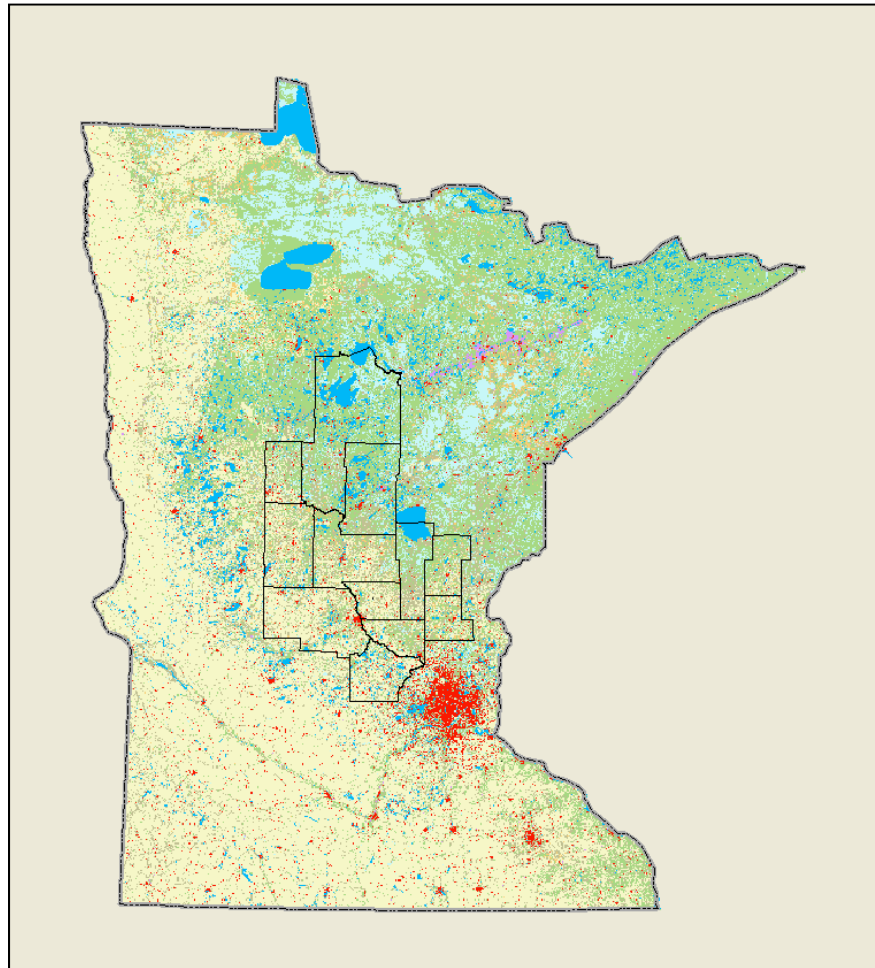


# Central Minnesota

## Regional Freight Profile

*Working DRAFT*

May 2010



Minnesota Department of Transportation



The purpose of the Central Regional Freight Profile is to document freight movement trends in the area. This report will analyze the major freight-dependent business sectors and examine the impact that they have on the regional freight transportation system. This analysis will examine the demands placed on the freight transportation modes of truck, rail, air, water, and pipelines. The profile will also identify the key import and export markets in Central Minnesota generating significant freight traffic, and take into account traffic projections into year 2030 to anticipate future demands.

This analysis primarily uses IHS-Global Insight's 2007 TRANSEARCH Insight database and the Surface Transportation Board's 2007 Rail Waybill Sample. These datasets provide county-level data for freight moves originating and terminating within Minnesota, and BEA-level information for those moves originating or terminating beyond state borders. This information provides a quantitative description of the movement of goods between regional origins and destinations by mode. The TRANSEARCH Insight database also provides database traffic projections for years 2020 and 2030. These forecasts predict goods movements between regions, and are not general economic projections. They take into account industry, regional and national economic trends to estimate commodity-level trade flows. This information can help identify transportation improvements, freight planning objectives and other strategies that will benefit the economic competitiveness of the region.

## Directional Flows

According to data analysis, Central Minnesota moved 31 million tons of freight valued at \$16 billion in 2007. Figures 1 and 2 indicate that 60 percent of the freight tonnage and 28 percent of freight value resulted from freight terminating in the region from origins outside the region. 21 percent of the tonnage and 71 percent of the value originated in the region with destinations outside of the region. 20 percent of the tonnage and 1 percent of the value were local freight movements that both originated and terminated in the region.

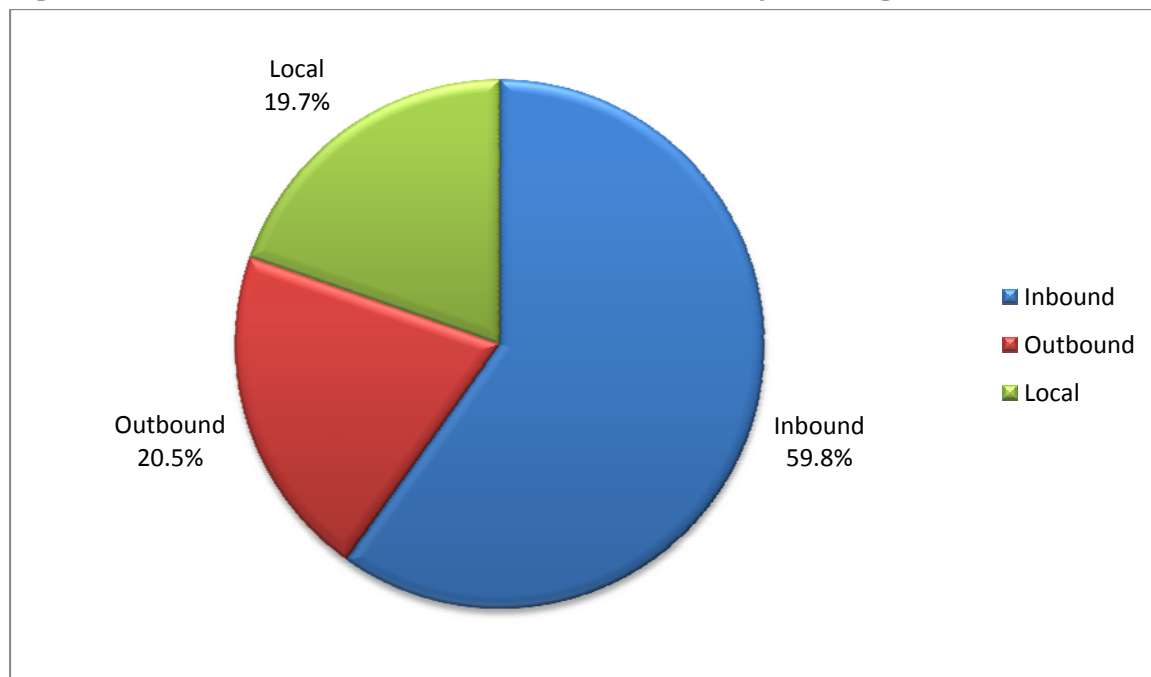
By 2030, the weight of freight moving into, out of and within Central Minnesota is projected to grow by 41 percent to over 43 million tons. A significant portion of this increase is expected to come from originating freight shipments, although terminating and local freight shipments are also expected to experience increased weights. The value of freight moving into, out of and within the region is projected to grow by 92 percent to approximately \$31 billion by 2030, resulting mainly from originating shipments.

Freight shipments moving to Central Minnesota have many different origins. Figure 3 lists the top 10 origins of freight moving to the region by tonnage. Most freight tonnage terminating in Central Minnesota originates in the Powder River Basin regions of Casper, Wyoming and Billings, Montana. These are primarily rail coal shipments destined for the power plant in Becker, Minnesota. Additional origins of freight moving to the district include the Twin Cities Metro Area, other Minnesota locations, and other locations in the Upper Midwest such as Wausau, Wisconsin, Des Moines, Iowa and Bismarck, North Dakota. Figure 4 lists the top 10 origins of freight moving to the region by value. Again, the Twin

Cities is the largest origin, with the Los Angeles, New York, and Seattle areas and the Upper Midwest also representing significant import value.

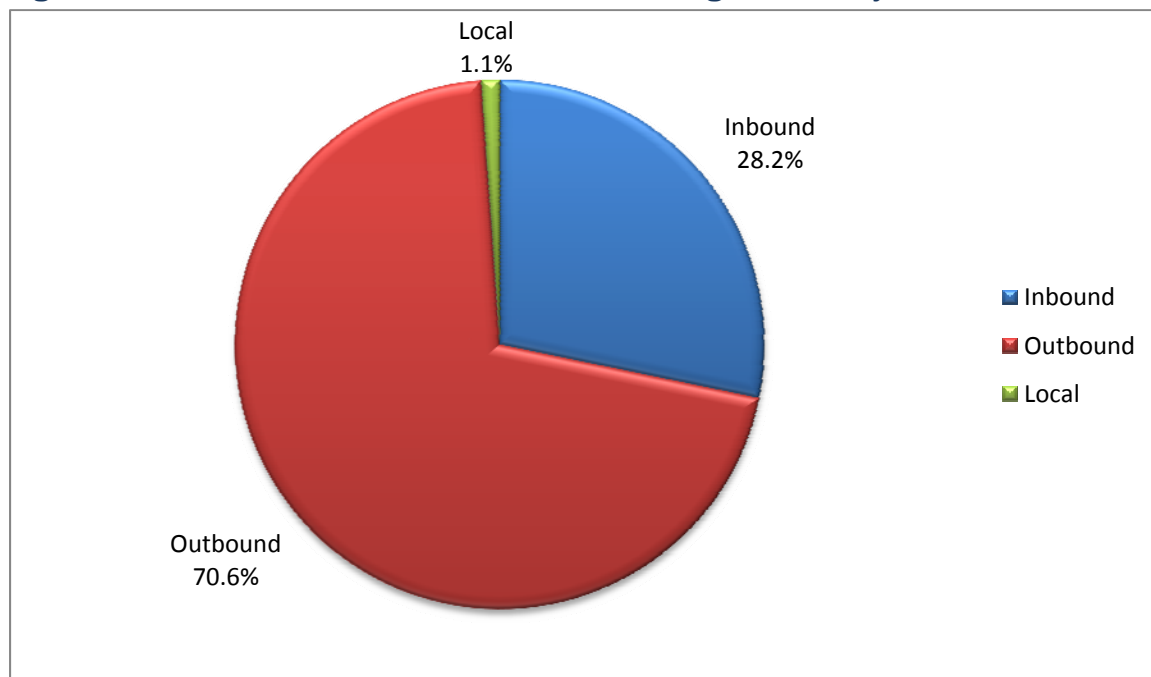
Figure 5 lists the top 10 destinations of freight tonnage originating in Central Minnesota. The Twin Cities Metro Area receives the most amount of freight tonnage from Central Minnesota, with other areas in Minnesota and the Midwest also receiving notable tonnage. Figure 6 lists the to 10 freight destinations by value. The Twin Cities Metro Area is the largest destination by value, with Los Angeles, New York, Washington, DC and Philadelphia also receiving notable freight value from Central Minnesota.

