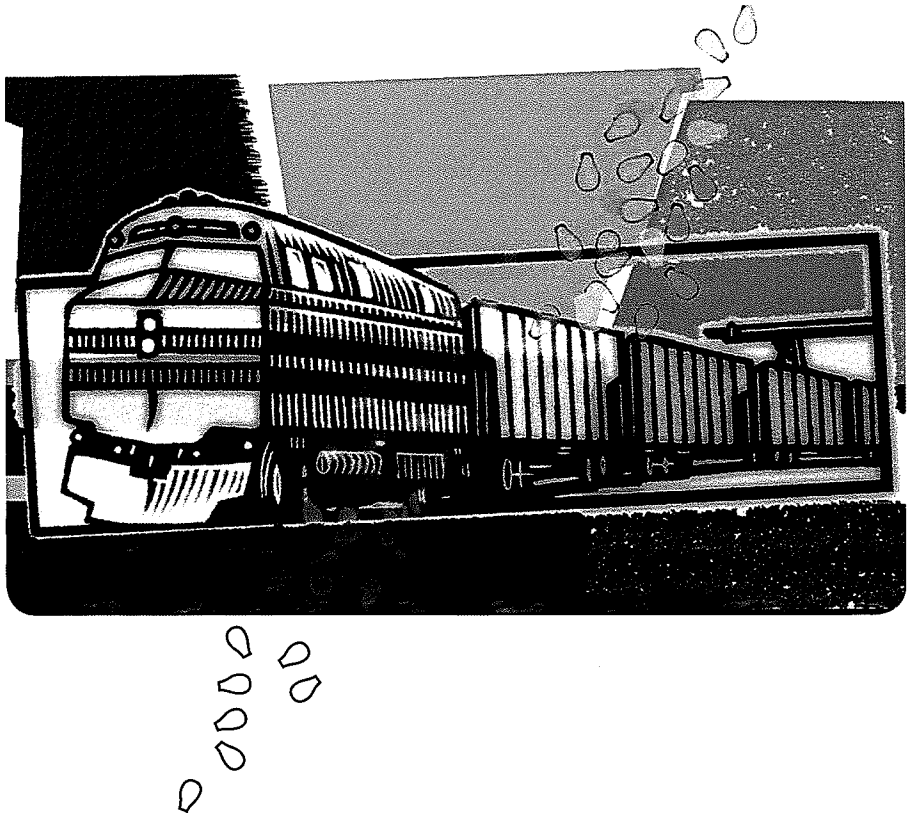
# INTERMODAL ACCESS FOR WEST-CENTRAL MINNESOTA

A Preliminary Feasiblilty Assessment

06 - 0144



January 2006


MINNESOTA DEPARTMENT OF AGRICULTURE

FROM THE FARM TO YOUR FAMILY

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November 23, 2005

Kurt Markham, Director
Agricultural Marketing Services Division
Minnesota Department of Agriculture
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St. Paul, MN 55107-2094

RE: Intermodal Access for West-Central Minnesota Feasibility Assessment

Dear Mr. Markham,

Thank you for the opportunity to review this study. Given the short timeline and the many issues that needed to be addressed, you and Ms. Jennifer Kocs are to be congratulated for a study well done.

We concur with the primary conclusion of the study that the conditions necessary to establish a successful Intermodal Facility in West-Central Minnesota are not presently in place. Specifically:

- An intermodal rail terminal must have a railroad to serve it. It appears that the 100,000 lifts thresholds identified by the class I railroads is not there.
- The potential grain/grain products market identified in the study is not sufficient to support a separate intermodal terminal in West-Central Minnesota.
- The predominantly outbound nature of the grain/grain products available for movement creates an imbalance of freight flows. That makes it very difficult to position containers needed for outbound loading and puts the full cost burden of operating the terminal on the grain shipments.
- A strong private sector interest in the project is vital to assure potential volumes can be committed to the project. The study was not able to identify that needed support.

While the required elements for a successful project were not found, circumstances are continually changing and your suggestions that if a business that could provide significant container loads of product were to locate in the vicinity, it should stimulate a review of the viability of this idea.

Thank you for including Mn/DOT in the review process for this study.

Cecil L. Selness

Director, Office of Freight & Commercial Vehicle Operations
Minnesota Department of Transportation

c: Jennifer Kocs
Robert Gale

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***This study was conducted in cooperation with the Minnesota Department of Transportation.***

## Executive Summary

In 2005, the Minnesota legislature assigned the state's commissioner of agriculture, in consultation with the commissioner of transportation, the task of conducting "an economic impact study of a rail container load-out facility located in the west-central area of Minnesota." The study was to "include benefits of a facility to the region and to the state transportation system." Methods used to accomplish this included surveying shippers, interviewing railroad representatives, and examining other studies conducted for similar areas.

For the purpose of this study, a "rail container load-out facility" is defined as an intermodal terminal, whether one using traditional equipment to lift containers and trailers on and off the rail, or a facility that utilizes alternative technology to build trains carrying containers and trailers. The "west-central area of Minnesota" consists of a 17-county area west of the Twin Cities' metropolitan area and follows the Clean Energy Resource Team's West Central definition.

Even as the use of containers for shipping has increased, the number of intermodal terminals in the U.S. capable of handling containers has decreased. Class I railroads are closing smaller intermodal facilities in favor of developing a system of central terminals that gather freight from larger draw areas. This system allows them to gather significant volumes at each hub to build dedicated trains that travel long distances to ports and other large terminals. Efficiency is gained by eliminating stops at intermediary points where the volumes are smaller.

Minnesota currently has three intermodal facilities that handle both containers and trailers, Minneapolis, St. Paul, and Dilworth, located east of Moorhead. These facilities use a piece of heavy machinery called a packer to lift containers and trailers on and off flatcars. In addition, there is a facility in Minneapolis that puts trailers on rail through use of an alternative, bimodal technology, which utilizes special chassis that can travel both on the rail and over the road.

Identity preservation (IP) and traceability have fueled the trend of containerization of agricultural products, but many producers in the west-central and southwestern parts of the state are at a disadvantage when trying to compete in international markets where demand is greatest because of the distance to existing terminals. With better access to intermodal shipping options, Minnesota companies could be in a very good position to serve export markets for IP corn, soybeans, soybean meal and distiller's dried grain with solubles (DDGS), a co-product of ethanol production used as a feed ingredient.

Review of previous studies and interviews with railroad representatives highlighted certain factors necessary for the creation of a successful intermodal terminal:

1) Volume: 100,000 lifts for establishing a new traditional intermodal hub; around 20,000 lifts to maintain an existing hub; **but as little as 7,000-20,000 lifts for a bimodal hub utilizing alternative technology.** (A "lift" is a movement either

onto or off the rail; therefore, utilization of one unit—container or trailer—generally requires 2 lifts.)

2) Balance of traffic: Incoming as well as outgoing; use of both 20' and 40' containers; lighter, high-value products moving along with the heavier, lower-value commodities.
3) Density of destination: Sufficient traffic moving to the same destination in order to build dedicated trains.
4) Cooperation of operators: Many containers are owned by the steamship lines, and they have the ultimate say as to where and how the containers move. With their cooperation will also come the cooperation of the railroads. Clear economic benefits must exist for all parties involved in order to establish a successful terminal.
5) Commitment of area businesses and the community: Shippers must make use of the terminal in order for it to succeed, and the community must be willing to support its use and potential growth.

A survey of identified shippers in the west-central and southwestern areas of the state was conducted to determine current patterns of intermodal use. The response rate was low (16%), but included manufacturing companies, producers of retail food products, as well as shippers of agricultural commodities. Companies currently using intermodal transportation are primarily utilizing the terminals in Minneapolis and St. Paul. Respondents estimated that they are receiving about 600 units, and shipping out about 3600 units annually. (One unit equals one container or trailer of any size.) Together this would equal around 4200 units (8400 lifts) per year. Extrapolated to cover all businesses in the draw area, total potential volume is estimated to be in the range of 51,000 – 54,000 lifts per year.

Because estimated volumes are currently below the minimum threshold of 100,000 lifts cited by Class I railroads to service a traditional intermodal terminal, several strategies could make intermodal feasible in the future.

1) Remove existing barriers to intermodal in the west-central area to encourage the viability of a terminal in the future:
   a) Focus efforts on building volume of intermodal use in the area
   b) Consider creative solutions to traffic balance issues, such as incentives for those bringing in containers, or the possibility of manufacturing containers in the area
   c) Reconstruct the low bridge over the BNSF line in northeast Minneapolis to allow double-stacking of containers on trains moving west through Willmar
2) Explore the possibility of an intermodal terminal on a short line or regional railroad
3) Work with neighboring states to develop a coordinated intermodal plan:
   a) Work with North Dakota to insure continued service at Dilworth, which has been threatened with closure for many years
   b) Advocate for a terminal to service the tri-state area (MN, IA, & SD)

If a terminal were established, jobs would be created and economic benefits realized as a result. Each dollar invested in the transportation industry results in three dollars re-

spent in the regional economy. A new terminal could attract development of agricultural-related processing or manufacturing facilities. For each dollar of wages in the agricultural processing and miscellaneous manufacturing industries, about 4.5 dollars are contributed to the regional economy.

If the intermodal terminal at Dilworth can be made to remain viable, and a new terminal were established to service the west-central and southwestern areas, the state could also benefit by fewer trucks operating in the Twin Cities metropolitan area, less damage to roads and bridges from fewer ton-miles, and lower emissions. Freight volumes and the demand for intermodal freight are growing in Minnesota along with the rest of the country. In order to remain competitive, Minnesota's freight transportation system needs to have adequate capacity and services, including intermodal.

In addition to private investment, possible funding sources for a new terminal could include federal and state transportation funds, particularly those aimed at railway improvement, such as Rail Rehabilitation and Improvement Financing (RRIF), USDA Rural Development Programs, and state & local economic development resources. The most likely scenario would be the use of a combination of these.

While a west-central intermodal rail facility on a Class I railroad line does not appear to be feasible at this time, efforts should continue to increase shipper demand, stimulate railroad interest, consider alternative technologies and locations, and further understand the requirements for such a facility.

SECTION I.

## 1. Introduction and Methodology

In 2005, the Minnesota legislature assigned the state's commissioner of agriculture, in consultation with the commissioner of transportation, the task of conducting "an economic impact study of a rail container load-out facility located in the west-central area of Minnesota." The study was to "include benefits of a facility to the region and to the state transportation system."

Methods used in conducting this study included:

1) Examine previous studies conducted for other geographic regions with characteristics similar to west-central MN.

2) Identify potential users of a facility through freight database information, Chamber of Commerce membership, and local economic development organizations.

3) Survey shippers and importers to determine current freight patterns and estimate future volume.

4) Interview railroads to determine feasibility and interest.

5) Estimate economic impact with regards to transportation, agricultural, manufacturing, and related industries.

6) Identify potential funding sources.

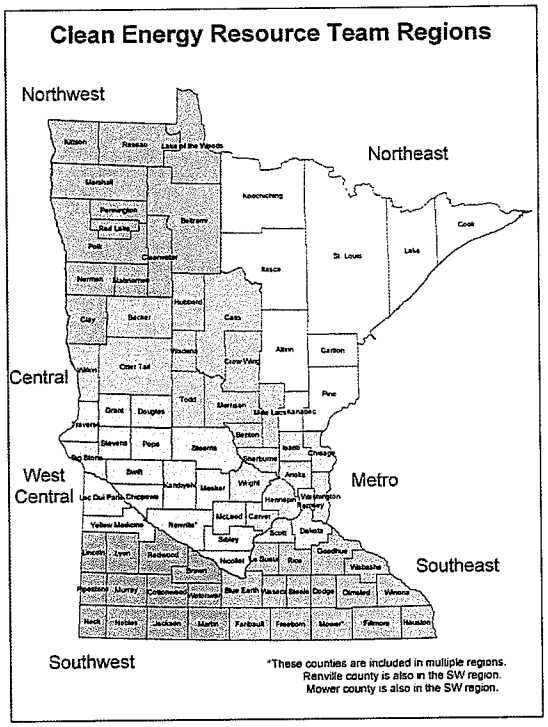
## 2. Definitions

### *A. Legislative language definitions*

***Rail container load-out facility*** A rail yard with the equipment, space, and staff necessary to put containers and trailers on the rail. This could be a "traditional" intermodal terminal with a packer to lift containers and trailers onto flatcars/wellcars, or it could be a ramp or yard that would utilize other technology to move containers and trailers onto the rail.

***West-central area*** For purposes of this study, the "west-central area of Minnesota" is defined as consisting of the following counties: Traverse, Grant, Douglas, Stevens, Pope, Stearns, Big Stone, Swift, Kandiyohi, Meeker, Lac Qui Parle, Chippewa, Yellow

Medicine, Renville, McLeod, Sibley, and Nicollet. This is consistent with the Clean Energy Resource Teams West Central region definition.




## B. *Intermodal definitions*

(from Intermodal Association of North America website glossary)

Bogie A frame with wheels on which a container is mounted for street or highway transport. Commonly referred to as a chassis.

Chassis A rubber-tired trailer under-frame on which a container is mounted for street or highway transport.

COFC (container on flat car) The movement of a container on a railroad flat car. This movement is made without the container being mounted on a chassis.

Container A receptacle that resembles a truck trailer without wheels (chassis) that is lifted onto flat cars. Containers are designed for all modes of intermodal transport. Most containers are 20, 40, 45, 48 or 53 feet in length.

Container Yard A yard used for storage of containers when not in use. Container yards can be railroad or privately owned.

Crane A large machine that straddles the railroad track for the purpose of loading and unloading containers and trailers to and from railcars.

Dedicated Train A train that by design transports a dedicated commodity or type of cars. In the case of intermodal, intermodal trains only carry trailers and/or containers.

Double-Stack The movement of containers on articulated "well" cars which enable the one container to be stacked on another container for better ride quality and car utilization.

Drayage The movement of a container or trailer to or from the railroad intermodal terminal to or from the customer's facility for loading or unloading.

Intermodal Transport of freight by two or more modes of transportation. Examples are: ship-rail, rail-truck.

Intermodal Terminal A railroad facility designed for the loading and unloading of containers and trailers to and from flat cars for movement on the railroad and subsequent movement on the street or highway.

Lift The process of moving a container or trailer to and or from a rail car.

Packer A moveable piece of heavy machinery used to lift rail containers or trailers on/off railroad flatcars at an intermodal facility. Also known as a "piggybacker".

TOFC (trailer on flat car) A truck trailer or container mounted on a chassis that is transported on a rail car. Also known as piggyback.

Trailer A rectangular shaped box with permanent wheels attached for the transport of goods on rail, highway or a combination of both.

Transload To physically transfer product from one transportation vehicle to another.

## 3. Background

Since their introduction, the use of shipping containers for both domestic and international shipments has grown steadily. The Intermodal Association of North America (IANA) reports that containers transported on rail grew from 7,718,853 units in the year 2000 to 10,283,491 units in 2004, a 33% increase.

**Annual Intermodal Volume Figures, 2000-2004**

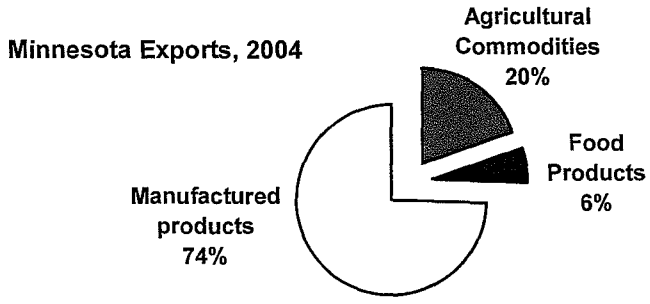
| | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|
| **RAIL INTERMODAL ACTIVITY** | | | | | |
| Containers | 7,718,853 | 7,921,213 | 8,588,822 | 9,472,518 | 10,283,491 |
| Trailers | 2,646,502 | 2,413,933 | 2,345,508 | 2,424,407 | 2,639,545 |
| *Total Rail Intermodal Volume* | *10,365,355* | *10,335,146* | *10,934,330* | *11,896,925* | *12,923,036* |

**Source: IANA's *Intermodal Market Trends & Statistics Report***

A more recent phenomenon is the volume of agricultural products being exported in containers, fueled by food manufacturers' interest in obtaining commodities with certain traits (identity-preserved), and consumers' interest in food safety (traceable).

Minnesota is the nation's seventh largest exporter of agricultural products. In 2004, the state sent almost $2.9 billion worth of agricultural commodities, food, and related

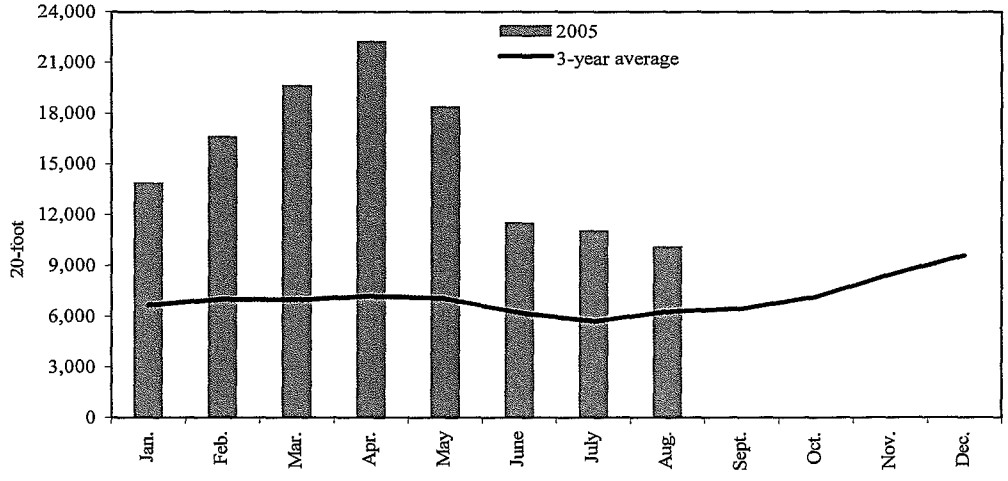
products abroad, in addition to the $10.89 billion of manufactured products exported. Hurricane Katrina caused damage to ports, elevators and barges just before the 2005 harvest, exacerbating congestion on railroads and waterways. This was coupled with record yields and has resulted in millions of bushels of grain being stored on the ground awaiting transport. Even before this, the Minnesota Legislature recognized the need to review the situation to determine if locating an intermodal facility in the west-central area of the state would assist in economic development, lessen highway congestion in the metro area, and boost the competitiveness of Minnesota's agricultural products around the world.




Source: Minnesota Annual Export Statistics, Rev. May 2005

98% of US agricultural production is moved to its final destination in bulk, via rail hopper cars, barge, and by vessel. This is in contrast to the 2% of grain that moved in containers in 2004. While bulk transport will continue to dominate, containerization of grain for export has been increasing. A report recently completed by Pollack Logistics for the American Soybean Association & United Soybean Board (ASA/USB) found US soybean exports in containers increased 32% from the year 2000 to 45,700 TEUs (twenty-foot equivalent containers) shipped in 2004. Port Import Export Reporting Service (PIERS) data published by the USDA's Agricultural Marketing Service shows that trend continuing strongly, with shipments of containerized grain to Asia well above the 3 year average for the first seven months of 2005.

