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# Market Demand and Transportation Impact Study

This study identifies opportunities to improve the efficiency, reduce the cost and expand the capacity of the freight network in the Mid-America Port Commission tri-state region

## Project Summary and Business Plan for a Regional Barge Facility

**CHAIRMAN**

Mike McLaughlin
Mid-America Port Commission

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# Contents

# Executive Summary

SECTION
01

# Project Overview

Mid-America Port Comission (MAPC) Region is a 26-county coalition formed in 1999 by an interstate compact between Illinois, Missouri and Iowa to form a port district for the intended purpose of providing long-term economic benefits to the rural region. Several large companies in the agriculture, manufacturing and transportation industries are located in the region that rely heavily on multimodal transportation options for both domestic and international trade of raw materials and finished goods.

This document summarzies the findings of a market assessement using freight network optimization to examine the demand for three network enhancements in the region: 1) additional river port/barge capacity, 2) rail transload / unit train demand; and 3) freight consolidation through a regional truck cross docking facility.

All of the businesses located in the MAPC region currently truck transport, and many use barge and/or rail transportation in their supply chain operations. And, while many see existing ports, barge docks and rail faciliities in the region as providing good access to lower cost transportation, there is nearly unanimous concern over existing facilities due to the potential of flooding outages. Some of the existing facilities are out-dated and in need of modernization. In addition to concerns over existing river port and rail facilities, and the condition of some regional highways were also concerns raised by regional businesses.

Using commodity flow data from the Federal Highway Administration's, Freight Analysis Framework (FAF), and private shipping records to simulate regional demand, the freight network optimization analysis suggests a number of opportunities for lowering regional shipping costs for commodities currently moving long distances by highway.

## THE CHALLENGE

Utilize supply chain network optimization analysis to define market opportunities and infrastructure investments that will support economic development and enhance the economic competitiveness of the 26-county Mid-America Port Commission Region through lower business transportation costs and a more efficient multimodal freight network.

## THE OPPORTUNITY

Freight volume in the rural area of the Mid-America Port Comission Region is mostly heavy bulk commodities like cereal grains, processed agricultural goods, animal feed, fertilizer, and sand and gravel. Federal data suggests that 80% of the region's tonnage currently moves by truck. Greater utilization of the marine highway system for transporting the region's key commodities will result in lower business costs, greater economic development opportunities, and result in less wear on regional highways.

## THE SOLUTION

The proposed network enhancementswill allow shippers greater access to a more efficient mode of transportation. The proposed barge and rail improvements will also help build regional demand for expanded barge and rail transportation services in support of long term economic development goals for a larger, new port development on the Mississippi and Illinois Rivers. A freight consolidation center in the region could help reduce partial truckload shipments moving long distances.

# Business Objective

**The objective of the MAPC is to be a catalyst for regional economic growth by helping tri-state businesses compete globally, while also attracting new businesses and industry.**

To achieve its objectives, the MAPC through the MAIAPD contracted for the development of a regional demand-based freight network optimization analysis. The study analyzed the freight movements into, out of, and within the 26-county region using a base year of 2014 and forecast year of 2025.

By developing a regional supply chain network optimization model, MAPC and MAIAPD sought to evaluate several infrastructure investment opportunities based on cost savings to regional

## MISSION

The Mid-America Port Commission was established in 1999 to be a catalyst for economic growth in the Tri-States. The Development of intermodal ports within the region will help area businesses compete globally, create short and long-term high-paying jobs, and help attract new businesses and industries to the region.

## VISION

The Mid-America Port Commission seeks to serve as a tool and partner in economic development for the Tri-State Region by providing the region's businesses a competitive advantage through the connection and provision of safe, efficient, and low-cost transportation services across and between all available modes.

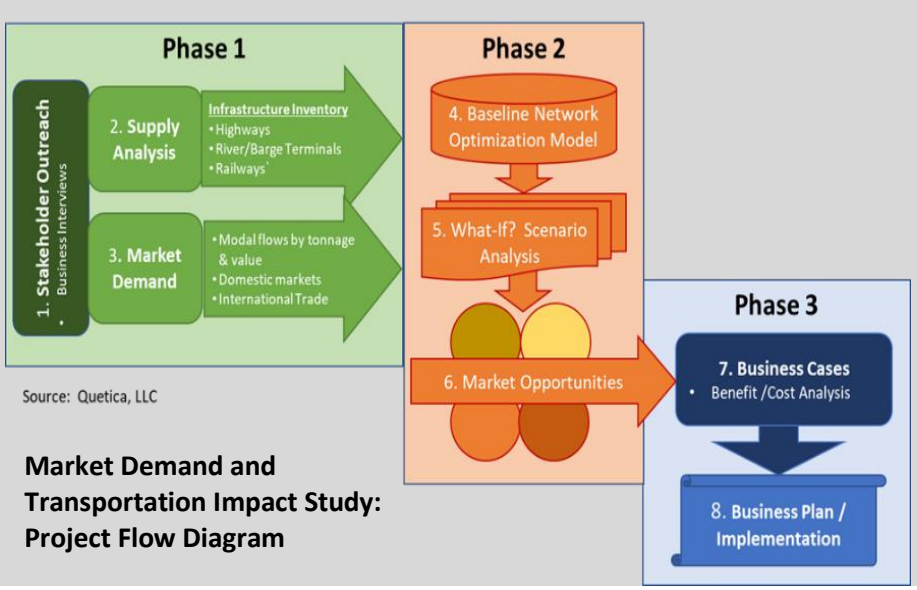
## OBJECTIVE

The Mid-America Port Commission seeks to make the region more competitive by lowering business supply chain and transportation costs. This planning effort was undertaken jointly by the MAPC and MAIAPD to prepare an actionable plan that can be implemented in a timely manner to provide cost-effective transportation options to local industries and manufacturers.

# Project Description

***The Market Demand and Transportation Impact Study conducted by MAIAPD analyzes freight movements into and out of the Mid-America Port Commission Region, to identify opportunities for network investments that lower transportation costs for regional shippers.***

The study was conducted in three primary phases:




**Market Demand and Transportation Impact Study: Project Flow Diagram**

1. In Phase 1, the consultant team conducted stakeholder interviews, assembled an inventory of important regional freight infrastructure, and, examined commodity flows using the Freight Analysis Framework (FAF) from USDOT.
2. In Phase 2, Quetica analyzed regional supply chain networks using network optimization tools designed to identify and address constraints and prioritize investments in its multimodal freight transportation network.
3. In Phase 3, the top project opportunity identified through the network optimization analysis was further refined to develop a business case which included a benefit cost analysis (BCA) suitable for supporting a federal grant application.

## Key Findings from Stakeholder Outreach Meetings

An early goal of the study was to examine the feasibility of a new port facility south of Lock and Dam 21 on the Mississippi River. During interviews, some companies acknowledged the appeal of a new river port capacity with modern barge laoding equipment, especially a facility protected by a 500-year flood levee.

Several stakeholders also raised other potential logistics solutions that could improve competitiveness of the region, including better access to unit train rail facilities.

# Network Optimization Results

## Key Findings from MAIAPD Network Optimization Scenarios

**1. Significant market opportunities exist to convert truck and rail freight to barge multimodal shipments:**

- Approximately 2.4 million (2014) to 2.7 million (2025) annual tons or the equivalent of 45 to 52 barges a week (assumes 1,350 tons/barge and 39 weeks per year).
- Estimated cost savings to shippers and carriers of $32 million (2014) to $39 million (2025), or on average 30 percent.

**2. Sizable market opportunities exist to convert long haul truck to rail multimodal shipments:**

- Approximately 662,000 (2014) to 817,000 (2025) annual tons or roughly 117 to 144 railcars per week. (Assuming 109 tons/railcar and 52 weeks per year).
- Estimated saving of $23 million (2014) to $29 million (2025) for shippers and carriers, or on average 40% cost savings.

