation system.

- Trends in agricultural exports suggest the increasing role of high-value exports consisting of animal and horticultural products, and processed grains and oilseeds. This has been facilitated by a containerized transportation system that often features refrigeration and controlled atmospheres. As U.S. agriculture adopts increasingly advanced production systems and products, containerization offers a means to add value through an alternative handling and transportation that facilitates identity preservation.

- A case study into the effect of improvements in South America's corn and soybean transportation and marketing system shows their improved efficiency increases producer prices and revenues, expands crop production and lowers world price, and for those competing world regions that do not make comparable transportation improvements there is a decline in producer revenues and exports. Improvements to South America's transportation and marketing infrastructure are estimated to increase corn and soybean producers annual revenues by $1 billion.

- U.S. agriculture has enjoyed an efficient transportation and marketing system that has enhanced its competitiveness in world commodity and product markets. In view of improvements in competing countries transportation and marketing infrastructure, it is important that the U.S. be vigilant regarding its transportation system for purposes of maintaining international competitiveness.

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Transportation's Role in Competing in Global Agricultural Markets

Stephen Fuller
Tun-Hsiang Yu

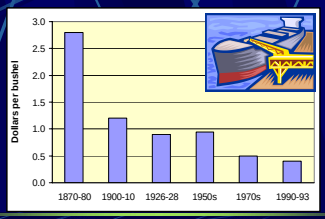
Transportation and Economic Development

- Technological improvement in transportation
- Reduction in maritime transport cost facilitated industrialization

Introduction

- One-third of U.S. agricultural output exported
- Exports comprise 1/4 of U.S. farm cash receipts
- Transportation links U.S. agricultural products to global markets

Ocean Freight Rates for Grain, U.S. to Europe, 1990 Dollars



Overview of Presentation

- Transportation and economic development
- Transportation and international agricultural competitiveness
- Agricultural transportation in U.S.
- Agricultural exports and transportation system
- A case study

International Competitiveness

- Cook and Bredahl, 1991
  - "ability to deliver goods and services at time, place and form sought by international buyers at prices as low or lower than competing suppliers"

Transportation Costs in Agricultural Product Prices

- Domestic market: $1 of agricultural output requires $0.15 of transport services
- Foreign market: 30% of destination price is due to transport services

Role of Transportation Modes in Haulage of Selected Agricultural Products

	Field Crops	Fruits & Vegetables	Meat & Poultry	Grain Mill Products
Railroad	44%	4%	10%	48%
Water	28%	0%	0%	3%
Truck	17%	90%	87%	46%

Transportation and International Competitiveness

- Cost and quality of transport service
- Necessary and sufficient conditions of competitiveness:
  - Necessary: Efficient agricultural production and agribusiness sector
  - Sufficient: Efficient logistics and transportation systems

Role of Transportation Modes in Haulage of Selected Agricultural Products

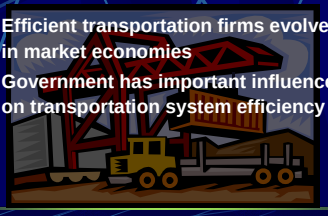
	Field Crops	Fruits & Vegetables	Meat & Poultry	Grain Mill Products
Railroad	44%	4%	10%	48%
Water	28%	0%	0%	3%
Truck	17%	90%	87%	46%

Agricultural Transportation System

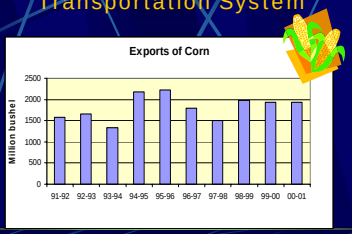
- Supply chain management
- Not easy for agricultural products:
  - Seasonal, perishable and geographically-dispersed supply
  - Supply uncertainties confound logistics management
  - Requires a flexible, efficient transport system

The Efficiency of Agricultural Transportation System

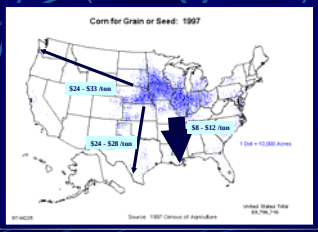
- Efficient transportation firms evolve in market economies
- Government has important influence on transportation system efficiency



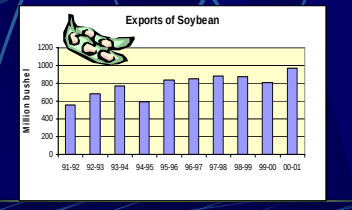
Agricultural Exports and Transportation System



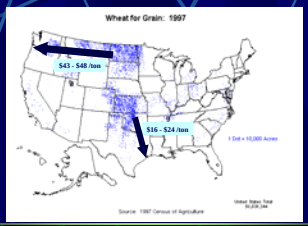
Agricultural Exports and Transportation System



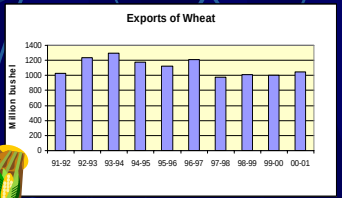
Agricultural Exports and Transportation System



Agricultural Exports and Transportation System



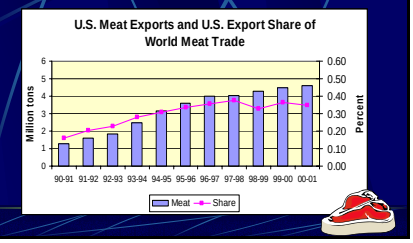
Agricultural Exports and Transportation System



Recent U.S. Agricultural Exports

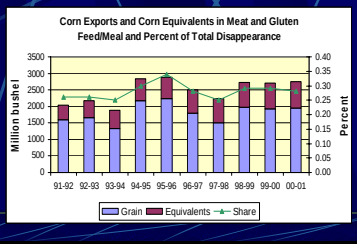
- **High-value and perishable exports are increasingly important -- 20% of exports are high-value and perishable**

Recent U.S. Agricultural Exports



Recent U.S. Agricultural Exports

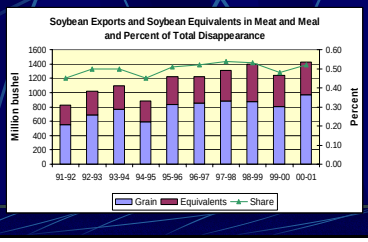
Recent U.S. Agricultural Exports



Recent U.S. Agricultural Exports

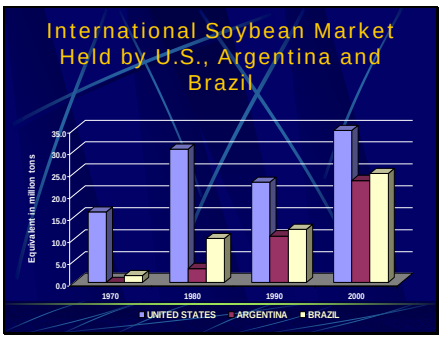
- ***Containerization*** **offers a means for U.S. agriculture to add value through an alternative handling and transportation system that facilitates identity preservation**

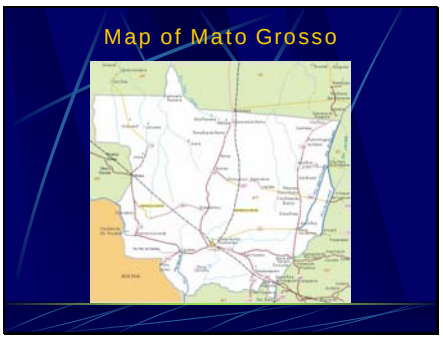
Recent U.S. Agricultural Exports



A Case Study: South America in World Grain Markets

- **U.S. agriculture has been a leading exporter of grain/oilseeds**
- **South America has generated sharp increases in grain/oilseed production over past decade**


International Soybean Market Held by U.S., Argentina and Brazil
Equivalent in million tons
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
1970
1980
1990
2000
UNITED STATES
ARGENTINA
BRAZIL


Map of Mato Grosso


Cerrados - Brazil's New Land Frontier
Cerrado


Soybean at Mato Grosso - 1


Map of Brazil

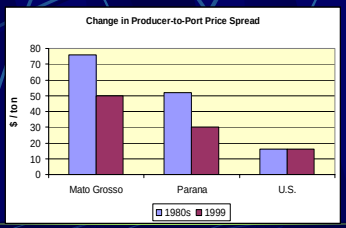

Soybean at Mato Grosso - 2

Soybean at Mato Grosso - 3

Map of Argentina

Soybean at Mato Grosso - 4

International Competitiveness



Soybean at Mato Grosso - 5

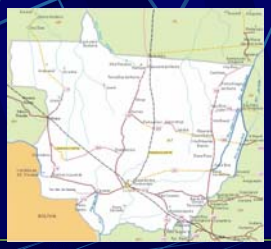
Assessment of Soybeans Export Cost Competitiveness

	U.S.	*Brazil*		*Argentina*
Cost item ($/bu.)	Hinterland	Parana	Mato Grosso	Buenos Aires/ Santa Fe
Total production cost	5.11	4.16	3.89	3.92
Internal transport & marketing cost	0.43	0.85	1.34	0.81
Cost at border	5.54	5.01	5.23	4.73
Freight to Rotterdam	0.38	0.57	0.57	0.49
Price at Rotterdam	*5.92*	*5.58*	*5.80*	*5.22*

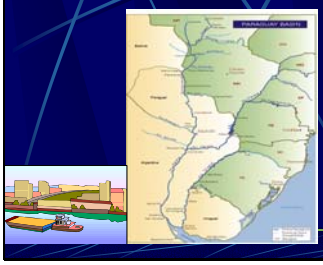
Evaluation of South American Transportation Projects

- Port facilities -- $4 / ton
- Lower Parana river -- $5 / ton
- Parana – Paraguay waterway -- $0.75 to $5 / ton

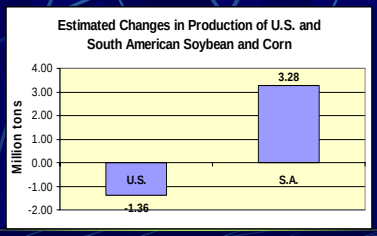
Evaluation of South American Transportation Projects (cont')



Evaluation of South American Transportation Projects (cont')



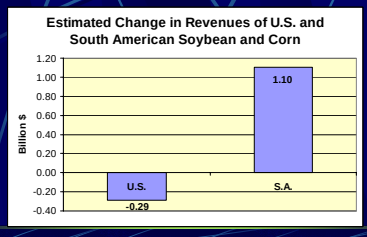
Results



Evaluation of South American Transportation Projects (cont')

- Railroad privatization -- 10% rate reduction
- Ferronorte railroad -- <= $3.50 /ton
- Madeira – Amazon waterway -- $13 / ton
- BR – 163 -- $13 / ton

Results (cont')



Summarizing Thoughts

- U.S. agriculture is depend on international agriculture markets
- U.S. agriculture has benefited from an efficient transportation and marketing system
- Motor carriers, inland waterways and railroads are central to U.S. agriculture export activity

Summarizing Thoughts (cont')

- In view of improvements in competing countries transportation and marketing system, it is important that the U.S. be vigilant regarding its transportation system

Implications of NAFTA: Border Crossing Issues

Jerry Nagel, Northern Great Plains Inc.

Northern Great Plains Inc. serves the states of Iowa, Minnesota, Nebraska, North Dakota, South Dakota and the province of Manitoba. NGP works to develop and to implement regional solutions to issues, concerns and opportunities that can best be addressed through regionally focused action.

NAFTA, for which 70 percent of trade is by truck, has had an impact with Canada and Mexico. Quality and maintenance of trucks and broadly understaffed customs offices stress the transportation system. Law enforcement needs to be equal on both sides of both borders with port processing zones that separate high risk and low risk travelers.

Canada's northern Great Plains global export in 1999 markets shipped 67 percent to the United States. The U.S. shipped 29 percent to Canada and 6 percent to Mexico.

Telling in the total freight flow is that in 1992, 171 millions of tons circulated within Canada and in 1997, 276 millions of tons circulated within Canada. Like numbers in the U.S. show 619 millions of tons flowing through the region in 1992 and in 1997 the number more than doubled to 1,496 millions of tons flowing through the region.

In billions of dollars, the total freight flow associated with the northern Great Plains was, in Canada, $56 billion in 1992 and $376 billion in 1997 circulating in the region, while in the U.S. the numbers were $923 billion in 1992 and $3826 billion in 1997 flowing through the region.

In 1997, northern Great Plains region total outbound and circulating freight by mode was, in percentages:

- Trucks, 46 percent, 239,964,890
- Rail, 43 percent, 224,051,994
- Water, 11 percent, 58,004,108
- Air, 0 percent, 324,567

This included secondary traffic, truck IMX and truck air drayage.

New Generation thinking on the Plains

Implications of NAFTA: Border Crossing Issues – National Forum on Agriculture and Transportation Linkages

Presented by:
Jerry Nagel
Northern Great Plains Inc.
Crookston, MN

www.ngplains.org

Northern Great Plains Inc.

The NGP serves the states of Iowa, Minnesota, Nebraska, North Dakota, and South Dakota and the province of Manitoba.

Northern Great Plains Inc. works to develop and implement regional solutions to issues, concerns and opportunities that can best be addressed through regionally focused action.

Current Major Activity Focus

- Agriculture and Natural Resources
- Information Technologies
- Strategic Analysis in Support of Regional Economic Growth and Vitality
- Issues in Strategic Leadership

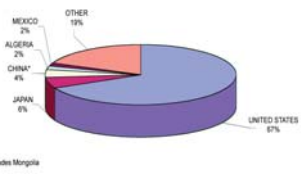
Transportation, Trade and Economic Development: Maximizing Future Opportunities in the Northern Great Plains

Publications

- An Overview of Transportation Infrastructure and Services in the Northern Great Plains
- Trade Patterns and the Economy of the Northern Great Plains: A Baseline Report
- *Toward New Horizons*: Trends in Transportation and Trade – Moving the Northern Great Plains Region to a Strong Economic Future

New Generation thinking on the Plains

Figure 2.30 – Canadian NGP Global Export Markets, 1999 (percentage of value)



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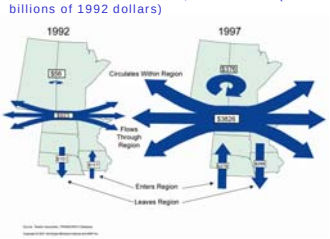
New Generation thinking on the Plains

Figure 2.10 – Total Freight Flow Associated with Northern Great Plains, 1992 & 1997 (in billions of 1992 dollars)



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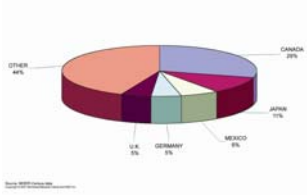
New Generation thinking on the Plains

Figure 2.18 – U.S. NGP Global Export Markets, 1999 (percentage of value)



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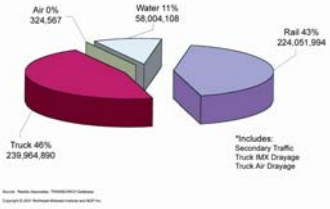
New Generation thinking on the Plains

Figure 2.2 – NGP Region Total Outbound and Circulating Freight by Mode, 1997 (percentage by weight, tons)



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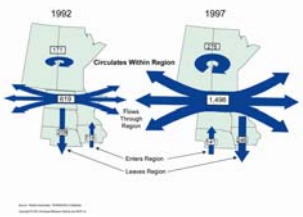
New Generation thinking on the Plains

Figure 2.7 – Total Freight Flow Associated with the Northern Great Plains Region, 1992 & 1997 (millions of tons)



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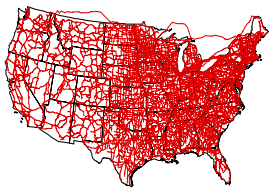
New Generation thinking on the Plains

US/Canada Truck Traffic on US Highway Network, 2020 (tons)



Federal Highway Administration
Office of Freight Management and Operations

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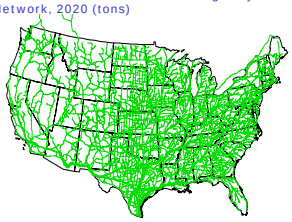
New Generation thinking on the Plains

US/Mexico Truck Traffic on US Highway Network, 2020 (tons)



Federal Highway Administration
Office of Freight Management and Operations

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New Generation thinking on the Plains

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www.ngplains.org

Trends in Ocean Freight & Port Capacity: Implications for Modal Transportation Interface

Libby Ogard, Tioga Group

Intermodal transportation is the movement of freight from origin to destination using different modal combinations of trucks, trains, planes and ships. From a supply chain perspective, the system is only as strong as the weakest link. Carriers and Logistics providers are addressing modal fragmentation and are working to improve cross modal communication, coordination and system optimization. Yet the intermodal connectors, linking the highway systems to the ports and railroads are constraining the network. The funding issues cannot be solved or financed by carriers alone. Shippers, Logisticians and communities need to collaborate to define need, justify cost and agree on program improvements, project beneficiaries and public policy. The issues are difficult and there are no quick or easy fixes.

Agricultural exports have outpaced the world Gross Domestic Product. Transportation and communication capabilities have fueled global economic growth. More than 96% of the world's population lives outside the US and is obviously where there is the largest opportunity for consumption growth. In 2001 the global population was estimated at 6.2 billion people. Over the next 10 years the population is expected to grow by another 737 million people. Technology has helped fuel this growth trend in ag exports. With improved farming methods and manufacturing processes we can now identify 9 grades of soybeans and separate grain genetically. The rise of a global middle class population has created more discretionary income to spend on food. Consumers are becoming more quality conscious; demand is influenced by taste preferences, cultural trends and social factors.

Our diets have changed including more fresh fruits and vegetables. Our eating trends have changed as we become more health conscious and as more women enter the work force. Our global economy has become more urbanized as more people move to the cities to find work. Transportation has contributed to the improved quality and variety in our diets. Today's agriculture is consumer driven. American and International consumers expect and receive a great deal from their food system. As each year passes our interest in the environment, convenience, food safety and manufacturing processes increases. Over the last decade we have seen an explosion in new product introductions. More than 12,000 new food products are introduced annually ranging from organic baby foods to free range chicken to drinkable yogurt; all compete for shelf space in the supermarket. This is all possible as a result of faster, better and cheaper transportation. Thru improved science we can identify a specific region where a product was grown and maintain that identity through the supply chain. Producers can guarantee specific agronomic practices and producers can specify specific handling instructions to preserve identity important for branding and market segmentation purposes. Simply put, science is allowing us to produce products to end user specifications. This diversification and specialization has allowed farmers to charge more for customized crops, which in turn demands a specialized transportation network.

General Mills estimates that for each consumer dollar spent the following are estimates of each input cost.

- 8 cents is for seeds and fertilizers
- 29 cents goes to the farmer
- 7 cents goes to the elevator
- 30 cents goes to the processor/manufacturer
- 26 cents goes to retail and marketing

Biotechnology has the ability to shift a larger share of the profits back to the farmer and they are keenly aware of this opportunity. In 1957 Malcom McLean, a trucker, revolutionized the container industry by putting truck bodies on an oil tanker called the "Ideal X" on an initial voyage from New York to Houston. This revolutionized the shipping industry. Labor costs fell. Break bulk ships previously took 200 men to load palletized freight, with containerization, the same vessel could be loaded by 20 men. Loss and damage was reduced in sealed containers. Loading times decreased substantially which had a significant impact on inventories and lead times. In some cases more than five days of transit reduction could be realized. Standardization in container sizes improved vessel utilization. By 1965 containers crossed the Atlantic bound for Rotterdam. Ports were adapted, narrow piers in urban centers were replaced by large docks on the edge of town. Finger docks with warehouse facilities were replaced by container parking and container cranes. On-dock rail facilities were developed to accommodate the efficient movement of inland cargo. The shipping container transformed the ocean industry into a highly efficient and intensely competitive business. Getting freight to and from the dock was a different story. In the 80's deregulation allowed the inland carriers to improve efficiency and productivity. Carriers were able to reduce empty miles and improve reliability. Competition resulted in lower rates. Reduced transportation costs allowed structural shifts in manufacturing and agriculture. Companies began to move distribution and manufacturing plants to rural areas where they could enjoy lower labor costs and cheaper land.

In the last two decades we have seen structural shifts in agriculture. Farms decreased from 2.4 million in 1980 to 2.0 million by 1998, a 15 percent reduction. The average farm size increased 11 percent, larger operations resulted in more product to move to market. Labor was better utilized and farm unit costs were reduced. Larger production volumes allow the farmers better bid prices, often at more distant elevators and processors. Since the 1980's there has been a significant change in on-farm feeding patterns. In the 80's 60 percent of the feed corn production was used in on-farm operations, by 1997 only 44 percent of the total corn feed was used on farm. This has increased demand for all modes of transportation. The dairy and livestock industry consolidations have resulted in a regional shift in farms. Since 1980 WI has lost 433,000 head of dairy cattle while during the same period CA has increased their herds by 472,000 cows.

As containerization grows, conditions are ripe for agriculture to take advantage of this capacity. Retailers and manufacturers have been intensely involved in containerization for the last 20 years, which has lead to significant imbalances. Shipping companies and railroads are now vigorously pursuing backhaul freight. In the last decade it was not uncommon for ships to head westbound from US ports less than half full. Balance improves container economics and allows a broader reach of services. Empty miles must be built into the head haul rate. If empty miles can be reduced, profitability can be improved and the reach of containerization can be extended. Density is necessary to justify the cost investments required for new terminals and clearing train tunnels. Density is required to run dedicated intermodal trains. Five day per week train service is needed to attract shippers. And reliable schedules are important to build user confidence. In these pictures, hay and lumber products are being loaded for overseas markets. Both are unlikely containerized commodities but illustrate the need to find freight to balance the container lanes. Hay moves at a rate of $550 per container from

the West Coast to Japan or $350 from the West Coast to Taiwan or Korea. These prices are driven by shipping companies trying to reposition containers to areas where new loads can be found. The US supplies nearly 80 percent of all the import hay that Japan consumes. The US ships on average 10,000 containers of hay to Japan each year.

Geography is also important. Typical container moves must be over 700 miles to be cost effective. Container shipments can only withstand 10 to 12 percent out of route miles to remain economical. For example if a door-to-door shipment from Chicago to New York would be over 700 miles. If the shipment originated in Northern Indiana and needed to be drayed to Chicago to board the train for a movement to New York. The out of route miles to back dray the container to Chicago would more than likely be more expensive than truck. Since the 80's ships have increased capacity in response to growing global demand. Larger ships mean lower unit costs for ocean shipping companies, yet these larger vessels often lead to increased expense at the port and a more elaborate feeder network. The economies of scale presented by these behemoth vessels are contributing to an extended reach for containerized cargo. The largest vessels carry over 6000 TEU or 3000 truckload equivalents. Traditional freight flows are changing as a result of this capacity. Demands for infrastructure improvements are increasing. At ports more parking and support services are necessary, wider turning radius areas must be identified. Many of these vessels require a 45-foot channel.

The San Joaquin Valley includes six of the top ten agricultural counties in California. Fresno County alone shipped $770 million of preserved fruits and vegetables. Beverage manufacturing provides 19 percent of the food processing employment in California, led by the high value-added wine production. Over 65 percent of the U.S. wine production employment is in four California counties. Napa, Sonoma, Stanislaus and San Joaquin. California food processing employed 183,300 people in 1999, composing 11 percent of the nation's total. Seasonal harvesting results in an annual employment surge in the late summer, as illustrated in the graph below. In addition to actual harvesting, the food processing industry provides thousands more jobs in directly related industries such as food wholesaling and retailing. More jobs are linked through manufacturers of packaging materials, industrial and agricultural chemicals, biotechnology products, and farm and food production machinery. Japan was the single largest market for California food and kindred products. Purchases in 1999 exceeded one billion dollars, or one quarter of the total

This business activity is straining inland connectors. On I-80, daily traffic volumes have nearly doubled in the last 10 years. Container growth is adding to this congestion. Yet, it is often difficult to justify the investment in intermodal infrastructure because of the nature of the freight, which often travels through regions adding to the traffic volumes. It is often hard to identify where the freight is originating or going, and those users are often unidentified where port congestion is the worst.

Intermodal connectors are not up to the task. Ports and ocean connectors represent the largest mileage category of sub-standard highways. Poor pavement conditions result in reduced traffic speeds and an increase in maintenance and repair costs for trucks and vehicles operating on those roadways. Funding is needed to address these issues, yet there is no easy way for carriers and shippers to address this need on a national basis. Many of these connectors are located in local jurisdictions making it increasingly difficult to justify from a national network perspective. Connectors are the orphans of the highway system and often fall between the cracks in long range planning. It is hard to get shippers and stakeholders to participate in the MPO process for each and every facility they operate. New sources of funding need to be identified to address this issue.

I would like to leave you with a final image of a cereal box. I hope containerization will change the way we think about agricultural products in the future.

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Trends in Ocean Freight and Port Capacity

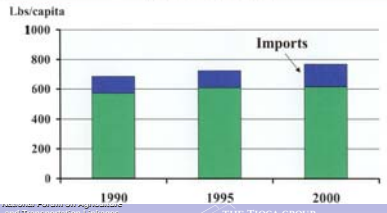
Libby Ogard – Tioga Group

Agenda

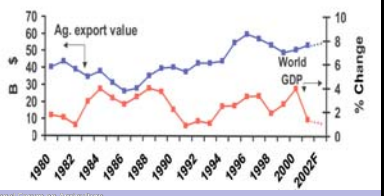
- High-value exports are critical to the future of US agriculture.
- US exporters depend on the capacity and efficiency of containerized shipping to compete in foreign markets.
- Growth in containerized cargo of all kinds is straining US port capacity.
- Key highways and intermodal connectors are not up to the task.