**Figure 1: Central Minnesota Directional Flows by Tonnage**



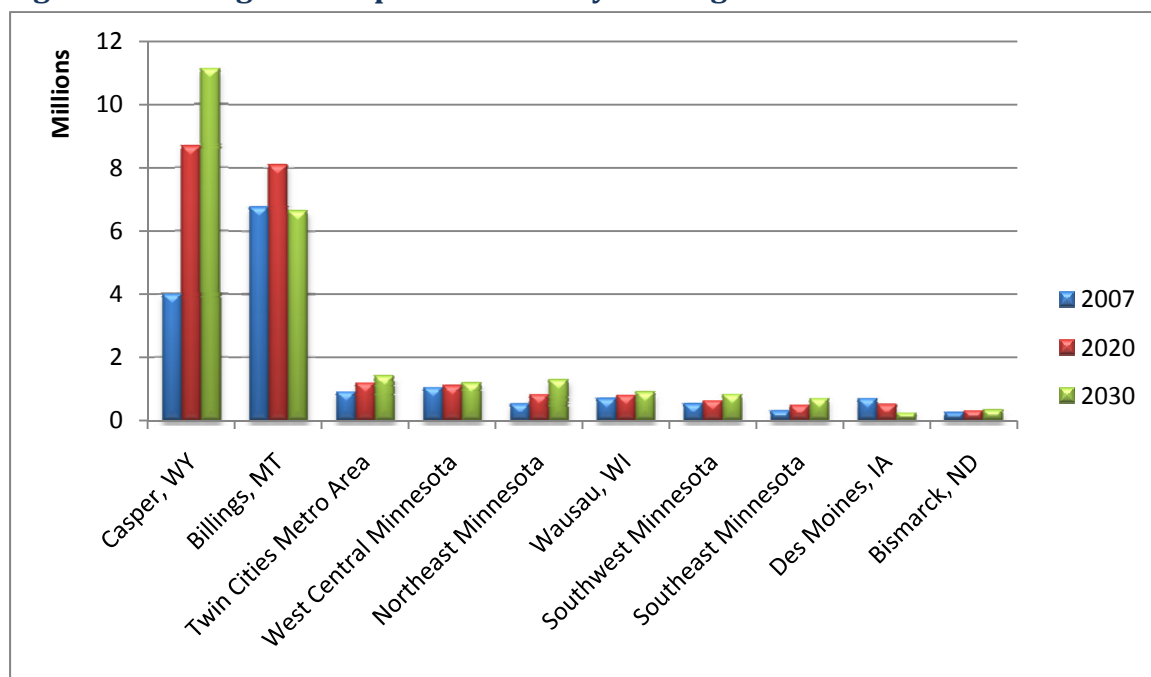
Source: TRANSEARCH

**Figure 2: Central Minnesota Directional Freight Flows by Value**



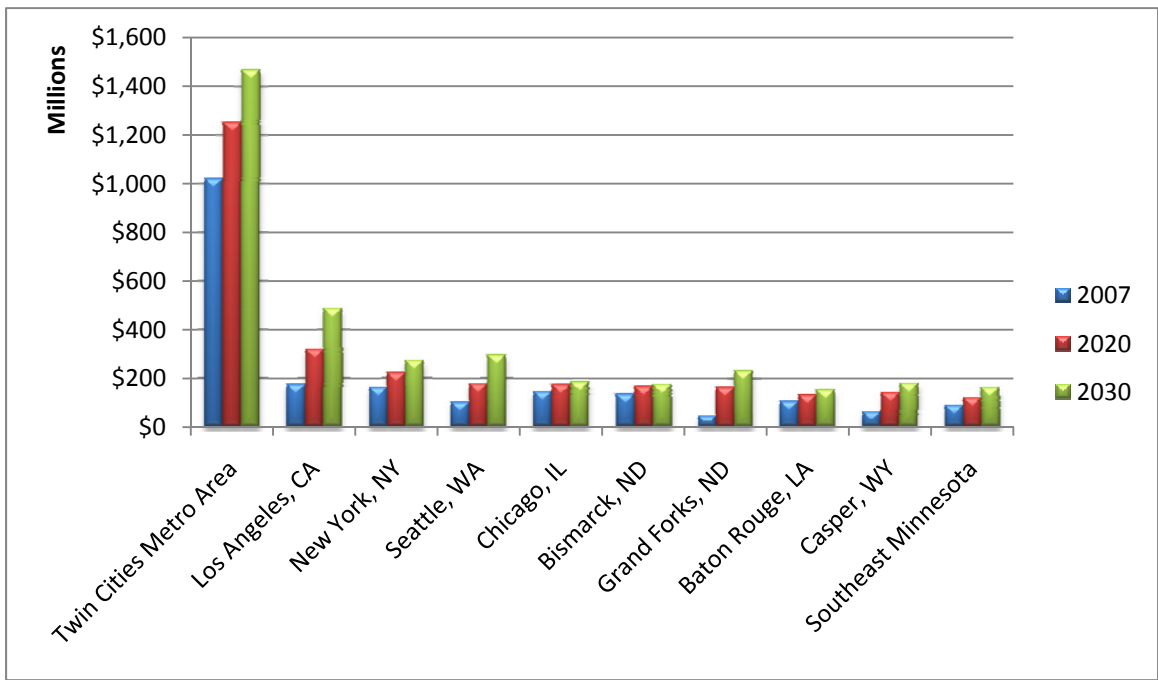
Source: TRANSEARCH

**Figure 3: Regional Import Markets by Tonnage**



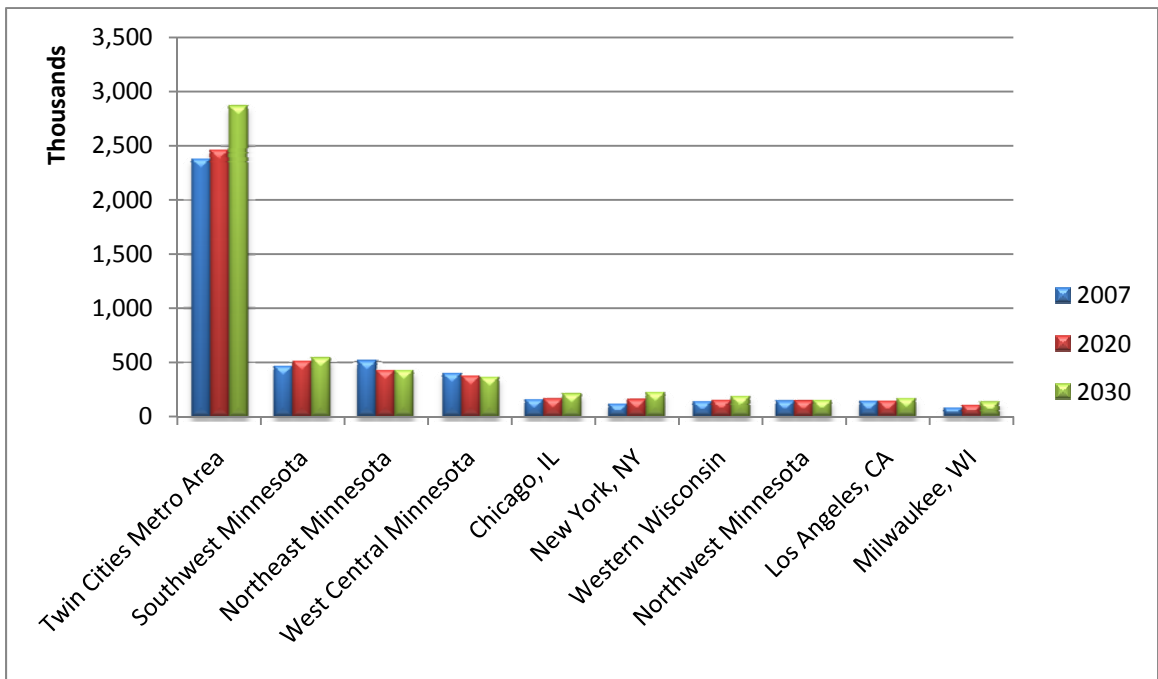
Source: TRANSEARCH

**Figure 4: Regional Import Markets by Value**



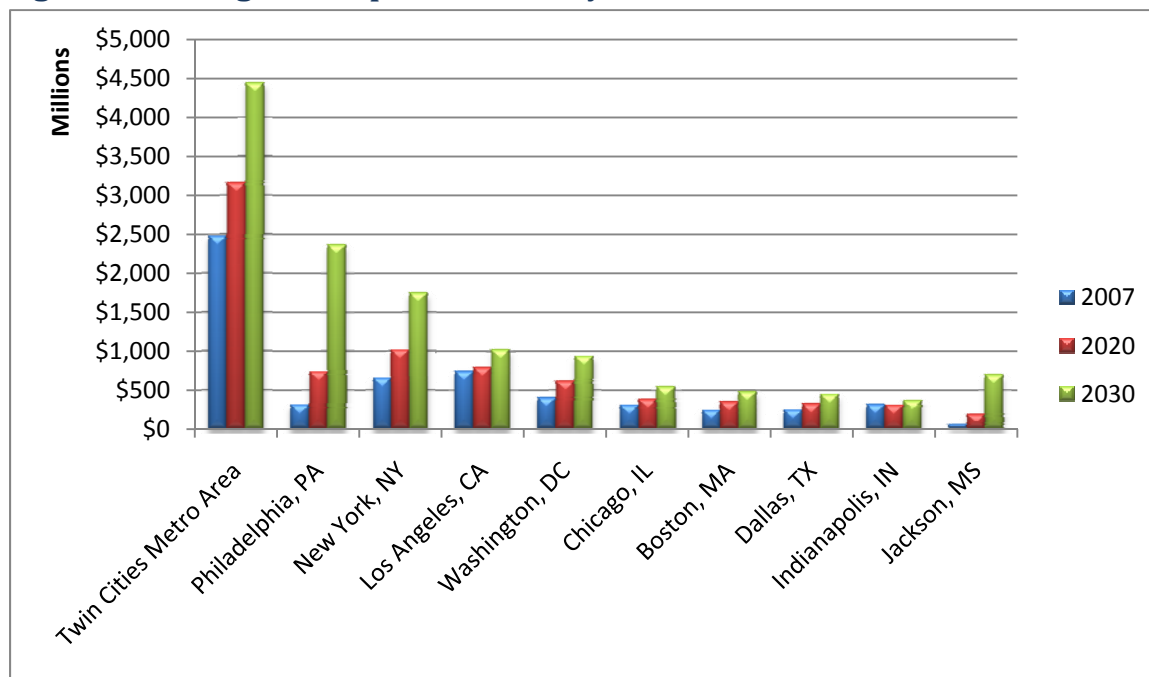
Source: TRANSEARCH

**Figure 5: Regional Export Markets by Tonnage**



Source: TRANSEARCH

**Figure 6: Regional Export Markets by Value**



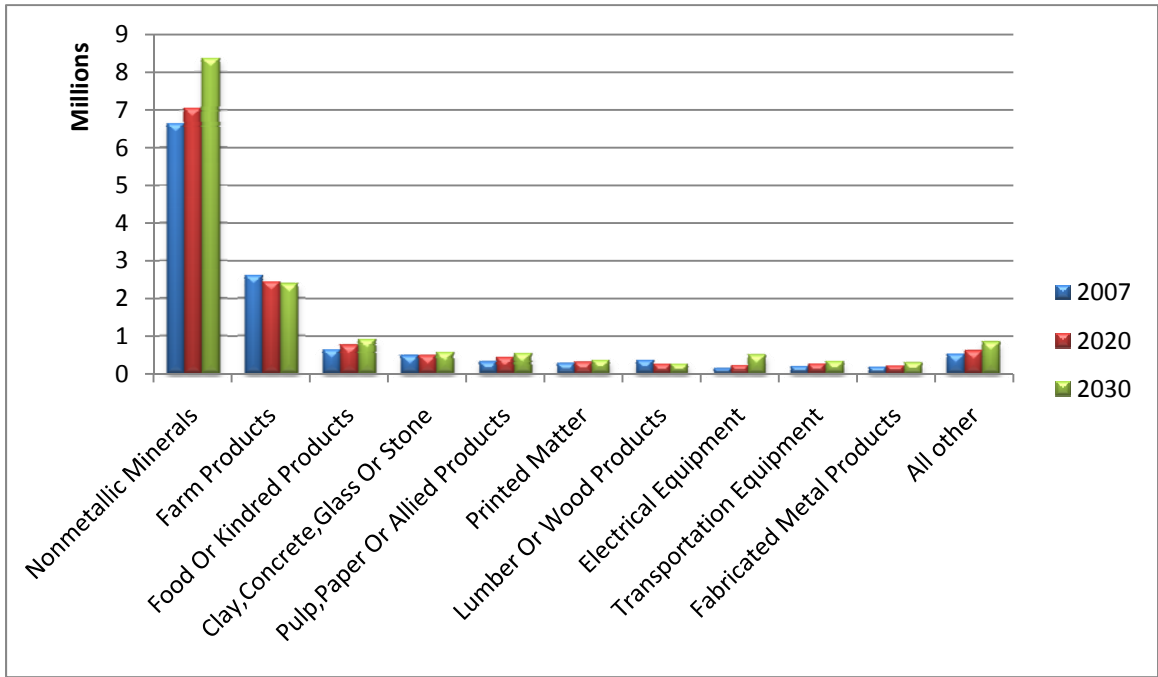
Source: TRANSEARCH

## Key Originating Commodities

The largest commodities originating in Central Minnesota by tonnage are nonmetallic minerals and farm products, which together make up 75 percent of outbound tonnage. Included in the nonmetallic minerals group are products such as sand and gravel (including crushed granite), broken stone, riprap and dimension quarry stone. Most of this tonnage moves by truck, but a portion includes rock ballast quarried near Waite Park that moves by rail to locations throughout the U.S. The farm products group consists primarily of grain, field crops, nuts and seeds. Global Insight projections suggest moderate growth in nonmetallic mineral tonnage through 2030, while tonnage will remain fairly stable for most other commodities. Another notable commodity producing heavy outbound freight tonnage in the region is the food or kindred products group, consisting primarily of soft drinks. Figure 7 lists the top 10 commodities originating in Central Minnesota.

