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Executive Summary

The OKI region is a major link in America’s freight transportation network. More than 323 million tons of freight flow into, out of and through the region annually.

About one-third of this freight is inbound, destined for major businesses in the region such as General Electric, AK Steel, Toyota, and Schwan Food Company.

For these and hundreds of other businesses, transportation is their lifeblood. Fortunately from an economic development standpoint, the OKI region provides a powerful nexus for truck, rail, barge, and air transportation.

More than 80 percent of the region’s freight moves by truck, so major highways and local roads are vital to regional commerce. Interstate 75, running north-south through the region, is one of the heaviest truck corridors in America. The region is also home to major railroad facilities including three intermodal terminals, three train classification yards and numerous industrial sidings. Together, the region’s three railroad companies handle almost 100 trains per day.

Barge terminals are critical to the region’s heavy industries. While just 10 percent of the region’s freight moves by barge, its low cost is essential to shipping bulk commodities such as chemical products for DuPont and scrap metal for AK Steel.

For time sensitive cargo, the Cincinnati/Northern Kentucky International Airport (CVG) offers service from major parcel carriers such as FedEx and also serves as the North American hub for DHL. The DHL hub at CVG employs more than 1,800 people and total freight has increased 190% since 2009.

For many years, transportation planning has focused on moving people by automobile or public transit. Now, attention is turning to freight transportation and the importance of freight mobility to economic activity.

OKI, recognizing the link between freight mobility and economic development, launched this regional freight plan to understand industry trends, forecast freight demand, and identify projects that maintain freight mobility and spur business growth.

Regional Freight Trends

Freight systems are global. In the past, connection to railroads or highways ensured the prosperity of a region. Today, regional economies depend on their connections with global supply chains. Shippers are concerned with their total distribution cost, from supplier to consumer. Even modest changes in the cost of distribution can have dramatic impacts on manufacturing sources and the modes of transportation used by businesses.

As a result, transportation planners must consider how freight is moving through the system, and how freight carriers—ocean carriers, ports, railroads, and trucking companies—are adjusting their networks to serve global supply chain developments. The OKI Regional Freight Plan evaluated three significant supply chain dynamics of this decade:
• The expansion of the Panama Canal is set for completion in 2014, which will allow larger container vessels to transit the canal and its lock system. As a result, Asian imports to America can route around West Coast Ports, directly serving southern and eastern U.S. ports.

• The Norfolk Southern (NS) Railroad’s Heartland Corridor, which has opened double stack container train service from Norfolk, Virginia, through Columbus, Ohio and on to Chicago, Illinois. The double stack service could be a boon to shippers in the Midwest and OKI has taken advantage of the opportunity by providing funding for double stack clearance on the NS line from Columbus to Sharonville.

• The CSX National Gateway Program, which is building similar double stack clearance from East Coast ports into the Midwest. Significantly, CSX has included a major container hub-and-spoke operation in Northwest Ohio, which could improve rail service and shipping rates into the OKI market.

Due to changes in the global supply chain, brought on in part by these major transportation developments, overall freight volumes in the OKI region are forecasted to increase 56 percent by 2040—from 323 million tons in 2009 to 487 million tons in 2040.

Truck traffic is forecasted to increase from 9.8 million loaded trucks in 2009 to 16 million loaded trucks by 2040—a 63 percent increase over 30 years.

Rail traffic is estimated to increase from approximately 33,000 trains per year in 2009 to 45,000 trains per year in 2040. This will increase trains in the region from 90 to 130 per day by 2040.

In a region with highway and railroad congestion, this growth in freight volume will strain transportation capacity. The biggest concern for OKI is to maintain or improve freight mobility so that businesses can continue to benefit from an efficient transportation system.

Regional Freight Transportation Assets

The OKI region has a number of geographic and transportation advantages, which make it attractive from a business logistics standpoint.

Geographically, regional businesses are able to serve about 60 percent of the North American market by one day’s truck drive.

Along with this geographical advantage, the region adds the synergy of four transportation modes—air, water, rail and highway—which few other regions can match. Focusing on railroads, the region boasts two large carriers and one regional railroad, providing good service and competitive rates. In addition, there are relatively few air cargo hubs in the Midwest, which makes DHL a competitive advantage for the OKI region and an economic driver in and of itself.

Regional Freight Transportation Deficiencies

While the regional freight assets are strong, there are significant deficiencies that can impact freight mobility now and in the future:
• **Railroad congestion.** CSX, NS, and RailAmerica share three main lines through the Mill Creek Valley which are currently near capacity. With regional railroad traffic forecasted to increase 38 percent, bottlenecks in the rail corridor will further erode rail freight mobility. If rail service quality degrades, freight traffic could shift to the highway system, which would increase congestion and negatively impact safety and air quality. Even worse, a degradation of rail service could cause shippers—regional businesses—to move to areas with more reliable rail service.

• **Highway freight capacity.** While the OKI freeway system is relatively good in terms of congestion, there are critical links in the system that dramatically impact freight mobility. Most notable is the Brent Spence Bridge, which carries I-71/75 across the Ohio River. From a freight standpoint, the OKI region would cease to function if the Brent Spence Bridge fails. While freight traffic can now back up many miles because of congestion on the bridge, a failure of the structure would be catastrophic, causing truck freight to gridlock, or to bypass the region altogether. Inability to serve freight traffic would have deleterious effects on business, employment, and regional income.

It is important to note the interplay between railroad and highway freight congestion in the region. Key rail freight corridors are nearly at capacity now and will certainly be overcapacity when rail volume increases 38 percent as forecasted.

But it is most likely that trucks would carry the burden of any rail freight overflow, which would make congestion on the Brent Spence Bridge and other regional freeways even worse.

This situation provides a perfect illustration of the interdependence among different modes of freight transportation and the need to think comprehensively in developing freight transportation strategies and projects.

While the Mill Creek Valley railroad bottlenecks and the Brent Spence Bridge are the biggest regional freight concerns, there are a number of other freight deficiencies that require attention to ensure mobility over the next 30 years. These include:

• Truck congestion on interstate routes, including I-75 (Thru the Valley and Mill Creek Expressway) and I-471
• Truck congestion on a number of local roads, which provide the “last mile” of freight mobility to and from customer locations
• Overweight trucks and the damage inflicted on the highway system
• NS Sharon Yard (Sharonville), where rail operations routinely block Reading Road
• Safety of at-grade highway-rail crossings
• Developing regional barge terminals to their full potential
• Capitalizing on the air freight assets of CVG for regional economic development

Regional freight deficiencies are addressed comprehensively in the regional freight plan, with recommendations for policy actions and capital investments.
Meeting the Region’s Future Freight Needs

There are a total of 58 recommendations in this plan to address regional freight deficiencies, now and in the future. Each recommendation contains a cost estimate and priority ranking. The following lists the high priority freight recommendations for the region in alphabetical order:

- Activate the “Port” in the Port of Greater Cincinnati Development Authority, $300,000 annually for new barge freight related administrative staff and responsibilities. The Port Authority can enhance the profile of regional waterway assets as a lever for economic development.
- ARTIMIS Message Signs, $1,388,000. Responding to input from trucking companies, this recommendation would add four new changeable message signs in the region to improve guidance of commercial vehicles.
- Brent Spence Bridge, $2,300,000,000. Replacement of the aging Brent Spence Bridge is vital to regional freight mobility; the bridge handles an estimated $487 billion in commercial cargo annually.
- CVG Air Cargo Park, $50,000,000. With appropriate capital improvements in and around the airport, CVG can use its position as an air cargo hub to develop logistics business in the area.
- East Sharon Road Study, $250,000. This recommendation is to analyze the segment of East Sharon Road, including both the intersection of Medallion Drive and entrance/exit to Sharon Yard, to determine a comprehensive strategy for improving multi-modal transportation movements that benefit both the Sharonville and Evendale communities, as well as facilitate potential growth in NS freight activities.
- Grand Avenue Improvement, Taylor Mill, $4,500,000. This recommendation would improve truck flow along KY 177 (the Decoursey Pike area) in Kenton County and improve the attractiveness of the Decoursey Yard brownfield redevelopment site.
- Hamilton-Mason Road Mouse Hole: Rail Underpass Widening and Reconstruction, $12,000,000. As the highest priority of many deficient railroad underpasses in Butler County, improving this mouse hole will improve east-west freight mobility through the county.
- Hopple Street Passing Track and Crossovers, $8,000,000-$10,000,000. At the Hopple Street overpass, the CSX mainline narrows from three to two tracks to pass through the bridge piers. Addressing this choke point will improve operations for all three railroads in the region.
- I-75 Mill Creek Expressway and Thru the Valley, $644,900,000. Widening I-75 in Hamilton County will improve mobility for automobiles and trucks alike; however, these projects are not fully funded by the Ohio Department of Transportation (ODOT).
- I-471 Reconstruction, $36,615,000. This recommendation addresses an important freight connector for northern Kentucky businesses. With future improvements planned for the I-75 corridor and Brent Spence Bridge, even greater emphasis is placed on the need to maintain and improve I-471 to handle the additional volumes of diverted passenger and freight traffic.
- Reading Road Grade Separation, Sharonville, $25,000,000. This recommendation will address the at-grade crossing of NS railroad tracks and Reading Road in Sharonville, which is repeatedly blocked by NS switching operations in the Sharon Yard.
- Regional Public-Private Freight Rail Partnership, $100,000 annually. Collaboration between the public sector and railroads is critical to implementing a number of the recommendations in this
freight plan. This recommendation requires a modest investment for administrative costs, to advance the public/private partnerships required to implement railroad projects.

The total estimated cost of top regional freight priority recommendations is $3,085,053,000. Of this total, 74 percent represents the cost of the Brent Spence Bridge replacement project.

**The Economic Future**

The OKI regional freight plan is more than a list of projects. It provides a blueprint for improving freight mobility, including the formation of critical public-private partnerships to address railroad and barge transportation challenges.

OKI has also identified actions to implement freight plan recommendations, and keep current on future freight trends in order to adjust strategies and address unforeseen changes in global supply chains.

Ultimately, the success of the regional freight plan will depend on the partnerships and collaboration of the public and private sectors. Railroads, trucking interests, barge terminals and air cargo carriers will need to collaborate to address the transportation challenges facing OKI over the next 30 years.

While collaboration is the most important ingredient for successful implementation, progress can be measured by the economic vitality of regional businesses, which depend so greatly on the adequacy of the freight network.
1 Introduction

1.1 Context: The OKI Region and the National Freight System

The OKI region is well situated within a dense network of railroads and highways that serve the East Coast and Midwest. Figure 1-1 depicts the volume of freight flows through this network. The OKI region is located in a strategic national position: it is at the crossroads of major freight corridors, including I-71 and I-75; the region is adjacent to major consumer markets in the heart of the Midwest, as well as the Northeast and Southeast; and with roadway, rail, river, and air freight assets, the region offers a complete set of freight transportation services.

Figure 1-1: Tonnage on Roadways, Railroads, and Inland Waterways, 2007

1.2 OKI Regional Freight Plan

In early 2010, OKI launched a freight plan for the three-state, eight-county region that OKI serves. The purpose was to devise a plan that will enhance the mobility of people and goods, while encouraging economic development, and mitigating adverse environmental impacts, and safety and security risks. The OKI Freight Plan considers the adequacy of the region's freight infrastructure, but more importantly, prepares to position the OKI region to accommodate future demand within the context of the national freight system. This is important as federal, state, and local policy makers—
as well as the private sector—are making major capital investments to eliminate freight bottlenecks and ensure capacity for future growth. For example:

- Railroads are developing new western “gateways” at North Baltimore, Ohio and Memphis, Tennessee and other cities, to relieve the congestion caused by Chicago rail bottlenecks.
- Both CSX and NS have major programs underway to add intermodal capacity.
- The air cargo industry has gone through a difficult period of merges and consolidations, which has led to the closure of some air hubs (Wilmington, Dayton, and Toledo, Ohio) and the expansion of others (Louisville, Kentucky).
- The U.S. Maritime Administration is sponsoring the development of “Marine Highway Corridors” to serve as extensions of the surface transportation system, and relieve congestion on it.
- The Federal Highway Administration (FHWA) has designated a “Corridors of the Future” program to improve freight corridors that are considered critical to the nation’s economy.

To help ensure the region’s prosperity, the OKI Freight Plan evaluates the region’s place amidst the many and various changes in the nation’s supply chain. It charts a course for freight transportation in the region. This is done so area industries have the necessary transportation services to keep them competitive and key freight investments can help stimulate the regional economy.

The OKI Freight Plan is intended to be an iterative process where system deficiencies, freight flows, cargo forecasts and recommendations are reviewed periodically. This document serves as a tool to educate the public about regional freight planning and solicit comments and feedback that will be useful in making informed decisions, prioritizing solutions consistently and allocating resources appropriately.

The OKI Freight Plan was developed through a comprehensive data collection process that included an extensive public and stakeholder involvement process such as shipper surveys and interviews. Proprietary data was acquired, such as FHWA’s Freight Analysis Framework Model (FAF 3) and IHS Global Insight’s TRANSEARCH® data, for the OKI region. The information collected enabled a thorough examination of existing conditions and current freight flows by each of the four modes (trucking, rail, inland waterways, and air cargo.) The existing conditions analysis included analysis of the freight system, its uses and limitations and a profile of its users from carriers to cargo owners.

Following an existing conditions analysis, a regional needs assessment was conducted to understand shipper behavior and preferences, forecast future regional freight volumes, and identify infrastructure needs that would be required to accommodate this growth. In consideration with other regional investments such as the NS Heartland Corridor and CSX National Gateway projects, combined with other exogenous factors like the Panama Canal expansion, the regional needs assessment identified OKI’s future freight needs.

The OKI Regional Freight Plan also consisted of developing a framework of performance metrics, which enabled a first iteration of testing recommendations against plan goals, as well as cross comparing them in a qualitative manner. As part of identifying opportunities and mitigating risks, a safety and security analysis was conducted to identify vulnerabilities and options for addressing critical infrastructure concerns. These analyses culminated in a set of recommendations that were
prioritized according to the following time horizons: immediate, mid term, and long term. An implementation plan that details next steps for carrying out recommendations was developed.

The following chapters are based on the work described above:

- Chapter 2 provides an overview of data collected, sources and methodology.
- Chapter 3 presents the current freight systems, users and current limitations.
- Chapter 4 presents the shipper survey results (which reveal behavior and preferences), a commodity flow assessment, future forecasts and freight infrastructure needs to accommodate growth.
- Chapter 5 provides a framework for developing freight performance metrics that integrate goals from the OKI 2030 Regional Transportation Plan. Goals and corresponding metrics were used for a first iteration of performance measurements and then applied to the recommendations made in Chapter 7.
- Chapter 6 identifies the potential safety and security risks associated with regional freight movements. In addition to identifying historical trends in safety and security incidents and locations, a macro-level set of measures to mitigate risk were identified.
- Chapter 7 presents recommendations that have been evaluated using the performance measures developed in Chapter 5. These recommendations have been prioritized by the following time horizons: immediate, mid term and long term.
- Chapter 8 discusses the implementation of these recommendations and next steps.

Additional reports and data collected (i.e., the IHS Global Insight Commodity Flows Report, the Tompkins Shipper Survey results and Annual WBAPS 2010) are included as Appendix A and C.
2 OKI Freight Data Collection and Public Involvement

Developing the regional freight plan required information on both the physical freight system (i.e., roadways, railroads, river terminals, airports, pipelines) and data on the freight flows into, out of, and through the region. Freight data includes proprietary data sources described below, as well as public data sources such as from the U.S. Census, which was used for calibration and interpretation. The geographic boundaries of data collection were:

- Ohio counties of Butler, Clermont, Hamilton and Warren
- Kentucky counties of Boone, Campbell and Kenton
- Indiana county of Dearborn

2.1 OKI Freight Plan Timeline

OKI worked for many years in preparation for launching a formal freight planning effort that would identify the most significant regional freight needs and opportunities. OKI’s contacts with public and private stakeholders greatly elevated its understanding of regional freight issues, which helped organize the scope of work for a regional freight plan. The major milestones of this effort were:

- February 26, 2010: OKI advertises “Request for Qualifications” for Regional Freight Plan
- May 13, 2010: OKI Executive Committee approves contract with freight plan consultant, Parsons Brinckerhoff
- July 15, 2010: Project kickoff meeting with OKI and Parsons Brinckerhoff
- October 12 and 14, 2010: Staff provide update presentation to OKI Intermodal Coordinating Committee (ICC) and Executive Committee
- January 10, 2011: OKI receives technical memorandum, providing physical profile of OKI freight system from Parsons Brinckerhoff
- March 3, 2011: Public meeting held to present data collection and interview/survey findings to date
- March 8 and 10, 2011: Staff provide update presentation to OKI ICC and Executive Committee
- April 4, 2011: OKI receives technical memorandum, “Freight System Strengths and Needs Assessment” from Parsons Brinckerhoff
- May 10 and 12, 2011: Staff provide update presentation to OKI ICC and Executive Committee
- June 7 and 9, 2011: Staff provide update presentation to OKI ICC and Board of Directors
- June 8, 2011: OKI Draft Regional Freight Recommendations shared publicly for review
- June 30, 2011: OKI Freight Stakeholders’ Public Open House held to present and gather input on draft recommendations
- August 2, 2011: OKI Regional Freight Plan Executive Summary and Final Draft Report shared publicly for review
- August 9, 2011: Staff provide presentation to ICC on OKI Regional Freight Plan Final Draft
August 11, 2011: Staff provide presentation to Executive Committee on OKI Regional Freight Plan Final Draft and receive OKI Executive Committee adoption

## 2.2 Physical Freight Inventory Profile

OKI maintains a Geographic Information Systems (GIS) inventory of the regional transportation system which includes the roadway network and an inventory of railroad lines and their ownership. Developing the OKI freight plan involved a review of this existing data and addition of elements such as daily train volume, the location of barge terminals and the location of major warehouse and distribution center facilities. Table 2-1 outlines the attributes of the freight assets reviewed for this plan.

<table>
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<th>Table 2-1: Freight Asset Data</th>
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<td><strong>Asset</strong></td>
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| Roadway | • Truck volumes  
• Crashes  
• Routes prohibiting hazardous materials  
• State department of transportation (DOT) designated interregional corridors (IRCs)  
• State-designated Highway Commercial Freight Network  
• Federal Highway Administration (FHWA) designated intermodal connectors  
• Major distribution centers (number of loading docks, truck volumes per day) | • Kentucky Transportation Cabinet (KYTC), Ohio Department of Transportation (ODOT), Indiana Department of Transportation (INDOT)  
• Local governments |
| Railroads | • Rail ownership  
• Rail operator  
• Rail class  
• Line name  
• Number of trains per day  
• Major rail yards (by railroad owner)  
• Rail-to-rail interchanges (by railroad owner)  
• At-grade rail/roadway crossings | • OKI  
• Railroad Atlas of North America  
• County auditor maps  
• Local research and field verification  
• Private rail companies |
| Intermodal terminals | • Locations  
• Owner and railroad(s) served  
• Capacity in terms of twenty-foot equivalent units (TEU’s) per year | • Railroad directories and interviews  
• Local research and field verification |
| Barge facilities | • Locations  
• Owner  
• Intermodal access (rail carrier name)  
• Major commodity groups (e.g., dry bulk, liquid bulk, break bulk, etc.) | • Inland River Guide  
• U.S. Army Corps of Engineers  
• U.S. Geological Survey (USGS) maps  
• County auditor maps  
• Local research and field verification |
| Air cargo facilities | • Locations  
• Air freight carrier serving the airport  
• Tonnage, top commodities | • Quick Caller Air Cargo Directories  
• Local research |
| Pipelines | • Pipeline (Volume per day, capacity, commodity) | • United States Department of Transportation (USDOT) |
2.3 Commodity Flow Data

Commodity flow was analyzed using 2008 TRANSEARCH® data, producing a profile of freight movements into, out of, and through the OKI region. Analysis included a freight forecast using 2040 as the horizon year with interim years: 2015, 2020, 2030 and 2040. The parameters of this analysis are described in the following sections.

2.3.1 Trucking Mode

- OKI: counties of Boone (KY), Butler (OH), Campbell (KY), Clermont (OH), Dearborn (IN), Hamilton (OH), Kenton (KY) and Warren (OH)
- Analysis at two digit Standard Transportation Commodity Code (STCC) level
- Aggregate geographic areas external to the study area—Ohio, Kentucky, Indiana, Tennessee, Northeast, Southeast, Midwest, California, Washington, and all other Western States
- Inbound, outbound and through traffic
- Routing and mapping of major commodity flows
- Major interstate travel lanes: I-71, I-74, I-75
- By value: top commodities, by two digit STCC, which comprise 80 percent of the total commodity movements by value
- By volume: top commodities, by two digit STCC, which comprise 80 percent of the total commodity movements by weight

2.3.2 Rail Mode

- Cincinnati/Northern Kentucky Bureau of Economic Analysis Economic Areas
- Aggregate geographic areas external to the study area, similar to the trucking analysis above
- Inbound, outbound (not through)
- By value: top commodities, by two digit STCC, which comprise 80 percent of the total commodity movements by value
- By weight: top commodities, by two digit STCC, which comprise 80 percent of the total commodity movements by weight

2.3.3 Aviation Mode

- Air freight data is reported at the county level
- Aggregate geographic areas external to the study area—Ohio, Kentucky, Indiana, Tennessee, Northeast, Southeast, Midwest, and Western States
- By value: top commodities, by two digit STCC, which comprise 80 percent of the total commodity movements by value
- By volume: top commodities, by two digit STCC, which comprise 80 percent of the total commodity movements by weight
2.3.4 Water Mode (River/Inland Waterway)

- OKI: Ohio counties of Hamilton and Clermont, Kentucky counties of Boone, Kenton and Campbell, Indiana county of Dearborn
- Analysis at two digit STCC level
- Aggregate geographic areas external to the study area—Ohio, Kentucky, Indiana, West Virginia, Pennsylvania, Upper Mississippi States, Lower Mississippi River States
- Inbound, outbound and through traffic
- Routing and mapping
- By value: top commodities, by two digit STCC, which comprise 80 percent of the total commodity movements by value
- By volume: top commodities, by two digit STCC, which comprise 80 percent of the total commodity movements by weight

2.3.5 Hazardous Materials

The TRANSEARCH® database was used to gather hazardous material cargo flows by truck, train, plane, and barge, and is illustrated in tables and maps of hazardous material flows by route.

TRANSEARCH®, managed by IHS/Global Insight, is a nationwide database of freight traffic flows between U.S. Bureau of Economic Analysis (BEA) markets and is updated annually. The database draws from a wide variety of data sources covering commodity volume and modal flow, including a long term, proprietary motor carrier traffic sample, proprietary railroad data, and numerous commercial and federal government surveys, samples, and census. To compose the database, these multiple and diverse information sources are brought together in a single, consistent format.

2.3.6 Development of the Database

Each annual version of the TRANSEARCH® U.S. database begins by establishing market-specific production volumes by industry or commodity. This information is drawn from IHS Global Insight’s Business Demographics Model.

Once the production volumes are established, tonnages moving by rail, water, air, and pipeline\(^1\) are netted from the totals (which serve as control totals), leaving the remaining freight volumes allocated to truck distribution patterns. Since the process begins with production data, which include items produced for both domestic and foreign consumption, export volumes were developed in the same manner. Import volumes, drawn from U.S. Department of Commerce data, are subsequently combined into the traffic flows at the point of importation. North American Fair Trade Agreement (NAFTA) traffic volumes are also produced.

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\(^1\) Pipeline flows were excluded from TRANSEARCH® although some of the supporting databases do report information on pipeline flows.
2.3.7 The Development of Domestic Production Statistics

Production and shipment estimates are developed from IHS Global Insight’s Business Demographics Model which describes industrial activity by geographic market area. This information is supplemented by trade association and industry reports. Shipment patterns are refined with proprietary traffic information from freight carriers. Relationships between industries are determined with input/output patterns.

2.3.8 Development of Domestic Modal Database Flows

IHS Global Insight constructs the TRANSEARCH® database from the most recent set of publicly available freight traffic flow information. The result is a database of BEA-level origin-to-destination flows by commodities for seven modes of transportation: for-hire truckload, less-than-truckload, private truck, conventional rail, rail/truck intermodal, air, and water. Volume is presented in terms of tonnage, and then translated to value, vehicle miles traveled (VMT) and ton miles using conversion tables and route distances. For any given BEA, traffic coverage will include flows that are intra-market (internal), inbound and outbound (external/internal and internal-external), and overhead (external-external) or through traffic. Overhead volumes are estimated with modal routing models applied to the nationwide data.

2.3.9 Railroad Traffic Activities

BEA-level railroad data is taken primarily from the public-use version of the Surface Transportation Board’s (STB) annual Railroad Waybill Sample. The Waybill Sample is a statistically based stratified sample of shipments terminated by U.S. rail carriers. All carriers terminating 4,000 or more carloads per year are required to report therefore, 62 railroad systems are captured, encompassing all Class I and II roads, as well as the more prominent short lines. Carriers with fewer than 4,000 annual loads may be sampled when they act as haulage agents for larger railroads and the latter appears as the carrier of record on a shipment. The Waybill Sample file is supplemented with data that is collected directly from the railroad industry.

2.3.10 Waterborne Commerce Activities

The U.S. Army Corps of Engineers (USACE) annually collects information on all shipments moving on the nation's waterways to support its management and planning activities. TRANSEARCH® uses various components of the data issued by the USACE to develop its waterborne flow data. While the raw information collected is comprehensive, that released to the public is aggregated in ways that mask the details of traffic flows; the data development process in TRANSEARCH® aims to reestablish or disaggregate some of this detail. The primary data set employed is the annual USACE file of waterborne commerce. This source provides state-to-state annual volumes of broad commodity groupings. Complementing these flow data are originating and terminating volumes by port and more specific commodity type, which are also provided by the USACE. The less detailed state-to-state flow data are disaggregated to the port level using the more detailed origination and termination information, supplemented by directories profiling public and private port facilities.

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2 Pipeline flows were excluded from TRANSEARCH® although some of the supporting databases do report information on pipeline flows.
Thus for example, the general flow of goods from Pennsylvania to Louisiana is refined to steel products from Pittsburgh-area counties to counties in South Louisiana by comparison of sources. Commodity descriptions adopted by the USACE are transformed to Standard Transportation Commodity Codes (STCC) through data links IHS Global Insight developed and maintains.

2.3.11 Air Cargo Activities

Air cargo represents by far the smallest portion, on a tonnage basis, of the TRANSEARCH® Database. Air activity is constructed using Bureau of Transportation Statistics (BTS) Airport Activity Statistics.

The BTS enplanement data report the total tonnage originating at each airport. In addition, a separate data series, BTS T-100, reports cover airport-to-airport flow volumes. The origin tonnage is then disaggregated into flows to the destination airport based on this second set of data. The data are then translated from airports to counties, based on airport location information that is maintained by the Federal Aviation Administration (FAA). In some cases, where there is more than one airport in a county, data are subject to a further aggregation. Because the data are meant to portray domestic freight between origin and destination markets, adjustments are made to account for international traffic and the use of intermediate airport hubs. Consequently, air traffic is captured from source airport market to consuming market, and any use of hub facilities enroute is not depicted.

Commodity identification is then introduced. The Commodity Flow Survey (CFS) provides a broad level identification of commodity types. This broader detail is further refined based on the origin at the production region, and consumption at the destination region, by using full detail commodity information for each market.

Finally, TRANSEARCH® also captures the dray portions of air freight shipments, which are the segments moved over the road to and from airports. This traffic is shown in the truck mode and is identified by STCC 5030. This truck portion shows both the movement from ultimate origin (producing) point to the airport, and from the airport destination to the ultimate destination point. As with rail intermodal shipments, each air shipment appears in the data set as three separate records: origin truck dray, aircraft linehaul, and destination truck dray. When modal volumes are totaled by tons, each shipment’s tonnage will be counted three times. However, when volumes are totaled by ton-miles, each shipment mile segment is counted only once.

2.3.12 Truck Flow Activities

Truck traffic remains the most complex mode to estimate because of its broader market areas and lack of unified databases. As mentioned earlier, the truck portion of TRANSEARCH® begins as the share of total freight not identified on other modal shipments, derived through a netting process. To develop truck estimates, IHS Global Insight allocates the remaining truck freight volumes between the for-hire and private sectors of the industry based on relative volumes reported in the CFS. The for-hire segment is then split between truckload and less than truckload (LTL) components using industry data on the level of LTL shipments, and prior TRANSEARCH® patterns.
At this point, the data are ready to be split into origin-to-destination flow volumes. The sources used for this processing step consist of a combination of proprietary data collected and compiled by IHS Global Insight, and information collected and disseminated by government sources. The information from IHS Global Insight includes the Motor Carrier Data Exchange and databases of shipping establishments. TRANSEARCH® elements from prior years are considered as a repository of historical patterns. The government sources are the BTS CFS and the BEA Industrial Input/Output (I/O) tables.

### 2.4 Shipper Survey Using the Supply Chain Consortium

The Supply Chain Consortium (SCC) is a voluntary group of industry peers who work together on benchmarking and best practices on supply chain performance. Tompkins Associates manages the SCC forum and data sharing process. Data provided by consortium members are aggregated such that individual responses are kept confidential.

The SCC is led by an Advisory Board composed of senior supply chain executives. The Advisory Board provides guidance on process content, development priorities, and peer invitations.

The SCC covers four major industries: Distributors/Wholesalers, Manufacturers, Retail and Service Providers. In addition to industry designations, consortium member companies are further defined by market segments as follows:

- Apparel, Fabric and Accessories
- Automotive, Truck and Vehicles
- Beauty, Health and Wellness
- Department Store and Discount
- Electronics and Electricals
- Food and Beverage
- Hardware and Home Improvement
- Hobby, Toys, Arts, Crafts and Sporting Goods
- Home Products/Furniture/Appliances
- Industrial/Commercial Manufacturing
- Pharmaceutical and Drugs
- Service Providers
- Specialty

The SCC data represents the “voice of the shipper” providing shipper opinions on the following subjects:

- Shipper forecast of their freight volumes (five year maximum)
- Port selection criteria
- Factors in location of operating/distribution facilities
- Those considering the OKI region for location or expansion
- Those not considering the OKI region for location or expansion
• Perceptions of the OKI regional freight network
• Rating compared to other regions
• Identification of bottlenecks

For the freight planning effort, OKI used the SCC in two ways:

• To distribute a shipper survey to more than 1,100 SCC company members. Approximately 43 companies completed the survey, which is a response rate of about 4 percent. While this response rate was low, those companies that did respond have active transportation facilities in the OKI region and shared very similar comments regarding the regional freight network.
• To query the SCC database for further analysis and compilation of national and regional data that was directly pertinent to the OKI region. The database is a compilation of a series of more than 200 questions that each consortium member completes as part of their membership. This query generated a profile of 172 firms that ship products into, out of and through the OKI region. The profile of their responses were compared to the 43 companies that directly responded to the survey to provide a complete profile of regional shipping trends and issues.

2.5 Shipper Interviews

In addition to SCC survey data, OKI interviewed approximately 35 shippers who move products in, out, or through the OKI region, to gather information about how they use and perceive OKI’s multimodal transportation network. These shippers included local and national companies that use OKI’s road, rail, road, river and/or air transportation systems, and which have some “asset” (e.g., retail outlet, manufacturing facility, or distribution facility) in the region. These shippers were interviewed via phone under clauses of confidentiality to ensure a meaningful and open response to the region's freight issues.

2.6 Carrier Interviews

In addition to shipper interviews, the freight planning team, led by OKI, conducted more than 30 additional phone interviews with carriers including trucking companies, railroads, air carriers, barge lines, and river terminal operators.

2.7 Interviews with Local Government Officials

Development of the OKI freight plan included numerous interviews and discussions with local government officials, whose concerns ranged from local truck access issues, to railroad and intermodal terminal operating nuisance issues. Direct interviews included officials from the following:
• Dearborn County, Indiana
• Kentucky counties of Boone, Campbell and Kenton
• Ohio counties of Butler, Clermont, Hamilton and Warren
• Cities of Cincinnati, Covington and Sharonville
• Airport officials
2.8 Public Participation

There were many venues for public participation in developing the freight plan. As a general portal for information, OKI established a link on their website to a dedicated OKI Regional Freight Plan page, which contained information on the scope and schedule of the effort. The website was updated during milestones with data and presentations. Visitors to the site were able to submit questions, comments and requests throughout the entire planning process. This online resource will be used in the future as a portal for freight plan documents and other regional freight information.

Periodic updates on the freight planning process were provided to OKI’s Intermodal Coordinating Committee (ICC) and Board of Directors/Executive Committee.

Over the past several years, OKI has developed a freight contact database comprised of private and public individuals interested in the topic. Through interviews and outreach during the course of this planning effort, OKI greatly expanded the database. The database was used to invite stakeholders to meetings and disperse draft materials for review and comment.

There were two opportunities for the public at large to review development of the freight plan, provide input and review and comment on recommendations. On March 3, a public meeting was held in the OKI Board Room to present data findings to date. The meeting was attended by 58 individuals. Attendees were asked to fill out a comment form and four comments were received following the meeting. On June 30, a public open house was held in the OKI Board Room from 4-6 p.m. with a brief presentation given by the project manager at 5 p.m. The purpose of the meeting was to visually present the draft recommendations and solicit further input. The 53 attendees were invited to review the displays describing the recommendations and to fill out an evaluation sheet to provide input regarding the timing of the project and how each project met the study goals. Thirteen evaluation sheets were completed and an additional 21 comments were received.

A detailed overview of all public outreach and participation efforts is provided in the Appendix D.
3 Freight System: Assets, Use and Shipper Needs

3.1 Roadways and Trucking

3.1.1 Context: the OKI Region and National Trucking Trends

According to FHWA’s Freight Facts and Figures 2009, trucking handles 62 percent of the nation’s freight by volume and 66 percent by value making it the dominant mode of transportation in the U.S. Compared to other transportation modes, trucking provides fast, reliable, and economical freight-hauling services, as well as ubiquitous access to U.S. shippers. Figure 3-1 shows how the OKI-area roadway network affects the location of major distribution centers in the region.

Figure 3-1: Major Distribution Centers in the OKI Region

Source: OKI
From an economic development perspective, transportation access improves economic opportunities by expanding the reach of markets for labor, material, and consumption. However, the continued growth in truck traffic has led to concern that the highway system does not have the capacity for continued truck growth. For example, truck traffic is forecast to double by 2035, and 2,500 miles of the interstate highway system will carry more than 50,000 trucks per day, compared with only 30 miles carrying that volume today. Figure 3-2 illustrates peak-period congestion on the Interstate Highway System, and that highway congestion is prevalent in every population center of the country including the OKI region. Furthermore, the negative impact of congestion on highway truck speeds is shown in Figure 3-3. Brent Spence Bridge and I-75 congestion affects truck mobility in Southwest Ohio.

Figure 3-2: Peak-Period Congestion on the National Highway System, 2007

Source: FHWA Freight Analysis Framework
The truck freight volume and forecast is of great intrigue to transportation planning because of its implications for freight mobility and economic vitality. Truck congestion forecasts have, in part, led transportation planners to consider alternative modes of transportation for goods movement, and there is ample evidence that private carriers are doing the same. The next section details issues of specific importance to the industry at the national level.

**National Trucking Industry Issues**

Like the national economy, the trucking industry has been in a significant recession from 2007 to 2010, but there are indications that the economic downturn is easing. In September 2010, the American Trucking Association reported that national freight volumes improved over the first seven months of 2010. Dry van trailer loads increased 5.4 percent, flatbed freight improved 6.8 percent, temperature-controlled freight grew 7.1 percent and tank freight was up 9.3 percent. The average truckload revenue per mile was up 4.2 percent in July 2010 compared to July 2009.

The American Trucking Association also noted that the average fleet size today is 14 percent smaller than the fleet average three years ago. Class 8 truck sales were “well below any reasonable replacement rate,” and the industry continued to dispose of more trucks than they are replacing.

Each year the American Transportation Research Institute compiles a list of the “Critical Issues in the Trucking Industry” based on the responses of a representative sample of for-hire and private carriers.
carriers, representing a broad cross-section of fleet sizes, industry sectors, and geography. This survey is now in its sixth year and in 2010 included over 4,000 participants. Respondents were asked to rank the top industry issues. While these issues are compiled on a national level, the impact is realized in every state and region. As shown in Figure 3-4, the nation’s economy is the critical concern of the trucking industry.

![Figure 3-4: ATRI Critical Issues in the Trucking Industry, 2010](image)

**The Economy**

The economy has been the chief concern of the trucking community for the past two years, with the survey showing it as the first or second concern of more than 50 percent of the respondents. From the truck driver’s perspective, the economy directly translates to the number of loaded miles a driver might operate per year and usually has a significant impact on the number of empty miles driven between loads. From a trucking company’s perspective, the economy has a direct impact on the number of drivers and the size of the fleet each company can keep productive and profitable.

In 2004, according to the Ohio Trucking Association, trucks transported freight for more than 19,346 manufacturing companies, delivered goods to more than 59,660 retail stores, and stocked 24,466 wholesale trade companies. Trucks also brought supplies to over 5,414 agricultural enterprises in the state and moved produce and harvested bulk commodities to market. Nearly 80 percent of Ohio communities are served exclusively by trucks.

In addition, 357,503 people in Ohio, or one out of every 14 workers, were employed in trucking-related occupations at private and for-hire motor carriers. The average annual wage paid to trucking industry workers was $38,079. The total annual payroll for the trucking industry in Ohio was $13.6 billion.
In the past two years, during the economic downturn, many idle trucks were sold to trucking companies overseas. If the economy recovers quickly, growth of four to five percent may result in more transportation demand than available truck capacity.

**The Comprehensive Safety Analysis 2010**

The Comprehensive Safety Analysis (CSA 2010) was ranked as the number two concern. This new regulatory framework developed by the Federal Motor Carrier Safety Administration was developed to provide visibility of trucking company safety records for the shipping community. The CSA 2010 system primarily uses roadside inspection and crash data to measure carrier safety performance, to identify potentially unsafe carriers and to prioritize them for various enforcement interventions. Violation examples include speeding, following too closely, improper lane change, log book errors, expired medical cards, improper endorsements, use or possession of drugs/alcohol, brake adjustment, tire depth, lighting, improper placards and improperly securing loads.

There are industry concerns that CSA 2010 will increase the cost of trucking and further reduce the pool of qualified drivers. The chief operating officer of Werner Enterprises estimated that CSA 2010 may reduce the overall truck driver population between five and eight percent.

**Government Regulation**

The Federal Motor Carrier Safety Administration (FMCSA) has undertaken an initiative to revamp the Hours of Service (HOS) rule in an effort to put an end to litigation by safety advocacy groups that have sued repeatedly since the rule was first published in 2003. In April 2010, FMCSA reported that nearly 5,700 trucking companies had a history of HOS violations. FMCSA held a series of listening sessions throughout 2010 and on December 23, 2010, published proposed changes in the HOS rules.