The Global Economy is Dependent upon Intermodal Supply Chains

U.S. CONSUMPTION OF FRUITS AND VEGETABLES



WORLD GDP AND U.S. AG EXPORTS



Branded Products

High-value Exports Are Critical

- Agricultural products are one of the few U.S. Industries to enjoy a positive trade balance
- *High value means containerized*
- Containerization will enable the farmer to keep more of the profits

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Deregulation Fueled Further Growth

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Containerization Revolution

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Structural Shifts in Agriculture

- Since 1980 the number of farms has decreased by 15%
- The average farm size increased by 11%
- Improved productivity has resulted in larger production
- On-farm feed patterns changed as the livestock industry consolidated
- Regional shifts in poultry and livestock industries has impacted transportation patterns

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Ports Were Adapted

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Container Economics

- Balance
- Density
- Geography

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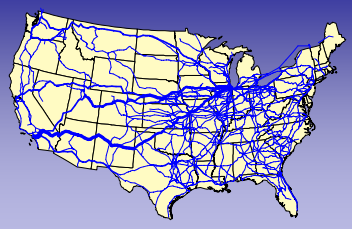
Rail Intermodal Flows, All Commodities

Rail freight density in tons



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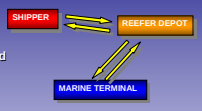
High-value Ag Exports *Need* Reefer Services

- Refrigerated containers must be cleaned and serviced before use
- Trucks must move reefer containers move back and forth between shippers, depots, and terminals



- These functions require space near ports and add to traffic congestion

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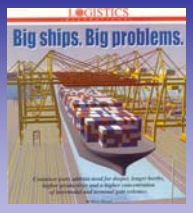
US Exporters Depend on the Capacity and Efficiency of Containerized Shipping

- Competition is intense and foreign markets are fickle
- Minimizing landed cost is the key to successful and profitable exports
- US shippers need extra capacity in the peak shipping seasons



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Core Services: Heavy Cargo Transloading and Consolidation

- Exporters rely on transloading and consolidation to achieve shipping economies and reduce delivered cost.

- Many of the containers handled by these services approach or exceed highway weight limits. Such containers must be moved on designated routes to and from the Port.

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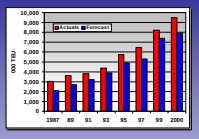
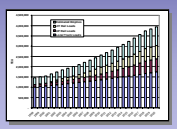
Containerized Cargo Growth Is Straining US Port Capacity

- Cargo flows through Los Angeles and Long Beach have consistently exceeded the forecasts





- Port of Oakland container traffic will grow at 4-5% annually through 2020.

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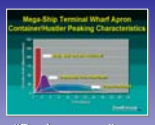
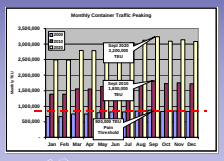
Implications of Faster Growth: Peaking



Daily and monthly traffic peaking will continue to tax the entire port system infrastructure

- "Peak season" congestion in southern California now lasts from may through December



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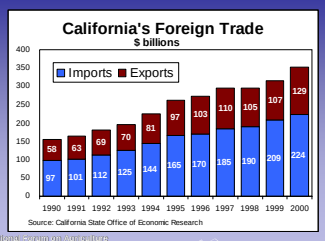
Japan is California's Largest Market



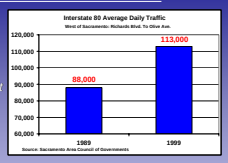
NHS Freight Terminals

No.	Terminal Type	Miles
99	Airports	221
61	Truck/Pipeline	115
253	Ports (ocean and river)	532
203	Truck/Rail	354
616	Total Freight Con.	1,222

Total NHS Miles ~161,000

Inland Connectors Are Strained

- *"I-80… will not accommodate the anticipated growth in travel. Heavy congestion… will result from such growth."*



Estimated Port of Oakland Regional Traffic Volumes - 1999 Units

	Bay Area	Sacramento	Stockton/ Modesto	Fresno	Salinas/ Monterey	Other No. California	Total
Export Loads	142,824	28,034	57,003	46,330	59,280	28,063	361,524
Import Loads	206,392	7,153	7,958	2,051	2,108	2,708	381,294
Total Loads	349,216	35,187	64,961	48,381	61,388	30,761	589,894

Source: Port Import-Export Reporting Service

Portland - access road to the Port's Marine Terminals 4, 5, 6, through residential community of St. John's

Oakland Truck Queue Forming on Service Road

Pavement Conditions

Terminal Type	Poor/very poor % Mileage
Airports	7%
Truck/Pipeline	7%
Ports (ocean and river)	15%
Truck/Rail	12%

All NHS Mileage 8%

NHS Freight Terminals Annual Investment Levels per Mile

Terminal Type	3-Year	3-Year W/out Top 5
Airport	$ 347,000	$ 79,000
Pipeline	$ 55,000	$ 12,000
Port	$ 136,000	$ 41,000
Truck/Rail	$ 118,000	$ 66,000

All non-Interstate NHS $102,100/mile

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Intermodal Connectors Are Our Weakest Link

- Connectors are "orphans…someone else's responsibility"
- Lack of visibility in planning process
- Inadequate coordination among stakeholders
- Unclear vision of intermodalism and the role NHS connectors serve
- Funding - establishing priorities…new sources
- Balancing freight and community interests

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Freight Connector Mileage by Jurisdiction

Jurisdiction	Mileage	Percent
State	349	29%
Local	635	52%
State and Local	238	19%
Total	1222	100%

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Cereal Box?

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Morning Session 1: Modal Perspectives

Randy Grauberger, Colorado DOT, presiding

Multimodal Perspective on U.S. Freight Transportation

Alan Meyers, AICP, Cambridge Systematics, Inc.

This presentation offers an overview of current and forecasted conditions for the nation's freight movement system, identifies cross-cutting issues common to all freight transportation modes, and argues that "planning across boundaries" – across modes, across jurisdictions, and across traditional divisions between public and private-sector roles and responsibilities – will be critical in solving the emerging challenges of goods movement for agriculture and other commodities in the 21st Century.-

To begin with, we can observe that the United States freight transportation system evolved through four distinct eras of development.

- Maritime, coastal trade hallmarked the 18th Century or "Sail Era." Colonial economies were built on water transport because it cost as much to move a ton of goods 30 miles inland as across the Atlantic Ocean. In the same time period, two out of three settlers lived within 50 miles of the Atlantic Ocean.

- With the advent of railroad service, the 19th Century or "Rail Era," freed business and industry from the waterways. The new rail technology opened the Midwest and West. Lines were centered in key rail hubs and corridors from east to west. More than 200,000 miles of rail were laid by the 1920s. This moved both goods and people, nationalizing the country.

- The 20th Century was the "Truck Era." Major systems were placed. Highways freed business and industry from rail hubs and corridors. These highways hugely increased access to efficient transportation for goods, services and people. In turn, highways fostered dramatic increases in trade, yet at the same time created dependencies on truck access.

- Moving into the 21st Century, the "Information and Integration Era," appears to be focusing on connections across modes and across borders. In the 21st Century, the developing intermodal transportation system comes into its own. The global economy is built on information and efficient intermodal connections. Our seaports and NAFTA contribute to trade expanding rapidly. Intermodal efficiencies affect ports, border crossings and inland transport. In year 2000 real dollars, the Atlantic Coast and Canadian border were close to $500 million, Pacific Coast at just above $500 million, Gulf Coast topping $200 million and the Mexican border almost $200 million in goods through portals.

Today, freight tonnage shows a domestic market, excluding pipeline, at 13,800 million tons with a value of $10.8 billion. An approximated international freight tonnage shows 1,700 million tons with $1.8 billion. This leads to an impressive total of approximately 15.5 million tons of freight tonnage and $12.6 billion value.

In moving forward, the challenge we face is: how to handle increasing demands – in terms of absolute volumes and in terms of system integration – on our aging and increasingly-burdened highways, railroads and seaports, and on modal systems that were developed independently but must now be "knitted together" into seamless end-to-end transportation service networks.

To address these issues, it is important to understand the market niches served by different transportation modes. Shippers buy freight services based on the relative importance of five factors: cost, speed, reliability, visibility and security. Air and truck provide the fastest, most reliable and most visible service – at the highest cost – and tend to serve higher-value, lower-weight commodities (electronics, perishables, consumer goods, etc.). Conversely, water and bulk rail provide the lowest-cost service – with reduced speed, reliability and visibility – and attract large unit shipments of heavy, lower-value commodities (coal, petroleum, grain, etc.). Intermodal rail, which blends economies of scale with relatively high levels of service, falls somewhere in-between, and is competitive with trucking for higher-value commodities at longer distances.

- The inland water freight system moved 1 billion tons of freight valued at $138 billion over 540 billion ton-miles in 2000. This included petroleum, coal, crude materials, food and farm products and chemicals.

- The rail freight system moved 2 billion tons valued at $600 billion over 1.2 trillion ton-miles in 2000. The bulk commodities/unit train service moved 1 billion tons of coal, grain and minerals, a 70 percent market share, in 2000. The industrial commodities/carload service moved 780 million tons of chemicals, food products, metal products, wood products, clay and concrete, a 7 percent market share, in 2000. The merchandise/intermodal system moved 200 million tons of containerized mixed shipments and automobiles for a 16 percent market share in 2000. Agriculture, while important, was not the leading revenue generator for Class One railroads. Materials topping agriculture were coal, coke, iron, consumer products and energy.

- In domestic truck freight flows, the truck-freight systems moved 11 billion tons valued at $9.5 trillion over 2.6 trillion ton-miles in 2000. This included secondary traffic, warehouse and distribution, clay plus concrete products. In domestic goods movement today, the U.S. freight system moved 14 billion tons of freight valued at $11 trillion over 4.5 trillion ton-miles in 2000. By far, truck moved the most.

In domestic goods movement, the "highest service" freight modes – air, truck and intermodal rail – have seen the fastest growth. This is due, at least in part, to an increased emphasis on "just in time" transportation logistics that value reliability and speed over cost, so that the increased cost of transportation is offset by the reduced cost of warehousing. From 1990 to 2000, compound annual growth rates by mode showed air at 17.9 percent, truck at 6.9 percent, rail intermodal at 4.6 percent, rail bulk and carload at 1.4 percent and inland water lower at 0.5 percent.

With just-in-time logistics, global supply chains and e-commerce, this trend is anticipated to continue.

Forecasted growth through 2020 shows air at 5.3 percent, truck at 2.4 percent, rail intermodal at 2.6 percent, average all modes at 2.3 percent, rail bulk and carload at 1.8 percent and inland water at 1.7 percent.

In international goods movement, one billion tons of freight valued at $1.1 trillion in 1998, excluding approximately 700 million tons of petroleum, moved through the system. Sea trade moved more than 500 billion tons with a value of about $4.5 trillion; cross-border trucks moved just over 200 billion tons with a value of about $3.6 trillion; cross-border rail moved about 150 billion tons with $100 trillion value; cross-border waterway moved about 75 billion tons at about $20 trillion value and air moved about 10 billion tons with about $140 trillion value. Los Angeles and South Louisiana were the leading ports in 2000.

Growth forecasts for U.S. international trade from 1998 to 2020 indicate 114 percent growth. International sectors from 1998-2020 indicate 3.1 percent growth to Canada, 3.5 percent between the U.S. and Mexico and 3.6 percent between the U.S. and the rest of the world.

These levels of forecast growth will create new pressures on our nation's freight infrastructure. How we choose to address them will affect the performance of the nation's economy and security:

- Transportation costs represent a substantial share of the overall value of a product – all products, not just agriculture.
- Lower transportation costs mean reduced domestic prices and improved competitiveness in domestic and global markets.
- Different shippers need different modes of transportation for different reasons – every mode makes a critical contribution and the modes depend on each other.
- To support the U.S. economy, we need to support freight transportation – in terms of modal capacity, intermodal connectivity and overall service – and do so in the face of significant growth i freight and passenger demand.
- Cargo security, clearance and tracking are critical issues at our nation's ports and borders.
- Increase awareness that we need multiple modes and options in the event of a transportation system disruption – no single mode can stand alone.
- The military relies on our freight transportation system for force projection and re-supply – highway, rail and seaport.

Congestion is, obviously, a bad thing for both the freight and non-freight users of all modes in the nation's transportation system. It increases costs and reduces speed, reliability and safety. There are many potential congested highways projected for 2020, with urban centers and critical intercity corridors being especially impacted. Cross-cutting issues include:

- Congestion delays at ports – freight not transferred to rail or truck due to peak demands on labor, land equipment.
- Congestion delays at border crossings.
- Congestion delays on rail – railroad interchanges, terminal handling, interference by higher-priority passenger traffic, "choke points" that reduce capacity.
- Congestion delays on highways – growing freight and passenger demand.

To address these issues, a variety of "fixes" for different modes have been promoted by different modal interests. When looked at in total, these "fixes" show a surprising degree of consistency across modes, and fall principally into the areas of: infrastructure needs; vehicle size; customer service; business operations; and partnerships.

• **Infrastructure Needs**: Continuing investment is needed for highways to meet system needs. This means $1.9 trillion between 2000 and 2020 under the 1999 *FHWA Conditions and Performance Report Maximum Investment Scenario.* Rail is faced with critical "choke points" of antiquated tunnels and bridges, lack of mainline capacity, "missing" system connections, height and weight clearances and inadequate terminals. Marine channel depths must accommodate deep-draft next-generation "mega ships"; lock and dam improvements and navigable water depths for the inland waterways as well as improved truck and double-stack rail connections.

- **Vehicle Size**: Trucks of greater size and weight are more economical for carriers but also affect the infrastructure. There is a need to homogenize standards across state lines. Likewise, heavier and taller rail cars are more economical for the carrier but require an upgraded infrastructure. Longer trains and "hub and spoke" routings are more economical for the carrier but fewer consolidation points mean more trucking to railheads. Marine vessels including "mega" container ships and large tows are more economical for the carrier, but again increase the demand for deeper channels, larger fleeting areas and more terminal acreage for traffic surges.

- **Customer Service**: "The customer wants more and is willing to pay less for it" has become the reality. With trucks, customers want highly flexible service, offering high reliability and visibility. These consume highway resources. There is possible opportunity for off-hours travel. And, there is a need for rest areas. Rail faces issues of system preservation, competitive access and pricing. "Scheduled roads" have been implemented but customers still complain about reliability. There is potential for greater intermodal backhauls and the role of shortlines in connecting Class Ones to their customers are critical. For marine terminals, landside access is critical. They are now scheduling truck pickup and delivery, managing "outside the gate."

- **Business Factors**: Trucking must deal with liability insurance, driver shortages and wages, and equal safety enforcement. Railways are profit driven businesses rather than public transportation providers. They face major capital investment needs and major shortfalls of capital. Further mergers and/or system rationalization is possible. Few ports are actually profitable. Their major benefit is support for regional economies. Ports face major capital needs for navigation channels, terminals and landside access improvements.

- **Need for Partnerships**: Our goal should be the best possible freight transportation system across all modes and all parts of the country. Partnerships across modes — between ports, railroads and trucking – have been responsible for the emergence of intermodal transportation in the US, and must be encouraged and extended. Partnerships in public-sector freight planning across jurisdictional boundaries (between cities, counties, regions and states) are necessary to deal effectively with longer-distance freight trips, and we are seeing the emergence of several of these types of regional freight planning efforts. Finally, partnerships between the public and private sector will be needed to fund and implement improvements to the nation's freight transportation network, which is comprised of public and private components. Increasingly, we are seeing an increased willingness to blend public and private sector participation in developing and improving ports, railroads and highways, and this is clearly the emerging model.

Multimodal Perspective on U.S. Freight Transportation

presented to

National Forum on Agriculture and Transportation Linkages

by

Alan Meyers, AICP
Cambridge Systematics, Inc.

May 18, 2002

Slide 1

Freight System Overview

FHWA Freight Analysis Framework Project, AASHTO Rail Bottom Line Report, Presentations of May 17th

- Evolution of the U.S. Freight Transportation System
- Current and Future Conditions
  - Domestic Freight
  - International Freight
- Cross-Cutting Multimodal Issues

Slide 2

18th Century/Sail Era

Colonial economies were built on water transport; it cost as much to move a ton of goods 30 miles inland as across the Atlantic; 2 out of 3 settlers lived within 50 miles of the Atlantic

Slide 3

19th Century/Rail Era

Rail technology freed business and industry from the waterways, opened the midwest and west; lines were centered in key rail hubs and corridors; over 200,000 miles by 1920

Slide 4

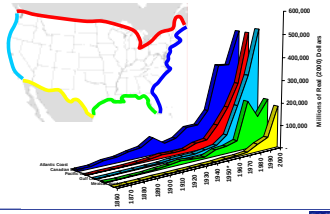
20th Century/Truck Era

Highways freed business and industry from rail hubs and corridors; hugely increased access to efficient transportation; fostered dramatic increases in trade, but created dependencies

Slide 5

21st Century/Information and Integration Era

Global economy built on information and efficient intermodal connections; seaports and NAFTA trade expanding rapidly; ports, border crossings, inland transport, "end-to-end" service are key



Slide 6

Where Are We Today?

Freight Tonnage	Tons (mil)	Value ($ bil)
Domestic (excluding pipeline, from 2000 Transearch)	13,800	10,800
International (approximated from 2000 USACE and 1998 FAF)	+/- 1,700	+/- 1,800
Total	+/- 15,500	+/- 12,600

Slide 7

Domestic Rail-Freight Flows

Rail-freight system moved 2 billion tons valued at $600 billion over 1.2 trillion ton-miles in 2000

Slide 10 Source: Reebie Associates and FHWA Freight Analysis Framework Project

Mode Choice

Shippers buy freight services based on relative importance of factors: cost, speed, reliability, visibility, security

Higher……..Service Cost Continuum……..Lower

Space	Air Cargo	Truck	Rail Intermodal	Rail Carload	Rail Unit	Water
$10K/lb.	$1.50/lb.	5-10¢/lb.	3¢/lb.	1¢/lb.	1/2-1¢/lb.	1/2¢/lb.
Fastest, most reliable, most visible Lowest-weight, highest-value, most time-sensitive			Fast, reliable, visible Range of weight, value Rail intermodal competitive with truck over longer distances		Slower, less reliable, less visible Highest-weight, lowest-value, least time-sensitive	

Slide 8

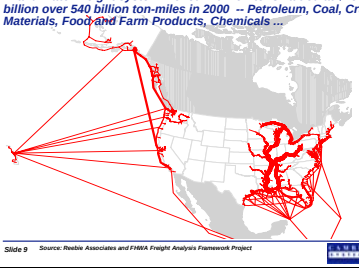
Bulk Commodities/Unit Train Service, 2000

Moved 1 billion tons -- Coal, Grain, Minerals … 70% Market Share

Slide 11 Source: Reebie Associates and FHWA Freight Analysis Framework Project

Domestic Waterborne Freight Flows

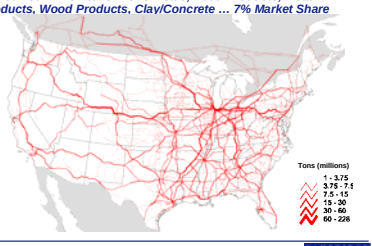
Inland-water-freight system moved 1 billion tons valued at $138 billion over 540 billion ton-miles in 2000 -- Petroleum, Coal, Crude Materials, Food and Farm Products, Chemicals …



Slide 9 Source: Reebie Associates and FHWA Freight Analysis Framework Project

Industrial Commodities/Carload Service, 2000

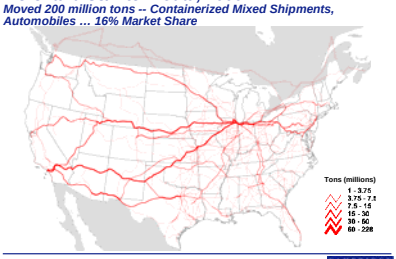
Moved 780 million tons -- Chemicals, Food Products, Metal Products, Wood Products, Clay/Concrete … 7% Market Share



Slide 12 Source: Reebie Associates and FHWA Freight Analysis Framework Project

Merchandise/Intermodal, 2000

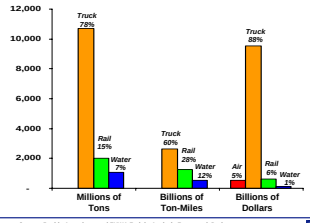
Moved 200 million tons -- Containerized Mixed Shipments, Automobiles … 16% Market Share



Slide 13 Source: Reebie Associates and FHWA Freight Analysis Framework Project

Domestic Goods Movement Today

US freight system moved 14 billion tons of freight valued at $11 trillion over 4.5 trillion ton-miles in 2000



Slide 16 Source: Reebie Associates and FHWA Freight Analysis Framework Project

Class I Rail's Leading Commodities by Revenue

Agriculture important, but not the leading revenue generator

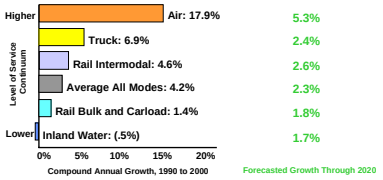
Norfolk Southern (2000)	CSX (2001)	Union Pacific (2001)	Burlington Northern/ Santa Fe (2001)
• 23% Coal, Coke and Iron	• 24% Coal, Coke and Iron Ore	• 23% Energy	• 37% Consumer Products
• 18% Intermodal	• 16% Intermodal	• 19% Industrial Products	• 23% Coal
• 15% Automotive	• 13% Chemicals	• 18% Intermodal	• 23% Industrial Products
• 13% Chemicals	• 11% Automotive	• 15% Chemicals	• 7% Agriculture Products
• 11% Metals and Construction	• 9% Forest Products	• 14% Agricultural Products	
• 10% Paper, Clay and Forest Products	• 7% Agricultural Products	• 11% Automotive	
• 10% Agriculture	• 6% Metals		
	• 5% Minerals		
	• 6% Other		

Source: Railroad Annual Reports.

Slide 14

Growth Rates by Mode

Intermodalism, "Just-in-Time" Logistics, E-commerce Place More Emphasis on Speed, Reliability, Visibility, Favoring Certain Modes



Slide 17 Source: Reebie Associates and AASHTO Rail Bottom Line Report

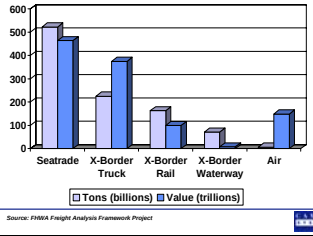
Domestic Truck Freight Flows

Truck-freight system moved 11 billion tons valued at $9.5 trillion over 2.6 trillion ton-miles in 2000 -- Secondary Traffic (Warehouse and Distribution, Clay+Concrete, Products ...

Slide 15 Source: Reebie Associates and FHWA Freight Analysis Framework Project

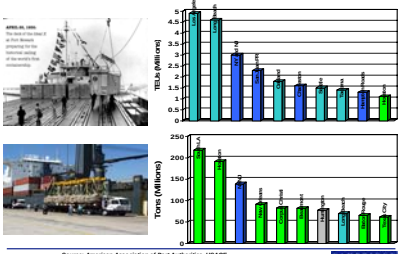
International Goods Movement

1 billion tons of freight valued at $1.1 trillion in 1998 (excluding approximately 700 million tons of petroleum)



Slide 18 Source: FHWA Freight Analysis Framework Project

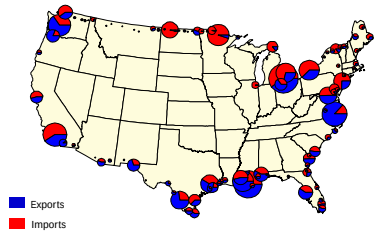
Leading U.S. Ports by TEUs and Tonnage, 2000



Slide 19

Source: American Association of Port Authorities, USACE

Leading U.S. International Gateways

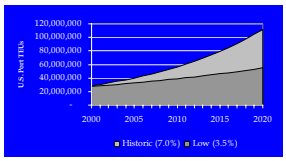


Slide 20

Source: FHWA Freight Analysis Framework Project

Growth Forecasts for International Trade

- US International:
  - 1998-2020: 3.5% (114% total)
  - 1998-2010: 4.0%
  - 2010-2020: 2.9%
- International Sectors:
  - US/Canada 1998-2020: 3.1%
  - US/Mexico 1998-2020: 3.5%
  - US/Rest of World 1998-2020: 3.6%



Slide 21

Source: FHWA Freight Analysis Framework Project and Cambridge Systematics

Cross Cutting Issues -- Economic Impacts of Transportation

- Transportation costs represent a substantial share of the overall value of a product -- all products, not just agriculture
- Lower transportation costs mean reduced domestic prices and improved competitiveness in domestic and global markets
- Different shippers need different modes of transportation for different reasons -- every mode makes a critical contribution, and the modes depend on each other
- To support the US economy, we need to support freight transportation -- in terms of modal capacity, intermodal connectivity and overall service -- and do so in the face of significant growth in freight and passenger demand

Slide 22

Cross Cutting Issues -- Security, System "Redundancy" and Emergency Response

- Cargo security, clearance and tracking are critical issues at our nation's ports and borders
- Increased awareness that we need multiple modes and options in the event of transportation system disruption -- no single mode can stand alone
- The military relies on our freight transportation system for force projection and resupply -- highway, rail and seaport

Slide 23

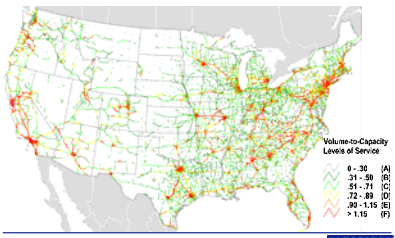
Cross Cutting Issues -- Congestion

- Congestion is bad
  - Increased cost
  - Reduced speed, reliability, visibility
- Congestion delays at ports -- freight not transferred to rail or truck due to peak demands on labor, land and equipment
- Congestion delays at border crossings
- Congestion delays on rail -- railroad interchanges, terminal handling, interference by higher-priority passenger traffic, "choke points" that reduce capacity
- Congestion delays on highways -- growing freight and passenger demand

Slide 24

Potential Congested Highways, 2020

Urban centers and critical intercity corridors will be impacted



Slide 25 Source: U.S. DOT Freight Analysis Framework Project

Cross-Cutting Issues -- Infrastructure Needs

- Highway: continuing investment needed to meet system needs ($1.9 trillion between 2000 and 2020 under the 1999 FHWA Conditions and Performance Report Maximum Investment Scenario)
- Rail: critical "choke points" -- antiquated tunnels and bridges, lack of mainline capacity, "missing" system connections, height and weight clearances, inadequate terminals
- Marine: channel depths to accommodate deep-draft next-generation "mega ships"; lock and dam improvements and navigable water depths for the inland waterways; improved truck and double-stack rail connections

Slide 26

Cross-Cutting Issues -- Vehicle Size

Opportunities and Challenges

- Truck: greater size/weight more economic for carrier, but affects infrastructure; need seen to homogenize standards across state lines
- Train: heavier and taller cars more economic for carrier, but require upgraded infrastructure; longer trains and "hub and spoke" routings more economic for carrier, but fewer consolidation points mean more trucking to railheads
- Marine vessels: "mega" container ships and large tows more economic for carrier, but increase demand for deeper channels, larger fleeting areas, more terminal acreage for traffic surges

Slide 27

Cross Cutting Issues -- Customer Service

"The customer wants more … and is willing to pay less for it."