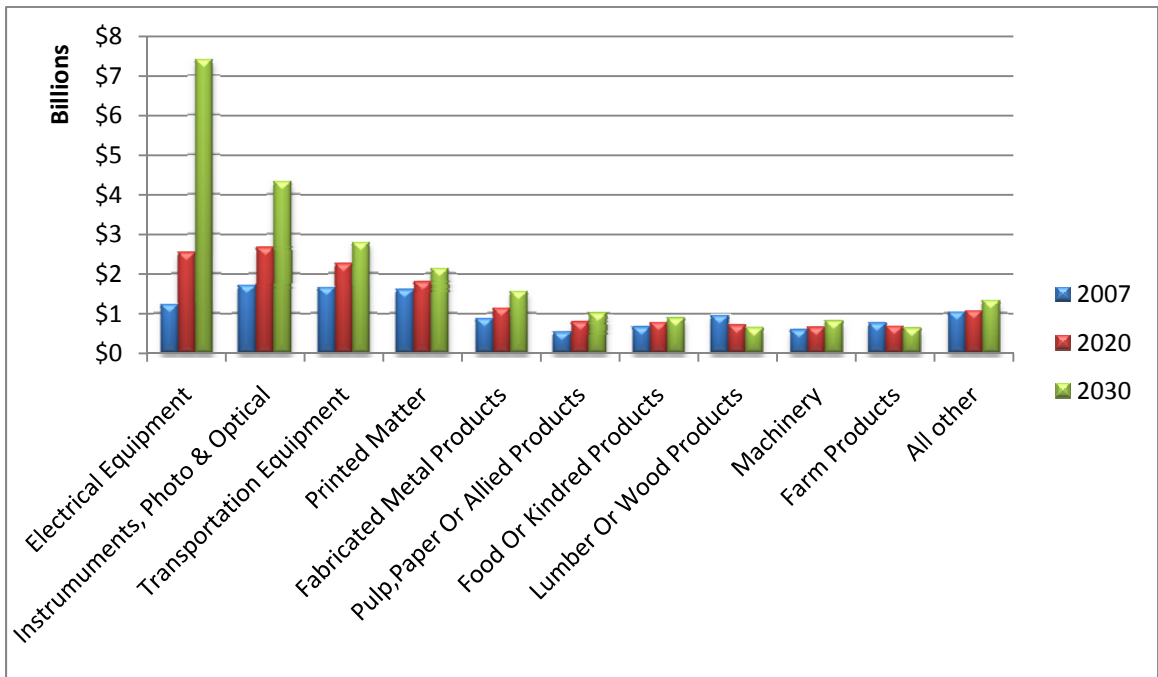
The largest commodities originating in Central Minnesota by value are electrical equipment, instruments, photo and optical equipment, transportation equipment and printed matter. The data indicates that electrical equipment value is expected to grow substantially by 2030. Products included in this group are telephones, refrigerators, appliances, and lighting. Instruments, photo and optical equipment is also expected to experience moderate growth, and these products include surgical, medical and orthopedic equipment. Figure 8 lists the top 10 commodities originating in Central Minnesota by value.

**Figure 7: Top Originating Commodities by Tonnage**



Source: TRANSEARCH

**Figure 8: Top Originating Commodities by Value**



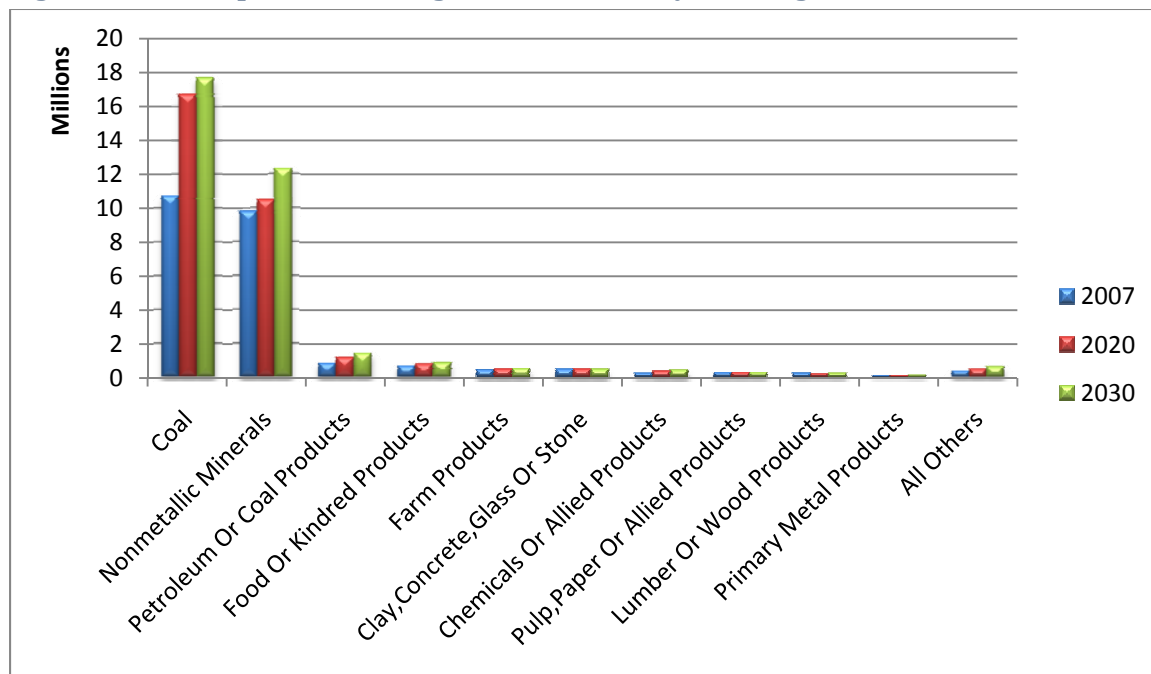
Source: TRANSEARCH

## Key Terminating Commodities

The largest commodity terminating in Central Minnesota by tonnage is coal. These are mostly rail movements from the Power River Basin in Wyoming and Montana destined for the coal-fired power plant in Becker, MN. The nonmetallic minerals commodity group also generates significant tonnage. Products included in this commodity group included rip rap, sand and gravel. Much of this nonmetallic mineral terminating tonnage results from local truck movements that both originates and terminates within Central Minnesota. Figure 9 lists the top 10 terminating commodities by tonnage.

The largest commodities terminating in Central Minnesota by value are petroleum or coal products, transportation equipment, and food or kindred products. The petroleum or coal products commodity group consists primarily of petroleum refining products. The transportation equipment group consists of parts for buses, boats and trailers. The food or kindred products group consists mainly of soybean oil and cheese. Figure 10 lists the top 10 commodities terminating in Central Minnesota by value.

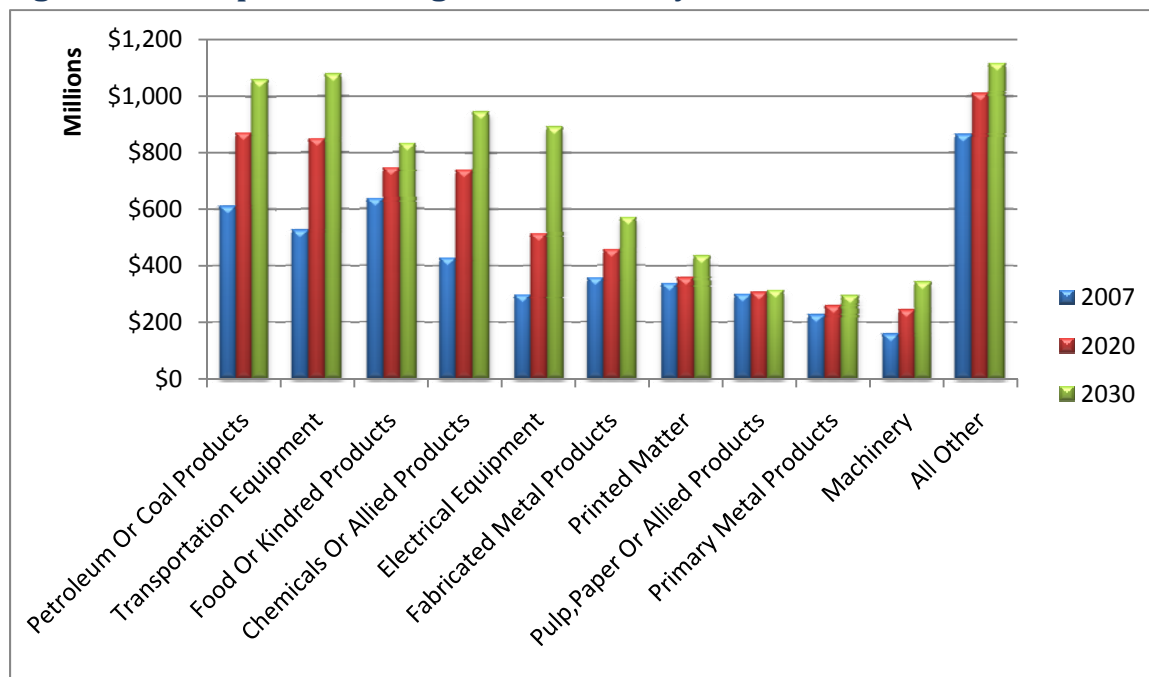
**Figure 9: Top Terminating Commodities by Tonnage**



Source: TRANSEARCH



**Figure 10: Top Terminating Commodities by Value**



Source: TRANSEARCH

## Modal Split

Trucking has the largest share of total originating and terminating tonnage in Central Minnesota. Trucks handled 60 percent of freight tonnage and 90 percent of freight value in the region in 2007. Rail also handled a significant amount of freight, with air and other modes handling much smaller tonnage and value. Waterways carried no freight in Central Minnesota because there are no waterway terminals in the region. Figure 11 shows the 2007 modal split of inbound, outbound and local freight tonnage in Central Minnesota, and Figure 12 shows this modal split by value.

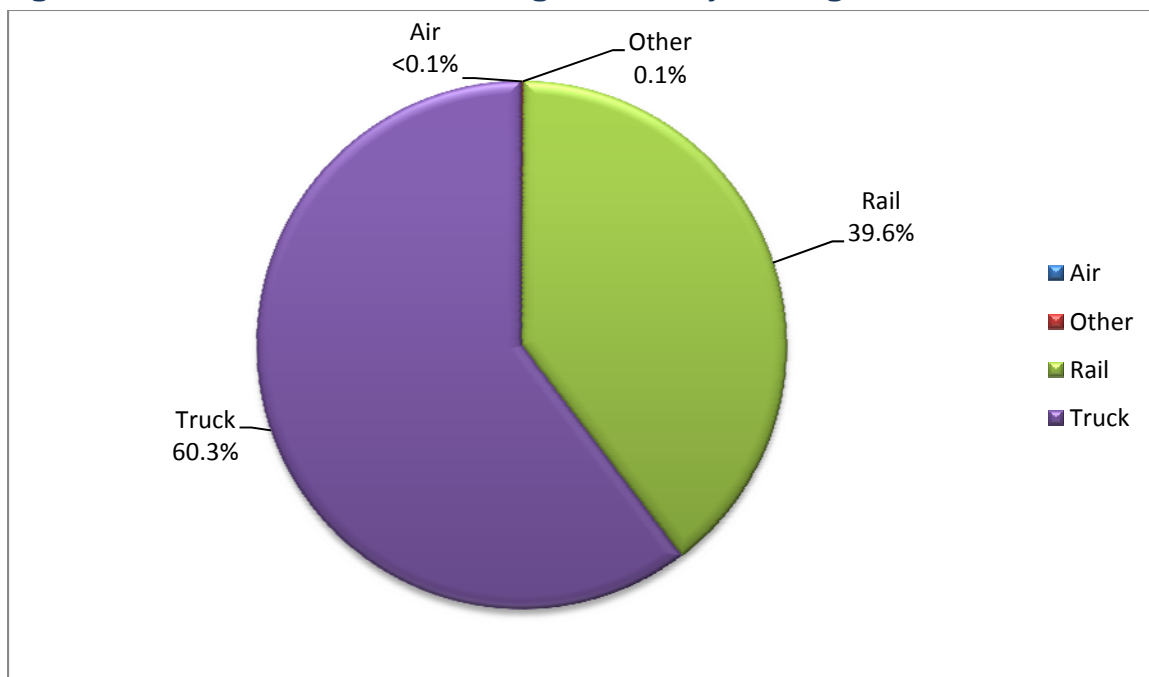
Trucking has a larger share of total freight tonnage in Central Minnesota than it does statewide. Rail's tonnage share in the region is comparable to that of Minnesota as a whole. Table 1 compares the 2007 modal split of freight tonnage and value in the region to that of the Minnesota. There are several freight rail lines and highways in Central Minnesota that have significant volumes of though freight which this analysis does not capture. Data limitations prevent this analysis from including through freight movements at the regional level. This limitation results in underreporting of modal freight tonnage and value.