**3. Cost saving opportunities exist to consolidate long-haul, outbound partial trucks.**

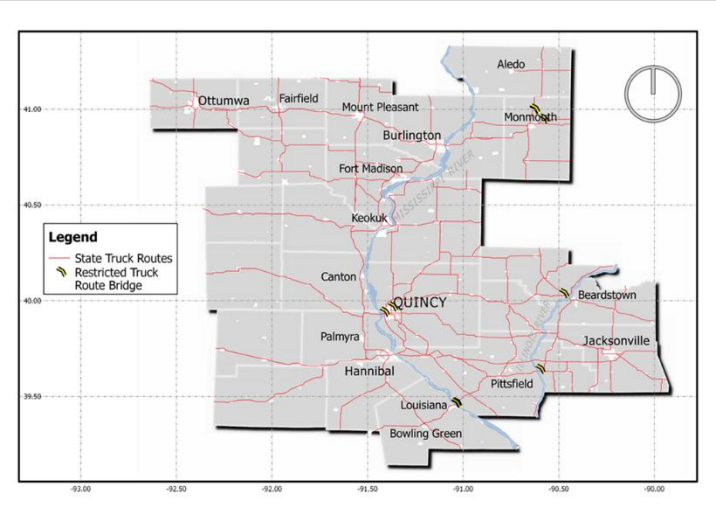
- Approximately 219,000 (2014) to 248,000 (2025) annual tons or the equivalent of 210 to 238 consolidated trucks per week.
- Opportunities to save $11 million (2014) to $13 million (2025) per year through truckload consolidation, or on average 23 percent.

***Under a revised project scope, Quetica designed and built a customized supply chain network optimization model for the MAPC region. The scope also called for the development of three "what-if" scenarios to test potential strategies and/or investments that could lower business transportation costs in the region.***

After completing the MAPC Regional Optimization Model (MROM), Quetica ran the model to establish a baseline of how freight currently moves in the region and examine existing constraints by contrasting baseline results to the optimized network. Next, the network modeling focused on identifying and evaluating network design alternatives that could address constraints and achieve the optimization objective of reducing regional business transportation costs.

Three "*what-if*" scenarios agreed upon by the MAPC Steering Committee and the Consultant Team were run and evaluated. The greatest cost saving opportunity in the region, shifting more freight to inland barge, confirmed long held convictions of MAPC and MAIAPD leadership. However, due to the lack of an identified anchor user, the consultant team recommended modernizing existing facilities over a greenfield port at this time.

The primary recommendation from the optimization modeling effort suggests expanding modern barge facilities/capacity in the MAPC region. Results from the optimization scenario runs are provided in Section 4.




# The Existing Freight Network

SECTION

02

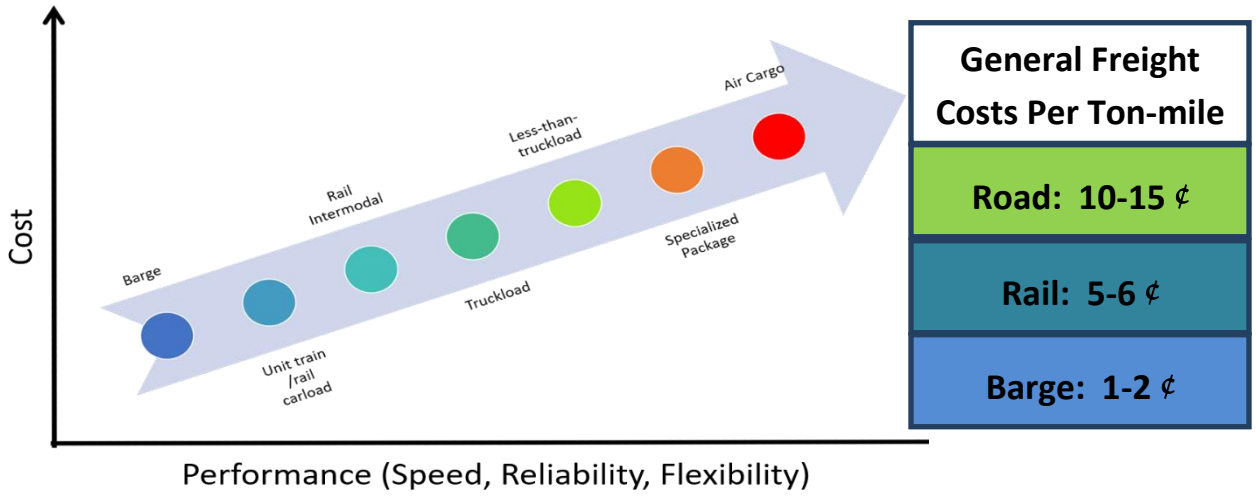
# Multimodal Networks: Key to Efficient Freight Movement

***Connecting the disparate freight transportation modes unlocks savings for shippers by allowing supply chains to access modal services across a range of speed and cost.***

A regional freight inventory provides an understanding about the existing supply of multimodal transportation options for regional shippers and provides the backbone of the optimization model's *Network Module*. The *Network Module* is designed to represent MAPC's multimodal freight transportation network. It includes all surface transportation modes available to transport commodities form origins to destinations. The freight network serving the Mid-America region is composed of highways, railways, and inland waterway systems.

In general terms, each mode of freight transportation provides a mix of cost, speed, accessibility, and flexibility that shapes its service attributes and offerings. Service needs also play a major role in determining the mode(s) used by specific industries for the commodities they consume and produce. For example, services offered by air cargo carriers are most often used to transport products with a high value to weight ratio (e.g. computer chips), or products that are extremely time sensitive (e.g. fresh flowers), and/or require a high-level of flexibility (e.g. on-site replacement parts). At the opposite end of the modal spectrum, barges usually transport products with low time sensitivity (e.g. sand, gravel, road salt). **Figure 1** shows a common array of modal services for moving goods along with the general service attributes that define modal options.

**FIGURE 1: MODAL SERVICE AND COST ATTRIBUTES**




Competition between service and price tends to be greatest the closer the modal options are on the spectrum. However, access to one service may alter the ability to substitute for a similar service, especially when initial capital costs are high. The global nature of trade and the long distances many products move often results in

the use of multiple modes to achieve the best price and service mix. In addition, the flexibility and door-to-door attributes of trucking services make trucking the undisputed choice for "first and last-mile" transport.

Products depend on different transport services based on factors such as inventory holding costs, weight, perishability or shelf-life, fragility, and sensitivity to market conditions. For example, medical devices (e.g. pacemakers) have a high cost to weight ratio, high inventory holding costs, and time definite delivery windows measured in minutes and hours. These conditions are best met by the services specialized package and air cargo carriers routinely provide. Conversely, grain has a low cost to weight ratio, low inventory holding costs and delivery windows measured in days as opposed to hours. These factors make low cost barge or rail services more suitable for grain transport. Air cargo and expedited truck delivery services may cost thousands of dollars on a weight basis versus barge and rail services which are more likely to have cost measured in cents.