The proposed legislation would limit the current 11-hour driving window to 10 hours, before a driver would be required to take a break. Restart rules that govern the driver’s ability to restart their weekly work cycle may also be extended which would effectively cut the total number of hours in a driver’s work week. Although the total impact of this proposed legislation is unknown, industry experts estimate that somewhere between six to 11 percent of driver productivity will be lost.

For manufacturers in the OKI region, this legislation has two impacts. More than 70 percent of the U.S. population is within a day’s drive of Cincinnati. Therefore, if driving times are reduced, the number of markets within one day’s truck trip will be reduced. OKI shippers and receivers rely on intermodal service provided in rail hub centers in Chicago and Columbus among others. For drayage companies to make a run to Columbus, it is a five hour average roundtrip, allowing for equipment loading and terminal access. A roundtrip to Columbus would consume 10 hours of a driver’s available day (assuming a load/load scenario.) If additional delay is incurred, this trip could result in an HOS violation. For Chicago trips, based on highway congestion and terminal delays, it is not possible to make a roundtrip in one day based on the new proposed rules.

**Driver Availability**

Some of the issues above allude to the tight labor market for truck drivers. The Council of Supply Chain Management Professionals in their annual *State of Logistics Report* notes that “retirements,
tougher regulations and a need to replace laid-off drivers since the downturn in 2008 will mean the 
trucking industry will need 150,000 drivers by the end of 2011.”

Since the recession, most truckload carriers no longer support driver training in the recruiting 
process. This means that as the economy improves, there will be a need for over-the-road driver 
training centers to qualify drivers for new trucking jobs. The demographics of the industry—along 
with increased driver screening, especially for hazardous material truck drivers—will be a difficult 
challenge for many coastal and urban areas.

**Fuel Cost**

In 2007, the price of fuel was a trucking company’s high cost element, when crude oil sold at over 
$100 per barrel. Many large companies can collect fuel surcharges and some can even hedge fuel 
prices. Smaller, independent owner-operators are more vulnerable to fuel price fluctuation. The price 
of fuel has a direct impact on the number of carriers available to haul freight. The beginning of 2011, 
with some improvement in the national economy, is showing signs of increasing fuel prices.

**Environmental**

The Environmental Protection Agency’s latest emissions regulation went into effect in 2010 for new 
Class 8 tractor purchases. Most of the industry chose selective catalytic reduction, which relies on 
the addition of diesel exhaust fluid to an exhaust after-treatment system. Many small companies and 
independent owner operators have skipped truck-replacement decisions to evaluate the new 
technologies. The new equipment is substantially more expensive to purchase and to operate, and 
some estimate that those costs will not improve over time. This increased cost may affect an owner 
operator’s ability to reinvest in their business.

### 3.1.2 Profile of OKI Regional Trucking Operations

The trucking industry is often segmented by type of operation. Each segment has specific operational 
characteristics and customer requirements that affect their use of the roadways within the region. It 
is important to note that many carriers have multiple trucking product lines, which serve different 
customer-specific niches. Over the past decade, the intermodal rail product has become more widely 
offered by traditional truckload carriers in an effort to provide lower cost transportation in long-haul 
markets. More recently, long-haul truckers have identified specific rail routes, which complement 
their service area, as a method to help their customers reduce greenhouse gas emissions and report 
environmental sustainability progress. Many drayage companies, which move freight between 
customer sites and the rail terminals, also offer highway brokerage service to cover regional 
distribution needs in short-haul markets of less than 500 miles.

**Full Truck Load Dry Van**

A “truckload” firm typically moves a full truckload of freight for a single shipper, directly from the 
origin to the destination. This movement can be from a producer to a manufacturer or it can be an 
inter-plant or stock transfer from one company-owned facility to another. The driver picks up the 
freight at the point of origin and delivers the full truckload to the receiver at the final destination. 
One of the nation’s largest integrated full truckload carriers was contacted about their perspective of
the OKI region’s infrastructure and access. This carrier provides long-haul, private-fleet contract service and full-service intermodal door-to-door deliveries.

This carrier notes that within their network, southern Ohio and the OKI region has a much higher percentage of manufacturers than most Midwestern markets they serve. The region is attractive to truckload carriers because of reliable transit times and good overall freight balance. Freight balance refers to the “balance” of loads inbound and outbound from the region. Where there is good freight balance, there are fewer issues of equipment shortages or empty backhauls, providing better overall shipping rates. Congestion is not a significant issue, and they report few if any service failures as a result of the Brent Spence Bridge or I-75 congestion.

As the market improves, the local truckload carrier viewed Ohio as a good area to recruit a high-quality workforce who might have interest in becoming truck drivers. In their opinion, the proposed HOS changes will increase the number of distribution centers nationally and will potentially reduce the driving radius to 225 miles for a roundtrip work assignment. A one-day trip, considering pickup and delivery, is estimated to be reduced to 450 miles.

**Private Fleet**

Private carriers are typically firms that manufacture or distribute goods and choose to carry their own goods to their customers or retail locations. Generally, private-fleet operators are sensitive to requirements for timely, reliable service because of specific methods of supply-chain management or labor availability. For example, some retailers have limited storage space that requires regular replenishment. This replenishment effort must be scheduled during off-peak retail hours often because of limited labor availability at the retail location. Private-fleet truckers typically run regular and predictable routes and often perform customer relationship functions during these frequent repetitive deliveries.

In the OKI region, one of the largest private-fleet operators was contacted. They operate box trucks and step vans primarily for local deliveries. Large 53-foot dry vans make regional deliveries to other company distribution facilities in neighboring states. Their primary concern within the region was how the replacement of the Brent Spence Bridge would affect their local routes. They understood that the replacement of the bridge would not be undertaken for several years, yet as soon as detour routes are available, they would want to know so that new local delivery routes could be designed. A secondary concern was for the improvement of variable message signs. It was noted that the signs are often located too close to the point of congestion to make reroute choices.

**Less-Than-Truckload**

A less-than-truckload (LTL) company moves small shipments typically in the range of 500 to 2,000 pounds. This type of freight is handled several times in a series of moves that involve a local pickup, a cross-dock operation at a local consolidation point, which transfers the local freight into full truckload quantities destined for regional markets like Pittsburgh, Indianapolis, Louisville, Chicago, and others. The full truckloads leave the consolidation center with multiple shipper's cargo, and head to regional cross-dock operation close to the final destination. At the final cross-dock facility, the LTL freight is then transferred to a local delivery truck for final delivery. Many national and regional LTL carriers operate in and around the metropolitan region and must make pickups and
deliveries in time for the freight to make the cross-dock cutoff at the point of consolidation. For inbound LTL freight, once the inbound freight is cross-docked to local delivery trucks, routes are developed to minimize empty miles and are scheduled around committed customer delivery windows.

Carrier interviews in the region identified that the biggest bottlenecks and choke points along the corridor between Cincinnati and Dayton are caused by road construction. The Brent Spence Bridge congestion was noted in numerous interviews. One regional carrier has established cross-dock terminals in both Ohio and Kentucky, thereby reducing the need for local pickup drivers to cross the bridge. When hazardous material is moved, carriers must detour around the I-71 Lytle Tunnel, which requires approximately 10 miles of additional transport. This LTL carrier noted that truck speeds in Kentucky vary and can be a cause for safety considerations when trucks and motor vehicles travel at different speeds. Lane changes and crossings can become hazardous.

**Drayage**

Cincinnati has intermodal rail yards that handle domestic and international container traffic. Most of this traffic is not overweight and does not require specific clearance for high or wide dimensional loads. Drayage companies typically provide tractors to pull equipment in and out of the rail yard. The U.S. is the only nation that requires international container operators to provide chassis at the rail terminals so that containers can be delivered by truck to regional customers. Most of the drayage operators pick up and deliver containers within 100 miles of the local rail terminals. Some carriers interviewed make regular trips to western railroad gateways in Memphis and Chicago. These long-haul carriers noted that the OKI region was not congested compared to terminals in Chicago and Memphis. Routes connecting the OKI region to these gateway cities were not mentioned as having any performance issues.

This group of trucking companies had the greatest concern about the future of chassis ownership and availability. If the intermodal industry pushes chassis ownership to the drayage companies, it will require significant capital investment for them to stay in business. CSA 2010 was also a significant concern for this community of service providers, with respondents indicating that they may lose up to 30 percent of their drivers. This group also speculated about the new service CSX proposes for Northwest Ohio (North Baltimore) and was unsure of the total impact until pricing and service packages are known.

Drayage times to Chicago are reported to be eight to 10 hours per trip, depending on the time of day and day of week. Drayage time to Columbus is approximately five hours. Although the distance to Columbus is less than Chicago, the amount of highway congestion and terminal delay impact driver productivity.

**Specialized Equipment/Heavy Haul**

A heavy haul flatbed trucking company was contacted to identify issues with oversize and overweight shipments. It was reported that Ohio has the best permit process and that Indiana's process has the most room for improvement. It was also noted that Kentucky had a simple to use process. The carrier felt that some uniformity in the permit process for the overall region would be a great benefit, especially if a single permit could be developed. The carrier has a steady flow of freight that travels between Indiana and Kentucky on I-74 to I-275 and on to I-75. The western beltway
route actually leaves Indiana, enters Ohio, and crosses back into Indiana into Kentucky. This movement would technically require two permits from the state of Indiana.

Speed differentials between trucks and automobiles were noted in Kentucky with 55 to 65 mph ranges. Variable message signs on I-275 were noted as not being helpful because of the size of the area the messaging sign covered. It was recommended that more signs be used in this area to be meaningful for route diversion purposes. More lanes would be desirable from Covington to Sharonville and from northern Kentucky to Cincinnati. Both the Brent Spence Bridge and I-75 improvements are addressing this concern. A new list of vertical height restrictions for the entire region needs to be updated. Some documents have not been updated since 1993, and pavement overlays have been made since the vertical clearance guides were last updated.

Summary
In many ways, the OKI region is similar to regions of similar size in the U.S., as there are congested highway segments, yet congestion is not viewed as having a major impact on the trucking industry. The exception is the Brent Spence Bridge which carries a heavy burden of the region’s truck traffic and serves as a major bottleneck for regional mobility.

Also like other areas, the trucking industry in the OKI region is facing some difficult labor, regulatory, and financial issues. For example, driver shortages have been an ongoing industry concern for the past five years. New regulations such as CSA 2010 will only exacerbate an already tight labor market. Similarly, new hours-of-service restrictions will reduce productivity, putting further strains on labor. In terms of financial issues, the trucking industry was hard hit by the recent recession, which put some firms out of business and led to the sale of some used equipment to foreign trucking businesses. Even with an upswing in the economy, it will be difficult for some companies to make capital investments to increase their capacity.

3.2 Rail Freight Profile

3.2.1 Overview
The railroads today are a major component of the U.S. freight transportation network, which includes highways, waterways, pipelines, and airports. The U.S. freight rail system is the safest, most efficient in the world. In the last 10 years, private railroad companies have focused on improving the reliability of their service and intermodal capacity. The freight rail industry operates and maintains its infrastructure largely without government funds. Notwithstanding the recent recession, railroads continued to invest heavily in expanding their capacity for future growth in freight traffic.

Railroads handle nearly the entire spectrum of goods moving throughout the country. Rail is most competitive however in shipping goods in commodity-specific trains over long distances where delivery requirements are less stringent than say, motor carrier transportation or parcel delivery. It is not surprising, then, that relatively low value, bulk commodities make up the greatest share of freight handled by railroads. Coal is number one in this regard, accounting for about 47 percent of
total rail freight movements (Association of American Railroads, 2009). Similarly, farm products (grain), chemicals, and nonmetallic minerals account for another 25 percent of rail freight shipment.

This is not to imply that railroads do not carry high-value freight, nor to imply that railroads cannot meet stringent service demands. As a matter of fact, in some markets, and in some corridors, they do. For example, on a daily basis, railroads handle semi-finished steel products, such as steel coils, between Middletown steel plants and destinations in Ohio. There are certain products such as auto parts and finished automobiles that railroads transport effectively on tight delivery schedules.

The railroads’ increasingly important role in the higher value market segments is evident by the substantial growth of container and trailer traffic during the last two decades. The introduction of double stack train technology, which significantly reduces the cost of handling this type of freight, and the establishment of fast, reliable service makes possible the diversion of some truck traffic to rail.

The US DOT has estimated that railroad freight tonnage will increase by 88 percent through 2035. Although railroads are investing to prepare for this increased demand, the railroads will not have the capability to provide the capital necessary to meet increases in freight demand over the next 20 years. Consequently, the industry is increasingly seeking public sector investment in its major capital improvement programs.

There is a policy nexus between the public and private sectors involved in freight transportation. If rail capacity is inadequate to handle the expected increases in traffic, some of that traffic will revert to the already congested highway system. In light of this, federal, state, and local government agencies are exploring public-private partnerships that encourage the expansion of rail capacity. A prime example is OKI’s investment in double-stack clearance for the NS line between Columbus and Cincinnati.

The principal growth market for railroads and an industry success story is intermodal traffic. Today, intermodal traffic accounts for six percent of total rail tonnage, but 13 percent of gross revenue. In contrast, coal accounts for 47 percent of rail traffic and just 25 percent of rail industry revenues. Improved intermodal service allows railroads to compete head-to-head with trucks in a number of high volume corridors. A number of public benefits stem from the diversion of traffic from trucks to railroads:

- Railroads are three to five times more fuel efficient than trucks (U.S. DOT).
- Rail shipment can reduce highway congestion—one intermodal train removes 300 or more trucks from the highway system (U.S. DOT).
- Rail shipment reduces logistics cost, thus the cost of delivered goods.
- Rail transportation emits less greenhouse gas and other air pollutants.
- Rail transportation has a superior safety record to trucking.

Due to these critical benefits, the capacity of the freight rail system is of acute concern to public policy makers. If railroads are unable to handle the forecasted growth in freight demand because of capacity constraints, any or all of the following detrimental impacts could occur:

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3 Association of American Railroads 2009
• Railroads will raise rates on or shed less profitable traffic, driving up transportation costs.
• Shipment delays will occur, resulting in higher shipping costs.
• Shippers that could not tolerate higher rates or reduced service would divert shipments to trucks.
• In the long term, new businesses could be discouraged from locating in communities with poor rail or intermodal service.

Railroad transportation remains important to the economic vitality of the OKI region. Railroads serve industries in the Mill Creek Valley, notably chemical businesses and related companies. Middletown Steel depends on rail to receive taconite shipments from the Port of Toledo and ships semi-finished steel products, such as steel coils, by rail. In addition, many of the barge terminals in the OKI area rely on railroad partnerships for the intermodal transfer of bulk commodities, such as coal, stone, and farm products. These industries and their rail connections are well-established in the OKI region and are detailed in the following discussion of railroad operations in the region. There are various yard and terminal facilities in the area to serve these industries efficiently.

The interesting story of railroads today is their intermodal service. With the growing importance of intermodal container service, a region’s shipping costs will be determined, at least in part, by the efficiency of its intermodal connections.

### 3.2.2 Intermodal Freight Transport

Intermodal freight is not new to the railroad industry; it has been used since the late 1800s. Only in the 1950s, however, when the use of containers started, did the railroads start to concentrate on this traffic. The 1980s saw a major increase in intermodal container traffic. Deregulation improved the ability of railroads to reinvest in their infrastructure and enter into contractual partnerships with trucking firms and steamship lines. At the same time, Asian imports and containerization spurred the growth in intermodal traffic. Railroads invested in intermodal services with the introduction of double-stack train technology that permitted two containers to be stacked on a single rail car.

This arrangement allowed the railroads to run one double stack train, which normally would take 300 trucks to move the same amount of containers. Consequently, railroads were able to grow their market share in intermodal container carriage. The Association of American Railroads reported that the traffic grew from 3.1 million trailers and containers in 1980 to 9.3 million in 2002. Today, more than 70 percent of the rail intermodal traffic in the U.S. moves in the double stack operation.

The principal application of double stack technology has been in the international business segment. The long-hauls from ports to inland markets and the ability to fill a train with containers from a single ship were conducive to intermodal rail transportation. However, the railroads have recently begun to penetrate the domestic truck market. Cost reductions and improved service are making railroads more competitive for the shorter-haul domestic trips.

### 3.2.3 Profile of Railroads in the OKI Region

The OKI region is served by two major Class I railroads (CSX and NS) and several small railroads, which are owned by a short line railroad holding company (RailAmerica). Both Class I railroads
indicate that the OKI region is a strong market for freight service, with good balance between inbound and outbound traffic. Similarly, RailAmerica views the region as having the potential for growth. The operations of these three companies are profiled below.

**CSX Profile**

CSX, along with NS, are the dominant rail carriers in the Eastern U.S (Figure 3-5). The precursors to CSX were the Chesapeake and Ohio (C&O) Railroad, the Baltimore and Ohio (B&O) Railroad and the Seaboard System. CSX expanded significantly in 1999 when it (and NS) acquired Conrail.

**Figure 3-5:** CSX Railroad Service Area

![CSX System Map](image)

*Source: CSX*
The OKI region was served by both the C&O and B&O railroads, which affiliated with one another in the 1960s and began operating as the Chessie System in 1972. CSX acquired the Seaboard System in 1983, which itself was a collection of railroads in the southeastern U.S. Whereas the C&O and B&O railroads served the OKI region with a generally east-west orientation, CSX linked the region directly to the southeast, with additional deepwater port alternatives.

CSX operations in the Cincinnati region reflect the heritage of its predecessor rail companies. Former B&O and C&O lines serve the area from the east, north and west, while former Seaboard System Louisville and Nashville lines serve the metropolitan area from the south. Although rail traffic varies by season and with the economy, CSX typically operates 60 trains a day through the OKI area which include:

- Intermodal trains for container transfers at CSX's Queensgate Intermodal Terminal.
- Intermodal and general-merchandise trains passing through the OKI region.
- Merchandise trains originating or terminating at Queensgate Yard, providing intercity service for the region's industries.
- Local trains, serving local industries.

The following sections outline the CSX lines in the OKI region that have a significant amount of traffic and connections to major markets.

**CSX Middletown Branch**

The Middletown Branch was built by the B&O Railroad to service the steel plant in Middletown, Ohio, and today serves the current plant owner (AK Steel).

**Cincinnati to Indianapolis, Indiana Main Line**

Several general freight and grain trains per day operate over this line to Indianapolis and Chicago.

**Cincinnati to Lima, Ohio Main Line**

This is a major trunk line in the CSX system, connecting the OKI region to Toledo and Detroit to the north. It also connects with two major east-west CSX lines to Chicago and the east coast.

**Cincinnati to Russell, Kentucky Main Line**

Part of the original C&O line to Cincinnati completed in the late 1800s, this line parallels the Ohio River and is one of the most active in the region with trains transporting coal, steel, and chemical products.

**Queensgate Yard**

Queensgate Yard is one of four CSX classification yards in Ohio and is one of the most important railroad facilities in the OKI region. It is located just west of downtown Cincinnati along the Mill Creek, and has more than 50 tracks for classifying trains. Queensgate Yard is also the location of a locomotive repair shop, car shop, CSX Intermodal Terminal and CSX TransFlo Terminal.
Queensgate Yard is known as a “hump” yard. Trains are pushed up an incline, or hump, and cars are uncoupled and rolled down by gravity to one of the 50 classification tracks. By this method, cars from incoming trains are sorted and each classification track in the yard “builds” a train for another destination.

Queensgate Yard was built in 1980 to better handle the local switching of rail cars that either originated or terminated in the Cincinnati area. It serves local businesses such as Kroger, General Mills, Proctor & Gamble, and other customers, and is considered a very productive yard.

**CSX Intermodal Terminal**

The Queensgate Intermodal Terminal is the railroad's trailer and container transfer facility serving the region with access off Hopple Street. Its proximity to I-75 provides connectivity with the region's major economic and industrial centers. CSX operates the following published domestic and international intermodal services between Queensgate and the following destinations:

- **East**: Northern New Jersey and New York
- **South**: Portsmouth, Savannah, Jacksonville, Tampa, Orlando and Miami
- **West**: Dallas, Houston, Laredo, El Paso, Denver, Salt Lake City, Southern California, Oakland, Portland and Tacoma

CSX’s volume at Queensgate is estimated to be less than 100,000 containers per year.

**CSX TransFlo Terminal**

Transload facilities provide an important service to rail shippers, enabling those who do not have direct rail access the ability to benefit from the advantages of rail transportation. A transload terminal provides truck-to-rail transfer and product-storage capabilities for dry bulk, liquid bulk and break bulk products. Some facilities also provide other value added services such as product blending. The CSX TransFlo facility, located on Geringer Avenue, has capacity for 78 cars. The facility accommodates a range of dry and liquid bulk commodities that include the following:

- Acids
- Chemicals (liquid)
- Chemicals (dry)
- Foods (liquid)
- Foods (dry)
- Plastics (dry)
- Petroleum products

As with the intermodal terminal, the TransFlo terminal is accessible to I-75.

**CSX Automobile Distribution Center**

Through its Total Transportation Distribution Services subsidiary, CSX operates an automobile distribution center located on 200 West Crescentville Road. In addition to providing rail-to-truck transfer of motor vehicles for local distribution, the facility is capable of accessorizing the vehicles...
prior to local movement. The center has four tracks with capacity for 24 rail cars. It also has storage capacity for motor vehicles. The facility is accessible to I-275.

**CSX’s Intermodal Strategy**

With the development of a new intermodal terminal in North Baltimore, Ohio, and introducing infrastructure improvements to its National Gateway corridor, CSX will be adopting a novel operating strategy for its Northeast and Midwest intermodal business. Typically, railroads move containers directly from their origins to their destinations or to locations where the intermodal freight cars are transferred to another railroad on single trains. Where multiple trains are required, the freight car is moved from one train to another. However, CSX plans to adopt a hub-and-spoke operation similar to that employed by the airline industry and by the railroads in its general traffic business.

**National Gateway Project**

The National Gateway Project is a major railroad-infrastructure improvement initiative funded by CSX, the federal government, and several states. The project, which will cost $842 million, will improve clearances and eliminate track curves, allowing double-stack trains to operate from North Carolina up the I-95 corridor and over to northern Ohio. Ports such as Wilmington, North Carolina and Baltimore, Maryland will have double-stack train access to the Midwest with completion of the project. It will also provide an additional double-stack route from the Hampton Roads ports beyond that operated by NS. The CSX National Gateway infrastructure improvements are highlighted in green in Figure 3-6.

**North Baltimore Intermodal Facility**

The new CSX intermodal terminal constructed at North Baltimore, Ohio, is a $175 million facility on 500 acres. The terminal, which opened in 2011, is part of the railroad’s National Gateway initiative. When operational, it will be the hub where all containers passing through the region will be sorted (with some containers placed on trains and others delivered by truck) to final destinations. CSX expects that service will be enhanced and while operating costs reduced. In addition, CSX plans to bypass Chicago for intermodal cargos being transferred to other railroads for delivery to destinations in the west, as well as traffic received from the west destined for locations on CSX. Avoiding the rail congestion in Chicago will reduce transit times by 24 to 48 hours. The planned capacity of the facility is 650,000 containers per year.

CSX has indicated that it would be willing to provide container train service between North Baltimore and the OKI region. This connection is already double stack cleared. Initiation of service would be contingent on sufficient volumes of containers originating or terminating in the OKI region to make container trains cost effective.
Implications for the OKI Region

The combined development of the CSX National Gateway corridor and North Baltimore intermodal hub could have several ramifications for the OKI region:

- **Intermodal services will be available to more markets** – Point-to-point service limits the network served by an intermodal terminal. While it is possible to move containers beyond a terminal’s designated network, it is costly and time consuming because 1) routes could be extremely circuitous and 2) the intermodal freight cars would have to be moved out of one train and into another train, a process that may take more than a day. The North Baltimore terminal is being designed to move containers between trains. Also, North Baltimore, as a hub, will have train service to many markets.

- **The region’s shippers will benefit from increased port competition** – Most of the international container cargo moved by CSX passes through the Ports of New York and New Jersey. After CSX’s acquisition of Conrail and access to the metropolitan New York area, the railroad invested
heavily in its corridor connecting the ports to Chicago. With the National Gateway, access to other east coast ports will be improved.

- **The cost of container shipments may decrease in the future** – The introduction of innovative container-handling equipment at North Baltimore is intended to improve productivity and reduce train-to-train as well as train-to-truck transfer times. This will reduce handling costs and improve service. The ability to bypass Chicago will also significantly reduce costs and transit times.

- **Additional rail traffic may pass through the region** – Offsetting the benefits could be an increase in trains passing through the region. As Cincinnati is located on a CSX north-south axis that is cleared for double-stack trains, connecting North Baltimore with CSX locations in the Southeast and Deep South, trains will pass through the region without offering any economic value.

- **Queensgate Intermodal Terminal may initially see a decrease in activity** – Until container volume between Cincinnati and North Baltimore is sufficient to economically support train service, containers will be trucked from the terminal. This will reduce the demand for Queensgate Intermodal Terminal as well as change truck-traffic patterns in the region.

**Norfolk Southern Railroad**

NS operates approximately 21,000 route miles in 22 states and serves every major container port in the eastern U.S (Figure 3-7). NS operates an extensive intermodal network in the east and is a major transporter of coal and industrial products. In Ohio, NS operates on 2,300 route miles. The city of Cincinnati financed the Cincinnati and Southern Railroad (from Cincinnati to Chicago) in 1869 and still owns the line, leasing it to the NS for about $20 million annually.

The OKI region is in NS’s natural flow of traffic from the southeast to the north and Chicago, and in reverse. With the OKI supported, double stack clearance improvements now being built between Columbus and Sharonville, NS will be able to operate double-stack intermodal trains south of Sharonville through Cincinnati to all points in the southeast, including western connections.
**NS Train Volumes**

NS averages 35 to 40 trains daily through the Cincinnati area. The breakdown of the traffic moving through Cincinnati is as follows:

- Five to six intermodal trains that are switched at the Gest Street Intermodal facility. UPS is one of their key customers for intermodal service.
- Ten to 15 trains are “run-through” trains that bypass Gest Freight Yard except for some block swapping. Examples of run-through trains would be trains transporting commodities such as coal and grain, with traffic that does not originate or terminate in the area.
- Fifteen to 20 trains are switched at the Gest Street Freight yard, which includes some block swapping.
NS Facilities

The Gest Street intermodal terminal in Cincinnati offers container train services to the southeast and to the west coast through Chicago. Gest Street intermodal trains serve Charleston, South Carolina; Jacksonville, Florida; Miami, Florida; and Savannah, Georgia. The facility features the following:

- Nine tracks – the longest track is 2,100 feet
- Terminal capabilities
- Trailer on Flat Car /Container on Flat Car /Stack Car services
- Bottom and top lift
- Container pool for domestic traffic

The Gest Street intermodal facility is efficient and well organized with ample storage area. It is estimated that the facility handles up to 100,000 containers, annually.

There is also a general freight car classification yard at Gest Street having the following:

- Thirty-six tracks – longest track is 4,000 feet in length
- Thirty of 36 tracks are used for the major switching operation
- Total yard capacity of 1,000 cars (on an average day, the terminal handles 300 to 500 cars)

The track condition is excellent. The freight yard is well operated and handles all types of freight traffic. Freight trains serve the local customers from the terminal to as far south as Erlanger, Kentucky. One local train is dispatched from Gest Street yard each day to Erlanger with approximately 40 cars.

The Gest Street yard is used mainly for transferring freight cars from one intercity freight train to another and provides a connection with CSX. Although trains are dispatched from the yard for some local customers, the NS yard at Sharonville currently serves more of the local market.

NS Bulk Transfer

As with CSX, NS operates transload facilities that provide a vital service to rail shippers that do not have tracks leading to their facilities. NS handles dry bulk and liquid bulk products at the Clare, Ohio facility on its line to Portsmouth, Ohio. Trains serving the bulk facility originate at the Sharonville terminal. The facility includes:

- Four tracks
- Yard capacity for storage is approximately 40 cars
- Commodities handled are dry food and non-hazard commodities
- Fifteen to 20 cars handled per day

NS Sharonville Terminal

Sharonville Terminal, north of Cincinnati, was acquired during the Conrail acquisition in 1998. It includes both an intermodal terminal and freight car classification yard. The terminal has available land to expand the intermodal facility and the ability to improve the freight yard. Sharon Yard
serves the major NS customers in the OKI region: Proctor & Gamble, General Mills, Bunge (Grain), Graphic Package (Paper products) and others.

**Sharon Yard**
Since its acquisition from Conrail, NS has not made any significant capital improvements to the Sharon Yard; it remains an important transportation asset for NS and the region.

Characteristics of the freight yard include:

- Thirteen tracks, 11 of which are used for assembling or disassembling trains as well as transferring cars between trains.
- Capacity is 300–500 cars.
- The principal function of the yard is to process freight cars for the local industries with some freight car transfer activity between through trains occurring.

**Sharonville Intermodal Terminal**
The intermodal traffic to the Sharonville intermodal facility is a double stack operation, off the Heartland Corridor, from the Port of Norfolk to Columbus to Sharonville. A double stack clearance project has been completed on the route from Port of Norfolk to Rickenbacker terminal in Columbus, Ohio, and the clearance improvements from Rickenbacker to Sharonville with the support of OKI will allow double stack clearance from Norfolk to Sharonville by the end of 2011.

Features of the Sharonville Intermodal Terminal are:
- Two tracks.
- Unpaved facility.
- The reverse movement to Norfolk consists of loads originating from the OKI area, and traffic is fairly balanced in both directions.

**Major NS Initiatives**
NS has several major infrastructure initiatives underway, which are designed to improve intermodal services over its system. The Heartland Corridor and the Crescent Corridor/Meridian Speedway (Figure 3-8) have relevance to the OKI region.
Heartland Corridor
The Heartland Corridor opened to double-stack intermodal traffic on September 9, 2010. The corridor is a public-private partnership between NS and Virginia, West Virginia and Ohio and was created to provide the shortest, fastest route between the Port of Norfolk and the Midwest. The route accommodates intermodal traffic between Norfolk and Chicago, which reduces the transit time to just less than 48 hours.

Again, NS does not have double stack clearance from Rickenbacker to Sharonville, but with the support from the OKI region, NS is in the process of improving the clearances on that segment of the route. NS already has double stack clearance south of Cincinnati to all southwest and southern connections.

Crescent Corridor/Meridian Connection
The Crescent Corridor (the red lines in Figure 3-8) is a 2,500-mile rail network supporting the supply chain from Memphis and New Orleans to New Jersey. The route roughly parallels several major interstate highways. Through the Crescent Corridor program, NS is making capacity
improvements—such as straightening curves, adding signals, building passing tracks and double tracks, constructing and expanding terminals—which will allow more efficient rail service from the east coast to western railroad gateways such as Memphis.

Through a joint venture with the Kansas City Southern Railroad in which NS funded infrastructure improvements on the line between Meridian and Shreveport, Mississippi NS acquired the rights to operate over that line, expanding its network. NS coupled those rights with an agreement with Union Pacific to operate over its lines to Dallas, in effect expanding the NS network into central Texas. This connection allows NS to route its traffic directly to Dallas, Texas, and avoiding the circuitous movement over NS’s own lines to New Orleans and congestion-related delays there and in Houston. From Dallas, NS traffic can be transported by Union Pacific to its Mexico gateway at Laredo or west to Southern California. This a major benefit to NS and to the OKI region as Union Pacific offers the fastest service to Mexico and the West Coast from Texas.

**Rail America**

RailAmerica is one of the largest owners and operators of short line and regional freight railroads in North America. RailAmerica has 40 individual railroads with over 7,500 miles of track. In the OKI region, two of the short line carriers are the Indiana and Ohio Railroad (IORY) and Central Railroad of Indiana (CIND), both which interchange with CSX and NS.

RailAmerica traces its lineage in the OKI region back to the IORY’s acquisition of short rail lines in Indiana, and Mason, Blue Ash, and Lebanon, Ohio, in the mid-1980s, all of which were former Conrail lines. The IORY continued acquisitions throughout Ohio into the mid-1990s. Today, the IORY is a 570-mile network that serves the areas of Cincinnati, Columbus, Springfield, and Lima, Ohio. The IORY handles commodities such as pig iron, metal products, chemicals, automobiles, plastics, lumber, paper products, and grain products. In the Cincinnati area, the IORY interchanges with CSX, NS, and CIND.

From Cincinnati, the IORY lines run north to Blue Ash and Columbus, and east to Batavia on the “Oasis line.” Near the Indiana border, the IORY interchanges with CIND and with a branch northwesterly to Brookville, Indiana.

CIND serves Cincinnati from the west, serving a few river terminals in Cincinnati and running west along the Ohio River, parallel to and north of the CSX rail line.

**CIND from Cincinnati to Shelbyville, Indiana**

This CIND line is a former Conrail property with interchanges in Cincinnati with NS and CSX. CIND’s principal commodities transported are grain, chemicals and steel, and the line serves a number of river terminals:

- Cincinnati Barge & Rail: bulk chemicals, lumber, paper
- Cincinnati Bulk Terminals: bulk chemicals, steel/metals
- Kinder Morgan (transloader): bulk chemicals, lumber, paper, steel/metals
- Port of Cincinnati Terminal, LLC (transloader): bulk chemicals, steel/metals
The IORY from Valley Junction to Brookville, Indiana

The IORY line to Brookville exists mainly to serve the Owens Corning plant in Brookville, Indiana. While this customer provides a steady stream of business, the track is in poor condition.

The IORY Blue Ash Line

One of the IORY’s earliest acquisitions, the Blue Ash line used to run from Cincinnati to Dayton. Now the line is broken into two sections: from east Norwood and Fields Ertel Road, and Mason to Lebanon.

The IORY Mason Line

The IORY Mason branch runs between Mason and Lebanon.

The IORY to Columbus

The IORY line to Columbus is a relatively recent addition to the railroad, acquired by lease from CSX in 2004.

The IORY Oasis Line

The IORY Oasis line is another former Conrail property, running from Reading to downtown Cincinnati, parallel to the riverfront for much of its length. Today, the line stops east of downtown at the Montgomery Inn Boathouse. NS has trackage rights on the Oasis line, serving a few customers in the eastern suburbs of the metropolitan area. In recent years, the Oasis line has been proposed for commuter rail service as part of the Eastern Corridor program of transportation improvements.

RailAmerica’s OKI Operations

McCullough Yard in Norwood is the hub of operations for RailAmerica in the OKI region. Along with switching, the facility also has a locomotive shop at this location. In addition to rail operations, RailAmerica is striving to be a holistic provider of transportation services, inclusive of warehouses and industrial development.

3.3 Inland Waterway System and River Ports

3.3.1 Overview

Waterways are ideal for large bulk cargo, project cargo, high-wide or heavy cargo and other cargo that is not time or value sensitive. On a per-ton-mile basis, it is estimated that commodity and project cargo (especially heavy or oversized) can be moved by the river at 33 percent of the cost of a rail move and 20 percent of the cost of a truck move. The cost advantage of river transport could be more significant over railroad and truck shipping depending on fuel pricing and environmental concerns. From an environmental perspective, a full “tow” of eight barges can hold the equivalent of the weight borne by 480 semi-trailer trucks with a significantly lower carbon footprint than either truck or rail. The cost savings of using waterways to transport items clearly outweighs using other
modes but only if the cargo is not time dependant and adequate terminal facilities are available with sufficient access and egress (road and rail) capabilities.

3.3.2 The Ohio River System

The Ohio River is the largest tributary by volume of the Mississippi River Inland Waterway System, and the current depth is at least nine feet along the length of the entire navigation system. Upstream of St. Louis, tows are limited to 15 barges because of the size of the locks—chambers that lift or lower towboats through dam structures—which are required to maintain the minimum channel depth of nine feet.

Two lock and dam complexes in the region illustrate their importance to interstate commerce. The Markland lock and dam, located at Ohio River Mile 531.5 and is 3.5 miles downstream of Warsaw, Kentucky, had a miter gate failure two years ago. The disruption of the 1,200 foot lock forced large barge tows to disassemble to lock through the auxiliary 600 foot chamber, causing delays of almost 11 hours on average. The Markland locks and dam project was completed in 2010. Upstream of the region, the Captain Anthony Meldahl lock and dam began a reconstruction in 2010 which will include the addition of a low-impact hydroelectric plant.

Modernization of the Ohio River system continues to be a top local, regional, and national priority. Within five years, more than half of the current navigation structures will be past their structural design life. Plans are underway to modernize several locks and dams throughout the navigation system. Current projects downriver from Cincinnati include the following:

- In Louisville, Kentucky, at McAlpine Locks and Dam, the USACE is replacing two small locks with a large lock to expedite navigation at one of the busiest points on the Ohio River.
- Olmsted, Illinois, is the location of a new lock and dam, which will replace two aging, 1929-era wicket dams. This $1 billion project will help move traffic through the lower Ohio River to and from the Mississippi system. Many innovative engineering solutions, such as construction on land and floating sections to the river, are being applied to get this lock operating as soon as possible.
- A lock enlargement has been authorized on the Ohio River at J.T. Myers (Uniontown, Kentucky) which will help to accommodate modern 15-barge tows and expedite delivery of commodities up-river.
- Kentucky Lock on the Tennessee River in western Kentucky is being modernized by constructing a larger lock adjacent and landward of the existing small lock.
As with all Ohio River navigation construction projects, half the cost of new construction and major rehabilitation is funded by the Inland Waterways Trust Fund. The fund is contributed to by commercial operators on the Ohio River Navigation System and the Intracoastal Waterway, who pay a fuel tax to the fund.

Maintenance of the Ohio River Navigation System is costly and necessary. In the past year, a number of unanticipated lock repairs have caused major traffic gridlock on the Ohio River system. These repairs were necessary to prevent a failure of gates that could result in much longer and costlier repairs and potential closures. At Greenup, emergency repairs to the large lock kept it out of service for 53 days, resulting in major delays of commodities to their intended destination. Impact to the region was calculated at more than $14 million while barges loaded with commodities, backed up 30 miles while waiting to lock through at Greenup. When the USACE determined the unanticipated McAlpine lock repair would result in shutting down the Ohio River for nearly two weeks, coordination with regional industry provided advance notice so commodities could be stockpiled. The USACE worked continuously to complete repair work. The McAlpine lock closure and repair was completed safely because of cooperation between the USACE, the U.S. Coast Guard and the navigation industry. Knowing the age of the lock, the USACE is aware of the potential for problems and is conducting regular inspections and surveillance to anticipate required maintenance and repairs to ensure safe, reliable navigation on the Ohio River.
3.3.3 Port and Terminal Facilities

“Ports” and “terminals” on the inland waterway system differ in some respects from deepwater, coastal ports. With coastal ports, there is often (though not always) a port authority that develops the port through land acquisition, navigation improvements, dredging, and the construction of seawalls and dock structures. The port authority can lease property to terminal operators which, in turn, develop cargo handling and warehouse facilities for customers (e.g., container terminals, coal facilities, and the like.)

Inland waterway ports do not necessarily develop in the same manner as coastal ports. Cargo-handling terminals can acquire property on the riverfront and develop dock space without necessarily involving a public port authority. Unlike coastal ports, there is more developable land along the inland waterway system and the capital cost of developing terminals is lower, which reduces the necessity for sponsorship by a public authority. Consequently, the vast number of Ohio River terminals are privately owned and operated, and fall under two broad categories:

- **Private-Use Terminals** handle commodities for the cargo owner or consumer. For example, a great deal of traffic on the inland waterway system is coal destined for power plants located on the river. The terminal receiving the coal for the power plant (e.g., AEP Tanners Creek Power Generation Plant) is a private-use terminal. Other private-use terminals in the OKI region include LaFarge in Silver Grove, Kentucky, and Morton Salt in Cincinnati, Ohio.