**Table 1: Regional Mode Comparison (2007)**

|              | Tonnage    |           | Value      |           |
|--------------|------------|-----------|------------|-----------|
|              | Central MN | Minnesota | Central MN | Minnesota |
| <b>Truck</b> | 60.3%      | 49.3%     | 89.6%      | 79.6%     |
| <b>Rail</b>  | 39.6%      | 38.2%     | 10.4%      | 19.3%     |
| <b>Water</b> | 0.0%       | 5.9%      | 0.0%       | 0.5%      |
| <b>Air</b>   | <0.1%      | <0.1%     | <0.1%      | 0.5%      |
| <b>Other</b> | 0.1%       | 6.6%      | 0.1%       | <0.1%     |

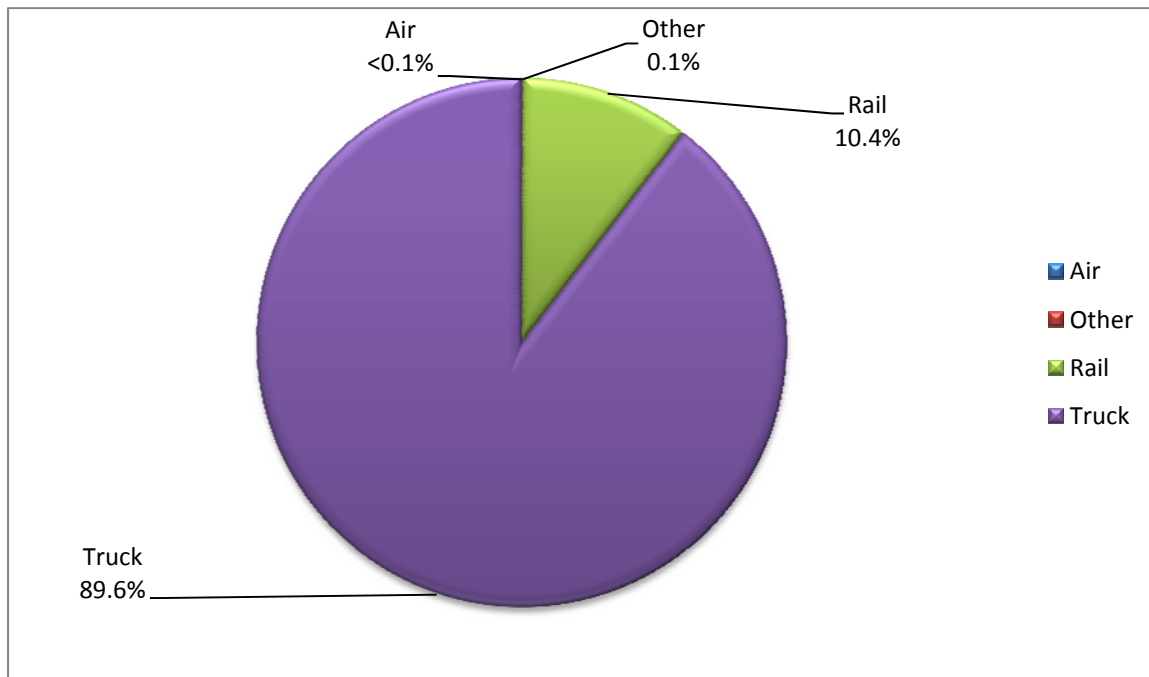
Source: TRANSEARCH

**Figure 11: Central Minnesota Freight Modes by Tonnage**



Source: TRANSEARCH

**Figure 12: Central Minnesota Freight Modes by Value**



Source: TRANSEARCH

Each mode offers a unique set of costs and benefits that appeal to different commodities. Goods carried by truck tend to have high value to weight ratios than rail and water. Therefore, trucking carries a higher percent of value of freight shipped in the region than it does tonnage. Air cargo transports the highest value to weight ratio of all modes. These low weight, high value goods are extremely time sensitive and benefit from the added cost to utilize one of the fastest and most expensive modes of transport. Rail tends to transport heavier goods that are less time-sensitive than those shipped by air and through, though these goods may also be high in value. Waterways carry the least time-sensitive goods, and are typically bulk goods. Other modes such as pipelines tend to ship specific commodities of varying value to weight ratios. Table 2 lists the top originating and terminating commodities by mode in Central Minnesota.

**Table 2: Top Originating and Terminating Commodity Tonnage by Mode (2007)**

| Mode         | Originating Commodity          | Terminating Commodity          |
|--------------|--------------------------------|--------------------------------|
| <b>Truck</b> | Nonmetallic Minerals           | Nonmetallic Minerals           |
|              | Farm Products                  | Petroleum Or Coal Products     |
|              | Food Or Kindred Products       | Food Or Kindred Products       |
|              | Clay, Concrete, Glass Or Stone | Farm Products                  |
|              | Lumber Or Wood Products        | Clay, Concrete, Glass Or Stone |
| <b>Rail</b>  | Pulp, Paper Or Allied Products | Coal                           |
|              | Waste Or Scrap Materials       | Clay, Concrete, Glass Or Stone |
|              | Lumber Or Wood Products        | Pulp, Paper Or Allied Products |
|              | Transportation Equipment       | Chemicals Or Allied Products   |
|              | Food Or Kindred Products       | Lumber Or Wood Products        |
| <b>Air</b>   | Misc Mixed Shipments           | Misc Mixed Shipments           |
|              |                                | Machinery                      |
|              |                                | Farm Products                  |
|              |                                | Mail Or Contract Traffic       |

Source: TRANSEARCH

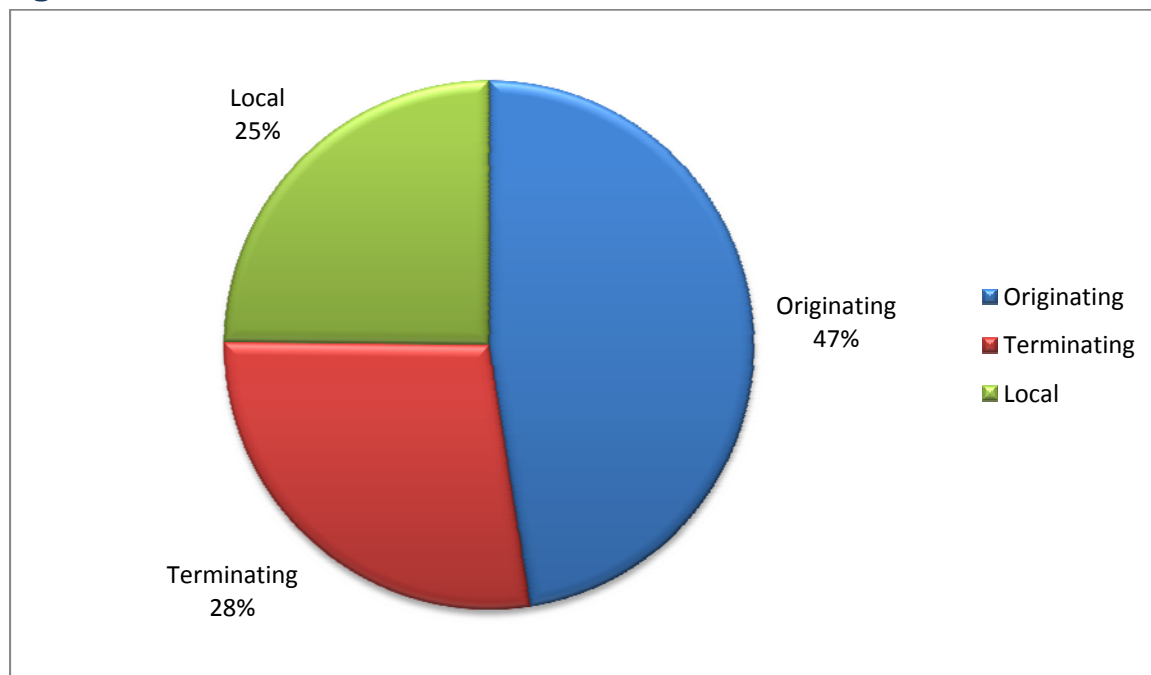
## Trucking

In 2007, trucks moved over 18 million tons of freight moved to, from, and within the Twin Cities Metro Area. As noted in Table 1, the percent of all freight tonnage in the region that moves by truck is significantly higher than the percentage of statewide freight tonnage that moves by truck. The value of freight moving by truck as a percentage of all freight modes is also above the average for the state. Table 2 lists nonmetallic minerals, farm products, food or kindred products, clay, concrete, glass or stone and lumber or wood products as major commodities by tonnage.

Tonnage and value are good measures of overall product flow in the region. Truck loads are a measure of the number of trucks moving on roadways, and are more directly related to roadway capacity and the

amount of space that trucks utilize. Figure 13 indicates the originating, terminating, and local distribution of truck freight movements in Central Minnesota by truck loads. Most truck loads moving to, from, and within the region are originating truck movements. There is also a significant portion of terminating and local truck load movements in the region.

**Figure 13: Distribution of Truck Loads**



Source: **TRANSEARCH**

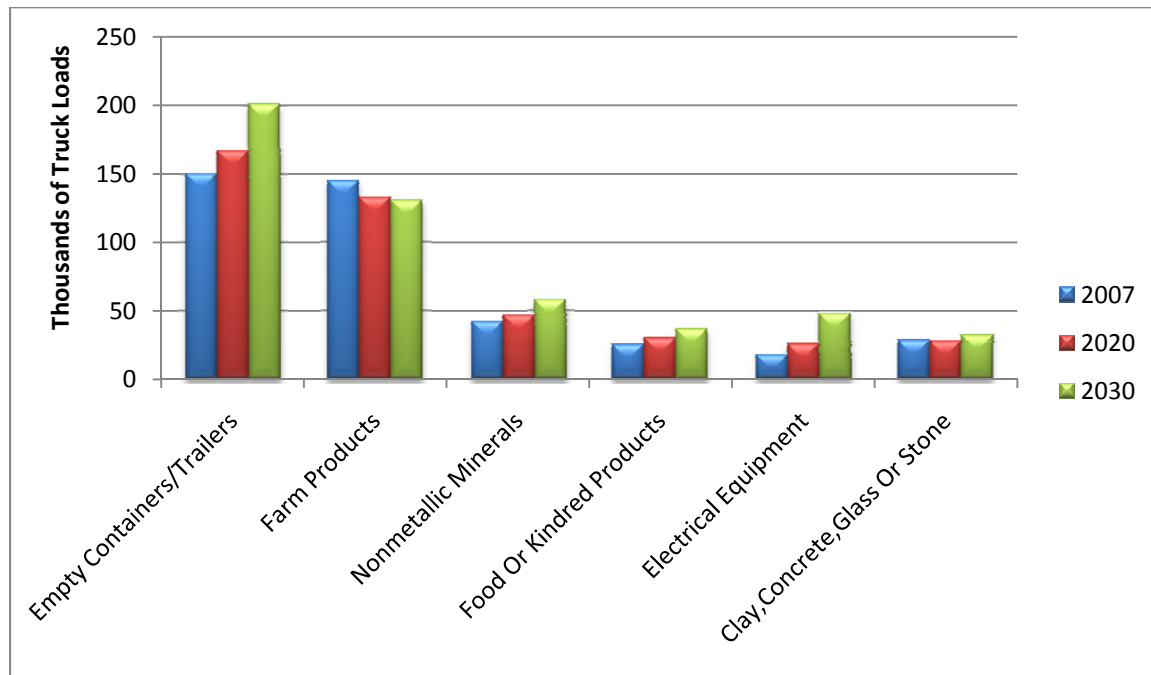
In 2007, over 1 million trucks moved to, from, and within Central Minnesota. This figure does not include through truck movements that pass through the region. Figure 14 breaks down originating truck movements by empty moves and the top five commodities by truck loads. Empty truck moves represent a significant portion of originating truck loads, and represent more loads than any other commodity group. Farm Products, nonmetallic minerals and food or kindred products are major originating commodities. Many of these truck loads are destined for locations within Minnesota and the Upper Midwest, and New York is also a major destination.

31 percent of local, originating, and terminating truck loads in Central Minnesota are empty moves.