- Truck: highly flexible service, offering high reliability and visibility, but consuming highway resources; possible opportunity for off-hours travel; need for rest areas
- Rail: faces issues of system preservation, competitive access and pricing; "scheduled roads" implemented but customers still complain about reliability; potential for greater intermodal backhauls; role of shortlines in connecting Class I's to their customers is critical
- Marine terminals: landside access is critical; now scheduling truck pickup and delivery, managing "outside the gate"

Slide 28

Cross-Cutting Issues -- Business Factors

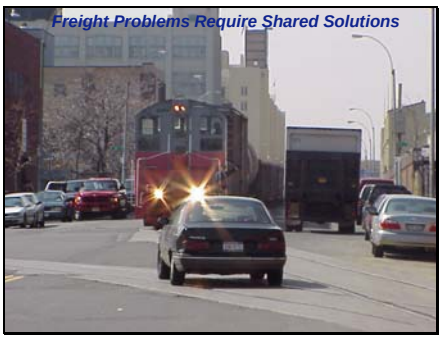
- Trucking: liability insurance, driver shortages and wages, equal safety enforcement
- Rail: profit-driven businesses rather than public transportation providers, facing major capital investment needs and major shortfalls of capital; further mergers and/or system rationalization possible
- Ports: few are actually profitable -- major benefit is support for regional economies; facing major capital needs for navigation channels, terminals and landside access improvements

Slide 29

Cross Cutting Issues -- Need for Partnerships

- Our goal should be the best possible freight transportation <u>system</u> -- across all modes and all parts of the country
- Across modes
  - Intermodal partnerships between rail and truck
  - Ports building rail corridors and access roads
- Across state lines -- freight moves long distances through multiple states, requires coordinated planning
- Across traditional public-private roles
  - Public sector already builds highways and ports
  - Public sector investing in shortlines, partnering with Class I's for projects with clear public benefits

Slide 30


Freight Problems Require Shared Solutions

Railroads and Grain

Craig Rockey, AAR

The issues facing North American railroads are numerous and significant:

- Re-regulation
- Service initiatives
- Security
- Fuel prices
- 4.3-cent fuel tax
- TEA-21
- Short line infrastructure
- PLCT
- Productivity
- Safety
- Chicago plan
- Passenger rail

Railroads and Grain

Presentation to

National Forum on Agriculture and Transportation Linkages

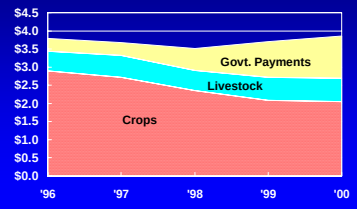
by

Craig F. Rockey

Vice President - Policy and Economics
Association of American Railroads
May 18, 2002

Fargo, ND

North Dakota Cash Receipts From Farm Marketing and Government Payments
($ Billions)

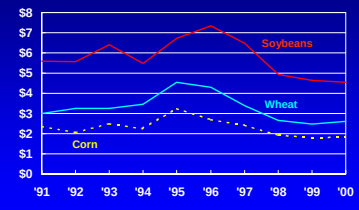


Source: North Dakota Agricultural Statistics Service

U.S. Grain Production*
(Millions of Tons)

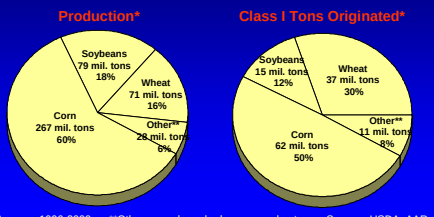
*barley, corn, oats, rye, sorghum, soybeans, and wheat. Source: USDA

Average Price Received by Farmers
(Current Dollars Per Bushel, Avg. All States)



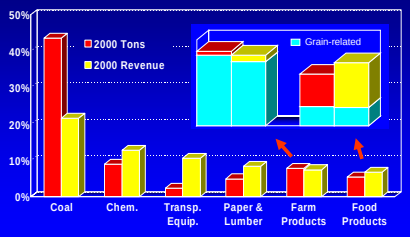
Source: USDA

U.S. Grain Production vs. Class I Grain Tonnage



*Average 1996-2000 **Other = sorghum, barley, rye, and oats. Source: USDA, AAR

Where Grain Fits

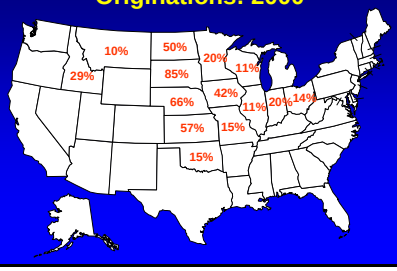


Source: AAR - *Freight Commodity Statistics*

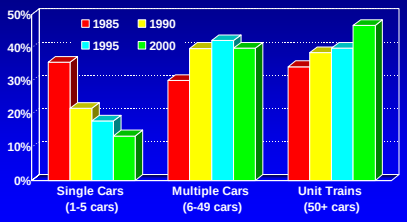
Grain Car Supply

- Increase in fleet capacity
- Reservation programs
- Incentives for efficiency
- Availability to small shippers

Farm Products as a % of Total Rail Originations: 2000

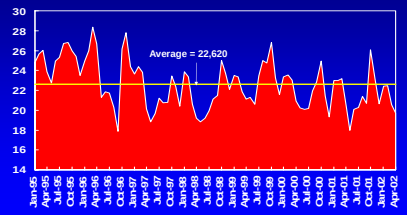


U.S. Rail Grain Tonnage by Movement Type



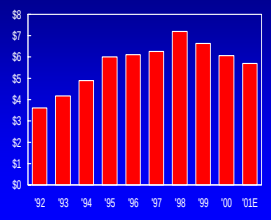
Source: STB *Waybill Sample* (various years)

Grain Carloads are Highly Cyclical
(U.S. Average Per Week, 000s)



Source: AAR

Railroad Capital Expenditures
($ Billions)

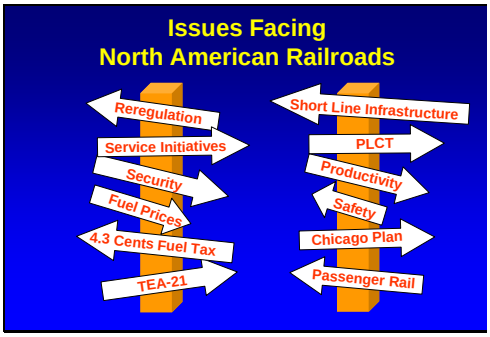


Capital Expenditures as a % of Revenue: 2000

All manufacturing	3.7%
Transp. equip.	2.6%
Food	2.7%
Wood products	3.3%
Machinery	3.1%
Metal products	3.7%
Paper	4.9%
Computers	5.5%
Chemicals	4.6%
Class I RRs	**17.8%**

Source: Census Bureau, AAR

Source: AAR



TEA-21 Reauthorization

- Section 130
- CMAQ
- Corridors and Borders
- Planning / MPOs
- Intermodal Tax Incentives
- Rail Infrastructure Tax Incentives
- RRIF

Trucking

Fletcher Hall, ATA

Agriculture, by any measure, continues to be a vital and dynamic sector of the U.S. economy. As Michael Martin and Richard Beilock pointed out in their paper, "Agricultural Transportation in Constant Adaptation," presented yesterday, "agriculture makes multiple contributions to the nation's well being and transportation plays a special role in serving agriculture. And, I would add that trucking plays an increasing and critical role in the transportation component of the agricultural industry in the United States.

In recent years, substantial adjustments and paradigm adjustments have taken place in American agriculture. Many of these changes and paradigm shifts have exacerbated old challenges and created new ones for the transportation industry that serves American agriculture.

In 2000 – 2001, 340 metric tons of agricultural output in grain alone was produced in the United States. In 2000, trucks transported 491 million tons of farm products and in the past few years, trucks have been rapidly replacing trains and barges as the primary mode for commercial transport of most types of grains and all other agricultural commodities.

There have been significant long-term trends in railroad service in the United States, which has affected its service to U.S. agriculture: Increased Class 1 railroad concentration, shrinking of the rural railroad network; growing importance of short line and regional railroads; the trend to trainload operations, transfer of logistic costs to shippers; shift to larger capacity rail cars; and the declining significance of agricultural traffic in the railroad industry, have all affected commercial agricultural transportation.

The shift in the primary mode of transportation in American agriculture, from trains to trucks, has had significant implications for the trucking industry and the infrastructure support necessary for efficient, cost-effective truck transportation for agricultural commodities.

There are other major changes, which have taken place, which create many challenges for commercial agricultural transportation in the U.S. Since 1980, the number of farms has decreased in this country by 15 percent, a loss of more than 376,000 units. The size of farms has increased by 11 percent during that same period. This consolidation has created, among other things, a substantial impact on transportation: the types used by producers, the availability and affordable choices. During this same period of time, there has been a major geographical shift in production of crops and these regional shifts also affect transportation demand. It appears that one area hit with new, large demands because of these shifts has been the Western area.

We are seeing large increases in corn and soybean acreage in the West. While corn acreage was increasing by 1 million acres east of the Mississippi River, it was increasing by 9 million acres west of the Mississippi.

For poultry producers, the shift has been to the southern region. In 1947, broiler production in the South amounted to 20 percent of the total product. In 2001, that figure was 79 percent. These areas, however, produce only 5 percent of the nation's feed grains, which means they must rely heavily upon feed grains delivered from the Corn Belt. Shifts in hog production, too, have increased the demand for grain transportation capacity as North Carolina, Oklahoma and even Utah are developing large pork producing facilities.

Major shifts in the beef and dairy cattle industries are further impacting the demand for feed-grains, which must be shipped long distances. We continue to see major consolidation and greater concentration of the cattle

industry in the western and southwestern states. In 1960, the Corn Belt accounted for 33 percent of U.S. cattle marketings. In 2001, this region accounted for only 13 percent of all U.S. marketings.

In 2001, the Southwest and the Plains states accounted for 65 percent of the U.S. total. The only states that have expanding dairy herds are in the West and the Southwest. In 1980, 42 percent of the nation's dairy cows were in the Corn Belt states. Today, five states: Arizona, California, Nevada, New Mexico, and Texas, account for nearly one-fourth of the nation's dairy cows. And not one of them is a state that the average citizen thinks of as being a dairy-producing state. It's not surprising, in light of production shifts, to note that on-farm grain use is declining, further increasing the demand for safe, reliable and affordable transportation services.

As we watch the commodity production shifts to Western states and the Southwest, an immediate transportation problem comes to mind. There are no major river systems available to sustain barge traffic. That eliminates a major source of transportation services for many producers. There are huge geographic areas to cover to get product to market: markets are distant; and rail systems are few, which leaves highways the only cost effective alternative for many.

It is no secret that agricultural producers are experiencing severe difficulties in accessing adequate rail service to transport each year's harvest. Storage capacity for product is severely limited and rails have notified customers of new requirements and an inability to move product in the event world prices increase. The often repeated saying, "If a farmer can't ship it, he can't sell it," is all too true. In some cases, if he could sell it, he still couldn't ship it in a cost effective manner. In addition, ports continue to operate at less than peak efficiency, giving further rise to shipper concerns. There are still major problems in some areas and in some markets with rail service, although it is better today than it was previously.

Changes in the way railroads do business also impacts the way that you and I do business. We've seen dramatic changes in both the railroad industry and the trucking industry since the deregulation of both industries in 1980. While the number of trucks and trucking companies have grown dramatically, the reverse has been true for the rails. While highway miles have steadily increased, railroad miles of track have steadily decreased, as have the number of service providers in the rail industry. In fact, in only two Western states – New Mexico and Wyoming – were there more rail miles in 1995 than there were in 1980. This increase in rail track miles for these two states is largely driven by coal production, not the production of agricultural commodities. Most increased capacity is not readily available to agricultural producers.

Today, trucks transport more than 50 percent of the nation's grain crops and under present regulatory requirements, would be hard-pressed to increase capacity to move large quantities of grain into the export market, should prices increase dramatically. Particularly in the West, farmers have few transportation choices. Navigable river systems are non-existent, producers often live far from rail heads, and a regressive federal truck size and weight policy severely hampers the trucking industry's ability to use proven productive equipment to move grain to market.

With that background, let me turn to the primary issue I want to discuss today. In ISTEA-91, a federal provision was adopted which restricted the use of Longer Combination Vehicles to the routes, configurations and weights that were in actual, regular operation on June 1, 1991. This meant that states no longer had the ability to make reasoned changes in truck transportation practices that made safe, economic sense. This means that agricultural producers could not take advantage of productive truck transportation unless you were smart enough to be doing it on June 1, 1991, and if you were also smart enough to know on which route you wanted to operate. And then, you had to be operating there "on a regular and continuing basis." It also means that

states such as Montana or Wyoming, South Dakota or Utah, who are in full and complete compliance with federal law, in terms of axle weights, trailer lengths, and Bridge Formula B, cannot move a legal vehicle across the border into adjacent states.

It means that a truck, hauling grain from Lusk, Wyoming, to the mills in Denver Colorado, cannot move a legal Wyoming truck into Colorado because the Wyoming combination was not operating in Colorado on June 1, 1991. It means that same legal Wyoming truck can't haul grain from Wyoming to the mills in Omaha. It means that Nebraska sugar beet producers have to change trailer fleets at the Wyoming border to haul beets to the sugar mill in Torrington, Wyoming, 14 miles away, at increased cost to the producer. It means that Idaho milk producers have to change trailer fleets between Idaho and Washington or Idaho and Montana. South Dakota producers can't move east to St. Paul or south to Omaha. Kansas is stuck in the middle and even though the length of the highway grain haul has increased by at least 25 percent in the past several years, and in some cases as much as 50 percent.

The larger trucks used in parts of Kansas can't be used to move the bulk of the harvest today because they weren't operating on those roads on June 1, 1991. Some grain hauls in Kansas today are as much as 260 miles in length, a situation unheard of in years past. Most of these trucks must travel at the lower Federal weights allowed – 80,000 pounds – because of the Longer Combination Vehicle "freeze." This situation is creating a severe hardship for the Kansas rain farmer and his counterparts across the country. Rail practices, including increased minimum car requirements, increased rates for single cars, an inability to serve, the closing of "undesirable locations," have resulted in freight rate increases of up to 100 percent for some producers.

Clearly, a prime example of poor public policy, the Longer Combination Vehicle (LCV) freeze has led to numerous exemptions from the restrictions in the seven and a half years since its adoption. Six exemptions were granted in the original ISTEA legislation itself. More have been adopted every year since, including three in the last highway bill, TEA21. Today, nearly half of the states have an exemption from the freeze in one form or another. All but one or two of these exemptions deal directly with the movement of agricultural products. The Longer Combination Vehicle freeze has had an impact on the economy of the West. It is having an impact on the economic health of agricultural producers and transporters.

The 27 western states through their state DOTs and the Western Association of State Highway and Transportation Officials' Highway Transportation Committee have spent nearly 20 years developing recommended guidelines for Longer Combination Vehicle operations with minimum standards recommended to facilitate interstate commerce, much of it agriculture related. The WASHTO Highway Transport Committee recognizes that the West is an area of vast distances, with a low population, far from markets, and with few cost effective transportation choices. Longer Combination Vehicle operation and development has been an orderly process for more than 30 years in the West. The WASHTO recommended sizes and weights were to be adopted by each individual state through the public, political, and legislative process. The Longer Combination Vehicle freeze stopped this cooperative effort and has led directly to increased costs for producers and consumers.

The Montana Department of Transportation, in 1999, commissioned a study by the Agricultural Economics Department of Montana State University. This two-year study examined the effects of productive truck transportation on basic industries in the state, including what would happen if there should be a rollback in truck sizes and weights as some members of Congress advocate. The study looked at the effects of truck transportation on Montana's basic industries and the economy of the state as a whole. The results are most enlightening.

For example, the dairy industry today uses 8 and 9 axle double trailers at 106,000 and 110,000 pounds. A rollback to the federal maximum weight of 80,000 pounds means 54 percent more trips per year and an increased cost to producers of more than $1 million per year. If Montana could harmonize its sizes and weights with neighboring states, costs would decrease $100,000 per year. Approximately 176 million bushels of wheat were produced in Montana in 1996. As in more places, wheat is moved from the field to the elevators, where it is subsequently shipped either by rail or truck. The average distance from any given farm to the nearest elevator is 16 miles, with the shortest distance one-fourth mile and the longest reported distance, 84 miles.

Grain, however, as you know, is not always hauled to the nearest elevator, because of the type of product, price or elevator capacity. With these factors considered, the average length of the haul is assumed to be 40 miles, one way. If there is a rollback in truck sizes and weights, 27 percent more trips would be needed. If weights could be increased, 3 percent fewer trips would result. For the past several years, more than 90 percent of Montana's wheat has been shipped by rail from the elevators to the Pacific Northwest ports. A rollback in truck weights in Montana will increase producers' costs by $5.5 million per year (just in hauling from the field to the nearest elevator). The use of productive vehicles could decrease costs by nearly one-half million dollars per year. Under the rollback scenario, transportation costs could increase by at least 3.2 cents per bushel.

Over 50,000 acres of sugar beets are harvested each year in Montana, yielding over a million tons of beets. Currently, beets are hauled from the fields in 9-axle Rocky Mountain doubles at weights of approximately 123,000 pounds. If weights are rolled back, 54 percent more trips would be needed, and costs will increase by 21 percent, an economic impact of $1.39 million per year. More productive trucks will decrease costs by $250,000 per year. The annual value of Montana's sugar is $52 million per year. In addition to the impacts experienced by different segments, all Montana's economic base is affected. In the event of a rollback of truck sizes and weights, Montana's economy, within five years of enactment, suffers a $50 million reduction in Gross State Product. In the event that states' rights are restored, within five years, Montana's GSP increases by approximately $5 million. All of this is directly caused by changes in truck sizes and weights.

As you can ascertain, enormous costs are suffered, even on short hauls when there are weight discrepancies between states or even highways within a state. I believe that the differences locked into the freeze between Montana and North Dakota, Wyoming, Nebraska, Montana and Idaho cost just the sugar beet farming community millions of dollars every year.

For many, the frustration with the lack of a strong farm coalition to deal with the issues that drive freight rates up is high. About once or twice a year many ag transporters hear from some of their old farmer friends that are in a frenzy over rail rates and want to know what can be done, but within a few weeks the passion disappears as larger issues loom. It is my belief that the lack of focus is caused by the fact that historically the ag community has been driven politically by the revenue side of their operations. Consequently, the vast majority of their efforts go to the farm bills, export programs, loan rates, dollar exchange rates and the like. We all know that political credits are like money, and they must be spent judiciously. Maybe there just are not any left for transportation after the revenue protection issues are handled. Or perhaps western truck size and weight issues do not have enough national appeal to become a major target for many national farm and agricultural groups.

Another explanation for the lack of interest may be that in the process of shopping for a freight rate at any given time, the focus is simply on the best rate at the time and not on the long-term level of freight rates. Most commercial agricultural transportation customers contract for very long term rates and receive rate reductions for any improvement in weight limits, up or down. I am sure that few in the agriculture trade associations,

especially in Washington, D.C., are aware that almost all of the $8.5 billion savings identified in a 1990 Transportation Research Board (TRB) study would be from the western states and principally in agriculture. They may not even be aware of the $8.3 billion! Again, the Montana State University study also helps to ascertain some indication of increase in cost that farmers would suffer if Longer Combination Vehicles were rolled back, or benefit if limits were improved.

We know that there are huge savings, perhaps a billion dollars a year in the west if the western states were not subject to the federal freeze and weights could be established based on science and social compatibility rather than rail demands and political acceptability. Unfortunately, the trucking industry alone cannot make this happen.

Collectively, the agriculture industry can, but only if it becomes a very strong, broad based priority to which the industry is willing to contribute energy and assets.

However, there are some opportunities that we can seize, which will lead to positive changes.

First, I want to emphasize that the actual limits in the Federal Truck Size and Weight Law does not have to be increased. The industry can work nicely and competitively, efficiently, and safely with the federal limits of 20,000-pound single-axles, 34,000-pound tandem-axle weights, the use of Federal Bridge Formula B and the current trailer lengths that are allowed. What is fundamental to any productivity gains, to any efficient movement of agricultural products is that the freeze, limiting routes, sizes and weights to those in effect on June 1, 1991, must be repealed and the decision-making process on appropriate sizes and weights must be restored to the individual states.

Several legislative groups are on record asking for the federal authorities to let the states make the decisions on transportation matters. They include members of the Multistate Highway Transportation Agreement states and the American Legislative Exchange Council (ALEC).

Currently, every state has an exception from Federal Law on truck sizes and weights. Every one of these exemptions relates to an agricultural or natural resource product. Nearly half of the states have an exception from the Longer Combination Vehicle freeze; nearly 100 percent are agriculture related.

As we move forward on this issue, I would make the following suggestions for consideration as we seek answers to this transportation dilemma.

It is time to build support for Federal legislation, which restores the truck size and weight decision-making process to the states. When that takes place, you can begin the local process to bring some compatibility to the transportation process. In that way, you could move that load of wheat from Lusk, Wyoming, to Omaha or Denver, in an affordable fashion. There are enormous costs incurred by producers on short hauls when there are weight discrepancies between states or even on highways within states.

Another element to be considered is to encourage the development of regional solutions to transportation problems. As a result of Federal legislation and regulation, we wind up trying to fit our needs into somebody inside the Washington beltway notion of how we should operate. As I mentioned earlier, the 1990 Transportation Research Board completed a study that identified $8.3 billion in transportation savings that would happen if states could adopt more productive sizes and weights. We know that most of these savings would occur in the west and most of them principally in agricultural transportation. Stop for a moment and consider what $8 billion would mean to you.

Let me stress these import recommendations, which can help bring about transportation choices and alternatives:

1. Change Federal policy on truck sizes and weights to reflect actual needs; that is restoring the decision-making process to the state level where you can make a difference.

2. Support restoring the decision-making process to governors and state legislatures.

3. Encourage regional planning and cooperation with transportation partners to create solutions best suited to regional needs.

Let me add one more point, which concerns working together to make a difference on the issue of truck size and weight.

By working together, the commercial agricultural transportation industry can explore solutions and find a better way of doing business in the future. Perhaps, in that way, we can encourage government towards a philosophy of providing an atmosphere in which all modes of transportation can flourish, and discourage them from their constant attempts to manipulate the marketplace according to the latest beltway whim.

I will conclude my remarks by reminding us all that the United States has the finest freight transportation system in the world. This significant fact has immensely helped make the U.S. agriculture sector the world's most productive. However, the U.S. transportation industry is not without some real challenges that must be addressed if U.S. agriculture is to maintain its role as the world leader. Infrastructure issues are prominent among these challenges. In addition to truck size and weight issues, rural roads, rail capacity, lock and dam construction and maintenance, and port expansions are among the key issues to be addressed. Other trucking industry issues of concern include hours of service regulations, insurance costs, security, and productivity to mention a few.

I am reminded that recent farm legislation would have reduced the importance of what have become traditional farm support programs and increased the dependence on marketing and trade opportunities in determining farm income. I do not believe these legislative concepts will disappear. However to access these new markets, the U.S. agricultural sector will need an even more well-developed, efficient intermodal transportation system. The challenge of the future will be to plan, fund and implement that system so that the ability of America's agricultural producers to access domestic and foreign markets will be the best in the world.

Our Inland Waterway System: Key to Our Economic Future

Mike Klein, MARC 2000

The Midwest Area River Coalition was established in 1992 as a coalition of Midwest concerned parties. Its proposal is for seven new 1,200-foot locks, five on the Upper Mississippi and two on the Illinois River; guide wall extensions and mooring buoys.

The Upper Mississippi has 1,202 miles, fully 10 percent of the inland waterway system, 48 percent of ton-miles of inland waterway system with 37 total locks. The locks, however, were built in the 1930s with only a 50-year use expectancy. The locks need rehabilitation.

Grain-based agricultural trends show 60 percent of all grain exports move through the Upper Mississippi. With the agriculture trade policy encouraging more exports, the river system is not developing fast enough for future growth. The ethanol industry is growing. In turn, it decreases corn moving on the river and increases ethanol on the river.

International trends show South America spent $750 million; China, $12 billion and Europe, $26 billion on agricultural products, all of which needed to be transported.

A Corps of Engineers feasibility study was initiated in 1993 with a rationale for modernization. The river system is critical to the Midwest agriculture economy because an alternative transportation system would be costly in many ways.