- **Public-Use Terminals** are privately owned but handle different commodities for different customers. For example, a shipper might require a location to transload an oversize or overweight shipment for a customer, and contact a public-use terminal to unload the barge and transfer the shipment to truck or rail. In the OKI region, Cincinnati Barge & Rail Terminals and Cincinnati Bulk Terminals are examples of public-use terminals.

While the Ohio River system is dominated by private terminal operators, some public port authorities have been created to develop infrastructure in a manner similar to a coastal port authority. Specifically, they are publicly owned and developed, and lease land and facilities to terminal operators to handle cargo. These river port authorities often develop in conjunction with a state’s or region’s economic development initiative, in order to support business development and, by extension, job creation. Examples of river port authorities include the Port of Indiana-Jeffersonville and the Columbiana County Port Authority in East Liverpool, Ohio, both of which own public land for lease to private terminal operators. The OKI region has the Port of Greater Cincinnati Development Authority, which is discussed later in this section.

It is worth noting that the development of public port authorities to promote inland waterway-related economic development can face opposition from private terminal operators. One concern is that public port authorities subsidize new terminal operators to the detriment of existing terminal operators. A related concern is that additional terminal capacity can drive down the price of cargo handling services in the region. For these reasons, it is difficult to create public port authorities on the inland waterway system unless there is a dearth of terminals in an area or existing terminals buy in to the proposed port authority’s plans.
3.3.4 River Terminals in the OKI Region

There are approximately 50 river terminals along the Ohio River in the OKI region, handling a variety of bulk cargo. Figure 3-10 provides a map of barge terminal locations in the OKI region. Coal, grain, petroleum products, stone and chemical products make up about 90 percent of the barge shipments to and from the OKI region. Other important commodities for the region include steel coils, wire rod and aluminum. A list of these terminals follows the map in Table 3-1.

Figure 3-10: Map of OKI Barge Terminals

Source: Parsons Brinckerhoff
### Table 3-1: List of OKI Barge Terminals

<table>
<thead>
<tr>
<th>Barge Terminals</th>
<th>BP Pipelines Bromley Terminal</th>
<th>Northern Kentucky Aggregates Inc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caremeuse Limestone</td>
<td>372 Pike Street, Bromley, KY 41016</td>
<td>3743 Belleview Road, Florence, KY 41080</td>
</tr>
<tr>
<td>Black River Operation</td>
<td>Available Modes: Water/Rail/Truck</td>
<td>Available Modes: Water/Rail/Truck</td>
</tr>
<tr>
<td>9043 State Route 154 Butler, KY 41006-9019</td>
<td>Materials Shipped: Limestone/Aggregates</td>
<td>Materials Shipped: Gravel/Aggregates</td>
</tr>
<tr>
<td>Available Modes: Water/Rail/Truck</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materials Shipped: Limestone/Aggregates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BP Pipelines Bromley Terminal</td>
<td>372 Pike Street, Bromley, KY 41016</td>
<td>3743 Belleview Road, Florence, KY 41080</td>
</tr>
<tr>
<td>LaFarge North America</td>
<td>Available Modes: Water/Rail/Truck</td>
<td>Available Modes: Water/Rail/Truck</td>
</tr>
<tr>
<td>5145 Mary Ingles Hwy Silver Grove, KY 41085</td>
<td>Materials Shipped: Gypsum</td>
<td>Materials Shipped: Coal</td>
</tr>
<tr>
<td>Available Modes: Water/Rail/Truck</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materials Shipped: Gypsum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BP Pipelines Bromley Terminal</td>
<td>372 Pike Street, Bromley, KY 41016</td>
<td>3743 Belleview Road, Florence, KY 41080</td>
</tr>
<tr>
<td>AEP Tanners Creek Power Generation Plant</td>
<td>Available Modes: Water/Rail/Truck</td>
<td>Available Modes: Water/Rail/Truck</td>
</tr>
<tr>
<td>800 AEP Drive Lawrenceburg, IN 47025</td>
<td>Materials Shipped: Coal</td>
<td>Materials Shipped: Coal</td>
</tr>
<tr>
<td>Lawrenceburg, IN 47025</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Available Modes: Water/Rail/Truck</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materials Shipped: Coal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kentucky Dock Management/Aquarius Marine, Inc.</td>
<td>5868 River Road Hebron, KY 41048</td>
<td>1781 U.S. Route 52 Moscow, OH</td>
</tr>
<tr>
<td>Metal Working</td>
<td>Available Modes: Water/Rail/Truck</td>
<td>Available Modes: Water/Rail/Truck</td>
</tr>
<tr>
<td>5868 River Road Hebron, KY 41048</td>
<td>Materials Shipped: Service Facility</td>
<td>Materials Shipped: Coal</td>
</tr>
<tr>
<td>Available Modes: Water/Rail/Truck</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materials Shipped: Service Facility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greater Cincinnati Marine Service</td>
<td>840 Licking Pike Wilder, KY 41076</td>
<td>757 U.S. Route 52 New Richmond, OH 45157-9709</td>
</tr>
<tr>
<td>Beckjord Station Power Generation</td>
<td>Available Modes: Water/Rail/Truck</td>
<td>Materials Shipped: Coal</td>
</tr>
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<td>757 U.S. Route 52 New Richmond, OH 45157-9709</td>
<td>Materials Shipped: Service Facility</td>
<td>Available Modes: Water/Rail/Truck</td>
</tr>
<tr>
<td>Consolidate Grain and Barge/River Terminal Transport</td>
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<td></td>
</tr>
<tr>
<td>210 George St Aurora, IN 47001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Available Modes: Water/Rail/Truck</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materials Shipped: Grain/Dry Food Products</td>
<td></td>
<td></td>
</tr>
<tr>
<td>McGinnis, Inc/Cincinnati Dry Dock</td>
<td>3503 Bellevue Rd Petersburg, KY 41080-9701</td>
<td>11021 Brower Road North Bend, OH 45052</td>
</tr>
<tr>
<td>4 Adela Ave, Ludlow, KY 41016</td>
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<td>Materials Shipped: Coal</td>
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<tr>
<td>Available Modes: Water/Rail/Truck</td>
<td>Materials Shipped: Grain/Dry Food Products</td>
<td>Available Modes: Water/Rail/Truck</td>
</tr>
<tr>
<td>Materials Shipped: Dry Goods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Martin Marietta</td>
<td>3503 Bellevue Rd Petersburg, KY 41080-9701</td>
<td>11021 Brower Road North Bend, OH 45052</td>
</tr>
<tr>
<td>Available Modes: Water/Rail/Truck</td>
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<td>Materials Shipped: Coal</td>
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<td>Materials Shipped: Water/Rail/Truck</td>
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<td>Available Modes: Water/Rail/Truck</td>
</tr>
<tr>
<td>Materials Shipped: Grain/Dry Food Products</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materials Shipped: Dry Goods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terminal Name</td>
<td>Address</td>
<td>City/State, Zip Code</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>----------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Marathon Petroleum Asphalt Terminal</td>
<td>11001 Brower Rd, North Bend, OH 45052</td>
<td>North Bend, OH 45052</td>
</tr>
<tr>
<td>Agrium U.S. Inc</td>
<td>10743 Brower Road, North Bend, OH 45052-9761</td>
<td>North Bend, OH 45052</td>
</tr>
<tr>
<td>Consolidated Terminal Logistics Contractors</td>
<td>300 Three Rivers Parkway, North Bend, OH 45052-0008</td>
<td>North Bend, OH 45052-0008</td>
</tr>
<tr>
<td>INEOS/ABS/Lustran Polymers</td>
<td>356 Three Rivers Parkway, North Bend, OH 45052-0008</td>
<td>North Bend, OH 45052-0008</td>
</tr>
<tr>
<td>Buzzi Unicem</td>
<td>6381 River Rd, Cincinnati, OH 45233-1360</td>
<td>Cincinnati, OH 45233</td>
</tr>
<tr>
<td>Cargill</td>
<td>5495 River Rd, Cincinnati, OH 45233-1509</td>
<td>Cincinnati, OH 45233</td>
</tr>
<tr>
<td>Spurlino Materials</td>
<td>4109 Kellogg Avenue, Cincinnati, OH 45226</td>
<td>Cincinnati, OH 45233</td>
</tr>
<tr>
<td>Mid Valley Shipping</td>
<td>4489 Mary Ingles Highway, Silver Grove, Kentucky 41085</td>
<td>Silver Grove, Kentucky 41085</td>
</tr>
<tr>
<td>Kinder Morgan</td>
<td>4101 Kellogg Avenue, Cincinnati, OH 45226</td>
<td>Cincinnati, OH 45233</td>
</tr>
<tr>
<td>Cargill</td>
<td>6761 Kellogg Rd, Cincinnati, OH 45230 (513) 232-8981</td>
<td>Cincinnati, OH 45230</td>
</tr>
<tr>
<td>Kinder Morgan Terminals</td>
<td>4101 Kellogg Avenue, Cincinnati, OH 45226</td>
<td>Cincinnati, OH 45233</td>
</tr>
<tr>
<td>Mid Valley Shipping</td>
<td>4489 Mary Ingles Highway, Silver Grove, Kentucky 41085</td>
<td>Silver Grove, Kentucky 41085</td>
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<tr>
<td>Cargill</td>
<td>5495 River Rd, Cincinnati, OH 45233-1509</td>
<td>Cincinnati, OH 45233</td>
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<tr>
<td>Spurlino Materials</td>
<td>4109 Kellogg Avenue, Cincinnati, OH 45226</td>
<td>Cincinnati, OH 45233</td>
</tr>
<tr>
<td>Cargill</td>
<td>6761 Kellogg Rd, Cincinnati, OH 45230 (513) 232-8981</td>
<td>Cincinnati, OH 45230</td>
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## Table 3-1: List of OKI Barge Terminals (continued)

<table>
<thead>
<tr>
<th>Benchmark River and Rail Terminals</th>
<th>SGS North America</th>
<th>Peter Cremer North America</th>
</tr>
</thead>
<tbody>
<tr>
<td>4820 River Road, Cincinnati, OH 45204</td>
<td>3500 Southside Ave, Cincinnati, OH 45204</td>
<td>3117 Southside Ave, Cincinnati, OH</td>
</tr>
<tr>
<td>Materials Shipped: Not known</td>
<td>Materials Shipped: Agricultural products, Automotive parts &amp; tools, minerals, coal</td>
<td>Materials Shipped: Food products, Glycerine, Stearic and Oleic Acid, Oleochemicals, Methyl Ester, Fatty Acids, Rheolease Mandrel Lubricants, Nexsol Biodiesel</td>
</tr>
<tr>
<td>Modes Available: Truck/Rail/Water</td>
<td>Modes Available: Truck/Rail/Water</td>
<td>Modes Available: Truck/Rail/Water</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Consolidated Grain &amp; Barge</th>
<th>Westway Terminal Company</th>
<th>Marathon Petroleum Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anderson Ferry Terminal</td>
<td>3335/3350 Southside Ave, Cincinnati, OH 45204</td>
<td>4015 River Rd, Cincinnati, OH 45204</td>
</tr>
<tr>
<td>4837 River Road, Cincinnati, OH 45204</td>
<td>Materials Shipped: Bulk Liquid, Liquid Feed Products, Molasses, Vegetable Oil, Petroleum Products, Methyl Esters (bio-diesel)</td>
<td>Materials Shipped: Oil/Petroleum Products</td>
</tr>
<tr>
<td>Materials Shipped: Grain/Bulk</td>
<td>Modes Available: Truck/Rail/Water</td>
<td>Modes Available: Truck/Rail/Water</td>
</tr>
<tr>
<td>Modes Available: Truck/Rail/Water</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Valvoline Oil Company</th>
<th>Port of Cincinnati</th>
<th>Kosmos Cement</th>
</tr>
</thead>
<tbody>
<tr>
<td>4101 River Rd, Cincinnati, OH 45204</td>
<td>1119 Mehring Way, Cincinnati, OH 45203</td>
<td>200 Barkley St, Cincinnati, OH 45204</td>
</tr>
<tr>
<td>Materials Shipped: Oil/Petroleum Products</td>
<td>Materials Shipped: Coal, metals, bulk materials, aggregates</td>
<td>Materials Shipped: Aggregates/Sand/Gravel</td>
</tr>
<tr>
<td>Modes Available: Truck/Rail/Water</td>
<td>Modes Available: Truck/Rail/Water</td>
<td>Modes Available: Truck/Water</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hilltop Basic Resources</th>
<th>511 W Water St, Cincinnati, OH 45202</th>
<th>Materials Shipped: Gravel, Cement, Aggregates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Modes Available: Truck/Water</td>
<td></td>
</tr>
</tbody>
</table>

**Source:** Parsons Brinckerhoff
3.3.5 The Port of Greater Cincinnati Development Authority

The Port of Greater Cincinnati Development Authority was formed by the city of Cincinnati and Hamilton County as a port authority under Section 4582 of the Ohio Revised Code. Ohio port authorities have broad powers, including the ability to own land, pursue tax initiatives, and issue debt for transportation and economic development projects.

To date, the Cincinnati port authority has focused the majority of its efforts on economic development financings and brownfield redevelopment projects. The port authority does not own or manage any riverfront barge facilities, but has been involved in discussions with multiple private and public parties to promote waterborne trade and associated economic development projects. The port authority has also applied for grants to study specific transportation issues and redevelopment sites.

3.3.6 Competitive Assessment of OKI River Terminals

The OKI region is similar to other regions with access to the inland waterway system, in that the majority of water terminals are privately owned and operated and serve regional businesses. In terms of competitive advantages, the terminals have good access to I-71, I-74, and I-75, and many terminals are served by CSX, NS, or RailAmerica railroads.

On a microscale of analysis, the OKI region has a weakness in the availability of land for riverfront terminal development. Specifically, while there are a number of vacant industrial parcels available, these parcels are often too small for the establishment of new terminals or river-dependent industries. Developers would need to assemble a number of small parcels from different owners to market land for new terminals.

Another deficiency is RailAmerica’s access to riverfront terminals. RailAmerica reports that it could effectively serve a number of river terminals but their access to those terminals’ properties is blocked by CSX railroad.

As with other river ports, the competition for moving cargo via the river is dependent on the type of cargo being moved and the history of the facility handling the cargo. Most of the cargo moved to or from a specific terminal is based on the manufacturing facility located at or near the terminal. In the OKI region, for example, there are various coal terminals that receive coal directly for on site power plants. Also, AK Steel in Middletown receives coke and scrap metal through local terminals. Thus, local industries are the most important determinant of river traffic, as river terminals do not handle a large volume of cargo for intermodal transfer over a longer distance; the rail or truck move from the terminal is a relatively short distance.

In discussion with several barge operators, terminal operators and customers who use the river system, it is apparent that a “river mentality” is needed for a shipper to use the river system as a primary mode of transport. A shipper that has established their business using the river is more likely to continue, and even increase, their river usage over a shipper who is new to river shipping.
3.3.7 Competitive Environment for Waterborne Commerce

To fully understand the ability for river terminals in the OKI region to attract customers, one must understand the capability of other ports upriver and downriver of Cincinnati to serve similar commercial needs. Again, local industry is the biggest determinant of the viability of a river terminal. While competitors exist up- and downriver from the OKI region, their capabilities alone will not determine their ability to take waterborne commerce from the OKI region, or vice versa.

**Port of Indiana – Jeffersonville**

The Port of Indiana-Jeffersonville promotes itself as the fastest growing port on the Ohio River System. It is located on the northern bank of the Ohio River directly across the river from Louisville, Kentucky. The port features year-round access, intermodal access to rail, road, and airports, and is designated as a foreign trade zone. Types of cargo handled by the Port of Indiana – Jeffersonville include:

- Steel coils/slabs
- Ingots/billets
- Finished steel
- Lumber
- Project cargo
- Super sacked cargoes
- Containers (international and domestic)
- Grain
- Dry/liquid fertilizer
- Coal/ coke
- Salt
- Asphalt
- Minerals
- Vehicles
- Oversized equipment

Intermodal rail access is provided for steel, grain, bulk and project cargo. Jeffersonville features on-dock rail service, and rail connections are serviced by CSX and Louisville & Indiana Rail. There are 11 miles of interior rail service with switching via MG Rail. Road connections for the Port of Indiana – Jeffersonville include access to I-64, I-65 and I-71 via I-265. The port is serviced by heavy haul roads with no weight limit. The Port of Indiana – Jeffersonville is 1,057 acres (with 320 acres available for industrial development) and provides 3,200 feet of riverfront access. There are currently 25 port companies located at Jeffersonville.

**Portsmouth/New Boston/South Point, Ohio**

Upriver from the OKI region, there are a number of initiatives underway near Portsmouth, Ohio, to Huntington, West Virginia. This area has ample access to the river and vacant industrial parcels such as the former coke plant at New Boston, Ohio. Also, NS’s Heartland Corridor double-stack line runs through this area. While this portion of southern Ohio may have some advantages in terms of the cost and availability of land, it does not have a local market for freight, which is equivalent to the OKI region.

**Port of Louisville**

The Port of Louisville promotes itself as one of the most accessible industrial parks in the nation. Facilities include a bulk commodity transfer terminal, including dedicated coal operations, barge
fleeting area, ground storage, 13 miles of onsite and offsite railroad track, and a general cargo dock. The port is designated as a foreign trade zone. The transfer terminal is designed to handle more than four million tons of dry bulk at a rate of 2,000 tons per hour. General cargo off-loading is provided by a 30-ton overhead crane. Types of cargo handled by the Port of Louisville include:

- Scrap metals
- Sand
- Salt
- Coal
- Iron & Steel
- Wood Products
- Bulk cargoes
- Palletized Goods

Intermodal access is provided to three interstates, three railroads and one airport. A four-lane highway connects the port to I-64, I-65 and I-71. Three railroads are serviced directly: CSX, NS and Paducah & Louisville. The Louisville International Airport is located eight miles from the port. The port is situated on more than 300 acres and provides 30 acres of ground and warehouse storage. The storage area is fenced with 24-hour guard service.

**Paducah-McCracken County Riverport Authority**

Located in Paducah in western Kentucky, the port handles bulk, general, and liquid cargo. To move bulk goods, the port employs a 125-ton American crane and a 30-inch conveyer belt system that can move 500 tons per hour. General cargo can be offloaded with a 20-ton Linden crane to the 25,000-square-foot dockside staging area and stored, if need be, in 36,000 square feet of warehousing space. The Port of Paducah also has a total liquid cargo storage capacity of 2,600,200 gallons. Types of cargo typically handled by the port include:

- Aggregates and other building materials
- Fertilizers – dry bulk and liquid
- Steel – rolls and beams
- Ocean-going containers
- Veneer logs and finished lumber
- Wood products and pulpwood
- Agricultural feeds, supplies and bulk grains
- Petroleum products – diesel fuel, gasoline, kerosene, lube oil and solvents
- Palletized cargo
- Coal and ores
- Aluminum
- Zircon sand

Intermodal access is provided to truck and rail transportation. The port is located on the I-24 loop providing direct access to the interstate system. Rail service is provided by CSX with support from Paducah & Louisville regional railroad. Facilities onsite include train-to-barge loading. The Port of Paducah provides 2,300 feet of riverfront space and 48 total acres. Bulk storage capacity for the port is 14,000 tons in warehouse and 100,000 tons on 27 acres with room to expand.

### Summary

The OKI region is fortunate to have the capability of waterborne transportation on the Ohio River system. Private river terminals have supported industrial development over the years and continue service to this day. Coal, grain, petroleum products, stone and chemical products make up about 90 percent of the barge shipments to and from the OKI region.
River terminals are serving industries in the region, rather than transloading cargo for longer distance hauls by rail or truck. This reflects a basic truth about inland waterway transportation which is that most users of the system are local industries. While that makes it unlikely that waterborne commerce through the region will divert to other terminals in other river cities, the converse is true as well: the OKI region will have difficulty in attracting waterborne commerce from other regions.

Since the region has such a valuable transportation asset, there is naturally a desire to leverage waterborne commerce for economic development purposes. This ambition is hindered somewhat by the economic limitations of transload distance, noted above. In addition, the OKI region is somewhat hindered by the lack of large parcels of vacant land on the river for new terminal development and the access of that land to affordable and reliable rail service.

3.4 Air Freight and Air Parcel

The OKI region and surrounding areas are home to numerous airports with air freight and air parcel playing an important role in the regional economy. This section presents an overview of the national trends and forecasts of air cargo and air parcel activity and a summary of the airport assets located in the region, as well as a discussion of the trends related to air freight in the region.

3.4.1 Types of Air Freight

- Air freight (or cargo) is considered to be shipments weighing greater than 150 pounds that is typically of a time-sensitive or high-value nature. Air freight tends to, because of the weight and size, create truck movements with larger truck sizes such as semi trailers from contract carriers (truckers) for both local and regional pickups and deliveries.
- Air parcels (or express) are shipments of less than 150 pounds. Air parcel creates more of a delivery van and smaller semi truck moves in a local area and larger semi-truck moves on a regional basis.

3.4.2 Types of Air Carriers

- Integrated Express – The prominent examples of integrated express carriers are FedEx, UPS, DHL (international shipments), and to a certain extent, the U.S. Postal Service. These companies operate a dedicated fleet of cargo aircraft and trucking assets.
- All-Cargo – These carriers operate large cargo aircraft between major airports, especially between large population centers and international origin-destination pairs. All-cargo carriers handle only about 15 percent of the domestic U.S. market.
- Scheduled Commercial Passenger Carriers – A substantial amount of air cargo, both freight and parcel—about 50 percent in the U.S.—is transported in the cargo holds (belly cargo) of scheduled passenger airliners.

3.4.3 Types of Air Services

- Integrated Express Service – Integrated express services, like that offered by FedEx and UPS, provide door-to-door transportation services of packages generally weighing less than 150
pounds. The integration lies in the fact that a single company manages the entire shipment (from pickup to delivery) using truck, air, rail, or a combination of modes.

- **Freight Forwarders** – Many freight forwarders do not directly own or operate aircraft or trucks, but rather serve as a broker between the shipper and carrier(s) of freight. Part of this service can include the consolidation of packages to garner the most favorable shipping rates available. Generally, freight forwarders do not focus on the express market. DHL Air Freight Forwarding is an example of this type of service. While they are a part of DHL, they handle mostly air freight and international express business using either a sister company (DHL Aviation) or other aircraft assets to maximize the service offerings to customers. Most of the companies in this area also provide freight consolidation and TSA security screening and documentation services.

- **Airport-to-Airport** – This type of service is common for both all-cargo and commercial passenger carriers, which offer only transport between airports. Shippers must drop off or pick up cargo at the airport. As such, freight forwarders are often involved as an agent in the shipment, arranging for pickup and/or delivery via ground transportation.

Trends are constantly changing regarding the types of carriers and services outlined above. For example, some integrated express carriers have developed two- and three-day delivery options, rather than just overnight “express” options for customers. Also, there are carriers that are branching out from their traditional focus on packages weighing less than 150 pounds, such as UPS with their “Logistics Division” that will handle any shipment of any kind on all modes (in other words a “third party logistics provider,” or 3PL.) The profile of the air industry for this chapter is intended to provide context for the discussion of air freight trends in general, in particular, air freight capabilities in the OKI area.

### 3.4.4 Global and National Air Freight Trends

According to the Air Cargo Management Group, the worldwide market for air freight and express was approximately $120 billion in 2009, of which the U.S. represents a one-quarter share ($30 billion). The global market is split evenly between air cargo and express air parcel, while the U.S. market is mostly express shipments.

Air freight has traditionally been a growth market, increasing at approximately two times growth in gross domestic product. Mirroring the global economy, however, in 2009 demand for air cargo declined nearly 12 percent from 2008, resulting in the worst year for air freight growth and the first time air cargo tapered for two consecutive years, according the Boeing World Air Cargo Forecast 2010–2011 (Boeing Forecast.) Global air freight levels have rebounded sharply in 2010 after an 18-month decline and are expected to regain the peak attained in 2007 by the end of the year 2011.

From 1999 to 2009, world air-cargo traffic increased at an annual growth rate of 1.9 percent and according to Boeing Forecast, air cargo is projected to increase at an annual rate of 5.9 percent from 2009 to 2029. For the same period, the Airbus Industries Global Market Forecast 2009-2028 (Airbus Forecast) predicts that air cargo (tonnage) will increase 5.2 percent. These two forecasts are closely tied to the world economic growth forecast of 3.2 percent, which is consistent with the long-term historical trend for air cargo of approximately two times economic growth. While Boeing and Airbus have robust air cargo growth in the longer term (triple activity in 2029 as 2009), the near-term
forecast growth is approximately 3.5 percent from 2009 to 2014 and is more conservative, indicating the same growth trend in the world economy in the near term.

Table 3-2 compares the historical and forecasted air-cargo growth rates by world market from the Boeing Forecast. As shown, the world markets expected to see the greatest growth from 2009 to 2029 are Domestic China, Intra-Asia, and Asia-North America. Intra-North America is forecasted to grow 3.0 percent (the lowest), which is due primarily to the maturity of the market, the dominance of the U.S. integrated express freight, and the increased use of trucks because of reductions in the passenger air carrier fleet, which carries belly cargo.4

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>World</td>
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<td>5.9</td>
</tr>
<tr>
<td>Domestic China</td>
<td>13.1</td>
<td>9.2</td>
</tr>
<tr>
<td>Intra-Asia</td>
<td>3.4</td>
<td>7.9</td>
</tr>
<tr>
<td>Asia-North America</td>
<td>1.4</td>
<td>6.7</td>
</tr>
<tr>
<td>Europe-Asia</td>
<td>4.1</td>
<td>6.6</td>
</tr>
<tr>
<td>South Asia-Europe</td>
<td>4.1</td>
<td>6.5</td>
</tr>
<tr>
<td>Middle East-Europe</td>
<td>6.5</td>
<td>6.0</td>
</tr>
<tr>
<td>Latin America-North America</td>
<td>-0.7</td>
<td>5.7</td>
</tr>
<tr>
<td>Latin America-Europe</td>
<td>2.5</td>
<td>5.6</td>
</tr>
<tr>
<td>Europe-North America</td>
<td>-1.5</td>
<td>4.2</td>
</tr>
<tr>
<td>Intra-Europe</td>
<td>0.1</td>
<td>3.6</td>
</tr>
<tr>
<td>Intra-North America</td>
<td>-2.5</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Source: Boeing Forecast

According to the Federal Aviation Administration’s (FAA) annual forecast published in March 2010, revenue ton miles of U.S. carriers are forecasted to increase at 5 percent from 2009 to 2029, which is nearly double the growth rate that Boeing forecasts for the Intra-North America. This difference in forecasted growth rates is likely due to U.S. domestic passenger carriers hauling belly cargo to and from international markets, which are predicted to have higher growth rates than the Intra-North America market.

Air parcel tends to be somewhat steady over the year with obvious peaking occurring before a major holiday. The air freight portion, however, tends to break into two segments—planned and unplanned shipments.

Planned shipments are typically time-sensitive cargo. Fashion apparel, frozen fish, new electronics or toys are some of the items in this category. Besides the expeditious service, inventory carrying costs are also an important aspect, as in many cases, the reduced inventory carrying costs will go a long way in countering the increased costs for air freight.

Unplanned shipments are those shipments that occur from either an emergency situation (natural disaster, major equipment breakdown) or another unplanned event that affects the timely (and

---

4 The capacity for belly cargo is decreasing because of U.S. airlines’ shift to using more regional jets, which have less cargo space than larger aircraft.
planned shipment of goods and materials. In many cases, to meet customer and consumer demands, air freight is used to ensure on-time delivery. It is estimated that unplanned shipments make up 20 percent to 25 percent of all air freight shipments, and these become even more prevalent during the Christmas season.

3.4.5 Major Air Freight Services in the Mississippi and Ohio River Valleys

With the view of air freight services and trends as background, attention shifts to air freight services in the broader region of the Mississippi and Ohio River Valleys, which represents the competitive geography for OKI.

Every airport with scheduled commercial passenger service has, by default, some level of freight activity—this being in the form of belly cargo transported in passenger aircraft. Thus, freight forwarders are generally active in every market and integrated express services like UPS and FedEx serve all major airports.

Airport freight “hubs” generate greater traffic volume and greater levels of economic activity related to sorting operations, deliveries and other freight services. Hubs serve as centers for air freight sorting, most classically represented by integrated express carrier hubs that receive and sort air freight overnight, and fly to various locations the next day for overnight delivery.

The OKI region is ideally situated for air hubs serving the entire North American market. With varying degrees of success, airports in the region have worked to attract air cargo hubs, primarily for their economic development benefits. Examples include the following:

- Rickenbacker Airport in south Columbus, Ohio which is a converted military base. Local officials have had varying success in attracting air cargo service, but none has established a hub operation.
- The Toledo Express Airport was successful in attracting a hub for DB Schenker (formerly BAX Global, or Burlington Air Express) in 1991 which operates about 20 flights per night. DB Schenker announced a closure of their hub in July 2011.
- Wilmington Airpark, in Wilmington, Ohio (located just outside the OKI region), like Rickenbacker, it is also a former Air Force base, was successful in attracting a major express hub operation for DHL, which consolidated parcel-sorting operations there in 2005. A restructuring of DHL operations in 2008 with the pullout by DHL from domestic express service closed the Wilmington hub and eliminated thousands of jobs.
- Emery Air Freight operated a hub at Dayton International Airport until the early 2000s, when UPS acquired Emery’s aircraft services and consolidated operations in Louisville.

Table 3-3 shows the busiest air cargo airports in North America sorted by volume. Bold typeface shows the hub operations in the Mississippi and Ohio Valleys which represent the largest cargo hubs in the U.S. Within a few hours of OKI, Memphis and Indianapolis are major hub operations for FedEx, and Louisville is the major U.S. hub for UPS. Rounding out the regional competition is Toledo Express Airport (DB Schenker) which ranks 21st in North American cargo traffic. With DHL, Cincinnati ranks 32nd in North American air freight traffic.
### Table 3-3: North American Airport Cargo Traffic (Sorted by Volume)

<table>
<thead>
<tr>
<th>Rank</th>
<th>City (Airport Code)</th>
<th>Total Cargo (metric tons)</th>
<th>Hub</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Memphis, TN (MEM)</td>
<td>3,697,054</td>
<td>FedEx*</td>
</tr>
<tr>
<td>2</td>
<td>Anchorage, AK (ANC)</td>
<td>1,994,629</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Louisville, KY (SDF)</td>
<td>1,949,528</td>
<td>UPS*</td>
</tr>
<tr>
<td>4</td>
<td>Miami, FL (MIA)</td>
<td>1,557,401</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Los Angeles, CA (LAX)</td>
<td>1,509,236</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>New York, NY (JFK)</td>
<td>1,144,894</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Chicago, IL (ORD)</td>
<td>1,047,917</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Indianapolis, IN (IND)</td>
<td>944,805</td>
<td>FedEx</td>
</tr>
<tr>
<td>9</td>
<td>Newark, NJ (EWR)</td>
<td>779,642</td>
<td>FedEx</td>
</tr>
<tr>
<td>10</td>
<td>Dallas/Fort Worth, TX (DFW)</td>
<td>578,906</td>
<td>UPS/FedEx</td>
</tr>
<tr>
<td>11</td>
<td>Atlanta, GA (ATL)</td>
<td>563,139</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Oakland, CA (OAK)</td>
<td>491,138</td>
<td>FedEx</td>
</tr>
<tr>
<td>13</td>
<td>Toronto, ON (YYZ)</td>
<td>439,130</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Philadelphia, PA (PHL)</td>
<td>433,439</td>
<td>UPS</td>
</tr>
<tr>
<td>15</td>
<td>San Francisco, CA (SFO)</td>
<td>408,102</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Honolulu, HI (HNL)</td>
<td>387,566</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Houston, TX (IAH)</td>
<td>372,662</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Ontario, CA (ONT)</td>
<td>354,691</td>
<td>UPS</td>
</tr>
<tr>
<td>19</td>
<td>Washington, DC (IAD)</td>
<td>292,769</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Seattle, WA (SEA)</td>
<td>269,689</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Boston, MA (BOS)</td>
<td>247,782</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Toledo, OH (TOL)</td>
<td>241,472</td>
<td>DB Schenker (closed 2011)*</td>
</tr>
<tr>
<td>23</td>
<td>Denver, CO (DEN)</td>
<td>224,375</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Phoenix, AZ (PHX)</td>
<td>223,664</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Vancouver, BC (YVR)</td>
<td>198,422</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Minneapolis, MN (MSP)</td>
<td>189,690</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Portland, OR (PDX)</td>
<td>178,720</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Detroit, MI (DTW)</td>
<td>161,886</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Winnipeg, MB (YWG)</td>
<td>159,603</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Orlando, FL (MCO)</td>
<td>137,150</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>Salt Lake City, UT (SLC)</td>
<td>135,575</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>Cincinnati, OH (CVG)</td>
<td>133,125</td>
<td>DHL*</td>
</tr>
<tr>
<td>33</td>
<td>Hartford, CT (BDL)</td>
<td>118,147</td>
<td>UPS</td>
</tr>
<tr>
<td>34</td>
<td>San Antonio, TX (SAT)</td>
<td>114,713</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>Calgary, AB (YYC)</td>
<td>114,476</td>
<td></td>
</tr>
</tbody>
</table>

Source: ACI North America

**Denotes the carriers’ primary hub city.
**Red bold typeface denotes OKI competitive region

Airports in major population centers (New York, Los Angeles, Chicago) rank high in air cargo statistics because of their local and regional demand for freight and supply by all types of air cargo and parcel services.
3.4.6 OKI Region Air Freight Assets

The OKI region is home to numerous airports of varying sizes and ability to handle air cargo operations (belly cargo or all-cargo). Table 3-4 presents a comparison of the airport assets of the region that have runways equal to or longer than 3,500 feet.

<table>
<thead>
<tr>
<th>Airport Facility</th>
<th>County</th>
<th>Longest Runway Length x Width (feet)</th>
<th>Runway Surface</th>
<th>Air Traffic Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cincinnati-Blue Ash Airport</td>
<td>Hamilton (OH)</td>
<td>3,499 x 75</td>
<td>Asphalt</td>
<td>Daytime</td>
</tr>
<tr>
<td>Clermont County Airport</td>
<td>Clermont (OH)</td>
<td>3,568 x 75</td>
<td>Asphalt</td>
<td>Daytime</td>
</tr>
<tr>
<td>Lebanon-Warren County Airport</td>
<td>Warren (OH)</td>
<td>4,203 x 65</td>
<td>Asphalt</td>
<td>Daytime-Evening</td>
</tr>
<tr>
<td>Butler County Regional Airport</td>
<td>Butler (OH)</td>
<td>5,500 x 100</td>
<td>Asphalt</td>
<td>Daytime-Evening</td>
</tr>
<tr>
<td>Middletown Regional/Hook Field Airport</td>
<td>Butler (OH)</td>
<td>6,100 x 100</td>
<td>Asphalt</td>
<td>Daytime</td>
</tr>
<tr>
<td>Cincinnati Municipal/Lunken Field</td>
<td>Hamilton (OH)</td>
<td>6,101 x 150</td>
<td>Asphalt</td>
<td>Continuous</td>
</tr>
<tr>
<td>Wilmington Airborne Airpark</td>
<td>Clinton (OH)</td>
<td>10,701 x 150</td>
<td>Concrete</td>
<td>Daytime</td>
</tr>
<tr>
<td>Cincinnati/Northern International</td>
<td>Kentucky</td>
<td>12,000 x 150</td>
<td>Asphalt/Concrete</td>
<td>Continuous</td>
</tr>
</tbody>
</table>

Source: www.airnav.com; December 2010; Compiled by Parsons Brinckerhoff

As shown, four of the eight facilities have a runway with sufficient length to accommodate takeoffs and landings for a small all-cargo jet (6,000 feet or greater). Only two airports can accommodate the larger freighter aircraft that would likely be flown by an all-cargo carrier using an airport facility for a hub operation (runway greater than 8,000 feet) which would include package-sorting facilities rather than straight transfer of packages to trucks. Other factors that would influence the selection of one of these airports as a hub for air cargo could include air traffic control during nighttime hours, available land on or surrounding the airport for sorting facilities, roadway access to the interstate system and environmental concerns such as noise control.

The following briefly describes the potential of air cargo hub operations at the four airports with the longest runways in context with the air cargo hub selection criteria presented above:

- **Middletown Regional/Hook Field Airport** is located near the Miami River close to the downtown section of Middletown in northern Butler County. This airport has limited access to interstate highways, and the air traffic control is limited to daytime hours. Because of the airport’s physical location, land constraints, runway length and limited air traffic control, Middletown has no potential for cargo operations.

- **Cincinnati Municipal/Lunken Field** is located in the southeastern section of Hamilton County and is bordered by the Little Miami River to the east and the Ohio River to the south. There is reasonable access to interstate highways, but it is by a congested arterial road. Lunken is limited by its runway length, as well as available land on and surrounding the airport, to provide sufficient sorting facilities required of an all-cargo carrier providing a hub operation.

- **Wilmington Airborne Airpark** is located in Clinton County just outside the OKI Region in proximity to I-71. The airport has good access to the interstate and a runway length sufficient to...
accommodate some of the largest all-cargo aircraft. The airport has ample space to provide sorting facilities, but currently has limited air traffic control during nighttime hours. With the relocation of DHL operations to Cincinnati/Northern Kentucky Airport, Wilmington is searching for adaptable reuse of its ample cargo facilities. DHL’s history of operations in southwest Ohio and northern Kentucky dates to the early 1980s. Table 3-5 shows a timeline of these developments.

- **Cincinnati/Northern Kentucky International Airport (CVG)** is located in northern Boone County near I-275 and is home to DHL’s North American hub operation. It has excellent access to the interstate and a runway length sufficient to accommodate the largest all-cargo aircraft. The airport has land available on and around the airport to provide sorting facilities, as well as continuous air traffic control to provide for overnight operations. In January 2011, there was 450,000 square feet of warehouse space available.

While Middletown and Lunken Airports are not conducive to a hub operation for an all-cargo operator, they could provide locations for local operations of smaller parcel carriers to operate.

### Table 3-5: Timeline of Air Cargo Hub Development in the OKI Region

<table>
<thead>
<tr>
<th>Year</th>
<th>Wilmington</th>
<th>CVG</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>Airborne Express takes over the runways at the airport, making the airport the largest privately held airport in the U.S.</td>
<td>DHL begins operating at CVG</td>
</tr>
<tr>
<td>1983</td>
<td></td>
<td>DHL selects CVG as a hub for its sorting facility to propel its domestic express service</td>
</tr>
<tr>
<td>Late 1990s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2003–2005</td>
<td>DHL purchases Airborne Express and moves hub operations from CVG to Wilmington</td>
<td>DHL exits the domestic U.S. parcel delivery (air and ground) market to focus only on international parcel service</td>
</tr>
<tr>
<td>2008</td>
<td>DHL abandons hub facility in Wilmington and moves operations to CVG</td>
<td>DHL turns Wilmington Airpark over to Clinton County Port Authority</td>
</tr>
</tbody>
</table>

*Source: Parsons Brinckerhoff*

With the Wilmington Airpark now being owned and operated by the Clinton County Port Authority, the opportunity exists to utilize the facilities vacated by DHL. The port authority hired an executive director to lead the agency to bring new business to the airpark and issued a request for proposals in late 2010 to secure services for an airport redevelopment and reuse master plan that would include a market aimed at identifying opportunities for development of the airpark.