Figure 15 identifies the top five commodities by truck loads that terminate in the region. Nonmetallic minerals, petroleum or coal products, and food or kindred products are major commodities terminating in the region. Most of these truck loads originate at locations within Minnesota and the Upper Midwest and Chicago, though Los Angeles and New Orleans also send a significant number of truck loads to the region.

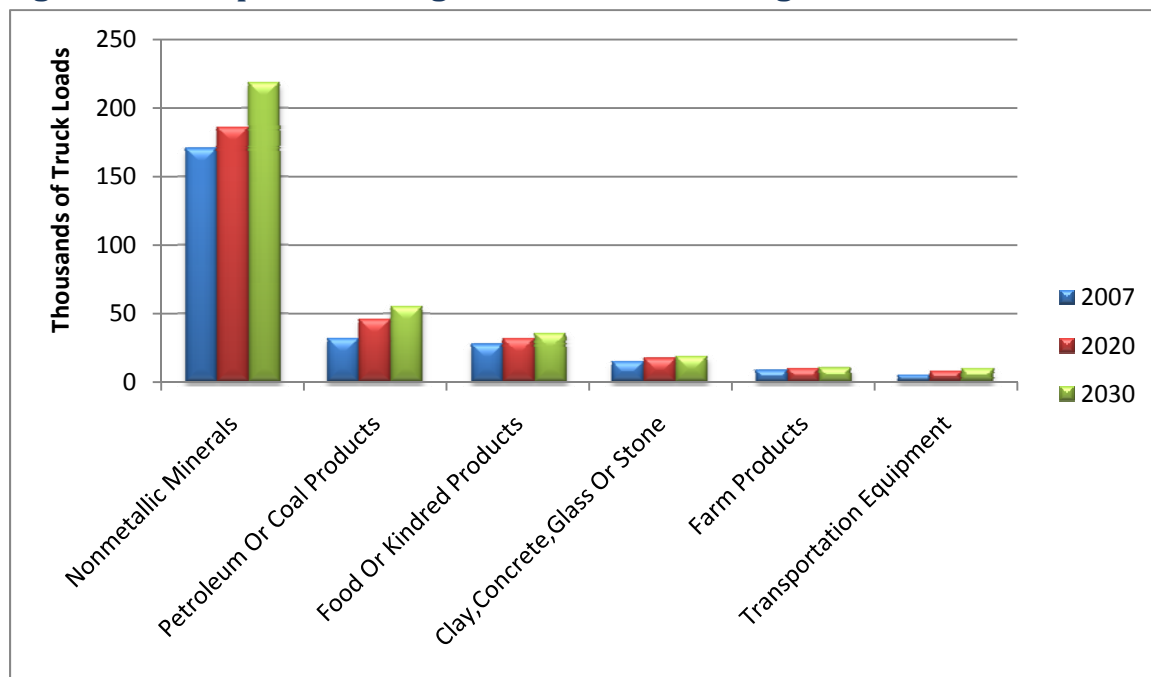
Figure 16 identifies the top five local truck commodities by truck loads. Nonmetallic minerals, farm products, clay, concrete, glass or stone, food or kindred products, printed matter and petroleum or coal products are major commodities moving locally within the region.

**Figure 14: Top Originating Truck Load Generating Commodities**



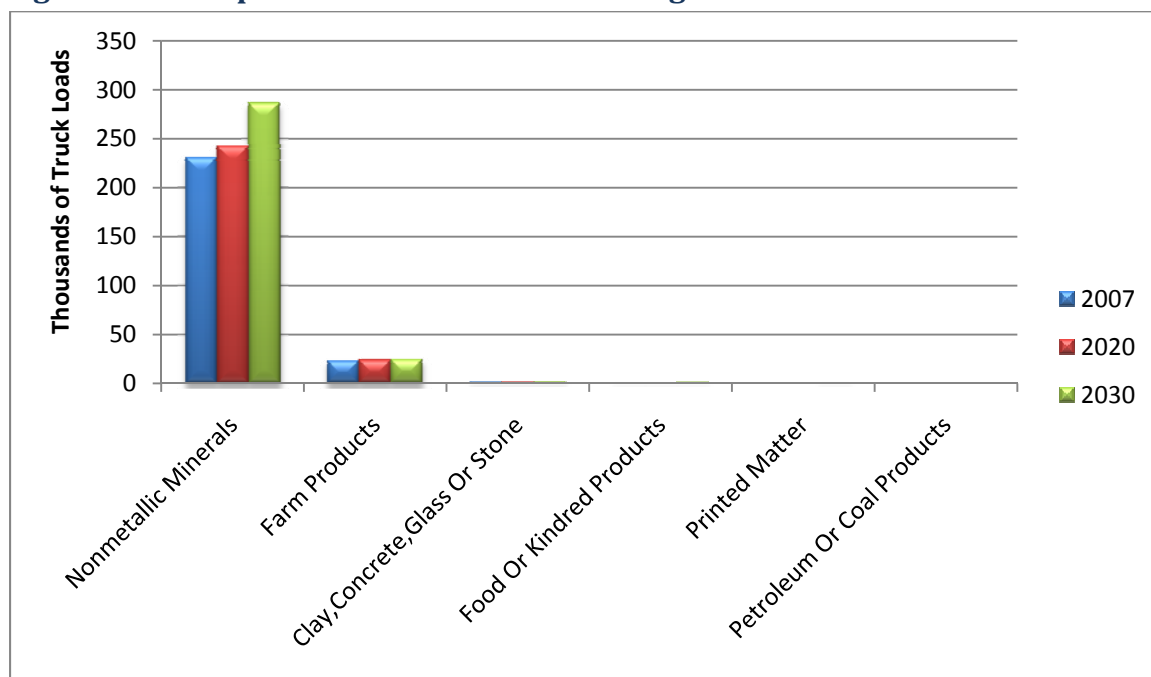
Source: TRANSEARCH

**Figure 15: Top Terminating Truck Load Generating Commodities**



Source: TRANSEARCH

**Figure 16: Top Local Truck Load Generating Commodities**



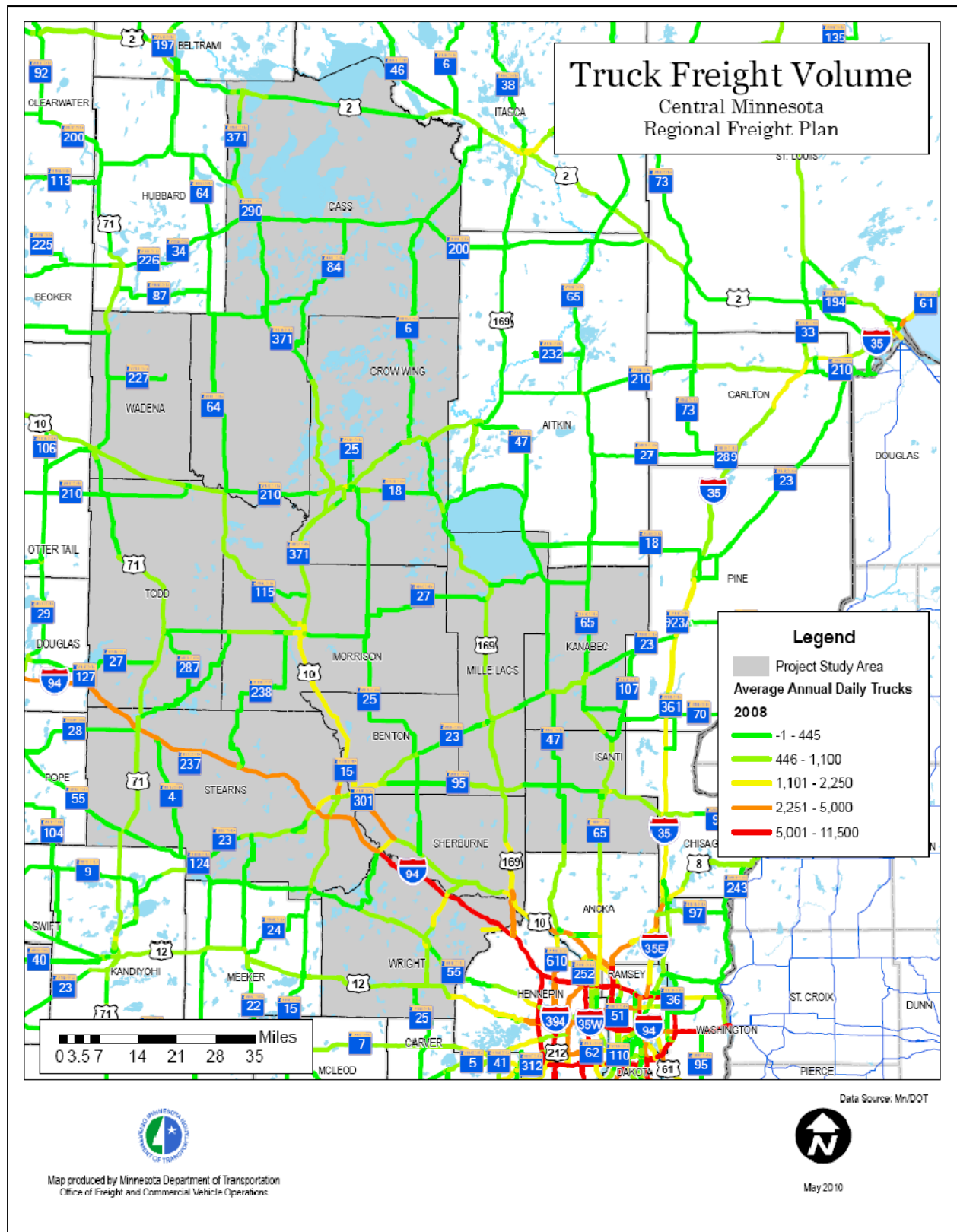
Source: TRANSEARCH

## ***Truck Traffic Trends***

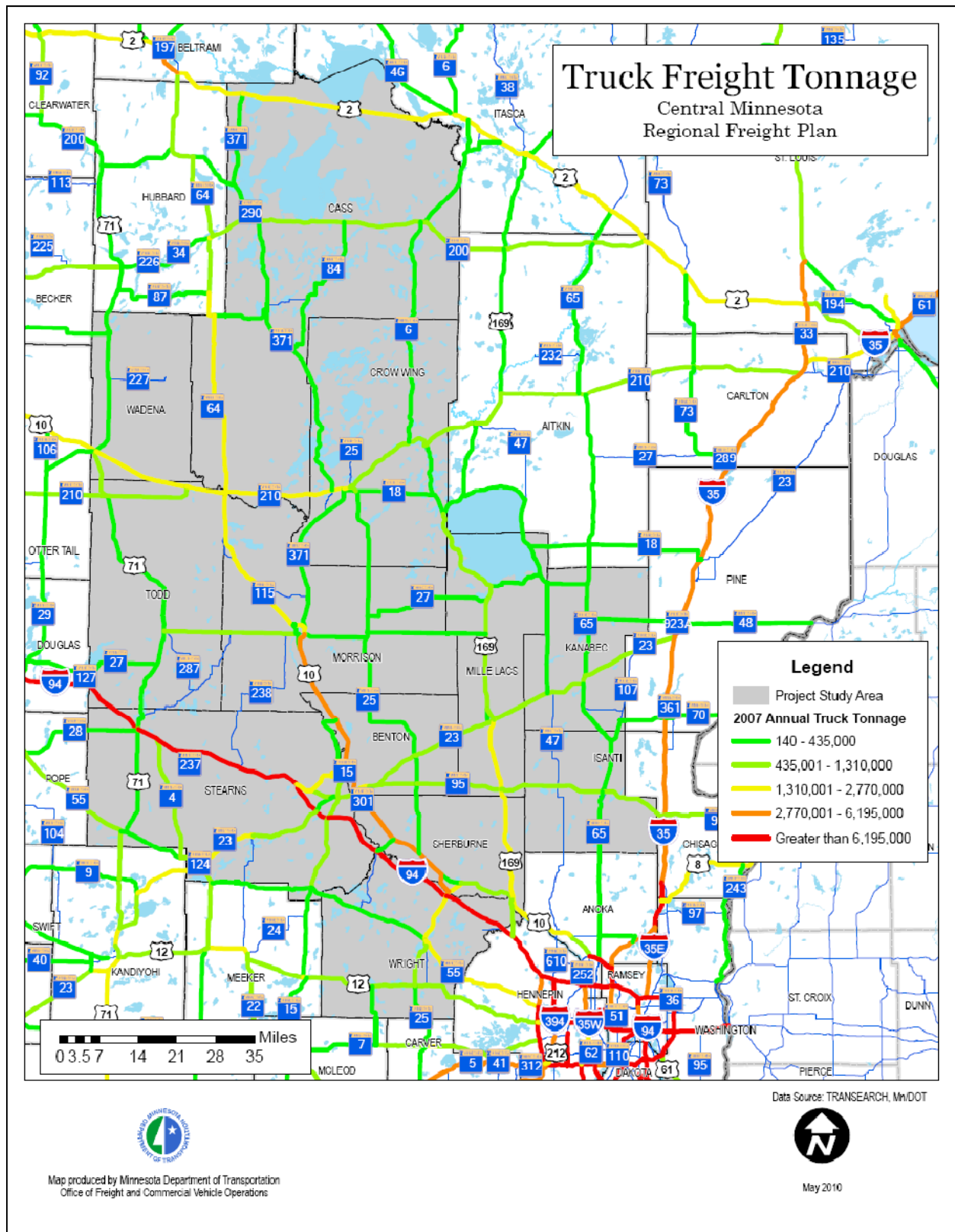
Figure 17 displays the volume of truck traffic moving on Minnesota's highways in 2008. This information is collected by the Minnesota Department of Transportation and indicates the average number of heavy commercial vehicles traveling on highway segments per day in the year 2008. The most significant corridors in Central Minnesota are the Interstate 94 corridor, the US 10 Corridor, and the US 169 Corridor. Interstate 94 between Clearwater and the Twin Cities carries the most amount of truck traffic in the region, and Interstate 94 from Clearwater to the west and US 10 between St. Cloud and Clear Lake also receiving high truck volumes. The US 71, MN 371 and MN 23 corridors are additional routes with significant amounts of truck traffic..