Doubling the need for modernization is that competing exporting countries will continue to become more competitive and deteriorating locks have had a negative environmental impact. There is widespread support for modernization.

The environmental focus of the Corps' study shows $26 million spent reviewing biological impacts and monitoring the river's ecology.

An inland waterway trust fund user fee shows a user fee charged to "boats" on the river of 21-cents per gallon. This money would be used to match government monies and the money must go to navigation improvements.

Our Inland Waterway System: Key to our Economic Future

Mike Klein
Midwest Area River Coalition 2000
May 18, 2002

Grain-Based Agricultural Trends

- 60% of all grain exports move through the Upper Mississippi
- Ag Trade Policy encourages more exports
  - River system is not developing fast enough to handle future growth
- Ethanol industry is growing
  - Decreases corn moving on river
  - Increases ethanol on river

MARC 2000
(Midwest Area River Coalition)

- Established 1992
- Coalition of Midwest concerned parties
- Proposal
  - 7 new 1200-foot locks
    - 5 on the Upper Mississippi
    - 2 on the Illinois River
  - Guide wall extensions
  - Mooring Buoys

International Trends

- South America = $750 million spent
  - Argentina
  - Brazil
- China = $12 billion spent
- Europe = $26 billion spent

Status of Locks

- Upper Mississippi = 1202 river miles
  - 10% of inland waterway system
  - 48% of ton-miles of inland waterway system
  - 37 total locks
- Locks built in 1930's
  - 50-year use expectancy
  - 600 foot locks
- Rehabilitation
  - Maintaining old locks
  - No effort to increase capacity

Corps of Engineers Feasibility Study

- Initiated in 1993
- Interim report due on July 1
- Delay during study
  - Attempt to find correct balance
  - Economic concerns
  - Environmental concerns

Rational for Modernization

- River system is critical to Midwest Ag Economy
- Alternative transportation will be costly in many ways
- Competing exporting countries will continue to become more competitive
- Deteriorating locks have had a negative environmental impact

Inland Waterway Trust Fund

- User fee charged to "boats" on the river
- 21 cents/gallon
- Money used to match government monies
- Money must go to navigation improvements

Widespread Support for Modernization

- Private citizens
- Stakeholder groups
- State Governments
  - Minnesota
  - Iowa
  - Missouri
  - Illinois
  - Wisconsin

MARC 2000 Goals and Call To Action

- Modernization included in WRDA '02
- Public Education
- Prepare for July Interim Report
- Stay informed
  - www.marc2000.org

Environmental Focus of Corps' Study

- $26 million spent reviewing biological impacts
- Monitoring system to watch the river's ecology

Comments: Red River Valley & Western Railroad and Fact Sheet on Behalf of the American Short Line & Regional Railroad Association

Dan Zink, Red River Valley & Western Railroad

I cannot overstate the importance of agriculture to the economy of this region, and the importance of short line and regional railroads to agriculture. The future of America's small railroad community and agricultural landscape is one.

Twenty-five years ago in America, there were roughly 200 Class II and III railroads operating 12,000 miles of line. There were 40 Class I railroads. In economic despair the big carriers rapidly consolidated operations. Through abandonment and sales to entrepreneurs they shed the lines that traditionally served as the agricultural gathering network for grains and other crops. Since that time more than 350 new Class II and III railroads were created. The Class I sector has shrunk to just seven major carriers. Large railroads operate more than 121,000 miles of track, while small railroads run over and maintain 50,000 miles.

Today short line and regional railroads operate the most endangered transportation infrastructure in America. The previous large owners undermaintained the tracks. While short line business has grown, revenues are insufficient to maintain the track structure at adequate service levels. This problem is compounded by the rapid introduction of heavy 286,000-pound freight cars. The unmet infrastructure rehabilitation needs are reaching crisis proportions. The American Short Line and Regional Railroad Association (ASLRRA) has identified over $6 billion in unmet needs just to stay even. There is an immediate need for $8 billion to save the system and enhance service. Rural America is at risk.

Our rural railroads are aggressively lobbying for a government–private partnership that has the potential to pump nearly $8 billion into our infrastructure in the short term. Legislation earmarking $7 billion in federal loan funds for short line and regional railroads has been reported out of Committee in both the House (H.R. 2950 – RIDE 21) and the Senate (S. 1991- The National Defense Rail Act). However, the economics of agricultural railroading are such that the loan funds must be supported by additional grant funds for the small railroads to be able to participate. House and Senate Committees have also reported legislation that would provide $1 billion in grant funding over three years.

Sadly, in the House, this legislation has become embroiled in a controversy. As with all legislation reported out of the House Transportation and Infrastructure Committee, the bill contains Davis-Bacon prevailing wage standards. For reasons explained in the attached fact sheet the inclusion of Davis-Bacon was not opposed by small railroads. However, at the request of a group of very conservative Republicans, House Majority Whip Tom Delay and House Majority Leader Dick Armey have announced they will block H.R. 1020 from going to the Floor of the House for a vote because of Davis-Bacon.

This is a tragedy for short line and regional railroads and agriculture throughout rural America. In my view, our only hope is if leaders like Senator Kent Conrad and Majority Leader Tom Daschle can get S. 1220 to the Floor of the Senate for a vote this session. If that can be done we are convinced that a deal can be cut in a House-Senate Conference and the bill will go to the President for signature before the year is out.

My appeal today is for the agricultural community and railroads to combine forces to get S. 1220 enacted in 2002.

FACT SHEET
REGIONAL RAILROADS – SHORT LINE RAILROADS AND AGRICULTURE

The American Short Line and Regional Railroad Association (ASLRRA) is a non-profit trade association that represents the interests of more than 400 short line and regional railroad members in legislative and regulatory matters. Short line and regional railroads are an important and growing component of the railroad industry. Today, they operate and maintain 29 percent of the American railroad industry's route mileage, and account for 9 percent of the rail industry's freight revenue and 11 percent of railroad employment.

Today, there are more than 500 North American short line and regional freight railroads. These small businesses have carved out specialized niches within the overall U.S. rail network (and now Canada, too). The short line and regional railroads have a long, proud history of being scrappy competitors and service-focused innovators in the railroad business. In many cases they have found a way to succeed where others have failed, and have saved thousands of miles of rail lines that were near abandonment.

Short lines and regionals represent the "growth segment" of the rail industry. The number of small railroads has more than doubled since the Staggers Rail Act of 1980, from about 220 companies in 1980 to more than 500 today. Small railroads employ 25,000 of the industry's 192,000 employees, or roughly 13 percent. Small railroads operate 50,000 of the 171,000 miles of line, or 30 percent.

Rail lines across the country made the transition from being money losers and abandonment candidates for their previous Class I owners, to being viable small businesses for their new owners. **In the process, many thousands of miles of rail lines have been preserved and rail jobs have been saved, predominantly in rural areas.** Agricultural traffic kept on the rails benefits the entire rail system, including the Class I's, which interchange significant volumes of freight with small carriers. This phenomenon, which has seen small railroads proliferate and prosper over the past two decades, has yielded multiple winners: small railroads, large railroads, agricultural shippers, rural communities and rail employees have all, reaped the benefits.

For thousands of shippers in thousands of towns across rural and sparsely populated regions of the nation, small railroads provide the initial, cost-efficient connection to markets all over the globe. The 50,000-mile small railroad network is an underutilized asset that offers opportunities for future growth to the communities they serve. But small railroads operate over the most endangered transportation infrastructure in North America. A crisis looms on the horizon. Consider:

- The Class I business model continues to shift to long-haul, dedicated trains as the most economical method for serving their vast territory and high-volume, high-revenue customers.

- Under this business model, the short lines have been able to focus on local traffic, and to bring a local focus to marketing in the communities they serve.

For this reason, many have said that Class I railroads represent the wholesale end of railroading, while short lines represent the retail end of the business.

- As Class I lines continue to consolidate and to shed "unprofitable" segments of their networks, short lines will continue to fill the breach and preserve local rail service. Thousands of additional miles of Class I track are expected to be either abandoned or sold within the next decade.

- This has proven critical for agriculture states from the Gulf to Canada.

- In North Dakota, short lines operate close to 1,400 miles of line, or 35 percent of the total state network.
- In South Dakota the percentage of miles operated by Class II-III railroads is 48 percent, in Kansas it is 50 percent.
- Without short line railroads in these states many local communities, grain elevators and farmers would be left without a local rail alternative.

- Loss of local service is detrimental to farmers and the communities, and states where they are located.
  - Without local rail service, farmers must truck goods further to get them to market.
  - Increased truck traffic on highways causes increased social costs such as rural congestion, degradation of highway infrastructure at a higher cost to taxpayers, and loss of life from highway fatalities.
  - As farm truck traffic increases over longer distances, and the social costs climb, regulatory and government bodies are more likely to increase regulation and control over such traffic.
  - As truck traffic has increased with the abandonment of Class I and short line trackage in Oklahoma and Kansas, the highway costs have become prohibitive. In some counties in Kansas state and county highways are being converted back to gravel roads to save maintenance costs caused by heavy farm trucks – the Law of Unintended Consequences in action.

- Just as rural agricultural shippers rely on short line carriers, so too do short lines rely on agricultural shippers. The Upper Great Plains Transportation Institute at North Dakota State University highlights some interesting data involving agricultural shipments on short lines.
  - Nationally, lumber customers represent the largest group. However, this is followed closely by chemicals, farm and food customers. The farm and food customers represent 25 percent of all short line shippers.
  - 17 percent of short line carloads are farm and food carloads as opposed to only 10 percent on Class I railroads.

- Short lines operate 30 percent of the nation's track miles, but they do this on combined freight revenue in 2001 of only $3.2 billion, compared to $33 billion for the large lines, and therein lies the rub.

- Short line railroads generate **gross freight revenues** of $64,000 per mile in comparison to $270,000 per mile on Class I railroads. That is a national average. For lines dependent upon agricultural shipments over large networks, the revenue per mile will be significantly less than that. Often between 1/3 and 1/2 of the national average revenue per mile or less.

- On that limited revenue short lines must maintain their own infrastructure, and cover all other costs of operating a business. In many cases, especially on large grain gathering networks, the revenues are insufficient to maintain the track structure to an adequate level.

- An additional burden is introduced by the use of heavier 286,000-pound cars.
  - When most short lines were spun off from their Class I owners the maximum weight for interchange was 263,000-pound cars.

- In addition, since these lines were "unprofitable" to the previous Class I operators, little work had been done to upgrade these lines, or to maintain track quality.
- These lines were then spun off to short line operators who inherited the degraded track conditions, and intended to upgrade the track as needed from available sources of capital.
- Subsequent to most of the spin-offs, the 286 cars became the standard car weight for shipments that composed the short line's bread and butter business – grain, farm products, food, plastics, coal and chemicals.
- Because of this, many short line railroads are unable to keep up with their infrastructure needs by using in-house profits or commercial lending.

- The American Short Line and Regional Railroad Association commissioned a study by railroad engineering consultants Zeta-tech, which estimates the unmet infrastructure needs for addressing the "286 crisis" and maintaining current service levels. Zeta-Tech reports a shortfall of $6 billion nationwide. Present service levels are inadequate in many areas. ASLRRA believes there is an immediate need for $8 billion to make the "286" transition and enhance service to meet growing shipper demands for time sensitive delivery. Rural America is at risk.

- In order to reverse this trend, the short lines, through their national organization, the ASLRRA, have been working to attract federal grant and loan investment into the rebuilding of short line infrastructure. Both House and Senate have reported bills authorizing $7 billion in federal loan funding to short line and regional railroads. However, because of the economics of short line railroading, a grant component is essential. This legislation, H.R 1020 in the House of Representatives, and S. 1220 in the Senate, would make $350 million in infrastructure grants available to short line railroads each year for the next three years. Enactment is a must if small railroad infrastructure is to survive and continue to serve agricultural America!

- The ASLRRA legislative package is faced with a problem in the House of Representatives. H.R. 1020 was reported unanimously out of the House Transportation and Infrastructure Committee (T&I). However, House Majority Leader Dick Armey and Majority Whip Tom Delay have taken the position
  that they will not bring any bill to the Floor of the House that expands Davis-Bacon prevailing wages. No bill is ever reported out of T&I without the Davis-Bacon provision. This has been true for some decades. As H.R. 2950-RIDE 21, which contains $7 billion in government loan funding for short lines, also contains Davis-Bill the entire ASLRRA legislative program is blocked in the House.

- The Armey-Delay position is extremely unfortunate. Davis-Bacon is not a problem for short lines.[1] Many of the projects on short lines will be relatively small and the money will be spent by in-house railroad maintenance of way forces employed by the railroads. In these cases, Davis-Bacon wages will not apply since Davis-Bacon only applies to independent contractors, not to work done in-house. Further, the unionized portion of the contracting industry, which is largely represented by the National Railroad Contracting and Maintenance Association (NRC), has negotiated a wage, which is competitive with responsible non-union contractors and qualifies under Davis-Bacon. The vast majority of credible union and non-union contractors pay wages and benefits at the Davis-Bacon standard. Indeed, thousands of contracting companies support Davis-Bacon and would be upset if it were removed from the legislation.

- ASLRRA believes the best hope for short line infrastructure investment in the near term lies in the Senate. We are appealing to Senators from rural states to move S. 1220 to the Floor of the Senate. ASLRRA has strong support from a bipartisan group of sponsors including: John Breaux of Louisiana; Gordon Smith and Ron Wyden of Oregon; Blanche Lincoln of Arkansas; Sam Brownback of Kansas; Chuck Grassley of Iowa; and Conrad Burns of Montana. Now we need powerful Senators in the Majority such as Tom Daschle, Kent Conrad and Byron Dorgan to get S. 1220 moved to the Senate Floor for action.

[1]In fact, the inclusion of Davis-Bacon in H.R. 1020 (and subsequently S. 1220) was a part of a legislative compromise negotiated by the principal stakeholders in the process. Representatives of labor and management from rail labor, the building trade unions, ASLRRA, the Association of American Railroads and the National Railroad Contracting and Maintenance Association agreed to all of the details of the bill. The Davis-Bacon language was worked out specifically with T&I Chairman Don Young and Ranking Democrat James Oberstar. ASLRRA would not walk away from its Davis-Bacon and railroad labor protection commitments if it had the opportunity. H.R. 1020 was reported unanimously out of the T&I Committee on May 16, 2001—over one year ago. Davis-Bacon only became an issue when the T&I leadership
approached Mr. Armey and Mr. Delay with a request to schedule the bill for House Floor action.

H.R. 1020 Supporters

"Cosponsors" signed on to support the bill before it was approved by Committee

"Yes Votes" have pledged to vote yes if the bill is considered for a vote before the House

Co-sponsor	Cosponsor/ Yes Vote	Party	St.
Rep Aderholt, Robert	Yes Vote	R	AL
Rep Allen, Thomas H.	Cosponsor	D	ME
Rep Andrews, Robert	Cosponsor	D	NJ
Rep Bachus, Spencer	Cosponsor	R	AL
Rep Baker, Richard	Yes Vote	R	LA
Rep Baldacci, John	Cosponsor	D	ME
Rep Barcia, James A.	Cosponsor	D	MI
Rep Bass, Charles	Cosponsor	R	NH
Rep Bereuter, Doug	Cosponsor	R	NE
Rep Berry, Marion	Cosponsor	D	AR
Rep Bishop, Sanford D. Jr.	Cosponsor	D	GA
Rep Blumenauer, Earl	Cosponsor	D	OR
Rep Boehlert, Sherwood	Cosponsor	R	NY
Rep Bonior, David E.	Cosponsor	D	MI
Rep Boozman, John	Yes Vote	R	AR
Rep Borski, Robert A.	Cosponsor	D	PA
Rep Boswell, Leonard L.	Cosponsor	D	IA
Rep Boyd, F. Allen	Cosponsor	D	FL
Rep Brown, Henry E. Jr.	Cosponsor	R	SC
Rep Brown, Sherrod	Cosponsor	D	OH
Rep Bryant, Ed	Yes Vote	R	TN
Rep Buyer Steve	Cosponsor	R	IN
Rep Callahan, Sonny	Yes Vote	R	AL
Rep Camp, Dave	Yes Vote	R	MI
Rep Capito, Shelly Moore	Cosponsor	R	WV
Rep Carson, Brad	Cosponsor	D	OK
Rep Clement, Bob	Cosponsor	D	TN
Rep Coble, Howard	Cosponsor	R	NC
Rep Cooksey, John	Cosponsor	R	LA
Rep Costello, Jerry	Cosponsor	D	IL
Rep Cummings, Elijah	Cosponsor	D	MD
Rep DeFazio, Pete	Cosponsor	D	OR
Rep DeMint, Jim	Cosponsor	R	SC
Rep Dingell, John D.	Cosponsor	D	MI
Rep Dooley, Cal	Cosponsor	D	CA
Rep Doyle, Mike	Cosponsor	D	PA
Rep Duncan, John J., Jr.	Cosponsor	R	TN
Rep Ehrlich, Robert	Yes Vote	R	MD
Rep English, Phil	Cosponsor	R	PA
Rep Evans, Lane	Yes Vote	D	IL
Rep Everett, Terry	Cosponsor	R	AL
Rep Ferguson, Mike	Cosponsor	R	NJ
Rep Filner, Bob	Cosponsor	D	CA
Rep Foley, Mark	Cosponsor	R	FL
Rep Frost, Martin	Cosponsor	D	TX
Rep Ganske, Greg	Cosponsor	R	IA
Rep Gekas, George	Cosponsor	R	PA
Rep Gillmore, Paul	Cosponsor	R	OH
Rep Gilman, Benjamin	Yes Vote	R	NY
Rep Goode, Virgil H., Jr.	Cosponsor	I	VA
Rep Graham, Lindsey	Yes Vote	R	SC
Rep Graves, Sam	Cosponsor	R	MO
Rep Green, Mark	Cosponsor	R	WI
Rep Greenwood, James	Cosponsor	R	PA
Rep Hart, Melissa	Cosponsor	R	PA
Rep Hayes, Robin	Cosponsor	R	NC
Rep Herger, Wally	Cosponsor	R	CA
Rep Hill, Baron	Cosponsor	D	IN
Rep Hilleary, Van	Yes Vote	R	TN
Rep Hilliard, Earl F.	Cosponsor	D	AL
Rep Hoeffel, Joseph M.	Cosponsor	D	PA
Rep Holden, Tim	Cosponsor	D	PA
Rep Honda, Mike	Cosponsor	D	CA
Rep Hostettler, John	Cosponsor	R	IN
Rep Houghton, Amo	Cosponsor	R	NY
Rep Jenkins, William	Yes Vote	R	TN
Rep John, Christopher	Cosponsor	D	LA
Rep Johnson, Timothy V.	Cosponsor	R	IL
Rep Kanjorski, Paul E.	Cosponsor	D	PA
Rep Kaptur, Marcy	Cosponsor	D	OH
Rep Kelly, Sue	Yes Vote	R	NY
Rep Kennedy, Mark	Cosponsor	R	MN
Rep Kerns, Brian	Yes Vote	R	IN
Rep Kirk, Mark Steven	Cosponsor	R	IL
Rep Kleczka, Jerry	Cosponsor	D	WI
Rep Kucinich, Dennis J.	Cosponsor	D	OH
Rep LaHood, Ray	Cosponsor	R	IL
Rep Larsen, Rick	Cosponsor	D	WA
Rep LaTourette, Steve C.	Cosponsor	R	OH
Rep Lipinski, William	Cosponsor	D	IL
Rep LoBiondo, Frank A.	Cosponsor	R	NJ
Rep Lucas, Frank	Cosponsor	R	OK
Rep Mascara, Frank	Cosponsor	D	PA
Rep McCarthy, Karen	Cosponsor	D	NY
Rep McHugh, John	Cosponsor	R	NY
Rep McInnis, Scott	Yes Vote	R	CO
Rep McIntyre, Mike	Cosponsor	D	NC
Rep McKinney, Cynthia	Cosponsor	D	GA
Rep McNulty, Michael R.	Cosponsor	D	NY
Rep Meeks, Greg	Cosponsor	D	NY
Rep Mica, John L.	Cosponsor	R	FL
Rep Miller, Jeff	Cosponsor	R	FL
Rep Mollohan, Alan	Cosponsor	D	WV
Rep Moran, Jerry	Cosponsor	R	KS
Rep Nadler, Jerry	Cosponsor	D	NY
Rep Neal, Richard E.	Cosponsor	D	MA
Rep Nethercutt, George	Yes Vote	R	WA
Rep Oberstar, James	Cosponsor	D	MN
Rep Ortiz, Solomon	Cosponsor	D	TX
Rep Otter, Butch	Yes Vote	R	ID
Rep Pallone, Frank, Jr.	Cosponsor	D	NJ
Rep Pascrell, Bill, Jr.	Cosponsor	D	NJ
Rep Pastor, Ed	Cosponsor	D	AZ
Rep Pence, Mike	Yes Vote	R	IN
Rep Peterson, John E.	Cosponsor	R	PA
Rep Petri, Tom	Cosponsor	R	WI
Rep Phelps, David	Cosponsor	D	IN
Rep Platts, Todd	Cosponsor	R	PA
Rep Quinn, Jack	Cosponsor	R	NY
Rep Rehberg, Dennis R.	Cosponsor	R	MT
Rep Reynolds, Thomas	Cosponsor	R	NY
Rep Riley, Bob	Yes Vote	R	AL
Rep Rogers, Mike	Cosponsor	R	MI
Rep Ross, Mike	Cosponsor	D	AR
Rep Ryun, Jim	Cosponsor	R	KS
Rep Sanders, Bernard	Cosponsor	I	VT
Rep Schaffer, Bob	Cosponsor	R	CO
Rep Sessions, Pete	Yes Vote	R	TX
Rep Shays, Christopher	Yes Vote	R	CT
Rep Shimkus, John	Yes Vote	R	IL
Rep Shuster, Bill	Yes Vote	R	PA
Rep Simmons, Robert	Cosponsor	R	CT
Rep Simpson, Mike	Yes Vote	R	ID
Rep Snyder, Vic	Cosponsor	D	AR
Rep Spratt, John	Yes Vote	D	SC
Rep Stupak, Bart	Cosponsor	D	MI
Rep Sweeney, John E.	Cosponsor	R	NY
Rep Thomas, William M.	Cosponsor	R	CA
Rep Thompson, Mike	Cosponsor	D	CA
Rep Tiahrt, Todd	Cosponsor	R	KS
Rep Towns, Edolphus	Cosponsor	D	NY
Rep Udall, Tom	Cosponsor	D	NM
Rep Visclosky, Peter	Cosponsor	D	IN
Rep Walden, Greg	Cosponsor	R	OR
Rep Watkins, Wes	Cosponsor	R	OK
Rep Watts, J.C.	Cosponsor	R	OK
Rep Whittfield, Ed	Cosponsor	R	KY
Rep Wilson, Joe	Yes Vote	R	SC
Rep Young, Don	Cosponsor	R	AK

S.1220 Co-Sponsors

Senator	Party	State
Sen. Breaux, John B.	D	LA
Sen. Brownback, Sam	R	KS
Sen. Durbin, Richard J	D	IL
Sen. Grassley, Charles E.	R	IA
Sen. Lincoln, Blanche	D	AR
Sen. Schumer, Charles E	D	NY
Sen. Smith, Gordon	R	OR
Sen. Snowe, Olympia J	R	ME
Sen. Specter, Arlen	R	PA
Sen. Wyden, Ron	D	OR

Railroad Service in Kansas 2000

Railroad Service and Employment

Facilities	Number of Freight Railroads	18
	Miles Operated (Excluding Trackage Rights)	5,167
Traffic	Total Carloads of Freight Carried	4,702,594
	Total Tons of Freight Carried	262,816,126
Employment and Earnings	Rail Employees Living in State	7,187
	Freight Employees Only	6,475
	Total Wages of Rail Employees	$422,680,000
	Freight Employees Only	$382,867,000
	Average Per Freight Rail Employee:	
	Wages	$59,100
	Fringe Benefits	$21,800
	Total Compensation	$80,900
Railroad Retirement	Railroad Retirement Beneficiaries	14,773
	Railroad Retirement Benefits Paid	$169,017,893

Freight Railroad Traffic in Kansas

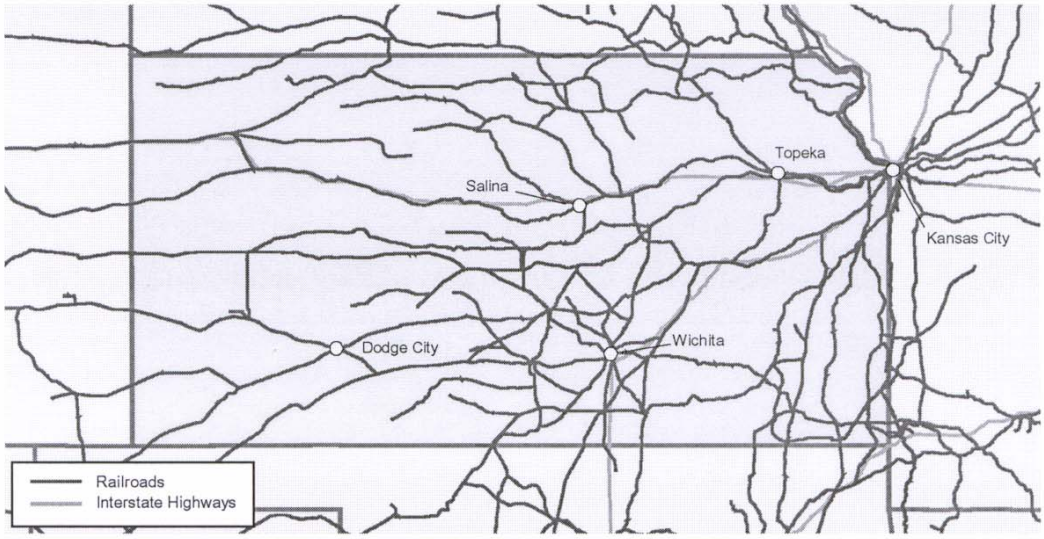
Tons Originated 2000

	Tons	%
Farm Products	13,649,291	57%
Food Products	3,380,308	14%
Chemicals	1,967,032	8%
Mixed Freight	1,321,680	6%
Petroleum	876,928	4%
All Other	2,761,507	12%
Total	23,956,746	100%

Tons Terminated 2000

	Tons	%
Coal	7,018,370	39%
Farm Products	1,971,515	11%
Chemicals	1,853,192	10%
Mixed Frt. & Empty Cont.	1,473,600	8%
Glass & Stone Products	1,272,028	7%
All Other	4,527,616	25%
Total	18,116,321	100%

Railroad Map of Kansas



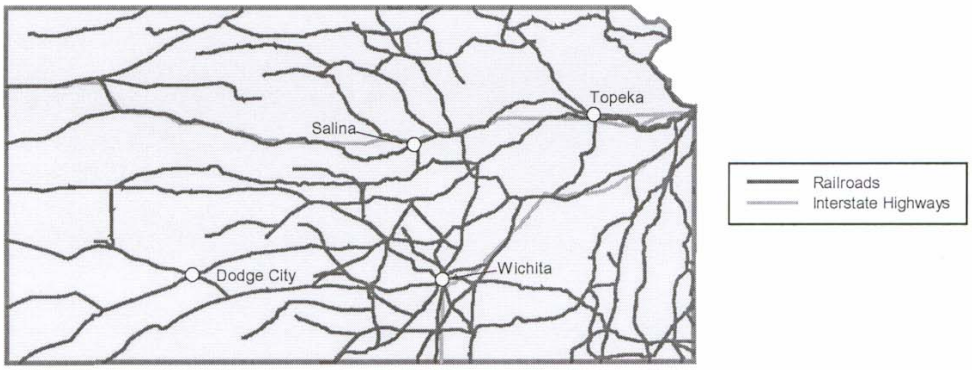
Rail network based upon 1997 National Transportation Atlas Database published by the US DOT Bureau of Transportation Statistics.