Cincinnati/Northern Kentucky International Airport is the only airport in the region with scheduled air cargo service. Both DHL and FedEx have operations at the airport, with DHL using the airport as a hub for its international freight shipments and FedEx using the airport as a local point of origin and destination (non hub). Because DHL has not consistently used the airport for its hub operation, the level of air cargo activity at the airport has fluctuated and not been consistent with the cargo activity in the U.S. Figure 3-11 compares the air cargo activity from 2002 to 2010 at CVG (includes weight of air mail, air express, and air freight) and the U.S. (revenue ton miles for U.S. commercial
Because Wilmington Airpark was privately held by Airborne Express and subsequently by DHL, air cargo activity information was not publicly available.

**Figure 3-11:** Comparison of Air Cargo Activity for U.S. and Cincinnati/Northern Kentucky International Airport

![Graph showing comparison of air cargo activity over years](image)


### 3.4.7 Summary

Air-freight services, especially integrated express services, are ubiquitous in North American cities. UPS and FedEx hold a large portion of the parcel delivery market. Numerous freight forwarders operate to consolidate and handle the ground transportation for commercial aircraft belly cargo.

Air-cargo hub operations are of greater value to regional economies because of their employment impact. For example, UPS employs 20,000 people in Louisville, making it one of the largest employers in the state of Kentucky. DHL operations in Wilmington employed thousands of workers until its closure in 2008.

The Ohio Valley is ideally situated for air-hub and air-logistics operations and the OKI region is fortunate to have DHL as a regional air-logistics asset. The DHL hub at CVG employs more than 1,800 people and total freight has increased 190% since 2009.
In spite of healthy growth trends in air-cargo shipments, the industry is competitive and numerous regions compete to attract a limited number of hub operations. Consolidation, overcapacity and modal changes might best describe the following overriding trends in air freight today:

- **Consolidation** – This has had a direct impact on southwest Ohio. Dayton International Airport was a major cargo hub for Emery and hence a major regional employer. With UPS’s acquisition of Emery, hub operations moved to Louisville and Dayton’s prominence in air-freight carriage diminished. DHL’s acquisition of Airborne Express had a similar impact of employment relocation, from Wilmington, to Cincinnati/Northern Kentucky.

- **Overcapacity** – The two examples above also illustrate the tremendous amount of unused air cargo capacity in the region. Wilmington and Dayton are prime examples, but Rickenbacker in Columbus, Ohio is also a significant air-freight facility that is greatly underused.

- **Modal Changes** – DHL and other air logistics providers will continue to operate in a region even if their own fleet of aircraft may not actively use the local airport. This is because of cargo and commercial carriers selling space available on each other’s flights and also because, depending on the time of year, of capacity and costs—the logistics provider may have the ability to land the cargo in one location and truck it to the final delivery point or local consolidation facility.

### 3.5 Pipelines

The U.S. Department of Transportation (USDOT), Pipeline and Hazardous Materials Safety Administration (PHMSA) provides public data on pipelines in the U.S. PHMSA illustrates the efficiency of pipeline transportation, using the example of a large pipeline that can transport roughly two million barrels of gasoline a day. By way of comparison, to transport an equivalent amount by another mode would take the following:

- 9,375 large semi-truck tankers.
- Twenty-four 100-car unit trains extending three miles each.
- Ten 15-unit barge tows.

Trucks, vessels, and trains consume diesel or other liquid fuels and contribute to congestion in our nation’s freight and passenger transportation corridors. Further, as the National Transportation Safety Board has observed, pipeline transportation has a consistently lower accident rate than other modes.

### 3.6 Pipeline Operations in the OKI Region

Pipelines within the OKI region are mainly used to transport natural gas, although petroleum and other pipeline operations are also prevalent. There are a number of river terminals and pipeline operators in the region, although an exact number is difficult to ascertain because of security measures surrounding the pipeline industry. Therefore, the following information describes pipeline operations in the region to the degree that could be discerned from various public sources.

The OKI region consists of over 904 miles of pipelines. These pipelines carry natural gas, product, liquid petroleum gas, crude, empty liquid and highly volatile liquid.
The majority of pipelines serving the OKI region carry natural gas and dispersed throughout the region. Not shown in Figure 3-12 is the number of pipelines designated as “unspecified” by the PHMSA. These “unspecified” pipelines comprise the second greatest percentage of total linear miles. A single crude pipeline runs approximately 50 miles in a north-south direction through the OKI region.

Figure 3-12: Pipeline Commodities by Total Linear Mile

Table 3-6: Ohio Pipeline Transmission Mileage by County

<table>
<thead>
<tr>
<th>County</th>
<th>Gas Miles</th>
<th>Liquid Miles</th>
<th>Percentage of All Ohio Pipeline Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butler</td>
<td>144</td>
<td>98</td>
<td>1.70</td>
</tr>
<tr>
<td>Clermont</td>
<td>66</td>
<td>0</td>
<td>0.40</td>
</tr>
<tr>
<td>Hamilton</td>
<td>94</td>
<td>72</td>
<td>1.20</td>
</tr>
<tr>
<td>Warren</td>
<td>161</td>
<td>51</td>
<td>1.50</td>
</tr>
<tr>
<td>OKI County Totals - Ohio</td>
<td>465</td>
<td>221</td>
<td>4.80</td>
</tr>
<tr>
<td>State Totals - Ohio</td>
<td>10,240</td>
<td>3,370</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Table extracted from http://primis.phmsa.dot.gov/comm/reports/safety/OH_detail1.html | Report generated on 02/03/11
### Table 3-7: Kentucky Pipeline Transmission Mileage by County

<table>
<thead>
<tr>
<th>County</th>
<th>Gas Miles</th>
<th>Liquid Miles</th>
<th>Percentage of All Kentucky Pipeline Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boone</td>
<td>22</td>
<td>29</td>
<td>0.60</td>
</tr>
<tr>
<td>Campbell</td>
<td>63</td>
<td>0</td>
<td>0.70</td>
</tr>
<tr>
<td>Kenton</td>
<td>16</td>
<td>4</td>
<td>0.20</td>
</tr>
<tr>
<td>OKI County Totals - Kentucky</td>
<td>101</td>
<td>33</td>
<td>1.50</td>
</tr>
<tr>
<td>State Totals – Kentucky</td>
<td>8,226</td>
<td>859</td>
<td>100</td>
</tr>
</tbody>
</table>

Table extracted from http://primis.phmsa.dot.gov/comm/reports/safety/KY_detail1.html | Report generated on: 02/03/11

### Table 3-8: Indiana Pipeline Transmission Mileage by County

<table>
<thead>
<tr>
<th>County</th>
<th>Gas Miles</th>
<th>Liquid Miles</th>
<th>Percentage of All Indiana Pipeline Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dearborn</td>
<td>84</td>
<td>0</td>
<td>0.90</td>
</tr>
<tr>
<td>State Totals - Indiana</td>
<td>5,342</td>
<td>3,637</td>
<td>100</td>
</tr>
</tbody>
</table>

Table extracted from http://primis.phmsa.dot.gov/comm/reports/safety/IN_detail1.html | Report generated on: 02/03/11

### Table 3-9: Total Pipeline Transmission Mileage for the OKI Region

<table>
<thead>
<tr>
<th></th>
<th>Gas Miles</th>
<th>Liquid Miles</th>
<th>Total Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>OKI Regional Total</td>
<td>650</td>
<td>254</td>
<td>904</td>
</tr>
</tbody>
</table>

Source: previous three tables

#### 3.7 Definitions of Pipeline Commodities Found in the OKI Region

##### 3.7.1 Natural Gas

Natural gas is an odorless, colorless gas consisting primarily of methane but also including significant quantities of ethane, propane, butane, and pentane (heavier hydrocarbons removed prior to use as a consumer fuel), as well as carbon dioxide, nitrogen, helium, and hydrogen sulfide. Natural gas has three sources: deeply buried with petroleum or oil in sedimentary rocks, non-fossil organic material decayed by anaerobic bacteria in marshes, bogs, and landfills, or produced by gasification of coal. Natural gas is the cleanest burning fossil fuel and is used for cooking and heating homes. It is believed to have formed from the compacted remains of marine organisms.

There are a number of companies operating natural gas pipelines in the OKI region, accounting for a majority of the pipeline operations in the area. It is difficult to obtain operation statistics specific to the OKI region however, summary information about the Midwest region was available from the U.S. Department of Energy.

Twenty-six interstate and at least eight intrastate natural gas pipeline companies operate within the Midwest region (Illinois, Indiana, Michigan, Minnesota, Ohio and Wisconsin). The principal sources of natural gas supply for the region are production areas in the Southwest, although Canadian natural gas pipelines now account for about one-fourth of natural gas pipeline capacity entering the region.
region. Regional natural gas production, principally from Ohio and Michigan, accounts for little more than eight percent of the gas consumed in the region.

Traditionally, the principal sources of natural gas for the Midwest Region have been the panhandles of west Texas and Oklahoma, eastern Texas, and Kansas and Louisiana. However, by the close of 2009, when the new Rockies Express East pipeline was completed, the ability to transport up to 1.8 billion cubic feet (Bcf) per day of natural gas directly from the Central Region's Rocky Mountain area to the Midwest region became possible.

In the first quarter of 2009, approximately 17 Bcf per day of the 28 Bcf per day of peak-day capacity (61 percent) entering the Midwest via the interstate network came from production areas in the Southwest region. The interstate pipeline systems that provide this transportation capacity are some of the largest in the nation. Two of those pipeline systems—ANR Pipeline Company (ANR) and Natural Gas Pipeline Company of America (NGPLA)—operate on corridors that transport supplies from the Texas, Oklahoma, Kansas and Louisiana production areas. NGPLA provides about 12 percent (3.4 Bcf per day) of the total throughput capacity into the region and terminates in the Chicago, Illinois area. ANR can transport 2.0 Bcf per day into the region and operates in all Midwest states except Minnesota, terminating in Michigan and Indiana.

Three systems—Northern Natural Gas Company, Panhandle Eastern Pipeline Company and Centerpoint Mississippi River Transmission Company—transport gas to the Midwest from the Texas/Oklahoma/Kansas production area, while four others—Texas Gas Transmission Company, Trunkline Gas Company, Texas Eastern Pipeline Company, and Tennessee Gas Pipeline Company systems—begin in Louisiana and east Texas and proceed directly north into the Midwest region. However, most of the capacity on the latter two systems is intended for markets in the Northeast, with few or no deliveries within the Midwest region itself.5

3.7.2 Product

Pipelines transport refined products to terminals or local distribution centers. Refined products are then distributed to the companies and consumers who rely on a steady and economically transported supply of these products. These refined product pipelines vary from a relatively small eight- to 12-inch diameter to 42-inch diameter.

3.7.3 Crude

Petroleum or crude oil is the naturally occurring, unrefined (not usable) form in which oil is initially extracted directly from geologic formations or reservoirs beneath the Earth's surface. Crude is a flammable liquid that consists of a complex mixture of hydrocarbons of various molecular weights, and other organic compounds such as oxygen, nitrogen and sulfur impurities. Crude remains liquid at atmospheric pressure. This fossil fuel is a remarkably varied substance, both in its use as a source of energy, and its composition. It can be a straw-colored liquid or tar-black solid. Red, green and brown hues are not uncommon.

5  http://www.eia.doe.gov/pub/oil_gas/natural_gas/analysis_publications/ngpipeline/midwest.html
3.7.4 Petroleum

At least one major oil pipeline, the Mid-Valley Pipeline, crosses through the OKI region. This pipeline is operated by the Mid-Valley Pipeline Company, beginning in Louisiana and terminating in Lima, Ohio. It is inconclusive whether this pipeline contributes to the local economy or simply passes through the area.

3.7.5 Other

There is at least one steel maker (AK Steel) listed as a pipeline operator in the OKI region, although the company does not disclose what type of pipeline it operates. Due to the energy intensiveness of steel production, it is likely that this is a natural gas pipeline.

3.7.6 Intermodal Pipeline/River Terminal Operations

While there are many river terminals in the OKI region, there are only a few that handle pipeline products. A definitive source on river terminals could not be found because of U.S. security measures. The largest operator of river terminals with pipeline operations in the OKI region appears to be Kinder Morgan which has at least five terminals in the area, however, it is not known whether all of these terminals have pipeline operations. Although not an exhaustive or list, the following companies likely have pipeline river terminal operations:

- **Arrow Trading LP** (Ghent, KY) – No additional information on this terminal could be found. Arrow Trading may or may not handle pipeline products.
- **Buckeye Pipe Line Company** (Cincinnati, OH) – Buckeye Pipeline Company owns and operates one of the largest independent refined petroleum products pipeline systems in the U.S. in terms of volumes delivered, with approximately 5,400 miles of pipeline; owns 69 active refined petroleum products terminals; operates and maintains approximately 2,400 miles of pipeline under agreements with major oil and chemical companies; owns a major natural gas storage facility in northern California; and markets refined petroleum products in certain of the geographic areas served by its pipeline and terminal operations.⁶
- **Kinder Morgan Terminals** (Cincinnati, OH) – Kinder Morgan is the largest independent terminal operator in North America. They have more than 180 terminals that store petroleum products and chemicals, and handle bulk materials like coal, petroleum coke, and steel products. Kinder Morgan operates multiple river terminals within the OKI region.⁷
- **Liquid Transfer Terminals Ohio** (Cincinnati, OH) – No additional information on this terminal could be found. Liquid Transfer Terminals Ohio is listed as a chemicals company and may or may not handle pipeline products.
- **River Transportation Company** (Cincinnati, OH) – River Transportation Company is listed as an oil field service company. No additional information could be found.

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3.8 Pipeline Operators

The following companies are identified as pipeline operators by the PHMSA within the OKI region:

- **AK Steel Corporation** is a world leader in the production of flat-rolled carbon, and stainless and electrical steel products, primarily for automotive, appliance, construction and electrical power generation, and distribution markets. The company operates seven steel plants and two tube manufacturing plants across four states—Indiana, Kentucky, Ohio and Pennsylvania.

- **BP Oil Pipeline Company** transports more than 450 million barrel miles of oil, refined products, natural gas liquids, carbon dioxide and chemicals daily—about nine percent of the U.S. liquids pipeline market. It is one of the largest liquids pipeline companies in the U.S.

- **Columbia Gas Transmission Corporation** transports an average of three Bcf of natural gas per day through a nearly 12,000-mile pipeline network in 10 states, serving hundreds of communities. Customers include local gas distribution companies, energy marketers, electric power generating facilities and hundreds of industrial and commercial end users. Columbia Gas Transmission also owns and operates one of North America’s largest underground natural gas storage systems, which include 37 storage fields in four states with nearly 600 Bcf in total capacity.

- ** Dominion Transmission, Incorporated** (headquartered in Richmond, Virginia) is the interstate gas transmission subsidiary of Dominion. The company is primarily a provider of gas transportation and storage services. Dominion operates one of the largest underground natural gas storage systems in the U.S. with links to other major pipelines and to markets in the Midwest, Mid-Atlantic and Northeast regions of the U.S. The company maintains 7,800 miles of pipeline in six states—Ohio, West Virginia, Pennsylvania, New York, Maryland and Virginia. They store and transport large quantities of natural gas for large customers such as major utilities and power plants.

- **Duke Energy** is one of the largest electric power companies in the U.S., supplying and delivering energy to approximately four million U.S. customers. The company has approximately 35,000 megawatts of electric generating capacity in the Carolinas and the Midwest, and natural gas distribution services in Ohio and Kentucky.

- **KO Transmission Company** is an interstate pipeline company engaged in the business of transporting natural gas in interstate commerce, under authorization granted by and subject to the jurisdiction of the Federal Energy Regulatory Commission. KO Transmission is a wholly owned subsidiary of Duke Energy.

- **Mid-Valley Pipeline Company** is a pipeline transportation of Crude Oil Company. Headquartered in Tulsa, Oklahoma, the branch office representing the OKI region is located in Burlington, Kentucky.

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10 [http://www.bppipelines.com/aboutus.html](http://www.bppipelines.com/aboutus.html)
Ohio Valley Gas Corporation provides natural gas distribution and transportation services to residential, commercial, industrial and governmental customers in 16 Indiana counties and one county in Ohio. The company’s various distribution systems are all connected to interstate pipeline systems operated by either Texas Gas Transmission, LLC (a wholly owned subsidiary of Boardwalk Pipeline Partners, LP) or ANR (a TransCanada company).15

Rockies Express Pipeline LLC (REX) is one of the largest pipelines ever constructed in the U.S. REX became fully operational in November 2009. The 1,679-mile pipeline stretches from northwestern Colorado to eastern Ohio and boasts 1.8 Bcf per day of capacity. REX is a joint venture of Kinder Morgan Energy Partners, Sempra Pipelines and Storage and ConocoPhillips.16

Texas Eastern Products Pipeline Company, LLC operates as a general partner for TEPPCO Partners, L.P, which operates common carrier pipelines of refined petroleum products and liquefied petroleum gases (LPGs). The company is based in Houston, Texas.17

Texas Eastern Transmission, LP and its subsidiaries engage in the interstate transportation and storage of natural gas. The company, with 8,700 miles of pipeline, connects Texas and the Gulf Coast with the markets in the northeastern U.S. It primarily serves local distribution companies, industrial end-users and natural gas marketers located in the Mid-Atlantic and northeastern states. Texas Eastern Transmission, LP is a subsidiary of Spectra Energy Corp.18

Texas Gas Transmission LLC is a long-haul interstate natural gas pipeline that moves gas from Gulf Coast supply areas to on-system markets in the Midwest and to off-system markets in the Northeast. Texas Gas is a wholly owned, operating subsidiary of Boardwalk Pipeline Partners, LP.19

Vectren Energy Delivery of Ohio is an energy holding company headquartered in Evansville, Indiana. Vectren's energy delivery subsidiaries provide gas and/or electricity to over one million customers in adjoining service territories that cover nearly two-thirds of Indiana and west central Ohio.20

15 http://www.ovgc.com/
16 http://www.kne.com/business/gas_pipelines/rockies_express/
17 http://investing.businessweek.com/businessweek/research/stocks/private/snapshot.asp?privcapId=7372077
18 http://investing.businessweek.com/research/stocks/private/snapshot.asp?privcapId=3033869
19 http://www.txgt.com/
4 Regional Freight Needs Assessment

4.1 Introduction
In identifying the regional freight needs assessment, a survey and a series of interviews were conducted to capture the behavior and preferences of shippers moving commodities into, out of, and within the OKI region. Following the shipper survey and interviews, a commodity flow assessment was conducted to analyze the goods flowing through the OKI region, including their directional flow, volume, and value. Based on the current flows, a demand forecast was derived to predict the future flow of goods in the OKI region. Finally, the needs assessment concluded with overlaying the shipper preferences and commodity flows, both current and forecasted, with existing conditions of the freight infrastructure to determine the OKI region’s needs.

4.2 OKI Shipper Survey and Interviews

4.2.1 Introduction
Presented in this chapter is an analysis of surveys and interviews that were conducted with members of the Supply Chain Consortium and selected major shippers, logistics service providers and transportation service providers (or carriers) who were good candidates to have operations in the greater Cincinnati area. Complete survey responses were received from 43 companies and interviews were conducted with about 35 shippers. Finally, dozens of interviews were conducted with a number of transportation companies, such as area railroads, trucking firms, barge terminal operators, and air cargo operators.

The companies responding to the survey and the interview process represent a wide range of industries, segments and company sizes including local companies and large multi-national corporations from across the U.S. The 52 companies that did not provide complete responses to the survey provided partial responses indicating that they did not have, or did not anticipate having, distribution or transportation operations pertaining to the OKI region.

4.2.2 Interview Methodology
An Interview Guide and Web-based survey form were created based on similar surveys conducted through the Supply Chain Consortium and Tompkins Associates. Specific questions were included, as well as more open-ended probes that were designed to extract true views and ideas. All interviews with shippers and carriers were conducted under strict confidentiality agreements.

The online survey process of the Supply Chain Consortium is based on the collection of data from a large group of companies by asking a series of freight- and distribution-related questions. In addition, specific companies with known or potential operations in the region were interviewed by a professional interviewer on their operations and their perceptions of the freight infrastructure and policies for freight in the Southwest Ohio and Northern Kentucky region. The interviews were based on the survey questions, and in some instances, the same company provided information by both survey and participation in an interview.
4.2.3 Detailed Profile of Surveys and Interviews

The following provides detail on the survey and interview population and their responses to queries about regional transportation issues. Figure 4-1 shows the breakdown of respondents by industry type.

Figure 4-1: Survey and Interview Breakdown

While there was more participation by logistics service providers, this sector represents a wide variety of shipper’s who do not contract their transportation or distribution of product directly with the transportation service providers. Therefore, a response from a logistics service provider could represent hundreds of individual shippers, thus extending the reach of the survey. Figure 4-2 shows that 83 percent of participants were medium-sized companies or smaller.
As shown in Figure 4-3, 52 percent of the respondents indicated they have operations of some sort in the OKI region. More than half of those firms have headquarters or a regional administration function, which would be expected given Cincinnati’s rich history of business enterprises. Approximately 20 percent of the firms with a Cincinnati presence have multiple operations.

The “Other” category represents logistics service providers’ facilities or pure freight terminals not associated with a specific company. “Inbound” freight is defined as freight with an origin outside of the region and a destination point within the region and does not include cargo moved “within” or “through” the region. Figure 4-4 indicates the commodity type for firms bringing goods and materials
into the region. For instance, 82 percent of the companies responding bring finished goods into the region.

**Figure 4-4: Inbound Freight Movement**

![Bar chart showing inbound freight movement](source)

“Outbound” freight is defined as freight with an origin point within the OKI region and a destination outside of the region. Figure 4-5 shows that 88 percent of the firms move finished goods out of the region, which indicates a strong distribution and shipping network.

**Figure 4-5: Outbound Freight Movement**

![Bar chart showing outbound freight movement](source)
Firms were asked what their relative volumes by weight of goods brought into the OKI region was and the modes with which they transited during the previous 12 months. Results are shown in Table 4-1.

### Table 4-1: Mode Breakdown

<table>
<thead>
<tr>
<th>Mode</th>
<th>Percentage Using</th>
<th>&lt; 5%</th>
<th>5% – 10%</th>
<th>11% – 25%</th>
<th>26% – 40%</th>
<th>&gt; 40%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steamship/international intermodal container</td>
<td>23.3%</td>
<td>50.0%</td>
<td>–</td>
<td>10.0%</td>
<td>10.0%</td>
<td>30.0%</td>
</tr>
<tr>
<td>Barge</td>
<td>18.6%</td>
<td>50.0%</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>50.0%</td>
</tr>
<tr>
<td>Air</td>
<td>16.3%</td>
<td>42.9%</td>
<td>14.3%</td>
<td>14.3%</td>
<td>–</td>
<td>28.6%</td>
</tr>
<tr>
<td>Unit train</td>
<td>14.0%</td>
<td>100.0%</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Manifest carload train</td>
<td>16.3%</td>
<td>42.9%</td>
<td>28.6%</td>
<td>–</td>
<td>–</td>
<td>28.6%</td>
</tr>
<tr>
<td>Domestic Intermodal rail (containers or trailer on flat car)</td>
<td>16.3%</td>
<td>71.4%</td>
<td>28.6%</td>
<td>–</td>
<td>–</td>
<td>28.6%</td>
</tr>
<tr>
<td>Full truckload</td>
<td>48.8%</td>
<td>4.8%</td>
<td>4.8%</td>
<td>4.8%</td>
<td>23.8%</td>
<td>61.9%</td>
</tr>
<tr>
<td>Other truck/specialized vehicle</td>
<td>20.9%</td>
<td>33.3%</td>
<td>11.1%</td>
<td>44.4%</td>
<td>–</td>
<td>11.1%</td>
</tr>
<tr>
<td>LTL</td>
<td>37.2%</td>
<td>31.3%</td>
<td>31.3%</td>
<td>12.5%</td>
<td>12.5%</td>
<td>12.5%</td>
</tr>
<tr>
<td>Small Package/parcel</td>
<td>25.6%</td>
<td>72.7%</td>
<td>18.2%</td>
<td>–</td>
<td>–</td>
<td>9.1%</td>
</tr>
</tbody>
</table>

**Source:** Tompkins Shipper Survey

Percentages do not add up to 100 percent as cargo modes overlap and modal transfers occur within the supply chain. The most significant finding is the amount of cargo moved by full truckload. Forty-nine percent of the firms use this mode with 62 percent of the firms using full truckload for more than 40 percent of their total transportation effort.

A key aspect to this data is that 56 percent of the firms move a majority (more than 40 percent) of their inbound freight by motor vehicle (full truckload, LTL, other (drayage) and small package/parcel) while 29 percent of the firms use rail as their significant mode of transportation (more than 40 percent.)

The same information was requested for outbound cargo movements with similar results (Table 4-2). Again, trucking and motor freight is significant. Eighty-six percent of the 50 percent of the respondents that use full truckload for inbound moves of more than 25 percent of their total freight have outbound figures that are skewed slightly toward more freight outbound by truck than inbound. This causes a potential imbalance of moves and has typically resulted in a difference in freight charges.
The same balance issue comes from the rail numbers, especially the intermodal containers, which show slightly more outbound cargo movements than inbound. Based on the statistical variations of the data, the imbalance for rail is not significant enough to cause a wide swing in pricing. For trucking, that may or may not be the case.

The key findings from forecasted freight moves (Table 4-3) show that both inbound and outbound flows are projected to remain aligned with 50 percent of the companies seeing increases in 2011, 65 percent seeing increases in 2012, and 75 percent seeing increases over the next five years. This is a good indication that the economy is improving and that companies are preparing for this increase.

Shippers were asked what modal shifts in their transportation networks they foresee in the next two years (Table 4-4) and what would be the reasoning behind such shifts. Overall, 18 percent indicated that significant modal shifts are in their plans for the future. This is a relatively high number with a shift from full truckload to rail and a shift from LTL to full truckload. High modal
shifts would be consistent with larger volumes being moved and the desire to obtain better pricing from rail and full truckload carriers. The interviewers indicated the move to rail would be highly dependent on fuel prices and the “greening” or more environmentally conscious changes made to their supply chains.

Table 4-4: Modes Shifts Planned in the Next Two Years

<table>
<thead>
<tr>
<th>To Mode</th>
<th>From Mode:</th>
<th>Air</th>
<th>Less than Truckload (LTL)</th>
<th>Full Truckload</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Package</td>
<td></td>
<td>12.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full Truckload</td>
<td></td>
<td></td>
<td>37.5%</td>
<td></td>
</tr>
<tr>
<td>Manifest Carload Train</td>
<td></td>
<td></td>
<td></td>
<td>37.5%</td>
</tr>
<tr>
<td>Domestic Intermodal</td>
<td></td>
<td></td>
<td></td>
<td>12.0%</td>
</tr>
</tbody>
</table>

Source: Tompkins Shipper Survey

The reduction of air cargo carriers and the removal of larger passenger aircraft resulting in less belly cargo capability at CVG and Wilmington has caused several shippers to shift from air cargo to small package (FedEx, DHL, UPS, etc.) for better reliability even though the cost may be slightly higher.

4.2.4 Utilization of Ohio River Terminals

Shippers have access to Ohio River terminals, but their use of water transportation has been declining for several years with the mode of choice shifting to rail and truck. Part of this shift has been the closure of plants and facilities along the river and the reliability issue that is paramount to any shipper of goods and materials. Only 14 percent of the respondents stated they use the river for the transport of goods. All of these firms transport heavy or bulk products where other modes of transport were either prohibitive by costs or restrictions (high, wide, and heavy moves are substantially restricted on the highways).

Those firms that indicated they did not use water transportation gave the following reasons (Figure 4-6), with the most common being a lack of useful origin-destination pairs and the speed of transit for time-sensitive shipments.

Another key finding was the lack of direct access to many of the private terminals because of current or historical rail trackage rights. Also, significant concern was expressed over the often perceived inability to get the environmental permits to increase or significantly enhance their riverfront operations, including new access for both truck and rail.
4.2.5 Rail Freight

As indicated in the previous sections, rail plays a very important role in the movement of goods into, out of, and through the region. Rail does not play a significant role in the movement of goods within the region. Approximately 67 percent of respondents currently use rail services for transporting goods into and out of the greater Cincinnati area. Several firms are considering the use of rail over full truck load or a move by existing rail-served customers to increase their rail shipments.

The southwest Ohio and northern Kentucky region has a long history of commercial and industrial development being crafted by the numerous railroads that served or passed through Cincinnati in the past. The shift to intermodal containers, both domestic and international, has created a shift in the historical pattern of industrial rail sidings at plants and manufacturing facilities to inland intermodal yards (IYs) where high production loading and unloading of the containers is performed. This causes a secondary transportation link by truck (container on chassis) between the IY and the plant or facility, resulting in the elimination or removal of the typical rail industrial siding or spur.

Both CSX and NS are investing heavily in newer and more productive intermodal corridors and associated yards. These investments by the private sector (railroads and terminal operators) and the public sector will result in more rail capacity, speed and reliability for the rail shipper. However, these improvements have not been made, and thus many shippers have not realized the potential for these services. On the other hand, the railroads have not firmed up their operational parameters, which will drive costs, speed, and reliability to the shippers based on these planned improvements.

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21 Domestic containers are lighter in weight and larger (48 feet and 53 feet) than international containers, which are specifically designed to be stowed on ocean-going container vessels. Double stack intermodal trains can accommodate both domestic and international containers.
Thus, current shipper reactions are based on known and proven service. For those firms who did not choose to use rail transportation, the lack of useful origin-destination pairs and speed of transit were the most common reason provided (Figure 4-7). These two factors are also the most common reasoning for using truck and motor freight as the preferred mode of choice.

Figure 4-7: Utilization of Rail Transportation

The survey also queried shippers as to their knowledge and preparation for enhanced and more reliable rail service, specifically identifying several key services that could have significant positive impacts on the shippers in the region, such as the Heartland Corridor. These are identified in Table 4-5 with the associated awareness response.

Table 4-5: Awareness of New Rail Services

<table>
<thead>
<tr>
<th>Shipper Was Aware of New/Future Rail Service</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Expansion of Norfolk-Southern's Heartland corridor intermodal service into Cincinnati</td>
<td>52.9%</td>
</tr>
<tr>
<td>Planned freight service improvements in the Cincinnati - Columbus-Cleveland corridor (Ohio 3C Project)</td>
<td>42.4%</td>
</tr>
<tr>
<td>Expedited intermodal service through CSX’s North Baltimore (Toledo), OH, terminal</td>
<td>51.5%</td>
</tr>
<tr>
<td>Direct rail connections through Memphis</td>
<td>42.4%</td>
</tr>
<tr>
<td>Direct rail connections through Chicago and St. Louis</td>
<td>60.6%</td>
</tr>
</tbody>
</table>

Considering the respondents’ high utilization of rail in the area, awareness of new service offerings was relatively low. No respondent saw any of the new services as a reason to decrease their rail
utilization. Of the respondents who saw the new service offerings as a reason to increase rail utilization, the majority based their expectations on improved intermodal service with a small number of firms (four percent) seeing a significant increase in their intermodal rail shipments as a result of all improvements (Table 4.6).

<table>
<thead>
<tr>
<th>Table 4.6: Effect of New Rail Services on Change in Rail Shipments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service</td>
</tr>
<tr>
<td>NS Heartland Corridor expansion</td>
</tr>
<tr>
<td>Ohio 3C Project</td>
</tr>
<tr>
<td>Expedited intermodal via CSX</td>
</tr>
<tr>
<td>Direct rail connections through Memphis</td>
</tr>
<tr>
<td>Direct rail connections through Chicago and St. Louis</td>
</tr>
</tbody>
</table>

Source: Tompkins Shipper Survey

It appears from the responses that rail shippers, especially those moving toward rail or greater rail usage, are in a “wait and see” mode and not in a position to commit to increased rail usage.

4.2.6 Distribution Network Changes

Based on new rail potential capacities and service, trucking regulations, existing infrastructure and planned infrastructure improvements, shippers were queried as to their plans for developing new or increasing their existing capability for their supply chain operations. Approximately 30 percent of the respondents indicated they were going to add new or enhanced supply chain operations with 30 percent of those firms looking at the Great Lakes and greater Ohio River/Mississippi River region for the location of their additions or improvements. Sixty-seven percent of the 30 percent indicated that the greater Cincinnati region would be their first choice for expansion. While this is positive, virtually all of the respondents indicated concerns over the following factors that they would need to address as part of their decision making process:

- The improvement of all aspects of the Cincinnati/Northern Kentucky International Airport’s passenger service (frequency, service routes and size of aircraft); air cargo and parcel capabilities.
- The availability of empty containers resulting from a current imbalanced flow of containerized goods.
- The transport cost of freight for each mode.
- The cost of raw materials.
- Having proximity to river and the ability to move bulk products given current environmental concerns.
- The ability to consolidate both manufacturing and distribution facilities outside Cincinnati area.
- The ability to ship to and from major port facilities in North America with particular interest in shipping from the Northeastern U.S.
4.2.7 Perception of the Regional Transportation Network

Based on the above, shippers were queried on their perception of the region’s transportation system, with questions ranging from policy to infrastructure to perceptions of business climate. The respondents were asked to rate several of these systematic areas in terms of strength (meaning this component is a key feature to the shipper using the region as a base for their operations) or a weakness (meaning they would use this reason to reduce their operations in the region).

As shown in Table 4-7, the key strengths deal directly to the movement of goods and materials by road or rail and access to market drivers, being either customers or suppliers. The largest weakness is the lack of access to a major seaport complex or gateway. Virtually every respondent spoke about the current and future business climate for the nation, the states (Ohio, Kentucky, Indiana) and the region. These issues ranged from additional costs (taxes, tolls) to uncertainty on the direction of infrastructure funding, capacities and other safety or security related policies.

Table 4-7: Rating Factors of the OKI Region’s Transportation System

<table>
<thead>
<tr>
<th></th>
<th>Strength</th>
<th>Average</th>
<th>Weakness</th>
<th>Not sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation costs/issues</td>
<td>8.1%</td>
<td>62.2%</td>
<td>10.8%</td>
<td>18.9%</td>
</tr>
<tr>
<td>Highway capacity</td>
<td>27.0%</td>
<td>48.6%</td>
<td>10.8%</td>
<td>13.5%</td>
</tr>
<tr>
<td>Rail connections with national rail system</td>
<td>29.7%</td>
<td>40.5%</td>
<td>2.7%</td>
<td>27.0%</td>
</tr>
<tr>
<td>Population</td>
<td>10.8%</td>
<td>62.2%</td>
<td>8.1%</td>
<td>18.9%</td>
</tr>
<tr>
<td>Labor costs/issues</td>
<td>15.8%</td>
<td>57.9%</td>
<td>5.3%</td>
<td>21.1%</td>
</tr>
<tr>
<td>Legislative business climate</td>
<td>8.1%</td>
<td>27.0%</td>
<td>24.3%</td>
<td>40.5%</td>
</tr>
<tr>
<td>Transportation service reliability</td>
<td>13.5%</td>
<td>75.7%</td>
<td>-</td>
<td>10.8%</td>
</tr>
<tr>
<td>Seaport access</td>
<td>11.1%</td>
<td>25.0%</td>
<td>30.6%</td>
<td>33.3%</td>
</tr>
<tr>
<td>Access to customers/markets</td>
<td>44.4%</td>
<td>36.1%</td>
<td>8.3%</td>
<td>11.1%</td>
</tr>
</tbody>
</table>

Source: Tompkins Shipper Survey

A follow-up question was asked of the participants to rate the greater Cincinnati region in the terms “best” and “worst” to other regional transportation system alternatives (Table 4-8). While most responses were average, the following ratings were noted:

- Air service ranked as worst by more than those who felt it was above average or greater.
- Waterways ranked as above average or best by almost 47 percent of the respondents.
- More respondents ranked road and bridge capacity/condition below the average than above the average.

Table 4-8: Greater Cincinnati Transportation Facilities Compared to Regional Alternatives

<table>
<thead>
<tr>
<th>Network Component</th>
<th>Best</th>
<th>Above Average</th>
<th>Average</th>
<th>Below Average</th>
<th>Worst</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air service</td>
<td>5.3%</td>
<td>5.3%</td>
<td>68.4%</td>
<td>15.8%</td>
<td>5.3%</td>
</tr>
<tr>
<td>Waterways</td>
<td>15.8%</td>
<td>31.6%</td>
<td>42.1%</td>
<td>10.5%</td>
<td>-</td>
</tr>
<tr>
<td>Rail service</td>
<td>-</td>
<td>26.1%</td>
<td>73.9%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Road and bridge capacity/condition</td>
<td>3.1%</td>
<td>18.8%</td>
<td>50.0%</td>
<td>18.8%</td>
<td>9.4%</td>
</tr>
</tbody>
</table>

Source: Tompkins Shipper Survey
Participants were asked to rank OKI's multi-modal transportation network compared to other regional alternatives, specifically to competitive regions of Chicago, Columbus, Detroit, Memphis, and Indianapolis (Figure 4-8). This is an important question, as it demonstrates the thinking of the decision makers (factually and perceived) on how they rate the Cincinnati region's transportation systems when directly compared with other competitive alternatives.

As a result of some of the issues identified above, participants were asked what adjustments, if any, have they made to overcome infrastructure deficiencies in Cincinnati and how costly have the changes been (Table 4-9).

Thus, a significant number of firms have made adjustments and those adjustments have added little or no significant costs to their supply chain.
Table 4-9: Costliness of Change to Overcome OKI Area Infrastructure Deficiencies

<table>
<thead>
<tr>
<th>Respondents Who Made Adjustments</th>
<th>Costliness of change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>None</td>
</tr>
<tr>
<td>Carrier changes</td>
<td>44.2%</td>
</tr>
<tr>
<td>Supplier changes</td>
<td>30.2%</td>
</tr>
<tr>
<td>Routing changes</td>
<td>39.5%</td>
</tr>
<tr>
<td>Process changes</td>
<td>32.6%</td>
</tr>
<tr>
<td>Metrics changes</td>
<td>27.9%</td>
</tr>
</tbody>
</table>

Source: Tompkins Shipper Survey

4.2.8 Interview Findings

The interviews with shippers and carriers provided additional depth to the survey responses. From the interviews, transportation companies and their customers formed these basic conclusions about the region’s freight system:

- Across all modes, inbound and outbound transportation appears balanced for the greater Cincinnati area and are forecasted to remain so.
- Sixty percent of survey respondents forecast shipping volumes to increase in the next 24 months. Thirty-three percent predict increases of greater than 10 percent in the next 12 months. However, minor modal shifts should be anticipated.
- Road capacity, specifically the Brent Spence Bridge, is a primary concern.
- There is a high amount of concern and interest in future industrial river development and having the ability to access river terminals by road and/or rail.
- Area businesses are concerned about the reduced airline (both passenger and cargo) presence at CVG and see this as a substantial barrier to increased or new business.
- Sixty-six percent of respondents ship via rail into or out of the region. However, awareness about new rail services such as CSX North Baltimore or NS Heartland Corridor was relatively low.