**Monthly shipments of containerized grain to Asia for 2005 compared with a 3-year average**




Source: Port Import Export Reporting Service (PIERS), *Journal of Commerce,* through USDA AMS

In the past, containers were considered an option only for high-value markets, such as processed food and specialty grains. More recently, however, food and feed manufacturers are seeking out trait-specific or identity-preserved (IP) raw materials on a larger scale, and these are often shipped in containers to insure quality and segregation.

For example, it was recently publicized that 500 metric tons of distillers dried grain solubles (DDGS) were marketed by an Illinois company to Vietnam. This is generally a low-value commodity, but it was sold as an IP value-added product because of its high amino acid levels. This allows the feed manufacturer to decrease other inputs and reduce costs, and some of the savings stay with the producer and processor in the form of increased premiums.

Minnesota has 16 ethanol plants operating or under construction, producing 1.4 million tons of DDGS. Of these, 8 are located in the areas that would likely be served by an intermodal terminal in the west-central area (see explanation in Section II, 7. Survey and Data Analysis). In addition, there are two soybean crush facilities in the area, producing soybean meal that is sold domestically and for export. With better access to intermodal shipping options, Minnesota companies could be in a very good position to serve export markets for IP corn, soybeans, soybean meal and DDGS.

Another reason behind increased use of containers is the cost of bulk freight. In the fall of 2003, the rate to move one metric ton of grain from Gulf of Mexico ports to Japan was around $45, up from around $30 earlier that year. Since then, bulk freight prices have fluctuated widely, reaching a peak of over $70/mt in March 2004, and by September 2005 moving back into the $45/mt range. The ASA/USB study concluded that containerized shipments of grain can be competitive any time the bulk freight rate moves above $45/mt.

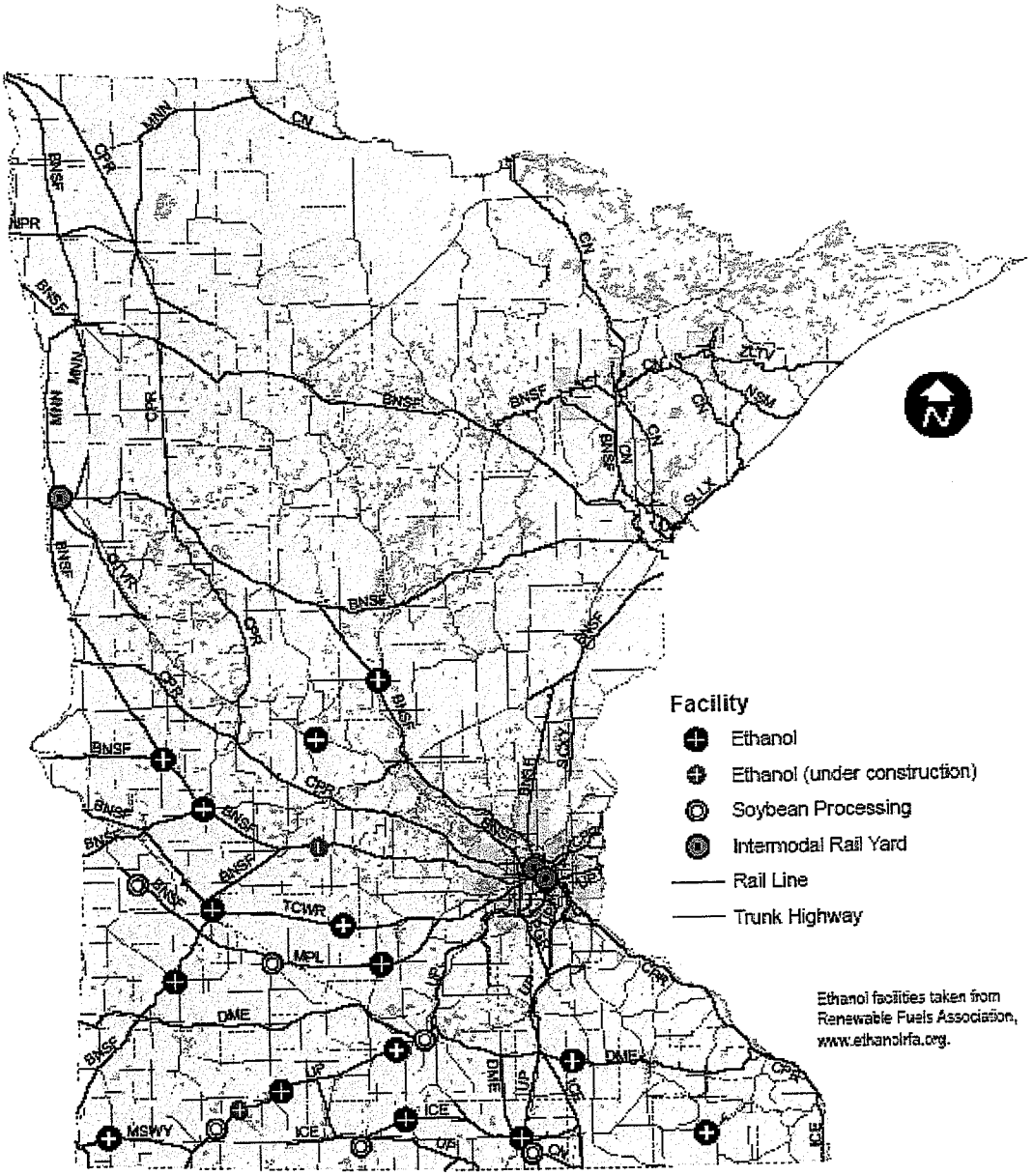
Minnesota currently has three intermodal facilities capable of lifting containers and trailers on or off the rail. Two of these are located in the Twin Cities: the Burlington Northern/Santa Fe's (BNSF) Midway Yard in St. Paul and Canadian Pacific's (CP) Shoreham Yard in Minneapolis. Another similar facility is located in Dilworth, a few miles east of Moorhead, and is serviced by the BNSF. There is also a facility in Minneapolis that handles trailers on rail using "bimodal" technology, an alternative system of equipment that allows trailer chassis to move both on the rail and over the road. That facility is operated by Triple Crown Services and is serviced by the Union Pacific Railroad.

Shippers in the west-central and southwestern areas of the state wishing to use intermodal transport for container shipments generally have two options for loading containers with product:

1. Transport their goods by truck or rail to a transloading facility that can transfer the product to containers.
2. Transport empty containers to their facility by truck for loading, and deliver loaded containers back to the intermodal terminal.

While adequate for some, other shippers have reported problems with these methods. For value-added agricultural products going to export markets, identity preservation and traceability complicate the use of transloading facilities, which can increase the likelihood of commingling and product damage. Loading product into a

# Minnesota Intermodal Rail yards, Ethanol & Soybean Processing Facilities



container and sealing it on-site is considered the best option for guaranteeing quality and food safety, and is a customer requirement in some cases.

However, many shippers are located relatively long distances from intermodal terminals, and the higher cost associated with individual containers being hauled over-the-road puts them at a competitive disadvantage. The irony for many shippers is that the farther west they are located in Minnesota, the more it costs them to ship a container to the west coast. The ASA/USB study found that due to drayage costs, "soybean sources in the range of "50 miles" around ramps – with single line rail service - would be logical draw-area maximums for competitive container freight development." That would put all of the locations listed below out of competitive range.

**Sample distances from the west-central area to Minnesota's intermodal facilities**

| | Twin Cities | Dilworth |
|---|---|---|
| Appleton | 139 | 153 |
| Benson | 121 | 139 |
| Glenwood | 128 | 131 |
| Montevideo | 125 | 171 |
| Willmar | 89 | 183 |

In addition, ongoing concerns have been reported regarding operations and the future viability of the intermodal facility in Dilworth. In a recent study, the Upper Great Plains Transportation Institute surveyed shippers within 100 miles of the Dilworth facility, and found "problems with obtaining equipment, service, and rates at the facility." It was reported that of companies using intermodal shipping, 50 percent utilized the facility at Dilworth, but it only accounted for 10 percent of potential intermodal volume in the study area, with the highest volume going to Twin Cities' terminals, and second highest volume going to Winnipeg. One obvious reason for this is the higher container rates quoted from Dilworth.

The following example shows the estimated cost of shipping a container of grain from Alexandria to Tokyo. Generally a 20' container can be loaded to around 45,000 lbs, or roughly 750 bushels of wheat or soy. In this case, shipping through Minneapolis saves an estimated $266.80, representing a freight cost savings of $0.36 per bushel.

Via Dilworth
Trucking 117 miles: $315.90 + Container rate: $1,759 = **$2,074.90**
Freight cost per bushel: $2.77

Via Minneapolis
Trucking 133 miles: $359.10 + Container rate: $1,449 = **$1,808.10**
Freight cost per bushel: $2.41

Trucking rates are based on $2.25/mile plus 20% fuel surcharge.
Container rates are actual quotes from one shipping line for bagged product moving on BNSF through Tacoma port to Tokyo.

If rates at Dilworth were equal to those at Minneapolis, the total cost of shipping the container would be reduced to $1,764.90, or $2.35 per bushel, for a freight cost savings of $0.06 per bushel. In this case, because the distance to the intermodal facility is shorter, there would also be fewer truck ton-miles on Minnesota roads. There would also be time cost savings for the trucker, since Twin Cities' traffic congestion can be avoided, and higher return on assets for the trucking company with more round trips accomplished in the same amount of time.

While shipping some grain by container will not alleviate all of the transportation problems faced by the state's agricultural producers, it is becoming more commonplace. And if competitive access to intermodal infrastructure is made available for producers throughout Minnesota, it can offer one more option for transport, while at the same time allowing many to sell their products into value-added markets.

## 4. Intermodal Infrastructure

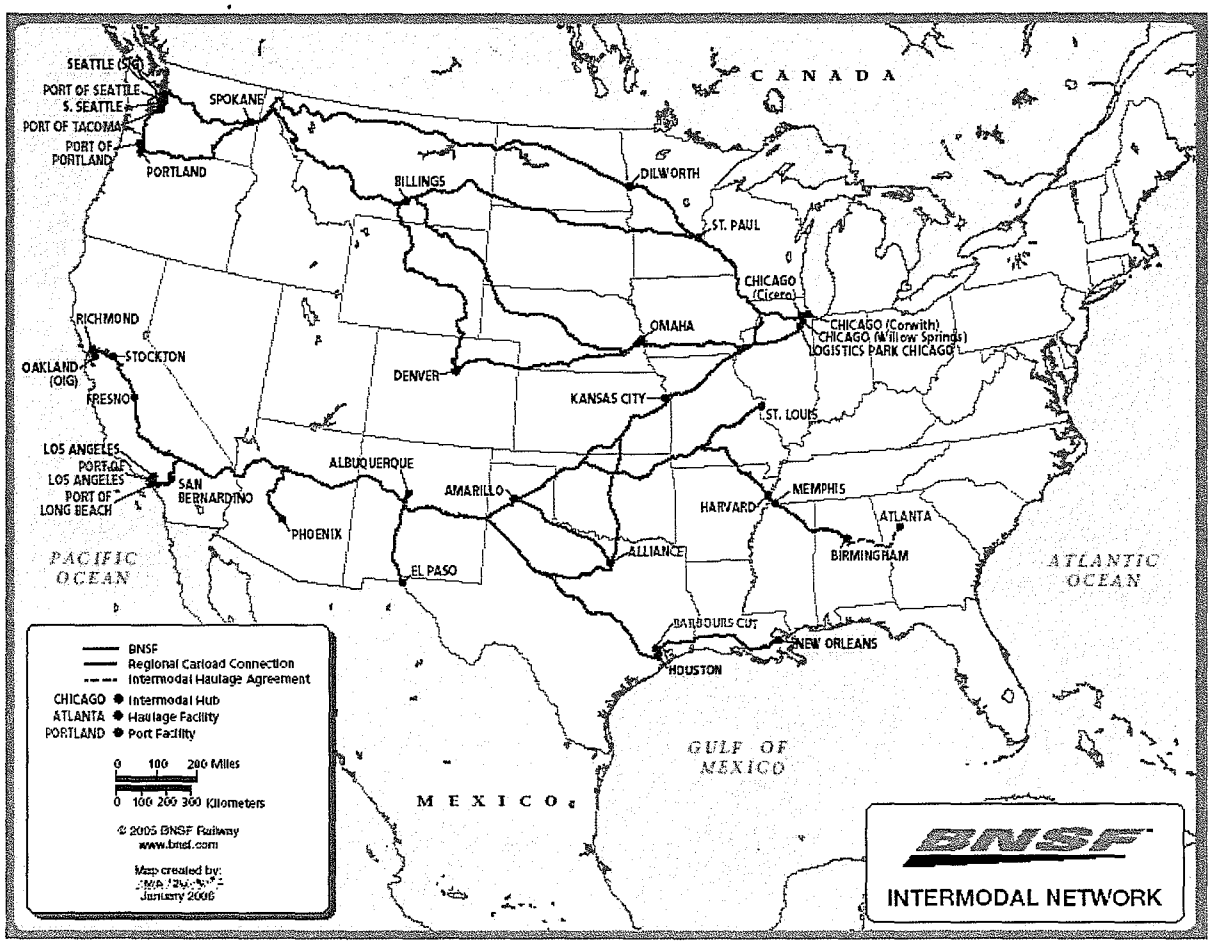
An intermodal terminal or hub is a rail yard with the necessary space, equipment, and service to place and remove containers on flat cars (COFC) or trailers on flat cars (TOFC). Equipment and facilities vary widely, but some generalities can be made:

1) There is rail track with regular service and a paved yard with space for lifting, maneuvering and storing containers and trailers.
2) Equipment includes a packer for lifting, and hostlers (trailers), chassis, and a forklift for movement within the yard. In order for it to be an effective container facility, it must also have a steady supply of suitable empty containers.
3) A manager and employees carry out operations from an office at the yard.

The intermodal system has undergone significant change and consolidation in the past 25 years, and as a result, there are far fewer intermodal terminals. It has been estimated that the 1500 terminals that existed in the 1970's have been reduced to fewer than 300 today. Class I railroads have found it more efficient to gather containers in central locations for dedicated trains to transport (One origin – One destination), and prefer not to stop at intermediate points along the routes of movement. This focus on long-haul intermodal moves has contributed to the closing of several Midwestern intermodal terminals in recent years, including the Canadian Pacific's Thief River Falls terminal, and continues to put the Dilworth terminal in jeopardy.

Another major change in the industry was the introduction of double-stack cars in 1977, which could carry one container loaded on top of another. This is much more efficient, with the potential to carry about 250 containers per train unit, almost twice as much as a train that is only single-stacked. Class I railroads have made considerable investment in infrastructure improvements to insure adequate bridge and tunnel clearances to accommodate the higher car heights.

This has also contributed to the use of containers for domestic shipments, since trailers on flat cars can only be single-stacked. While the numbers of containers moved on the intermodal network has increased each year, TOFC numbers have remained relatively flat, in spite of the apparent strong demand for this service from large truck lines.




**BNSF Intermodal Network, from BNSF website, 2005**

## 5. Intermodal Economics

The economics of intermodal movements are complicated by their nature of consisting of multiple modes of transportation. To understand how an intermodal terminal could be established successfully, one must look at roles of parties involved and factors necessary to insure competitiveness and profitability. The list below includes the main parties involved in an export shipment by container. Other parties, such as freight forwarders and third-party logistics companies, may play a role as well.

**Marine carrier-** Generally owns the container and provides transportation for the ocean portion of the movement. They contract with the railroads for the transport of the container to the coast.

**Railroad-** Owns the flat car and/or well car on which the container is carried on the railroad. Provides service from an inland intermodal terminal to and from the marine port. Although the railroad takes delivery from the shipper, their customer is the marine carrier.

**Trucking company-** Is hired by the shipper or the marine carrier to move the container to and from the shipper's door to the rail intermodal terminal.
**Shipper-** Owns product in the container. May arrange and pay freight charges.
**Consignee (Customer)-** Receives product. Pays cost of freight directly or indirectly. May choose to make own arrangements for shipment.

Each of these entities is striving to manage their assets to produce the greatest return, and resulting decisions may not be in the interest of the other parties involved. **In order to establish a successful intermodal terminal, all parties involved must realize benefits, monetary or otherwise.**

### *A. Critical Factors for Success*

In their 2005 report on the feasibility of a logistics center in the Fargo/Moorhead area, the Upper Great Plains Transportation Institute (UGPTI) listed five factors as critical to support a terminal: "volume, balance of traffic, concentration of destination (density), steamship company or equipment operator cooperation, and commitment of business and/or community". In interviews done for this study, representatives from the BNSF and CP confirmed these as the most important factors for success.

#### *1. Volume of traffic*

Intermodal terminals measure volume in "lifts" per year-- that is, how many times a container or trailer is moved on or off a rail car. The minimum volume considered necessary by railroads for an intermodal terminal to be financially viable can vary greatly depending on size, location, and operations.

In an earlier study by the UGPTI, Berwick, et. al estimated a minimum of 13,000 to 20,000 lifts per year for a Class I rail intermodal hub to be feasible. This is similar to the number cited by CP of a minimum 1500 lifts/month to keep an existing facility viable.

In reference to the establishment of a new terminal, **BNSF cited 100,000 lifts per year as an estimate of the volume necessary for them to consider servicing a new terminal.** A representative of CP said that establishing new intermodal hubs is not supported in their current strategy, so no number could be given.

**2004 lifts at BNSF terminals in the Midwest (COFC/TOFC combined)**

| Terminal | Lifts |
|---|---|
| Chicago (total of 5 terminals) | 2,250,000 |
| St. Paul | 210,000 |
| Dilworth | 8,100 |
| Omaha | 35,000 |

**Information provided by BNSF, Telephone interview Oct 2005**

It is known from the survey that intermodal freight from the west-central area of Minnesota is generally trucked to Minneapolis & St. Paul intermodal hubs for transfer to rail. If an intermodal terminal were established in west-central Minnesota, one might expect it to draw existing intermodal traffic from an area including west-central and

southwestern Minnesota, as well as parts of South Dakota and Iowa. Exact "draw" areas are difficult to calculate, since they would be affected by rates, service, relative distance to other terminals, and traffic conditions surrounding all available facilities.

### *2. Balance of traffic*

Ocean carriers can command much higher rates on import shipments than on exports (typically about 3 to 1) because of the trade imbalance, and because imported products are generally higher-value and can withstand higher rates. This acts as an incentive to the shipping lines to move containers into position as quickly as possible for another import move. For this reason, many containers are sent from the US back to Asia empty.

Although Minnesota's Statewide Freight Plan shows that inbound and outbound freight is roughly equal in tonnage and value (21% inbound vs. 24% outbound), anecdotal evidence suggests that an imbalance exists in freight origins and destinations within the state. Much of the incoming product is destined for the metropolitan area with its higher population density, whereas the agricultural commodities are being produced and shipped from other areas of the state, where lower population densities mean lower consumption of imported consumer goods.