**Measured by tonnage, 80% of the freight in the 26-county MAPC region moves by truck.**

**Nationally, 66% of all tonnage moves by truck.**

## HIGHWAYS & BRIDGES IN THE MAPC REGION

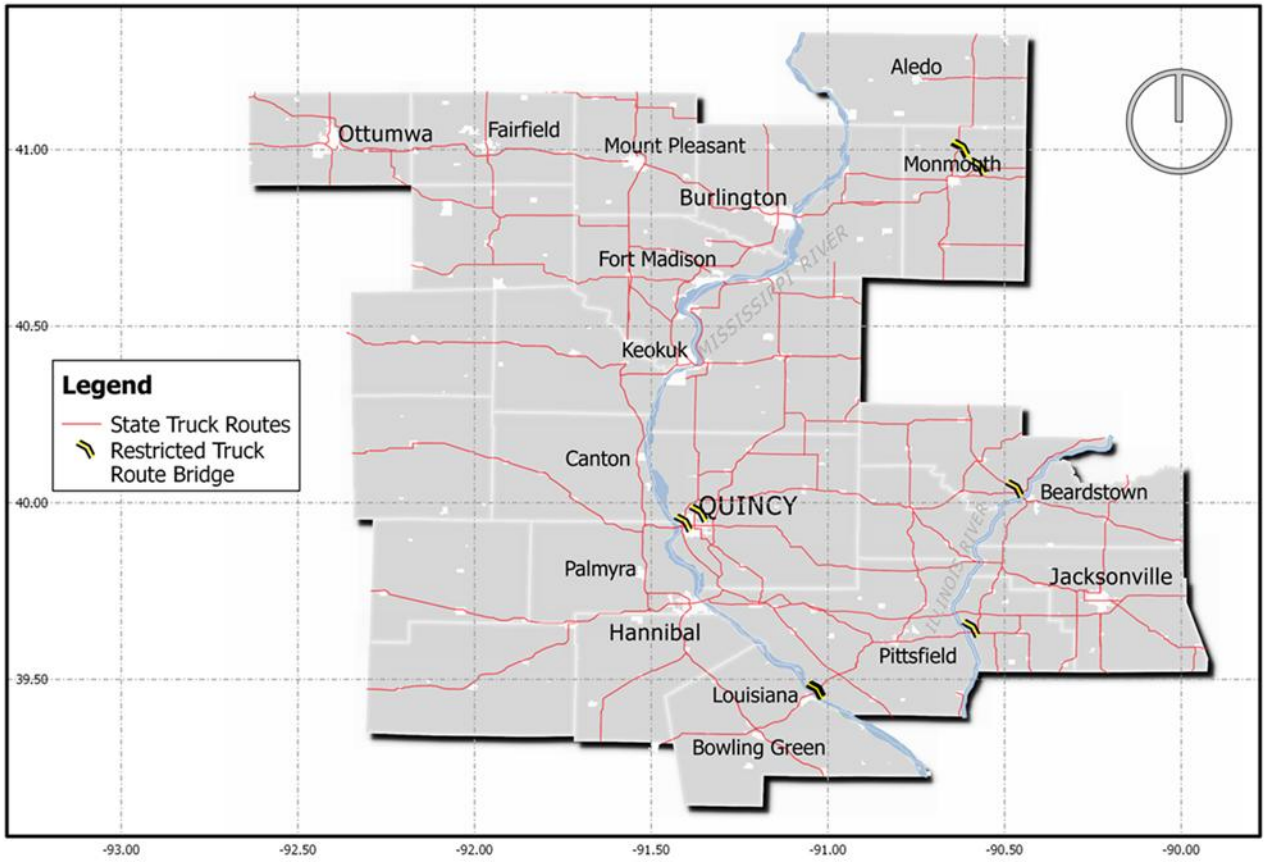
Freight traveling to, from, and through the Tri-State Mid-America region utilizes multiple modes, however the largest share of freight traffic moving in the region occurs on the region's highway network. Overall, the MAPC region has access to a high-quality roadway network, including I-72, US-24, US-34, US-36, US-61, US-67, US-136 and US-218. A map of the region's truck network is provided on the next page. Regional truck bottlenecks identified in recent state freight plans include:

**Illinois:** The Illinois state freight plan identified Broadway Street (IL-104) in Quincy as a "Truck Bottleneck". The truck bottleneck was rated as having 'Low Severity'.

**Iowa:** The recent statewide freight plan identified numerous truck bottlenecks including: U.S. 61 through Burlington with a Priority Ranking of 21 due to 172 incidences of significant delay, and several bottlenecks around Ottumwa on US-34 and US-63 causing 580 incidences of significant delay. The four separate bottlenecks were ranked 55, 66, 69, and 71 in terms of priorities. The other freight bottleneck identified was the BNSF railroad bridge over Iowa 1 in Fairfield which created 32 delays.

**Missouri**: The recent statewide freight plan identified the portion of US Highway 54 between Mexico and Louisiana as a non-prioritized planning project to construct a 4-lane roadway (this segment is approximately 60 miles). It has identified the 'Hannibal Expressway' (Highway 61) in Marion County as a 'Medium Priority'. Also prioritized are improvements to the US-24 bridge (High Priority) and Champ Clark bridge (Very High Priority).

## FIGURE 2: TRI-STATE MAPC REGIONAL TRUCK ROUTES




## RAILROAD FACILITIES IN THE MAPC REGION

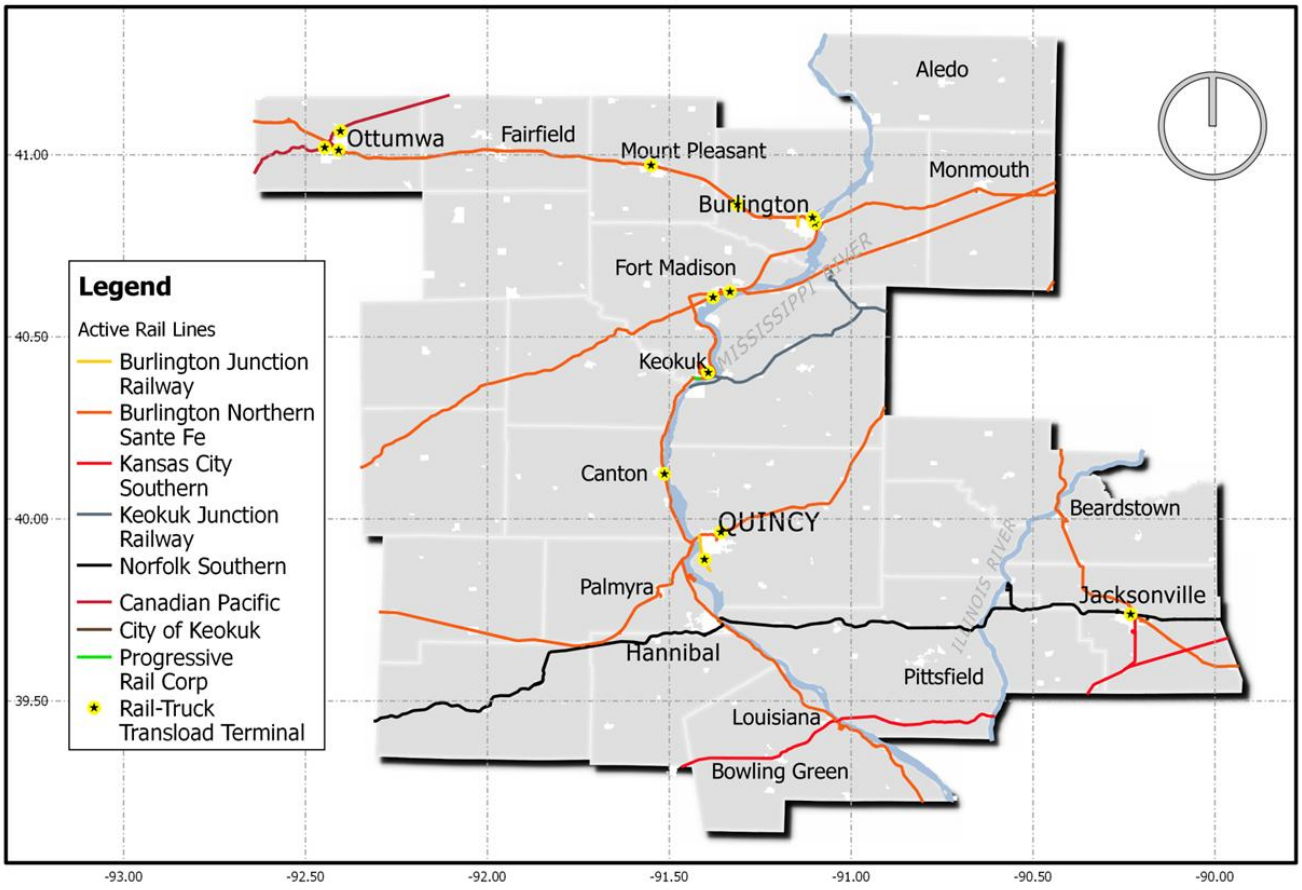
**In 2014, railroads moved 13 million tons of freight to and from the MAPC region; accounting for a 13% mode share.**

The Tri-State Mid-America region is home to four Class I railroads: Burlington Northern Santa Fe (BNSF), Canadian Pacific (CP), Kansas City Southern (KCS), and Norfolk Southern (NS). It is also home to four short line railroads: Burlington Junction Railway, Keokuk Junction Railway, City of Keokuk, and Progressive Rail Corp. Along with providing on-site access for shippers to put freight on the rail lines, there are 12 transload terminals in the region where freight can be transferred between trucks and rail.

During business interviews, several stakeholders noted that better access to unit train facilities was a need for the region. An examination of grain shuttle train elevators (high-speed loadouts for unit trains) identified just four facilities in the 26-county area – most on the outer edges of the region.

A map of the existing rail network is shown on the next page.