Findings – Logistics and Transportation Firms

- There is a perception that Queensgate rail yard is inefficient and would require significant investment to be efficient.
- Rail shippers are seeking alternatives to bypass Chicago because of delays and reliability and have a high degree of interest in an Ohio solution.
- Cincinnati’s transportation network is ranked as “average” across all modes when compared to other regional alternatives, with perceived opportunities to improve in all areas.
- Cincinnati’s main transportation issues include highway and rail congestion. Highway congestion is a common problem during peak travel times. Rail congestion includes the unloading of rail cars at the yard. Shippers have the freight cleared through customs before reaching the yard and want immediate access to their products.
- Many shippers and transportation service providers see an increased use of rail as a result of escalating fuel costs and the passing of CSA 2010 (new motor carrier safety regulations, which many believe will drive independent truck drivers out of business and increase costs).
Respondents note roads (infrastructure) around the railroad terminals need to be improved to ease the transition from trucks to rail by containers.

Certain views that the region is not doing enough to “market” itself to capitalize on the new Panama Canal upgrades to be completed in 2014—“Cincinnati should have a representative visiting the Port of New Orleans,” as a result of the Panama Canal upgrades it is still to be determined if more East Coast ports will be used which would cause an increased use of rail and the NS Heartland Corridor.

Rail is relatively expensive to steamship lines. Same respondent noted that steamship lines may stop servicing inland ports and require the shipper to arrange for transportation to the port.

Transportation service providers want OKI to encourage large local businesses to use rail, which would free up the congestion in the freeway.

Disappointment from many regarding the pull out of Delta International flights from the Cincinnati airport; only one flight a day to Paris has hurt local transportation service providers’ business. The continued reduction of aircraft coming in and out of CVG will be an issue for local businesses going forward.

**Findings – Shippers**

- In general, outbound freight is dictated by the end-user, and local companies are not as concerned about the efficiency.
- Shippers perceive that the local rail yards are outdated and have had issues finding rail cars. It typically takes about a day to get the car to a position.
- Interest in routing rail cargo into Columbus to divert around Chicago. As a result of rail congestion in Chicago, products may be held-up several days. Shippers can get items quicker if they come into Columbus or Cincinnati rails and then are trucked into their facility versus trucking in from Chicago.

**Findings – Government Entities**

- Greater Cincinnati Chamber has 15 industry sectors identified as a competitive advantage for the region. Cincinnati should determine the transportation needs for the industries targeted for growth, and align investments with the business attraction and retention strategies.
- Cincinnati needs to determine the economic return on investment, develop a regional strategy and determine the road blocks. They need to organize an economic development investment strategy with components focused on increasing a funding strategy.
- The question is how to tie the local interests together to get projects done. Projects should be driven by public-sector political interest and not private-sector political interest.
- OKI needs to incentivize private investment.
- OKI needs to encourage industries to place new buildings near rail access and locate industrial parks with rail access. Industrial parks need land to be designated for rail access.
4.3 Regional Commodity Flow Forecast

The commodity flow profile and forecast for the OKI region, as presented in this section, are based on the IHS Global Insight forecasts (see Appendix A). This section provides truck and train counts and a high level narrative to the commodity flows developed by IHS Global Insight; and puts the forecasts in the context of the infrastructure needs of the OKI region. In addition, this section analyzes the impact of several pending transportation developments on the region’s commodity flow patterns.

4.4 Existing Commodity Flow Profile

4.4.1 Cargo flows by direction

In 2009, the infrastructure network in the OKI region handled approximately 309 million tons of freight. It is estimated that 59 percent of the freight tonnage recorded in the OKI transportation system is “through” traffic, a significant portion of which is composed of Midwestern exports of farm products and automobiles to the Southeast. Imports and exports accounted for 22 percent and 15 percent of the freight tonnage, respectively, and the remaining four percent were intraregional flows. Figure 4-9 shows a breakdown of cargo flows by direction.

![Figure 4-9: Breakdown of OKI Region Cargo Tonnage by Cargo Direction](image)

Source: IHS Global Insight

The region imported more than it exported in 2009 in terms of both cargo tonnage (imports 44 percent higher than exports) and value (one percent higher). The significant difference between these percentages is because the OKI region exports, such as motor parts from the Toyota facility in
Erlanger and food products from Schwans, are relatively high in value and low in weight relative to the major imports, which include bulk materials such as coal and minerals. Figure 4-10 and Figure 4-11 illustrate these inbound and outbound cargo trends.

**Figure 4-10: Origins of Inbound Freight, 2009**

Source: IHS Global Insight
Inbound. In 2009, inbound freight flows to the OKI region totaled 66.9 million tons, with an aggregated value of $53.1 billion. The major commodities in terms of volume included coal, nonmetallic minerals, primary metal and chemical products—raw materials in support of OKI region’s heavy industries; agricultural products for food processing; and, food products, secondary cargo (movements between warehouses and/or retail locations) and petroleum for local consumption. In terms of value, electronic equipment, transportation equipment and machinery enter the “top ten” list, displacing the heavier, but significantly less valuable commodity groups such as concrete and nonmetallic minerals from the “top ten” volume list.

Outbound. In 2009, outbound freight flows from the OKI region totaled 46.4 million tons, with an aggregated value of $52.5 billion. The major commodities in terms of volume included nonmetallic minerals, secondary traffic, food products and chemical products—mainly outputs of OKI region’s heavy industries such as AK Steel.

Through Flows. For the purpose of this study, through traffic consists only of cargo traversing the OKI region via the truck and rail modes. Together, this cargo is estimated to have amounted to 183 million tons in 2009. The major commodities travelling through the OKI region include grains, other agricultural products, fertilizers and base metals. Figure 4-12 represents total cargo flows by mode.
4.4.2 Cargo Flows by Mode

**Truck**

Truck transportation is the mode that handles the most freight flows in the OKI region in terms of both tonnage and value. In 2009, trucks transported approximately 186 million tons of cargo into, out of, and through the OKI region. Of the 186 million tons, 54 percent was through traffic, imports and exports representing 20 percent and 19 percent, respectively, and the remaining six percent was intraregional flows. Figure 4-13 shows the total truck traffic in the OKI region. Further details on each of the cargo flow directions follow.

**Inbound.** Trucks accounted for 54 percent of all inbound freight flows to the OKI region in 2009. As truck transportation is a relatively expensive mode, truck trips tend to be shorter on average and trucks tend to carry goods that are higher in value compared to barge and rail. According to IHS Global Insight, more than 72 percent of the OKI region’s inbound freight flows originated from other Ohio, Kentucky, and Indiana counties. The major inbound commodities carried by truck include nonmetallic minerals and construction material primarily from other Ohio counties, foodstuffs from Cleveland and Cincinnati, and farm products (such as corn, soybeans, and livestock) from other Ohio counties and from the Norfolk, Virginia, Indianapolis, Indiana, and Chicago, Illinois regions.

**Outbound.** Of all transportation modes, truck transportation dominated the OKI region’s outbound cargo flows in 2009, representing 77 percent of total outbound tons. The vast majority (67 percent) of outbound truck flows, which included commodities such as nonmetallic minerals, manufactured food products, chemical products, and secondary traffic, were destined for Ohio, Kentucky, and Indiana.
regions. Approximately 11 percent of the flows were destined for elsewhere in the Midwest, eight percent destined for the Northeast and the remainder for southern and western states. The reach of truck origins and destinations for outbound truck traffic is very similar to that of inbound truck traffic.

**Through.** In terms of through truck traffic in the OKI region, cargo primarily flows in the directions of southeast and northwest. Cargo originating in the Midwest and destined for the Southeast made up the majority of OKI through commodity flows in 2009—one third in terms of tonnage. These flows were primarily grains and other agricultural products produced in the grain belt (Minnesota, Iowa, Illinois and Nebraska) destined for consumption in Kentucky, Tennessee, West Virginia, and Virginia.

**Figure 4-13: Total Truck Cargo Flows by Direction, 2009**

- **Inbound**: 20%
- **Outbound**: 19%
- **Intra**: 7%
- **Through**: 54%

*Source: IHS Global Insight*

**Rail**

In 2009, the OKI region’s rail system is estimated to have handled over 33,000 trains carrying cargo into, out of, and through the area. Compared to truck, rail transported cargoes tend to be heavier and to travel longer distances. Figure 4-14 shows the total rail traffic in the OKI region. Further discussion on the rail flows by direction is as follows:

**Inbound.** Compared to truck, rail made up a smaller percentage of inbound freight flows to the OKI region, accounting for approximately 21 percent in 2009. The distance of the cargoes’ origins are much further relative to trucked inbound cargo—only 52 percent of inbound OKI rail flows (compared to 67 percent for truck) were from other Ohio, Kentucky and Indiana counties, while 18 percent originated in the Northeast, 8 percent from the Midwest, five percent from the Southeast, and the remaining 17 percent from the southern and western regions of the country. The major flows...
include base metal products from Pittsburgh, Detroit and other Ohio and Kentucky counties (outside the OKI region); coal from other Ohio counties and West Virginia; food products from the greater Illinois region and mixed freight from the Chicago area.

**Outbound.** In 2009, rail was responsible for 14 percent of outbound freight flows from the OKI region. Almost half of the outbound rail freight is northbound, primarily headed to Michigan and other Indiana counties. The major commodities for these destinations include primary metals, chemicals and coal products. Northeast flows (to the northeastern U.S. states and Eastern Canada) accounted for about 15 percent of total outbound rail freight from the OKI region, and are comprised mainly of machinery and nonmetallic minerals. The remaining 35 percent of outbound flows are destined for the southern and western regions of the country, reaching as far south as Mexico and as far west as California.

**Through.** Most of the rail through traffic in the OKI region represents cargo flows between the Southern states east of the Mississippi, Chicago connections and the Midwest. According to FHWA FAF3 data for 2009, fertilizers, base metals, and waste and scrap make up the majority of the “through” cargo in the northbound direction, while grain shipments from the Grain Belt dominate southbound flows.

**Figure 4-14: Total Rail Cargo Flows by Direction, 2009**

![Pie chart showing rail cargo flows](image)

Inbound 12%  
Outbound 6%  
Through* 82%  
Intra 0%

**Source:** IHS Global Insight

**Barge**

In 2009, the Ohio and Mississippi river barge system handled a total of 21.6 million tons, or $6.1 billion worth of cargo that was bound for/originated from the OKI region. Inbound traffic accounted for 80 percent, dominating total barge cargo flows. Figure 4-15 shows the total barge traffic in the OKI region.
**Inbound.** Barge transportation accounted for 25 percent of total freight flows (in tonnage) in 2009. Coal, primarily from Kentucky and Ohio counties outside of the OKI region, made up almost half of inbound barge cargo. Other major commodities included chemicals (10.4 percent) from the New Orleans region and nonmetallic minerals and gravel (11.2 percent) from Michigan and Louisville.

**Outbound.** Barge transportation plays a much smaller role in the OKI region’s outbound than inbound commodity flows, accounting for only nine percent of total outbound flows in 2009. Outbound barge freight is largely southbound, with the primary flows being farm products and coal destined for New Orleans and Alabama, and crude petroleum products for West Virginia.

**Figure 4-15:** Total Barge Cargo Flows by Direction, 2009

- **Inbound:** 80%
- **Outbound:** 19%
- **Intra:** 1%

Source: IHS Global Insight

**Air**

CVG handled 57,429 tons or $371 million in cargo flows into and out of the OKI region in 2009. Because of relatively high costs associated with air transportation, this mode is generally used only to move time-sensitive or high-valued goods and makes up a small portion of total freight flows in the OKI region in terms of both value and tonnage. The capacity for belly cargo is decreasing because of U.S. airlines shift to using more regional jets, which have less cargo space than larger aircraft. CVG has not been immune to this trend in regional jets. Also at CVG, both DHL and FedEx have operations at the airport, with DHL using the airport as a hub for its international freight shipments and FedEx using the airport as a local point of origin and destination (non hub). Because DHL has not consistently used the airport for its hub operation, the level of air cargo activity at the airport
has fluctuated and not been consistent with the cargo activity in the U.S. Figure 4-16 shows the total air traffic in the OKI region.

**Inbound.** Air transportation represented only 0.1 percent in inbound freight tonnage (and 0.3 percent in cargo value) to the OKI region in 2009. A majority (41.6 percent) of the cargo is from the southern and western regions of the country. Major commodities transported include high-value machinery, chemicals and time-sensitive perishable items such as fresh fish and marine products.

**Outbound.** Air transportation made up only 0.1 percent of outbound freight tonnage (and 0.2 percent in cargo value) from the OKI region in 2010. The vast majority (more than 96 percent) of the cargo was miscellaneous mixed shipments destined for the Northeast and Southwest markets.

![Figure 4-16: Total Air Cargo Flows by Direction, 2009](source: IHS Global Insight)

### 4.5 Freight Flow Forecasts, 2009-2040

#### 4.5.1 Baseline Forecast

Freight volumes in the OKI region are forecasted to increase by 56 percent in the OKI region by 2040. A summary of the key forecast findings are as follows:

**Overall**
- Overall freight tonnage is expected to increase from 323 million tons in 2009 to 487 million tons in 2040—a compound annual growth rate (CAGR) of 1.3 percent.
In terms of tonnage, outbound flows are forecasted to grow the fastest; in terms of value, inbound flows are expected to increase faster. This suggests that over the next 30 years, the OKI region will be importing commodities that have a higher value per ton (such as electronics) than the goods it exports (such as steel products) to other regions.

In terms of commodities, secondary traffic is expected to have the highest growth by value and volume. On the other hand, tonnage of the largest existing commodity—farm products—is expected to decrease at an average annual growth rate of 0.4 percent over the forecast period. Coal flows in the region are also forecasted to slightly decrease by 2040.

**Forecast by Mode**

Air transport is predicted to be the fastest growing mode (CAGR 2.7 percent) followed by truck (CAGR 1.6 percent). Water and rail are forecasted to grow at a lower growth rate (CAGR 0.2 percent) than overall volumes (CAGR 1.0 percent).

Truck traffic is forecasted to increase from 9.8 million loaded trucks in 2009 to 16.0 million loaded trucks by 2040. Outbound truck count forecasts are estimated to slightly outpace the growth of inbound truck traffic with a CAGR 1.9 percent versus inbound traffic’s CAGR 1.8 percent. Through traffic will increase at a slightly lower CAGR of 1.6 percent from 2009 to 2040.

Rail traffic is estimated to increase from approximately 33,000 trains per year in 2009 to 45,000 trains per year in 2040. This is an increase of approximately 40 trains per day by 2040.

Presented in Table 4-10 through Table 4-14 are the 30-year forecasts of cargo flows in the OKI region by mode. Table 4-10 presents truck cargo, but it should be noted that several types of trucks are not captured by TRANSEARCH® or USDOT freight databases, including unloaded trucks, certain small trucks, single unit, dump trucks, and panel trucks used in local commerce.

**Table 4-10: OKI Region Truck Cargo and Loaded Truck Traffic Forecast, 2009 to 2040**

<table>
<thead>
<tr>
<th>Truck Forecasts</th>
<th>Unit</th>
<th>2009</th>
<th>2040</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of trucks</td>
<td>million trucks</td>
<td>9.8</td>
<td>16.0</td>
<td>1.6%</td>
</tr>
<tr>
<td>Inbound</td>
<td>million trucks</td>
<td>2.0</td>
<td>3.3</td>
<td>1.8%</td>
</tr>
<tr>
<td>Outbound</td>
<td>million trucks</td>
<td>1.9</td>
<td>3.3</td>
<td>1.9%</td>
</tr>
<tr>
<td>Intra</td>
<td>million trucks</td>
<td>0.7</td>
<td>1.2</td>
<td>1.7%</td>
</tr>
<tr>
<td>Through</td>
<td>million trucks</td>
<td>5.3</td>
<td>8.1</td>
<td>1.4%</td>
</tr>
<tr>
<td>Truck cargo tonnage</td>
<td>million tons</td>
<td>185.8</td>
<td>300.3</td>
<td>1.6%</td>
</tr>
<tr>
<td>Inbound</td>
<td>million tons</td>
<td>37.0</td>
<td>63.5</td>
<td>1.8%</td>
</tr>
<tr>
<td>Outbound</td>
<td>million tons</td>
<td>35.7</td>
<td>62.4</td>
<td>1.8%</td>
</tr>
<tr>
<td>Intra</td>
<td>million tons</td>
<td>13.5</td>
<td>22.7</td>
<td>1.7%</td>
</tr>
<tr>
<td>Through</td>
<td>million tons</td>
<td>99.7</td>
<td>151.7</td>
<td>1.4%</td>
</tr>
<tr>
<td>Truck cargo value</td>
<td>billion USD</td>
<td>217.4</td>
<td>491.9</td>
<td>2.7%</td>
</tr>
<tr>
<td>Inbound</td>
<td>billion USD</td>
<td>39.0</td>
<td>98.4</td>
<td>3.0%</td>
</tr>
<tr>
<td>Outbound</td>
<td>billion USD</td>
<td>41.9</td>
<td>93.2</td>
<td>2.6%</td>
</tr>
<tr>
<td>Intra</td>
<td>billion USD</td>
<td>4.0</td>
<td>6.7</td>
<td>1.7%</td>
</tr>
<tr>
<td>Through</td>
<td>billion USD</td>
<td>132.5</td>
<td>293.7</td>
<td>2.6%</td>
</tr>
</tbody>
</table>

Source: PB Analysis, Bureau of Transportation Statistics, IHS Global Insight

*Truck counts include only loaded trucks
### Table 4-11: Rail Cargo and Traffic Forecast, 2009 to 2040

<table>
<thead>
<tr>
<th>Rail Forecasts</th>
<th>Unit</th>
<th>2009</th>
<th>2040</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of trains</td>
<td>thousand trains</td>
<td>33.00</td>
<td>45.40</td>
<td>1.0%</td>
</tr>
<tr>
<td>Inbound</td>
<td>thousand trains</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Outbound</td>
<td>thousand trains</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Intra</td>
<td>thousand trains</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Through</td>
<td>thousand trains</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Rail cargo tonnage*</td>
<td>million tons</td>
<td>102.3</td>
<td>140.9</td>
<td>1.0%</td>
</tr>
<tr>
<td>Inbound</td>
<td>million tons</td>
<td>12.4</td>
<td>14.1</td>
<td>0.4%</td>
</tr>
<tr>
<td>Outbound</td>
<td>million tons</td>
<td>6.6</td>
<td>9.1</td>
<td>1.0%</td>
</tr>
<tr>
<td>Intra</td>
<td>million tons</td>
<td>0.1</td>
<td>0.1</td>
<td>1.3%</td>
</tr>
<tr>
<td>Through*</td>
<td>million tons</td>
<td>83.4</td>
<td>117.7</td>
<td>1.1%</td>
</tr>
<tr>
<td>Rail cargo value</td>
<td>billion USD</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Inbound</td>
<td>billion USD</td>
<td>8.8</td>
<td>12.1</td>
<td>1.1%</td>
</tr>
<tr>
<td>Outbound</td>
<td>billion USD</td>
<td>9.3</td>
<td>13.1</td>
<td>1.1%</td>
</tr>
<tr>
<td>Intra</td>
<td>billion USD</td>
<td>0.0</td>
<td>0.1</td>
<td>0.8%</td>
</tr>
<tr>
<td>Through</td>
<td>billion USD</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Source: PB Analysis, Bureau of Transportation Statistics, FHWA FAF, IHS Global Insight

*Total rail cargo tonnage was calculated based on the 110 trains per day, 300 days of operation per year, and average tonnage of 3,100 tons per train estimate from the Bureau of Transportation Statistics

### Table 4-12: Barge Cargo Forecast, 2009 to 2040

<table>
<thead>
<tr>
<th>Barge Forecasts</th>
<th>Unit</th>
<th>2009</th>
<th>2040</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barge cargo tonnage*</td>
<td>million tons</td>
<td>21.6</td>
<td>22.8</td>
<td>0.2%</td>
</tr>
<tr>
<td>Inbound</td>
<td>million tons</td>
<td>17.4</td>
<td>15.8</td>
<td>-0.3%</td>
</tr>
<tr>
<td>Outbound</td>
<td>million tons</td>
<td>4.1</td>
<td>6.9</td>
<td>1.7%</td>
</tr>
<tr>
<td>Intra</td>
<td>million tons</td>
<td>0.1</td>
<td>0.2</td>
<td>1.0%</td>
</tr>
<tr>
<td>Barge cargo value</td>
<td>billion USD</td>
<td>6.12</td>
<td>7.72</td>
<td>0.8%</td>
</tr>
<tr>
<td>Inbound</td>
<td>billion USD</td>
<td>5.0</td>
<td>5.9</td>
<td>0.5%</td>
</tr>
<tr>
<td>Outbound</td>
<td>billion USD</td>
<td>1.0</td>
<td>1.7</td>
<td>1.6%</td>
</tr>
<tr>
<td>Intra</td>
<td>billion tons</td>
<td>0.0</td>
<td>0.1</td>
<td>1.0%</td>
</tr>
</tbody>
</table>

Source: IHS Global Insight

### Table 4-13: Air Cargo Forecast, 2009 to 2040

<table>
<thead>
<tr>
<th>Air Cargo Forecasts</th>
<th>Unit</th>
<th>2009</th>
<th>2040</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air cargo tonnage*</td>
<td>million tons</td>
<td>0.11</td>
<td>0.26</td>
<td>2.7%</td>
</tr>
<tr>
<td>Inbound</td>
<td>million tons</td>
<td>0.1</td>
<td>0.1</td>
<td>1.9%</td>
</tr>
<tr>
<td>Outbound</td>
<td>million tons</td>
<td>0.1</td>
<td>0.2</td>
<td>3.4%</td>
</tr>
<tr>
<td>Air cargo value</td>
<td>billion USD</td>
<td>0.66</td>
<td>1.83</td>
<td>3.3%</td>
</tr>
<tr>
<td>Inbound</td>
<td>billion USD</td>
<td>0.4</td>
<td>0.9</td>
<td>3.0%</td>
</tr>
<tr>
<td>Outbound</td>
<td>billion USD</td>
<td>0.3</td>
<td>0.9</td>
<td>3.8%</td>
</tr>
</tbody>
</table>

Source: IHS Global Insight
Table 4-14: Regional Comparison of Truck Tonnage and Growth Rates

<table>
<thead>
<tr>
<th>FAF Zone</th>
<th>2010</th>
<th>2040</th>
<th>2010-2040 CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Tonnage</td>
<td>Truck Tonnage</td>
<td>Truck Share of Freight</td>
</tr>
<tr>
<td>Cincinnati</td>
<td>143,756,917</td>
<td>93,298,239</td>
<td>64.90%</td>
</tr>
<tr>
<td>Cleveland</td>
<td>166,613,203</td>
<td>114,130,044</td>
<td>68.50%</td>
</tr>
<tr>
<td>Columbus</td>
<td>140,521,962</td>
<td>118,600,536</td>
<td>84.40%</td>
</tr>
<tr>
<td>Indianapolis</td>
<td>183,465,312</td>
<td>159,798,287</td>
<td>87.10%</td>
</tr>
<tr>
<td>Louisville</td>
<td>104,411,522</td>
<td>86,765,975</td>
<td>83.10%</td>
</tr>
<tr>
<td>Memphis</td>
<td>88,508,001</td>
<td>62,132,617</td>
<td>70.20%</td>
</tr>
<tr>
<td>Nashville</td>
<td>132,771,771</td>
<td>120,158,453</td>
<td>90.50%</td>
</tr>
<tr>
<td>Pittsburgh</td>
<td>164,770,706</td>
<td>117,316,743</td>
<td>71.20%</td>
</tr>
</tbody>
</table>

Source: FHWA, Freight Analysis Framework 3

Cincinnati has the second slowest tonnage growth rate among the regions compared here. When comparing the same regions by growth in goods value moved by truck, Cincinnati was still second slowest at 2.4 percent CAGR, with only Pittsburgh lower at 2.0 percent CAGR. By comparison, Memphis grew its truck value by 5.2 percent. Finally, on a value-per-ton basis, Cincinnati was in the middle of the pack (fourth), growing its value-per-ton 0.96 percent CAGR. This compares to -0.03 percent for Nashville and 3.0 percent for Memphis.

4.5.2 Adjustment Factors Affecting Transportation Volume Projections

The baseline forecast, as presented above, was developed from IHS Global Insight and FAF data sources, which is based on an analysis of more than a hundred industry, commodity and proprietary data exchange sources, and forecasts of major county-level economic drivers. While this baseline forecast takes into account major macroeconomic drivers and other industry-specific economic factors, it is important to note that it does not capture some of the expected major infrastructure developments that may have an impact on freight flows in the OKI region, including:

- CSX National Gateway Corridor through North Baltimore, which would affect both domestic and international freight movement
- NS Heartland Corridor that will affect primarily international moves
- Opening of the widened Panama Canal in 2014, which will affect primarily imports from Eastern, Southern, and Southeast gateways

In the attempt to quantify the impacts of these developments, simple scenarios with the use of FHWA FAF data were developed to gauge potential changes in the OKI region’s freight flows. The evaluation of each development, the results of which are discussed in the following sections, suggests that the impacts of the aforementioned developments on freight flows in the region are relatively small in scale. This result, together with the inherent uncertainties of these infrastructure developments, both in terms of timing and scale, suggests that the baseline is an adequate cargo flow forecast upon which to base OKI region’s infrastructure assessment needs.
Development of CSX National Gateway Corridor to North Baltimore

As discussed in the previous chapter, the CSX National Gateway project is expected to improve the connectivity and capacity of the transportation network carrying freight to, from, and through the Midwest. er costs, this development may have an impact on the pattern of containerized freight movement in Ohio and in the OKI region.

The National Gateway project may alter freight movement in the OKI region in the following ways:

- Diversion from truck to rail for containerized cargo moving between the Mid-Atlantic ports and the OKI region.
- Reduction of rail to truck transfer for containerized cargo moving between the OKI region and Chicago, where some containerized goods from the West Coast ports currently switch from rail to truck to reach the OKI region.

Each of the above cargo pattern modifications will lead to a reduction in the number of trucks in the OKI region each year from the baseline IHS Global Insight forecast, as discussed further below.

With the development of the North Baltimore transportation hub and the proposed improvements in rail network clearances and intermodal terminal capacities along the Mid-Atlantic coast, shippers may begin to see cost and time savings from shifting goods currently shipped by truck to an improved rail service. For example, instead of trucking goods from Charleston, West Virginia to the OKI region, an importer may instead opt to ship via rail, which would include a rail move to the North Baltimore intermodal terminal in Ohio and then a rail or truck move to the final destination in the OKI region. This would result in fewer trucks along the I-75 and a corresponding increase in rail traffic.

According to FHWA FAF data, 585,000 tons of containerized goods\textsuperscript{22} were shipped from South Carolina, North Carolina, Virginia, and Maryland to the Cincinnati FAF region in 2009, of which nearly 80 percent was shipped by truck, likely most via I-75. Principal commodities moving from these Mid-Atlantic States to the Cincinnati area include meat/seafood, other foodstuffs, newsprint/paper, printed products and rubber/plastics.

Compared to inbound freight, the volume of outbound freight from the Cincinnati FAF region to the Mid-Atlantic States in 2009 was relatively balanced at over 500,000 tons, with nearly 90 percent moving by truck. The product mix principally includes articles of base metal, chemicals, chemical products and newsprint/paper.

Since the average distance between many of the Mid-Atlantic areas and the OKI region is well within the range where rail would be a competitive option to trucking, it is likely that some portion of this inbound and outbound freight (especially the lower value and less time-sensitive commodities) could benefit from competitive rail service made available by the National Gateway project. To gauge the impact of a truck-to-rail mode diversion of this cargo, a shift of 10 percent of the commodity flow was analyzed with the following result:

\textsuperscript{22} Containerized cargo tonnage was estimated based on the FHWA FAF database. Since FAF does not produce information on whether cargoes are containerized, the data at the commodity level was reviewed, commodity groups that are largely containerized were selected, and a 100 percent containerization of these items was assumed.
• A 10 percent truck diversion would result in a reduction of 87,500 tons of inbound/outbound freight from truck to rail
• This diversion equates to a reduction of 4,600 truck trips per year, primarily on the I-75 corridor
• Rail traffic would increase by 28 trains per year

Aside from rail service improvements for Mid-Atlantic cargo, the CSX National Gateway Project is also expected to improve rail services for shipments from U.S. regions west of Chicago into Ohio (and vice versa), including international freight moving through West Coast ports. By pulling the railroad switching activities between western and eastern rail carriers out of Chicago, the CSX North Baltimore intermodal facility will encourage containers to remain on rail for the last leg into Ohio and minimize delays previously caused by trucking and Chicago rail yard congestion. This could boost transport by rail into the North Baltimore facility and then to final destinations by truck in the OKI region. This would have the effect of reducing truck traffic on I-74 and shifting some containerized cargo to rail connections into Cincinnati from North Baltimore.

**International cargo.** Based on FHWA FAF data, it is estimated that containerized cargo into the Cincinnati FAF region through West Coast ports totaled 806,000 tons in 2009, of which about 54 percent was transported directly by truck and 41 percent by a combination of rail and truck. Since detail is not available on the share of volume moved to Chicago or other gateway by rail and then by truck to the Cincinnati region, it is difficult to estimate with accuracy the potential for how much of this freight could be switched from trucking for either full trips from the West Coast or final legs from Chicago and other rail gateways. However, assuming that the CSX development would divert 10 percent of this total volume from truck to rail:

• An estimated 4,200 trucks per year will be removed from I-74 and I-71.
• A corresponding increase in 26 trains from North Baltimore.

**Domestic Cargo from the West.** Domestic volumes for container and vehicle/auto products shipped between the Pacific Coast and Mountain states and the OKI region are significantly less than international imports (approximately 369,000 tons in 2009). About 64 percent of this volume was shipped by truck. Estimating the share of this traffic that might shift to rail as a result of better rail transportation service into Ohio is speculative, but to provide some sensitivity analysis, a 10 percent diversion rate was calculated, which resulted in a reduction of 1,900 trucks annually on the I-74 and I-71 corridors.

**Heartland Corridor**

Development of the Heartland Corridor, as discussed in the previous chapter, is expected to provide faster and less expensive shipment of goods to and from the OKI region. Similar to the CSX National Gateway project, the NS Heartland Corridor will likely divert some cargo movements from truck to rail for shipments to and from the OKI region, the East Coast, and Norfolk, Virginia.

Compared to the CSX National Gateway project, which will provide a new hub-and-spoke network for moving goods in and through the Midwest, the NS Heartland Corridor is aimed at the corridor linking the Midwest with the Port of Norfolk—a deep-water port that is able to handle post-Panamax vessels, and thus well-positioned to benefit from the Panama Canal expansion. As such, the NS Heartland Corridor project may not only induce a modal change for cargo movements
between Atlantic Coast states and the OKI region, but may also lead to a switch in trade corridors. For example, importers that are currently shipping goods via New York/New Jersey to the OKI region may opt to use Norfolk instead, lured by possible shipping cost and time savings from improved rail services.

The extent to which the Heartland Corridor development will lead to a trade corridor shift will largely depend on the value and service requirements of the commodities. High-valued goods that are time-sensitive, such as those moved in containers that are currently trucked from New York/New Jersey to Cincinnati, will likely continue to be trucked from New York/New Jersey to their final destinations. Therefore, it is expected that there will be minimal diversion of these goods to Norfolk/Heartland Corridor. On the other hand, goods that are currently railed from New York/New Jersey to Cincinnati (and thus less time-sensitive) may take advantage of cost savings that rail service in Norfolk could offer.

Just as for the CSX National Gateway Corridor project, there is a potential for goods that are currently trucked from the Port of Norfolk to the Cincinnati region to switch to rail because of improved NS Heartland Corridor rail service. According to FAF data, approximately 40 percent of total international imports into the Cincinnati FAF region were moved through Norfolk and about one quarter of those were transported by truck. Using the estimate of 20,000 total loaded 40-foot containers, this translates to approximately 2,000 loaded containers per year or about 80 trucks per day. Using the assumption that 10 percent of this cargo could be diverted, this would result in a reduction of 2,900 trucks per year, again representing less than 0.1 percent of total truck traffic, with a minimal impact on OKI region highway traffic. The corresponding rail increase is estimated to be 18 trains per year.

According to FAF data, in 2009 the Cincinnati region imported over 300,000 tons of containerized/vehicle goods from foreign countries, shipped through major Atlantic Coast ports. This excludes a small volume of goods imported from Northeast Asia, which are discussed below. This represents roughly 20,000 loaded 40-foot containers using a weight per container of 15 metric tons. Of these imports, 55 percent moved through the Port of New York and New Jersey, 40 percent through Norfolk, and the remaining five percent through other ports.

Of the 55 percent New York/New Jersey share of international goods moving into the Cincinnati FAF region, a 60 percent majority of these goods is transported by truck, which translates to about 7,000 loaded 40-foot containers moving by truck from New Jersey to the Cincinnati FAF region via I-71. More than half of this volume is represented by the category “Other Foodstuffs” from Southern Asia and Southeast Asia/Oceania. To the extent this represents relatively high-value and/or refrigerated goods, diversion from trucking through New York to rail through Norfolk is likely minimal.

For the 40 percent of freight moving by rail from New York/New Jersey to the Cincinnati area, a portion of this traffic might be attracted to service through Norfolk. The impact of this diversion would be a shift to NS routing from the South into Columbus/Cincinnati rather than via CSX through North Baltimore. However, one should note that this potential diversion could be offset by improved competitive service provided by the CSX National Gateway Corridor described earlier. Thus, for this portion of the impact, the main effect is changes in the direction of rail car movements within the OKI rail networks, and not a modal shift resulting in reduced truck traffic.
Panama Canal Expansion Impacts

The Panama Canal expansion, scheduled for completion in 2014, will allow much larger ships to utilize the canal than those currently in service. Although toll rates have yet to be established by the Panamanian government, potential economies of scale will probably reduce shipping costs to U.S. inland regions through the U.S. and Gulf Coasts compared to shipment through West Coast ports, with particularly significant impacts for relatively low value containerized cargo.

These impacts are expected to affect mainly containerized waterborne U.S. imports from Northeast Asia since it is on that particular trade lane that larger ships are most likely to be deployed. While it may generally be less expensive to import goods from Northeast Asia and thus see an increase in overall Northeast Asian imports due to this effect, the principal impact on the flow of goods is the shift in trade routing, not in overall aggregate volumes. For example, imports from Northeast Asia may move to/from the OKI region on rail and by truck via Atlantic Coast ports (Norfolk and New York/New Jersey), rather than from the West Coast via Chicago or other Midwest gateways. On a geographic basis, this may result in more rail/truck traffic to the east of the OKI region, offset by decreases in rail/truck traffic from the west.

Imports of containers/vehicles from Northeast Asia shipped directly into the Cincinnati FAF region totaled over 314,000 tons in 2009, or about one percent of the region’s total import tons of these products from all U.S. and international origins (according to FHWA Freight Analysis Framework data). Using a factor of 15 metric tons per 40-foot container, this represents about 20,000 containers per year or 80 containers per day. These Northeast Asia imports do not include those transloaded in locations such as Southern California and then moved to the Cincinnati region or those shipped to distribution centers outside the region that are then moved to final destinations in the region. These excluded shipments are considered domestic movements and are not likely to be significantly affected by Panama Canal expansion. An important initial point is that this aggregate potential volume of goods is quite small compared to total regional inbound flows.

Within the potential volume that could be affected, impacts for specific commodities and modes are likely to vary significantly, with transportation cost savings resulting in volume shifts much smaller than the full potential. Of the total containerized imports from Northeast Asia, an average of 93 percent moved through West Coast ports in 2009. For many of these product groups, especially high value commodities such as electronics, the importance of significantly shorter transit times via West Coast ports far outweighs relatively small costs savings, and so the West Coast routing is likely to persist.

For a small share of total freight volume (the lower value commodities) moving into the Cincinnati region, aggregate volumes are not expected to be affected by the Panama Canal expansion; rather, route and modes could be shifted. Specifically, goods would enter through East Coast ports such as New York/New Jersey or Norfolk and then move inland to Cincinnati, most likely by rail. Where the direct moves to Cincinnati from the West Coast were made entirely by truck or on the final leg (e.g., from Chicago) by truck, this would mean that inbound truck traffic from Chicago or otherwise from the West would be reduced, replaced by increased rail traffic from the East. To the extent that the goods are moved from the West by rail and replaced by movements from the East, there would be little impact given routing to Cincinnati on CSX through North Baltimore or NS through Columbus.
It is also unclear which U.S. ports will absorb increased traffic through the Panama Canal. Many eastern U.S. ports are vying for the traffic, aggressively marketing shipping lines and making capital expansion plans. To the extent that increased Panama Canal traffic is spread over a larger number of U.S. ports, the impact on an individual region would be rather insignificant. Under a scenario where 10 percent of the total potential volumes actually shifted, this would result in shifts of just 0.1 percent of total inbound volumes to the OKI region.

On the other hand, it is possible that one or just a few ports garner the majority of increased trade through the Panama Canal. In such a case, the impact on an individual region like OKI might be nil if the ports do not serve the region effectively, or quite significant if the ports serve the region well. The OKI region would stand to benefit more if Panama Canal traffic increases favor ports in the Southeastern or Southern U.S., which are served by NS, as Cincinnati is a primary Midwest intermodal terminal for NS. However, because of the need for significant dredging and lack of funding at these ports, this upside potential for the OKI region is not likely to manifest.

### 4.5.3 Adjusted Cargo Forecasts

The CSX National Gateway, NS Heartland Corridor and Panama Canal expansion initiatives represent major improvements in transportation capacity, which will cause shifts in business supply chains. Impacts on an individual region like OKI, however, might not be as significant. The following broad conclusions can be made about the impacts of these three infrastructure initiatives:

- There will be a shift in travel from truck to rail.
- Calculating a 10 percent shift in forecasted travel demand, from truck to rail, results in a relatively small volume of truck traffic reduction. This is because the OKI region is already saturated with truck flows from other origin-destination pairs, such that the impact of any one of the three infrastructure projects is muted.
- Correspondingly, the increase in rail traffic is small in absolute terms, but more consequential given the limited capacity of the region's rail system (as described in greater detail below).
- The CSX National Gateway program will affect travel costs to the Northeastern U.S. and New England, but the resulting “induced” travel demand and mode shift is difficult to calculate with accuracy.
- Given its intermodal service from Southern U.S. ports by NS, the OKI region would see more traffic through the Panama Canal if Southern U.S. ports garner a larger percentage of Panama Canal traffic flows.
- Strictly speaking, the simple summation of the impacts of the three developments may not be a very meaningful portrayal of their aggregate impact on OKI traffic, as in reality, there may be synergies in the impacts of these developments, e.g., the CSX National Gateway and NS Heartland Corridor rail systems may compete with each other or the Panama Canal expansion and the NS Heartland Corridor may amplify the diversion of cargoes between the OKI region and Norfolk.