CP mentioned this as one reason for the Thief River Falls terminal closure. The other issue they found was the seasonality of the export movements. Since agricultural commodities made up the majority of the movements out of that terminal, CP found it difficult to maintain a terminal year-round, with most shipments occurring in the months following harvest, and lower usage the balance of the year. Although it has been suggested that an "ag-only" terminal be considered for the west-central area, railroads and steamship lines prefer to service terminals that have steady volume throughout the year and higher-value product movements which can stand higher rates such as retail goods to balance the "lower-value" agricultural products.

Other issues of balance exist as well. Many imports are of finished goods that are less dense, and are therefore shipped in 40' containers, whereas exports of raw materials and agricultural commodities are usually more dense and generally need to move in 20' containers. Also, marine carriers want their containers returned to the countries from which the imports arrive, such as China. However, Minnesota's exports of containerized agricultural products currently travel to other countries such as Japan, Korea, and the European Union. Finally, trains themselves have weight limits, and must balance loaded containers carefully. This creates challenges when all products exiting a particular terminal are heavy commodities.

### *3. Density of destination movement*

As mentioned earlier, the railroads consider themselves most efficient on long-haul moves. Trains that can be built to move from a single location to another single location are attractive to the Class I railroads, such as is done with 110-car grain and coal unit trains. If considering a traditional intermodal COFC/TOFC terminal, it will be important to demonstrate that there will be sufficient numbers of containers moving to a single destination, such as the port at Tacoma, to be able to build dedicated intermodal trains.

Also, since double-stack trains have become standard for COFC movements west of the Mississippi, physical barriers that would prevent double-stacking of containers on rail would need to addressed. For example, a low bridge on Main St in Northeast Minneapolis over the BNSF's track prevents double-stacking of containers on the line moving west through Willmar.

### *4. Railroad, steamship line, and other equipment operator cooperation*

A lot of emphasis has been placed on the railroads and their commitment to intermodal hubs. However, the role of the steamship line could arguably be more important. Like all businesses, steamship lines operate to make a profit, and they command much higher rates on import business than on exports.

If steamship lines can be convinced that it is worth the extra time involved to have product loaded for the return to Asia, the railroads will cooperate. Currently, many steamship lines refuse to have their equipment repositioned for loading at Dilworth, insisting it actually costs them more money in days spent on the re-load than they actually realize in the revenue movement. This issue would have to be addressed in advance of a new terminal being established in order for it to gain the support of marine carriers.

The ASA/USB study looked at the economic factors associated with loading soybeans in containers rather than returning them to Asia empty, and concluded that "the financial interests of ocean carriers are well served by transporting containerized bulk soybeans." This should be true for the railroads as well, since they receive a higher rate for carrying loaded containers than for carrying empties. While this is encouraging, further study and promotion of the findings remain to be done.

### *5. Commitment of area businesses and communities*

This is one advantage to the west-central area of the state. Many of the area's Chamber of Commerce organizations, economic development groups, and elected officials are interested in the possibility of an intermodal terminal. Interviews conducted found that private enterprise, including agricultural producers and manufacturers, is also open to considering creative options for establishing a successful terminal.

### *6. Other factors*

Additional factors to consider when evaluating the potential success of an intermodal hub include the distance from existing intermodal terminals, existing infrastructure, and highway access, since these points will influence the cost of the facility and the likelihood that shippers would make use of it. It should also be considered whether ancillary services or conditions already exist for the railroad in a particular location (such as fuel stops, switching, safety checkpoints, etc.) Intermodal trains are being built from the large hubs to travel long distances, but if there are other reasons that compel the railroad to stop the train, they are more likely to agree to add containers or cars at that point.

### B. Location Analysis

In interviews with businesses, community leaders, and railroad representatives, several locations were suggested as potential sites for an intermodal terminal, including Appleton, Benson, Clara City, Glenwood, Montevideo, and Willmar. The following chart shows selected attributes of each site.

| *City* | *County* | *Population 2003 est.* | *Railroad* | *Distance From TC* | *Distance From Dilworth* | *Ancillary Services* |
|---|---|---|---|---|---|---|
| **Appleton** | Swift | 2,877 | BNSF TC&W | 139 | 153 | Switching |
| **Benson** | Swift | 3,375 | BNSF | 121 | 139 | Switching |
| **Clara City** | Chippewa | 1,384 (2001 est.) | BNSF | 108 | 180 | None |
| **Glenwood** | Pope | 2,654 | CP | 128 | 131 | Switching |
| **Montevideo** | Chippewa | 5,448 | TC&W | 125 | 171 | None |
| **Willmar** | Kandiyohi | 18,597 | BNSF | 89 | 183 | Switching |

However, the scope of this study did not include construction feasibility or site selection analysis. The goal of this report, rather, is to suggest possible scenarios and corresponding benefits. If anticipated benefits justify further study, these and other communities would need to be examined to determine the best possibility for successful execution.

## 6. Alternatives to Traditional Intermodal Equipment & Terminals

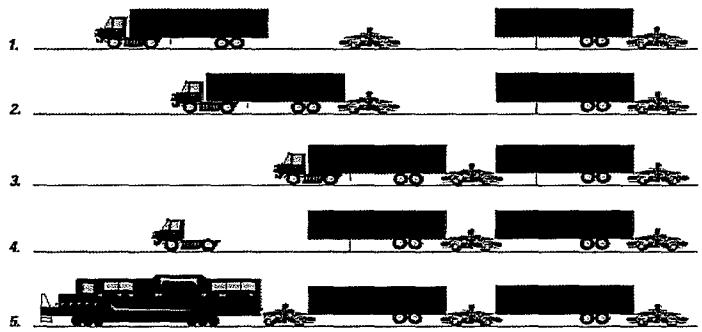
### A. Bimodal Systems

One alternative to traditional intermodal hubs is the bimodal system. This consists of specialized equipment that can adapt street chassis to use on the rail. With this type of system, containers and trailers can be moved onto the rail without lifting, eliminating the need for expensive packer equipment and extensive ground preparation. These systems also offer possibilities for movement of short haul domestic truck traffic which has implications for reducing truck traffic on "local" roads.

The illustration below shows how this type of system works. Specialized bogie wheels are used in between each chassis on the rail. The truck backs the trailer onto the rail and up against the bogie, and then unhooks and moves off the rail. This step is repeated with additional trailers until the train is complete, with the rubber wheels of the chassis being elevated up off the rail. A transitional bogie is put into place that attaches the engine to the train, and the train is ready to move.

There are several companies that have developed bimodal systems, including RailMate, based in Minnesota. RailMate is currently testing its system on a short line railroad, hauling taconite from the Iron Range to Duluth. RailMate's system utilizes bogies that can be moved on and off the rail at any street grade crossing without a forklift, making use of the system even more feasible for rural locations.

Another example of this technology in use is RailRunner's RailReach service, which moves containers and chassis on rail from Ft. Wayne, IN to the port at Jacksonville, FL. This service was started in August 2004, and Charles Foskett, President of RailRunner sees it as a model for intermodal on short line or regional railroads. In an interview done for this study, he estimated that the **minimum number of lifts necessary to make a bimodal terminal feasible would be significantly lower than a traditional intermodal terminal, between 7,000 and 20,000 lifts per year depending on circumstances.**




**Example of the Bimodal System, from RailRunner website, 2005**

Interviews with both the Twin Cities & Western Railroad (TCWR) and the Dakota, Minnesota & Eastern (DME) found that short line and regional railroads are very interested in these systems and are considering possibilities for intermodal application in Minnesota.

### *B. Paper Ramps*

These ramps are primarily used by Union Pacific as a way to offer access to intermodal service where no rail facility exists, or to test volume before establishing an intermodal terminal. They are similar to a regular terminal in that a "container pool" is formed and customers can pick up and deliver containers back to that point. Rather than being loaded onto a train there, however, the containers are trucked by the railroad to an intermodal terminal for loading onto a train.

Benefits to the shipper with this system include being able to pick up and deliver containers to a site nearby, with "paperwork" indicating that site as the loading point. Also lower drayage rates can often be achieved by economies of scale and coordination of backhauls. The benefit to the railroad is that they can decide to which intermodal terminal to truck the containers depending on routing, congestion, etc. BNSF used to have a paper ramp system, but found it to be inefficient. They believe that it is makes sense when you have a large pool of railroad-owned equipment such as the Union Pacific's domestic containers, but that it would not be a fit for them.

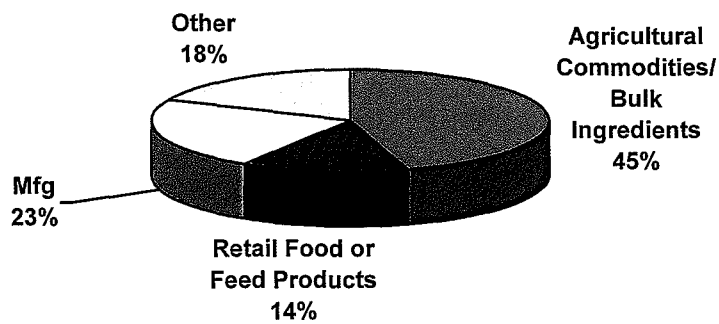
SECTION II.

## 7. Survey and Data Analysis

One aspect of this study has been to survey businesses in the Minnesota counties most likely to benefit from an intermodal terminal located in the west-central area. As stated earlier, draw areas for any particular location are difficult to pinpoint, since use of an intermodal terminal will vary based on many factors. However, with all other factors being equal, the cost of trucking plus container rates will dictate choices. (If import volumes into the proposed intermodal terminal were sufficient to balance exports, container rates could be similar to those for Minneapolis. In that case, the new terminal would draw from a larger area and potentially cut into the draw area of the Twin Cities' intermodal terminals, since metro area traffic congestion could be avoided.) However, since container rates are based on the marine carriers' need to balance equipment, and no major importers have been identified in the area, one would have to assume that rates at the new facility would be similar to the Dilworth terminal.

Based on this assumption, businesses in the west-central area as defined above were sent surveys, with the exception of those in Stearns, Meeker, McLeod, Sibley, and Nicollet, which would likely continue to utilize the intermodal hubs in the Twin Cities where rates are lower. Depending on its location, the new terminal would also likely draw from the nine counties of southwest Minnesota: Cottonwood, Jackson, Lincoln, Lyon, Murray, Nobles, Pipestone, Redwood, and Rock, so businesses in those counties were also included. Because South Dakota does not have any intermodal terminals, and terminals in Iowa are limited, shippers in some areas of those states might also make use of the terminal, but including them in the survey at this time was not feasible.

**Business Type of Respondents**



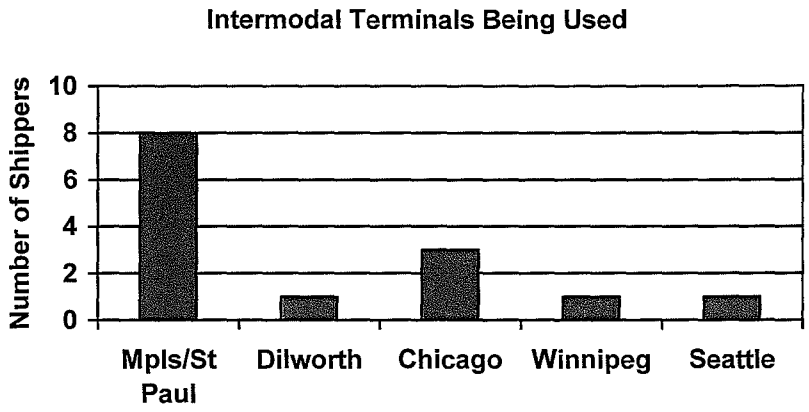

Businesses that ship and/or receive freight were identified through several means, including the Minnesota Department of Transportation's Freight Database, local Chamber of Commerce offices, and area economic development personnel. 140 surveys were faxed, with special effort made to include large manufacturers and specialty grain operations. There were 22 responses received for a response rate of around 16%. Follow up was done with several respondents in person or by telephone. A copy of the survey sent can be found in Appendix C.

### *Industries Covered*

Of the respondents, the largest group with 45% characterized their products as Agricultural Commodities, or Bulk Food/Feed Ingredients. 23% of the group were manufacturers, and 14% produced Retail Food or Feed Products. The remaining 18% consisted of a number of different businesses including producers of consumer goods or wood products.

### *Currently Using Intermodal*

Of the respondents, 50% are currently using intermodal transportation. The following graph shows the intermodal terminals currently being used. Several respondents use more than one terminal.




### *Incoming volumes*

Of the respondents using intermodal, only one reported any product currently being received by container. As a manufacturing company, they receive 120-160 forty-foot containers annually with large specialized parts. These containers arrive at the east coast, travel on rail to Minneapolis, and are drayed to a storage facility in the Twin Cities area, where the contents are unloaded and stored. The parts are then picked up as needed and trucked to the plant in west-central MN. Another respondent reports receiving 40 TOFC shipments per month for a volume of 480 forty-eight foot trailers during the year. This equals a total number of incoming units to be around 620, and since each COFC or TOFC move requires two lifts, this equals 1240 lifts.

### *Outgoing volumes*

Of the respondents shipping product out with intermodal transportation, total volume is estimated at 1625-1775 containers and 1872 trailers per year, for an estimated volume of around 7144 lifts. However, the largest shipper of the container group representing 960 containers (1920 lifts), currently loads containers in Chicago or on the West Coast. Because their needs include cold storage warehousing for fresh and frozen foods and a large supply of refrigerated containers, servicing this volume at a new terminal would be more complicated than for other shippers.

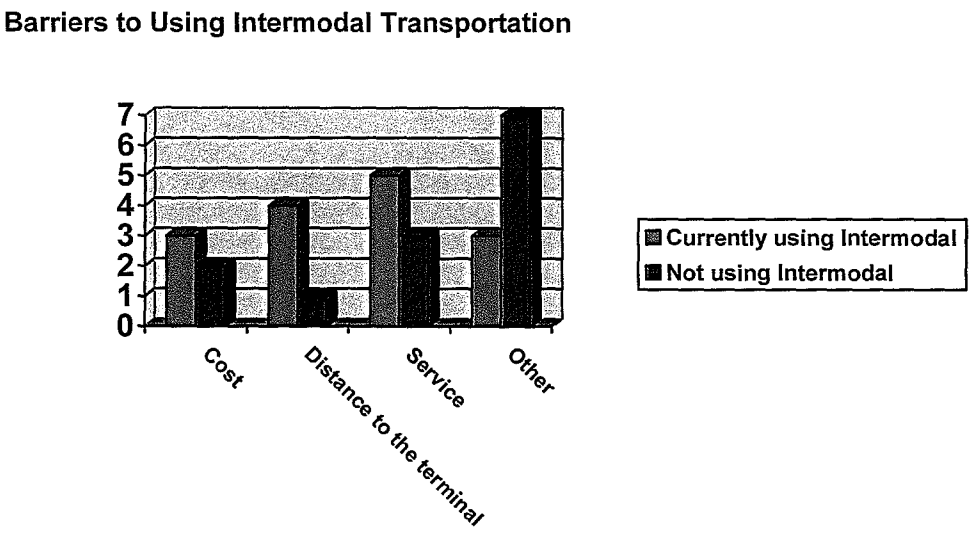
### *Total potential volume*

The potential volume of an intermodal container yard in the west-central area can be calculated through a simple extrapolation of the results above. Total incoming volumes for all shippers who responded were found to be 1200-1280 lifts per year, and outgoing volumes were estimated at 6994-7294 lifts per year. 16% of those surveyed responded, so by dividing the volumes by that rate, **total potential volume can be estimated to be in the range of 51,200 – 53,600 lifts.**

### *Largest barrier to continuing or starting to use intermodal*

Various reasons were identified as barriers to using intermodal transportation. For those not currently using intermodal, these fell primarily into the "Other" category, with explanations given that markets are local, or they deal primarily with less-than-truckload shipments, making intermodal use impractical.

For those currently using intermodal, the largest barrier to continuing was identified as "Service", with "Distance to Intermodal Terminal" next.




### *Future growth rates and transportation challenges*

All respondents currently using intermodal transportation anticipate growth in their business over the coming years. Expected growth rates ranged from 3% to 100-110% year-over-year. Current and future general freight challenges cited by many in the survey area were summed up by one respondent:

1. Fuel costs
2. Shortage of over-the-road carriers
3. Reliability of rail service
4. Lack of 4-lane highway access connecting to Interstates.

## 8. Economic Impact of a Rail Container Load-out Facility

The economic impact of establishing an intermodal hub in west-central Minnesota is difficult to estimate without identifying location and scope of the project. New jobs would mainly be created as a result of increased economic activity in the area, both during the construction phase and the facility's subsequent operation. However, some ideas can be given based on activities at existing and proposed facilities.

The intermodal facility at Dilworth had 8100 lifts in 2004 and employs four people full-time. The terminal at Omaha had 35,000 lifts in 2004 and employs 10-15 people full-time. Because a traditional intermodal terminal would only be established if potential volumes were similar or greater than those at Omaha, one could estimate that 10-15 transportation-related jobs would be created. Based on Minnesota Department of Employment and Economic Development (DEED) data for 2004, salaries for transportation and warehousing employees in the private sector averaged $533 per week, or $27,690 per year, in the Southwest Central (EDR6E) and Upper Minnesota River Valley (EDR6W) Economic Development Regions.

The UGPTI 2005 study utilized an input/output model to estimate the impact of adding jobs on the regional economy, by determining linkages to spending in other areas to create a gross receipts multiplier. For the transportation industry, UGPTI found that each dollar paid in wages would be re-spent in the region about 3 times. The 10-15 jobs generated by the site would amount to an estimated economic impact to the region's economy of $800,000-$1,200,000.

**Estimated Regional Economic Impact per Job Created**

| Industry | Average Annual Salary | Gross Receipts Multiplier | Estimated Benefit to Economy per Job |
|---|---|---|---|
| Agriculture | $26,156 | 4.45 | $116,394 |
| Manufacturing | $37,726 | 4.45 | $167,881 |
| Transportation | $27,690 | 3.05 | $84,455 |

Utilizing the same model, UGPTI found the gross receipts multiplier for agricultural processing and miscellaneous manufacturing to be 4.45. Using the same source for salary data times the gross receipts multiplier, one can estimate the positive economic impact each additional job would have on the region. Without more complete information about a proposed facility, the total number of jobs to be created cannot be determined. However, the data above can be a guide to economic impact based on potential scope of different projects.

## 9. Impact on Minnesota's Transportation Network

Many studies demonstrate the benefits of rail over truck transportation in terms of less energy consumption, less traffic congestion, less wear-and-tear on the highway system, lower emissions, etc., but these are very difficult to quantify precisely without determining the location of a proposed facility, volumes, freight origins, and from what

terminal freight would be diverted. If further study is pursued, quantification of benefits could be achieved at that time.

## 10. Possible Scenarios and Recommendations

This study has found that Class I railroads consider minimum volume of 100,000 lifts and a strong balance of incoming and outgoing freight as necessary for establishing an intermodal terminal. Based on information available, current volumes and balance of traffic in the west-central area of the states are not likely sufficient for a traditional intermodal terminal to be successfully established at this time. For this reason, alternative scenarios must be considered to solve the original issue: "How can agricultural producers and manufacturers in the west-central and southwestern areas of Minnesota have access to price-competitive intermodal transportation?"

### *A. Remove existing barriers to intermodal in the west-central area*

Many state governments have attempted to influence the railroads through political means, or by investing in infrastructure. As mentioned previously, though, **Class I railroads are generally reticent about accepting government funding, since they prefer to avoid additional oversight.** Rather, work should be done to make the economic climate such that it will stimulate the railroads' interest in servicing additional intermodal terminals in Minnesota.