Freight Railroads Operating in Kansas 2000

Miles of Railroad Operated in Kansas	
Class I Railroads	
Burlington Northern and Santa Fe Rwy. Co.	1,921
Kansas City Southern Railway Co.	18
Norfolk Southern Corp.	2
Union Pacific Railroad Co.	2,332
	4,273
Regional Railroads	
Central Kansas Railway	1,116
Gateway Western Railroad	1
I&M Rail Link, LLC	13
Kyle Railroad	601
Missouri & Northern Arkansas Railroad	8
Nebraska, Kansas & Colorado RailNet, Inc.	139
South Kansas & Oklahoma Railroad	320
	2,198
Local Railroads	
Southeast Kansas Railroad Co.	46
Stillwater Central Railroad, Inc.	18
V & S Railway, Inc.	43
	107

	Number of Freight Railroads	Miles Operated Excluding Trackage Rights	Miles Operated Including Trackage Rights
Class I	4	2,992	4,273
Regional	7	1,788	2,198
Local	3	107	107
Switching & Terminal	4	280	281
Total	18	5,167	6,859

Miles of Railroad Operated in Kansas	
Switching & Terminal Railroads	
Boot Hill & Western Railway	27
Cimarron Valley Railroad	203
Garden City Western Railway	45
Hutchinson & Northern Railway	6
	281



Rail network based upon 1997 National Transportation Atlas Database published by the US DOT Bureau of Transportation Statistics.

Class I Railroad - As defined by the Surface Transportation Board, a railroad with 2000 operating revenues of at least $261.9 million.
Regional Railroad - A non-Class I line-haul railroad operating 350 or more miles of road and/or with revenues of at least $40 million.
Local Railroad - A railroad which is neither a Class I nor a Regional Railroad and is engaged primarily in line-haul service.
Switching & Terminal Railroad - A non-Class I railroad engaged primarily in switching and/or terminal services for other railroads.
Note: Railroads operating are as of December 31, 2000. Some mileage figures may be estimated.

Railroad Service in

North Dakota 2000

Railroad Service and Employment

Facilities	Number of Freight Railroads	5
	Miles Operated (Excluding Trackage Rights)	3,866
Traffic	Total Carloads of Freight Carried	1,653,711
	Total Tons of Freight Carried	90,815,536
Employment and Earnings	Rail Employees Living in State	1,943
	Freight Employees Only	1,638
	Total Wages of Rail Employees	$113,373,000
	Freight Employees Only	$96,318,000
	Average Per Freight Rail Employee:	
	Wages	$58,800
	Fringe Benefits	$21,700
	Total Compensation	$80,500
Railroad Retirement	Railroad Retirement Beneficiaries	3,415
	Railroad Retirement Benefits Paid	$39,071,015

Freight Railroad Traffic in North Dakota

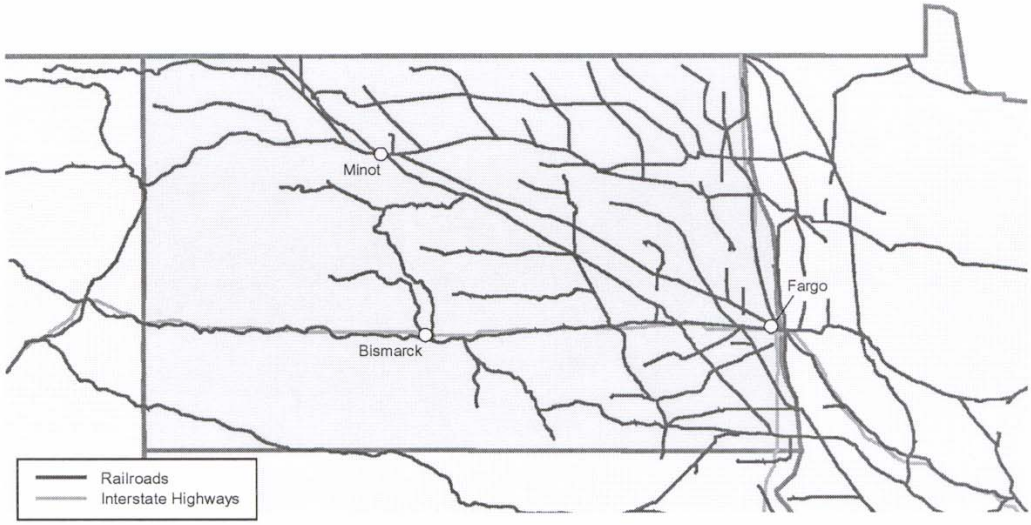
Tons Originated 2000

	Tons	%
Farm Products	9,951,299	50%
Coal & Nonmet. Minerals	4,847,482	24%
Food Products	4,368,960	22%
Chemicals	292,864	1%
Petroleum	237,448	1%
All Other	297,145	1%
Total	19,995,198	100%

Tons Terminated 2000

	Tons	%
Coal	5,562,800	56%
Farm Products	1,092,588	11%
Nonmetallic Minerals	985,060	10%
Chemicals	872,436	9%
Glass & Stone Products	599,732	6%
All Other	815,052	8%
Total	9,927,668	100%

Railroad Map of North Dakota



Rail network based upon 1997 National Transportation Atlas Database published by the US DOT Bureau of Transportation Statistics.

 Jan. 2002

Freight Railroads Operating in North Dakota 2000

Miles of Railroad Operated in North Dakota

Class I Railroads

Burlington Northern and Santa Fe Rwy. Co.	2,089
Soo Line Railroad Co.	482
	2,571

Regional Railroads

Dakota, Missouri Valley, & Western	402
Northern Plains Railroad, Inc.	371
Red River Valley & Western Railroad Co.	612
	1,385

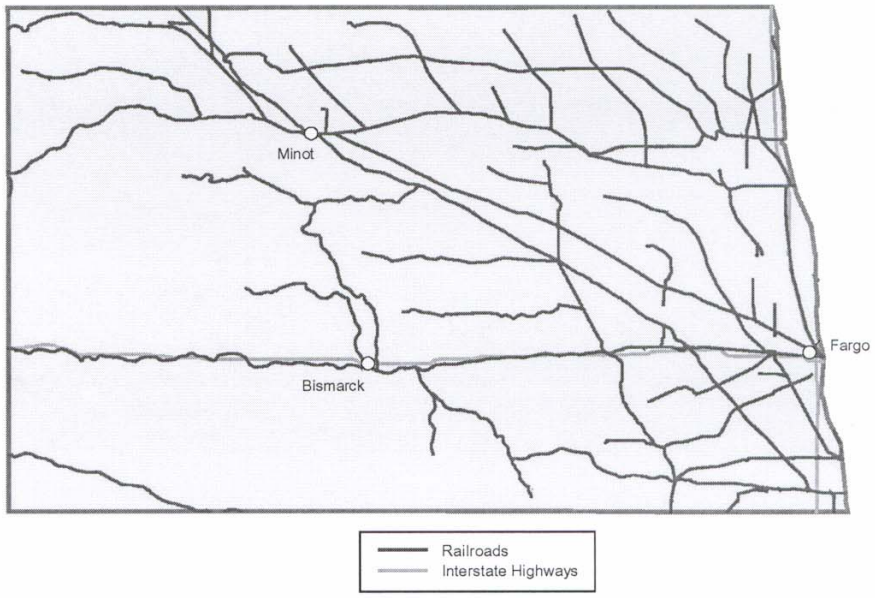
Local Railroads

(none)

Switching & Terminal Railroads

(none)

	Number of Freight Railroads	Miles Operated Excluding Trackage Rights	Miles Operated Including Trackage Rights
Class I	2	2,554	2,571
Regional	3	1,312	1,385
Local	0	0	0
Switching & Terminal	0	0	0
Total	5	3,866	3,956



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Regional Railroad - A non-Class I line-haul railroad operating 350 or more miles of road and/or with revenues of at least $40 million.
Local Railroad - A railroad which is neither a Class I nor a Regional Railroad and is engaged primarily in line-haul service.
Switching & Terminal Railroad - A non-Class I railroad engaged primarily in switching and/or terminal services for other railroads.
Note: Railroads operating are as of December 31, 2000. Some mileage figures may be estimated.

Railroad Service in

South Dakota 2000

Railroad Service and Employment

Facilities	Number of Freight Railroads	10
	Miles Operated (Excluding Trackage Rights)	1,803
Traffic	Total Carloads of Freight Carried	741,746
	Total Tons of Freight Carried	81,193,128
Employment and Earnings	Rail Employees Living in State	839
	Freight Employees Only	731
	Total Wages of Rail Employees	$46,788,000
	Freight Employees Only	$40,749,000
	Average Per Freight Rail Employee:	
	Wages	$55,700
	Fringe Benefits	$20,500
	Total Compensation	$76,300
Railroad Retirement	Railroad Retirement Beneficiaries	1,393
	Railroad Retirement Benefits Paid	$15,937,313

Freight Railroad Traffic in South Dakota

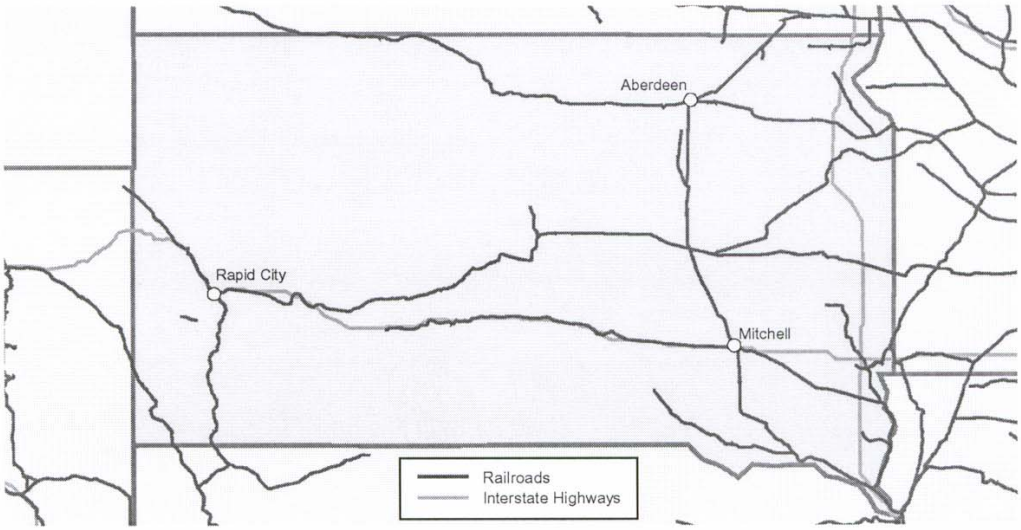
Tons Originated 2000

	Tons	%
Farm Products	7,188,667	85%
Nonmetallic Minerals	492,336	6%
Food Products	433,925	5%
Gl/Stone & Metal Prod.	265,644	3%
Lumber/Wood & Chem.	85,800	1%
All Other	29,564	<1%
Total	8,495,936	100%

Tons Terminated 2000

	Tons	%
Coal & Petroleum	2,360,264	72%
Chemicals	424,588	13%
Gl/Stone & Nonmet. Min.	180,353	6%
Lumber & Wood Prod.	129,240	4%
Primary Metal Products	60,780	2%
All Other	123,720	4%
Total	3,278,945	100%

Railroad Map of South Dakota



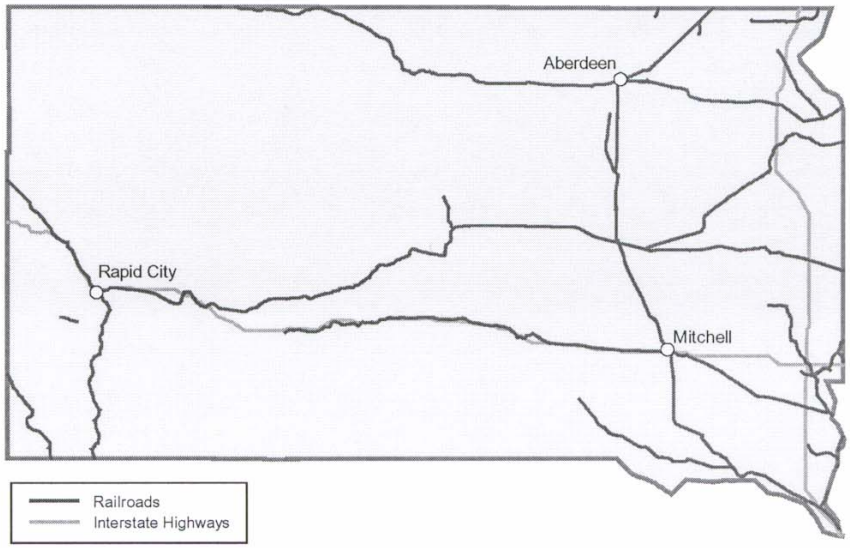
Rail network based upon 1997 National Transportation Atlas Database published by the US DOT Bureau of Transportation Statistics.

 Jan. 2002

Freight Railroads Operating in South Dakota 2000

Miles of Railroad Operated in South Dakota	
Class I Railroads	
Burlington Northern and Santa Fe Rwy. Co.	980
Soo Line Railroad Co.	6
	986
Regional Railroads	
Dakota, Minnesota & Eastern Railroad	719
Red River Valley & Western Railroad Co.	4
	723
Local Railroads	
D&I Railroad	97
Sisseton Milbank Railroad, Inc.	38
Sunflour Railroad, Inc.	26
Twin Cities & Western Railroad Co.	20
	181
Switching & Terminal Railroads	
Dakota Southern Railway	1
Ellis & Eastern Co.	17
	18

	Number of Freight Railroads	Miles Operated Excluding Trackage Rights	Miles Operated Including Trackage Rights
Class I	2	961	986
Regional	2	666	723
Local	4	161	181
Switching & Terminal	2	15	18
Total	10	1,803	1,908



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Keynote Address

Senator Kent Conrad
North Dakota

Introduction:
Dave Sprynczynatyk, North Dakota Department of Transportation

Welcome back to our morning session to hear our keynote speaker this morning. For the past 16 years, I have had the opportunity to work with North Dakota's Senior Senator, Kent Conrad. For the first 14 of those 16 years, I worked in the area of water. I can truly say that Senator Conrad worked very hard for us in developing our water resources and managing our water resources in the state. It was a real pleasure for me. That all culminated in December of the year 2000 when the Senator took the lead and was able to pass into law the Dakota Water Resources Act of the year 2000.

Since then I have had the opportunity to work with him very closely on a number of transportation issues. I know that the Senator truly believes in the public infrastructure of the country, obviously water and transportation. In February of this year, the Senator, who is the chairman of the Senate Budget Committee, held a field hearing in North Dakota addressing those two subjects, water infrastructure and transportation infrastructure. As a result of his efforts, not too long ago, just about a month ago, the Senator was successful at the budget committee level in increasing the amount of funds that could be available to transportation in the fiscal year 2003. That certainly is something that from my perspective is very important and something that we really appreciate. The fact is, that the Senator is very active, in serving not only our state and country, but in doing so, he truly believes in our public infrastructure and our need to maintain it and improve it. The Senator also serves as a member of the Agriculture Finance and Indian Affairs Committee, another very important committee to the state of North Dakota. So please help me in welcoming our Senior Senator, Kent Conrad.

I just wish Senator Dorgan were here to have heard Dave characterize me as the senior Senator. For those of you who don't know, 28 years ago, Byron Dorgan was the Tax Commissioner of North Dakota and hired me to be his assistant. And now, I'm the senior Senator and I never hesitate to remind him of that fact. And he always reminds me that he is the dean of the delegation because he's been in Washington longer, because he served in the House of Representatives first.

But Spry, thank you for that introduction. Working with Dave Sprynczynatyk over the years has been a revelation, because Spry is somebody who has always done his homework. No doubt, you have noticed that during this conference. He's served this state. He was in charge of our water resources and now has moved to the man who is in charge of our transportation resources. He is somebody who has a great deal of credibility, which has helped us as a state, and I appreciate that warm introduction. I also want to thank the Upper Great Plains Transportation Institute for hosting this forum. I especially want to congratulate Gene Griffin, who has put together really a remarkable assemblage of experts from around the country, to talk about these critical issues. I think this really represents Gene, the Institute at its finest, and thank you for what you've done.

You know the Senate is kind of an unusual place. Our oldest member is Strom Thurmond, he is 99 years old and in his eighth term in the United States Senate. He's been elected eight times. In his last campaign, I'm told he ran on the theme of term-limits. You know, easy for him to say. I've got to tell you my favorite Strom

Thurmond story. A couple of years ago, he went on a trip to Europe and he told his staff he was going to bring back a present for all of them. So there was a sort of an air of expectation in the office and sure enough when he got back he called them into his private suite. He had a little item on the desk for every member of the staff: a little bar of soap for one, a little bottle of shampoo, a little bottle of hand lotion, all with the names of the best hotels in Europe. You can imagine the staff reaction. I'm told there were people who actually had tears coming down their cheeks, they were laughing so hard. I was telling this story one night in Washington and a woman stopped and said, Senator, I was on Senator Thurmond's staff when that happened. I said, well can you confirm or deny the story? She said, Senator, I can't confirm or deny it. I can tell you I got the shoe shine kit. So, if you are wondering what to take back to your families from this conference, those little bars of soap and those bottles of shampoo make a very nice gift.

This has been a fascinating time for me, and a fascinating time in Washington. We have just come through a Farm Bill fight and we have just concluded it. I was at the signing ceremony on Monday with the President. Never have I felt a greater relief at the end of a legislative trail than at the conclusion of the Farm Bill. But I have seen, all across the country, an outpouring of characterizations of this Bill that sometimes surprise me, sometimes anger me, sometimes just disappoints me. But over and over, I have seen a question raised about why we even have a Farm Bill. In fact, I was on a radio talk show the other day, and a North Dakota small businessman called in and said, Senator, why is it that we've got a Farm Bill? Nobody helps me if I get in trouble. And I said, that's a fair question. Let me try to answer it.

The first reason we have a Farm Bill is because we're dealing with food, and other than air and water, food is the other essential of life. There are no other things that you simply can't do without. You can't do without food. And in addition to that, no other industry is as vulnerable to weather and disease, as is agriculture. You're dealing with a necessity of life, and you're dealing with something that is highly vulnerable. But there's another factor that is very rarely talked about. And if you think about it, what is it, that determines the price of a product in the marketplace. Absent monopoly, absent oligopoly, absent manipulation of markets, what is it that determines price?

We've all learned that it is supply and demand. Supply and demand. In most businesses, you can alter that relationship in very short order. At least you can alter the supply side in very short order. That is, if you're producing automobiles, you can end the production line. You can slow down the production line. If you're making shoes, you can decide to produce fewer shoes in the next manufacturing run. If you're producing any other good or commodity, you can make changes in a relatively short time frame. In agriculture, once that farmer has made the planning decision for the year, and planted, that's it. He's made his production decision for the year. And so, it's much more difficult in agriculture to alter the supply and demand relationship and affect price.

There's a final reason as well. We are not an island unto ourselves. In this industry, we've got to pay attention to what the competition is doing. And in agriculture, every country has a farm program. Every country tries to secure its food supply. Every country tries to make certain that it has a network of family farms out across the land. And our major competitors in agriculture are the Europeans. They are our major competitors. We are now neck and neck in world market share with the Europeans.

And they're doing much more for their producers, than we're doing for ours. The numbers are really startling. The Europeans provide over $300/acre of support per year, to their farmers. We provide $38. And it doesn't end there, because the Europeans also account for 84 percent of all the agricultural export subsidy. 84 percent. The United States accounts for less than 3 percent. So we're being out-gunned there almost 30 to 1. And it's no wonder we've got hard times in the heartland. It's no wonder, that there's economic hardship on almost

every farm in every part of this state. And it's no wonder that there are hard times in the cities and towns that service those farms. Because that is the reality. There's not a level playing field here in world agriculture.

In effect, we're saying to our farmers, while you're out there competing against the German farmer and the French farmer you take on the German government and the French government as well. That is not a fair fight. And somehow we've got to level this playing field if we're going to give our people a chance to survive and to thrive. But it doesn't end there either. We've got obviously other issues that are at issue at this conference, things that have a meaningful impact on the ability of agriculture to compete.

I was very interested in looking at the nexus that this conference is focused on between agriculture and transportation. Steve Fuller, I'm told, talked about a study that shows for every one dollar of agriculture output, it requires fifteen cents of transportation expenses. Clearly, that shows a linkage. I'm told that he also reported on a USDA study that showed that when you compare marketing and transportation costs in Brazil and Argentina, on soybeans to the United States, that those costs are two to three times higher in Brazil than here. Obviously, that has an enormous impact on our competitive position. And I'm told in another review before this conference, of a 1997 USDA study, that it showed that 30 percent of destination prices of agricultural exports is because of transportation costs. That is a big chunk that influences the competitive position of our nation.

And I'm told that Jim Dunn talked about a DOT study that showed that fourteen percent of the trucks that are hauling goods in this country are handling agricultural goods or food. Again, the nexus is clear. The linkage is clear. And that brings us to the question of transportation funding, an area where I have, as Dave indicated, a special responsibility. As chairman of the Senate Budget committee, I have the obligation to present my colleagues with a budget.

And one of the areas that we had to consider was transportation. The president proposed in highway funding, a 27 percent cut. And I'm not talking Washington talk about cuts. I'm not talking about slower growth in spending. I'm talking a real cut. I'm talking about less money this year than last year. Last year, the highway program spending was $32 billion. The president proposed $23 billion for this year. That would mean a slowing and cancellation of projects all across the country. That would mean the laying off of more than 350,000 workers that would have a significant impact on the economy because those are some of the best paying jobs in America. And more than that, that would go right to the heart of the efficiency of our economy.

Because one of the things we know is the gridlock that is increasingly gripping more urban parts of the country has an effect on the efficiency and effectiveness of our economy. It drives up those costs that we referred to that already are a large part of what makes up the agricultural expenses of delivering goods around the world. Let me just say to you that I tried to convince my colleagues we shouldn't make that big of a cut. I've proposed adding back two-thirds of that money. Roughly, two-thirds. I couldn't add back more because to add back more would trigger a gas tax increase under the formula. We are in hot debate right now on the question of what we'll do with respect to highway and bridge construction funding. And I'm hopeful that my colleagues will endorse a reduction in the cut the president has proposed.

But it doesn't stop there, because we go to other transportation systems, for example, AMTRAK. And we've been told that if they don't get $1.2 billion for next year that AMTRAK will start to shut down. I have met that $1.2 billion requirement in the budget that I have proposed. But I can tell you that it's a hot debate. There are some who say that government shouldn't be in the business of supporting a rail system at all in this country. I don't believe that. I look around the world and I don't see any country anywhere that has any kind of rail system that doesn't have some government support. Sometimes it's disguised. I'll grant you that. Some

of our European friends are brilliant at disguising their schemes for supporting public ventures. But I think we've got to be very in tune to what's happening in other places.

Just as the Europeans are spending an enormous amount of money to dominate world agricultural trade, so too, are the Europeans engaged in an attempt to become a dominant player in transportation. And they're doing it in airplanes, through airbus, with enormous government subsidy. They're doing it in rail, again with enormous government subsidy. Much of it disguised, but nonetheless there. We as a nation cannot allow our major competitors to seize the high ground, which many times is market share. We can't allow them to seize that dominant position and not pay a price. And so, one of my messages to you here today: is that a conference like this is important because they talk about segments of our economy that are critical to our continuing success.

And there are others who are on the move. They have designs on our position. I can tell you, in hours of negotiation and discussion with the Europeans, they've made abundantly clear to me that they intend to dominate world agricultural trade. They intend to dominate aircraft manufacture. Their next target is financial services. They intend to, and if you watch the pattern of purchases by major financial institutions in Europe, you can see the pattern emerge, they intend to have competitive advantage. Competitive advantage in part through government subsidy of industries right there at the heart of commercial success of our country.