## FIGURE 3: TRI-STATE MAPC REGIONAL RAIL NETWORK




**Transit time by barge from New Orleans to Quincy, IL is about 16 days**

## MAPC INLAND WATERWAY FACILITIES

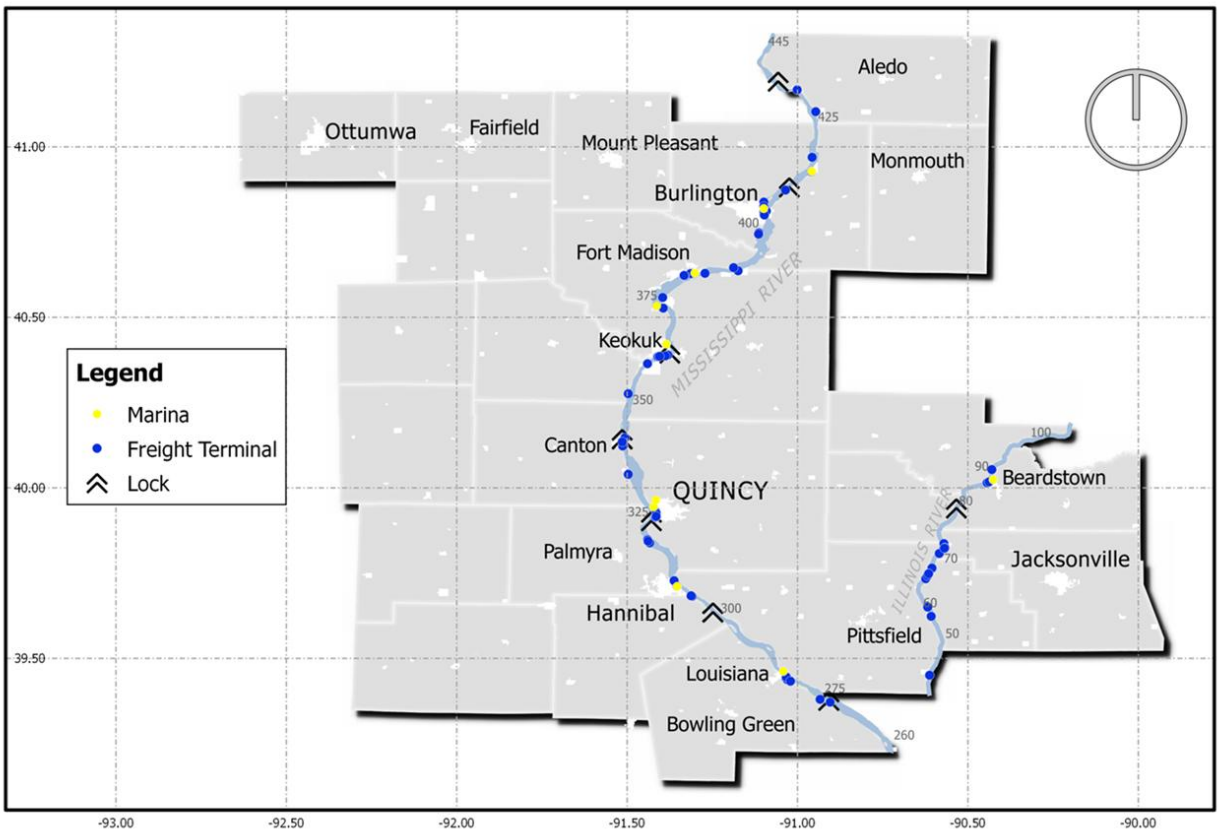
Utilizing waterways to ship bulk goods and products provides shippers with greater economies of scale and lower cost, provided the service meets transit time requirements as waterways are among the slowest mode options for getting bulk goods to market.

In 2014, just five percent of the region's freight moved by barge, just slightly more than the national average of three percent. * The Southwest region of the U.S., which includes Louisiana's Mississippi River export gateways, is the largest domestic trade partner region, with outbound flows more than double inbound volumes.

A map of the inland waterway network for MAPC is shown on the next page.

* Includes 1 percent counted as multimodal truck and barge. Source FHWA Freight Analysis Framework 4.3.

## FIGURE 4: TRI-STATE MAPC REGIONAL INLAND WATERWAY NETWORK




## EXPANDING MULTIMODAL OPTIONS IN THE MAPC REGION

**One barge holds:**

- **70 semitrailers**
- **16 rail cars**

**The average rate for barge is $.04 per ton mile vs. 06 for rail and $.10 to $.15 for truck.**

Transload facilities involve transferring non-containerized commodities from one mode to another. Transloading can be used to effectively leverage railroad services where shippers/receivers do not have direct rail access at their production or warehousing facilities. Transloading works for many commodities, including finished and unfinished goods, fresh food and beverage products, lumber, paper products, metals, building materials, a variety of packaged bulk commodities, as well as special shipments that cannot travel their entire route by road.

For example, extending rail access to new or existing barge facilities and upgrading to high-speed loading/unloading equipment would allow shippers to achieve operational savings by using a mixture of modes to reduce their transportation costs from origin to destination.

# Market Anaysis & Regional Freight Flows

SECTION

03

# Market Analysis

***Our solutions are aimed primarily at the largest volumes of freight, which have specific characteristics and trade lanes into and out of the Tri-State Region.***

Freight is a demand driven activity, and modern supply chains are the integration of facilities, information, people and transportation modes servicing the demand. Supply chains vary significantly depending on the transport needs of the freight- specific raw materials, intermediate goods, finished products, and waste moving trade lanes are most likely to benefit from the addition of transload or consolidation services in the region. These include bulk, breakbulk, liquid, and refrigerated products moved by truck beyond 500 miles

## GEOGRAPHIC

The Mid-America Ports strategic location on the M-35 Marine Highway (Mississippi River) provides shippers within the 26-county area full access to nation's multimodal freight network.

| | |
|---|---|
| Tri-State | Illinois, Iowa, Missouri |
| Highways | I-72/172, US-24, US-34, US-36, US-61 |
| Railroads | BNSF, NS, Burlington Junction |
| Rivers | Mississippi and Illinois |

## PRODUCT

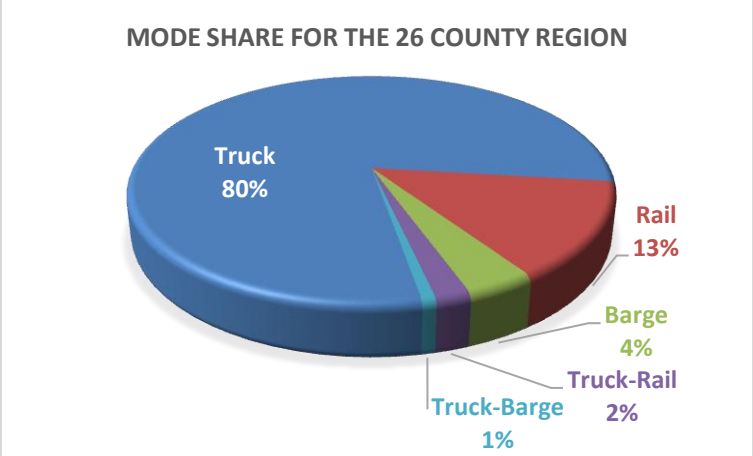
Logistic services that can be provided at the Mid-America ports support the movements of raw materials, intermediate goods, finished products, and wastes in various forms.

| | |
|---|---|
| Bulk | Animal Feed, Foodstuffs, |
| Breakbulk | Machinery, Base Metals, |
| Liquid | Animal Feed, Chemicals, |
| Refrigerated | Foodstuffs, Agriculture Products, Milled Grains |

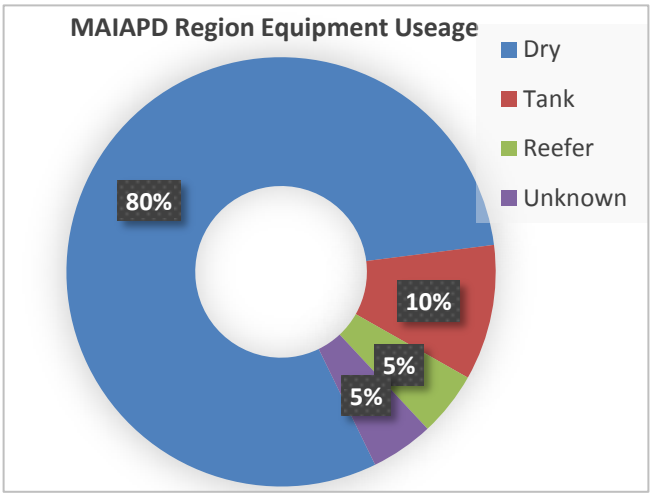
# Modal Comparison for MAPC Region

***It is estimated that 97 million tons of freight travelled from, to, and within the 26 county Tri-State Region on its roads, railroad lines, and waterways throughout 2014.***

Trucks moved more of the MAPC region's freight than any other mode: 77.5 million tons in 2014. The regional modal share of 80 percent is comparatively higher than the 66% mode share for truck nationally in 2015. * Railroads' roughly 13 million tons represented 13 percent of the regional total, four percentage points higher than the national average. The MAPC Region moved 3.8 million tons of freight via barges on the Mississippi and Illinois Rivers. Barged freight accounted for four percent of the region's total versus about three percent nationally. An additional 2.7 million tons of freight were moved by a combination of truck and rail or truck and barge in the region.