#### 1) Focus efforts on building volume

Railroads make decisions regarding intermodal terminals based on economic factors. As a result, terminals considered effective by shippers or researchers are often closed, such as the one in Green Bay, WI that was cited as "successful" in a 2003 study by the Midwest Regional University Transportation Center, but subsequently shut down by the Canadian National Railroad. Volume and balance of traffic are considered the most important factors for the railroads in servicing an intermodal terminal, so emphasis should be placed on economic development efforts that could increase volume or help solve balance of traffic issues.

It is very difficult to determine potential volume without cooperation from local shippers. If shippers could make a commitment on the number of containers or trailers they would use based on certain pricing levels, it may be possible to demonstrate volumes sufficient for a traditional intermodal terminal.

#### 2) Consider creative solutions to balance issues

Perhaps more important than volume is the issue of balance for Midwestern terminals, so solving this problem could make a terminal viable in the short-term as volumes grow. One economic development initiative would be to attract businesses that utilize imports, such as retail distribution centers or manufacturers. Whereas economic benefits of entities are generally measured in number of jobs created or potential tax income, this focus would allow incentives to be developed for businesses that bring

containers into the area on rail. Preference would be given to those importing year-round, those utilizing 20' containers that would be appropriate for loading food-grade product, and those importing from countries to which we ship products.

Another idea would be to explore manufacturing containers in Minnesota. Economic development funds might be available to help make this feasible, and it could assure a constant supply of suitable empty containers in the area, while at the same time promoting manufacturing jobs and building a local market for raw materials from our own "Iron Range." New containers would be sold or leased to shipping lines, but be available for loading as they enter the system.

**3) Raise the low bridge over the BNSF line to allow double-stacking**

Freight volumes throughout the US are growing each year, as are COFC volumes, and Minnesota's infrastructure must keep up in order for the state's businesses to grow. One known barrier to double-stacking of containers on rail cars headed west is the low bridge on Main St in Northeast Minneapolis over the BNSF line. That line currently handles express TOFC intermodal trains from St. Paul through Willmar and Aberdeen, SD, on the way to Laurel, MT, and the west coast. Planning now for reconstruction of this bridge (or lowering of the track), opens the door for that line to handle double-stacked COFC movements in the future. Funding for this type of project may be available in the form of a grant from the federal government for rail line relocation. (See 11. Possible Funding Sources for further details.)

### *B. Explore the economics of moving containers on short line or regional railroads*

Minnesota has a number of short line and regional railroads. These could potentially be used to move containers in and out of the west-central area from Class I intermodal terminals in Minneapolis, Saint Paul, or Chicago, either with a traditional system of flat cars/well cars, or alternative technology such as one of the bimodal systems.

**1) Using the traditional system**

Using the traditional system would involve developing a location with the same characteristics as a Class I intermodal hub. There would need to be ground preparation suitable for moving loaded containers and heavy equipment, sufficient space for movement and parking, and investment in a packer and other equipment.

This scenario would also involve interchanges of containers or railcars at the already busy Class I intermodal terminals, but would not necessarily involve extra drayage between facilities. This would allow empty containers to be brought in on rail, filled in the west-central area, then lifted back onto the rail for movement to an interchange site for further shipment on a Class I carrier.

**Benefits & Drawbacks to traditional intermodal**

**Benefits**

- Utilizes current technology
- Interchanges could occur on the rail

**Drawbacks**

- Heavy investment in assets necessary
- Shipment times increase
- Volumes need to be high to compete with trucks and offset investment
- Interchanges for shipments headed in different directions complicated

**2) Using the bimodal system**

The use of the bimodal system could offer more flexibility, but would involve extra handling and drayage, and would introduce a new technology into the system. In this scenario, a train would be built from empty containers obtained from one or more Class I rail yards. The chassis and bogies would be owned by one entity, and they would stay in a closed loop, with only containers and trailers moving into and out of the system freely.

For example, Company X owns the chassis and bogie wheels. Chassis would be used to gather empty containers from the intermodal terminals in Minneapolis & St. Paul, and truck them to a common point in the metro area where they would be used with the bogies to build a train directly on the rail. Once the train was built, it would move on the short line rail to the west-central area, where it would be disassembled. Chassis with containers on them would be picked up by truckers and drayed to the plants where the containers would be filled, and the trucks would return them to the rail yard where the train would be reassembled.

The train could then be moved on rail back to the common point in the metro area where local truckers would pick up the containers and move them over the road to the Class I intermodal terminals. Advantages to this system are that containers headed to multiple export destinations can be combined to build one train, initial equipment investment costs are lower, and site preparation is less intensive.

**Benefits & Drawbacks to intermodal using bimodal technology**

**Benefits**

- Fewer number of lifts necessary to make venture profitable
- Different export destinations handled easily
- Lower equipment investment
- Less ground preparation
- Can accommodate domestic truck trailer, shorter haul traffic

**Drawbacks**

- Introduces different technology
- More handling & drayage costs may eliminate benefits
- Cannot offer economy of scale by doublestacking

### *C. Work with neighboring states to develop a coordinated intermodal plan*

Both North Dakota and South Dakota lack intermodal terminals for COFC/TOFC, and both have applied considerable resources in recent years to studying this issue. During interviews with agricultural producers and manufacturers, many people expressed frustration with the number of intermodal-related surveys they had received from different entities in the last few years, and this may have contributed to the low response rate. This sentiment was also evident in discussions with the railroads. If the ultimate goal is to increase competitiveness of our agricultural production and industry, stimulate economic development and job growth, and decrease congestion and road maintenance costs, cooperation with neighboring states is imperative.

#### 1) Move quickly to insure continued service at Dilworth

Minnesota and North Dakota should cooperate to make sure that the Dilworth facility remains viable, both from the standpoint of the BNSF and for the shippers in that area. The UGPTI's 2005 report (see Appendix D for summary of key findings) found that many businesses that could utilize the Dilworth hub were choosing instead to haul containers to the Twin Cities to put them on rail. The inability to use a facility to its full potential affects shippers throughout the state by increasing competition for available trucks to haul containers, and results in further congestion on roads and at other intermodal terminals.

Minimum volumes necessary to service an existing terminal are lower than volumes given by the railroads to service a new terminal. Efforts should be made now to address service and balance of traffic issues at Dilworth, so it remains a profitable center for BNSF. If there was more incoming traffic, rates could come down and shippers might utilize the terminal more. The benefits of this would be enjoyed by both states, and volume lost to Winnipeg terminals could be regained.

#### 2) Advocate for a terminal to service the west-central and southwestern areas of the state

A terminal servicing the tri-state area of Minnesota, South Dakota and northern Iowa has the potential to offer multiple benefits for the state. Agricultural producers and manufacturers would have the benefit of lower transportation costs, and local economies would benefit. Currently, IP grain and other containerized products originating in South Dakota and northern Iowa are traveling on Minnesota highways to reach the intermodal terminals in Minneapolis and St. Paul. A closer terminal would reduce congestion and wear on our highways and bridges.

The 2005 U.S. Department of Transportation bill, SAFETEA-LU, could offer some unique opportunities to develop joint plans with neighboring states and obtain funding for implementation. In the past, the minimum project size eligible for funding under Section 1601, the Transportation Infrastructure Finance and Innovation Act was $100,000,000. That has been amended to $50,000,000, which is still far more than a single intermodal terminal would cost. However, the amendment also makes it possible to group smaller projects under one umbrella application "with the common objective of improving the flow of goods." If the states cooperated to build a comprehensive plan that included

better intermodal access for all shippers in the region and demonstrated how this project would benefit rural areas and promote exports, a very compelling case could be made for funding. A representative from BNSF also agreed that if the states made a joint case to railroads and shipping lines, their participation is far more likely to be obtained.

## 11. Potential Funding Sources

Funding for further study, project planning, or implementation could be available from a variety of sources. Any actual construction would likely require participation from several parties including federal, state, and local government grants or loans, rural economic development funds, and private enterprise. Some possible sources are listed here with descriptions of the part of the project in which funds could be utilized.

### *A. Federal and State Transportation Funds*

The US Department of Transportation and MnDOT are obviously the first sources to examine for possible funds to develop an intermodal terminal. Historically, most transportation project monies have been dedicated to highway projects and were not available for truck-to-rail intermodal projects. However, there are some options for rail projects, and SAFETEA-LU may have opened doors for intermodal project funding in the future.

#### 1) Rail Rehabilitation and Improvement Financing (RRIF)

RRIF funding may be used to purchase or improve intermodal or rail equipment or facilities, including track, bridges, yards, and buildings, or to establish new intermodal or railroad facilities. This is considered a good option for a short line or regional railroad that is interested in pursuing offering intermodal service. Although Class I railroads are eligible for funding under this program, BNSF and others are apprehensive about accepting public funding for projects, as they do not desire government oversight.

#### 2) SAFETEA-LU Provisions

The following sections of the 2005 transportation bill may have implications for the establishment of an intermodal facility in the future, but it is important to realize that federal funding is appropriated to the states which make the allocations based on their plans. MnDOT has already completed transportation planning through 2010, so a new project would need to be very compelling to place it ahead of other projects currently scheduled.

<u>Section 1306 - Freight Intermodal Distribution Pilot Grant Program:</u>
The purposes of the program...shall be for the Secretary to make grants to states:

(1) to facilitate and support intermodal freight transportation initiatives at the State and local levels to relieve congestion and improve safety; and

(2) to provide capital funding to address infrastructure and freight distribution needs at inland ports and intermodal freight facilities.

Among eligibility/priority considerations for determining funding for projects submitted by States are:

(A) reduce congestion in and out of international ports located in the United States;
(B) demonstrate ways to increase the likelihood that freight container movements involve freight containers carrying goods;
(C) establish or expand intermodal facilities that encourage the development of inland freight distribution centers.

$30 million dollars was allocated to six projects over five years. Minnesota does not have any project included in this program now. However, by preparing now the state could be in a position to take advantage of this program if it is refunded after 2009.

Section 1601 – Transportation Infrastructure Finance and Innovation Act (Amended)

Program project eligibility expanded to include public freight rail facilities or private (freight rail) facilities providing public benefit to highway users; intermodal freight transfer facilities; and access to any of these facilities.

Minimum project size reduced to $50,000,000 (from $100,000,000). Grouping of smaller projects under one umbrella application permitted "*...with the common objective of improving the flow of goods.*"

Section 9002 – Capital grants for rail line relocation projects:

A State is eligible for a grant under this section for any construction project for the improvement of the route or structure of a rail that either:

(1) is carried out for the purpose of mitigating the adverse effects of rail traffic on safety, motor vehicle traffic flow, community quality of life, or economic development; or
(2) involves a lateral or vertical relocation of any portion of the rail line.

This provision opens the possibility of a grant to the state for the purpose of raising the bridge over the BNSF line in Northeast Minneapolis that prevents double-stacking of containers on trains heading west through Willmar.

SAFETEA-LU also contains several provisions for study and planning related to rail and intermodal facilities. Section 4149 instructs the Director of Transportation to "develop a plan to improve the national intermodal transportation system." Section 5209 establishes a National Cooperative Freight Transportation Research Program, that may be a source of funding for further intermodal study in the state. Section 9007 authorizes a comprehensive study of the nation's railroad system since the Stagger's Act of 1980, including recommendations on "the effectiveness of public policy in balancing the need

for railroads to earn adequate returns with those of shippers for reasonable rate and adequate service." All of these could offer unique opportunities to address the lack of intermodal terminals in the region and to promote a system that includes access for underserved areas.

## *B. USDA Rural Development Programs*

The USDA has several programs focused on building the economies of rural areas. One program that has potential for use in studying the establishment of an intermodal terminal is the Value-Added Producer Grant (VAPG).

### Value-Added Producer Grants (VAPG)

These grants are awarded each year to cooperatives, agricultural producer groups, and majority-controlled producer-based business ventures for projects that expand market reach or that increase the value of commodities through value-added processing or segregation. The Minnesota legislature established a shippers' organization a few years ago to help producers take advantage of export market opportunities. As a cooperative, the Midwest Shippers' Association (MSA) would be eligible to apply for matching grants for either planning or working capital purposes to implement value-added ventures. Planning grants can be used for feasibility analysis and marketing plans and working capital grants can be used to pay salaries and purchase office equipment & supplies.

It is important to note that VAPG resources cannot be used for real estate or facility planning, improvement, or acquisition, or to purchase machinery. However, if it can be shown that producers stand to gain economically from the ability to containerize their grain and competitively reach new markets, funding to examine the feasibility of the project could be available.

## *C. State & Local Economic Development Resources*

Funding available through the state or from local sources may take on many different forms. Illinois recently approved the use of tax increment financing and other incentives by municipalities to attract development of intermodal terminals, and Minnesota could consider similar legislation. The programs below may be particularly suited for use in establishing businesses alongside an intermodal terminal to provide vital services such as warehousing, distribution, steam-cleaning of containers, transloading, packaging, etc.

### 1) Small Business Development Loan Program

The goal of the Small Business Development Loan Program is to create jobs and provide loans for businesses locating or expanding in Minnesota. Small business loans are available through the Minnesota Agricultural and Economic Development Board (MAEDB) for manufacturing and industrial businesses. While an intermodal terminal itself may not qualify for a loan through this program, enterprises being established or businesses relocating into Minnesota to take advantage of the facility could potentially benefit from this program.

**2) Minnesota Investment Fund**

The purpose of the Minnesota Investment Fund is to encourage growth and retention of high-quality jobs. Loans can used by new or expanding businesses in Minnesota to purchase land, buildings, and equipment, or to make other infrastructure improvements.

**3) Small Cities Development Program**

While this program is primarily centered on improvement of housing for low- and moderate-income residents, it can also offer funding to local governments for economic development projects. The project must demonstrate benefits to low- and moderate-income persons or involve elimination of blight. Depending on the location and scope of a project, funds may be available from this U.S. Department of Housing and Urban Development (HUD) program.

### *D. Private Funds*

A combination of public and private funding is the most likely scenario for development of a new intermodal terminal. Progressive Railroading magazine's commentary on the National Railroad Construction & Maintenance Association's 2005 conference discussed the impressive unity between stakeholders of all types and sizes, "clamoring for a focus on transportation infrastructure, and for rail's ability to solve problems of congestion, taxation, pollution and productivity." The article's author believes that this "timely unity" will result in more public-private partnerships to solve intermodal challenges, as long as costs and benefits to each party are well-defined.

The use of public-private funding mechanisms is also in line with policy directions outlined in Minnesota's Statewide Freight Plan, published by MnDOT in May 2005. Because much of the state's freight transportation network is owned and operated by private businesses, cooperation with them is necessary to determine and implement appropriate projects.

## 12. References


"Against the Tide." p.32, Journal of Commerce, June 20, 2005.

Beier, Fred J. "The Status of Short line and Regional Railroads Operating in the State of Minnesota." University of Minnesota, 2003.

Berwick, Mark. "Potential for Locating Intermodal Facilities on Short Line Railroads." North Dakota State University, 2000.

Berwick, Mark, John Bitzan, Junwook Chi, and Mark Lofgren. "North Dakota Strategic Freight Analysis, The Role of Intermodal Container Transportation in North Dakota." Upper Great Plains Transportation Institute, North Dakota State University, 2002.

"The Container Logistics Channel for Exports of Soybeans and Soybean Meal." Pollack Logistics Consulting for the American Soybean Association & United Soybean Board, September 2005.

"Feasibility of a Logistics Center Including Container/Trailer Intermodal Transportation in the Fargo/Moorhead Area." Upper Great Plains Transportation Institute, North Dakota State University, Draft Version, January 2005.

Glassheim, Elliot, Jerry Nagel, and Northern Great Plains Inc. Toward New Horizons. Northern Great Plains Inc., Crookston, MN, 2002.

"Minnesota Agricultural Statistics 2005." United States Department of Agriculture, National Agricultural Statistics Service, and Minnesota Department of Agriculture. St. Paul MN, 2005.

"Minnesota Annual Export Statistics." Minnesota Department of Employment and Economic Development. St. Paul MN, Rev. May 2005.

"Minnesota Identity Preserved Agricultural Products, Market Overview & Customer Profiles." Minnesota Department of Agriculture and Global Resource Associates, Inc./FasTrack, 2002.

"Minnesota Port Access Study." Minnesota Department of Agriculture and Global Resource Associates, Inc./FasTrack, 2000.

"Minnesota Port Access Study, IP Crop Production Update." Minnesota Department of Agriculture and Global Resource Associates, Inc./FasTrack, 2001.

"Minnesota Statewide Freight Plan." Minnesota Department of Transportation, St. Paul MN, 2005.

Muller, Gerhardt. Intermodal Freight Transportation *4th Edition*. Eno Transportation Foundation and Intermodal Association of North America, Washington DC, 1999.

"Public-private intermodal infrastructure investment: Tilting at windmills or the new model for the 21st Century?" Progressive Railroading.com, 3/7/2005.

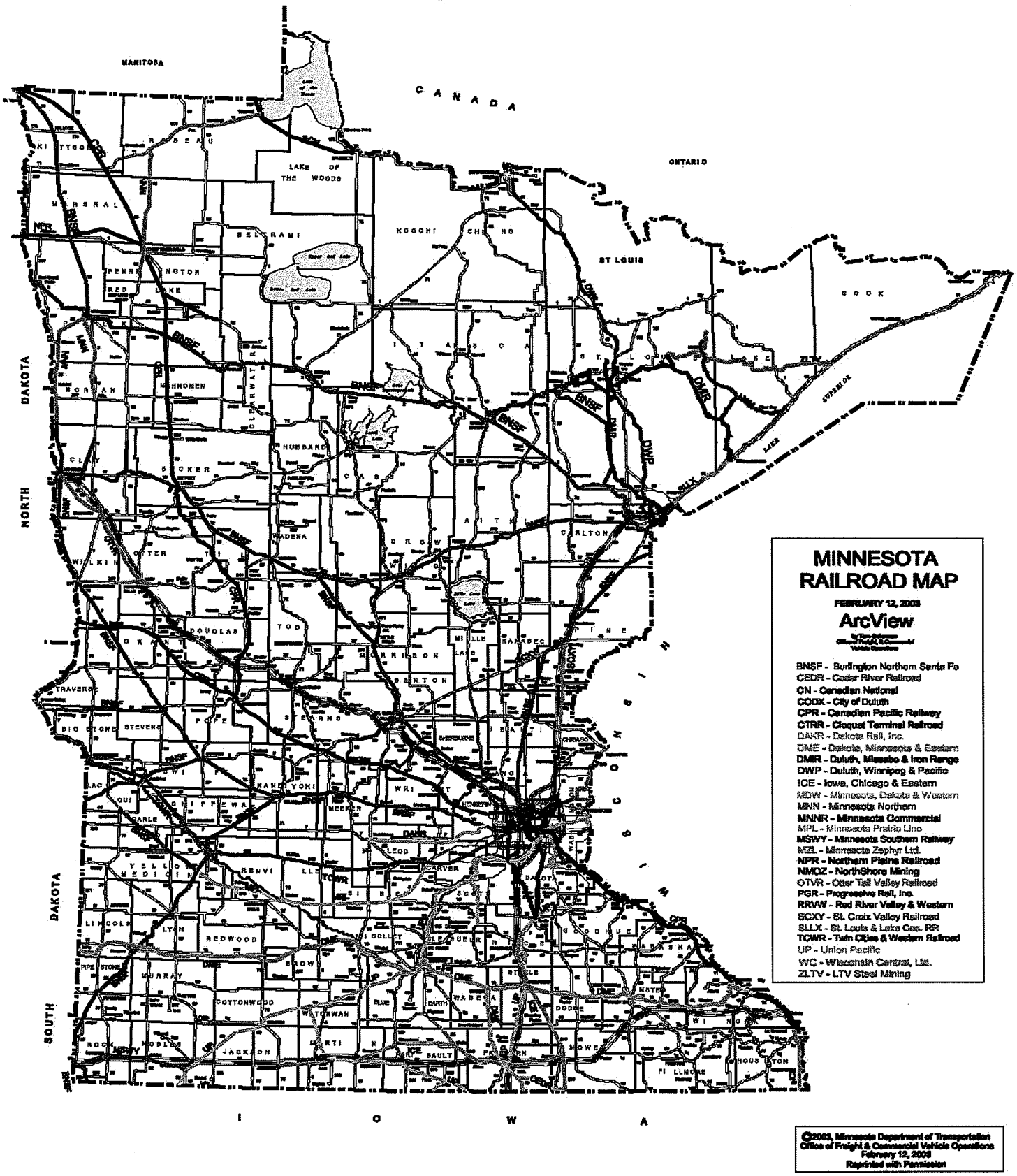
"Statewide Multimodal Freight Flows Study." Cambridge Systematics, Inc. for Minnesota Department of Transportation. 2000.