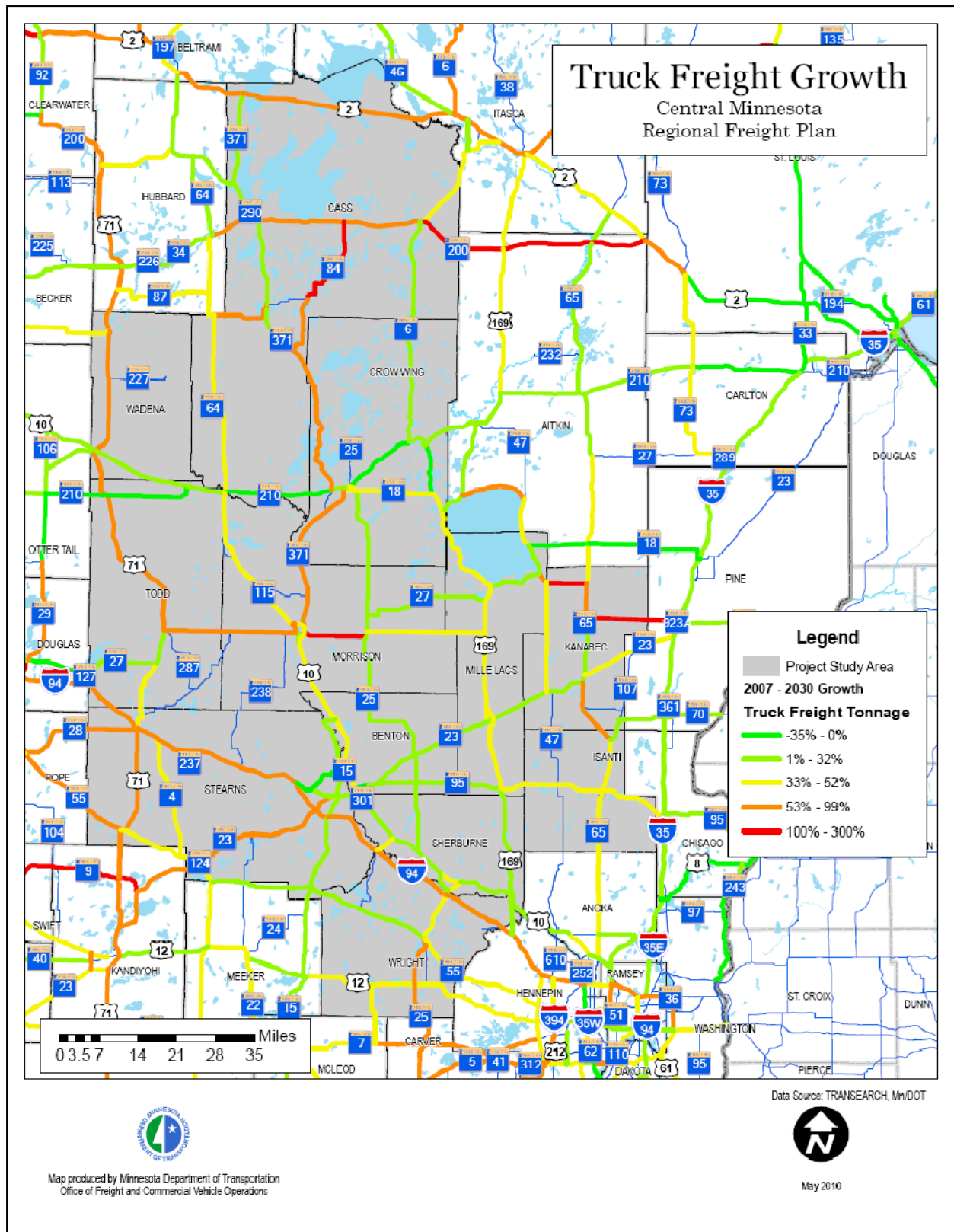
**Figure 17: Truck Counts (2008 Annual Average Daily Trucks)**



**Figure 18: 2007 Annual Truck Tonnage**



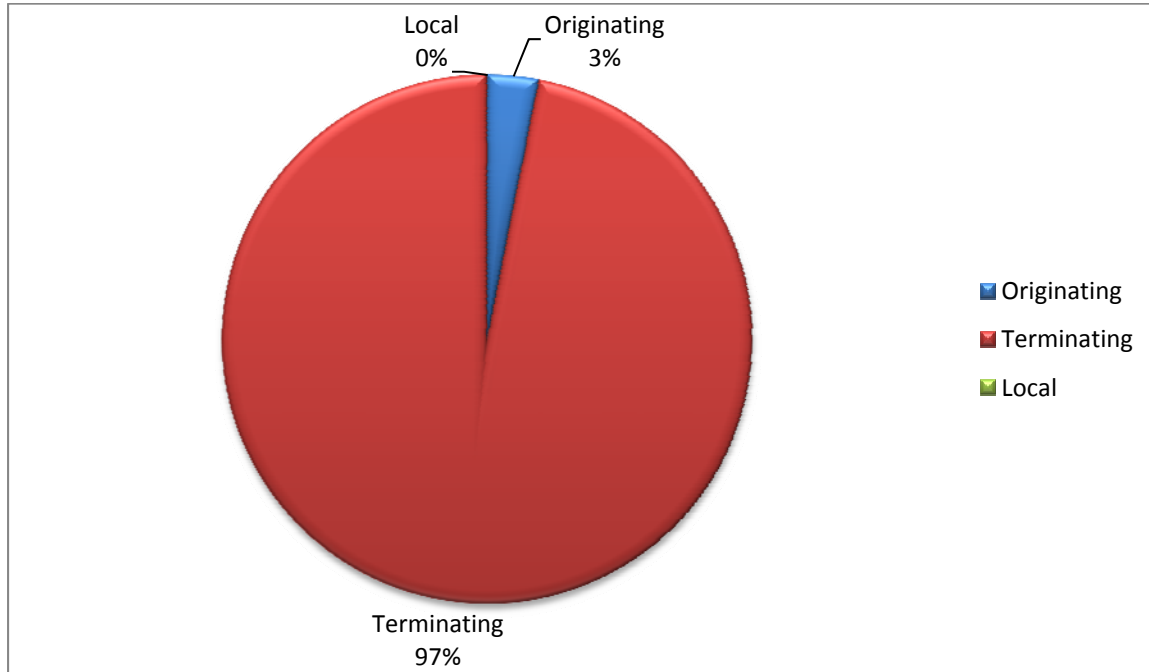
**Figure 19: Projected Truck Freight Tonnage Growth, 2007 - 2030**



# Rail Freight

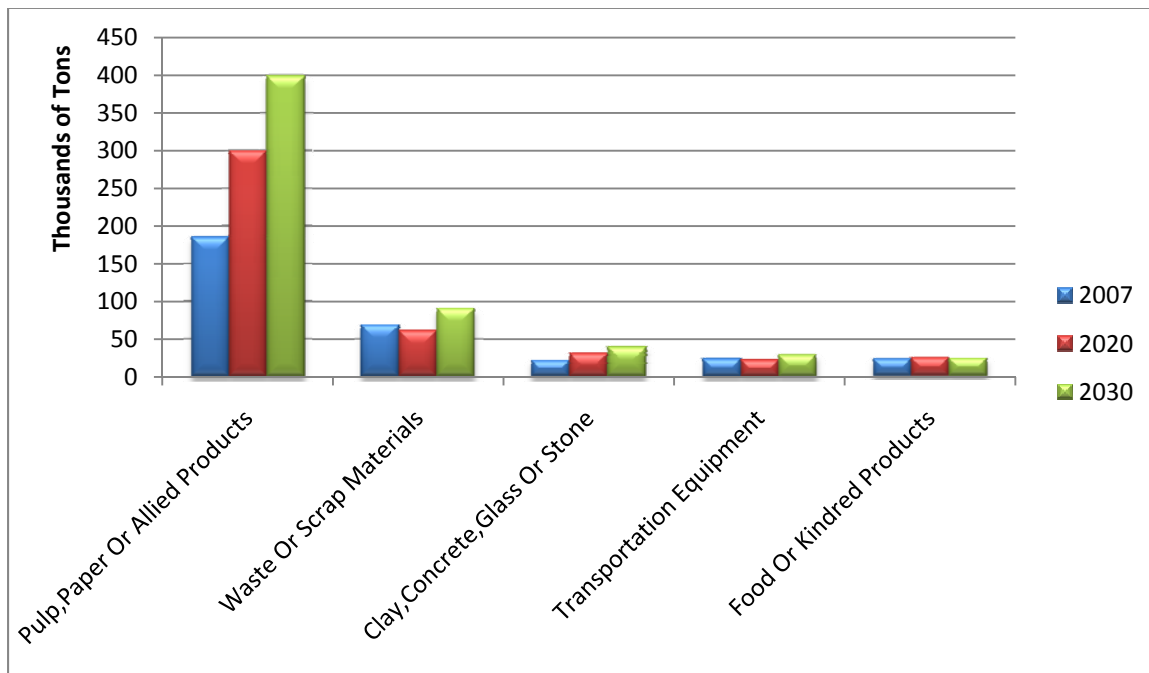
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**Figure 20: 2007 Rail Freight Distribution**

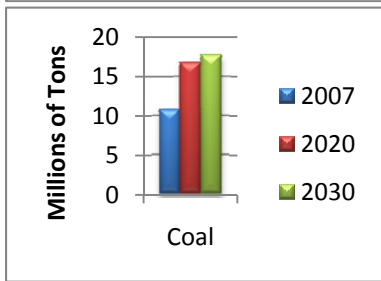
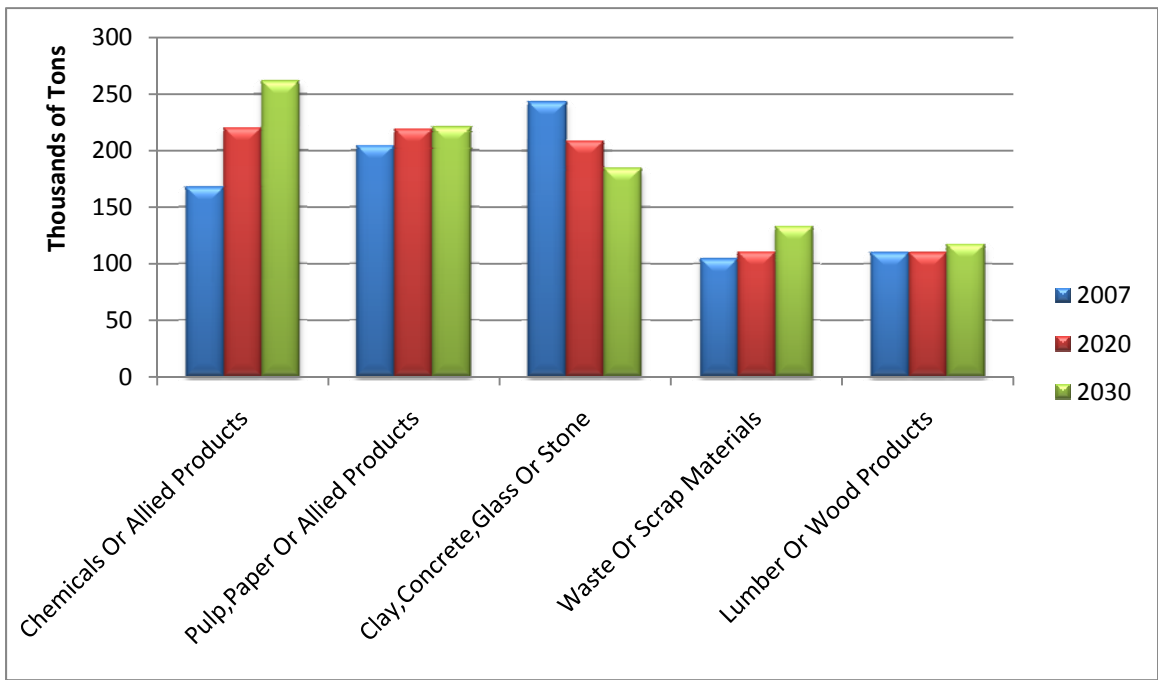