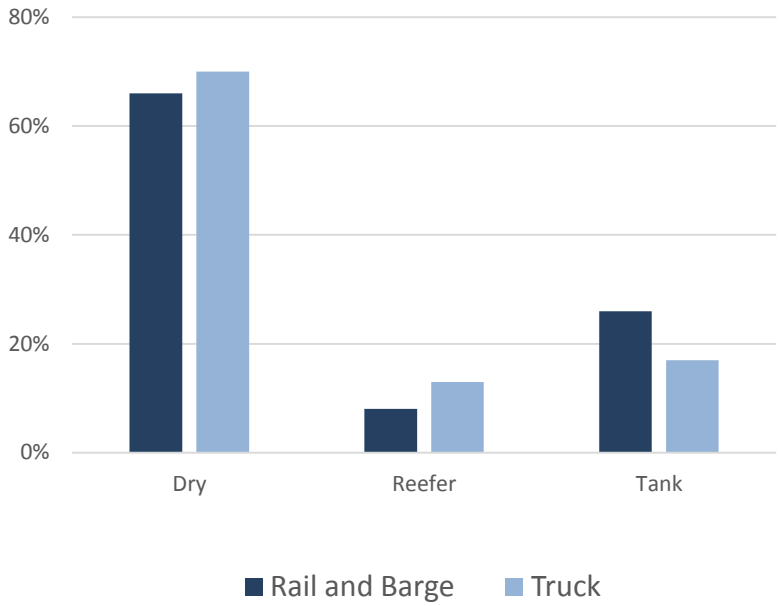

Different commodities require different transportation equipment to ensure products are delivered from origin to destination safely while maintaining quality and limiting damage. Of the 97 million tons of freight traveling from, to, and within the Tri-State Region, 80 percent was transported with the use of dry van equipment, 10 percent transported with the use of tank equipment, and five percent was moved in temperature controlled, or *reefer*, equipment. Five percent was unknown. By 2045, the demand for reefer equipment is projected to grow by 44 percent, dry van 40 percent, and tanker by 36 percent.




* The national mode shares for truck, rail and barge in 2015 came from *Freight Facts and Figures 2017*, published by USDOT, Bureau of Transportation Statistics. Table 2-1 comparing total domestic tonnage to truck tonnage. Online at: https://www.bts.gov/sites/bts.dot.gov/files/docs/FFF_2017.pdf

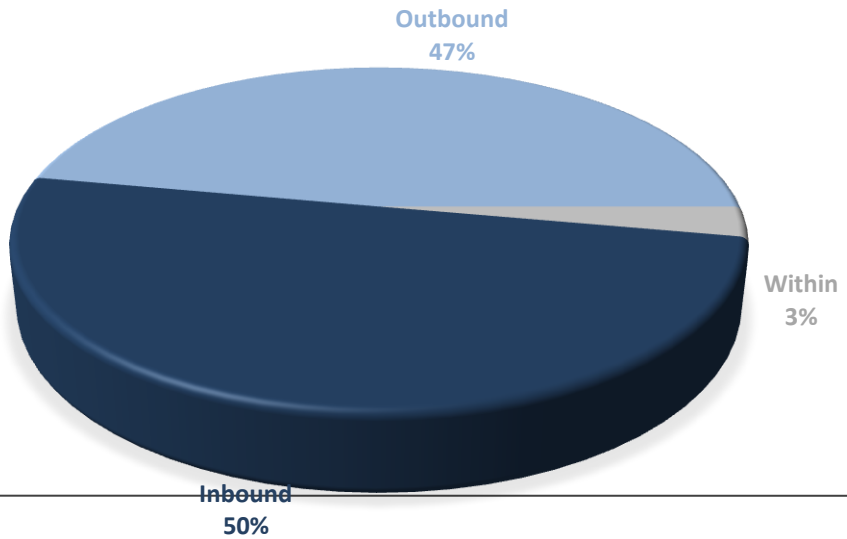
## LONG-HAUL EQUIPMENT UTILIZATION

Equipment used for long-haul freight movements, those over 500 miles, varied by mode. Whereas dry van and temperature-controlled equipment experience a larger percentage of utilization by trucks, freight transported on railroads and the waterways utilized a higher percentage of tank equipment. The transportation of crude oil and its derived products accounted for the higher utilization rate.



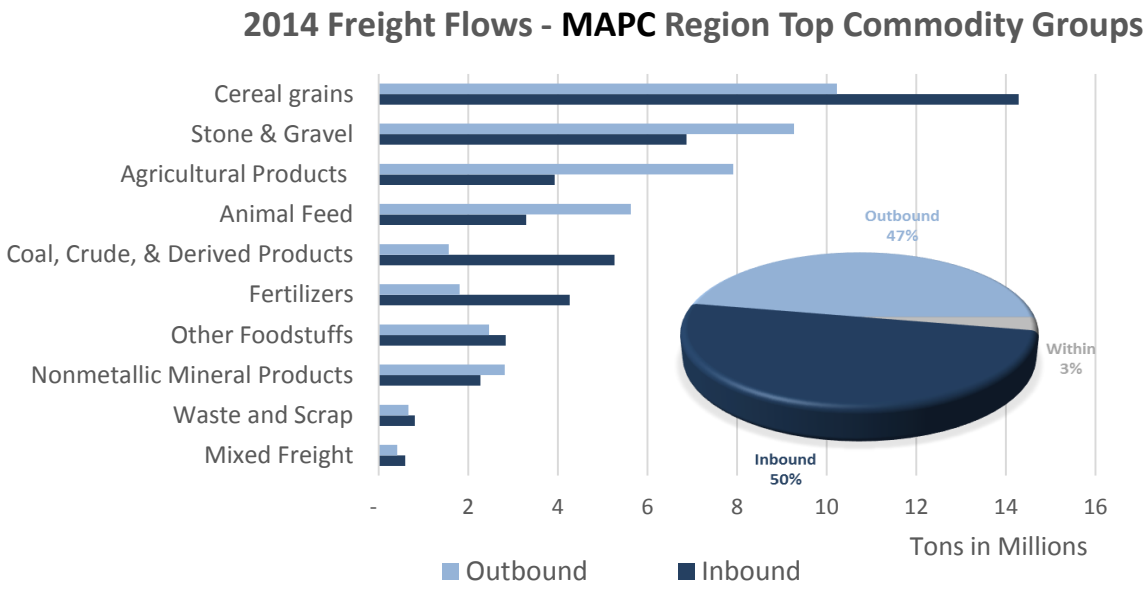

# Directional Freight Flows

***Overall freight flows into and out of the Tri-State Region are balanced with an estimated 45.8 million tons originating from the region and 48.7 million tons terminating in the region. Roughly 2.8 million tons both originate and terminate within the region.***



## FREIGHT FLOWS BY COMMODITY TYPE

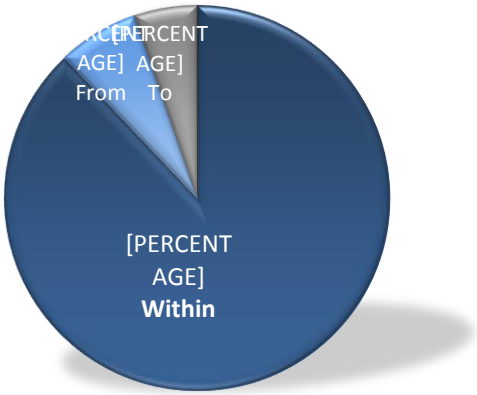
While overall freight flows are balanced, it is not necessarily the case when looking at freight flows of specific commodities. The region ships out more stone and gravel, agricultural products, animal feed, and nonmetallic mineral products than it receives. It receives more cereal grains, coal, crude, and derived products, fertilizers, other foodstuffs, waste and scrap, and mixed freight than it ships out. Agricultural products include soy beans, vegetables, fruits, and various seeds. Derived products include gasoline, fuel and lubricating oils, natural gas, propane, coke, asphalt, and others. Other foodstuffs include dairy products, processed vegetables and fruits, animal or vegetable fats and oils, and other edible preparations. Mixed freight includes items for grocery and convenience stores, restaurants, as well as home and office supply stores.