Stewart, Richard D., Robert J Eger III, Libby Ogard, and Frank Harder. "Twin Ports Intermodal Freight Terminal Study." Midwest Regional University Transportation Center, Madison WI, 2003.

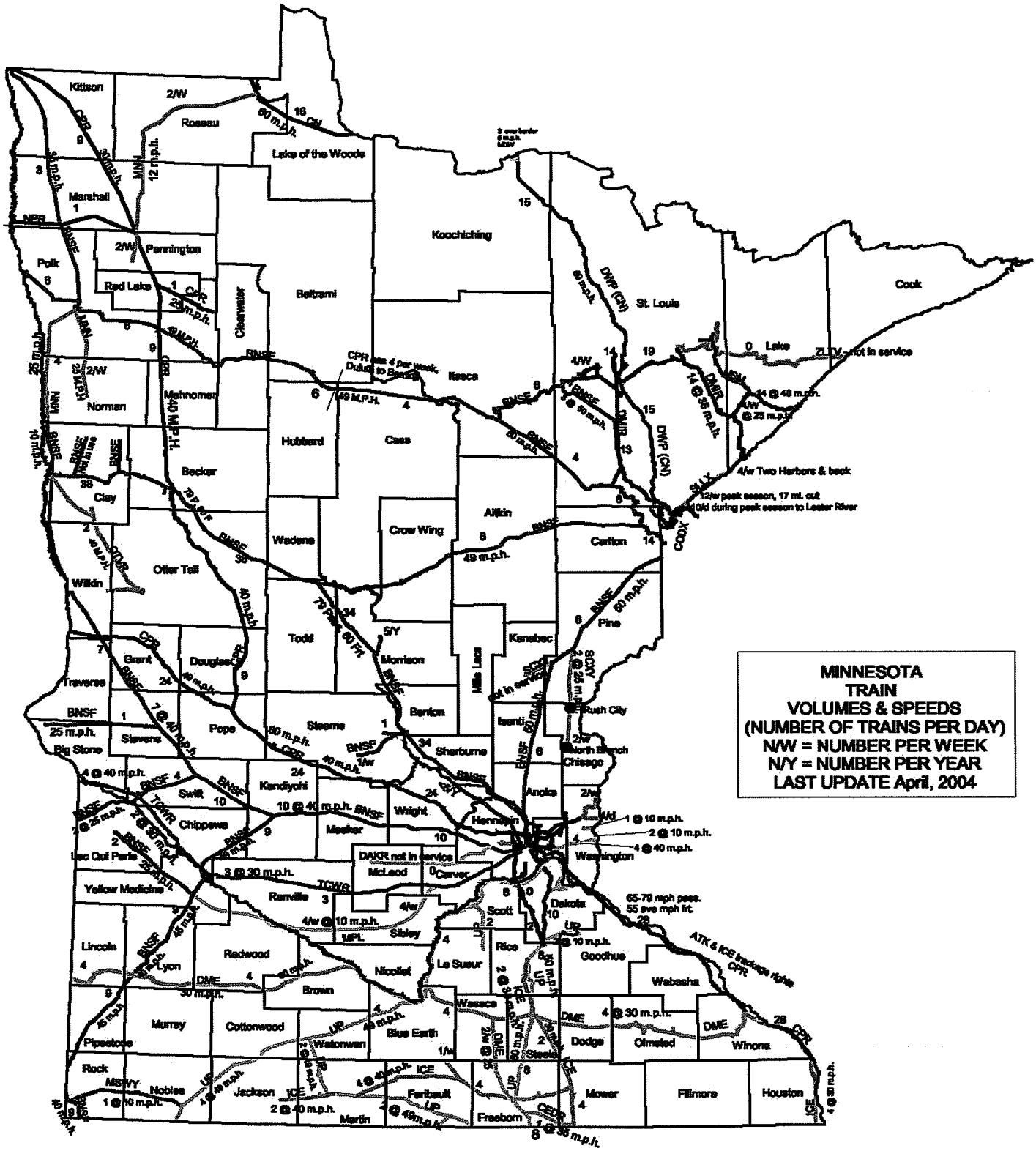
Vachal, Kimberly, Tamara VanWechel, and Heidi Reichert. "U.S. Containerized Grain & Oilseed Exports Industry Survey." Agricultural Marketing Service, USDA, 2003.

Vachal, Kimberly, and Heidi Reichert. "Identity Preserved Grain- Logistical Overview." Upper Great Plains Transportation Institute, North Dakota State University, and Shipper & Exporter Assistance, USDA, 2000.

# Appendix A. Minnesota Railroad Map



# Appendix B. Minnesota Train Volumes & Speeds Map



## Appendix C. .Shipper Survey

***Company Information (optional)***

1. Company Name: _____

   Address: _____

   _____

   Contact Name: _____

   Tel (in case of questions) _____

***Industry***

2. Please mark the category/categories that best describe your products:
   - ☐ Agricultural commodities
     Conventional_____ IP Conventional____ IP Organic ____
   - ☐ Bulk food/feed ingredients
   - ☐ Chemicals
   - ☐ Consumer goods
   - ☐ Retail food/feed products
   - ☐ Wood products
   - ☐ Other_____

***Shipping information***

3. What factors are most important in determining your choice of transportation method?

| | Very important | | | | Not important |
|---|---|---|---|---|---|
| Cost | 5 | 4 | 3 | 2 | 1 |
| Transit time | 5 | 4 | 3 | 2 | 1 |
| Availability | 5 | 4 | 3 | 2 | 1 |
| Reliability of carrier | 5 | 4 | 3 | 2 | 1 |
| Customer requirements | 5 | 4 | 3 | 2 | 1 |
| Maintaining product quality | 5 | 4 | 3 | 2 | 1 |

4. If you currently using intermodal transportation (containers or trailers on rail) for incoming or outgoing shipments, which intermodal terminals do you use?

| | | |
|---|---|---|
| Chicago | LA/Long Beach | Winnipeg |
| Dilworth | Minneapolis/St. Paul | Other _____ |
| Kansas City | Seattle/Tacoma | Other _____ |

INCOMING

5. Please estimate the number, size and type of shipments you'll receive in 2005.

| *Containers* | *Trailers* | *Trucks* |
|---|---|---|
| 20' _____/month | 45' _____/month | Hopper _____/month |
| 40' _____/month | 48' _____/month | Dry Van _____/month |
| Refr._____/month | 53' _____/month | Refr. _____/month |
| Other_____ /month | Other_____ /month | Other_____/month |
| (please specify:_____) | (please specify:_____) | (please specify:_____) |

6. What is the origin of these materials?

Domestic US _____% (Region/s_____)
Canada _____% Mexico/Central America _____%
Europe _____% Asia_____%
Other _____% (Area/s_____)

OUTGOING

7. Please estimate the number, size and type of shipments you'll ship in 2005.

| *Containers* | *Trailers* | *Trucks* |
|---|---|---|
| 20' _____/month | 45' _____/month | Hopper _____/month |
| 40' _____/month | 48' _____/month | Dry Van _____/month |
| Refr._____/month | 53' _____/month | Refr. _____/month |
| Other_____ /month | Other_____ /month | Other_____/month |
| (please specify:_____) | (please specify:_____) | (please specify:_____) |

8. What is the destination of these products?

Domestic US _____% (Region/s_____)
Canada _____% Mexico/Central America _____%
Europe _____% Asia_____%
Other _____% (Area/s_____)

9. What is the largest barrier to starting or continuing to use intermodal transportation for your company?

- ☐ Cost
- ☐ Distance to intermodal terminal
- ☐ Service
- ☐ Other (please specify)_____

***Future Growth & Transportation Needs***

12. What are the most pressing transportation issues for your company right now?

_____

_____

_____

_____

13. How do you expect your transportation needs will change in the future?

_____

_____

_____

_____

14. Please share your company estimates for projected growth in the coming years.

2006 _____%

2007 _____%

2008 _____%

2009 _____%

2010 _____%

***Thank you very much for your assistance.***

Please fax or mail this survey back by October 14, 2005.

Minnesota Department of Agriculture
Agricultural Marketing Services
90 West Plato Boulevard
Saint Paul, MN 55107-2094
Fax: 651-296-6890

## Appendix D. Summary of UGPTI Study

**Summary of Key Findings & Conclusions of UGPTI Study: "Feasibility of a Logistics Center Including Container/Trailer Intermodal Transportation in the Fargo/Moorhead Area", Draft Version, January 2005**

The purpose of the study was to look at the feasibility of locating an intermodal logistics center in the Fargo/Moorhead area. Shippers were surveyed to determine current and potential future volumes of COFC/TOFC traffic within a 100-mile radius. Specific findings included:

- The Dilworth facility is handling fewer COFC/TOFC movements, despite growing volume in the region.
- Area businesses are using Minneapolis/St. Paul terminals in the largest numbers, followed by Winnipeg, and then Dilworth.
- Current estimates for COFC/TOFC volume are 29,353 outbound and 8,503 inbound. The area is expected to have a volume of more than 80,000 units by the year 2015.
- With regards to factors necessary for success, the area has "marginal volume, imbalance of traffic, some concentration and at this time only marginal cooperation of the steamship lines."
- It would cost around $4 million to construct a new terminal, not including manufacturing or transloading facilities, and the annual operating costs would be around $850,000. It would take about 40,000 lifts per year for the facility to break even.

Based on the findings, three potential options were offered with regards to the Dilworth terminal:

- To leave it as is.
- To improve the facility.
- To move the terminal and add services.

Of these, the first was offered as a no-cost option, that also offers no solutions. The second was considered an economically feasible option, but one that would still entail issues to be worked out. The third would involve ironing out many of the same operational issues as the second, but would involve much greater cost.

# Appendix E. Remarks from Minnesota Department of Transportation

**Minnesota Department of Transportation**

**Office of Freight and Commercial Vehicle Operations**
Mail Stop 420
1110 Centre Pointe Curve
Mendota Heights, MN 55120-4152

Tel: 651/405-6060
Fax: 651/405-6082

November 23, 2005

Kurt Markham, Director
Agricultural Marketing Services Division
Minnesota Department of Agriculture
90 West Plato Blvd
St. Paul, MN 55107-2094

RE: Intermodal Access for West-Central Minnesota Feasibility Assessment

Dear Mr. Markham,

Thank you for the opportunity to review this study. Given the short timeline and the many issues that needed to be addressed, you and Ms. Jennifer Kocs are to be congratulated for a study well done.

We concur with the primary conclusion of the study that the conditions necessary to establish a successful Intermodal Facility in West-Central Minnesota are not presently in place. Specifically:

- An intermodal rail terminal must have a railroad to serve it. It appears that the 100,000 lifts thresholds identified by the class I railroads is not there.
- The potential grain/grain products market identified in the study is not sufficient to support a separate intermodal terminal in West-Central Minnesota.
- The predominantly outbound nature of the grain/grain products available for movement creates an imbalance of freight flows. That makes it very difficult to position containers needed for outbound loading and puts the full cost burden of operating the terminal on the grain shipments.
- A strong private sector interest in the project is vital to assure potential volumes can be committed to the project. The study was not able to identify that needed support.

While the required elements for a successful project were not found, circumstances are continually changing and your suggestions that if a business that could provide significant container loads of product were to locate in the vicinity, it should stimulate a review of the viability of this idea.

Thank you for including Mn/DOT in the review process for this study.

Cecil L. Selness

Director, Office of Freight & Commercial Vehicle Operations
Minnesota Department of Transportation

c: Jennifer Kocs
Robert Gale

RAILRUNNER

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# The Identity-Preserved Grain Market

The U.S. grain market is enormous. U.S. farms produced 298 million metric tons of grain in 2002, with 27 percent or 81.2 million tons going to export.

But foreign competition, government regulation, and more specific consumer preferences have combined to make some fundamental changes in this huge market and to create new challenges for American farmers and processors. Countries that were once importers of American grain production are now competitors, exporting grain on their own. Meanwhile, the mass-commodity style of grain production, so long the mainstay of American agriculture is now becoming inadequate to meet the highly differentiated demand profiles of 21st-century consumers and government regulators.

Countries such as India, China, and Russia (in the form of the Soviet Union) were once big buyers of American farm output. The rise of capitalist-style economies in these and other countries has served to increase farm output efficiency to the point that not only do these countries produce enough grain for their own consumption, but they actually have become net exporters, in competition with American farmers. This competition has been driving down the per-bushel price of standard grain products, putting American farmers and their processing partners under severe economic pressure.

The solution adopted by many farmers has been to shift production to specialized grain products that can demand higher prices because of special, high-demand attributes in for specific markets. Consumer preferences and government regulation are demanding high degrees of labeling and differentiation in what used to be bulk commodities.

Due to consumer preferences and economic requirements, food processors have grown increasingly demanding in the specifics of the agricultural materials they use to achieve greater consistency and particular characteristics in the consumer products they make. A cookie manufacturer, for example, may specify a particular type of wheat and even particular farming methods in order to achieve desired performance in taste, baking characteristics, durability in shipping, and shelf life in the grocery store.

At the same time, government regulation and consumer protection policies are driving ever-more complex labeling of food products. Decades ago, labeling was confined to descriptions of flavor and perhaps a sign of USDA inspection. Today, food products carry labels with ever-increasing detail about nutritional value and the characteristics of the ingredients. This requirement has prompted food processors and manufacturers to be more detailed in their specifications for the agricultural products they buy.

A dramatic example of this regulation is the treatment of genetically modified organism (GMO) products. Genetic modification has shown great success in producing more resilient crops with specific qualities and GMO grain has become widespread in the United States. Yet many consumers and regulatory agencies worldwide, concerned that genetically engineered organisms might have as-yet unknown ill effects on human consumers, seek to identify and control GMO products in the food supply. Many retailers decline to stock GMO foods, charging a premium for certified non-GMO products. Moreover, the European Union restricts GMO content in foodstuffs and requires traceable proof that shipments of grain have GMO content of less than a fraction of a percent.

This overall trend toward growing and delivering more specifically defined (and authenticated) farm products is known as "Identity-Preserved" (or IP) agriculture. It is perhaps the most important, sweeping trend in agriculture today and it calls for highly partitioned farming, transport and processing procedures so that the product characteristics can be isolated and preserved from specific farm acreage to final packaged product. This trend is also creating challenging domestic transportation problems for the grain shipper.

## The transportation problem

But the nature of IP agriculture runs directly counter to the traditional approach to transporting bulk agricultural products such as grain. Traditionally grain goes by truck from the farm to a local grain elevator, usually operated by an agricultural cooperative or a food processor, where it is held for shipment in high capacity rail hopper cars to markets in the United States or abroad. Grain from different farms usually is mixed together at the elevator, maintaining general consistency of the type and grade of grain, but not preserving the identity of the particular crop and the growing methods used. The grain then goes to market as a commodity, losing whatever additional value it might have as a differentiated product with specific characteristics. This system is highly efficient for bulk product shipments, but very unattractive for identity preserved or high-value market demand.

In cases where identity preservation is important, shipment in containers is the preferred mode. There are two problems with this approach in most agricultural producing hinterlands. First, there are no intermodal terminals, and second, as a result, access to intermodal terminals is only possible with long-haul highway travel. An alternative solution is to ship bagged product in rail boxcars, and when the boxcar nears an intermodal hub or port, transload the bags from the boxcar to the container. This process of transloading to containers introduces the possibility of having other grain mixed in, of damaging the product, of moisture, and other problems that compromise the identity and value of the product. Either way is expensive and makes U.S. IP growers less competitive in the world export market.

Containerization is particularly valuable for exports, since the overwhelming majority of all international merchandise trade is shipped in containers, which can be loaded on rail cars, ships, or highway vehicles. The use of standardized containers has created a highly efficient system of moving cargo using different modes of transport throughout the United States and internationally. It is known as "intermodal" transportation. Since the US has a well-documented trade imbalance in which imports exceed exports by a factor of two, over half the containers returning overseas are empty. This results in favorable shipping rates for containerized grain export from almost any port, but especially for Asian destinations.

## The intermodal solution

The most efficient method for transporting IP grain would be for farmers to load IP grain into standardized containers at the farm or at a local grain processor. This would allow farmers to maintain the authenticated identity of the grain all the way to its destination, when the containers are unsealed at the food processor's or manufacturer's plant. It also would reduce costs and transport time, since it would stay in the same standardized container throughout the intermodal transport system, whether on rail, ship, or barge.

The problem is that farmers have no way of getting a container directly from the farm into the intermodal transport system. There are not adequate intermodal facilities in the interior that constitutes America's great economic agricultural engine. The relatively few intermodal terminals are located in big cities near rail terminus points and ports, far from the grain-producing farmland. These intermodal terminals are generally hubs attracting large numbers of shipping transactions. In order for an intermodal facility to operate profitably it typically must handle nearly 100,000 container transactions, called "lifts."

## RailRunner

RailRunner solves the problem of intermodal access with its RailRunner system and Terminal Anywhere™ technology. The RailRunner system is based on a specialized chassis that can carry a standardized container on either a roadway or a railroad. Thus a truck carrying a standardized container can be loaded at the farm with grain grown to meet particular specifications and sealed on the spot to preserve its identity. That container can then be trucked to a nearby RailRunner Terminal Anywhere yard at a rail siding, where, with no specialized container-moving cranes, the chassis and container can be placed on the rails for shipment elsewhere in the United States or abroad.

With RailRunner's flexibility and low capital investment, economic intermodal operation is possible at much lower transaction volumes in locations that reach deep into the agricultural heartland. RailRunner terminal operation can be established in local railroad yards, on rail sidings or added to rail served grain elevators or processing plants. A RailRunner train can be assembled close to the source of production and transported to a traditional intermodal center.