And we cannot be asleep. I worry sometimes that we don't see what others are doing. We spend so much time focusing on what we're doing that we don't pay as much attention as perhaps we should as to what our competitors are doing. What their thinking is, what their strategy is. And I can tell you, they have a strategy and they have a plan. And they are very determined in executing that strategy and plan.

So, my message is, America's got to fight back. We've got to stick up for ourselves. We've got to be tough in trade negotiations and we've got to be tough when we fashion responses to those who want to take our position. That is right at the heart of judgments that we have to make in the Senate of the United States and the Congress of the United States and certainly in the Administration. I'm very hopeful as we go forward this year, just as we joined together to pass important farm legislation, that we will join together to pass important transportation funding, that will make certain America is in a position to compete and to win because at the end of the day that is the challenge we must face.

And I think that is why this conference is important. Because you are thinkers. You are people who are engaged in these questions and in these debates. And you are here focusing on these issues. For that I thank you. And please, when you leave here, don't hide what you've learned. Don't fail to communicate with others what you have heard. And don't be shy about becoming advocates for what policies you believe are critical to our nation's success. I think you know it's very hard to get attention in this media-focused world. There are so many things that are coming at people. But these issues that you're talking about are critically important to our nation's success.

So don't be shy about trying to influence policy outcomes. Don't be shy about telling members of Congress and members of the Administration what needs to be done to respond to these challenges. You've talked about answers, you've talked about solutions. It's critically important that we have a chance to hear them.

Again, Gene, thank you so much for what you've done and thanks to all of you for participating in this important conference.

(End of Senator Conrad's remarks)

Thank you very much Senator. We appreciate you being with us, here this morning, and presenting the big picture from Washington. The Senator does have a couple of minutes and has agreed if there is a question or two from the audience to field the questions. Are there any questions?

(Senator Conrad) Well, we're at a critical time. Yesterday, I spent an hour and a half negotiating with Mitch Daniels, the head of the Office of Management and Budget, on a global settlement of the outstanding issues. Included in our discussion was the debt ceiling, the supplemental appropriations bill, the budget for this year and the various budget disciplines that are eliminated after September 30. Those are the budget points of order, the pay-go provisions and all the rest. This is a critical juncture. Absolutely critical. This week we may see a conclusion to all these discussions. It may not happen but it could. And so, if you ever wanted to intersect the process, this is the time. If you ever wanted to have an influence on the outcome, this is the time. If you are a transportation official, talk to your governor, get him to talk to your senators now. If you are in the private sector, and you work for a company and you're part of an association, tell him to weigh in now. Not in the sweet by and by, but now. Because these decisions are about to be made.

I am in an intense fight right now, on the question of what number we should have. I proposed a $5.7 billion add-back; the House is at $4.4 billion. We can accommodate the $5.7 billion without triggering a gas tax increase. I think it's just critically important to the economy, critically important to the efficiency of our operating systems in this country, critical to jobs that we have as high a number as we can get in highway and bridge construction.

So, my message would be, try to influence representatives and senators right now, and the Administration as well. The negotiations are at a very intense phase. And this transportation number is one of the most critical to reaching a conclusion.

Any other questions? If not, thank you again. Thanks for being patient. Thanks for listening. And most of all, thanks for being involved. As I've indicated, please don't hesitate to engage in this battle right now. It's certainly important to this country and I think you can make a big difference. One thing we know is, if representatives hear from the people that elect them, that has an influence. I believe it is altogether possible we could have a budget deal by the end of this next week. So these decisions are going to be made in a very short time period. Thank you very much.

Morning Session 2: Importance of a National Transportation System

Jerry Lenzi, Washington State DOT, presiding

No State is an Island or Only One State is an Island

Ken Casavant, Washington State University

Like most speakers my first action is to acknowledge those who have helped in the development of this presentation. I do that freely, acknowledging the conversations and discussions I have had with Gene Griffin, discussions that were productive and substantial. Second, I wish to acknowledge the innovative, creative and sometimes even scary contributions of my friend, Richard Bielock. I would like to remind you that, though he has not given a presentation at this Forum, this will be the third paper that the presenters acknowledge as having gained from Richard's research, insight and overall transportation wisdom. I would like to ask Richard to stand briefly and be further acknowledged by all of us in this Forum.

That is enough…he gets giddy if too much is made of him and his work.

Today I would like to offer some brief anecdotes focusing on the theme of this talk, namely that with transportation and agriculture, no state or region stands alone, and all must work collectively to improve and support this very critical marketing function. An underlying theme is that there is a natural and required role of Federal intervention and investment in transportation infrastructure. The alternative is duplicative user fees, and charges, multiple registration forms, etc., in effect, the Balkanization of our nation.

Role of Transportation:

- It is useful and appropriate that we take a step back from the various pointed presentations and talks we have heard thus far today and remind ourselves of just what is the role of transportation and what does having adequate transportation do for us as firms, families and as a nation.

- A first noticeable impact of having efficient transportation available is that the cost of inputs to the production functions of our farms and firms is decreased. More alternative sources of inputs are available with more stable sources and in a competitive environment that generates cost-based input prices.

- Second, a complete transportation system, with its competitive and complementary modes, serves to effectively increase the price received by producers, shippers and manufacturers since many prices, especially in international agricultural markets, are determined in distant markets and the domestic or country price is the international price minus transportation costs. Thus, a lower transportation price yields a higher price to the producer or shipper.

Both of the above directly result in increased returns to the producer or manufacturer, generating both direct and indirect to local economies and communities.

- In a nation with our consumptive habits the consumer gains as well, with the options increasing and the cost to the consumer decreasing as a result of efficient and effective transportation. Take for example a somewhat typical meal – with just the right amount of local boasting, as you might notice.

We start the dinner with a light wine, probably a Washington Chardonnay, joined by a delightful salad using Florida lettuce of several types. This is then followed by a nice Washington Merlot, to be combined with our first taste of our vegetable, California asparagus. The main course is, of course, the favorite, Colorado beef, flavored nicely to go with that excellent Washington Cabernet Sauvignon. As the conversation and wine flow freely we reach the time of the evening when a late harvest Riesling, from Washington of course, is used to finish the tasteful evening. Throughout the evening we enjoyed the crisp rolls from North Dakota wheat. Finally, the evening, made possible by consumer options and lowered cost from efficient transportation, is finished off with a nice Washington brandy.

Just how or why do both improved consumer options and increased producer returns come about? It is simply the benefits arising from economies of scale available from the ability to specialize in production, specialization that is not possible without access to markets and sources of consumer goods made possible by the availability of full transportation providers.

Anecdotes to make a point

Let's look at various scenarios or instances where the availability of transportation has caused or aided change, while reinforcing, as the meal example did above how food, fiber and products move throughout our nation. No roads or rail lines stop at state lines, except to ports and other markets, the very markets on which we are so dependent.

We should all remember the Whiskey Rebellion, early in our nation's history. The Federal government tried to put a tax on liquor that was being transported over the mountains to the markets on the coast. The whiskey was produced, and available for taxation, because the producers couldn't move the grain to the market efficiently but could move the grain in the form of condensed alcohol products. Whiskey runners were really grain transporters and the government noticed – and the producers rebelled.

In the state of Washington in 1994, my research team at the University did the first, and thus far only, statewide origin and destination study of trucking. We stopped about 30,000 truckers at 30 locations during four periods within a year, interviewing them about their loads. Information generated identified the loads as to origin, destination, commodity, weight, truck configuration and exact highway used, along with about 20 other variables. The interesting finding was that Washington truckers were not Washington truckers! Overall, 74 percent of the truck movements did not have a Washington origin or a Washington destination. They were simply transient shipments going through Washington on the way to other receivers, from shippers that were also not in the state.

We are currently redoing that study and the first two periods indicate that this type of traffic may have increased up to 80 percent. Subsequent interviews will give the final number for the year. This figure varies depending on the highway segment and its location relative to ports and to Canadian customs. For north to south movements on I-5 the percentage was 78 percent and on the east to west movement, the percentage rose to 83 percent, noticeable for the difference in incidence of containers. Again, states are providing services to other states' movements, another example of why a national approach to infrastructure provision is appropriate.

Richard Beilock talks about the "two percent take that roared," or the small amount of movement that is just in raw product, as in corn. But, listen to a very select list of products that utilize and depend on corn: dry cell batteries, bookbinding, fireworks, insecticide powders, wallboard and wallpaper, caramel color, catsup, chili sauce, tomato sauce, chewing gum, frozen or dried eggs, licorice, marshmallows and related products, canned peas, potato chips, aspirin, chocolate milk, soaps and cleaners, ceramics, insecticides, mouthwash, shoe

polish, rubber substitutes, and many, many more. Need I remind anyone from the farm the further use of the cob itself. In all, there are more than 135 uses of corn in products that depend on it. Yes, the 2 percent that roared reflects its value to other products and consumer items.

The transportation ties between trade and ports are obvious. What isn't so obvious is the dependence of our ports, Portland and Seattle in my area for example, on other states. The tremendous exports and growth in exports through these ports is because of the flows from other states. Thank you, Nebraska and Kansas, for making our ports into the great avenues of trade they have become. Without those states, it would not have happened.

The impact of good transportation is far reaching. It can be said that our chicken industry in my state of Washington died or was severely restricted because my state was and is so good at producing apples. Washington apples went east in trucks, trucks that were looking for any type of backhaul to get back to the Pacific Northwest. What was available were low cost Arkansas chickens, so low cost that the normal Washington chicken producer could not compete. Thus the only Washington chickens successfully marketed have to be sold as "fresh, homegrown, home processed, home eaten" with a premium paid for that pleasure. Yes, good transportation makes us a nation of competitors and consumers.

Look to Florida where cow/calf operations send their feeders to Oklahoma for the grass and winter wheat grazing, then to feed lots all across the country for finishing. Then the meat is brought back to Florida for Mike Martin and Richard Beilock to use for their evening meal, hopefully complemented by a nice Washington wine. Florida is the number 10 state in number of cattle but 90 percent of the eaten beef comes from other states. Specialization? I do believe so.

Final thought

I do thank you for your attention but let me leave you again with an anecdote that reminds us that we need to operate as a nation to develop and support the transportation system that is so sorely needed by our nation's agricultural industries.

The shipment of fruit and vegetables out of Washington to Mexico has tripled from 8 percent of our market to more than 24 percent in the past 15 years. Mexico is a critical market for Washington producers and processors. So, we in Washington say a huge THANK YOU to Oregon, Idaho, Utah, Colorado, Oklahoma, Texas – especially Texas. You see, no state is really an island!

Congestion and Agricultural Transport: Its Contribution and Impact on Consumer Costs and Farm Prices

James W. Dunn, Pennsylvania State University

U.S. agriculture is specialized. Each region produces a few things and consumes many things. This specialization is possible because of our transportation system. Without the high quality transportation system, each region would have to be more self-sufficient, with higher food prices, less selection and less efficient uses of resources. The importance of the transport system can hardly be overstated. The variety and quality of winter fruit and vegetables present in the United States is vastly better than in 1960. The efficiency of our transport system has allowed food processors to be bigger, gaining more efficiency because they can economically draw their inputs from a larger area. The volumes of goods shipped are enormous.

Table 1 shows the breakdown. Food and agriculture in 1997 shipped 1.6 billion tons of product, two-thirds by truck, with the remainder by rail or water. In that year, approximately 14 percent of all trucks on the road carried food or agricultural products. Grain moves heavily by rail and water, but food moves disproportionately by truck. Although the travel distances aren't in the table, the highway movements of food are considerably farther than the highway movements of agricultural products. Food and agriculture are important users of the nation's transportation infrastructure and the prices of food and agricultural products are affected by the transport system. In areas where congestion is a problem, some of the costs of that congestion are passed on to consumers and farmers. The discussion that follows tries to break out the effects of congestion and identify sectors that are particularly affected.

Table 1: Truck Transportation for Food and Agriculture, 1997

Product	total tons mil	Share truck	tons truck mil	truck loads mil	share of all trucks
Cereal grain	490	38.5%	189	9.4	2.5%
Other ag	202	66.6%	135	6.7	1.7%
Live animals	6	93.0%	6	0.3	0.1%
Feed	220	86.4%	190	9.5	2.5%
Meat	79	96.0%	76	3.8	1.0%
Bakery	102	79.9%	81	4.1	1.1%
Other food	397	87.6%	348	17.4	4.5%
Alcohol	81	86.6%	70	3.5	0.9%
Total	1,577		1,094	54.7	14.2%

Source: U.S. Department of Transportation, 1997 Commodity Flow Survey

Food

Food comes from everywhere. A typical meal might include lettuce from California, tomatoes from Florida, beef from Kansas, milk from Pennsylvania, butter from Wisconsin, bread made from Montana, wheat and potatoes from Idaho. In addition to domestic products, we commonly consume bananas from Ecuador, coffee from Columbia, chocolate made from cocoa from Ghana, wine from Australia and many other items of foreign origin.

We take this variety in our diet for granted, but it is available because the transportation system allows food of distant origin to be sold in supermarkets and restaurants at reasonable prices. Most food products move by truck from the processor to a food distribution warehouse, either belonging to a supermarket or a distributor serving the hotel, restaurant and institutional food sectors. From there, the food is loaded on trucks where it goes to the supermarket, restaurant, or other food preparer. In some cases, especially bread, milk, snack foods and soft drinks, the processor delivers directly to the retailer. The warehouses tend to be located at transportation hubs, in order to minimize transportation problems. The Harrisburg, Pa., area is an example of somewhere with many food distribution facilities, since it is the intersection of many major highways.

In the Northeast, the existing agricultural capacity could never support the population in the region without food from other regions. The Northeast produces at most 12 percent of the nation's food, but consumes between 20 percent and 25 percent of it. All of this food moves part of the way to the consumer by truck and much of it moves entirely by truck. Of course, with the specialization of agriculture, every region both imports and exports food, so more than half the food in a Northeastern supermarket comes from other regions, while Northeastern apples, milk, eggs and mushrooms are shipped elsewhere.

In the Northeast corridor, traffic and congestion are ever present. The cities have gridlock and delivering food is never easy. New York, in particular, but Boston, Philadelphia, Washington and Baltimore all have sprawling suburbs and many more vehicles on the road than are easily accommodated. One shipper said their drivers tried to get into New York City by 4:30 a.m., and hoped to get out before the noon rush hour. If they didn't, the drivers would just park on a side street and wait until after lunch rather than sitting in traffic and going nowhere.

The higher cost of serving consumer markets raises retail prices and lowers farm prices. Tyson Foods' 870 trucks from their Pennsylvania plant delivering product average 38 mph (Michael Blessing). An average trip is 300 miles, one way. The speed is that good because many deliveries are at night or early in the morning and most others going to warehouses located near major highways. The major customers, such as WalMart, give their suppliers a five-minute window to be at their loading dock. The truck cannot be at the warehouse more than one hour ahead of time. Of course, the majority of this product is loaded unto another truck for delivery to the retail outlet, whether it be a supermarket, restaurant, or food service company. The processor therefore only bears part of the costs of congestion directly, while the retailer or food distributor bears more.

Agriculture

Northeastern agriculture and much of agriculture in other regions coexists with large rural, non-farm populations. Rural roads and bridges serve not only agriculture but school buses, people going to and from work, considerable truck traffic related to the non-farm commercial activity in the area, and in some instances, lots of tourists. In Pennsylvania, the traffic is further complicated by a large number of Amish, driving buggies on secondary, tertiary and occasionally primary roads. The Northeastern problem is further exacerbated by a road system that was established during colonial times, when a winding flat road was better than a straighter, hillier road because it was easier on the horses. In addition, the number of towns is

considerable, and houses and barns are often very close to the road, restricting the possibility of widening or straightening roads. Even with no other traffic, these roads are slow, bumpy and dangerous. The Amish buggies, with their steel wheels, can rut the roads terribly.

Lancaster County, Penn., is an extreme but important example. Having 949 square miles, and a rolling terrain, it has some of the best agricultural land in the country. It has the most agriculture receipts of any non-irrigated county in the U.S. It also is home to 470,000 people. Growth has occurred everywhere. Sixty-seven of the county's 70 minor civil divisions grew at rates more than three times faster than overall growth in Pennsylvania between 1980 and 1990. There seems to be no one focus for growth. It is driven by commuters from Philadelphia settling in the eastern part of the county, by those who work in Harrisburg moving into the northwestern areas, and the suburban areas around the city of Lancaster becoming areas of commerce in their own right and stimulating development in adjacent townships. The city of Lancaster has 56,000 people. Over five million tourists a year visit the area to see the Amish farmers and the other sights.

The 4,700 farms in the county average 86 acres, but this small farm size is deceptive. Lancaster County is the heart of the Pennsylvania Dutch country. About 30 percent of the county's farmers belong to the Plain Sect community – Amish, Mennonite and Brethren. Altogether about 17,000 county residents are Old Order Amish. In 1999, the county had 96,000 dairy cows in a herd of 230,000 cattle and calves, 10 million laying hens, 51 million broilers produced, and 300,000 swine. Land values are so high that in order to be viable most farms have livestock and so many livestock that most purchase feed.

Milk and eggs require frequent pick-up – at least every other day. In addition, there is frequent feed delivery to eggs and broiler houses. A layer house might get feed deliveries every other day and for a big complex of 750,000 birds more often than that. A broiler house, as the birds approach market weight, might get a feed delivery every five days. Most broiler houses are within 1-1/2 hours of the plant. The biggest broiler integrator has 230 houses and processes 22 trucks per day.

The county has roads laid out from colonial times, lots of little towns with the houses very close to the street, lots of traffic, lots of tourists, and lots of Amish driving buggies. Except on the single limited access divided highway, all roads have stop and go traffic. It is difficult to average 30 mph. Often it would be much less. However, the cost of hauling is an important part of the profitability of agriculture in the area.

Furthermore, all of this agriculturally related traffic creates costs for everyone else as well. It further clogs up roads with milk trucks, feed trucks, egg trucks, chicken trucks, etc. An employee of Land O' Lakes estimated that in winter their trucks picking up milk average less than 30 mph, with slower speeds in the summer when tourism is more active. The congestion and agriculture fragmented with suburbia mean that it takes many more trucks than it would (and does) in other regions, lowering farm prices with higher hauling fees. Several agribusiness transportation managers said that traffic was their number one transportation problem. In total, what could and should be a nice rural setting is a swarm of traffic.

With the congestion, moving machinery from one field to another is a big problem because busy roads, dangerous roads, hilly terrain and small fields make cross country movements difficult, even with small farms. A Pennsylvania corn and soybean farmer in another populous county has 1,600 acres in these crops, with an average field size of seven acres and his largest field is 42 acres. Moving equipment on the road is a necessity for him. He often has a pickup trailing him, and occasionally another leading him. If the roads are smooth he can make pretty good time, but if they are rough he must go slowly and a line rapidly forms behind him. If he pulls over to let them go past, he may sit for 15 minutes before he can get back on the road. He can make better time if he moves the equipment at night, but having a wide piece of equipment on the road after dark is dangerous as well. The main road that goes by his farm has 14,000 vehicles per day.

One question Pennsylvania farmers have is whether congestion is making it harder for local corn to compete with corn coming by rail from the Midwest. Apparently the answer is no, but because the big feed mills are on the main railroad lines and they have congestion problems with rail car delivery, cars may arrive in a nearby yard but take quite a while to be delivered to the mill. No receiver is large enough to buy a unit train load of corn and the railroad has trouble splitting it between several customers because of the business of the lines.

Feed companies in Lancaster County charge $2.00/ton less for feed if you allow night delivery. The efficiency of the trucks is higher at night to justify this discount and the improvement is almost entirely because of less congestion.

An Estimate of the Costs of Congestion

A model of the U.S. Food System (Dunn, Lee and Thatch) was adapted to address the issue of congestion and transport costs. Some estimates of these costs are in Table 2. Assuming that congestion increases transportation costs in the northeast by 20%, gross farm receipts in the Northeast are estimated to be $800 million less than without the congestion, gross farm receipts elsewhere are increased by $700 million, and consumer food costs are higher by $50 million in the northeast and $150 million elsewhere. This happens because it separates Northeastern farmers from the marketplace by higher transportation costs, offering easier access to Northeastern markets de facto to more distant producers. In this instance the increased cost of congestion is borne disproportionately by Northeastern farmers.

Table 2. Effects When Congestion Raises Transport Costs 20 Percent on Consumers and Farmers

	Congestion a Northeastern Problem		Urban Congestion Everywhere, Rural Congestion in Northeast	
	Prices	Total (mil.)	Prices	Total (mil.)
Northeastern Consumers	0.04%	$50	0.20%	$500
Consumers Elsewhere	0.04%	$160	0.20%	$1,520
Northeastern Farmers	-1.63%	-$810	-3.59%	-$900
Farmers Elsewhere	0.21%	$730	0.05%	$90

If one assumes that congestion is a universal urban problem, but not only a Northeastern rural problem, then consumers bear the costs of congestion more heavily. In this instance, a 20 percent increase in transport costs due to congestion would lower gross farm receipts in the Northeast by $900 million, raise gross farm receipts

elsewhere by $90 million, and raise consumer food costs by $500 million in the northeast and $1,520 million elsewhere. Because transportation is only 4 percent of value of the average food product the percentage change in retail prices is small. However, food is a $1 billion business, with a farm value of $200 billion, so even small price changes have big dollar effects.

Congestion in rural areas is not exclusively a Northeastern problem. It is important in many other areas, although generally not to the same degree. The above estimates provide some clue to the effects of congestion. The costs of urban congestion fall more heavily on consumers than producers, although farm prices are lowered as well. However, the costs of rural congestion are borne almost exclusively by the farmers in the congested area, because all farmers in America do not face the problem. In this instance, the substitution of production from less congested areas for production in the congested areas leaves the impact most heavily on the farmers. This makes farming less competitive in congested areas. Generally farms in congested areas have trouble competing in any case. They have difficultly expanding, and land values often have a significant development premium. This makes their costs higher than farmers in less congested areas. From one perspective, it makes sense to relocate agriculture out of congested areas. However, the loss of open space and agriculture is viewed by many as a decline in the attractiveness of an area. For this reason, Lancaster County has one of the nation's largest farmland preservation programs.

CONCLUDING COMMENTS

Congestion is an important issue for the food and agricultural system. Urban congestion raises food prices for urban consumers, as delivery to the places they buy food is more difficult. Rural congestion is also a topic of increasing importance. As more people move to the countryside, the movement of farm machinery, feed and fertilizer, and farm products to market becomes more expensive, making the agriculture that remains less viable. The food supply itself is not at risk, but the structure of agriculture will ultimately be affected by the broader forces of encroachment, which include congestion costs.

References

James W. Dunn, David R. Lee, and Daymon W. Thatch. "The Effects of Transportation Rates on Interregional Competition in Agriculture: A General Case." Agribusiness, 3 (1987): 393-402.

PENNSTATE

Congestion and Agricultural Transport

Its Contribution and Impact on Consumer Costs and Farm Prices

James W. Dunn
Pennsylvania State University

Food

- Comes from everywhere
- We take availability for granted
- Lots of transport required
- Farm to factory
- Factory to distributor
- Distributor to retailer
- Lots of trucks

Introduction

- Specialization requires lots of transport
- Although transport's share of food dollar is small, dollar amounts are huge
- Urban congestion costly
- Rural congestion an issue in some areas

Northeastern Food Market

- 25% of people
- 12% of agriculture
- Self-sufficiency less than this
- Congestion everywhere
- New York City
- Raises food prices and lowers farm prices
- 38 mph avg. for Tyson Foods

Table 1: Truck Transportation for Food and Agriculture, 1997

Product	total tons mil	share truck	tons truck mil	truck loads mil	share of all trucks
Cereal grain	490	38.5%	189	9.4	2.5%
Other ag	202	66.6%	135	6.7	1.7%
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Feed	220	86.4%	190	9.5	2.5%
Meat	79	96.0%	76	3.8	1.0%
Bakery	102	79.9%	81	4.1	1.1%
Other food	397	87.6%	348	17.4	4.5%
Alcohol	81	86.6%	70	3.5	0.9%
Total	1,577		1,094	54.7	14.2%

source: U.S. Department of Transportation, 1997 Commodity Flow Survey

Northeastern Agriculture

- People and farms together
- Winding colonial roads in hilly terrain
- Lots of towns
- Buildings close to roads
- Amish

Lancaster County, PA

- 949 sq. miles
- Most ag receipts of any non-irrigated county in America
- 470,000 people – lots of growth
- 4,700 farms
- 30% of farms plain people

Northeastern Agriculture

- Small fields – 1,600 acres, 7 acre average
- 14,000 vehicles per day on road by farm
- Hard to move equipment
- Rail congestion also an issue

Lancaster County, PA

- 96,000 dairy cows
- 230,000 cattle and calves
- 10 mil. laying hens
- 50 mil. broilers
- 300,000 swine

Estimating the cost of congestion

- Interregional trade model
- Assume congestion increases transport costs by 20%
- Urban congestion a problem for all farmers
- Rural congestion a problem for affected farmers

Lancaster County

- Dairy and Eggs – pick-up product every other day
- Broilers and eggs – deliver feed every few days
- Feed companies give $2.00/ton discount for night delivery

Costs of Farm Congestion

	Prices	Mil $
NE Consumers	+0.04%	$50
Other Consumers	+0.04%	$160
NE Farmers	-1.63%	-$810
Other Farmers	+0.21%	$730

Costs of Urban and Farm Congestion

	Prices	Mil $
NE Consumers	+0.20%	$250
Other Consumers	+0.20%	$760
NE Farmers	-0.89%	-$450
Other Farmers	+0.01%	$45

Costs of Farm Congestion

- Costs almost entirely borne by affected farmers
- Probably a few billion
- Benefits farms in non-congested areas
- Makes ag less competitive in congested area
- Another disadvantage for farmers in growing areas

Costs of Urban Congestion

- Hurts all consumers
- Hurts all farmers
- Consumer costs probably billions
- Farm costs less but comparable
- Price effects small but quantities large

Concluding Comments

- Infrastructure important to way ag. & food system operates
- Congestion slows process and increases costs
- Urban congestion costly but neutral
- Rural congestion discourages ag in affected areas

Increasing the Investment in Transportation: Alameda Corridor East (OnTrac) Project "TEA-3 Funding Partnerships"

Christopher Becker, OnTrac

$250 billion in new international trade will flow through our ports in 2020. The Alameda Corridor East includes Los Angeles, Orange, Riverside and San Bernardino counties. Including local and international goods, it is one of the largest manufacturing regions in the nation. Alameda East (OnTrac) is a collaboration.