The impact of current and future travel demand is explored for each mode in the sections that follow.
4.6 Highway and Trucking Strengths and Needs Assessment

The OKI region has a mature highway system, which serves the primary means of freight transportation in the region which is trucking. As reported from the Supply Chain Consortium shipper surveys, 27 percent of shippers viewed “highway capacity” as a strength for the region, as compared to 10.8 percent who rated “highway capacity” as a weakness.

Perspectives of highway congestion are often guided by personal experience. If a smaller city than Cincinnati is a reference point, then congestion in the OKI region will seem more severe. Similarly, if a large city like Chicago or New York is a reference point, then congestion in Cincinnati will seem less severe. To provide perspective on truck freight mobility for the OKI region, a comparative analysis of highway congestion for the Cincinnati region and regional peer areas was performed.

4.6.1 Truck Mobility – Highway Congestion Comparative Analysis

As a comparison of highway congestion, the peer metropolitan areas of Cleveland, Columbus, Dayton, Indianapolis, Louisville, Memphis, Nashville, and Pittsburgh were selected. The USDOT's FAF3 was used to allow a comparison of these areas and their forecast freight growth.

FAF3 estimates that 93.2 million tons of freight moved through or within Cincinnati’s FAF zone in 2010 (Cincinnati FAF zone only includes the Ohio portion of the MSA). Truck freight accounted for 64.9 percent of this freight. FAF3 estimates a compound annual growth rate (CAGR) of 1.4 percent through 2040. Table 4-15 shows the comparative analysis for the OKI region.

<table>
<thead>
<tr>
<th>FAF Zone</th>
<th>2010 Total Tonnage</th>
<th>2010 Truck Tonnage</th>
<th>2010 Truck Share of Freight</th>
<th>2040 Total Tonnage</th>
<th>2040 Truck Tonnage</th>
<th>2040 Truck Share of Freight</th>
<th>2010-2040 Truck Tonnage Growth Rates</th>
<th>2010-2040 Truck Share Growth Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cincinnati</td>
<td>143,756,917</td>
<td>93,298,239</td>
<td>64.90%</td>
<td>188,367,301</td>
<td>141,652,210</td>
<td>75.20%</td>
<td>1.40%</td>
<td>0.49%</td>
</tr>
<tr>
<td>Cleveland</td>
<td>166,613,203</td>
<td>114,130,044</td>
<td>68.50%</td>
<td>274,207,999</td>
<td>207,575,455</td>
<td>75.70%</td>
<td>2.01%</td>
<td>0.33%</td>
</tr>
<tr>
<td>Columbus</td>
<td>140,521,962</td>
<td>118,600,536</td>
<td>84.40%</td>
<td>254,021,090</td>
<td>225,062,686</td>
<td>88.60%</td>
<td>2.16%</td>
<td>0.16%</td>
</tr>
<tr>
<td>Indianapolis</td>
<td>183,465,312</td>
<td>159,798,287</td>
<td>87.10%</td>
<td>331,095,375</td>
<td>296,330,361</td>
<td>89.50%</td>
<td>2.08%</td>
<td>0.09%</td>
</tr>
<tr>
<td>Louisville</td>
<td>104,411,522</td>
<td>86,765,975</td>
<td>83.10%</td>
<td>182,812,497</td>
<td>159,229,685</td>
<td>87.10%</td>
<td>2.04%</td>
<td>0.16%</td>
</tr>
<tr>
<td>Memphis</td>
<td>88,508,001</td>
<td>62,132,617</td>
<td>70.20%</td>
<td>174,489,884</td>
<td>117,431,692</td>
<td>67.30%</td>
<td>2.14%</td>
<td>-0.14%</td>
</tr>
<tr>
<td>Nashville</td>
<td>132,771,771</td>
<td>120,158,453</td>
<td>90.50%</td>
<td>315,206,629</td>
<td>285,577,206</td>
<td>90.60%</td>
<td>2.93%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Pittsburgh</td>
<td>164,770,706</td>
<td>117,316,743</td>
<td>71.20%</td>
<td>194,474,230</td>
<td>144,688,827</td>
<td>74.40%</td>
<td>0.70%</td>
<td>0.15%</td>
</tr>
</tbody>
</table>

Source: FHWA, Freight Analysis Framework 3

Cincinnati has the second slowest tonnage growth rate among the regions compared here. When comparing the same regions by growth in goods value moved by truck, Cincinnati was still second slowest at 2.4 percent CAGR, with only Pittsburgh lower at 2.0 percent CAGR. By comparison, Memphis grew its truck value by 5.2 percent. Finally, on a value-per-ton basis, Cincinnati was in the middle of the pack (fourth), growing its value-per-ton 0.96 percent CAGR. This compares to negative 0.03 percent for Nashville and 3.0 percent for Memphis.
Another source of comparative analysis comes from the Texas Transportation Institute (TTI), which provides data regarding congestion in the overall metropolitan area, with measures of delay hours and the delay costs to freight. Since the earliest available data in 1982 through 2009, delay hours in the Cincinnati metropolitan region grew at a 7.8 percent CAGR over the 27-year period. More recently, the trend has been the reverse: delay has been decreasing since 2003 at a CAGR of 6.6 percent. The cost of truck delay, measured starting in 2007, decreased by 14 percent, while overall hours of delay decreased by 16.5 percent during this same short-term period. The delay increase over the long-term period is very close to Cleveland and Memphis, which are comparable areas from a freight perspective.

Table 4-16: TTI Annual Percent Increase in Vehicle Hours of Delay

<table>
<thead>
<tr>
<th>Region</th>
<th>Hours of Delay (CAGR 1982–2009)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cincinnati</td>
<td>7.80%</td>
</tr>
<tr>
<td>Cleveland</td>
<td>7.40%</td>
</tr>
<tr>
<td>Columbus</td>
<td>10.50%</td>
</tr>
<tr>
<td>Indianapolis</td>
<td>4.90%</td>
</tr>
<tr>
<td>Louisville</td>
<td>4.50%</td>
</tr>
<tr>
<td>Memphis</td>
<td>7.70%</td>
</tr>
<tr>
<td>Nashville</td>
<td>5.50%</td>
</tr>
<tr>
<td>Pittsburgh</td>
<td>2.30%</td>
</tr>
</tbody>
</table>

Source: Texas Transportation Institute

The Cincinnati region, however, saw greatly reduced truck congestion costs from 2007 to 2009 compared to its peers, many of which increased (as seen in Table 4-17.) Much of this was attributable to system-wide delay. While delay increased from 1982 to 2009 as shown above, between 2007 and 2009, Cincinnati saw a reduction in overall VMT on arterials and freeways, and a 30.3 percent reduction in system hours of delay. The only capacity change was a 30 lane-mile increase in arterials, so the reduction in VMT and system-wide delay may be attributable to the recession effecting Cincinnati’s travel behavior much more than other cities. Other regions, unlike Cincinnati, saw increases in VMT and overall increases in system-wide hours of delay. Truck congestion costs followed suit.

Table 4-17: TTI Annual Change in Truck Congestion Cost

<table>
<thead>
<tr>
<th>Region</th>
<th>Truck Congestion Cost (CAGR 2007–2009)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cincinnati</td>
<td>-14.5%</td>
</tr>
<tr>
<td>Cleveland</td>
<td>13.00%</td>
</tr>
<tr>
<td>Columbus</td>
<td>2.70%</td>
</tr>
<tr>
<td>Indianapolis</td>
<td>0.30%</td>
</tr>
<tr>
<td>Louisville</td>
<td>3.50%</td>
</tr>
<tr>
<td>Memphis</td>
<td>2.70%</td>
</tr>
<tr>
<td>Nashville</td>
<td>-2.90%</td>
</tr>
<tr>
<td>Pittsburgh</td>
<td>2.20%</td>
</tr>
</tbody>
</table>

Source: Texas Transportation Institute
In summary, relative to other regions, the OKI region has good highway mobility for freight. The truck growth rate is the next issue to address, as future truck growth could exacerbate existing congestion issues.

### 4.6.2 OKI Region Highway Congestion Forecasts

The OKI Regional Transportation Model includes forecasts of truck and passenger traffic, along with various measures of speed and quality of service on network links. The OKI model used a 3.0 percent yearly increase in truck volume between 2005 and 2030, with the share of trucks on the entire road network increasing from 5.8 percent in 2005 to 8.5 percent in 2030, highlighting the increasing demand for freight on the region’s road network. Table 4-18 shows the growth in truck share broken down by peak and non-peak hours:

**Table 4-18: Truck Share of Total Traffic, by Time of Day, 2005 vs. 2030**

<table>
<thead>
<tr>
<th>Time of Day</th>
<th>2005</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM</td>
<td>Trucks (daily)</td>
<td>1,682,623</td>
</tr>
<tr>
<td></td>
<td>Non-truck vehicles (daily)</td>
<td>32,394,015</td>
</tr>
<tr>
<td></td>
<td>Truck Share</td>
<td>4.90%</td>
</tr>
<tr>
<td>Mid-day</td>
<td>Trucks (daily)</td>
<td>2,792,048</td>
</tr>
<tr>
<td></td>
<td>Non-truck vehicles (daily)</td>
<td>35,114,312</td>
</tr>
<tr>
<td></td>
<td>Truck Share</td>
<td>7.40%</td>
</tr>
<tr>
<td>PM</td>
<td>Trucks (daily)</td>
<td>2,188,675</td>
</tr>
<tr>
<td></td>
<td>Non-truck vehicles (daily)</td>
<td>50,980,157</td>
</tr>
<tr>
<td></td>
<td>Truck Share</td>
<td>4.10%</td>
</tr>
<tr>
<td>Night Time</td>
<td>Trucks (daily)</td>
<td>2,710,138</td>
</tr>
<tr>
<td></td>
<td>Non-truck vehicles (daily)</td>
<td>33,538,092</td>
</tr>
<tr>
<td></td>
<td>Truck Share</td>
<td>7.50%</td>
</tr>
<tr>
<td>Daily</td>
<td>Trucks (daily)</td>
<td>9,373,484</td>
</tr>
<tr>
<td></td>
<td>Non-truck vehicles (daily)</td>
<td>152,026,575</td>
</tr>
<tr>
<td></td>
<td>Truck Share</td>
<td>5.80%</td>
</tr>
</tbody>
</table>

Source: OKI Travel Demand Model

**Table 4-19: Annual Growth in Truck Traffic, 2005 to 2030**

<table>
<thead>
<tr>
<th>Time of Day</th>
<th>Trucks (daily)</th>
<th>Non-truck vehicles (daily)</th>
<th>Truck Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM</td>
<td>2.10%</td>
<td>1.10%</td>
<td>1.00%</td>
</tr>
<tr>
<td>Mid-day</td>
<td>4.60%</td>
<td>2.30%</td>
<td>2.00%</td>
</tr>
<tr>
<td>PM</td>
<td>2.10%</td>
<td>1.00%</td>
<td>1.10%</td>
</tr>
<tr>
<td>Night Time</td>
<td>2.10%</td>
<td>1.00%</td>
<td>1.00%</td>
</tr>
<tr>
<td>Daily</td>
<td>3.00%</td>
<td>1.40%</td>
<td>1.50%</td>
</tr>
</tbody>
</table>

Source: OKI Travel Demand Model

OKI is currently using a truck VMT growth rate of CAGR 3.0 percent in its long range travel demand model. TRANSEARCH estimates a CAGR of 1.6 percent for 30-year truck forecasts, and FAF3 estimates a 1.4 percent CAGR (2009 to 2040).

Because it is based on VMT, OKI’s 3.0 percent CAGR truck growth rate comports with TRANSEARCH and FAF3 analyses. The latter two data sources are based on truck tonnage, while VMT accounts for both volume and distance traveled by trucks. Beyond growth in the tonnage moved by trucks, travel demand models consider the distance to develop VMT forecasts. So in addition to an increased volume of truck freight, forecasts call for trucks to move over longer distances into, out of, and through the region. A 3.0 percent compound annual growth rate is significant. It means that total truck travel in the OKI region will double in just 24 years.
4.6.3 OKI Region Truck Industry and Regulatory Issues

As indicated in the previous chapter, there are a number of trucking industry, legislative, and regulatory issues that could affect truck freight transportation in the region. While these issues might not affect demand enough to sway a modal shift, they can certainly affect the cost of trucking and, in turn, the cost of transportation for businesses in the OKI region.

4.6.4 Trucking Industry Concerns

The trucking industry itself is very competitive and operates at low profit margins. Notable concerns for the industry include driver shortages. The general state of the economy is also of concern, as the recent recession forced a number of carriers out of business, thus downsizing the fleet, which could also impact trucking rates. Finally, truckers are very concerned with the cost of diesel fuel, which spiked in 2007 prior to the global recession, and is indeed increasing again as the economy recovers in 2011. Once again, the trucking industry will seek to pass on fuel price increases to shippers.

Regulatory Changes

The second category of concern involves regulatory changes. The 2010 Comprehensive Safety Analysis (CSA 2010) is a new regulatory framework developed by the Federal Motor Carrier Safety Administration (FMCSA) to provide access to trucking company safety records for the shipping community. The Chief Operating Officer of Werner Enterprises estimated that CSA 2010 may reduce the overall truck driver population by five to eight percent. FMCSA is also reviewing its “Hours of Service” regulation, seeking to reduce the current 11 hour driving window down to 10 hours. Although the total impact of this proposed legislation is unknown at this time, industry experts estimate that somewhere between six and 11 percent of driver productivity will be lost.

HR 763

There is a final regulatory/legislative issue that could have a mixed impact on the trucking industry and the public sector. There are a number of state initiatives, as well as HR 763 at the federal level, to increase the legal weight of trucks on the Interstate Highway System from 80,000 pounds currently to 97,000 pounds if the truck has six axles (generally, a three axle trailer). HR 763 could be beneficial to the trucking industry by increasing productivity – a single driver and tractor would effectively be carrying more payloads. In theory, this would also reduce the volume of trucks using the regional roadway system. On the other hand, there are concerns from the railroad industry that HR 763 would provide a greater competitive advantage to the trucking industry, as well as concerns from the public sector in regard to the affects heavier trucks will have on local bridge and pavement maintenance.
4.6.5 OKI Region Roadway Freight Deficiencies

The OKI region is heavily reliant on truck transportation and analysis suggests this will continue to be the case, even if there are freight shifts from trucking to rail associated with other developments in the supply chain. Based on truck growth forecasts and interviews with local public officials, the following deficiencies are most important to regional trucking.

I-75 Brent Spence Bridge

OKI’s top regional priority is the replacement of the Brent Spence Bridge, the most critical freight transportation asset in the region, on the busiest freight corridor in the nation. The Brent Spence Bridge is old and carries twice the number of vehicles as it was designed to carry. Daily backups from congestion on the bridge extend more than three miles. These concerns have led to this project being considered a top priority by the KYTC, ODOT, OKI, and the cities of Covington, Kentucky and Cincinnati, Ohio.

From a freight standpoint, the OKI region would cease to function if the Brent Spence Bridge fails. While freight traffic can now back up three miles because of congestion on the bridge, a failure of the structure would be catastrophic, causing truck freight to gridlock, or to bypass the region altogether. Inability to serve freight traffic would have deleterious effects on business, employment and regional income.

To put the Brent Spence Bridge in perspective, I-75 is a major north-south transportation corridor through the Midwestern U.S. linking Ohio and Kentucky with Toledo, Ohio and Detroit, Michigan to the north, and Atlanta, Georgia and Miami, Florida to the south. I-75 is among the longest and busiest continuous interstate trade corridors on the continent, creating a 2,200 mile major trade corridor from Canada to the Port of Miami. According to the FHWA estimates, I-75 is among the busiest trucking routes in North America, with truck traffic approaching six billion miles annually.

The Brent Spence Bridge carries I-71/75 over the Ohio River and is substandard from a capacity standpoint for the traffic it carries today. Opened in 1963, the bridge was designed to carry 80,000 vehicles per day, but currently handles 150,000 – 30,300 of which are trucks. The National Bridge Inventory lists the Brent Spence Bridge as functionally obsolete due to the capacity, sight distance, and safety concerns associated with its current configuration.

Value of Commercial Trucks Crossing the Brent Spence Bridge

As part of studies for replacement of the Brent Spence Bridge, OKI has developed estimates that this crossing handles more than $487 billion in freight annually. This estimate differs from the cargo value derived from TRANSEARCH® and USDOT freight databases, for two primary reasons.

- First, the OKI Regional Freight Plan uses 2009 TRANSEARCH® commodity flow estimates. 2009 was a year when the economy and trucking industry were in a severe recession.
- Second, the OKI analysis includes several types of trucks that are not captured by TRANSEARCH® or USDOT freight databases; these include certain small trucks, single unit, dump trucks, and panel trucks used in local commerce.

Thus, the OKI analysis provides a reasonable estimate of the total commercial value of cargo crossing the Brent Spence Bridge.
The importance of the Brent Spence Bridge replacement was reflected in shipper interviews, where a number of trucking companies voiced their concern over the need to replace the bridge. One regional trucking firm has located distribution centers on each side of the Ohio River, making shipments between the two centers at night when traffic is relatively light, and completely avoiding the Brent Spence Bridge during the day.

**I-75: Mill Creek Expressway and Thru the Valley Projects**

In addition to the Brent Spence Bridge replacement, the I-75 corridor is undergoing a significant reconstruction program, which will improve conditions on this major truck corridor. The projects stem from a 2000 planning study by OKI and the Miami Valley Regional Planning Commission, called the North/South Transportation Initiative.

While a large portion of I-75 between the Brent Spence Bridge and I-275 currently experiences congestion, the entire corridor is expected to have Level of Service “F” by 2030 if improvements are not made.

The I-75 improvement projects, which are currently underway, will improve several interchanges and add a fourth lane for traffic, and an auxiliary lane where warranted, to correct congestion and safety issues.

**Boone County**

OKI staff was able to identify a number of trucking issues that are of particular interest to local governments in the region. The County has received bids for the construction of a new connector road (South Airfield Road) south of the Greater Cincinnati/Northern Kentucky Airport (CVG). This new roadway will connect Burlington Pike, west of Florence, to the Turfway Road/Houston Road retail and entertainment development area. This new roadway is part of the current CVG Master Plan and it expected to realize some light industrial growth when completed (potentially air cargo related services).

The SR 237 Interchange at I-275 is also an area of concern for Boone County. This interchange is located to the northwest of CVG and is surrounded by industrial development, including many of the county’s high-volume truck terminals. North of the interchange, there is a mix of industrial development closer to I-275, but the development pattern quickly changes to residential farther north. The lack of places to turn around and miscommunication/mis-mapping is a concern with trucks that venture too far north. To partially address this, two roundabout intersections were installed, but the mix of traffic remains a concern in this area.

Higher densities of truck terminals and industrial development are also present south of the interchange and SR 237 (North Bend Road) and this area includes some of the lowest pavement ratings in the state.

Improvements to SR 237/North Bend Road are currently in development, including widening farther south and creating an interchange with the heavily traveled Burlington Pike. On one hand, these improvements are expected to help congestion and access for trucks but on the other hand, it will hasten the need to provide improvements south of Burlington Pike west of Florence and closer to U.S. Route 42.
Butler County

Butler County has several freight transportation issues. With a growing suburban population, the county has a number of east-west arterial roadways, which pass beneath elevated, north-south oriented rail lines, through structures colloquially known as “mouse holes.” These “mouse holes” are becoming choke points for the roadway network in terms of width and clearance issues. This has been a particular issue along the NS route passing over Cincinnati-Dayton, Hamilton-Mason, Princeton and Kyles Station Roads in the southeastern part of Butler County. In particular, Hamilton-Mason Road’s five-lane section to the west is reduced to one lane in each direction under the railroad at that point. For this reason, the “mouse hole” at Hamilton-Mason is the top concern.

A railroad grade-separation project on Grand Boulevard on the south side of the City of Hamilton, is also high on the Butler County list of priorities to make the former Champion site more attractive to development.

Rapid growth in West Chester Township continues to stress capacity of the recently constructed Union Centre Boulevard interchange with I-75. Butler County shared that the interchange is at or over capacity at the current time. Major retail, light industrial and school district developments to the west of this interchange have been a major addition of traffic volumes of all types, including truck traffic from 8 to 10 percent. Property to the east of the interchange is now beginning to develop with more of a focus on both heavy and light industrial tenants. It is a major distribution hub for the entire county. In contrast, the next I-75 interchange to the north, at Cincinnati-Dayton Road, is somewhat under-utilized.

City of Sharonville

Meetings with the city of Sharonville revealed two high profile freight-related concerns. First is the issue of truck weight on the local road system, which would only be exacerbated by a move to increase truck weights to 97,000 pounds. Sharonville is home to a number of manufacturing facilities, so trucking traffic is a major concern for the region.

The NS Sharon Yard is becoming a major freight issue for the city. When NS is switching or doubling their trains out of the Sharonville terminal, the Reading Road crossing is frequently blocked, causing delays to highway traffic and posing public safety concerns. It is also an inconvenience to NS in their yard operation and dispatching of trains. At one time, Ohio had programmed this crossing for a grade-separation project, but project cost escalation ultimately caused the state to cancel the project. This grade crossing issue is sure to become more problematic as Sharon Yard experiences increases in intermodal trains from the Heartland Corridor (via Columbus), and if Sharon Yard begins handling more of the freight switching, which is currently handled at Gest Street.

There are also significant trucking issues around the Sharonville terminal, and the Sharon Road/Medallion Drive intersection. As intermodal traffic increases in the terminal, there are many more trucks using the intersection, which is not conducive to turning movements (it is the site of a recent fatal injury crash). The city believes that a traffic signal should be installed to improve truck and traffic safety at the intersection.
**Clermont County**

SR 32 is the main east-west artery for all traffic, including trucks. It is a very congested route over the western half of the county, particularly during peak periods. Improvements to this corridor are planned to address these issues over the next several years.

US 50 currently carries the second highest volume of truck traffic, particularly between the Roundbottom Road intersection and the town of Owensville. Steep grades are an issue. Along this route, intersections at Roundbottom, SR 222, and SR 276 are problematic in terms of turning movements for trucks.

SR 125/Ohio Pike/Beechmont Avenue also carries a significant volume of truck traffic between I-275 and the town of Amelia, located less than 10 miles to the east. Congestion/flow problems on SR 125 are exacerbated by the lack of any access management controls.

**Hamilton County**

The Hamilton County Engineer’s Office noted that the existing underpass on Mt. Carmel near Roundbottom Road is too small for many trucks to pass. As a result, this traffic is pushed onto Broadwell Road. Trucks are also prohibited on the portion of Mt. Carmel Road south of Broadwell further exacerbating the situation.

One possible solution for this area is construction of the proposed Ancor Connector project that has been discussed over the last several years. Officials noted that the Ancor area is one of the top remaining areas for development within the entire county. The Ancor Connector could provide an alternate route for truck traffic in this area, while opening up land for development between Broadwell and SR 32, east of Roundbottom Road.

While turning radius issues were noted as a general concern throughout Hamilton County, the intersection at Governor’s Way and Union Cemetery Road was identified as a major concern with current observed volumes of truck traffic.

There are also several routes in Hamilton County that prohibit trucks, as follows:

- Mt Carmel Road, south of Broadwell
- Rybolt Road (due to steep grades)
- Springdale Road, just east of Harrison Avenue
- Winton Road, south of Cross County (for wide loads due to pedestrian bridge at Finneytown High School)
- Sheits Road near Blue Rock Road (heavy permits prohibited only)
- Cleves Warsaw Road, between Sayler Park and West Price Hill (heavy permits prohibited only)

The Hamilton County Engineer’s staff also noted that recently increased legal weight load limits were causing excessive damage to the county road system. To illustrate this point, they cited the current super-load route from the Queensgate/Gest Street Yards rail terminal. This route utilizes Spring Grove Avenue, Winton Road, North Bend Road and Hamilton Avenue to reach the I-275 corridor and points north.
Kenton County

A number of options exist for providing better access to the Decoursey Yards area. These include improving Grand Avenue, particularly between the Licking River and KY 16.

The intersection of KY 16, Decoursey Avenue and Southern Avenue is also inadequate for trucks to make the turn from northbound Decoursey onto southbound KY 16, which connects to I-275. Solutions would involve either re-designing this intersection, or providing better access from an alternative location – likely to the south.

Farther south, current roadway access is a problem between the river, KY 177, and KY 16. Locust Pike currently provides north/south access, but would be challenged to handle increased truck traffic geometrically. Improving connections to KY 177 and KY 16 via Porter and Wolf roads could be an alternative.

Recent improvements to major north-south routes in the county have highlighted the need for better east-west access. Both KY 16 and KY 17 provide excellent access to I-275. However, the need to improve KY 536 on the western portion of the county is another major east-west need in addition to those to serve the Decoursey site.

KY 536 currently connects to I-71/75 in neighboring Boone County (Mt. Zion Road). However, sections of KY 536 (Bristow Road/Shaw Road/Harris Pike) are unimproved, narrow two lane sections with numerous difficult intersections. KY 536 improvements are in the OKI long range plan.

Recent residential and commercial developments in the city of Independence have helped congest this route very quickly. Improvement of this route would provide much needed congestion relief and open more of the southern portion of Kenton County for development. Improvement to KY 536 could also provide a more direct connection across the tri-county area to the I-71/75 corridor without needing to go north for connection to I-275 on a route to the south. There are alternative solutions that would create a Mt. Zion Road to AA Tri-County Connector. In absence of I-71 and I-471 connections, access to Kenton and Campbell counties is greatly hindered.

County officials are also interested in the potential to extend the Mary Grubbs Highway that currently dead ends into an industrial park on the Boone County border. This highway provides a direct interchange connection with I-71/75. Eastward extension would provide access needed to develop additional industrial tenants in this already developing area. A tunnel was recently constructed within Boone County to move trucks into/out of the industrial park by traveling under the rail tracks.

Warren County

A major truck access issue in Warren County is an impassable bridge and a hairpin turn on King Avenue/Grandin Road in the Kings Mills area. The Sumco Phoenix Corporation is located on Grandin Road and receives several trucks per day. The county has tried to communicate alternate routes to the trucking industry, including the SR 48/I-71 Interchange and Fujitec Drive, with limited success.

In addition, truck-turning radius issues were noted on the Turtlecreek Road Bridge, just east of U.S. 42 and at the Lebanon Commerce Park near the Turtlecreek and Kingsview Road intersection.
The county is planning to improve Union Road between SR 63 and SR 123 interchanges with I-75 to address heavy local truck volumes, noting that in the last 10 years, SR 63 truck traffic has increased dramatically.

4.7 Rail System Strengths and Needs Assessment

As described in the freight forecasts, railroad traffic is predicted to increase up to 38 percent by 2040. Current railroad volume in the OKI region is about 90 to 115 trains per day, including local, inbound, outbound, and overhead (through) trains. CSX volume is as high as 70 trains per day on its busy Mill Creek Valley main line, and Norfolk Southern volume can be as high as 40 trains per day through this same area. Figure 4- is a map of rail lines showing daily train volume.

4.7.1 Current and Future Rail Capacity

Next to the Brent Spence Bridge, rail capacity is the critical freight issue for the OKI region. The north-south mainlines of both CSX and NS are near capacity now and facing an almost 40 percent increase in rail traffic over the next 20 years. In addition, there are particular choke points where CSX, NS, and RailAmerica operations conflict, exacerbating train congestion. Without solutions to rail capacity issues, either traffic will divert from rail to truck, or freight congestion will begin to negatively affect the regional economy. Specific rail issues in the OKI region are discussed below.

4.7.2 Norfolk Southern Facilities

Unlike CSX, NS has multiple facilities in the OKI region, which can handle an increase in traffic if their Gest Street Terminal cannot handle the growth. This is especially true of Sharon Yard, which NS acquired as part of its purchase of Conrail. Sharon Yard remains relatively unimproved.

The NS Heartland Corridor (Norfolk, Virginia to Chicago, Illinois via Columbus, Ohio) is notable for its new service offerings to the Midwest. Cincinnati is on the primary route from NS intermodal terminals and ports in the Gulf, mid-Atlantic, and southeast. Accordingly, Cincinnati terminals see a total of five or six intermodal trains per day, which are running through Cincinnati, from Chicago to southern states.

The NS Gest Street intermodal facility is handling all of this Chicago-southern U.S. intermodal traffic, while the Sharon Yard is handling one to two intermodal trains per week from Columbus. With the increase in Heartland Corridor traffic via Columbus, and the NS double stack clearance project from Columbus to Sharonville, Sharon Yard could see an increase in intermodal traffic. When the Heartland Corridor double stack clearance is completed between Columbus and Sharonville, there could be an increase in traffic southbound traffic through Cincinnati. At this time, however, NS does not have an estimate of that increase.
Figure 4-17: Daily Train Volumes on OKI Area Railroads

Source: Parsons Brinckerhoff

Note: The forecast increase in railroad traffic could equate to as many as 34 more trains into, out of and through the OKI region.
4.7.3 CSX Facilities: Queensgate Freight (Carload) Terminal

Based on forecast rail traffic demand, it is possible that CSX could be required to handle up to 26 more trains daily, over and above its current volume of about 70 trains per day. At times during train traffic surges, Queensgate Terminal will have to use alternate methods in the CSX System to relieve the pressure of the switching at Queensgate Terminal. With limited opportunity to expand, CSX will relieve the pressure at Queensgate by switching blocks of overhead traffic at other terminals in its system instead of Cincinnati. All major railroads use this approach by bypassing terminals with overhead blocks of traffic to reduce switching at their major terminals during periods of heavy volume. The overhead traffic would still come through Cincinnati.

4.7.4 CSX Cincinnati Intermodal Terminal

The CSX Intermodal Terminal at Queensgate Yard handles one intermodal train in each direction daily. CSX officials declined to provide details about the origins and destinations of their Cincinnati area intermodal service, but it is known to be international (import/export) cargo.

The new CSX intermodal facility at North Baltimore, Ohio will act as a “hub” for all of the CSX intermodal traffic in the Midwest. CSX Cincinnati Intermodal Terminal will serve as a “spoke” for the North Baltimore Terminal Hub. North Baltimore Intermodal Terminal will perform the refined switching at North Baltimore Intermodal Terminal instead of CSX Intermodal yard in Cincinnati. As an example, traffic coming from the southeast moving to Chicago will not be switched at Queensgate Intermodal Terminal, but will instead be switched at North Baltimore, and the same is true in reverse from Chicago and the Northeast.

At the present time, CSX does not have an estimate of the intermodal traffic volume from North Baltimore destined to the Cincinnati area, but is planning to rail the intermodal traffic destined to the OKI region from the North Baltimore Intermodal Terminal. Thus, the North Baltimore Terminal might have the effect of relieving pressure from the CSX Queensgate Intermodal Terminal and at the same time open the OKI region to intermodal service from the New England and New York area that does not exist today. This will be a major improvement for the intermodal customers in the OKI region.

4.7.5 RailAmerica (IORY and CIND)

RailAmerica has sufficient facilities to handle the increase in freight traffic without any major increases in capacity to their system. With industrial facilities located on their network in the OKI region, there is an excellent opportunity for industries to locate on RailAmerica lines and ship on either of the two major Class I carriers.

4.7.6 Railroad Choke Points in the OKI Area

Choke points are specific locations on the rail system where trains experience recurring delays. OKI has some modest congestion currently due to the choke points discussed below, but NS and CSX can generally manage the system without significant delays. Over the course of a year, however, they do add to the cost of rail shipping due to the additional fuel consumption and cost of crews. With a
38 percent forecasted increase in rail traffic, these choke points are certain to affect rail congestion, delay, and shipping cost.

When the 3-C (Cincinnati, Columbus, Cleveland) intercity passenger rail service was envisioned, it would have had a major impact on the mainline capacity to operate passenger trains in the shared freight corridor in the Mill Creek Valley. This is the primary reason that 3-C planners were considering other places to route the passenger service, even though Cincinnati officials expressed preference for the 3-C to serve the Cincinnati Union Terminal (adjacent to Queensgate Yard). Since the 3-C passenger rail project is currently unfunded, its operational impacts were excluded from choke point analysis.

In the past, CSX dispatched their trains in the Cincinnati area from their central dispatching center in Jacksonville, Florida, which resulted in communication gaps with train operations in critical choke points. Now that the dispatching has been moved from the central dispatching in Jacksonville to the local area, all railroads in the OKI region have seen improvements in the operation of train traffic.

Below are evaluations of the critical choke points that could cause major delays to the main line traffic with the expected future growth of freight rail and intermodal traffic in the region.

After review of the railroad operation in the OKI region, the following recommendations were identified to prepare the OKI region for the projected increase in rail traffic over the next 20 years. These recommendations should increase the velocity of the rail traffic, improve customer service, and prevent the diversion of rail traffic to the highway system.

### 4.7.7 Hopple Street Choke Point

Just north of Hopple Street, three tracks narrow to two main tracks for approximately 1000 feet. This has been done so the tracks can fit through the Hopple Street bridge piers. At the present time, due to capacity constraints at the north end of Gest Street Yard, there are delays with the movement of NS traffic in and out of the Gest Street freight terminal on the Cincinnati-Chicago and the Cincinnati–Columbus corridors, and also delays on local moves between Cincinnati and Sharonville.

The major problem for the NS southbound traffic is the ability to cross from the third track (NS mainline) north of Hopple Street to Gest Yard and at the same time allow NS trains to depart north from the Gest Street freight terminal. This choke point causes delays for through trains of both NS and CSX.
Figure 4-18: View of Hopple Street Looking North

Source: Parsons Brinckerhoff

Figure 4-19: View from Hopple Street Viaduct, Looking South

Source: Parsons Brinckerhoff
4.7.8 Choke point from RH Tower to NA Junction

One of the major areas for delays is from the RH Tower at the north end of Queensgate Terminal to NA Junction. This is where CSX traffic converges from the north, plus CSX traffic comes in and out of Queensgate Terminal and there is NS movement through the area. The convergence of traffic on this relatively short area of traffic creates delay for NS and CSX through movement, and complicates coordination of the movement of trains to and from Gest Street.

4.7.9 Capacity Improvements to CSX’s Cincinnati Terminal Subdivision north of NA Junction

The existing CSX Cincinnati Terminal Subdivision includes a grade-separated, single-tracked segment of track approximately 1,500 feet in length from just south of Mitchell Avenue to just east of Spring Grove Avenue in Winton Place. If an additional track is constructed from NA Junction southward, this segment of track (also known as the “head on connection”) will likely be a capacity constraint to northbound CSX and NS directional running trains to Hamilton and points north. It is recommended that approximately 1,500 feet of additional track be constructed. This will require new railroad bridge structures over Spring Grove and Mitchell Avenues as well as right-of-way acquisition.

4.7.10 Other Regional Railroad Deficiencies and Needs

At-Grade Crossing at Reading Road, NS Sharonville Terminal

Presently, when NS is switching or doubling their trains out of Sharon Yard, the Reading Road crossing is frequently blocked, causing delays to highway traffic and posing public safety concerns. It is also an inconvenience to NS in their yard operation and dispatching of trains. At one time, the state of Ohio had programmed this crossing for a grade separation project, but project cost escalation ultimately caused the state to cancel the project.

This grade crossing issue will become a critical problem as Sharon Yard experiences increases in intermodal trains from the Heartland Corridor (via Columbus), and if Sharon Yard begins handling more of the freight switching that is currently handled at Gest Street.

RailAmerica CSX Crossing

RailAmerica’s Indiana and Ohio Railway (IORY) must cross the CSX main line to access IORY property in Cincinnati. The IORY has incurred significant delays waiting for clearance from CSX to proceed with their work in the Queensgate area. A solution was to construct a third interchange track on CSX property at Queensgate Yard and acquire trackage rights from CSX to operate trains into Queensgate Yard. Cost estimates by other studies for a third track was approximately $33 million, with an alternative to construct a five mile flyover at a cost in excess of $365 million.

RailAmerica Access to Barge Terminals on U.S. 50

RailAmerica and some barge terminal operators are frustrated by the lack of access to barge facilities on U.S. 50 west of Cincinnati. In this area, CSX and RailAmerica lines run in parallel, with
CSX property abutting the river terminals. Some barge terminal operators have a desire to transload to rail, but their shipment sizes are too small for efficient handling by CSX. RailAmerica’s business model and cost structure would accommodate such shipments but their access to the barge terminals is blocked by CSX’s rail line. This is an institutional and competitive issue, which does not offer itself to simple resolution.

**Butler County/Miller Brewing**

Like many communities, officials in Butler County have very site specific issues with rail service, specifically for Miller Brewery which is located southwest of Trenton, Ohio. Rail service to this location has not provided cost efficient, reliable delivery of grain. Due to inconsistent service, Miller and other businesses on this line have increased their reliance on trucks, increasing weekly traffic by 600 trucks, primarily affecting State Routes 4, 63, and 73.

**Western Hills Viaduct**

In the central part of Cincinnati, the Western Hills Viaduct over CSX Queensgate Yard is under study for rehabilitation or replacement. If a replacement is warranted, there is an opportunity to design a structure with fewer piers. This would present the opportunity to cost-effectively increase rail capacity and/or access to Queensgate Yard.

**CSX Industrial Track**

The CSX line west of the Mill Creek is also known as the CSX Cincinnati industrial track. The only current active customer is S&B Industrial Minerals Inc. north of NS’s Gest Street Yard. The line is currently railbanked north of S&B. City of Cincinnati officials have a policy of preserving rail infrastructure for economic development and this line represents a strategic threat due to low traffic volume, but perhaps also an opportunity for increasing a rail-reliant industry. Cincinnati intends to discuss potential for future rail service on this line with CSX to foster industrial development on the adjacent property.

**Clermont County**

The major freight rail issue for Clermont County is maintaining the ability to ship traffic on the Norfolk Southern Pea-Vine line that connects Cincinnati and Fairfax to the east with the Clermont County cities of Milford and Batavia. The line itself runs east toward Portsmouth, Ohio but has been “embargoed” by NS near the village of Peebles. “Embargoed” means that NS has rendered the track unusable by piling gravel and other material across the tracks, thereby blocking passage.

The line does see limited traffic at present, but the county has several plans and opportunities for business development along the Pea-Vine line. The most notable opportunities exist near the former Ford Plant site located east of Batavia at SR 32 and Half Acre Road. The University of Cincinnati is currently developing a medical campus at the Ford Plant location and the county has been working to attract other office and light industrial tenants. Cincinnati Milacron and Georgia Pacific are existing customers along the Pea-Vine line, but have little rail service.
**Kenton County**

The major freight rail issue in Kenton County is the redevelopment potential of its western banks on the Licking River. Much of this stretch of riverfront, near the I-275 crossing, was formerly occupied by CSX and its Decoursey Yard rail operations. Over the last several years, CSX has decreased service and removed large amounts of trackage from this once vital area. These parcels currently represent an excellent opportunity for brownfield redevelopment. The land and access to rail and water are readily available. Some challenges exist for providing better highway access to this area, but there are a number of options to investigate.