In the end, RailRunner can provide the farmer, processor, shipper and buyer traceable assurance that their product has been identity-preserved from source to destination at a competitive transportation cost, thus offering vast opportunities for growth in the market for identity-preserved grain.

**For Further Information, contact:**
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**For Further Information, contact:**
Mark Metzger
Metzger Communications
781-648-2564
mmetzger@shore.net

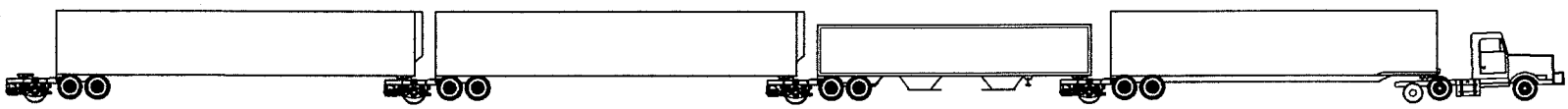
AMERICAN SURFACE LINES

# RailMate

**The Future of Bi-Modal Transportation**

**The Road-To-Rail Choice For**

- **Simplicity**
- **Versatility**
- **Adaptability**
- **Profitability**

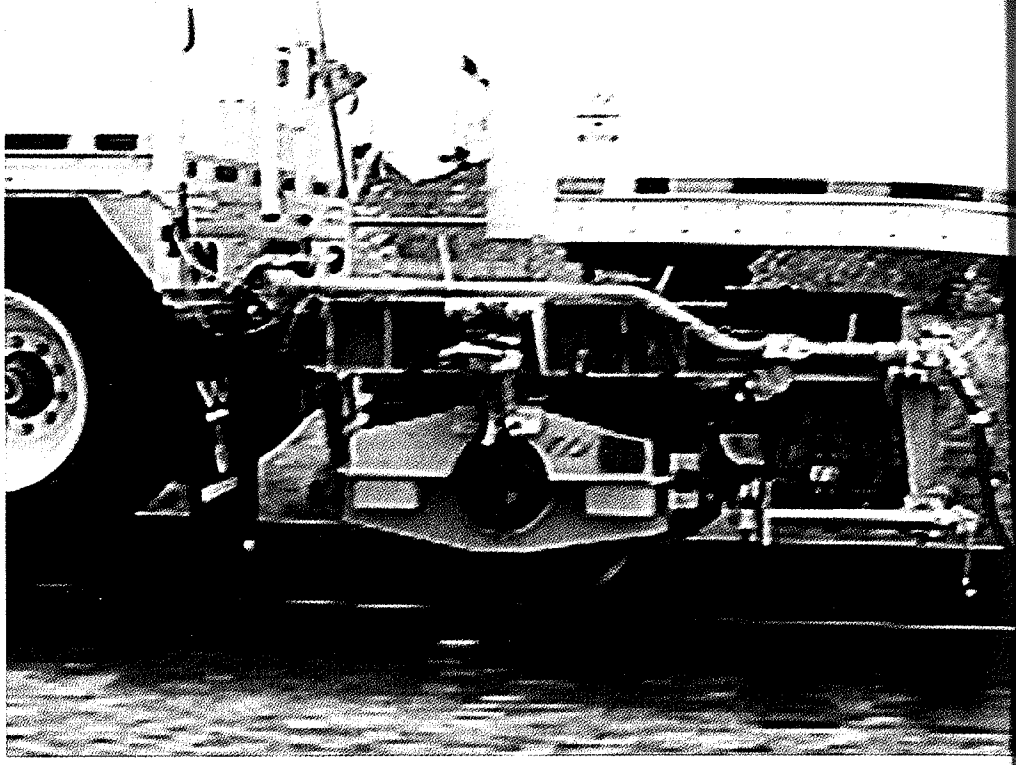


# RailMate Advantages

- Adapts to most standard makes of trailers
- Lighter in weight than competitive equipment
- A single operator handles all functions
- No auxiliary equipment needed
- Readily repositioned by road or rail
- Lower operating cost
- Lower equipment cost
- Slack free
- Operates on any class of track
- Combines superior advantages of truck and rail
- Constructed with standard components
- Accommodates up to 53' trailer or chassis
- Bypasses traffic congestion


# RailMate Flexible Applications

- Rail Service to Off-Rail Sites
- Containerized Freight
- LTL (Less than Truck Load) and TL Shipping
- Refrigerated Carriers
- Grain Hauling
- Waste Hauling
- Aggregates

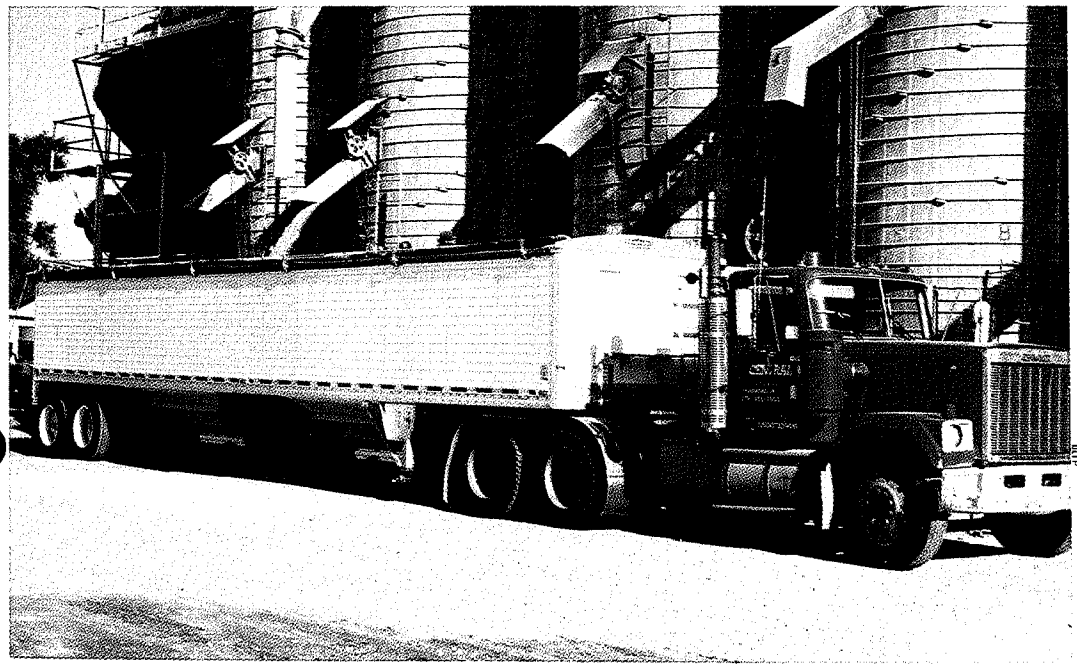


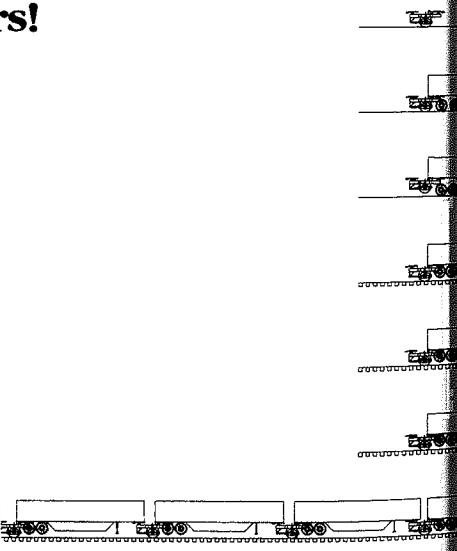
# Connect With Your Competitive Edge...

**RailMate**™

**RailMate** breaks the barriers between road and rail providing a cost-effective way of placing highway cargo on rail.

**RailMate:** a *real* choice for shippers!

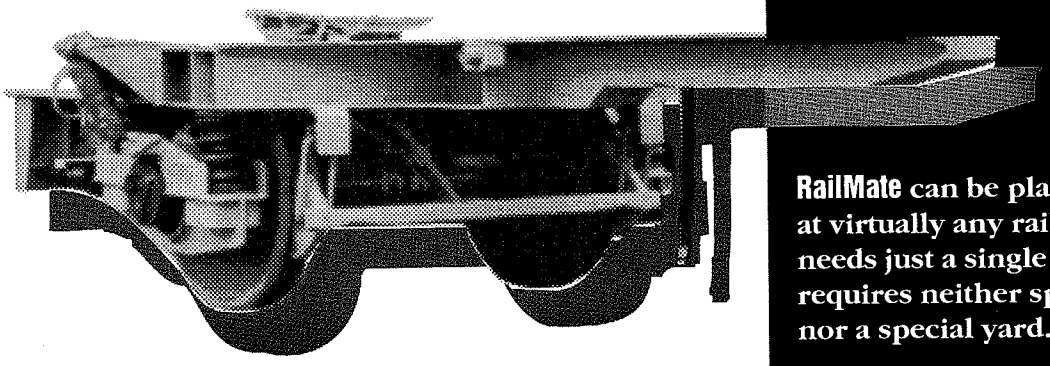




# RailMate

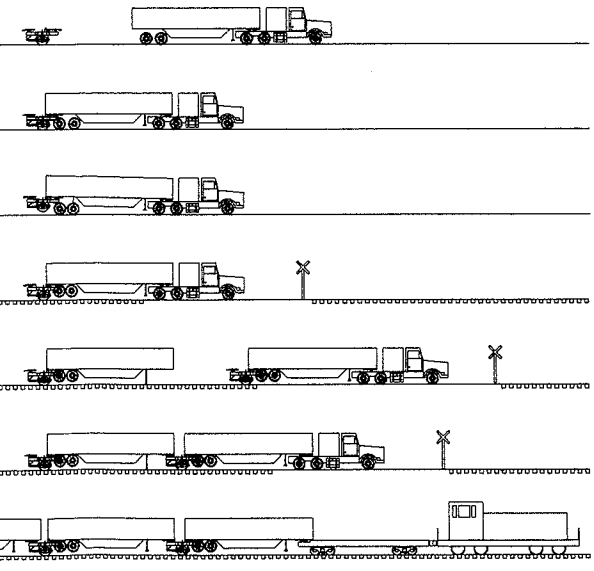
# Road to Rail:

## An Easy Connection



**RailMate** can be placed on the rails at virtually any railroad crossing. It needs just a single operator. It requires neither special end units nor a special yard.

## Moving from Road to Rail:



① Trailer backs up to bogie

② Trailer couples to bogie and air is connected

③ Trailer lifts bogie and is used to move bogie to rail

④ Trailer lowers bogie onto rail and raises tandem on trailer

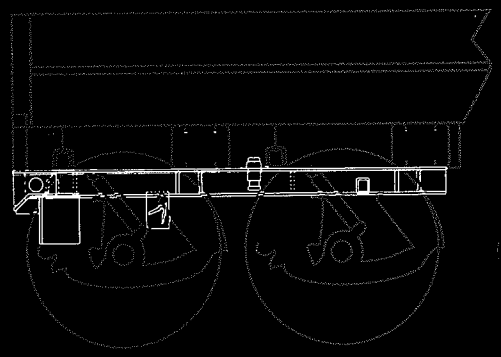
⑤ Tractor repeats steps 1-4 for next trailer

⑥ Tractor couples trailers together and air is connected

⑦ Power unit couples to consist and moves consist

## Trailer Modification

*Modification Kit licensed to any trailer manufacturer. The Trailer Modification Kit is installed above the air-ride suspension. It provides a sleeve for the* **RailMate** *connection that will fit most standard makes or models of trailers.*



- *Minimal requirements for trailer modification*
- *Trailer modification weight - less than 800 pounds*

RailMate™

# Your Answer to Today's Freight Delivery Challenges

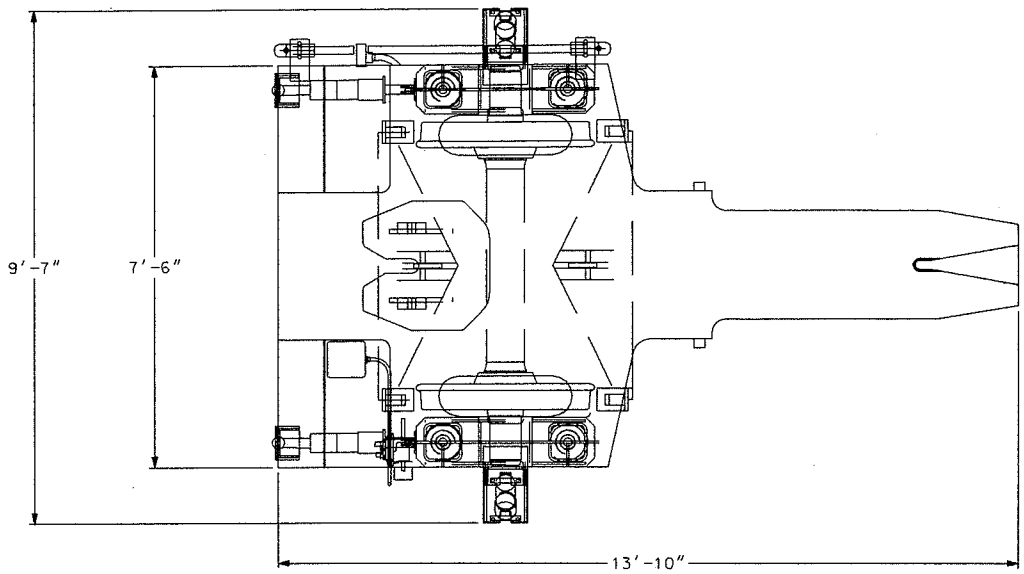
Whether you are in the freight business as a carrier, a producer, or a supplier, you face increasing challenges to your business in today's competitive marketplace.

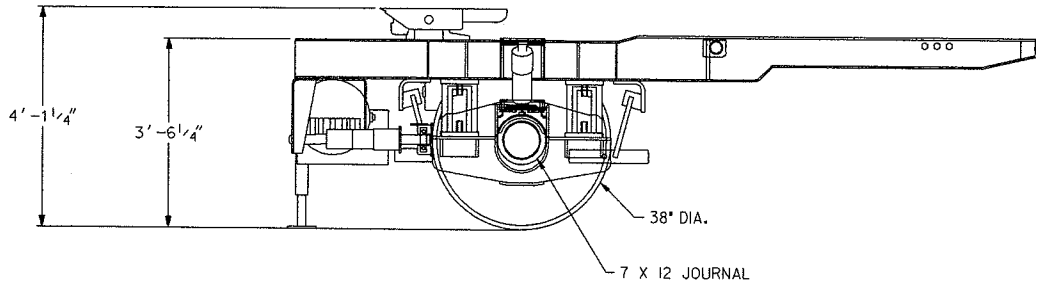
- **Speed** - Timely delivery may be impacted by the growing traffic congestion on roads and the availability of equipment. **RailMate** lets you go around the competition and on to your destination faster.
- **Personnel** - Finding enough qualified drivers you can depend upon isn't always easy. **RailMate** substantially reduces your personnel requirements.
- **Cost** - **RailMate** can reduce cartage costs significantly when compared with other alternative services - costs in time, personnel, equipment, and operations.
- **Flexibility and Accessibility** - **RailMate** enables your cargo to go virtually anywhere it needs to go - congested or remote locations become readily accessible. **RailMate** is designed to accommodate the higher permissible weights of NAFTA countries Mexico and Canada.
- **Regulation** - While the United States thus far has not faced the stringent freight transportation regulation of some countries, increasing environmental regulation places new demands on tractor trailer fleets. Regulation can be expected to increase as the problems worsen. **RailMate** is designed to meet the challenges of environmental, highway, and noise pollution regulations.

## Ready To Meet Your Needs

Developed by American Surface Lines and Sims Professional Engineers, **RailMate** has been thoroughly tested by the **Association of American Railroads' Transportation Technology Center**, Pueblo, Colorado, and in service on Midwestern railroads.

# RailMate™




- **Single axle**
- **Designed to run up to 70 mph**
- **Each bogie designed for gross weight up to 90,000 pounds on rail**
- **Designed to FRA and AAR standards**
- **AAR tested on a variety of track conditions**
- **Lifting system: Air-ride suspension**
- **Braking system compatible with AAR standards (clasp brakes)**

- **Bogie length - 13'10"**
- **Bogie width - 9'7"**
- **Bogie height to top plate - 49 1/4"**
- **Weight: Bogie unit -8,000 pounds**

**Patent # 5220870**

4600 West 77th Street, Suite 305
Edina, Minnesota 55435
Telephone: 952-830-9050
Fax: 952-830-1011
www: railmate.com

AMERICAN SURFACE LINES

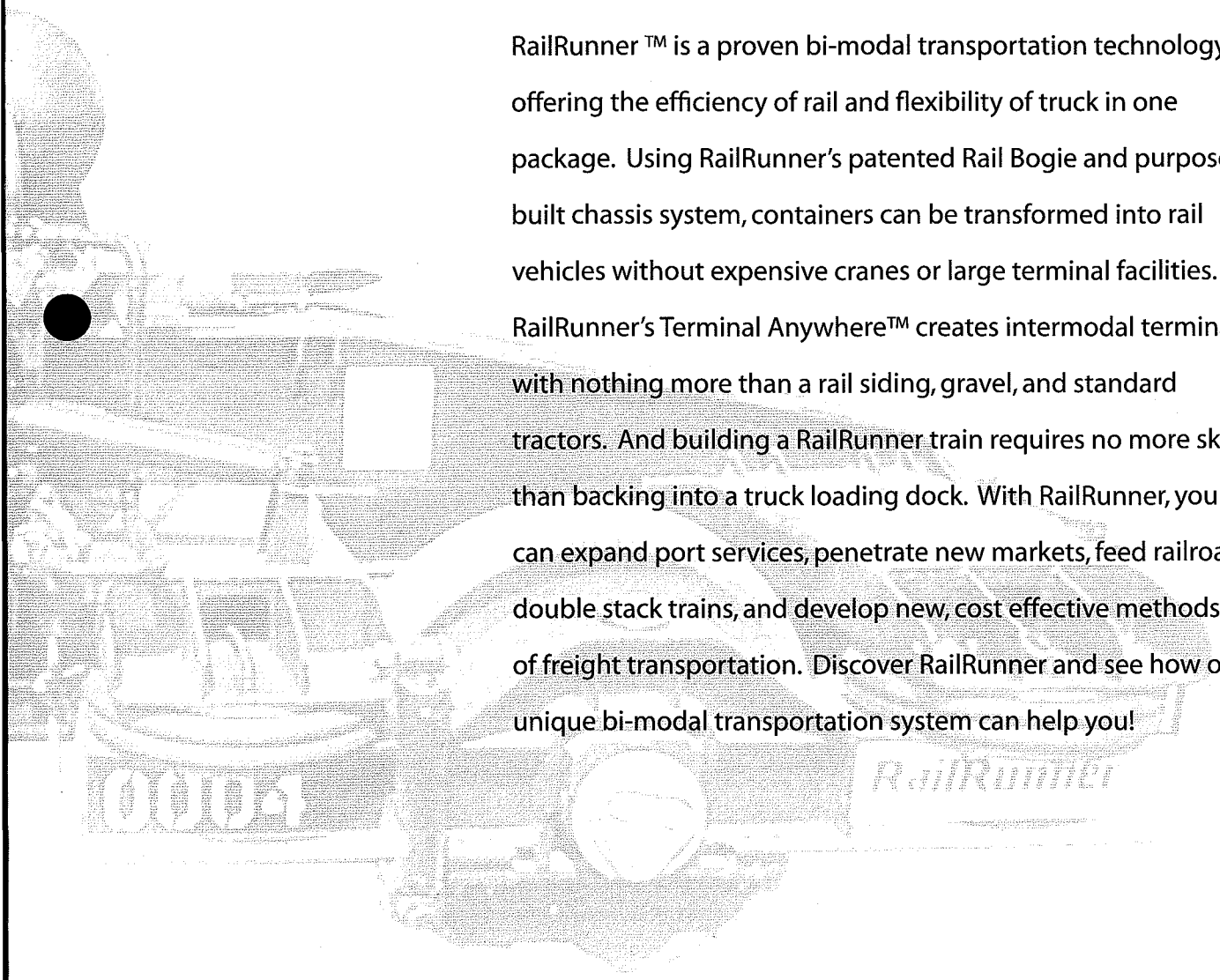
Member of
Intermodal Association of North America
& American Shortline Railroad Association

# RailRunner

## BI-MODAL TECHNOLOGY

### New technology. New markets. A new way of doing business.

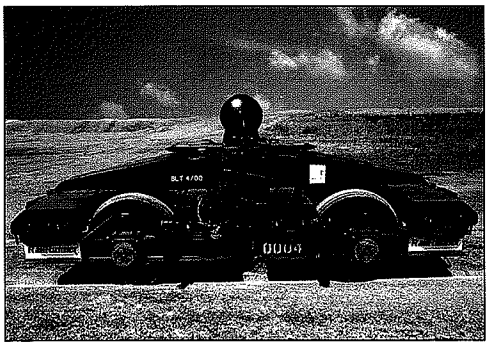
RailRunner ™ is a proven bi-modal transportation technology offering the efficiency of rail and flexibility of truck in one package. Using RailRunner's patented Rail Bogie and purpose-built chassis system, containers can be transformed into rail vehicles without expensive cranes or large terminal facilities. RailRunner's Terminal Anywhere™ creates intermodal terminals with nothing more than a rail siding, gravel, and standard tractors. And building a RailRunner train requires no more skill than backing into a truck loading dock. With RailRunner, you can expand port services, penetrate new markets, feed railroad double stack trains, and develop new, cost effective methods of freight transportation. Discover RailRunner and see how our unique bi-modal transportation system can help you!