Source: TRANSEARCH

**Figure 21: Top Originating Rail Carload Commodities**

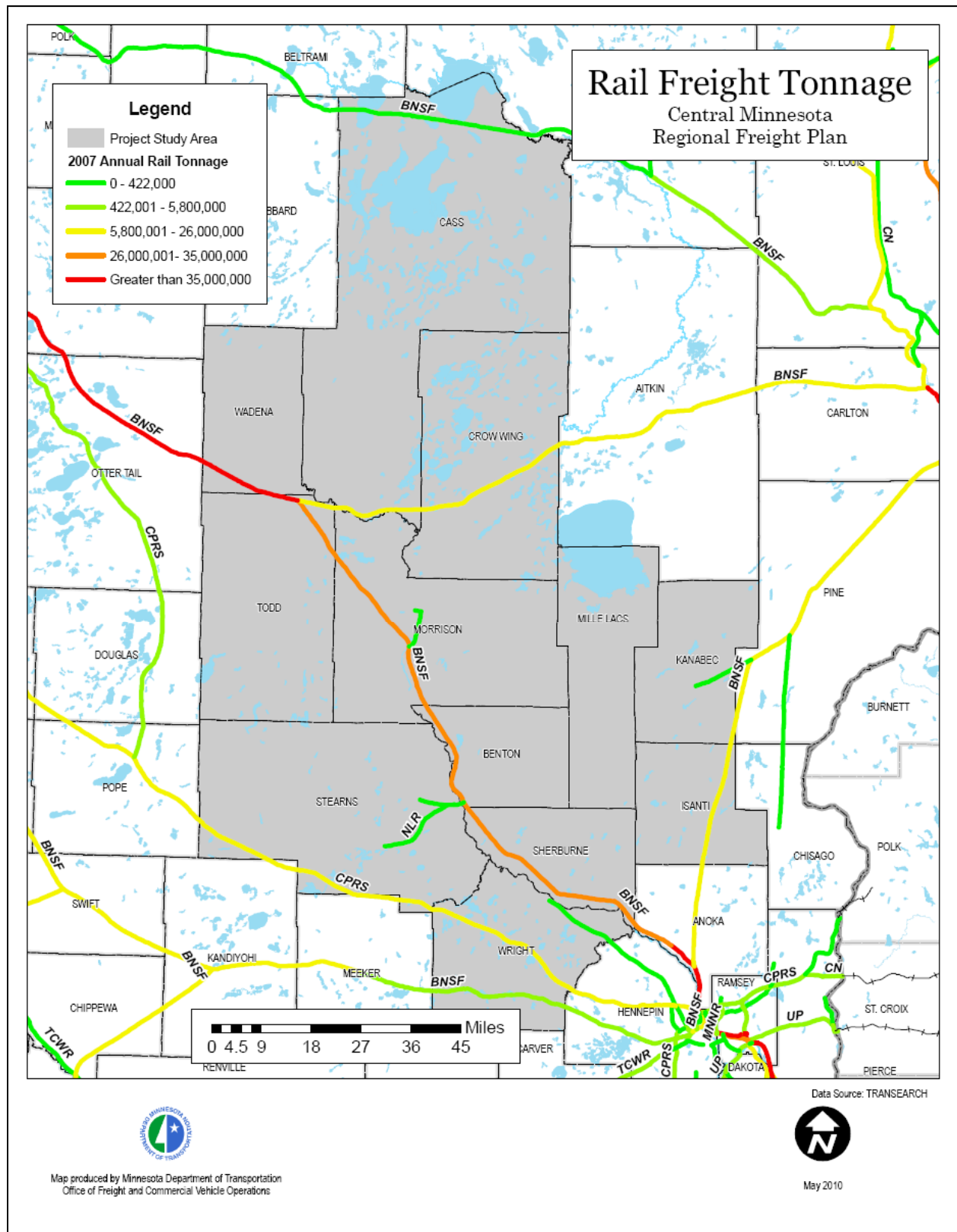


**Figure 22: Top Terminating Rail Carload Commodities**



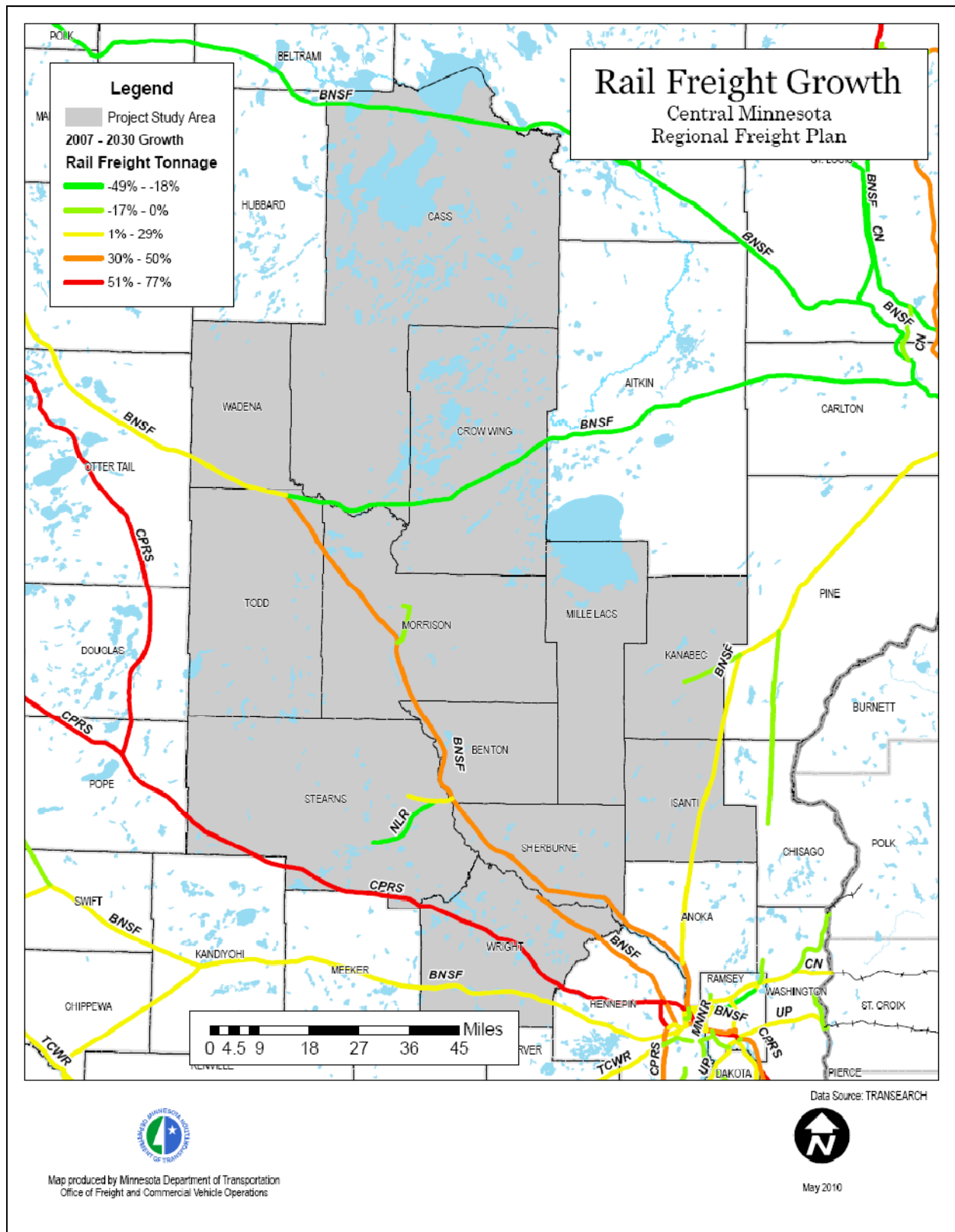
Source: TRANSEARCH

**Figure 23: Rail Freight Tonnage, 2007**





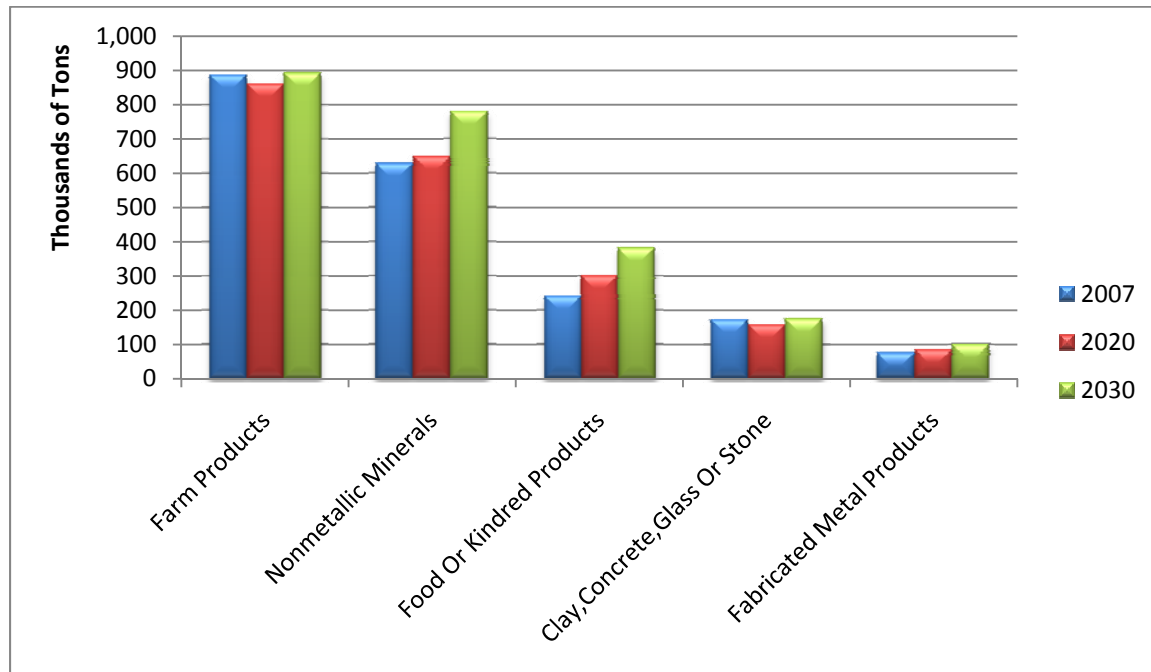
**Figure 24: Projected Rail Tonnage Growth, 2007 – 2030**



## Trade with Twin Cities Metro Area

Nearly one million tons of freight moves from the Twin Cities to Central Minnesota, and nearly 2.4 million tons of freight moves from Central Minnesota to the Twin Cities. 93 percent of freight tonnage from the twin Cities and 98 percent of freight tonnage to the Twin Cities moves by truck. The remainder of this tonnage moves almost exclusively by rail.