In the south Covington/Latonia area, an existing railroad grade crossing on Decoursey Avenue is a problematic area in terms of roadway blockage/congestion.

### 4.8 Inland Waterway and Barge Terminal Strengths and Needs Assessment

Situated along the Ohio River, the OKI region enjoys a geographic advantage allowing transport of freight by inland waterways. As stated in the previous chapter, the Ohio River is the largest tributary, by volume, of the Mississippi River Inland Waterway System. Barge terminals are generally privately owned businesses, which are dispersed along a 30-mile section of the Ohio River in the OKI area.

Bulk commodities dominate inland waterway trade and barge traffic in the OKI region. Coal, petroleum, nonmetallic minerals and chemicals make up 90 percent of the 17.4 million tons coming into the region annually. These commodities represent important raw materials for electricity generation, chemical production and salt for winter road maintenance.

Other commodity groups, while making up a small percentage of overall tonnage, have significant influence over the regional economy and business development. For example, Cincinnati Bulk Terminals specialize in break bulk handling, including bagged material, palletized goods, and steel products. Break bulk terminals employ a relatively larger number of people per ton of commodity handled, as compared to coal or stone shipments. In addition, as a regional asset, river terminals that handle break bulk and offer warehousing, represent an important asset to the area's manufacturing industries.

Barge transportation in the OKI region, while handling about 10 percent of total commodity movements, provides unique business development opportunities for the region that landlocked cities cannot equal.

Opportunities for increasing business development along the Ohio River are outlined in the following subsections.

#### 4.8.1 America’s Marine Highway Program

America’s Marine Highway Program is an initiative that identifies routes where water transportation presents an opportunity to offer relief to landside corridors that suffer from traffic congestion, excessive air emissions or other environmental concerns and other challenges. Transportation Secretary Ray LaHood identified 18 marine corridors, eight projects, and six
initiatives for further development as part of this initiative. ODOT's Office of Maritime and Freight Mobility is sponsoring both the M-70 and M-90 corridors.

The M-70 Marine Highway Corridor includes the Ohio, Mississippi and Missouri Rivers, and connecting commercial navigation channels, ports, and harbors, from Pittsburgh to Kansas City. It spans Pennsylvania, Ohio, Indiana, Illinois and Missouri, connecting to the M-55 Corridor at St. Louis, Missouri. This corridor contains major freight truck bottlenecks at numerous points, including Kansas City, St. Louis, Louisville, Dayton, Cincinnati, Columbus, and Pittsburgh. According to the USDOT, long-haul truck volumes are expected to reach 25,000 per day along major segments by 2035. Similarly, rail congestion is evident in and around Kansas City, St Louis, and several points along the corridor in Ohio. This marine highway corridor has the potential to help alleviate a portion of the congestion from the existing landside routes, while at the same time, reducing emissions, conserving energy, improving safety, and reducing highway maintenance costs. It can also contribute to increased economic and commercial activity in the region by removing barriers to efficient freight transportation.

4.8.2 Emerging U.S. Trade Patterns

In discussion with port and shipping industry professionals, commodity flows from the southeast to the Midwest/Chicago are increasing in importance, as the economy of the southeast continues to grow (see Figure 4-20). The OKI region is at strategic crossroads for this commodity flow, and there is a potential for shift to rail-barge handling of this traffic, from current truck hauls.

Figure 4-20: OKI Region Truck Flow

Source: IHS Global Insight
4.8.3 Potential for Container-on-Barge

Container-on-barge (COB) operations is a means to alleviate congestion on roadways caused by truck traffic and offers a lower cost alternative to other freight transportation methods. Successful COB operations around the world have been cited, particularly in Rotterdam, Netherlands and Antwerp, Belgium. America’s Marine Highways Program mentioned above implies such a solution. However, there are important differences between the operations in areas of Europe where COB has been successful, and the current circumstances in the U.S.

The first differences involve competition from rail and truck operations. The U.S. freight rail system is much more capable than in Europe and provides significant rate competition with barges. Faced with similar COB operation proposals along the Mississippi River, railroads lowered rates to a point where COB service was unable to compete. There is no reason to believe that rail companies would react differently to new COB operations that threaten to challenge their existing market share.

A second difference involves the difference in market scale between the U.S. and Europe. European rivers benefit from an abundance of containers at their port cities. For example, Rotterdam handles 20 million TEU’s per year which provides a large potential market for COB service on the Rhine River, into Germany. In contrast, the primary COB market for the OKI region would be New Orleans which in contrast to Rotterdam, handles between 200,000 and 300,000 TEU’s per year.

COB service on the inland U.S. waterway system remains an attractive vision if certain market issues mentioned above can be adequately addressed.

4.8.4 Regional Identity for Waterborne Commerce

River terminals in the OKI region compete with other regions for business development. In fairly close proximity to Cincinnati, there are at least three river ports that have invested in promotion and, in some cases, public development of cargo handling facilities.

- Paducah-McCracken County Riverport Authority: provides public finance of some cargo handling and warehouse development. Annual total volumes handled at this port have fluctuated between 673,000 net tons and 1,014,000 net tons.
- Port of Louisville: Capitalizing on the city’s name, the Port facilities include the bulk commodity transfer terminal, barge fleeting area, ground storage, 13 miles of onsite and offsite railroad track, and a general cargo dock. The transfer terminal is designed to handle more than four million tons of dry bulk commodities a year working at the rate of 2,000 tons an hour. An entire 120 car train can be off-loaded in an eight hour shift. Located at Mile 618, The Port of Louisville is 1,334 miles from the Gulf of Mexico, a transit time of 10 to 12 days.
- Port of Pittsburgh Commission: is an affiliate of the Commission of the Commonwealth of Pennsylvania. Created in 1992 to serve a 12 county region of Southwestern Pennsylvania, the Port of Pittsburgh Commission has broad powers established in its enabling legislation Title 55 Chapter 17J P.S. 698.21. To date, it has chosen to limit and focus its efforts by its mission statement and by-laws. Specifically, it has chosen not to own or operate port terminals but to act more like: (1) a chamber of commerce promoting the overall waterway interests of its 12 county port district clientele; (2) an economic development agency with a low cost loan program for waterway-related entities and a revenue bond program that is not restricted to waterway
activities; (3) a liaison between port interests and elected and regulatory officials to ensure that each side understands the implications its actions have on the other; and (4) an innovator of new, non-structural technologies that could transform and improve waterway transportation, thus lowering the cost of doing business in the Port of Pittsburgh. The Pittsburgh Port District encompasses essentially all 200 miles of commercially navigable waterways in southwestern Pennsylvania. It includes the three major rivers in southwestern Pennsylvania: the Allegheny, the Monongahela, and the Ohio. This waterway is made navigable by a system of 17 locks and dams. The Port of Pittsburgh supports over 200 river terminals and barge industry service suppliers, including privately owned public river terminals. The Commission acts as a one-stop shopping link for shippers seeking information on the river system. The Port complex is served by CSX and NS and by four interstate highways. Based on 2007 data from the USACE, Pittsburgh is the second busiest inland port in the nation and the 19th busiest port, of any kind, in the nation. Pittsburgh is larger in tonnage than Philadelphia and St. Louis. The more than 38 million tons of cargo the Port of Pittsburgh ships and receives each year equates to an annual benefit to the region of more than $800 million.23

- Port of Indiana-Jeffersonville: The ports of Indiana were created by the Indiana legislature in 1961 to promote the industrial development of the state. The port handles 1.9 million bushels of grain, bulk, steel and project cargo, which amounts to approximately $500 million of cargo value annually. With 3,200 feet of riverfront access, the port enjoys year round access via the Ohio and Mississippi rivers, boasts 1,057 acres of which 320 acres are available for industrial development. Furthermore, the port is accessible by CSX and Louisville-Indiana rail service, which includes an 11-mile interior rail yard that provides switching and sorting of rail cars.

Unlike some regions, barge terminals in the OKI region do not share a common identity, such as with a port authority that might provide strategic planning and marketing support. Intermodal Impediments

In the U.S., barge transportation faces significant competition from railroads which are price competitive for bulk shipments. Railroads also compete against each other for access to ports and other large traffic generators, access itself can be a barrier to competition. Competitive issues can run counter to public policy interests.

For example, RailAmerica’s IORY rail line ends one mile from the AK Steel plant in Butler County. If RailAmerica had direct access to AK Steel, they would rail iron pellets from river terminal facilities to the plant, providing cost savings, decreasing truck traffic, and reducing pollution. However, NS and CSX serve AK Steel exclusively and will not grant access to RailAmerica, which is logical from a business perspective. However, unlike RailAmerica, neither CSX nor NS finds this short haul of iron pellets to be profitable, so instead of that cargo moving by rail, it is moved by truck from barge terminals on the Ohio River. Such institutional and competitive issues result in more trucks on the regional highway system, and possibly higher cost of transport for AK Steel.

### 4.8.5 Infrastructure

Antiquated locks and dams along the Ohio River have been a hindrance to barge traffic. These infrastructure deficiencies increase the time and expense of transporting cargo and can make water

transport less competitive with truck or rail transport options. Where cargo flows between St. Louis and New Orleans enjoys unimpeded travel all the way to the Gulf of Mexico, the Ohio River presents a need to update and modernize its infrastructure. Modernization of the Ohio River system continues to be a top local, regional and national priority. By 2015, over half of the current navigation structures will be past their structural design life. Replacements for a number of locks are under construction. Some of the new designs being implemented reduce the number of locks required and therefore reduce time lost due to stoppages. Plans are underway to modernize several locks and dams throughout the navigation system. Current projects include:

- The Markland locks and dam project, completed in 2010, is located at Ohio River Mile 531.5 and is 3.5 miles downstream of Warsaw, Kentucky. The project consisted of two adjacent parallel locks located on the Kentucky bank. The main lock chamber has clear dimensions of 110 feet by 1,200 feet and the auxiliary lock 110 feet by 600 feet. This replacement was due to the failure of the 1,200-foot lock and lower miter gate, which forced large tows to be broken up to go through the smaller 600-foot chamber only to be reassembled again leading to an average delay of 10 hours and 49 minutes. Over the past five years, Markland Locks passed an average of 46 million tons of commodities annually with coal being the primary commodity.

- Captain Anthony Meldahl Locks & Dam is located at mile marker 436 on the Ohio River. There is a great deal of recreational activities along the Meldahl Locks and Dams. Construction of a low impact hydro electric plant began in June 2010. The plant will supply energy to Hamilton, Ohio. There is currently a project underway to construct a low-impact hydroelectric plant along the side of the Ohio River. The U.S. Army Corp of Engineers issued a permit in April 2010 to begin the $473 million construction, which is expected to be complete and operational by 2014.

As with all Ohio River navigation construction projects, half the cost of new construction and major rehabilitation is funded by the Inland Waterways Trust Fund. The fund is contributed to by commercial operators on the Ohio River Navigation System and the Intracoastal Waterway, who pay a fuel tax which deposits to the fund. Unfortunately, inland waterway advocates have had difficulty conveying the importance of adequate funding for lock and dam infrastructure.

### 4.8.6 Availability of Land for Barge Terminal Development and Expansion

Another issue for improving the prospects of barge transportation is the availability of developable land. In the Cincinnati area, there are a number of parcels available, yet they tend to be smaller than necessary for large scale barge terminal operations. Some parcels are located between the road or rail and the river, leaving the land between too narrow for a development. Some parcels are land-locked and do not have direct access to the riverfront. Other parcels have tributaries that would require bridges to be built within parcels to traverse and use property, and others might have brownfield issues related to former industrial uses.

### 4.8.7 Land Use Conflicts

Waterfront property is valuable for any variety of development, whether it is residential, commercial, or industrial. There can be conflicts where commercial or industrial uses of the

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waterfront are at odds with residential development. Such conflicts are not readily resolved, especially since barge terminals have few alternatives on where they operate. This conflict is evident in many port cities where industrial waterfront uses compete with residential and commercial development and similar conflicts exist in the OKI region.

4.8.8 RailAmerica Service to Cincinnati Bulk Terminal

RailAmerica’s CIND line serves the Cincinnati Bulk Terminal facility, which presently trucks pig iron across West Mehring Way for transloading to rail cars; CIND then moves the loaded cars through Queensgate Terminal to connection with IORY for delivery to Dover, Ohio. There are discussions underway to build tracks to directly serve the terminal location eliminating the short truck haul and increasing efficiency. Cincinnati Bulk Terminals has received initial permit approval from the city of Cincinnati to construct this connection and at-grade crossing.

4.8.9 Cincinnati Barge and River Terminal

RailAmerica has tracks next to this facility, but does not currently service any cargo from it. If business develops, RailAmerica could efficiently receive freight directly from the terminal and move it to locations north of the region. Such an operation would avoid the movement through Queensgate Terminal that RailAmerica makes today via its CIND line.

4.8.10 Kenton County

Kenton County can offer development parcels with outstanding water and rail access along the Licking River. Currently, two small steel companies and Ashland Chemicals operate facilities along the Licking River in Campbell County with limited volumes of barge traffic. One limiting factor is the navigability of the Licking River and how far south barges can feasibly travel.

4.9 Air Cargo Strengths and Needs Assessment

As presented in the previous chapter, the OKI region has several facilities that can be utilized for air freight. This section focuses on efforts of CVG management to increase the air cargo capacity of the region, as well as potential infrastructure needs specifically that are essential for expanding air freight activities in the region. DHL cargo landing revenue made up 40 percent of landing revenues in 2010.

Operations at CVG have been dominated by Delta Airlines and changes since their merger with Northwest Airlines. Specifically, the merger has decreased the significance of CVG as a hub, with the number of daily departures decreasing from 670 in 2005, to 200 in 2010. Even with such a drastic reduction in service, CVG has more flights than the nearest large airports in Indianapolis, Columbus, and Pittsburgh, and is the only airport in the tri-state region with international service to Paris. CVG’s three runways are also a significant asset to freight and passenger air service.

Airport management is currently undertaking an effort to update an airport master plan. There are four demand scenarios for air cargo being contemplated for the study: an air cargo hub scenario and non-air cargo hub scenario, for both freight and passenger service. The goal is to have the ability to
respond to market drivers and change strategies and tactics if necessary to react to airline needs and opportunities. This plan update is expected to be complete in summer 2012 and will result in a list of projects that will be required over the next 20 years to meet the demand for each of the scenarios.

As the aircraft fleet mix of CVG has shifted from larger passenger jets to smaller regional jets, the capacity for belly cargo (freight carried by passenger airlines) at the airport has decreased. Airport management is currently working with Delta Airlines (the primary passenger carrier) to increase the size of the aircraft utilized in the larger and busier business markets served at the airport, which would in turn increase the capacity and potentially the demand for belly cargo carried at the airport.

Another effort being undertaken by airport management to increase air cargo is to obtain a U.S. Fish and Wildlife Service port of entry designation. This would allow for imported products to come directly to the OKI region rather than being shipped through other ports of entry such as the New York City region, Atlanta, Georgia, and Louisville, Kentucky prior to being shipped to the region for a savings of both cost and time.

Both DHL and FedEx operate at CVG, with DHL having an international air cargo hub operation at the airport. DHL is currently planning to expand its operation at CVG; however, the extent of this expansion is currently proprietary. Airport management indicated that a connector road from the expanded DHL facility and CVG property to the future South Airfield Road would help accommodate additional DHL truck traffic, as well provide additional airport access for employees by providing more convenient access to I-75. This improvement would also open up additional land for commercial, industrial and other airport-related development and employment.

**Figure 4-21: Aerial view of Cincinnati/Northern Kentucky International Airport**
There has been discussion regarding the construction of a new Ohio River bridge that would connect western Hamilton County to Boone County between the Brent Spence and Carroll C. Cropper bridges. This has been a controversial topic with much community opposition in the past amongst long-established residential communities in western Hamilton County. All agree that the political will for such a project is not present. However, the project is not without transportation and economic development interest to the region. Two OKI studies have recommended this new crossing or study of this new crossing. One study estimated that the forecasted volume of a western county river crossing could be as many as 50,000 vehicles per day, much of it from the heavily congested Brent Spence Bridge. A new crossing could also provide intermodal access from the regional freeway system to barge terminals in Boone County. Because of extremely steep topography and narrow two-lane facilities, roadway access to barge facilities in Boone County along KY 8 is lacking. It is emphasized that prior to any future discussion or study of a new Ohio River crossing, the OKI region’s foremost priority is the full funding and completed construction of all Brent Spence Bridge improvements. Once completed, the improved Brent Spence Bridge may show that consideration of a new Ohio River Crossing is unwarranted.
5 Freight Performance Measures

As part of the OKI freight planning effort, a first iteration of freight performance measures was developed to evaluate potential freight system investments. This chapter provides a freight performance management framework for OKI and suggested metrics that could be applied to evaluate projects and initiatives identified as part of the recommendations in Chapter 7.

5.1 Goals from OKI Long-Range Plan

To develop freight system performance measures, the OKI 2030 Regional Transportation Plan was leveraged as a starting point to identify relevant goals. While the four-year update of the plan is just being initiated, the goals articulated in the plan are not likely to change drastically. Starting with these pre-existing goals will enable OKI to conform the metrics to the 2030 plan, thereby maintaining consistency with the overall regional transportation plans. The 2030 plan goals, which lay the foundation for freight system performance measures, are as follows:

1. Improve travel safety
2. Improve accessibility and mobility options for people and goods
3. Protect and enhance the environment
4. Enhance the integration and connectivity of the transportation system
5. Promote efficient system management and operation
6. Emphasize the preservation of the existing transportation system
7. Support economic vitality
8. Consider regional security
9. Strengthen the connection between infrastructure and land use

For the purposes of the OKI Regional Freight Plan, the following five freight performance goals were selected:

1. Mobility and Intermodal Connectivity
2. Economic Vitality
3. Environment and Public Health
4. Safety and Security
5. System Preservation and Condition

Cross-referencing the original nine goals from the 2030 plan and assigning them to one of the five freight performance goals enables a more manageable performance management process without losing sight of OKI’s original mission in implementing a metropolitan transportation plan. Table 5-1 shows the relationship between the 2030 plan goals and the freight plan goals.
Table 5-1: OKI 2030 Plan Goals Cross-Referenced with OKI Freight Goals

<table>
<thead>
<tr>
<th>OKI 2030 Long-Range Plan Goals</th>
<th>Proposed OKI Freight Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Safety</td>
<td>Safety and Security</td>
</tr>
<tr>
<td>2. Accessibility and Mobility Options</td>
<td>Mobility and Intermodal Connectivity</td>
</tr>
<tr>
<td>3. Environment</td>
<td>Environment and Public Health</td>
</tr>
<tr>
<td>4. Intermodal Connectivity</td>
<td>Mobility and Intermodal Connectivity</td>
</tr>
<tr>
<td>5. Efficient Management and Operation</td>
<td>Mobility and Intermodal Connectivity</td>
</tr>
<tr>
<td>6. System Preservation</td>
<td>System Preservation and Condition</td>
</tr>
<tr>
<td>7. Economic Vitality</td>
<td>Economic Vitality</td>
</tr>
<tr>
<td>8. Regional Security</td>
<td>Safety and Security</td>
</tr>
<tr>
<td>9. Land Use</td>
<td>Environment and Public Health</td>
</tr>
</tbody>
</table>

Source: OKI 2030 Regional Transportation Plan goals

The following changes were made to tailor the goals specifically to OKI’s Regional Freight Plan:

- Safety and security goals were combined because of the interplay between the two areas and the overlap of measures.
- Mobility was changed to include intermodal connectivity as both focus on system performance and strive for the efficient movement of goods.
- Environment was combined with public health because of impacts to all things natural and/or organic. This also reflects the goal as previously developed by OKI.
- System preservation was renamed “System Preservation and Condition” to reflect the goal as previously developed by OKI.
- The interests and connections of land use and transportation were included within the freight goal addressing environment and public health.

These proposed OKI freight goals are also consistent with other recent freight planning efforts, in their focus on freight mobility, economic impact, environment, safety and security, and infrastructure conditions. Ideally, stakeholder outreach and public participation should drive the goal articulation process and tailor the criteria setting process specific to OKI’s regional needs. By providing a forum to debate the merits of these goals, OKI is being mindful of the diversity and breadth of freight stakeholders, thereby achieving greater transparency and credibility while securing cooperation in building a new platform of performance metrics. For the purposes of this project, OKI’s freight performance management system will begin with these five metrics. For each category a goal will be defined, followed by the objective or criteria that will be applied and the key performance indicator (actual metric) that will be used to measure the criteria.

### 5.2 Performance Measures

Once goals are established, criteria can be developed to measure the goals and evaluate freight investment decisions. Whereas the goals describe what is being measured, the criteria describe how the project will be measured. Typically, the criteria developed for freight performance measurement are quantifiable. Despite the ability to quantify many of the benefits, some are not as easily measurable. The process of selecting projects wades through a myriad of complex issues, many of which are nebulous, contentious, and subjective. Examples of qualitative criteria include
geographical and political considerations, socioeconomic and community impacts, relationship to any pending legislation or regulatory hurdles and project implementation obstacles. Because there is no clear-cut answer or method to measuring these issues, qualitative criteria often require discussions, negotiations, consensus building, and compromise. Furthermore, because of the different natures of projects across the various transportation modes, comparing these projects’ benefits is challenging. Realistically speaking, performance metrics will be rooted in a combination of straightforward, quantitative metrics and complex, qualitative and subjective debates.

Table 5-2 presents a framework that suggests the kind of goals and criteria that may be applied to freight projects. The tables are broken out by modes and are meant to serve as guidance and introduction to the criteria that may be applied to freight projects. For the purposes of this first iteration of performance metrics, a high level qualitative screening of freight projects was conducted. The high level screening entailed a quick analysis of whether the project is likely to address a specific goal and whether any immediate concerns or issues emerged to be considered in the more in-depth analytical iterations informed by real data. The extent to which the project meets the criteria will have to be properly measured and analyzed in these subsequent iterations of performance metrics.

5.3 Evaluation Methodology

As part of the first iteration of performance measures, each proposed recommendation was evaluated against the goals and criteria developed in this first iteration. Through a high-level screening process that assesses whether the project is likely to meet the criteria upon an initial review, a preliminary overview of whether the project is likely to meet any of the criteria and any concerns or issues with respect to the criteria were identified at the outset of the initial screening.

This process was sequestered and repeated by mode. For example, only highway projects were evaluated against other highway projects, rail projects were evaluated against other rail projects, and so forth. In reality, these projects will eventually need to be considered in tandem, which adds another layer of complexity. But for the purposes of a first iteration of performance measures, cross-comparing projects was not conducted.
### Table 5-2: Freight Performance Measure Framework Broken Out by Mode

<table>
<thead>
<tr>
<th>Goal</th>
<th>Mobility &amp; Intermodal Connectivity</th>
<th>Economic Vitality</th>
<th>Environment &amp; Public Health</th>
<th>Safety &amp; Security</th>
<th>System Preservation &amp; Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve freight mobility of trucks in the region by reduction of traffic congestion.</td>
<td>Improve economic development by lowering the operating cost of trucking and increased reliance on just-in-time delivery.</td>
<td>Promote environmental protection through improved air quality and reduced energy consumption. Reduce harmful impacts of truck emissions to human health.</td>
<td>Enhance safety of highways.</td>
<td>Invest continuously in highway maintenance.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Criteria # 1</th>
<th>Improved Travel Time</th>
<th>Public Sector Benefits</th>
<th>Air Quality impacts to environment and human health</th>
<th>Crash Fatality and Disabling Injuries</th>
<th>Pavement Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key Performance Indicator</td>
<td>1) Actual travel time savings</td>
<td>1) Number of permanent jobs created</td>
<td>1) Volume of GHG Emissions and volatile organic compounds (VOCs)</td>
<td>1) Number of annual crash fatalities and disabling injuries</td>
<td>Pavement condition index.</td>
</tr>
<tr>
<td></td>
<td>2) Transfer time between modes</td>
<td>2) Financial impact to tax revenue</td>
<td>2) Reduction in truck emissions impacts on human health</td>
<td>2) Consecutive number of days without incidents</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3) Percentage on time performance</td>
<td>3) Financial impact to regional GDP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4) Time lost to congestion</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Criteria # 2</th>
<th>Improve Intermodal Connections</th>
<th>Private Sector benefits</th>
<th>Energy Savings</th>
<th>Reduction of HAZMAT incidents</th>
<th>Repair of potholes and sinkholes.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key Performance Indicator</td>
<td>1) Percentage of modal balance</td>
<td>1) Reduction of Financial cost per mile</td>
<td>1) Fuel Cost Savings</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2) Number of intermodal facilities</td>
<td>2) Increase in TEU or tonnage of freight moved</td>
<td>2) NOx reduction</td>
<td>Number of accidents and highway crashes involving HAZMAT materials</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3) Transfer time between modes</td>
<td>3) Reduction in number of “empty miles”</td>
<td></td>
<td>Number of potholes repaired by state DOTs.</td>
<td></td>
</tr>
<tr>
<td>Goal</td>
<td>Table 5-2: Freight Performance Measure Framework Broken Out by Mode (continued)</td>
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<td>------</td>
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</tr>
<tr>
<td>Mobility &amp; Intermodal Connectivity</td>
<td>Economic Vitality</td>
<td>Environment &amp; Public Health</td>
<td>Safety &amp; Security</td>
<td>System Preservation &amp; Condition</td>
<td></td>
</tr>
<tr>
<td><strong>Criteria # 1</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Key Performance Indicator</td>
<td>Diversion of truck to rail</td>
<td>Public Sector Benefits</td>
<td>Diversion of truck to rail</td>
<td>Reduction of railroad crashes</td>
<td>Increase rail freight capacity</td>
</tr>
<tr>
<td>Rail movement as a proportion of total regional freight movement (in tons)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Number of permanent jobs created</td>
<td>1) Rail movement as a proportion of total regional freight movement (in tons)</td>
<td>2) Fuel cost savings</td>
<td>Number of railroad crash incidents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Financial impact to tax revenue</td>
<td></td>
<td></td>
<td></td>
<td>Number of capital projects that invest in new or improved alignments, connections and rail yards</td>
<td></td>
</tr>
<tr>
<td>3) Financial impact to regional GDP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>4) Number of rail carriers available to provide service</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Criteria # 2</strong></td>
<td></td>
<td></td>
<td></td>
<td>Rail Infrastructure conditions</td>
<td></td>
</tr>
<tr>
<td>Key Performance Indicator</td>
<td>Improve dwell time in rail yards and address rail bottlenecks at grade crossings</td>
<td>Private Sector benefits</td>
<td>Air Quality Impacts to environment and human health as a result of modal diversion to rail</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dwell time in rail yards</td>
<td></td>
<td></td>
<td></td>
<td>1) Rail track conditions</td>
<td></td>
</tr>
<tr>
<td>Number of grade crossing delays</td>
<td></td>
<td></td>
<td>1) Reduction of Financial cost per mile</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Reduction of Financial cost per mile</td>
<td>1) Volume of GHG Emissions and volatile organic compounds (VOCs)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Increase in TEU or tonnage of freight moved</td>
<td>2) Reduction in truck emissions impacts on human health</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) Reduction in Number of &quot;empty miles&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Key Performance Indicator:

- **Goal**: Promote freight movement via rail.
- **Criteria # 1**: Diversion of truck to rail
  - Key Performance Indicator: Rail movement as a proportion of total regional freight movement (in tons)
    - 1) Number of permanent jobs created
    - 2) Financial impact to tax revenue
    - 3) Financial impact to regional GDP
    - 4) Number of rail carriers available to provide service
- **Criteria # 2**: Improve dwell time in rail yards and address rail bottlenecks at grade crossings
  - Key Performance Indicator: Dwell time in rail yards
  - 1) Reduction of Financial cost per mile
  - 2) Increase in TEU or tonnage of freight moved
  - 3) Reduction in Number of "empty miles"
Table 5-2: Freight Performance Measure Framework Broken Out by Mode (continued)

<table>
<thead>
<tr>
<th>Inland Waterway Performance Metric Framework</th>
<th>Mobility &amp; Intermodal Connectivity</th>
<th>Economic Vitality</th>
<th>Environment &amp; Public Health</th>
<th>Safety &amp; Security</th>
<th>System Preservation &amp; Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Goal</strong></td>
<td>Improve the movement of freight along the Ohio River.</td>
<td>Focus on growing the inland waterway system to transport greater volume of freight cargo along the Ohio River.</td>
<td>Utilize inland water movements to divert freight from trucks.</td>
<td>Minimize impacts from river floods and other natural disasters</td>
<td>Improve infrastructure along the Ohio River by replacing or expanding dams and locks.</td>
</tr>
<tr>
<td><strong>Criteria # 1</strong></td>
<td>Maintain existing throughput.</td>
<td>Stimulate growth of manufacturers and shippers along the riverfront.</td>
<td>Diversion of freight from trucks to inland water transportation.</td>
<td>Flood disasters.</td>
<td>Improvement of dams and locks.</td>
</tr>
<tr>
<td><strong>Key Performance Indicator</strong></td>
<td>Number cargo tons moved by inland water way</td>
<td>1) Number of industries attracted to the riverfront. 2) Incentive packages to lure shippers/manufacturers</td>
<td>Inland water movement as a proportion of total regional freight movement (in tons).</td>
<td>Mitigation strategies to contain flooding along the Ohio River</td>
<td>Number of projects and investment levels focused on replacing new locks and dams.</td>
</tr>
<tr>
<td><strong>Criteria # 2</strong></td>
<td>Intermodal connectivity</td>
<td>Public Sector Benefits</td>
<td>Air Quality impacts to environment and human health as a result of modal diversion to inland water</td>
<td></td>
<td>Continuous inspections and monitoring of infrastructure conditions.</td>
</tr>
<tr>
<td><strong>Key Performance Indicator</strong></td>
<td>1) Number of connections 2) time/distance to highways and rail</td>
<td>1) Number of permanent jobs created 2) Financial impact to tax revenue 3) Financial impact to regional GDP 4) Number of rail carriers available to provide service</td>
<td>1) Volume of GHG Emissions and volatile organic compounds (VOCs) 2) Reduction in truck emissions impacts on human health</td>
<td></td>
<td>Number of periodic inspections.</td>
</tr>
</tbody>
</table>
Table 5-2: Freight Performance Measure Framework Broken Out by Mode (continued)

<table>
<thead>
<tr>
<th>Goal</th>
<th>Mobility &amp; Intermodal Connectivity</th>
<th>Economic Vitality</th>
<th>Environment &amp; Public Health</th>
<th>Safety &amp; Security</th>
<th>System Preservation &amp; Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintain or improve air cargo movements and landside connectivity.</td>
<td>Preserve OKI as a competitive market for air freight.</td>
<td>Monitor the environmental and health impacts related to air cargo movements</td>
<td>Enhance safety and security measures at air cargo terminals.</td>
<td>Ensure adequate capacity to continue air cargo operations.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Criteria # 1</th>
<th>Track intermodal connections.</th>
<th>Public Sector Benefits</th>
<th>Air Quality impacts to environment and human health as a result of modal diversion to inland water</th>
<th>Monitor incidents and potential threats.</th>
<th>Monitor airfield conditions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key Performance Indicator</td>
<td>Number of projects focused on enhancing or building intermodal and landside connections to the airport.</td>
<td>1) Number of permanent jobs created</td>
<td>1) Volume of GHG Emissions and volatile organic compounds (VOCs)</td>
<td>1) Number of aircraft threats and incidents</td>
<td>Pavement condition index for runways.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Financial impact to tax revenue</td>
<td>2) Reduction in truck and plane emissions impacts on human health</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3) Financial impact to regional GDP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4) Number of rail carriers available to provide service</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Criteria # 2</th>
<th>Air cargo processing cost and time</th>
<th>Private Sector benefits</th>
<th>Noise Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key Performance Indicator</td>
<td>Financial cost/ton of cargo moved</td>
<td>1) Reduction of Financial cost per mile</td>
<td>Percentage decibel reduction from air cargo and truck movements</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Increase in TEU or tonnage of freight moved</td>
<td></td>
</tr>
</tbody>
</table>
5.4 Future Considerations

Implementing a freight performance management system is a monumental effort. The system requires not only the upfront data, tools, technical skills and “hard resources” for building and launching this complex system, but also requires a steady commitment of “soft resources” including human capital, political will, buy-in, and cooperation from a spectrum of people who will manage, provide, scrub, and analyze the data.

Performance management may also require collecting new data that has never been collected before, making that cooperation even more important. Without cooperation, it becomes nearly impossible to insist on a discipline of consistent performance monitoring. The agency must achieve organizational buy-in from all those who will be held responsible for not only reporting on these metrics, but effecting change based on policy and investment decisions. This is particularly challenging in an environment that has not had a culture of performance monitoring and accountability. Furthermore, if the data are to come from a variety of sources outside of the jurisdiction of the main organization (in this case OKI) then securing cooperation with independent agencies will further challenge the sponsor organization. This may require constant negotiation, compromise and trust building, which are vital to the program’s core mission. Recruiting, training, and developing the right professionals to execute a performance management program will need to be a vision and plan articulated at the top of the organization.

In addition to human capital, tools are equally important factors of performance management. Building a performance management system may require investment in information technology that will collect, track and warehouse the data. It may even require building new platforms that interface with different data programs in order to capture the information in one system. However, despite the technology challenges, it is the people management that requires greater priority, eventually sustaining this performance management effort.

Finally, achieving buy-in, both internally and externally, will ensure collaboration from those who will participate in the performance management program. By illustrating the benefits of a performance management system—and how this system will create more transparency in the policy and investment decision process—the sponsor organization can build credibility with these independent organizations and obtain the information needed. For this to be successful, these other organizations and agencies must see the results of this effort, particularly how they contributed toward the decisions that were made. They will realize that their contribution means they have a stake in a process that will help them make a compelling case for their own capital and operational needs.
6 Safety and Security

6.1 Introduction

With the passage of the Safe Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA-LU), security became a separate, stand-alone planning factor to be reflected in, and coordinated between, both statewide and metropolitan planning processes, and consistent with security planning and review processes, plans, and programs. SAFETEA-LU continues long-established requirements for transportation safety. This chapter documents the freight safety and security analysis for the OKI region.

6.2 Highway Safety

Since 2006, overall highway crashes in the OKI region have declined. Based on 2009 data, overall highway crashes dropped from 68,606 to 62,815 representing an eight percent decrease.\(^{25}\) Table 6-1 shows the breakdown of highway crashes by county.

Table 6-1: OKI Highway Crash Incidents, 2009

<table>
<thead>
<tr>
<th>State</th>
<th>County</th>
<th>Total 2006</th>
<th>Total 2009</th>
<th>Total by %</th>
<th>Fatal</th>
<th>Injury</th>
<th>Property Damage Only</th>
<th>Unknown*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ohio</td>
<td>Butler</td>
<td>9,953</td>
<td>8,980</td>
<td>14%</td>
<td>24</td>
<td>2,412</td>
<td>6,379</td>
<td>165</td>
</tr>
<tr>
<td>Ohio</td>
<td>Clermont</td>
<td>5,654</td>
<td>5,167</td>
<td>8%</td>
<td>8</td>
<td>1,330</td>
<td>3,778</td>
<td>51</td>
</tr>
<tr>
<td>Ohio</td>
<td>Hamilton</td>
<td>33,538</td>
<td>30,041</td>
<td>48%</td>
<td>42</td>
<td>5,615</td>
<td>24,190</td>
<td>194</td>
</tr>
<tr>
<td>Ohio</td>
<td>Warren</td>
<td>5,061</td>
<td>5,168</td>
<td>8%</td>
<td>12</td>
<td>1,275</td>
<td>3,835</td>
<td>46</td>
</tr>
<tr>
<td>Kentucky</td>
<td>Boone</td>
<td>3,953</td>
<td>3,958</td>
<td>6%</td>
<td>12</td>
<td>611</td>
<td>3,335</td>
<td>–</td>
</tr>
<tr>
<td>Kentucky</td>
<td>Campbell</td>
<td>2,847</td>
<td>2,714</td>
<td>4%</td>
<td>3</td>
<td>354</td>
<td>2,357</td>
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</tr>
<tr>
<td>Kentucky</td>
<td>Kenton</td>
<td>5,621</td>
<td>4,893</td>
<td>8%</td>
<td>12</td>
<td>794</td>
<td>4,087</td>
<td>–</td>
</tr>
<tr>
<td>Indiana</td>
<td>Dearborn</td>
<td>1,979</td>
<td>1,894</td>
<td>3%</td>
<td>6</td>
<td>255</td>
<td>1,633</td>
<td>–</td>
</tr>
<tr>
<td>OKI Region Total</td>
<td>68,606</td>
<td>62,815</td>
<td>100%</td>
<td>119</td>
<td>12,646</td>
<td>49,594</td>
<td>456</td>
<td></td>
</tr>
</tbody>
</table>


* Crash statistics of “unknown” available for only Ohio counties

Hamilton County in Ohio is the leading county of crash incidents, representing nearly half (48 percent) of total crashes in the OKI region. Dearborn County in Indiana maintains the lowest number of highway crashes in the OKI region, which can be explained, in part, by the population differences between the two counties. According to the 2005–2009 U.S. Census American Community Survey Five-Year Estimates, Dearborn County’s population is 49,608—the lowest among the eight county OKI region. Hamilton County had the largest population with 851,867 people.\(^{26}\) In terms of severity, fatalities declined between 2006 and 2009 by 28 percent, while injury and property damage only accidents declined by eight percent.

\(^{25}\) OKI 2030 Regional Transportation Plan, Chapter 5, p. 5-1
\(^{26}\) Source: U.S. Census – American Community Survey, 2005–2009
Hamilton County’s crash totals reflect its larger population and road network, where many of the interstate and arterial highways converge in this part of the OKI region. Large concentrations of traffic traverse the I-71, I-74, I-75, and I-275 corridors.

State routes, such as SR 264, have experienced a high frequency of highway crashes. According to the 2007 FHWA’s Five Percent Plan as mandated by SAFETEA-LU, SR 264 was called out as having the most severe safety needs in the OKI region. In Ohio, there were 25 highway segments/intersections exhibiting the most severe safety needs, of which seven were located in the OKI region—all in Hamilton County. In Kentucky, approximately 16 roadways were identified as having the most severe safety needs. Most of these roads were in Kenton and Campbell counties. Indiana’s Dearborn County did not have any roads or highways in the Five Percent Plan.

6.3 Highway Railroad Crossing Incidents

Like many regions, OKI has a number of highway-rail grade crossings, which present a hazard to motorist safety. By and large, railroad and highway infrastructure must coexist, though projects have been implemented over time to build highway-rail grade separations at particular high volume grade crossings. Even then, there are still hundreds of grade crossings in the OKI region, as shown by the red dots on Figure 6-1.

Figure 6-1: OKI Rail Grade Crossing Map

Source: Parsons Brinckerhoff

28 OKI 2030 Regional Transportation Plan, Chapter 5, p.5-2
The train volume on some of these rail crossings is very heavy, such as on the CSX line through the Mill Creek Valley. This line has more than 70 trains per day and parallels the NS mainline with about 30 trains per day.

With respect to grade crossing incidents, Butler County in the OKI region had the most highway-rail grade crossing accidents. Table 6-2 shows the historical number of railroad crossing incidents from 2006 through 2010 that include fatalities.