# The RailRunner Bi-Modal System:

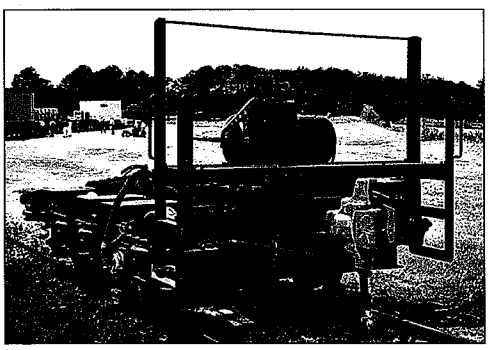
## Flexible. Affordable. Profitable.

RailRunner's bi-modal system can handle any standard freight container. The system has three main components: a RailRunner Rail Bogie, a RailRunner Rail Transition Bogie, and a RailRunner Chassis. Each component is carefully designed for ease of use, safety, and low-cost maintenance and operation. The system is flexible enough to adjust to your changing transportation requirements and durable enough to withstand the toughest freight conditions. Fully Transportation Technology Center, Inc. (TTCI)/AAR tested and using standard rail components, RailRunner is ready for your business.



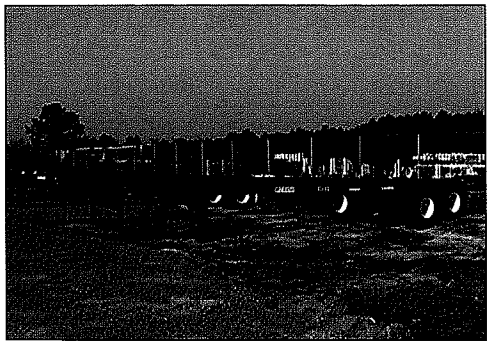
### The RailRunner High-Speed Rail Bogie

RailRunner's Rail Bogie transforms RailRunner Chassis from highway equipment to a high-speed rail freight vehicle. Each bogie supports and connects two RailRunner Chassis. The bogie's patented wedge-shaped, bayonet design aligns the chassis to the bogie without lengthy jockeying by a tractor to position itself correctly. RailRunner's Bogie has passed all TTCI/AAR tests at 70 mph and runs smoothly at 106 mph. Slackless coupling and airbag suspension ensures damage free transportation for even the most fragile cargo.



### The RailRunner Rail Transition Bogie

RailRunner's Transition Bogie connects RailRunner Chassis/Container units to standard locomotives and railcars. One end has a standard knuckle coupler, the other a specially designed RailRunner Coupler. The RailRunner Coupler attaches to the lead RailRunner Chassis/Container. The knuckle coupler attaches to the locomotive or railcar. Each bogie has hand-bar, crossover tables and access ladders on both sides. Bogies use standard railroad equipment and can operate as dedicated trains or behind mixed freight trains.



### RailRunner's High-Speed, Light-Weight Container Chassis

RailRunner Chassis travel like conventional highway equipment or run like railroad freight cars. The chassis carry any standard container and attach to tractors exactly like any over-the-road chassis. Minor RailRunner modifications produce minimal additional weight. RailRunner Chassis are also symmetrical: the same coupler is used on both sides. This speeds up terminal operations since equipment is not turned around to match different couplers. Each container takes three minutes to connect.

# RailRunner's Unique Features:

## A complete bi-modal package to meet today's changing transportation needs.

### Terminal Anywhere

RailRunner's Terminal Anywhere capability allows RailRunner trains to be assembled with minimal property and without expensive intermodal cranes or costly paving. All that is needed for a RailRunner terminal is a rail siding, a standard truck tractor, and gravel grading. This translates into lower capital costs, broad flexibility, and rapid penetration into markets difficult to reach by conventional intermodal systems.

### Low-Cost Operation

RailRunner's system is designed to be cost efficient in operation and maintenance. RailRunner Bogies use only standard, commercially available railcar equipment components for ease in parts repair and replacement. Each bogie is equipped with radial steering that mitigates wheel wear and extends product life. And RailRunner's lower tare weight and close coupling results in lower train operating costs by reducing fuel consumption and improving ride dynamics.

### Safety and Security

RailRunner has performed reliably and safely in actual freight operation field tests, mixed freight simulation, and controlled testing. All required AAR/TTCI testing requirements have been met or exceeded and the system operates safely up to speeds over 100 mph. RailRunner's train design reduces vandalism, substantially lowering cargo loss and damage. A failsafe-locking pin feature secures the chassis coupler safely and securely to the RailRunner Bogie.

### Fast and Easy to Use

RailRunner's unique coupling system and symmetrical chassis design make terminal operations easier than any other bi-modal system. Train assembly at the terminal is as simple as backing into a truck dock - no special training is required. The result is smooth and speedy terminal operations - each container takes only 3 minutes to be properly connected at the terminal.

### Superior Ride Quality

RailRunner's air bag suspension system insures a smooth, damage-free ride. The air bags are mounted on the RailRunner Bogie rather than the chassis as in other bi-modal systems. This reduces the tare weight of the chassis and permits heavier payload efficiency. In addition, RailRunner's slack free coupler system provides almost 100% less slack than conventional intermodal and 95% less slack than typical double stack.

### Flexibility

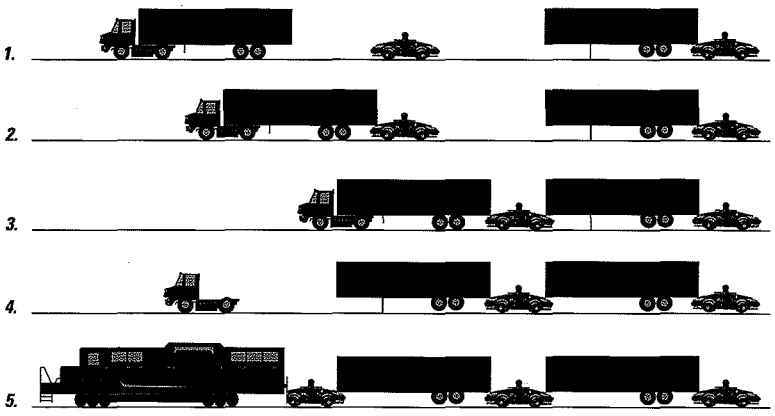
RailRunner's flexibility can meet your freight transportation requirements no matter how challenging. The system handles any standard size container and can easily be modified for custom applications. RailRunner can quickly and easily be sized to accommodate changing freight volumes and is portable enough to move to other, more desirable locations as market conditions dictate. No other system offers such flexibility in today's ever-changing transportation market.

RailRunner NA, Inc.
430 Bedford St.
Suite 370
Lexington, MA 02420-1523
781-860-7245 (main)
781-860-0017 (fax)

# Terminal Operations:

## RailRunner in action.

The diagram below shows the simplicity and flexibility of RailRunner's bi-modal system in the terminal.




1. Tractor positions RailRunner Container and Chassis on track and backs into RailRunner Bogie. As chassis slides on to bogie, chassis wheels lift clear of track. Once chassis is positioned on bogie, locking pin on bogie automatically attaches chassis. Tractor detaches from chassis, leaving it on landing gear.
2. Tractor repeats steps 1 for second RailRunner Container/Chassis and Bogie.
3. Tractor backs entire second unit (combined container, chassis, and bogie) to front of first chassis. As second bogie connects to first chassis, landing gear of first chassis raises clear of track. No manual rising of landing gear is required.
4. Tractor disengages from chassis and repeats above process until entire RailRunner train is ready for locomotive.
5. Rail locomotive backs RailRunner Transition Bogie into RailRunner train. Air hoses are connected and air bags on all RailRunner Bogies are activated, further raising all chassis on train clear of rail and cushioning cargo. RailRunner train departs terminal.

# Technology, expertise, and experience you can count on.

New port services, double stack feeder lanes, shorter haul truck markets, and specialized container commodities such as solid waste, wood products, and auto parts are all prime candidates for RailRunner. RailRunner's trained staff has the transportation expertise, railroad experience, and tools necessary to evaluate your specific application. Our economic model can develop a detailed financial analysis of your business and determine the best way to support your operations. Contact RailRunner today at 215-248-4151 or info@railrunner.com, or visit our web site at http://www.railrunner.com. Start learning about a new, exciting way to do business!

# Minnesota Agriculture

## The Foundation of Minnesota's Economy


**2004 - 05**

***A profile of Minnesota's agriculture and its contribution to the state economy.***

**www.mda.state.mn.us**

## Message from the Commissioner of Agriculture

MINNESOTA DEPARTMENT OF AGRICULTURE
FROM THE FARM TO YOUR FAMILY

Agriculture is the foundation of Minnesota's economy. Throughout Minnesota's history, production agriculture has been the cornerstone upon which the state's economy has been built. Today, Minnesota remains one of America's leading agricultural producers. The state ranks seventh in agricultural production, and is among the top 10 exporters of agricultural commodities.

With only a small percentage of the state's population engaged in farming, our agricultural producers provide a reliable source of food and clothing for an ever-growing consumer population. It is a huge responsibility.

Agriculture also provides opportunities for the development of many other industries in our state, such as manufacturing, transportation, and the wholesale and retail trades. In fact, the agricultural industry generates nearly one-fifth of the state's overall economic activities. One of every five Minnesota workers has a job that is directly or indirectly related to agriculture.

Today, Minnesota's agricultural industry is facing many new challenges – food safety, changes in consumer demands, environmental protection, sustaining our rural communities, and developing new products and markets. With public expectations growing, it is more important than ever for the agricultural community to tell its story. Minnesota farmers' tradition of hard work and innovative spirit will help them meet these challenges and find success in the 21st century.

Gene Hugoson
Commissioner

2004-05

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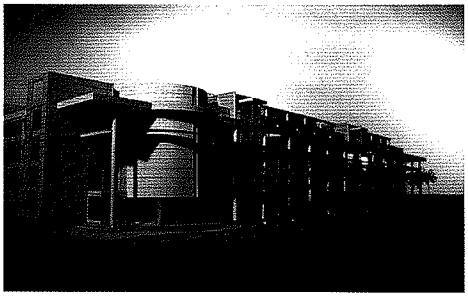


*Orville L. Freeman Building*

### Minnesota Department of Agriculture Mission

*From the Farm to the Family*

Our mission is to work toward a diverse agricultural industry that is profitable and environmentally sound; to protect public health and safety regarding food and agricultural products; and to ensure orderly commerce in agricultural and food products.


Minnesota Department of Agriculture,
90 W. Plato Blvd, St. Paul, MN 55107,
Tel: 651-297-2200, Fax: 651-296-6890
www.mda.state.mn.us


In accordance with the Americans with Disabilites Act, an alternative form of communication is available upon request. TTY: 1-800-627-3529

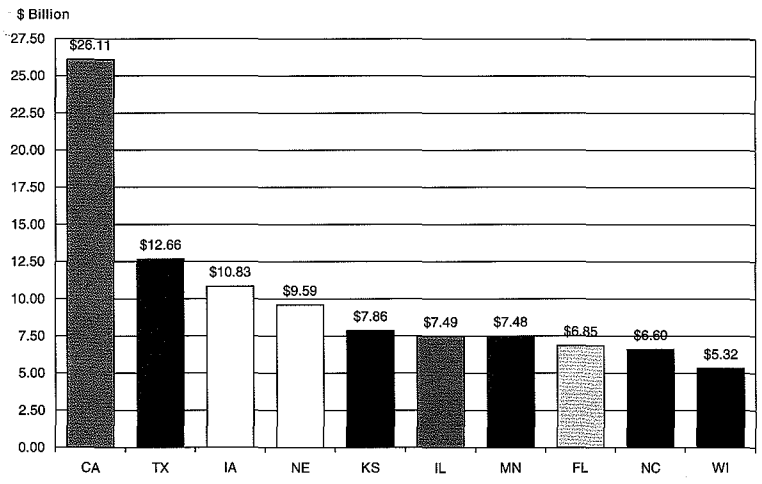
## MINNESOTA PROFILE

- Population: 5.06 million. (2003 – ranks 21st among all states)
- Urban population: 71%
  Rural population: 29% (2000 Census)
- Total workforce: 2,998,434 people (04)
- Total area: 84,068 square miles (12th largest state)
- Land area: 79,289 square miles
- Lakes and water surface: 4,779 square miles
- Number of lakes (larger than 10 acres): 15,291

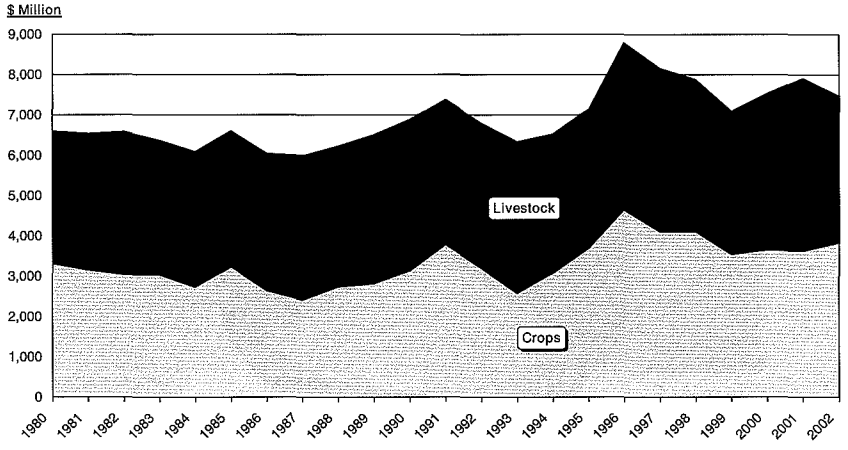
## MINNESOTA AGRICULTURAL FACTS (2002)

- Minnesota is the 7th largest agricultural producer in the U.S.
- Number of farms: 80,900
- Farm land: 27.8 million acres (55% of Minnesota's total land area)
- Average farm size: 344 acres
- Farm income from agricultural marketing:
  *Crops -- $3.8 billion*
  *Livestock -- $3.6 billion*
  *Total -- $7.5 billion (7th in the nation)*
- Crops and livestock are equally important to Minnesota's agriculture; they complement each other and are inter-dependent, making a diverse and well balanced production agriculture.