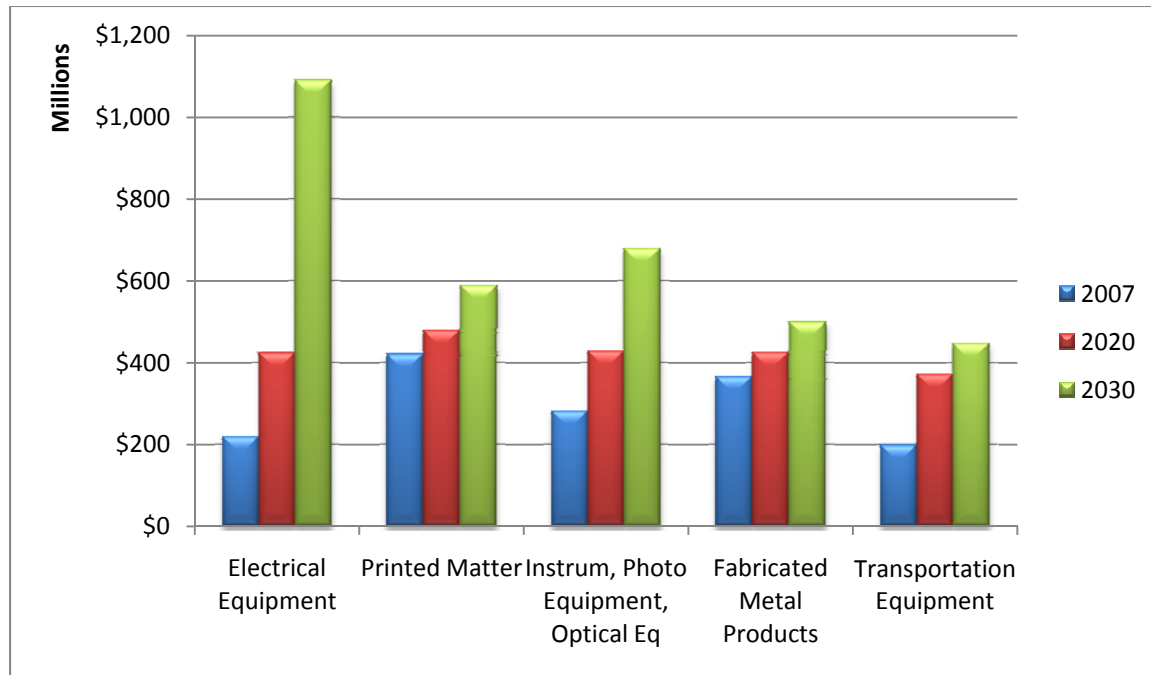
**Figure 25: Top Commodities Moving to the Twin Cities from Central Minnesota by Tonnage**



Source: TRANSEARCH

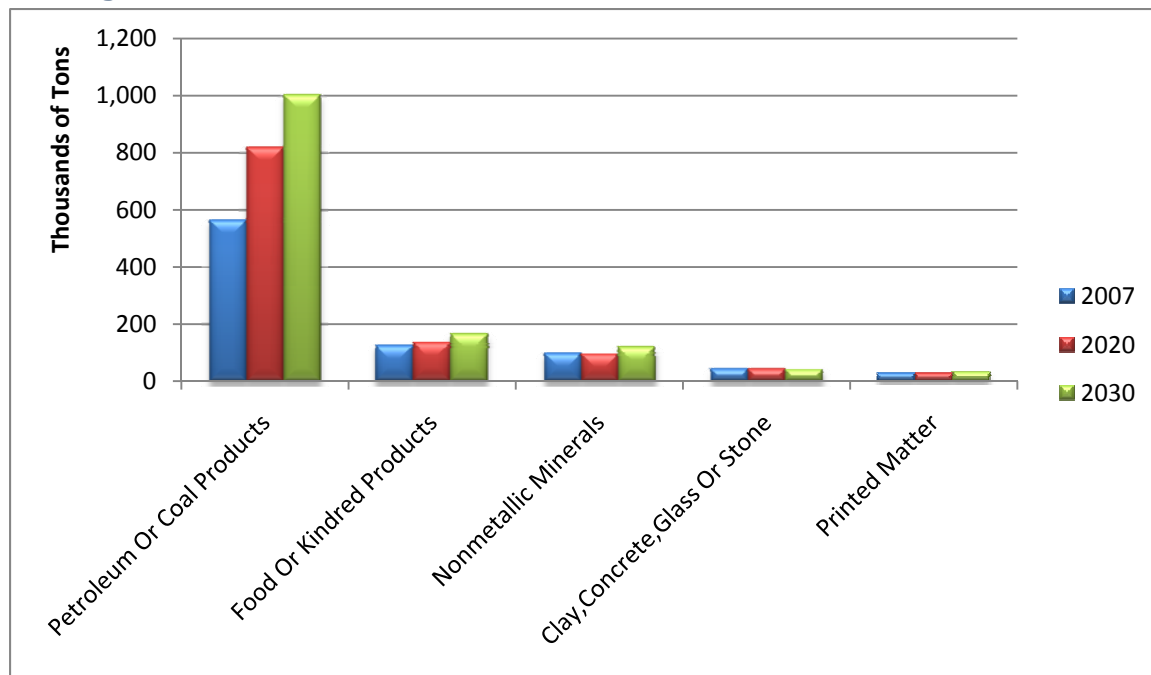


**Figure 26: Top Commodities Moving to the Twin Cities from Central Minnesota by Value**



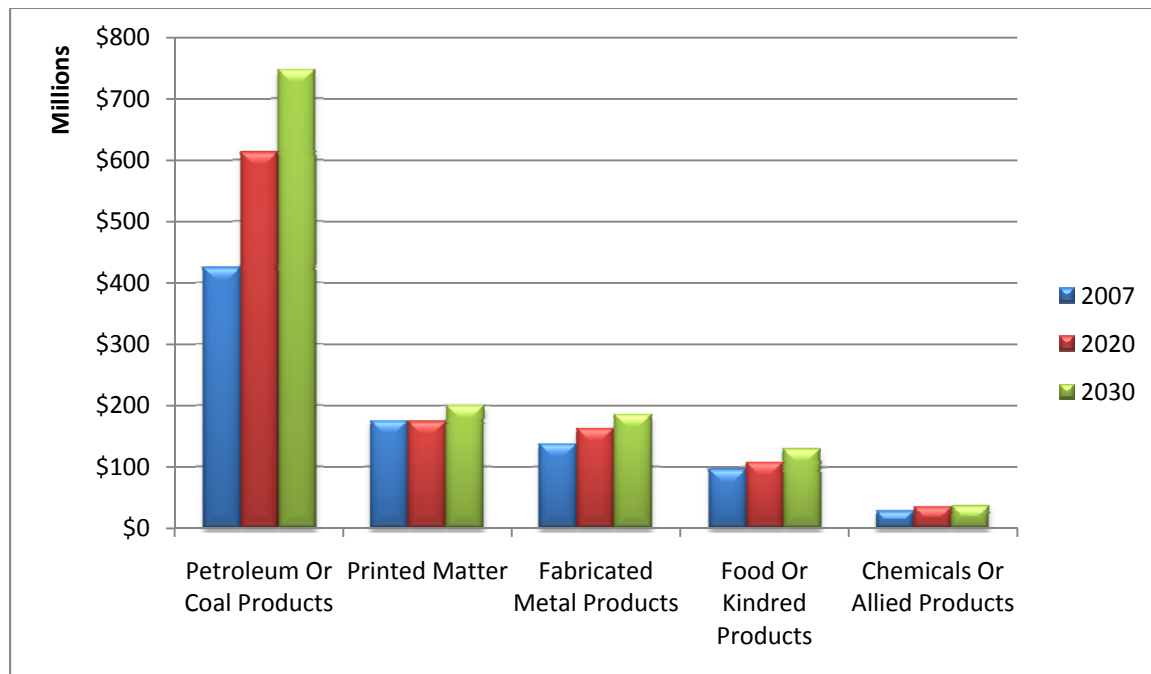
Source: TRANSEARCH

**Figure 27: Top Commodities moving from the Twin Cities to Central Minnesota by Tonnage**



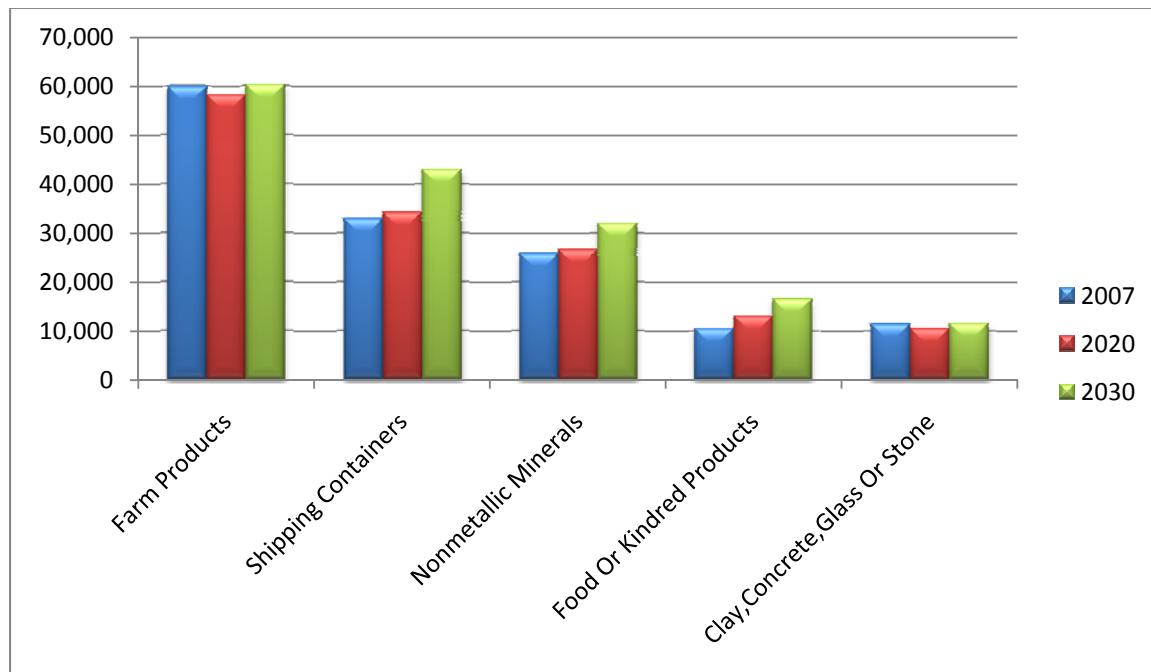
Source: TRANSEARCH

**Figure 28: Top Commodities Moving from the Twin Cities to Central Minnesota by Value**



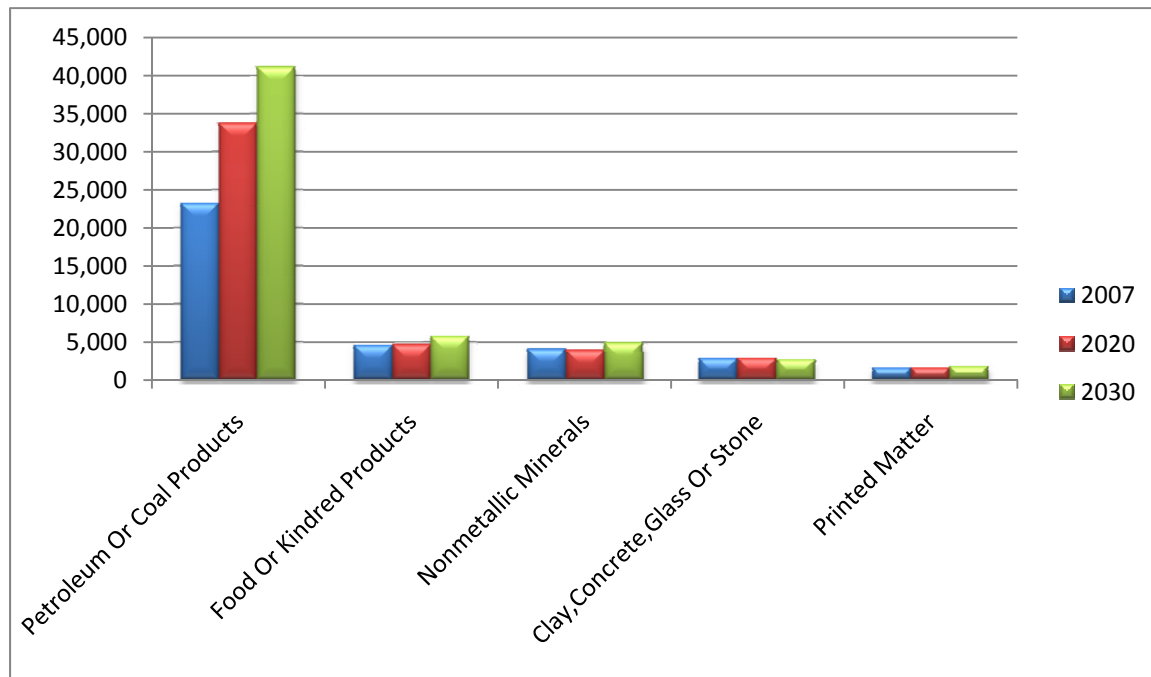
Source: TRANSEARCH

**Figure 29: Truck Loads Moving to the Twin Cities from Central Minnesota**



Source: TRANSEARCH

**Figure 30: Truck Loads Moving from the Twin Cities to Central Minnesota**



Source: TRANSEARCH