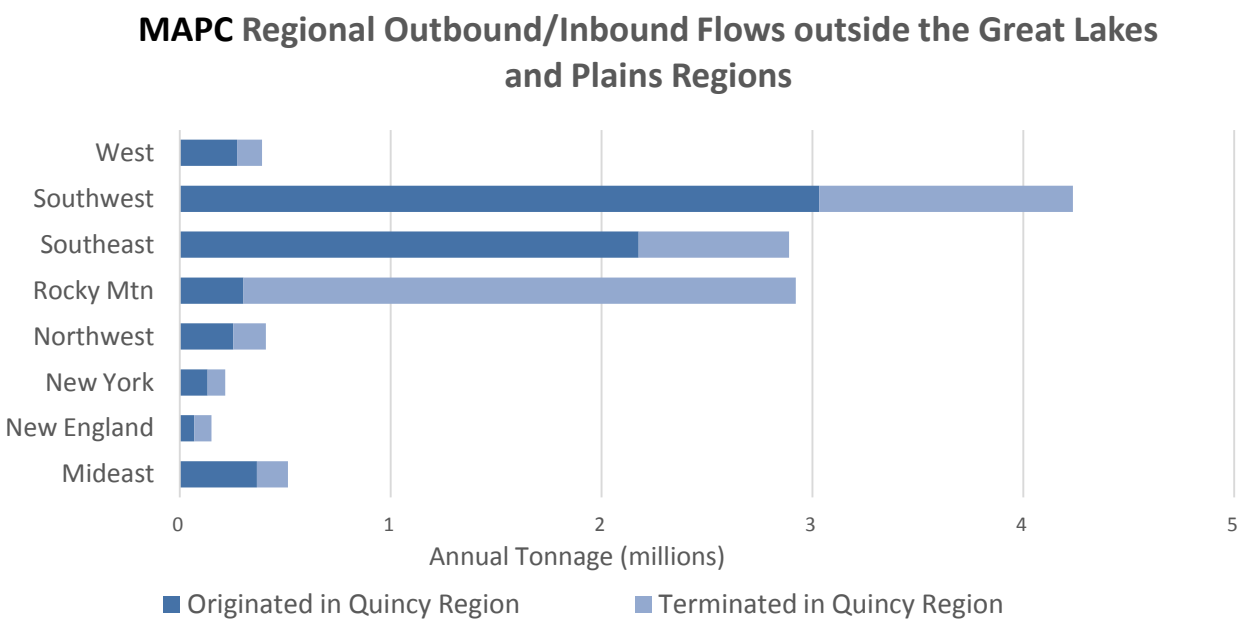

***The highest growth commodities for the MAPC Region are well suite to barge and rail transport. Non-metalliic Minerals exhibits the highest growth rate, while Cereal Grains are project to grow the most in total tonnage.***

# Trade Lanes

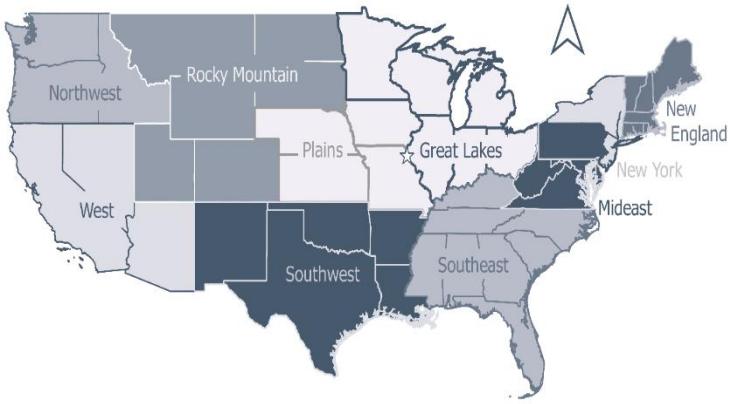
The adage that one's best trading partners are its neighbors certainly holds true for the Mid-America region as 88 percent of its freight flows to or from the states that make up the Great Lakes and Plains regions. This represents 85.5 million tons on an annual basis. The Southwest and Mid-America regions trade roughly 4.2 million tons with one another- 3 million tons originating in Mid-America. Trade with the Southeast totals 2.9 million tons with 2.2 million tons from Mid-America. The Rocky Mountain region is the lone region which sends more freight (2.6 million tons) than it receives (0.3 million tons) due to large amounts of coal (2.2 million tons from Wyoming).




Trade with the remaining regions includes: 512,000 tons with the Mideast; 408,000 tons with the Northwest; 390,000 tons with the West; 215,000 tons with New York; and 150,000 tons with New England. The bar chart below examines the balance of trade with regions beyond the Great Lakes and Plains Regions.



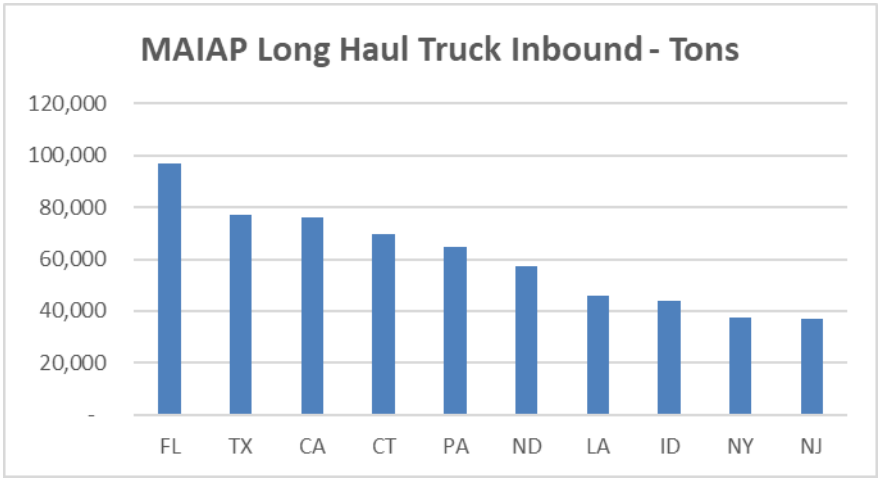
### Regional Geographies Used in the Analysis

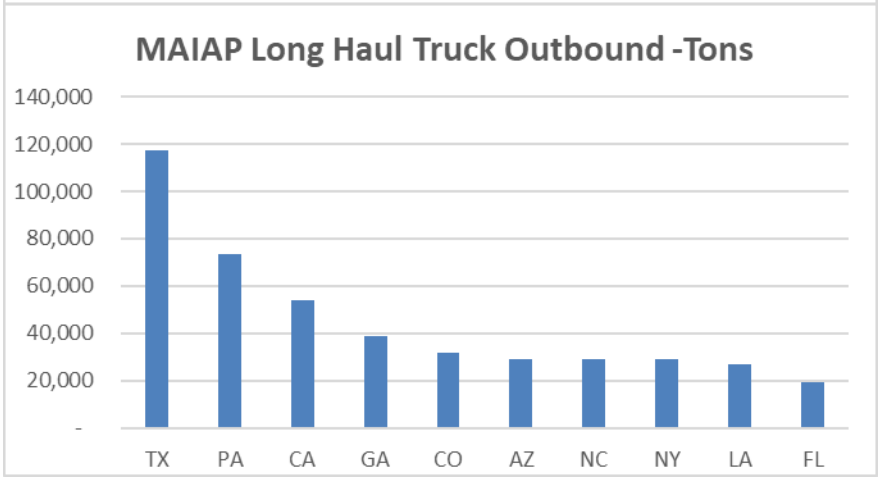



Digging deeper into the data, the top ten trade lanes between individual states outside of the Great Lakes and Plains Regions include:

1. to Texas: 572k tons
2. to Georgia: 276k tons
3. from Louisiana: 224k tons
4. from North Dakota: 194k tons
5. to Washington: 184k tons
6. to Pennsylvania: 160k tons
7. from Texas: 157k tons
8. to California: 143k tons
9. from Florida: 104k tons
10. from California: 100k tons

***The analysis found that significant volumes of freight are currently moving into and out of the MAPC Region, more than 500 miles by truck. The bar charts to the right display the larges volumes by state and direction of flow.***



# Network Optimization Results

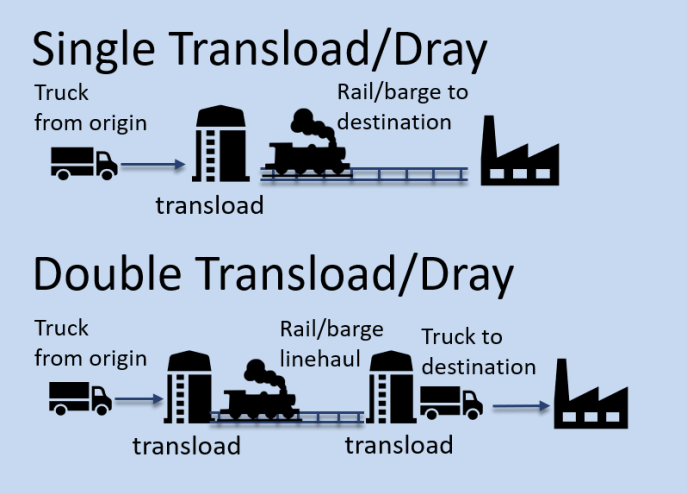
SECTION 04

# OPTIMIZATION SCENARIO RESULTS FOR MAPC REGION

**Results for Truck to Rail / Unit Train Transload: Conversion of Truck Trips > 500 miles**

*(Cost and savings are shown in millions of $)*

| | Annual Tonnage | | Baseline Costs | | Optimized Savings | | Percent Savings | |
|---|---|---|---|---|---|---|---|---|
| | *2014* | *2025* | *2014* | *2025* | *2014* | *2025* | *2014* | *2025* |
| Single Dray | 806,373 | 994,462 | $73.1 | $92.8 | $31.3 | $40.5 | 43% | 44% |
| Dbl Dray | 734,335 | 920,391 | $68.9 | $88.5 | $21.1 | $27.9 | 31% | 31% |




During stakeholder interviews, several businesses commented on the perceived lack of unit train capacity in the region. The consultant team responded by developing a scenario to examine bulk commodity movements going to and from the region that travel over 500 miles by truck. The table shows the optimization model results from converting long-haul truck freight moving into and out of the MAPC Region. The set-up was run using two drayage scenarios: 1) Single dray with bulk dry or liquid commodities moved by truck on one end of the rail haul (if the truck dray occurs at the origin, then the commodity will be transloaded from truck to rail at a transload facility; however, if the truck dray occurs on the destination end of the trip, then the goods are transloaded from rail to truck). A second scenario was run assuming a transload and dray occurring on both ends of the trip. The top commodities that could be converted from truck to rail via transload include: *Other Ag-Products, Animal Feed, Waste/Scrap, and Fertilizers.* Minnesota, Louisiana, Texas and Oklahoma are currently the largest destination markets for these product movements by truck. Florida, Connecticut and Alabama are the biggest inbound markets.

**Results for Truck and Rail to Barge Transload: Conversion of Truck & Rail Trips > 250 miles**

*(Cost and savings are shown in millions of $)*

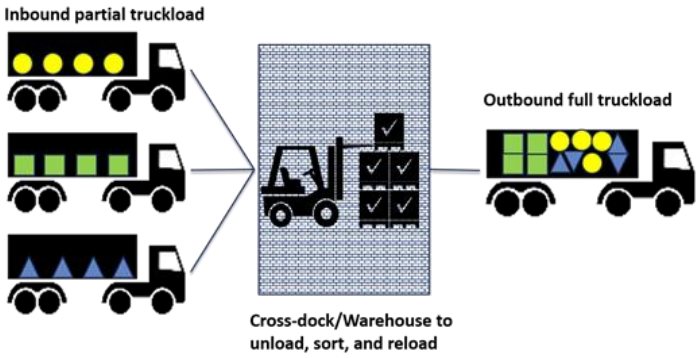
| | Annual Tonnage | | Baseline Costs | | Optimized Savings | | Percent Savings | |
|---|---|---|---|---|---|---|---|---|
| | *2014* | *2025* | *2014* | *2025* | *2014* | *2025* | *2014* | *2025* |
| Single Dray | 3,010,590 | 3,542,556 | $162.3 | $198.0 | $54.4 | $69.2 | 34% | 35% |
| Dbl Dray | 960,785 | 1,217,994 | $84.1 | $109.3 | $27.7 | $37.2 | 33% | 34% |

The barge transload scenario examined truck and rail movements greater than 250 miles, with a focus on bulk commodities such as: *Stone and Gravel, Cereal Grains, Other Ag. Products,* and *Animal Feed.* The results suggest potential cost savings for MAPC region shippers exceeding $50 million in the base year under the single dray analysis. For the single dray option, the potential market opportunity grows to nearly $70 million annually in 2025. In addition to cost savings, both the rail and barge transload scenarios would have significant public benefits in terms of converting long-haul truck trips to more efficient modes of transportation saving infrastructure wear, reducing fuel consumption, and lowering greenhouse gas emissions.

**Results for Truckload Consolidation: Consolidating Outbound Truck Trips > 500 miles**

*(Cost and savings are shown in millions of $)*

| Product | Annual Tonnage | Growth | Baseline Costs | Optimized Savings | Percent | Avg. Length of Haul |
|---|---|---|---|---|---|---|
| Animal feed | 180,837 | 31% | $34.5 | $7.1 | 21% | 1,066 |
| Other ag prods. | 101,651 | 36% | $25.6 | $6.1 | 24% | 1,336 |
| Other foodstuffs | 33,385 | 41% | $9.3 | $3.4 | 37% | 1,123 |
| Mixed freight | 17,573 | 8% | $4.2 | $1.1 | 26% | 1,143 |
| All Others | 87,316 | 25% | $18.7 | $3.9 | 21% | 1,122 |
| **TOTAL** | **420,762** | **30%** | **$92.3** | **$21.6** | **23%** | **1,132** |



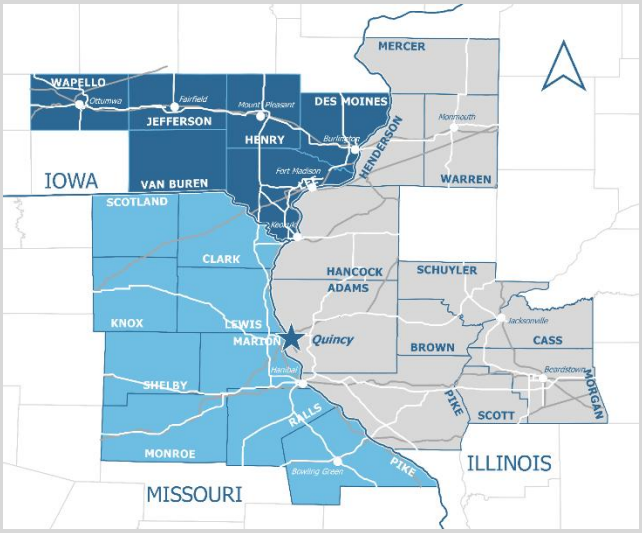

The table above summarizes the analysis of the truck freight consolidation scenario. Because contracted truckload carriage can be up to four times less expensive than less-than-truckload (LTL) rates, many smaller shippers enter contracts for truckload carriage but may not always be able to fill trucks to capacity. The analysis estimated the potential market savings from a truck cross-dock or freight consolidation center, where partially loaded trucks are brought to a warehouse facility that sorts and reloads freight into full truckload lots. The scenario focuses on partially loaded outbound truck movements over 500 miles. Key commodities in this scenario include: *Animal Feed, Other Ag-Products, Other Foodstuffs,* and *Mixed Freight.* Some of the top destination markets in this scenario include Washington, Virginia, Georgia and New Jersey.