## Agricultural Cash Receipts: Top 10 States (2002)



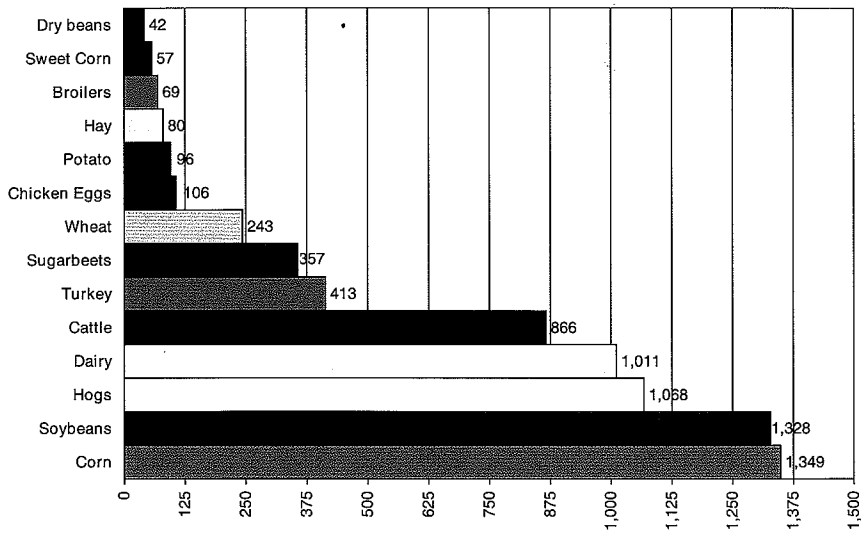

## Minnesota Agricultural Cash Receipts



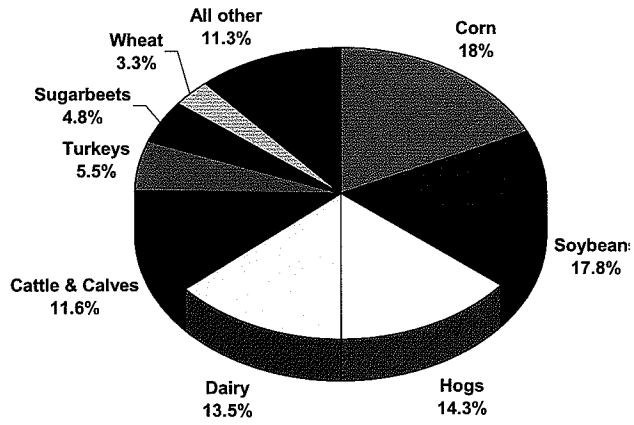

## Minnesota's Agricultural Products by Ranking (2002) - Million Dollars

| Crops | Value | % of Total | Livestock | Value | % of Total |
|---|---|---|---|---|---|
| Corn | $1,348.5 | 18.0% | Hogs | $1,067.8 | 14.3% |
| Soybeans | $1,327.8 | 17.8% | Dairy | $1,011.3 | 13.5% |
| Sugarbeets | $356.8 | 4.8% | Cattle and calves | $866.2 | 11.6% |
| Wheat | $243.2 | 3.2% | Turkey | $413.4 | 5.5% |
| Potatoes | $95.7 | 1.3% | Chicken eggs | $106.2 | 1.4% |
| Hay | $80.3 | 1.1% | Broilers | $68.9 | 0.9% |
| Floriculture | $78.3 | 1.0% | Honey | $12.1 | 0.2% |
| Sweet corn (processed) | $57.2 | 0.8% | Sheep and lamb | $11.9 | 0.2% |
| Dry beans | $41.7 | 0.6% | | | |
| Green peas (processed) | $31.4 | 0.4% | | | |
| Barley | $11.3 | 0.2% | | | |
| Sunflowers | $9.3 | 0.1% | | | |
| Oats | $8.8 | 0.1% | | | |
| Other crops | $143.0 | 1.9% | Other livestock products | $86.9 | 1.2% |
| Total Crops | $3,833.3 | 51.3% | Total Livestock | $3,644.9 | 48.7% |

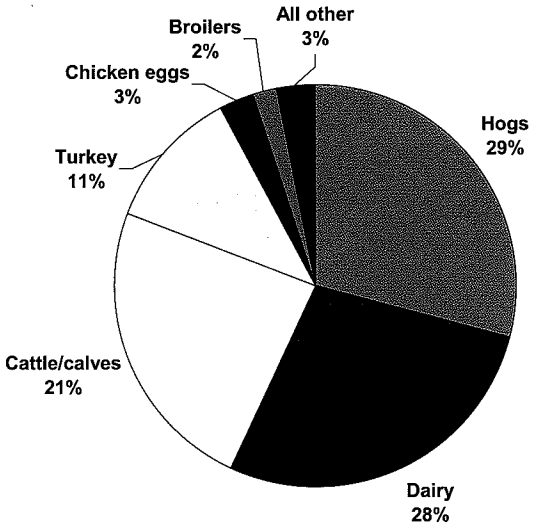
## Minnesota Major Agricultural Crops Value (Million $) (2002)




## Minnesota Cash Receipts (2002)




## Minnesota Livestock Sectors (2002)




## MINNESOTA AGRICULTURAL CASH RECEIPTS

- Minnesota's top 5 commodities in 2002: corn, soybeans, hogs, dairy, and cattle & calves, which accounted for 75% of Minnesota's total agricultural cash receipts.
- From 1990 to 2002, agricultural cash receipts increased from $6.9 billion to $7.5 billion, an 8.6% growth.

## MINNESOTA'S NATIONAL RANKING IN AGRICULTURAL PRODUCTION (2002)

**1st:** sugarbeets, turkey, sweet corn for processing, green peas for processing

**2nd:** spring wheat, oats, canola, cultivated wild rice

**3rd:** soybeans, hogs, flaxseed,

**4th:** corn, sunflowers, dry beans, cheese, mink pelts

**5th:** dairy cows, barley, honey

**6th:** potatoes, red meat

**7th:** all wheat

**8th:** total livestock production

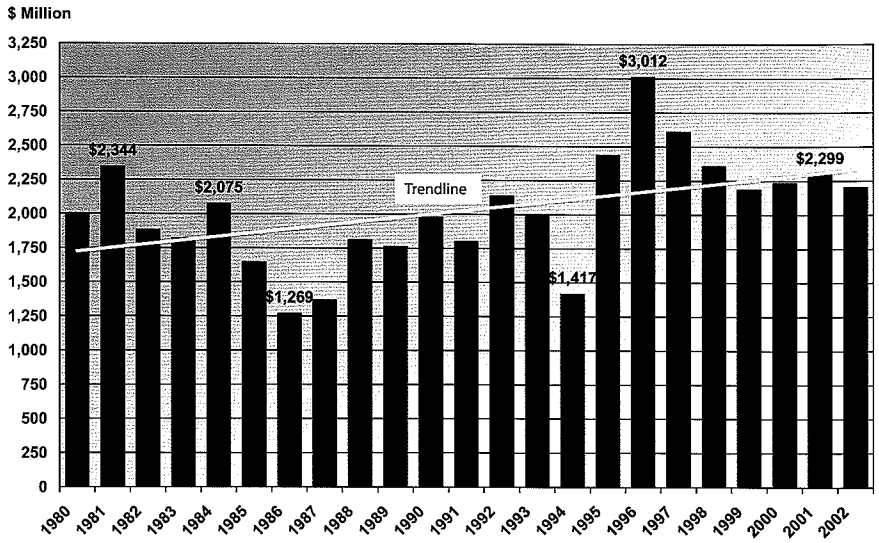
**9th:** all hay

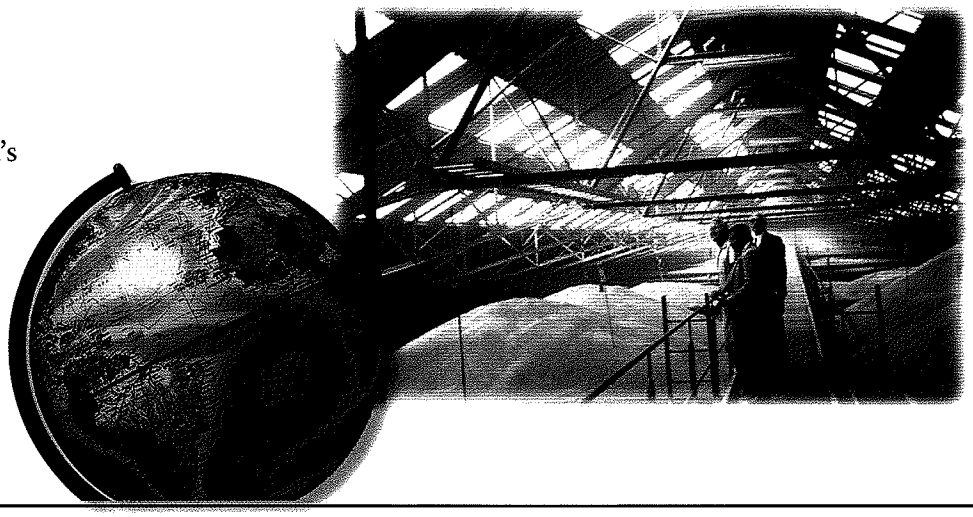
**10th:** cattle and calves, chickens, eggs

# MINNESOTA AGRICULTURAL EXPORTS

- Minnesota is the 7th largest agricultural exporting state in the U.S.
- Minnesota's total agricultural exports in 2002: $2.2 billion.
- Minnesota's top 5 export commodities: soybeans, corn, livestock products, wheat, and processed vegetables.
- The top 5 commodities contribute 83% of all agricultural exports.
- Soybeans, corn and wheat account for 63% of all commodity exports.
- Soybeans and soybean products account for one-third of Minnesota's total agricultural exports.

## Minnesota Agricultural Exports (1980-2002)



## Minnesota Agricultural Exports by Commodity *(Million Dollars)*

| 2002 Rank | Commodity | 2002 Exports | % of Total | 1990 Exports | % of Total |
|---|---|---|---|---|---|
| 1 | Soybeans & products | $675.1 | 30.6% | $507.0 | 25.6% |
| 2 | Feed grains & products | $512.1 | 23.3% | $828.7 | 41.9% |
| 3 | Livestock products (excludes poultry) | $238.4 | 10.8% | $93.0 | 4.7% |
| 4 | Wheat & products | $203.2 | 9.2% | $73.3 | 3.7% |
| 5 | Processed vegetables | $194.2 | 8.8% | $153.8 | 7.8% |
| 6 | Feed & fodder | $75.2 | 3.4% | $80.7 | 4.1% |
| 7 | Dairy products | $74.2 | 3.4% | $39.8 | 2.0% |
| 8 | Poultry & products | $51.8 | 2.4% | $13.6 | 0.7% |
| 9 | Hides & skins | $50.8 | 2.3% | $55.7 | 2.8% |
| 10 | Seeds | $26.9 | 1.2% | $15.0 | 0.8% |
| 11 | Fats & oils | $12.3 | 0.6% | $14.6 | 0.7% |
| 12 | Sunflower seeds & oil | $4.7 | 0.2% | $7.5 | 0.4% |
| | All other | $83.5 | 3.8% | $95.7 | 4.8% |
| | **Total** | **$2,202.4** | **100.0%** | **$1,978.4** | **100.0%** |

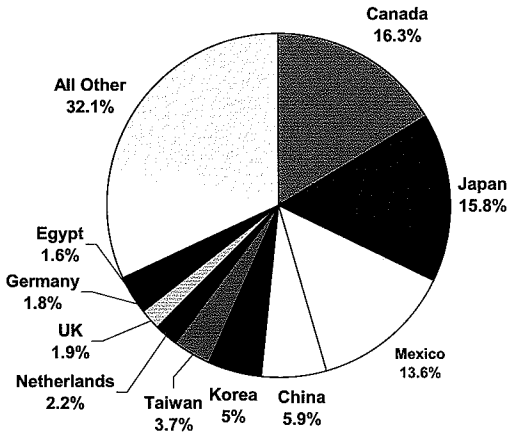
## EXPORT MARKETS FOR MINNESOTA AGRICULTURAL PRODUCTS

- Asia is the largest regional market for Minnesota's agricultural exports, with a marketshare of 36% in 2002.
- North America is the second largest regional market for Minnesota's agricultural exports, with a marketshare of 30% in 2002.
- The top 6 regional markets account for 88% of Minnesota total agricultural exports.

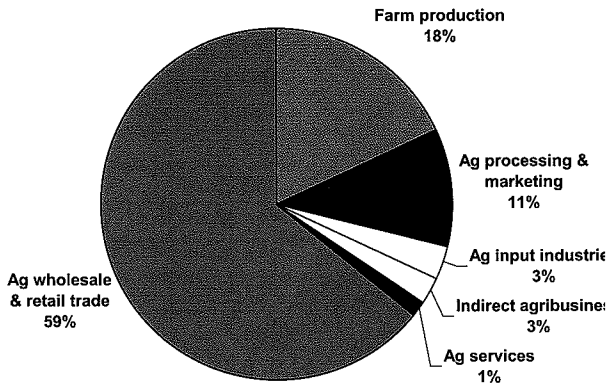
### Largest Regional Markets for Minnesota Agricultural Products

| 2002 Rank | Region | % of Total |
|---|---|---|
| 1 | Asia | 36% |
| 2 | North America | 29.9% |
| 3 | European Union | 11.6% |
| 4 | Middle East | 4.3% |
| 5 | South America | 3.4% |
| 6 | Caribbean Islands | 2.9% |
| | Top 10 Total | 87.9% |
| | All other | 12.1% |
| | **World Total** | **100.0%** |

### Minnesota's Top Export Markets (2002)




### Minnesota Ag Employment




- Canada is the largest country market, with a market-share of 16.3% in 2002.
- Japan is the second largest country market, with a market-share of 15.8% in 2002.
- The top 6 county markets account for 60% of Minnesota total agricultural exports.

### Largest Country Markets for Minnesota Agricultural Products

| 2002 Rank | Country | % of Total |
|---|---|---|
| 1 | Canada | 16.3% |
| 2 | Japan | 15.8% |
| 3 | Mexico | 13.6% |
| 4 | China | 5.9% |
| 5 | Korea | 5.0% |
| 6 | Taiwan | 3.7% |
| | Top 10 Total | 60.4% |
| | All other | 39.6% |
| | **World Total** | **100.0%** |

### Minnesota Agriculture's Contribution to the State Economy

- Minnesota's agricultural industry (including production and processing), is the second largest economic sector in Minnesota.

  Largest industries in Minnesota:

  1. Manufacturing
  2. Agriculture
  3. Services
  4. Wholesale and retail trade
  5. Finance, insurance and real estate
  6. Construction
  7. Transportation, communication, and public utilities
  8. Mining

- Agriculture is the second largest employer in Minnesota.
- Employment in agriculture and food industry accounts for 16% of total jobs.
- In rural Minnesota, agricultural employment accounts for 26% of all jobs.
- Even in metro areas, agricultural employment accounts for 13% of all jobs.
- Over 80% of all agricultural jobs are off-farm, in processing, distribution, supply, and service sectors.

# ECONOMIC IMPACT OF THE AGRICULTURAL INDUSTRY IN MINNESOTA



## Economic Foundation

- Minnesota's agriculture has a long history of serving as an economic cornerstone for the state's economy. It supports many other industries, such as manufacturing, transportation, wholesale and retail trade, services, construction, banking, insurance, and real estate.

## Job Creation

- Every agricultural production job supports an additional 1.5 jobs in all economic sectors.

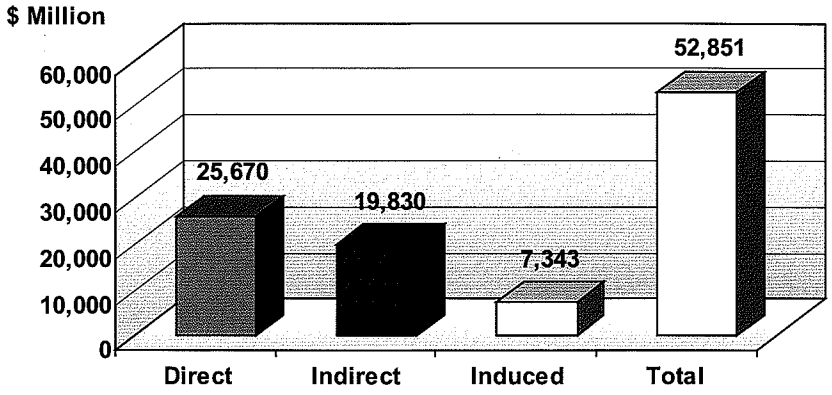
## Export Strength

- Agricultural and food exports account for more than 20% of Minnesota's total exports from all industries.

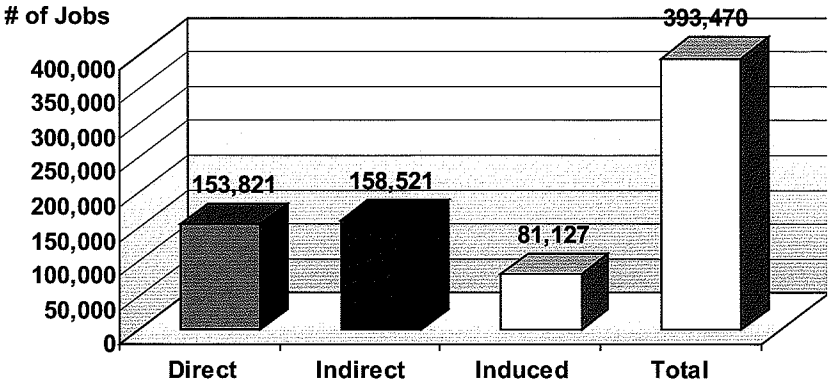
## Total Economic Impact

- The economic contribution of Minnesota's agricultural industry reaches far beyond the agricultural sector due to the "multiplier effect".
- Output impact:
  - The "multiplier effect" of Minnesota's agricultural production and processing generates ***$53 billion*** economic activities for the state.
- Employment impact:
  - The "multiplier effect" of Minnesota's agricultural production and processing supports over ***393,000 jobs.***

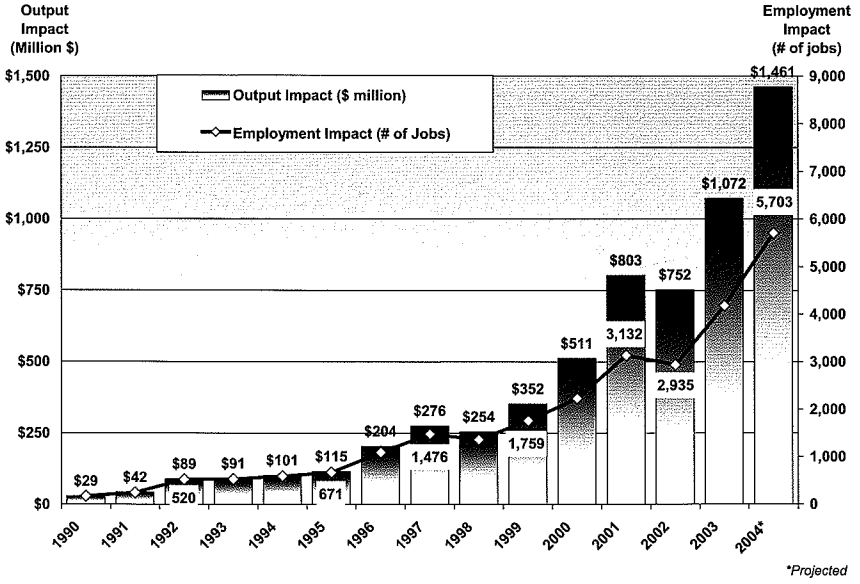
## Output Impact




## Employment Impact




## Minnesota Ethanol: Total Economic Impact and Employment Impact




*Projected

## Minnesota's Livestock Industry

- Minnesota is the 8th largest livestock producer in the U.S.
- In 2002, Minnesota's livestock cash receipts totaled $3.6 billion.
- Livestock production contributes 49% of Minnesota's total agricultural income.

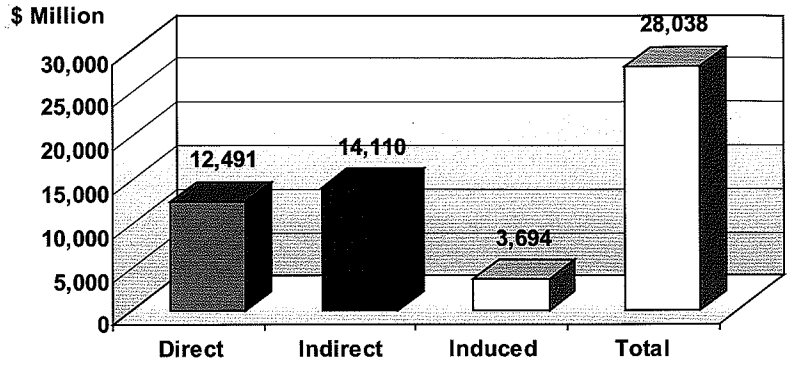
## Importance of the Livestock Industry

- The livestock industry is a key sector in Minnesota's agriculture.
- Livestock production supports crop farming through feed utilization, a significant market for Minnesota's major crops.
- The livestock industry in Minnesota consumes:
  28% of total annual corn crop
  23% of total annual soybean crop
- Without the strengths of the livestock industry, Minnesota's agricultural production and processing industries would lose 50% of its economic value.

## Economic Impact of Minnesota's Livestock Industry

- Minnesota's livestock industry (including production and processing) generates $28 billion in total economic impacts.
- Minnesota's livestock industry (including production and processing) supports more than 193,000 jobs.
- Minnesota's livestock industry creates economic activities in many other sectors including agriculture, manufacturing, transportation, trade, services, and construction.

## Livestock Industry Output Impact




## Livestock Industry Employment Impact