The OnTrac Project is a five-mile rail-lowering project that will eliminate 11 grade crossings and utilize a trench like the Alameda Corridor. A trade impact study is part of EIR/EIS and will help OnTrac communicate the national significance of the OnTrac project.

Addressing homeland security, OnTrac will document the value of defense materials processed with an LAEDC/RAND study of transportation, economics and homeland security.

OnTrac impacts the local benefits of trade in Southern California. As aerospace and hi-tech jobs drop to 200,000 in 2002, international trade jobs rise to 470,000.

OnTrac benefits the Great Plains states as well with $5 billion dollars and 73,200 jobs affecting North Dakota, South Dakota, Iowa, Nebraska, Kansas, Missouri and Minnesota. Taxes and payroll to the same states show $227.4 million in local taxes and $1.61 billion in payroll.

The Global Gateways program adds another dimension. Transportation agencies and businesses came together to develop ideas and suggestions with a small advisory group fine tuning the final document and delivering results to the transportation community.

That development program for Alameda East shows train traffic by 2010 having 265 trains per day – that's 11 trains per hour on a 24-hour basis. By 2025, the numbers rise to 390 trains per day with more than 16 trains an hour or a train every 3-4 minutes 24 hours a day.

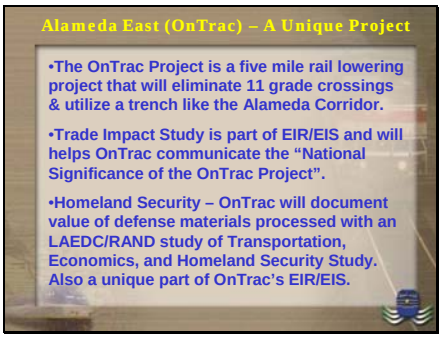
User tolls or customs revenue can help pay for needed improvements but they must be implemented nationally to avoid diversion and share funding with trade impact states like the Great Plains states. A dedicated trust fund for unfunded community infrastructure takes pressure off highway funding, in effect, alternative finance supports AASHTO and ATA desires to protect over-subscribed highway trust funds.

Next steps for U.S. transportation indicated federal assistance in TEA-3 must happen. The national benefits of expanding trade must include mitigation for local communities on major trade routes. The TEA-21 borders and corridors program allocation is equivalent to $3 million per year per state for six years – very under funded.

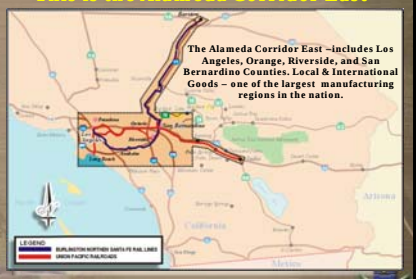
Congress and the administration must support innovative funding and grants, not loans.

Customs revenues growth can be put in escrow/trust accounts. Or the U.S. should charge a container fee at every port of entry. No other revenue streams exist for community grade separations. Something must be done or communities will fight transportation system capacity upgrades.

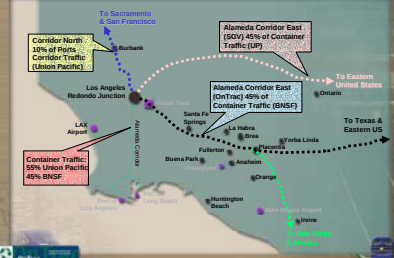
The next steps for OnTrac are to complete its study, continue studying homeland security, continue working with LAEDC on customs revenue reinvestment, explore the possibility of partnering with Great Plains states and continue working with the "Coalition for America's Gateways and Trade Corridors" on TEA-3.



This is the Alameda Corridor East

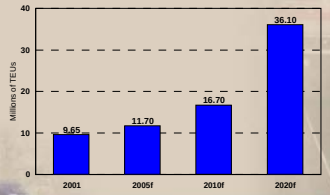


Alameda Corridor East
Container Distribution Percentages



OnTrac Trade Impact – Container Forecast

Figure 2
Container Traffic Forecast for POLA/POLB



OnTrac Trade Impact
Benefits Great Plains States

OnTrac Trade Impact Study
~Great Plains States~

State	Total Value	Jobs
Minnesota	$2.298 Billion	29,900
Missouri	$1.147 Billion	14,000
Kansas	$711.0 Million	14,000
Nebraska	$491.5 Million	9,900
Iowa	$315 Million	5,100
North Dakota	$3.7 Million	100
South Dakota	$8.0 Million	200
TOTAL	**$5.0 Billion**	**73,200**

Multi-State / Jurisdictional Approaches

Coalitions

Jurisdiction 1, Jurisdiction 2
Jurisdiction 3, Jurisdiction 4

Public Sector/ Private Sector

Challenges/Opportunities

National Forum on Agriculture and Transportation Linkages. Fargo ND May 18, 2002

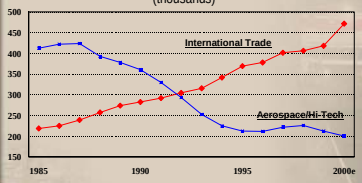
Alameda Corridor East Links To
Great Plains States Taxes and Payroll

OnTrac Trade Impact Study
~Great Plains States~

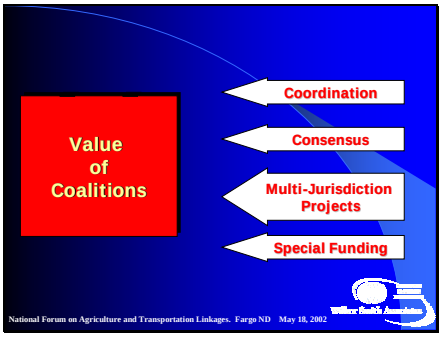
State	Local Taxes	Payroll
Minnesota	$94 Million	$608 Million
Missouri	$55 Million	$306 Million
Kansas	$39 Million	$308 Million
Nebraska	$28 Million	$240 Million
Iowa	$11 Million	$142 Million
N. Dakota	$.2 Million	$ 1.3 Million
S. Dakota	$.2 Million	$ 3.8Million
TOTAL	**$227.4 Million**	**$1.61 Billion**

OnTrac Trade Impact – Local Benefits of Trade

Jobs in So. Calif. -- Aerospace/Hi-Tech
(thousands)



Source: Labor Market Inform. Div., California Employment Development Dept., 2000 estimates LAEDC



Global Gateways Development Program

Economic Linkages

	2000	2020	Increase
Population (millions) [1]	16.7	21.5	28.6 %
Employment (millions) [1]	6.7	9.7	44.1 %
Two-Way Trade ($ billions) [2]	230	661.0	187.5 %
BNSF/UP Trains per day	144	390 [3]	271 % [3]

[1] Five County Area
[2] Total LA Customs District
[3] 2025 Forecast

Global Gateways Development Program

Forecast: Capacity Improvements

BNSF:
- 2010 - 3 main tracks, Hobart – Fullerton and Atwood - Colton
- 2025 - 4 main tracks, Hobart - Fullerton
  - 3 main tracks, Fullerton - Colton
  - Grade separation of Colton Crossing

UP:
- 2010 - 3 main tracks on East Bank Line
  - Metrolink fly-over at Pasadena Jct. (LATC)
  - 2 main tracks, Pasadena Jct. - Colton
- 2025 - Flying jct. of Palmdale Line at West Colton
  - Grade separation of Colton Crossing

Global Gateways Development Program

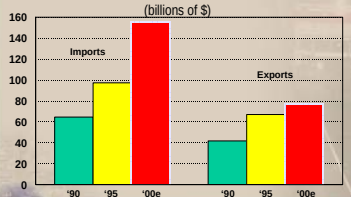
Alameda East – Train Traffic

2010:
- 75 passenger trains, 80 freight trains on BNSF = 155 Trains per day;
- 25 passenger trains, 85 freight trains on UP = 110 Trains per day;
- ***265 trains per day*** via Alameda Corridor East = 11 trains per hour – on a 24 hour basis!

2025:
- 100 passenger trains, 120 freight trains on BNSF = 220 Trains per day;
- 40 passenger trains, 130 freight trains on UP = 170 Trains per day;
- ***390 trains per day*** via Alameda Corridor East! Over 16 trains an hour or a train every 3-4 minutes – **24 hours a day**!

Global Gateways Development Program

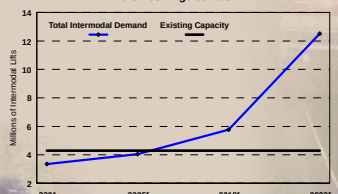
Huge Economic Linkage to US Treasury
L.A. Customs District
(billions of $)



Global Gateways Development Program

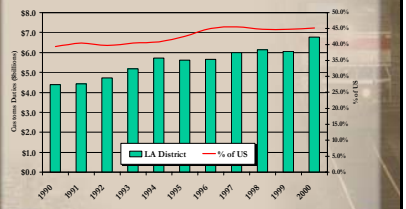
LA Intermodal Capacity Peaks – 2005-07

Figure 6
Comparison of Intermodal Capacity and Demand in the Los Angeles Basin



Customs Revenue Is Best Bang For Buck

$7 Billion in Customs Revenue – POLA/POLB Only!



How to pay for improvements?

User Tolls or Customs Revenue

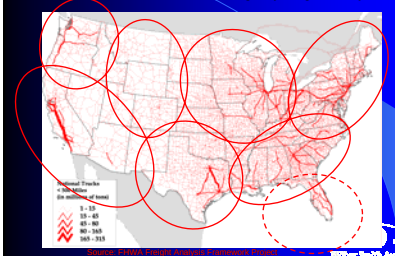
- Must be implemented nationally to avoid diversion and share funding with Trade Impact States like Great Plain States;
- Dedicated trust fund for unfunded community infrastructure – takes pressure off of highway fund – i.e.; Alternative Finance supports AASHTO & ATA desire to protect over subscribed Highway Trust Fund
- Customs Revenue at San Pedro Ports is equal to about $1,000 per container verses ACTA charge of $30 per container to finance $2.5 Billion Project.

Next Steps For US Transportation

- Congress and Administration must support innovative funding/grants not loans
- Customs revenue growth can be put in escrow/trust account. Or US should charge a container fee at every port of entry. No other revenue streams exist for community grade separations – forget a loan it takes a revenue stream;
- Something must be done or communities will fight transportation system capacity upgrades.

Short-Haul Truck Freight-Sheds

Trips <500 miles; All Commodities; Highway-Freight Density in Tons



Source: FHWA Freight Analysis Framework Report

National Forum on Agriculture and Transportation Linkages. Fargo ND May 18, 2002

Next Steps For OnTrac

- Complete OnTrac Trade Impact Study, once states get their districts drawn – probably late summer;
- Continue with study of "Homeland Security for Trade Corridors and Gateways" with LAEDC and RAND Corp.;
- Continue working with LAEDC on its "Customs Revenue Reinvestment Project";
- Explore possibility of partnering with Great Plains States and continue working with "Coalition for America's Gateways and Trade Corridors" on TEA-3.

Morning Session 3: Planned Success Versus Crisis Management: How Do We Maintain and Improve the System for Agriculture

John Horsley, AASHTO, presiding

My name is John Horsley. Through AASHTO I represent the 50 state Departments of Transportation. On their behalf, let me again say thank you to Gene Griffin and North Dakota State University for hosting this conference. Gene is not only a leader here on this campus and in this Institute, but in University Transportation Center circles, he is a leader nationally.

When we at AASHTO began to grapple with the issue of how to pass a strong transportation bill next year, we concluded that we needed to involve a broader array of interests than just the traditional highway construction industry. We concluded that others such as agriculture need to understand the stake they had in transportation. So we went to Gene and asked whether the University Transportation Centers around the country would partner with AASHTO to tell the story.

This agriculture-transportation linkage conference is the first of four. The second will be a partnership between AASHTO, the U.S. Chamber of Commerce, and the American Road and Transportation Builders, June 25, where we will focus on the importance of transportation to commerce. The third will be an event that Leo Penne gets to organize in Los Angeles on the importance of transportation to international trade. We'll do that in partnership with Long Beach State University and the University of Southern California.

And then later this year, we will do a conference on the importance of transportation to recreation, travel and tourism. So we think we have covered the gamut.

What we have seen throughout the last two days' discussion, and it has been a marvelous education for us in transportation, are the linkages between agriculture and transportation, but also the transformation that has taken place in the agricultural world. We have seen data on how important competitiveness is for the one third of U.S. production that is exported. Senator Conrad reminded us how competitive European agriculture is because of subsidy from their governments. And Steve Fuller's presentation yesterday showed us, in the case study regarding Argentina and Brazil, that they are coming on strong.

We in the western hemisphere have been blessed with huge acreages of fertile land. The competitiveness of American grain exports has depended on the efficiency and low cost of the U.S. transportation system. What we now see coming on in Argentina and Brazil, is increasing efficiencies in their barge systems that may undercut our comparative advantage. What that tells us is that we have to re-double our efforts on the water, on the rails, and through the trucking system to maintain our global market share, or the one third of our production which we currently export, may no longer have a market.

You heard me ask a couple of questions about rail. What we are seeing, especially through the example of the 100-car rail shuttles, is how a transformation in the number and distance between grain elevators is making it possible for the rail industry to survive, but in the process is shifting a maintenance burden onto county and state feeder roads.

We learned about the dispersal of the American population, where more people are living in the southwest and the southeast, but still are dependent on a worldwide supply of food commodities. We learned about a

shift in U.S. population, a shift in production locations, and a drive for efficiency. For instance, fewer cattle feedlots on the farm and more feedlots at a larger scale further west. Then the need to shift corn production more to the south and the middle Atlantic states closer to poultry production. All these dynamics are the consequence of the imperative of making agriculture more competitive, and more efficient, to drive down costs. That has a spillover effect on the transportation system. If American agriculture is to remain competitive and achieve its goals of efficiency and cost reduction, then transportation has to be even more efficient. And we heard that it isn't getting simpler to get through a metropolitan area at peak hours, especially driving a hazmat truck.

So, what we had set out to achieve, I believe has been achieved well. And I want to thank Gene Griffin, Leo Penne and our host, Dave Sprynczynatyk, and all of you who participated and contributed to the wealth of understanding that's come across here.

Let me get back to why we put this series together. In our view, transportation, especially highway transportation, has never been more important to agricultural competitiveness and to serving the food needs of this country than it is today. But the bill that we are going to be pushing next year has never faced a more uphill battle. In the last two cycles, we have been blessed. George Bush, Sr. raised the fuel tax a nickel. That enabled the Intermodal Surface Transportation Efficiency Act (ISTEA) to increase its resources 30 percent. Bill Clinton followed that with a 4.3 cent increase in fuel taxes. The combination of those two fuel tax increases made it possible for TEA-21 to increase highway and transit resources 40 percent.

This cycle we are facing a Congress that is not inclined to significantly increase fuel taxes or revenues at all. We're looking at a budget that is again in deficit. We are looking at domestic discretionary spending for education, agriculture, healthcare, social security, etc., all starved and competing for their share of the federal budget. And we are facing an American public where the consensus around the importance of transportation and highway improvements has largely broken down.

To a degree, the consensus with the American people is broken down because they are tired of seeing the orange cones slowing them down. They're tired of congestion. And they do not have a one-for-one understanding of what we need to do. And so we believe we need to get back to basics and reach out to sectors like agriculture and say, join us in articulating to the American people how important transportation is to the survival of your industry. And how the survival of agriculture is to meeting the needs of the to pulling this wealth of material together and sharing it with Members of Congress and others around the country.

Let me mention one other thing as we work in partnership with the University Transportation Centers around the country. Another element that we sometimes forget is how important our educational sector, especially state land grant colleges have been to increasing the productivity of American agriculture. If there was one single brilliant move the U.S. made years ago, it was to create these dedicated land grant colleges to focus their efforts on increasing human capital, increasing understanding and advancing technology in agriculture. We need to turn to the education sector again to tell the story of how important transportation is to agriculture and to the national economy.

Now, let me give you a brief summary of what Dave Sprynczynatyk and his colleagues agreed to three weeks ago in Pennsylvania, when we pulled together a national consensus at the state DOT level on what we plan to push for in TEA-21 reauthorization.

First, we think it is imperative that funding increase. Whether you look at the needs of North Dakota to preserve the system in place and to accommodate some of the increasing heavy truck loads, or the needs of just agriculture alone to move traffic east, west, north and south, the challenge is overwhelming. Every region

of the country sees the need to invest more to preserve and modernize roads and bridges built over the last 50 years. And they you look at the traffic and growing population in this country, in places like Texas, California and Florida. Congestion there and in places like Seattle is a mess now and is getting worse.

We recognize that there has been frustration in the freight industry and to a degree in agriculture, that needed freight-related projects have not received the priority they deserve. We want to work with you to change that. If you are a trucker, a common experience is to leave the interstate and wend your way from the exit down to the port, or down to the truck-rail terminal over some of the sorriest roads in the system. It's called the "last mile," and improving these intermodal connectors is something we want to see receive a higher priority for funding.

To increase the competitiveness of freight projects, one of the things AASHTO supports is capacity building at the state DOT and MPO levels to improve understanding of freight needs. We are asking for $10 million to fund this and thereby increase the competitiveness of projects that will help move freight. We support the creation of a cooperative freight research program and a national freight advisory council to advise the Secretary of Transportation on how we can better meet the country's needs. Finally, we support several improvements in innovative finance which we believe can make more resources available for freight-related projects, for both trucking and rail.

What AASHTO wants to see is for freight-related projects to be made more competitive through the existing process, rather than set up a new set-aside. We do support the continuation of the Borders and Corridor program, but beyond that we believe freight projects will net more by competing for NHS and STP funds which are in the tens of billions nationally, than for the Borders and Corridors program, which generates under $150 million nationally in any given year.

Most citizens will tell you, and most drivers, that as far as they are concerned there are already too many trucks on the road. What state DOTs are growing concerned about is the continuing ability of the rail industry to generate capital sufficient to maintain and modernize their system so they can continue to maintain rail's market share of freight. If they fail, we fear that more will shift to trucking and both systems will lose. So we want to work with the rail industry to see how we can help.

Likewise, we know how important the barge industry is to the competitiveness of American agriculture. So we want to work with that industry to make sure they get the help needed from Congress to sustain and modernize the system of river locks they depend on.

What all of this is going to take, more than ever before, is more financial support from Congress. To get that we need friends like you and a partnership like we are beginning to build here to increase public understanding and support. On behalf of our staff and my bosses, I want to thank all of you. I think just about everyone in this room has spoken or contributed a paper. What we have heard is a marvelous exposition on the linkages between agriculture and transportation, and the need to work more closely together to advance our mutual goals. Thank you very much.

Leo Penne:

We will be closing this morning's formal structured program with a topic that opens a door for the lunch discussion and beyond. That is the subject of partnerships. I don't think that at the end of this conference I need to elaborate in any detail at all, on the meaning and importance of partnerships in the freight transportation world. Nothing happens that does not involve government and business and that does not involve businesses in different sectors, and frequently involves multiple states and even multiple countries.

All of these reflect the need for cooperation across institutional lines and the need to understand whom you should be working with and how you can best work with them. First we have Mark Berndt with Wilbur Smith Associates. I met Mark in the not too distant past, when he was with the Minnesota DOT doing freight work and being involved in Minnesota's efforts to work with the private sector on freight matters. I think I can say with certainty that his departure from the state of Minnesota is a great loss to the Minnesota DOT. But, now he's free to do work directly with many states so it may actually turn out to be a greater benefit to the nation. Mark will provide an opening presentation on how to do partnerships.

We have asked three of the moderators for sessions during the program to take two or three minutes each and give us a couple bullet items that they think are important for partnerships based on the discussion in their particular sessions and then use that as the starting point for the lunch conversation where we want to talk about "what now?" What are the conclusions, what are the recommendations, what are the thoughts, what are the actions? So with that, Mark can you get us started?

Wilbur Smith Associates
Mark Berndt

I want to talk a little bit about my background and give you an overview of some of the partnerships that I have been involved in. While I was with MNDOT, I was involved in a number of multi-state partnerships, on freight corridors, and a regional trade partnership. The last major assignment I had at MNDOT was to help form a freight advisory committee and so I'll talk about some of those experiences and what we learned. Also, I want to mention that Wilbur Smith Associates has done a white paper for FHWA on partnerships. I believe that the white paper's probably available on the Website.

I'm going to go through a couple of slides that talk about some of the highlights in that paper. The background is the clusters and corridors that constitute the freight transportation system.

Against that background, I want to talk about the characteristics you'll see in a lot of the multi-state, multi-jurisdictional coalitions. One is coordination. Coordination is usually by a lead agency that then tries to recruit other agencies. And often times, they go back to familiar associations, like AASHTO regions and try and get those folks together to tackle some issue that are difficult to tackle as a single entity. Also, in terms of coordination you'll see various degrees of formality. But oftentimes, there's some sort of memorandum of understanding that spells out for each jurisdiction what their responsibilities are in terms of attendance, staff and supplying background materials to the group. Also, the level of commitment tends to equal the expected benefits. So it's really important that you try and achieve some win-win benefits for everyone in the group.

Major decisions, we found, often are really hammered out, outside the formal meetings, then ratified in the formal meetings. So it's a good opportunity to begin to understand how other members of the coalition, what sort of position they're in. And that really was something that came home to me when I participated in the Northern Great Plains rural development initiative that Jerry Nagle set up. I learned about the amount of trade

we do in this region with Canada. And it hit home again to me today, as I drove up here from the Twin Cities this morning. I passed about 20 trucks and 19 of them were from Canadian provinces. So I really began to learn a lot about how other folks of the region deal with their issues.

In multi-jurisdictional projects, one of the things we've found as we've reviewed these things is that travel can be a problem. It's a problem right now, in a lot of the states as budgets have been squeezed, so it's good to address those sorts of things up front, in terms of the funding commitments and also in terms of memorandums of understanding. And often times you have to rely on outside resources, like consulting firms to help staff the coalition. And then finally, a lot of these are driven by special funding.

So, just briefly, I will talk about some of the characteristics that coalitions that I have been involved with—how their jurisdictions are made up. Often there is public and private sector support for these things and usually they're formed to address some sort of major challenge. But often there are new opportunities that come out of these coalitions as well. I'm going to go through four types of coalitions that I've had experience working with.

One is some of the advisory councils or committees. Previous speakers today talked about those in Florida, California and Washington. There are many others that have been popping up and we'll talk about those. There are corridor coalitions that have resulted from the Corridors and Borders program in ISTEA and TEA-21, regional planning commissions or authorities. The Northern Great Plains group that Jerry Nagle has led the effort on. There's the Appalachian Regional Commission, which is kind of the granddaddy of them all, and there's some others like Latin America Trade and Transportation Study (LATTS) that Wilbur Smith has been involved with.

One of the things that I did when I was with MNDOT was set up the Minnesota Freight Advisory Committee, going on four years ago now. We hired a former congressman who was very involved in transportation and agriculture issues, Tim Penny. And then we invited some of the largest shippers in Minnesota to come to the table and begin to give us advice about what we should be doing. There was really no dedicated funding up front, so it was really started off as a kind of exchange of ideas to influence policy. And I think that's typical.

Now, there are some of these advisory councils that have been more involved in the funding issues, like Washington, and the previous speaker mentioned Florida. But Florida was actually a little bit of a fluke. They had pulled together money for high-speed rail – state and federal money and then there was a voter referendum that cut the high-speed rail program. They just happened to have a freight advisory committee together that had a list of projects so the money was transferred over, but that's probably not typical. Let me say that a lot of these freight advisory councils really started at the MPO level, due to the planning regulations in ISTEA and TEA-21, and now they've been growing in terms of their geographic scope.

We heard this morning that there's a proposal for a national advisory council. This makes a lot of sense because there are a lot of limitations even at a state level in trying to address freight issues because freight does not recognize a lot of the traditional political or geographic boundaries. And so, it's difficult then to deal with some of these larger issues, like rail movements and changing markets, limited access to project funding.

A lot of the corridor partnerships are driven by the corridors and borders program. John Horsley said it has been criticized for pork barrel. We tend to use the more polite "earmarking." But a lot of it has been earmarked, and so that's an issue and lots of times it makes it difficult for rural regions that are heavily into agriculture to get access to those types of funds because a lot of the funding is pointed at the major urban corridors in the east and the south. They tend to be mixed jurisdictional membership. This was true for a lot of the corridor programs that I have been involved with, and when I was a Minnesota representative on I-35. I'm

now working as a consultant on the I-10 corridor. They tend to involve cities and counties as well as states and they tend to be focused on highways.

Although many will say they are looking at it from a multimodal perspective, the fact that the corridor is defined by the major highways, leads you back to, sort of the highway focus and in that respect it's typically the transportation agencies that are involved.

As an example, right now, we're working on a study of the I-10 national freight corridor, which is a huge conduit of freight. It involves the ports of Los Angeles, Houston, Jacksonville and New Orleans, which are some of the largest ports in the world. It's a major feeder for all of the southern border crossings, so it's just a tremendous conduit for freight. It goes through eight states. We're about half way through the project. The intention is to finish up the assessment of the needs along that border prior to reauthorization.