**Results for Combination: Rail and Barge Transload, and Freight Consolidation**

*(Cost and savings are shown in millions of $)*

| Scenario | Annual Tonnage | | Baseline Costs | | Optimized Savings | | Percent | |
|---|---|---|---|---|---|---|---|---|
| | *2014* | *2025* | *2014* | *2025* | *2014* | *2025* | *2014* | *2025* |
| Truck-to-Barge | 2,348,787 | 2,726,027 | $105.5 | $125.6 | $31.8 | $39.7 | 30% | 32% |
| Truck Consolidation | 218,739 | 247,817 | $49.0 | $56.8 | $11.2 | $13.3 | 23% | 24% |
| Truck-to-Rail | 661,803 | 816,530 | $56.8 | $72.3 | $22.6 | $29.5 | 40% | 41% |
| **TOTAL** | **3,229,329** | **3,790,374** | **$211.3** | **$254.7** | **$65.6** | **$82.6** | **31%** | **32%** |

If all three of the previously discussed scenarios for reducing shipping costs in the MAPC region were implemented, there would be some overlap in terms of which commodities would convert to each of the three strategies tested. As a result, Quetica ran a fourth scenario which combines all three strategies. The results from this combination scenario are shown in the table above. If each of the strategies discussed were implemented the total opportunity for transportation cost savings in the region is estimated to exceed $200 million annually in the base year (2014) and with growth to over $250 million by 2025.




# Proposed Network Enhancements

SECTION

05

# Identified Cost Saving Network Enhancements


## Rail to Barge Transload

Rail to Barge transload was identified as the top cost saving opportunity in the region.

The planned new dock site is adjacent to Illinois Route 57 and approximately one mile from US Highway 24. The Quincy Bayview and Memorial Bridges carry US-24 over the Mississippi River and provide a direct connection to Missouri. Interstate 172 is approximately six miles to the east. US Highway 61, also known as the *Avenue of the Saints*, is roughly seven miles from the port facility. Railroad service is provided by the Burlington Junction Railway (BJRY). The location offers shippers no-charge reciprocal switching service with two Class I Railroad Carriers: the Burlington Northern and the Norfolk Southern.

# Additional Opportunities

***The regional supply chain network optimization analysis identified potential demand for following network enhancements and services.***

### RAIL UNIT TRAIN

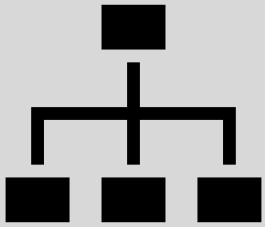
The network optimization analysis also showed that regional efficiencies can be gained by siting a multimodal/transload facility that can service cargo most efficiently moved by unit train service where a single product moves in large volumes between a single origin and a single destination.

### FREIGHT CONSOLIDATION

The network optimization analysis also showed that regional efficiencies can be gained by siting a freight consolidation facility that would consolidate partial truckloads moving long distances in to full truckloads. Consolidation centers can reduce costs, improve equipment utilization, and create additional capacity.

# Supply Chain Solutions

The Optimization analysis showed that for bulk products, a modernized barge dock facility in the region would be a great first step. The analysis was based on total commodity movements in the region and actual bills of lading from shippers and carriers in the Midwest. The final analysis, which examined the concurrent impacts across three network enhancements, identified over $82.5 million in annual efficiencies that can realized by shippers within the 26-County area from a combination of network improvements that include the transload, unit train, and consolidation facilities described. Utilizing a combination of modes will provide shippers greater options as well as save them money in transportation costs.



# Management & Operations

SECTION

06

# MAIAPD OVERVIEW

## PORT AUTHORITY

The Mid-America Port Commission was established by a three-state compact in 1999. It is the only three-state port compact in the United States.

It is the policy of the Port Commission to represent development strategies that will be compatible with legislative mandates and sensitivity to the environment, and to facilitate strategically located multi-modal complexes, regionwide system improvements for freight movement, development proposals in terminals and industrial parks, and the support of other development activities within its jurisdiction.

## LOCATION

The Mid-America Port Commission encompasses 26 counties: Illinois (11), Missouri (9), and Iowa (6). The 26-county Tri-State Region covers 13,000 square miles of land containing the Mississippi and Illinois Rivers and over four million acres of prime crop land. It is home to over 450,000 residents.

Since the 9-Foot Navigation Project was opened in 1939, commercial traffic on the river has grown quickly and steadily. Many industries, especially those that ship bulk commodities have taken advantage of the low-cost transportation made possible by the project.

## S

### STRENGTHS

Landside road and rail access to two major Marine Highways, M-35 and M-55 make the region an ideal location for a transload facility.

The surrounding region produces a high level of manufactured products, as well as bulk and value-added agricultural products.

## W

### WEAKNESS

The Tri-State Region has several commercial port terminals providing competition for its inbound and outbound freight flows.

The region does not have access to an intermodal rail facility resulting in a lack of containers.

## O

### OPPORTUNITIES

The Tri-State Region lacks a multi-use terminal with road, rail, barge, and consolidation services provided at one location.

This includes: a facility to host container on barge service and associated ancillary services; an FTZ, in-bond warehousing; and freight consolidation, deconsolidation, and other distribution services.

## T

### THREATS

Supply chain needs such as speed of delivery, requirements for containerized export, and inventory or warehousing space.

Intermodal competition from existing and future barge facilities outside the Tri-State Region and inter-modal competition from truck and rail carriers.

# Mid-America Port Commission Board of Commissioners

*The Mid-America Port Commission is governed by a nine-person board with three commissioners from each state: two appointed by county board chair and one by the Governor. Commissioners can serve two six-year terms.*

## ILLINOIS

**Mike McLaughlin**

CHAIRMAN

- Past Chairman, Adams County Board

**Blake Roderick**

- Executive Director, Two Rivers Farm Bureau

**Vacant**

## IOWA

**Daniel Wiedemeier**

SECRETARY

- Commissioner, SW Iowa Regional Airport Authority

**Joe Steil**

- Executive Director, Lee County Economic Development Group

**David George**

- Financial Advisor
- Mt. Pleasant Utility Board
- Henry County Housing Authority Board

## MISSOURI

**Douglas H. Aeilts**

VICE CHAIRMAN

- CEO / GM, Northeast Missouri Electric Power Cooperative

**Norris Hinton**

- Board of Director, Lewis County Rural Electric Cooperative

**Gordon Spilker**

- Vice President, Northeast Missouri Grain Processors, Inc.
- President, Northeast Missouri Development Authority

# Mid-America Intermodal Authority Port District Board of Commissioners

*The Illinois Mid-America Intermodal Authority Port District owns the property chosen by the Tri-State Commission for the proposed initial port site located in the South Quincy Development District.*

**Mike McLaughlin, Chairman**
- Adams County
- Vice Chairman, Adams County Board

**H.O. Brownback, Vice Chairman**
- Cass County
- Vice President, Southwestern Illinois Community College

**Max Edlen**
- Scott County
- Former Chairman, Scott County Board
- Founding Commissioner, MAPC

**Charles "David" Hood, Jr.**
- Schuyler County
- Retired Lockmaster, U.S.A.C.E.

**Blake Roderick**
- Pike County
- Executive Director, Two Rivers Farm Bureau

***The Mid-America Intermodal Authority Port District is governed by a seven-member Board of Directors. Board members were first elected in 1999. Four members are appointed collectively by the county board chairmen of the eleven Illinois counties in the District which include: Adams, Brown, Cass, Hancock, Henderson, Mercer, Morgan, Pike, Schuyler, Scott and Warren.***

***Three board members are appointed by the governor. County appointees are then approved by the governor and gubernatorial appointees are approved by the county board chairmen. Board members serve 5-year terms.***

MID – AMERICA INTERMODAL PORTS

**ADDRESS**
301 Oak St.
Quincy, Illinois 62301

# Thank You

**The Mid-America Intermodal Authority Port District and the Mid-America Port Commission wish to express their gratitude to the project sponsors including the Iowa Department of Transportation and Illinois Department of Transportation.**

**CREATED BY**

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