We've defined the corridor. We've looked at the baseline of the conditions in terms of the actual infrastructure and technology in the corridor. We've done some commodity flow analysis. We're now moving into issues and beginning to really define what the needs are.

Trade and economic development partnerships tend to be multi-state, often bi-national. The Northern Great Plains project involves two Canadian provinces. They also tend to involve more than just transportation agencies. They also tend to involve economic development agencies from the various jurisdictions. They focus on economic development and trade enhancement through transportation improvements.

A couple of examples. Wilbur Smith has worked on the Latin America Trade and Transportation Study, also the Western Trade and Transportation Network. Another example is the Northern Great Plains efforts by Jerry Nagle, which I think has been a really innovative and unique sort of partnership because it has included the provinces of Manitoba and Saskatchewan.

Finally, I want to touch a little bit on the traditional alliances. The research and transportation associations of Canada have typically been partnerships to look at policy and research, and also in some cases, operations. As Leo mentioned, I was a member the subcommittee in highway transport which represents a lot of the trucking officials at state DOTs. They were able to partner within their regions – create compacts for truck permits for oversize/overweight dimension permitting.

All the regional AASHTOs have compacts, with the exception of the Mississippi Valley. And they've even come together to form national agreements for things like nuclear waste transport permitting and national defense transport permitting in times of national emergency. There have been some good examples of partnering there. The problem for agriculture and freight movements is those traditional boundaries don't always match up well with what those trade markets are that we looked at in those first couple of slides.

I also see some emerging partnerships. This past week in the Twin Cities Jerry Nagle's group met for the last time to present the results of their work. There were representatives from the ministers of transport of two Canadian provinces, commissioners from departments of transportation and economic development from the five states. Jerry presented some of the recommendations in the report and one of the things being recommended is the creation of a regional freight advisory committee to look at freight movements from a regional perspective. He's also suggesting the establishment of ongoing regional working groups to tackle different issues in communication and transportation.

He's also been able to get language included in the Farm Bill that calls for the authorization of a regional funding authority where all the states would be represented and there's language in the bill that would

authorize funding for this regional authority to address transportation and communication problems. I think that's a really unique and innovative approach to look at some of these issues.

Another one that's going on right now sort of preparing for reauthorization comes out of the Intelligent Transportation Systems world. In ITS there's been a lot of implementation of technologies in specific jurisdictions, like metropolitan areas. One of the things being talked about is regional operating organizations where you begin to try and integrate technologies between jurisdictions, and in the area of freight I think this is particularly important. If you're a trucker and you're leaving from Fargo and heading to the West Coast, it's probably worthwhile knowing what the weather is in Montana before you get there, so if it makes sense to stop or to try and avert if you can.

The ability to integrate things like road and weather information systems across jurisdictions or traveler information systems across jurisdictions makes a lot of sense. There's actually a partnership that's being discussed right now that would run from Wisconsin out to the state of Washington, along I-90 and I-94. That would begin to do this ITS integration.

Just to help spark some discussion – a couple of things as I thought about how regional partnering or even national partnering could help move some of these things forward in freight and agriculture/transportation movements.

Since the terrorist attacks on America, security is a huge issue. One of the areas, which quite frankly has always been a little bit lax in terms of the regulatory environment, has been agriculture movements. A lot of hazardous materials move, like anhydrous ammonia and other types of fertilizers, and they're not very highly regulated. I suspect that unless the ag community takes a more proactive stance, others will act and do things like regional risk assessments and regional risk management of ag material, hazmat movements.

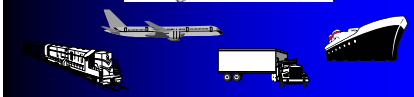
When I was with the MNDOT, we had a partnership with the University of Minnesota to look at various types of research.

One of the things that came out of our freight advisory committee was the idea of looking at the emerging markets for containerized grain movements. We understand that there's pressure on some of the short lines due to the Class I shuttle trains and the 286-thousand pound hopper cars. We created research that would look at the market opportunity to begin to put grain in containers and to try and create a network. But you really can't do that as a single state. And even though we got the project funded, we were never able to find a researcher to really step forward because the relationship in Minnesota was with one university. It should be looked at to see what would create that sort of market system, to be able to market specialty grains containers.

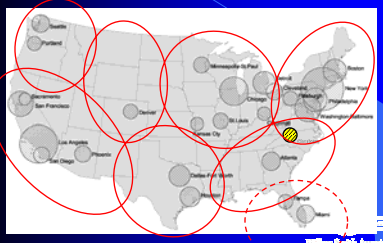
If anyone is interested in getting my slide presentation, I've got my Website address. There is material on things like the LATT study and the Latin Trade Transportation study on the Wilbur Smith Website, and there's also an I-10 corridor Website if you're interested. Thank you.

The Need and Potential for Partnerships: A Panel Discussion

ENGINEERS PLANNERS ECONOMISTS
Wilbur Smith Associates
50 Years



National Trade Areas



Report on the
Federal Highway Administration's
White Paper on:

Challenges with
Multi-State/Jurisdictional
Transportation Planning

Crystal City (Arlington), Virginia
June 18-19, 2001

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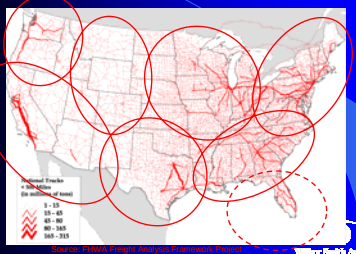
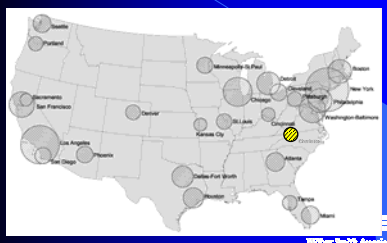
Short-Haul Truck Freight-Sheds

Trips <500 miles; All Commodities; Highway-Freight Density in Tons



Metropolitan Freight Centers



Value of Coalitions

- Coordination
- Consensus
- Multi-Jurisdiction Projects
- Special Funding

Multi-State / Jurisdictional Approaches

Coalitions

Jurisdiction 1, Jurisdiction 2
Jurisdiction 3, Jurisdiction 4

Public Sector/ Private Sector

Challenges/Opportunities

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Corridor Partnering for Freight Planning and Trade Issues

- Driven by ISTEA and TEA-21 Corridors and Borders Program
- Mixed jurisdictional membership
- Focused on highways - homogeneous
- Various degrees of "buy-in"

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Partnerships Affecting Freight and Agricultural Transport

- Advisory Councils / Commissions, e.g. MN, OR, WA, VA, KS
- Corridor Coalitions, e.g. I-10, NASCO (I-35), the Northwest Passage (I-90/I-94)
- Regional Planning Commissions or Authorities, e.g. NGP, Appalachia
- Traditional Transportation Alliances, e.g. AASHTO, RTAC

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The I-10 National Freight Corridor

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Freight Advisory Councils

- Public / private partnerships to exchange ideas, influence policy and recommend investments
- Scope limited by geography
- Limited access to project funding

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Trade / Economic Development Partnerships

- Multi-state, bi-national
- Heterogeneous agency participation
- Focus on economic development / trade enhancement through transportation improvements

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Opportunities for Regional Partnering in Ag &Transportation

- Regional risk assessments / risk management of ag-related hazmat transport
- Ag-related logistics assessments / market research for emerging high-value agriculture markets
- Rural ITS integration
- Regional partnerships for research

Traditional Transportation Alliances

- AASHTO and RTAC leaders in policy and research collaboration
- Regional AASHTO Conferences e.g. WASHTO, SASHTO have partnered for special truck operations
- Traditional boundaries don't always match freight / agriculture market needs

For More Information

Visit these websites:
www.wilbursmith.com/LATTS
www.i10freightstudy.org/

Or Contact Mark Berndt at:
mberndt@wilbursmith.com

Emerging Partnerships

- NGP Proposals:
  - Establish on-going Regional Working Groups
  - Establish a Northern Great Plains Regional Freight Advisory Committee (NGPFAC).
  - Regional funding authority
- Regional Operating Organizations
  - The Northwest Passage

Leo Penne: Why don't we hear from our three panelists and then questions/discussions related to Mark's presentation. Bruce Lambert, Federal Highway Administration, give us a couple of ideas on partnerships.

Federal Highway Administration
Bruce Lambert

I guess I get penalized for looking up at you first Leo. I want to open up with a joke. Sherlock Holmes and Watson are going camping and they were sleeping under the stars and Watson turned to Sherlock Holmes and said, "What are you thinking about? Are you thinking about how beautiful the night sky is, or about how cool and pleasant it is?" And Sherlock Holmes looked at him and says, "No, no, I'm not thinking about any of that stuff." Dr. Watson replies, "As we lie here in our sleeping bags and look up at the sky, it's really a beautiful inspirational view." And Sherlock Holmes says, "I know that, but I'm really thinking about who stole our tent."
My panel was on international exports. International trade reflects the microcosm of everything that agriculture faces related to basic transportation. Moving the product from the farm gate, into the domestic system, getting it to a port or border facility, requires many steps and transfers. The export shipments seem to reflect all the challenges that agriculture faces regarding capacity, equipment availability, seasonality, truck standardization regarding size and weight. It was really remarkable that the themes of the export markets kept coming up over and over in the conference, with discussions about how new markets were emerging, requiring new transportation linkages.

In some ways, it's obvious that we depend on transportation moving commodities in and out of our nation. The reasons our maps were initially created was simply to convince people that their freight moved beyond their state. It was not only the bridge traffic or through traffic that you should consider, but simply that you have an economic need to support your economy that goes beyond your border and vice-versa. And that's what those maps were originally designed to do. Of course they have been used in a lot of other forms and for a lot of other things.

We also discussed the competitiveness of the transportation system, looking at how to be efficient in supporting these export markets.

We had a discussion on how container shipping is changing and its relationship to agriculture. One of the things that was not mentioned was the larger container ships that are coming on line with more reefer capacity than the general reefer ship.

I find there are three ways that we can improve capacity. We can add new infrastructure. We can add information on the system. We can have institutional change. The most cost effective thing would be institutional change, the way we approach each other in our partnerships. And one of the interesting things that I've experienced in DOT is how there's been a gradual change in the way we look at transportation. It's more: "I'm not Federal Railroad, or I'm not MARAD. It's more of a common responsibility for the transportation system shared by everyone." And when you go into talk to other people, you're seeing that same recognition that I'm one of many and we can do this together. Of course, the institutional change is the hardest to initiate, and requires the most effort. It takes a champion and requires the most commitment by all the parties involved, yet it's the most cost-effective and has the largest benefit for all in the long run.

Colorado Department of Transportation
Randy Grauberger

Thanks Leo. Leo's been twisting my arm over the last month. First, to get me to come to this conference. We were hoping that our executive director, Tom Norton, who chairs AASHTO's special committee on freight, could be here but he was unable to so.

And I've got to tell one little story about Leo. I told him yesterday that I would mention this. When he got here to the hotel, on Thursday afternoon, I was already here and he knew that I hadn't ever been to Fargo before so he wanted to show me around and so we hopped in his rental car and headed south on the highway and he's describing various things about North Dakota and we're coming upon a town and I said, "Oh, it looks like this is Wahpeton (correct pronunciation) and he said, "Well, no, it's Wahpeton." And we kind of argued back and forth and I said, "Well, you know, I'm not from up here, but it looks to me like it's probably Wahpeton." And "nope, it's Wahpeton." So we decided to get a little adult beverage, wagered on this and he said he was going to pull over, stop and ask the first person that we could find to please sort of settle this little dispute, so Leo comes up to this individual and says, "Okay, I would like you to very slowly and distinctly pronounce the name of this place." And the guy says slowly and distinctly, "Ta-co Bell."

I have really enjoyed this conference. You know Leo asked the other day if I was learning anything. And I have been following Tom Norton around to a lot of national meetings regarding freight, but this one was the first one, as a lot of you have heard, that really focused just on agriculture, so I certainly have learned lots of things and I'll highlight just a couple of those here.

I lived on a farm, my uncles and grandparents lived on farms. But, I've never heard such a good explanation of the Farm Bill and the reason why we have a Farm Bill is what we heard from the Senator today. I thought that was very interesting. As we talk about partnerships, in Colorado now, the department is working pretty closely in trying to initiate some public-private partnerships with Burlington Northern Santa Fe and the Union Pacific Railroad. They, in the front range of Colorado, are literally at capacity in their lines as well as in their yards in intermodal facilities and they're in no position to see anywhere near this 100 percent growth in their business over the next 20 years that everybody's talking about. And also, the front range is very constrained due to highway capacity issues and the need for some passenger rail, so the department is starting to initiate some conversations with the two class ones and the regional transportation district regarding the potential for the railroads relocating their north-south through lines that are currently carrying around 30 unit coal trains a day of Powder River coal down into Texas.

If we can get that out of the front range communities and out into the eastern plains where there's still some available capacity, that would not only relieve the communities from that kind of heavy freight and congestion but could free up those lines for some passenger services. In the 20 years I've been involved in railroad planning with the department, we have never had this quality of discussions with the railroads, so we're very anxious to proceed with that. The gentleman from the Burlington Northern Santa Fe referred to his corporation's change in attitude yesterday and I would certainly concur that that's the case. In terms of other kinds of partnerships, the state is currently working with the states of Nebraska and South Dakota to formalize the entire route designation of the Heartland expressway. Nebraska and South Dakota pretty well determined the northern part from Scotts Bluff north to Rapid City a few years ago.

We have just completed working with Nebraska to identify the southern piece and we have proposed to go forward to FHWA and Congress to get that formal designation. Similar to what we have just done in the past year with Texas, Oklahoma and Nebraska in identifying the specific route through the Wilbur Smith study of the Ports to Plains high priority corridor. And again, we certainly support increased money in that program. The $3 million per state per year is not anywhere near enough money to do the kinds of work that are being identified. So we believe that there is some power in partnering with the other states instead of having each state independently go forward. There has been a lot of talk in previous meetings that I've been to in the past year, about how the United States has such a high level of transportation system compared to the rest of the world. Today I've heard from several speakers today that that dominant position is sliding, and sliding quickly.

We, in Colorado, too, are looking at developing a statewide freight advisory council. So I'm anxious to talk to those of you that have them and seeking some information from you in terms of what works with yours, what doesn't work. But through that Eastern Colorado freight mobility study that I've been project manager for the past 18 months, we had a 33-person advisory committee, that was made up of various regional representatives – the railroads, the trucking firms, our CDOT regional folks, the feds, Office of Economic Development of the Governor's offices and others.

We found out early on that we really needed to have a special freight working group within that committee. So we set up a freight working group and got some very good input from those folks and that really led us to the realization that we need to develop that kind of working group to advise the state on freight issues on a statewide basis, not just for the eastern plains. Thanks, Leo.

Washington State Department of Transportation
Jerry Lenzi

Well, I believe in terms of partnerships, I'm preaching to the choir here. But we have to be disciples and talk with folks to get other people to really understand. I don't think people really understand transportation and its relationship to the movement of goods, services. The Senator put it very well. Food's one of the things we have to have. We move food all over this country, export it, import it. People don't understand their economic viability depends on transportation.

We built a very good transportation system in this nation in the 40s, 50s, 60s and 70s. And it had the capacity to be useful. We've stopped. We've used that capacity. It was a legacy system. We've used it and we've gone beyond that and now we're abusing it.

In Washington one in four jobs depends on import/export. In terms of partnerships, it's not just government, it's got to include the private side. It has to be ports. We do have some things going. We have a freight mobility strategic investment board. It's a state agency that is tasked to look at freight investments and what resources they have to invest. We also have some other groups. I happen to be from Spokane, which is on the east side of Washington State. We're working with the Burlington Northern Railroad, the Union Pacific Railroad, our MPO, Spokane County and Kootenai County, Idaho, as well as the two DOTs to try to get the Union Pacific railroad tracks that parallel the BNSF tracks ten miles south, and put them both into the same corridor. Surprisingly, the Burlington Northern at this point is very interested, as the UP is, and they're willing to move on and now it's like the Jerry McGuire movie, "show me the money." So we're putting together some financial resources to actually start implementing the design.

We have to get the person out there on the street, having the ice cream cone, the wonderful filet mignon, to understand that it's the transportation system, it's the partnerships, and we've got to invest in those. Until we get there we're going to have meetings like this, which is very important, where we understand and we believe, but for some reason, a lot of the folks out there don't until we're hit with a problem. And then when they're hit with a problem they're flabbergasted. So I think it's incumbent upon all of us to go back and try to spread this word, encourage people and basically be supporters of transportation.

Leo Penne: Gentlemen, thank you.

I think this panel has done exactly the job they were asked to do, which is to begin the lunch conversation. And so, we will close here in a moment after a couple announcements and then move directly to lunch.

Sometimes you say you have the obligation but in this case, obligation would not be the right word. I have the great personal pleasure in acknowledging the work that the Upper Great Plains Transportation Institute has done on this Forum. You've heard from John Horsley on behalf of AASHTO. The National Cooperative Highway Research Program (NCHRP) provided the funding needed for the Forum at the request of AASHTO, part of a series to make the point that the major sectors of the U.S. economy are dependent upon efficient transportation system.

We all know Gene Griffin didn't do all the work. But, his efforts and perhaps most importantly the high regard that others around the country have for Gene, has led to their participation in this conference. Gene has done a phenomenal job with a national conference in somewhat difficult circumstances and has put together a phenomenal program.

This has been a conference of real significance and a conference that would have been unimaginable without the work of Gene Griffin. But beyond that there are other people with the Institute, not all of whom I know by name I'm afraid. Mitch Hoffart, of course, helped everybody who doesn't know how to run their PowerPoint. Kathy McCarthy is the person that I have had the most direct working contact with, and in my many years of being associated with meetings, conferences of various kinds, I have never run across anybody who is both as competent and as calm as Kathy and this is a wonderful combination. On behalf on AASHTO, and I would assume on behalf of everybody here, thanks to Kathy for her work. Thank you all very much.

We now will move from this room to the next room for lunch. As an added incentive we have a list of those who are in the room. If we don't see you in the room, we will call your spouse and ask them why you never made it to North Dakota.

Conference Wrap-Up

Leo Penne
AASHTO Facilitator

It is often the case that when you leave a conference you individually may leave with something in your mind, but the group has made no effort to pull ideas together, arrive at any conclusions, or make any recommendations. When you go home, someone will say, "Well, what did you learn?" And there will be something in your mind that struck you as being important, interesting and of interest to other people. So let's aggregate them here.

What are the big ideas? Other people will ask, especially if you're a researcher, if you heard anything that made you think about what we need to learn. Do we have questions that you want answered, that you think are important for this subject, that might involve research or may simply involve calling up somebody and asking them? What important questions were raised but not answered at this forum?

And finally, actions. I'm thinking little actions. Saying that an important action is that Congress should pass the reauthorization of TEA-21 is all well and good. But, you and I are not going to pass TEA-21. What can you or your organization do as a result of something you learned here?

Let's agree that we can't get out of this room until we have at least ten big ideas, ten questions that are important and need to be answered, and ten small things that you can do. Not things somebody else can do, but you can do.

(From the audience) We can communicate support for the work that the FHWA freight people have done on data and analysis, either to Mary Peters, the FHWA administrator, or to the Secretary or through your trade association, in whatever avenue is available to you.

(Penne) Here is an important communication item. What else? Any big ideas?

(From the audience) Balancing trade and security objectives.

(Penne) How do we make the trade off? You can have total security if you have no freight movement. And the security people would be perfectly happy, since they're in the security business. They're not in the freight movement business.

(From the audience) How do you coordinate trade and transportation policy to get the types of transportation investment you need for the kind of production you will be doing?

(Penne) So, the big, big question is what agricultural production will make the greatest contribution to the U.S. economy, in light of global competition, over time and what does that imply for transportation? For example, what does the Farm Bill imply for transportation? If we change policy tracks for agricultural production, are there transportation implications and implications for competitiveness in international markets as well? But, that's what Gene Griffin does, isn't it? Figure out what's going on with agriculture and then figure out how that translates into transportation.

(From the audience) There should be more support for freight transportation research so that we can make informed decisions concerning transportation and agriculture and other products that are moved on the transportation systems.

(Penne) So, are you lobbying for funding for the Jim Dunn study? I think that's a very good idea. The actual proposal for the creation of a cooperative freight research program sounds like kind of an insignificant item, but that would put freight transportation into the same category as transit and the National Cooperative Highway Research Programs the important thing. But regardless of what happens with that, if there are people here who have important ag transportation research proposals, and if AASHTO can help try to advance those through the NCHRP or in other ways, AASHTO would be happy to do that.

(From the audience) The importance and operations of freight transportation in general and agriculture transportation in particular is not understood by very many people.

(Penne) The shippers actually know less and less about how their product moves. There are more intermediaries involved and the shipper is saying, it has to get from here to there by tomorrow. That's what I pay you to do. Until some serious problem arises, the shipper really may have no sense of what's happening between origin and destination and doesn't care, as long as he can find somebody who will do that job. So public information is top to bottom, side to side. Take intermodal connectors, the last mile. It is generally thought that many intermodal connectors don't get done because they are within the area of metropolitan planning organizations who are concerned about commuters but don't have representation from the freight community. Or the freight community just doesn't have the staying power and the understanding of the process to be involved. So nobody understands the importance of the project and the project just doesn't get done.

(From the audience) How do we get enough attention focused on trade with Canada?

(Penne) How many people were surprised by the numbers that Jerry Nagle put up yesterday? I was. I , I had some kind of vague notion that Canada is our biggest trading partner, but the numbers were a revelation to me. And it seemed to me to be very important.

(From the audience) We need to make major transportation infrastructure investments to meet the current and projected demand.

(Penne) This is a big idea. At the time of the passage of ISTEA, Senator Moynihan declared that we were in the post-interstate era. I worked for the state of Nevada. The state of Nevada was not in the post-interstate era. Interstate 5, that runs through or around Las Vegas, was built for an uninhabited area. Las Vegas has been the fastest growing area in the country for the last two decades. And the interstate has been rebuilt, in the post-interstate era, for the most part, including a beltway, started without federal money.

The nation that existed in 1956 does not exist in 2002. The population is not where it was, the economic activity is not where it was. The origins, the destinations are not what they were. The trading partners are completely different. But we are operating with the ports of the colonial era, the waterways of the 19th century, the railroads of the turn of the century, the highway system of the mid-20th century and airports that are locked in now. So it's not simply condition of infrastructure, but the configuration of infrastructure, suitability of infrastructure, the adequacy of infrastructure for freight and agricultural freight, transportation.

What the data people tell me about freight transportation makes one wonder how you arrive at any kind of accurate picture of what's going on. Time-of-day data truck shipments, for example. You observe that you have urban congestion. You see trucks and you leap to to the conclusion that trucks are a major contributor to urban congestion. But if you don't know how many at what time, from where to where, you don't have a good sense if you're right or what to do about it. The U.S. is not going to have a massive transportation infrastructure refinancing program. You are not going to add 10 percent, 20 percent, to the highway system over the next 10 years. Knowing exactly what the problem is, where it is and what's to be done about it, seems to be very important so that you can target scarce resources.

For example, Alan Meyers and his colleagues have done the Mid-Atlantic Rail Study. It identifies major choke points on the freight and passenger rail corridor on the Eastern seaboard. They have identified those points and they have estimates of what it costs and when you would have to spend to remedy those problems. It turns out that it looks manageable. In the abstract you might say we could never spend enough money so we could move freight efficiently up and down the East coast. But when you do the analysis, the need is for a few billion dollars over 20 years, which is doable.

(From the audience) We need policies to encourage shifts among modes that make sense for freight transportation.

(Penne) Do you want to put modal-shift, modal trade-offs on the list? Okay. Others?

(From the audience) What can be done to overcome the environmental obstacles erected to slow or stop infrastructure construction?

(Penne) Add the problem of advocates for environment and safety viewing the construction of, or the improvement of, roads as an enemy.

(From the audience) Corn and ethanol seem to be on several sides of the agriculture and transportation subject.

(Penne) When you mention ethanol, I think of financing infrastructure, because of the threat to the highway trust fund in the increased use of ethanol and the exemption of ethanol from the gas tax. So I would put up here in the big questions category, financing transportation infrastructure. That's so big that it covers dozens of subjects. I don't think you could walk away from this kind of conversation without thinking about that.

(From the audience) Should the federal government make large direct investments in transportation to support international trade?

(Penne) That seems to me to be a very big, very important question. You have a national trade transportation system. You can describe what moves, how from where to where. And that is the national trade transportation system. It is created by decisions that are dispersed through tens of thousands of businesses, thousands of local governments, 50 states and all kinds of other entities. The federal government could say there are 12 ports in this country that are critical to economic competitiveness of the nation; we need about $20 billion to make the improvements necessary for them to operate as efficiently as they possibly can; we are going to take that $20 billion out of the highway trust fund. This would be a national program, nationally administered directly from the federal government to the ports. Would the world be better off in 10 years as a consequence? I happen to think not.

AASHTO is supportive of investment in the freight transportation infrastructure outside of the highway trust fund. There is a tendency for many to think that the highway trust fund or TEA-21 is the only possible source of transportation funding, which is not true.

For example there is legislation to expand and correct the RRIF program that provides loans to short line railroads so that it would actually work. When people ask why we don't let the federal government run the national freight program, I think, we have a short line, loan-loan guarantee program that was authorized in TEA-21 in 1996. They haven't funded a project. The federal government can't make it work. So you have on the books a program that could provide financing for short lines, for the kinds of purposes discussed here. But in federal government hands it is not working. In the meantime, there are states that have state-funded short line financing programs, which, I think, are mostly modest, but they are actually doing it. There are lots of things that are national in scope but they are not an exclusively federal government responsibility.

Well, I think we have exhausted ourselves, if not the subject. The Forum stands adjourned.

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