According to FRA’s Office of Safety Analysis, the total number of highway-rail grade crossing crashes nationwide was 13 in 2010, which is an increase from 2009 levels. The lower than average statistics for 2009 could reflect the fewer vehicles and rail movements caused by the economic recession. Of 2010 totals, Butler County had five crashes, one of which was fatal. Campbell County in Kentucky is the second worst in the OKI region with two crashes, one of which was fatal. Historically, Butler County had the most number of crashes, whereas Clermont County had the fewest. In Butler County, the cities of Middletown and Hamilton have experienced the most frequent highway-rail crossing incidents. Hamilton County, particularly the city of Cincinnati, had the worst number of incidents in 2006, but since then has improved its crash statistics. Table 6-3 represents a historical breakdown of highway-rail crossing accidents by cities from 2006 through 2010.

Those cities marked “unknown” were not indicated in the FRA Crash Statistics. There was no available information for those counties marked “no data” which suggests there were no grade crossing incidents or at least none that were recorded.

Furthermore, in the Ohio and Kentucky counties in the OKI region, the number of fatalities in 2010 exceeded their respective statewide average. Specifically in Butler, Clermont, Hamilton, and Warren counties, which make up the Ohio portion of the OKI region, approximately 14 percent of crashes (one fatality out of seven accidents) were fatal, compared to the state of Ohio’s average of seven percent (five fatalities out of 73 crashes). The same was true in Kentucky where in Boone, Campbell and Kenton counties, 33 percent (one fatality out of three crashes) of incidents were fatal, compared to the statewide average of 14 percent (eight fatalities out of 56 crashes).

One potential reason for Butler County’s rail grade crossing safety issue is the number of high-volume train lines and increased train speed, as trains leave the urban core of Cincinnati and travel faster through the more suburban setting of Butler County. The major rail lines in Butler County include:

- CSX to Indianapolis (five trains per day)
- CSX to Lima (48 trains per day)
- NS to Ft. Wayne (28 trains per day)
### Table 6-2: OKI Region Highway-Rail Crossing Accidents, 2006-2010

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total # of Accidents</td>
<td>Fatalities</td>
<td>Total # of Accidents</td>
<td>Fatalities</td>
<td>Total # of Accidents</td>
<td>Fatalities</td>
<td>Total # of Accidents</td>
<td>Fatalities</td>
<td>Total # of Accidents</td>
<td>Fatalities</td>
</tr>
<tr>
<td>Ohio</td>
<td>Butler</td>
<td>5</td>
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<td>4</td>
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<tr>
<td>Kentucky</td>
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<tr>
<td>Kentucky</td>
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<tr>
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<tr>
<td>Indiana</td>
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<tr>
<td>OKI Region Total</td>
<td>13</td>
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<td>8</td>
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<td>15</td>
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<td></td>
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</table>

Source: FRA Office of Safety Analysis 5.07 - Hwy/Rail Incidents By State/Railroad
### Table 6-3: Historical Highway-Rail Crossing Incidents for OKI Counties, 2006-2010

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
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<td>Fatalities</td>
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</tr>
<tr>
<td>GRAND TOTAL</td>
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<tr>
<td>13</td>
<td>2</td>
<td>8</td>
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<td>13</td>
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</tbody>
</table>

Source: FRA Office of Safety Analysis 5.07 - Hwy/Rail Incidents by State/Railroad
6.4 At-Grade Crossings: Safety Review and Improvements

At-grade highway-rail crossings are a large safety concern of local governments in the OKI region. As train volumes are expected to increase based on the rail forecasts, the potential for collisions at these crossings also increases. Therefore, OKI identified a list of at-grade crossings that pose the greatest danger, with follow up improvement recommendations.

The Federal Railroad Administration’s (FRA) Web Accident Prediction System (WBAPS), an analytical tool which, combined with other site-specific information (such as sight-distance, highway congestion, bus or hazardous material traffic, and local topography), can assist in determining where scarce highway-rail grade crossing resources can best be directed.

Regional planners should use WBAPS as a tool for a comprehensive safety review of area at-grade crossings, in concert with state and local transportation officials. Table 6-4 shows the top ranking highway-rail at-grade crossings by WBAPS that should receive further on-the-ground review by highway traffic engineers and specialists.

There are different types of warning devices and safety improvements available for at-grade crossings:

- Crossbucks/warning signs
- Flashing lights
- Flashing lights and gates
- Traffic channelization (to prevent motor vehicles from driving around gates); or four-quadrant gates
- Closing at-grade crossings (often in concert with other improvements above)
- Rail-highway grade separation projects

Areas of concern in the OKI region include Butler County, which had five at-grade crossing crashes in 2010 (out of 13 total for the region). Waneta Street in Middletown has been the site of two fatal at-grade crossing crashes (2006 and 2008). The Waneta Street rail crossing is part of the on-going NS “CJ” Corridor Projects which is currently planned for improvement under an agreement between the Ohio Rail Development Commission, city of Middletown and NS.
Table 6-4: Top 25 Public At-Grade Highway-Rail Crossings Predicted Collisions

<table>
<thead>
<tr>
<th>Rank</th>
<th>Predicted Collisions</th>
<th>Crossings</th>
<th>Railroad</th>
<th>State</th>
<th>County</th>
<th>City</th>
<th>County</th>
<th>City</th>
<th>Railroad</th>
<th>State</th>
<th>City</th>
<th>Date</th>
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<td>OH</td>
<td>Warren</td>
<td>Mason</td>
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<td>Warren</td>
<td>Mason</td>
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<td>OH</td>
<td>Fairfield</td>
<td>Seward St</td>
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<td>CSX</td>
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<td>OH</td>
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<td>OH</td>
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<td>Butler</td>
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<td>Central Avenue</td>
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<td>CSX</td>
<td>KY</td>
<td>Boone</td>
<td>Walton</td>
<td>Main Street/US 25</td>
<td>CSX</td>
<td>KY</td>
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<td>OH</td>
<td>Hamilton</td>
<td>Cincinnati</td>
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<td>KY</td>
<td>Boone</td>
<td>Walton</td>
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<td>Middletown</td>
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<td>OH</td>
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<td>12</td>
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<td>NS</td>
<td>OH</td>
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<td>OH</td>
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<td>In</td>
<td>Darborn</td>
<td>Aurora</td>
<td>GT</td>
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<td>Warren</td>
<td>Carlisle</td>
<td>Lower Carlisle</td>
<td>GT</td>
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</tr>
</tbody>
</table>

6.5 Local Agency Safety Concerns Related to Freight Transportation

In outreach to local agencies as part of the OKI freight planning effort, city and county officials identified the following freight transportation safety issues.

6.5.1 Boone County, Kentucky

As noted by the Boone County Engineer, at-grade crossings represent the largest freight safety concern for the county. Crossings are an obvious safety concern but also present an access problem when the crossings are blocked.

Blocked railroad crossings are a particular problem in the area of the Richwood Road interchange with I-71/75. This area includes crossings at Richwood Road and Shorland Drive which are in close proximity to each other. Also located nearby is Walton Fire House #2 and an existing industrial park that accommodates high volumes of truck traffic. Moving and standing trains block these crossings. Within the past year, there was a truck/train crash at the Richwood at-grade crossing, with no injuries, but property (empty truck) damage.

KYTC’s Six-Year Plan includes an upgrade of the Richwood Road interchange to a diverging diamond design and an upgrade to the near interchange to the north at Mt. Zion Road and I-71/75 (Mt. Zion – 536 Corridor improvement to AA/KY 17). There is also an existing at-grade crossing on Mt. Zion Road, east of the interchange. Boone County desires that both interchange projects include grade separation for the rail crossings within close proximity.

6.5.2 Campbell County, Kentucky

Officials in Campbell County restate a common perception that truck volume on the AA Highway is heavy, with a high occurrence of speed limit violations and severe traffic crashes. In 2009, there were two crashes involving tractor trailers with one fatality and one injury. In 2010, there were no crashes and to date in 2011 two crashes with no injuries have occurred.

One concern involving the inordinately heavy truck traffic on the AA Highway is that overweight trucks use the road to avoid weigh stations. Thus far, the majority of information about truck flows, truck weights, and weigh station avoidance is anecdotal, and Campbell County officials are working to verify citizen complaints.

6.5.3 Butler County, Ohio

Butler County has experienced major residential, retail and industrial growth over the past 20 years, and this growth shows little signs of slowing. This development has stressed the infrastructure system. Both NS and CSX operate multiple main lines through the county and major industrial centers are generally located in the southern and southeastern portions of the county.

Rail issues dominate transportation safety concerns. The county is home to several vital at-grade crossings. Blockage of these crossings is a major issue in terms of access and congestion. Major issues regularly occur with stopped trains in St. Clair Township blocking crossings at Augsberger,
Hamilton–Eaton, West Elkin, and Fear Not Mills roads. Trains are typically stopped on these crossings for significant periods of time while crews are switched. This blockage leads to access and congestion issues for freight movement.

In addition, some unannounced rail crossing closures were executed by the railroad companies west of downtown Hamilton, causing further access and congestion issues. Local officials were greatly frustrated with the lack of cooperation and responsiveness they received in dealing with the rail carriers operating in the county.

Butler County is home to a number of rail bridges that pass over major east-west roadway arteries. These “mouse holes” are becoming choke points for the roadway network in terms of width and clearance issues. This has been a particular issue along the NS route passing over Cincinnati-Dayton, Hamilton-Mason, Princeton, Kyles Station, and West Chester roads in the southeastern part of Butler County. In particular, Hamilton-Mason Road’s five-lane section to the west is reduced to one lane in each direction under the railroad. For this reason, the “mouse hole” at Hamilton-Mason is a top concern of local officials.

6.5.4 City of Sharonville, Ohio

The intersection on East Sharon Road and Medallion Drive experiences a high volume of truck traffic servicing industrial and commercial businesses in Evendale. The entrance/exit to the Sharon Yard is located within 300 yards of the Medallion Drive intersection with East Sharon Road. Within the past year, the intersection of the yard entrance/exit and East Sharon Road has been the site of a traffic fatality. The City of Sharonville believes that a traffic signal is warranted to protect left turns out of the intermodal yard. In light of projected increases in intermodal traffic at NS Sharon Yard, this segment of East Sharon Road becomes even larger concern.

The other major concern for Sharonville is the at-grade NS rail crossing with Reading Road. As currently configured, yard switching causes blocked grade crossings at Reading, Kemper and Hauck roads (north of Sharon Yard). A grade separation project at this location was programmed by ODOT, which subsequently pulled funding when the preferred alternative was deemed prohibitively expensive. Nonetheless, a grade separation at this location is still a primary concern for the city.

6.5.5 Warren County, Ohio

A major truck access issue in Warren County is an impassable bridge and a hairpin turn on King Avenue/Grandin Road in the Kings Mills area. The Sumco Phoenix Corporation is located on Grandin Road and uses several trucks per day. The county has tried to communicate alternate routes, including the SR 48/I-71 Interchange and Fujitec Drive, with limited success. Some county routes are not conducive to 53 foot trailers, but the county lacks the ability to communicate these local issues to the broader trucking community.

Another issue for Warren County is truck turning radius noted on the Turtlecreek Road Bridge, just east of US 42 and at the Lebanon Commerce Park near the Turtlecreek and Kingsview Road intersection.
6.6 State and Local Safety Programs

ODOT’s Highway Safety Program invests approximately $65 million per year in transportation projects that enhance safety. The programs that address safety include the Highway Safety Program, Hot Spot, Congestion and Corridor Safety program. Every year, top locations of safety and crash incidents are identified and reported to ODOT’s district offices. Each of these district offices conducts its investigation that entails an engineering analysis and short-term, low-cost strategies (such as new signs, pavement markings, and drainage improvements) to mid-cost and mid-term strategies (such as new traffic signals, turn lanes, and realignments.) Many of these improvements are paid for by the $65 million fund however, long-term, high-cost strategies over $5 million are funded through ODOT’s Major New Construction Program. In Ohio, the overall goal was to reduce fatalities to no more than one fatality per 100 million vehicle miles traveled by 2008.\textsuperscript{29}

In Kentucky, the governor created an Executive Committee on Highway Safety to combat the epidemic of highway fatalities and injuries occurring on Kentucky’s highways. The Executive Committee is charged with creating a safety management program that is data-driven and performance based. The Executive Committee also coordinates the development and implementation of goals, support actions, facilities and drives the overall mission of the safety program. The Incident Management emphasis area laid out four specific goals of its safety strategic plan:

1. Improve safety of responders and motorists
2. Reduce traffic delay
3. Improve motorist awareness
4. Improve responder preparedness

Based on these goals, action strategies were evaluated and scored on a scale of one to 10, where one represented the lowest priority order and 10, the highest. The top five strategies were as follows:

1. Improve the warning system for the end of the track queue at major incidents and during construction or maintenance activities.
2. Promote the use of the national incident management system.
3. Incorporate incident management training into the basic training of all responders.
4. Develop and implement alternate route plans for all critical roadways.
5. Establish or enhance local incident management teams and cultivate their development.\textsuperscript{30}

In Kentucky, the overall goal is to reduce the number of highway fatalities to no more than 700 by end of 2008.\textsuperscript{31}

The Indiana Strategic Highway Safety Plan serves as a framework to promote and improve safety. By establishing benchmarks, the plan identifies highway safety problems and opportunities for reducing accidents by analyzing and prioritizing the greatest threats to highway safety. This new document provides coordination of purpose, data sources, problem identification, emphasis areas and

\textsuperscript{29} Source: http://www.dot.state.oh.us/Divisions/TransSysDev/ProgramMgt/CapitalPrograms/Pages/SafetyPrograms.aspx
\textsuperscript{30} Source: “Toward Zero Deaths: Kentucky Strategic Highway Safety Plan 2011-2014”
\textsuperscript{31} OKI Regional Council of Governments 2030 Regional Transportation Plan, Chapter 5 Safety
partnerships. The lead state agencies evaluate implementation action plans annually as part of federally required highway safety action plans and reports: 32

- Highway Safety Improvement Program (Per 23 CFR 924)
- Commercial Vehicle Safety Plan (Per 49 CFR 350)

Indiana’s goal is to reduce traffic crash fatalities to 0.98 per 100 million VMTs in 2008 and down to 0.92 in 2010. 33

The OKI Safety Plan entails coordinating with individual states and local communities. As each of the three states developed State Highway Safety Plans as mandated by SAFETEA-LU, each state has also developed a Five Percent Plan, which identifies the most severe highway safety needs statewide.34

6.7 Hazardous Materials Cargo Flows

Hazardous materials (HAZMAT) make up approximately 5 percent of total freight flows in the OKI region. Table 6-5 provides a breakdown of HAZMAT by mode and their projected growth over a 30-year horizon.

<table>
<thead>
<tr>
<th>Table 6-5: OKI Region Hazardous Materials Traffic by Mode</th>
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<td><strong>Tons in Thousands</strong></td>
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<tr>
<td>Air</td>
</tr>
<tr>
<td>Rail</td>
</tr>
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<td>Truck</td>
</tr>
<tr>
<td>Water</td>
</tr>
<tr>
<td><strong>OKI Region Total</strong></td>
</tr>
</tbody>
</table>

Based on the forecast, HAZMAT volumes are expected to grow at a rate of 0.7 percent per year, which represents half the growth rate of overall freight volumes in the OKI. Today, approximately three-quarters of HAZMAT moves by truck, followed by inland water. Rail represents a nominal share of HAZMAT movements in the region of approximately 6 percent. The breakdown of HAZMAT materials by mode is expected to remain relatively stable over the 30 year horizon with trucks gaining slightly more market share (80 percent) at the slight expense of rail and water. The HAZMAT volumes that move by truck are primarily chemical and petroleum/coal products.

Given that a good portion of this volume is through-traffic (approximately 38 percent), most of the materials move along the north-south corridor on I-71, as well as I-75. Comparatively, water

32  Indiana Strategic Highway Safety Plan Revised 2010
33  OKI Regional Council of Governments 2030 Regional Transportation Plan, Chapter 5 Safety
34  OKI Regional Council of Governments 2030 Regional Transportation Plan, Chapter 5 Safety
movements represent over 90 percent of inbound traffic moving more petroleum/coal products than chemicals. Petroleum and coal products represent nearly three-quarters of the HAZMAT volumes moved by inland waterways, and that number is expected to increase slightly to 77 percent by 2040.\textsuperscript{35}

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{figure6-2.png}
\caption{OKI Composition of HAZMAT moved by Trucks, 2009}
\end{figure}

\textbf{Figure 6-2: OKI Composition of HAZMAT moved by Trucks, 2009}

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{figure6-3.png}
\caption{OKI Composition of HAZMAT moved by Inland Waterway, 2009}
\end{figure}

\textbf{Figure 6-3: OKI Composition of HAZMAT moved by Inland Waterway, 2009}

\textsuperscript{35} All volumes and forecast numbers based on IHS Global Insight Commodity Flows in the Cincinnati and Dayton Regions
According to the USDOT's Office of Hazardous Materials Safety, the Incidents Reports Database indicated 81 HAZMAT transportation incidents in the last 10 years by mode (Table 6-6). Of the total incidents, approximately 40 percent of the incidents occurred in Hamilton County—the highest number in the OKI region. Furthermore, highways represented the largest number of HAZMAT incidents of cargo while in transit.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Boone</th>
<th>Butler</th>
<th>Dearborn</th>
<th>Hamilton</th>
<th>Kenton</th>
<th>Grand Total</th>
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</thead>
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<td>3</td>
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<td>OKI Region Totals</td>
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<td>32</td>
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<td>Breakdown of HAZMAT Incidents by County</td>
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</table>

Source: USDOT’s Office of Hazardous Materials Safety, the Incidents Reports Database

Again, the high proportion of HAZMAT incidents on Hamilton County highways reflects the large population and concentration of traffic where key interstate highways and state highway corridors converge, increasing the accident rates in this locality. Of the 81 incidents, three of them occurred in a HAZMAT release, and gas dispersion was the common occurrence. There were no fatalities reported and only one HAZMAT related injury.

### 6.8 Homeland Security

Transportation assets are vital to the region's economic well being, but since September 11, 2001, they are also seen as targets for terrorist attack. In addition to the potential loss of life from terrorist attack, incapacitating strategic infrastructure could be a way for terrorists to disrupt the U.S. economy for a period of months or years.

Natural disasters like Hurricane Katrina have also exposed the vulnerability of infrastructure and the disruption possible if major human or natural catastrophes destroy parts of the transportation system. For this reason, the discussion of homeland security for OKI includes both human and natural calamity.

The U.S. Department of Homeland Security coordinates emergency preparedness and response. Of relevance to the OKI freight plan, the U.S. Department of Homeland Security developed a National Infrastructure Protection Plan (NIPP) which integrates several programs underway to protect the nation’s infrastructure. The NIPP includes 17 sector-specific plans (one of which is transportation) that manage, mitigate and minimize risk factors. According to the report, the Transportation Systems Sector-Specific Plan’s strategic approach was developed and based on the tenets outlined in the NIPP and the principles of Executive Order 13416, Strengthening Surface Transportation Security. The Transportation Systems Sector-Specific Plan describes the security framework that will enable sector stakeholders to make effective and appropriate risk-based security and resource
allocation decisions. The program is meant to identify assets that are vulnerable to hazards caused by both security breaches and natural disasters, as well as assess the risks and develop countermeasures around those risks.

6.9 OKI Area Critical Infrastructure

The OKI region contains critical transportation infrastructure, any disruption of which could severely impact the flow of freight, economic activity, and the quality of life in the area. A brief description of these assets is included in the following sections.

6.9.1 Highway/Trucking

The tri-state, OKI region consists of almost two million people. Their livelihood, and the economy of the region, greatly depends on the highway system. With the natural barrier of the Ohio River, highway bridges are a critical element of the region and a key consideration of disaster preparedness. The population and economy of the region depends on seven bridges:

1. I-275 western Ohio River Crossing (Carroll C. Cropper Bridge)
2. I-71/75 (Brent Spence Bridge)
3. US 42 (Clay Wade Bailey Bridge)
4. John A. Roebling Suspension Bridge
5. US 27 (Central Bridge) Taylor Southgate Bridge
6. I-471 (Daniel Carter Beard Bridge)
7. I-275 eastern Ohio River Crossing (Combs-Hehl Bridge)

6.9.2 Railroads

The main railroad lines through the Mill Creek Valley form the spine of the region’s rail system. CSX operates more than 70 trains per day through the area and NS operates as many as 30 trains per day. Any major disruption to these lines, such as through natural or human causes, would result in rerouting trains around the region with significant impacts to congestion on other rail lines, shipment time, and delays. It could also result in a temporary mode shift, exacerbating truck congestion in the region.

The NS and CSX railroads have bridges crossing the Ohio River south of Cincinnati and these structures represent a safety/security risk with a profile similar to the Ohio River Highway Bridges.

6.9.3 Pipeline

Because of their strategic importance and the amount of hazardous or explosive materials they carry, there is little public information available on the location of pipelines in the region. Emergency management agencies have access to more in-depth information on pipelines, which they use for emergency preparedness planning and response.

Source: http://www.dhs.gov/xlibrary/assets/nipp-ssp-transportation.pdf
6.10 OKI Security and Emergency Management Agencies

There are three levels of emergency response in the OKI region: local fire and police agencies, which have the resources and equipment to manage most natural and human disasters; county emergency management agencies, which plan and coordinate major response activities; and state emergency management agencies, which can coordinate emergency response staff and equipment from a deeper resource pool.

For the vast majority of security and emergency cases, local police and fire agencies are equipped to handle incidents, including HAZMAT releases or major infrastructure failures. Where there is an uncommon release of material, agencies have “mutual aid” agreements to share technical resources if a certain agency lacks capacity or expertise. Similarly, larger emergency incidents—such as extraordinary fires, materials spills, or infrastructure failures—can draw on the combined human and equipment resources of multiple jurisdictions across a region.

County emergency management agencies play a key role in emergency planning and coordination. Planning includes inventorying resources that might be deployed in the event of a disaster, planning for infrastructure disruptions, identifying temporary housing resources for displaced people and conducting mock disaster exercises with local response agencies.

Regional Emergency Mapping System

OKI, in cooperation with regional partners, successfully developed and used a cutting-edge emergency management system known as the Regional Emergency Operation Center, OKI, Geographic Information System, Regional Emergency Mapping System (ROGREMS). This system incorporates critical infrastructure layers, live data feeds, and analytic capabilities into an Internet-based common operating picture, allowing emergency responders from across the Greater Cincinnati region to identify significant infrastructure and key resources.

ROGREMS provides a common operating picture to achieve situational awareness and a series of tools to prepare for, respond to, or recover from a large-scale emergency. ROGREMS can help identify local resources such as the closest fire stations and urgent care centers. It can gather intelligence about a particular emergency via an integrated Twitter search function. Also, ROGREMS can view live feeds around emergency scenes, which are helpful in determining evacuation capacities and routes.

This system is utilized by first responder disciplines defined by the Department of Homeland Security including Fire, EMS, Hazardous Materials, Law Enforcement, Public Health, Government, Hospitals, Public Works, Emergency Management, Communications, Volunteers/Public (such as Red Cross or Salvation Army) and Private Industry Partners.

ROGREMS incorporates the aforementioned emergency response tools and technologies into a single Web-based interface, which ensures that all stakeholders are “reading from the same script” and facilitates a common operating picture for all users. ROGREMS provides a progressive solution to traditional pen and paper systems, which allows emergency personnel to define incidents spatially and visualize response assets.
The system covers a 12-county, three-state region, encompassing southwest Ohio, southeast Indiana, and northern Kentucky. OKI's project partner, the Hamilton County Emergency Management Agency (HCEMA) worked on behalf of emergency management agencies from across the region.
7 Recommendations

7.1 Introduction

The preceding chapters have laid out the entire planning development process, data collection, data analysis, and identification of key strengths and deficiencies of each freight transportation mode. This chapter presents the recommendations which are based on the preceding analysis of strengths and weaknesses of the OKI regional freight system. Recommendations can vary from capital projects to strategies that address deficiencies over the next 30 years. These recommendations have been identified as part of the regional needs assessment conducted in Chapter 4. These recommendations present a planning level, solution proposal to addressing system deficiencies. To the extent possible, each of these recommendations has been tested against the performance metrics developed in Chapter 5. Through a high-level, qualitative evaluation, OKI was able to evaluate the merits of each recommendation and whether they meet the goals. These recommendations have then been prioritized based on a time-horizon (immediate, mid and long term) that reflects the urgency of carrying out the proposed recommendation.

7.2 Structure of Recommendations

As each recommendation is presented in this chapter, the problem statement has been summarized. The focus in this chapter is placed on the recommended improvement or strategy needed to address specific deficiencies. Following a short text summary, capital cost estimates for each of the recommendations are developed based on existing studies, data from similar projects, or planning-level cost estimates. It is important to note that, to date, no engineering analysis has been performed for most of the recommendations, so cost estimates are at a conceptual planning level and provide the best estimates given current understanding of the issue and data available. Cost estimates are provided in year 2011 dollars.

The timing for each recommendation is categorized as “immediate” (0 – 5 years), “mid term” (5 – 10 years) or “long term” (over 10 years) depending on the urgency of the freight system deficiency and the recommendation’s contribution to the freight plan’s goals.

7.3 Evaluation Measures

The recommendations will work to remedy freight deficiencies to keep the region competitive in the future and build on the region’s freight transportation assets as a driver of economic development. In evaluating the potential freight project recommendations, OKI sought to establish a common link between freight goals and regional transportation goals that were discussed in Chapter 5. Thus, the evaluation process was not quantitative in nature, but rather a qualitative review that screened freight deficiencies against regional transportation goals. All recommendations were evaluated to contribute to one or more of the freight-related goals:

- Mobility and Intermodal Connectivity – Projects that improve freight mobility by reducing congestion or developing better connections between modes of transportation in the region.
- **Economic Vitality** – Projects that promote economic development by providing freight connections for new and expanded businesses or lowering shipping costs for businesses in the region.

- **Environment and Public Health** – Projects that improve air quality or reduce energy consumption and consider existing and future land use.

- **Safety and Security** – Projects that improve safety (such as those that address high crash rates), projects that reduce hazards (such as a railroad grade separation), and projects that address freight system security, including hazardous material spills, and natural or human disasters.

- **System Preservation and Condition** – Projects that improve or preserve the condition of existing freight infrastructure, including deficient railroad track, deficient bridges, or highway pavement heavily distressed by truck traffic.

Each of the freight project and policy recommendations was evaluated based on the above goals. The evaluation results for all 58 freight plan recommendations are presented in Table 7-1 through Table 7-4. For summary and comparison purposes, the recommendation’s potential and positive impact on each of the five goals was measured using “high = +++,” “medium = ++,” or “low = +.”

### 7.4 Top Regional Priorities

The freight transportation needs for the OKI region are immense and have resulted in a large number of recommendations. For each recommendation, there exists a clear, definable need. Given the overwhelming amount of need, however, it became clear to OKI that those recommendations having the greatest potential impact on the entire region must be highlighted. The below list summarizes the 12 top regional freight priority recommendations, which are supported as immediate projects. These improvements are required to address deficiencies in the freight transportation network that exist today. These top regional priorities are also the recommendations that would have the highest impact in addressing each of the plan’s five strategic goals.

The Brent Spence Bridge is the sine qua non of any freight, transportation or economic development plan. As such, it stands alone in importance. However, this should not diminish the critical need for other projects that are needed to address the region’s freight needs. In fact, the Brent Spence Bridge, without these other improvements, will not deliver a freight network that will be competitive in coming decades.
## Table 7-1: Roadway Freight Recommendations

<table>
<thead>
<tr>
<th>Page Number</th>
<th>Name of Recommendation</th>
<th>Mobility and Intermodal Connectivity</th>
<th>Economic Vitality</th>
<th>Environment and Public Health</th>
<th>Safety and Security</th>
<th>System Preservation and Condition</th>
<th>Recommendation Timing (Immediate, Mid Term, Long Term)</th>
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Table 7-1: Roadway Freight Recommendations (continued)

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Table 7-1: Roadway Freight Recommendations (continued)

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Table 7-2: Rail Freight Recommendations

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<tr>
<th>Page Number</th>
<th>Name of Recommendation</th>
<th>Mobility and Intermodal Connectivity</th>
<th>Economic Vitality</th>
<th>Environment and Public Health</th>
<th>Safety and Security</th>
<th>System Preservation and Condition</th>
<th>Recommendation Timing (Immediate, Mid Term, Long Term)</th>
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<tbody>
<tr>
<td>7-34</td>
<td>Regional Public-Private Freight Rail Partnership</td>
<td>+++</td>
<td>+++</td>
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<td>+++</td>
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<tr>
<td>7-35</td>
<td>At-Grade Crossing: Safety Study</td>
<td>+</td>
<td>+</td>
<td>+++</td>
<td>+</td>
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</tr>
<tr>
<td>7-37</td>
<td>Rail Quiet Zones</td>
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<tr>
<td>7-38</td>
<td>Hopple Street Passing Track and Crossovers</td>
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<td>+++</td>
<td>++</td>
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<tr>
<td>7-39</td>
<td>Mill Creek Additional Track</td>
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<tr>
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<td>Capacity Improvements to CSX’s Cincinnati Terminal Subdivision north of NA Junction</td>
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<tr>
<td>7-43</td>
<td>Reading Road Grade Separation, Sharonville</td>
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</tr>
<tr>
<td>7-44</td>
<td>Western Hills Viaduct</td>
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<td>++</td>
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Table 7-3: River/Inland Waterway Recommendations

<table>
<thead>
<tr>
<th>Page Number</th>
<th>Name of Recommendation</th>
<th>Mobility and Intermodal Connectivity</th>
<th>Economic Vitality</th>
<th>Environment and Public Health</th>
<th>Safety and Security</th>
<th>System Preservation and Condition</th>
<th>Recommendation Timing (Immediate, Mid Term, Long Term)</th>
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<tbody>
<tr>
<td>7-44</td>
<td>Activate the “Port” in the Port of Greater Cincinnati Development Authority</td>
<td>+++</td>
<td>+++</td>
<td>++</td>
<td>++</td>
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Table 7-4: Air Freight Recommendations

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<th>Page Number</th>
<th>Name of Recommendation</th>
<th>Mobility and Intermodal Connectivity</th>
<th>Economic Vitality</th>
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<tr>
<td>7-47</td>
<td>CVG Air Cargo Park</td>
<td>+++</td>
<td>+++</td>
<td>++</td>
<td>++</td>
<td>++</td>
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</table>
Total estimated cost of top regional freight priority recommendations is $3,085,053,000. Each of these recommendations is discussed in more detail in the sections that follow along with all other recommendations for the region. The recommendations continue to be presented in this document by alphabetical order and freight mode (highway, rail, river/inland waterway and air).

7.5 Roadway Freight Recommendations

Trucks handle almost 60 percent of the region’s freight transportation today. Truck volume—as measured in the volume of trucks and the miles they drive—is forecasted to increase three percent annually over the next 30 years. At this rate, truck travel in the region will double in just 24 years. To accommodate this growth in trucking, the following projects were identified.

7.5.1 Regional Truck Freight Mobility

**ARTIMIS Message Signs**

Interviews with regional trucking companies showed that dynamic messaging signs are very popular; however, many interviewees felt they are placed too close to the point of congestion to allow for trucks to take alternative routes. It was suggested that the location of dynamic message signs be reviewed and potentially moved or additional signs introduced at new sites to make them more useful for the trucking industry.

ODOT is evaluating less costly Destination Dynamic Message Signs (DDMS), with wireless communications, which could be efficiently located at more places on the regional freeway system. As most ARTIMIS dynamic message signs are nearing 20 years of age, identifying cost-effective replacement signs is imperative.

Current ARTIMIS message signs in the OKI region are concentrated on north-south traffic movements along the I-71 and I-75 corridors and connecting roadways. Regional growth and traffic patterns require more message signs on western and eastern approaches to the region, with these four locations as the highest priority:

- Clermont County: SR 32, westbound, approaching I-275
- Dearborn County: I-74 eastbound, approaching I-275 (before the SR 1 interchange)
- Western Hamilton County: I-275 westbound, one mile before the interchange with SR 126
- Western Hamilton County: I-275 eastbound, one mile before the interchange with I-74

The locations above call for large dynamic message signs mounted on a truss over the roadway. The cost for such a sign is approximately $350,000 each. The four locations above will require the planning efforts of ODOT and INDOT staff, both to identify funding for the message signs and to identify the appropriate siting and design for each installation. In addition, INDOT will have to
become a signatory to the current bi-state agreement between KYTC and ODOT, to ensure coordination and operating protocols for the new signs in Indiana.

ODOT’s pilot DDMS are smaller, ground-mounted, roadside signs that cost approximately $23,000 each. These smaller signs provide more direct information on travel time to a specific destination, and their lower cost will allow installation of more signs, such as around I-275.

**Cost:** $1,388,000 (estimate of $347,000 per location, based on overhead, LED dynamic message sign at four locations, and five DDMS, at $23,000 each, on I-275)

**Timing:** Immediate

**Implementing Agencies:** ODOT and INDOT, according to location

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**Brent Spence Bridge**

OKI’s top regional transportation priority is the replacement of the Brent Spence Bridge on the busiest freight corridor in the nation. The Brent Spence Bridge is old and carries twice the number of vehicles as it was designed to carry. Daily backups from congestion on the bridge can extend more than three miles. These concerns have led to this project being considered a top priority by the KYTC, ODOT, OKI, and the cities of Covington, Kentucky, and Cincinnati, Ohio.

The Brent Spence Bridge carries I-71/75 over the Ohio River and is substandard from a capacity standpoint for the traffic it carries today. Opened in 1963, the bridge was designed to carry 80,000 vehicles per day, but currently handles 150,000—30,300 of which are trucks. The USDOT's National Bridge Inventory lists the Brent Spence Bridge as functionally obsolete because of capacity, sight distance and safety concerns associated with its current configuration.

From a freight standpoint, the OKI region would cease to function if the Brent Spence Bridge fails. While freight traffic can now back up because of congestion on the bridge, a failure of the structure would be catastrophic.

The only alternate highway routes to the Brent Spence Bridge are I-275 and I-471. These routes and their connecting roadways are not constructed to handle the large increase in vehicular traffic that would be diverted. The result would be gridlock for truck freight, adding time and increasing costs for shippers. The inability to adequately serve freight traffic would have deleterious effects on business, employment and regional income.

A project to replace the Brent Spence Bridge is under development by KYTC and ODOT. The goals of the project are to improve traffic flow and safety, correct geometric deficiencies and enhance connection to key regional and national transportation corridors. While the environmental process is not yet complete, the project is expected to entail construction of a new I-71/75 bridge adjacent to the existing Brent Spence Bridge, with the existing bridge converted to handle local traffic movement.
While replacing the bridge will improve freight mobility, it will be equally important for transportation planners to accommodate truck detours during this multi-year construction project.

**Cost:** $2,300,000,000

**Timing:** Immediate

**Implementing Agencies:** KYTC and ODOT

**Eastern Corridor**

The existing Eastern Corridor transportation network is characterized by high accident rates and heavy congestion and delays during peak travel times, which primarily affect commuter or passenger motorists however, smaller delivery vehicles, dump trucks and other commercial vehicles also rely on the roadway network. Roadway issues are attributed to the two-lane facilities that have not been substantially improved in four decades and do not meet current capacity demand. Poor connectivity between Cincinnati/Hamilton County employment centers and heavy truck traffic result in the inefficient movement of goods and services.

The current phase of the Eastern Corridor is being administered by ODOT in cooperation with the Federal Highway Administration, the Federal Transit Administration and a local partnership, including Hamilton County, Clermont County, the city of Cincinnati, the Southwest Ohio Regional Transit Authority/Metro and OKI. Although four projects are underway as part of the program’s overall goal of improving transportation in and around the Eastern Corridor, funding has not been secured to make all needed improvements.

**Figure 7-1: Projected Truck Volume Growth**

![Projected Truck Volume Growth](image)

**Source:** Eastern Corridor Study

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37 Source: OKI 2030 Regional Transportation Plan-Amendment 6, February 2011
The Eastern Corridor includes rail transit recommendations using the current NS Oasis freight rail line. The proposed rail corridor is approximately 17 miles in length, and extends between the Riverfront Transit Center in downtown Cincinnati and I-275 in the city of Milford. It is imperative that use of this rail line for freight be continued should passenger service be introduced. The opportunity for economic development of rail adjacent properties for light/heavy industrial use is an important asset to both Hamilton and Clermont counties.

Because of its impact on truck traffic mobility of all classifications, implementation of the Eastern Corridor is supported and further recommended by this plan.

**Cost:** $815,800,000 (Year of Expenditure cost estimates are gathered from the OKI 2030 Regional Transportation Plan for Red Bank Road, $346,300,000; SR 32 Relocation, $292,000,000; 50 percent of Eastern Corridor Oasis Rail Transit $177,500,000 to take into account improvements to track not passenger stations)

**Timing:** Mid Term

**Implementing Agencies:** City of Cincinnati, Clermont County, Hamilton County, ODOT

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**I-75 Mill Creek Expressway and Thru the Valley**

The I-75 corridor is undergoing significant reconstruction, which will improve conditions in this major north-south truck corridor. While a large portion of I-75 between the Brent Spence Bridge and I-275 experiences congestion, the entire corridor is expected to have Level of Service “F” by 2030 if improvements are not made. Some of the I-75 improvement projects are currently underway while others are slated for funding and construction in ODOT’s Transportation Review Advisory Council process. Improvements along the I-75 corridor include adding a fourth through lane and fifth auxiliary lane, where warranted, to correct congestion and safety issues. In addition, every interchange along the corridor is slated for some type of improvement based on an existing condition such as poor turning radii (Hopple Street/Martin Luther King Drive), limited access (Shepherd Lane/Mangham Drive), or underutilization and benefit to overall corridor flow (Towne Boulevard). While the I-75 improvements are vital to freight traffic, it will be equally important for ODOT to have a coordinated plan for emergency removal of accident vehicles in order to adequately maintain traffic mobility during construction and minimize detour traffic in neighborhoods along I-75.

**Cost:** $644,900,000

**Timing:** Immediate

**Implementing Agency:** ODOT
### I-471 Reconstruction

The I-471 corridor forms one of northern Kentucky’s major north-south transportation spines. Within its nine miles, I-471 connects or traverses with US 27 (Alexandria Pike and Monmouth Street), I-275, KY 8, and KY 9 (Licking Pike and AA Highway). I-471 accommodates travel volumes of close to 100,000 total vehicles a day, 10 percent of which are trucks.\(^{38}\) With future improvements planned for the I-75 corridor and Brent Spence Bridge, even greater emphasis is placed on the need to maintain and improve I-471 to handle the additional volumes of diverted passenger and freight traffic. In accordance with the OKI I-471 Corridor Study (October 2008), this recommendation would include consideration of bus on shoulders/express bus service, ramp monitoring and metering, resurfacing, and potential lane additions. While the I-471 improvements are vital to freight traffic, it will be equally important for ODOT to adequately maintain traffic during construction, to ensure access and reduce detour traffic in areas served by I-471.

**Cost:** Ramp Metering: $1,369,000; Bus on Shoulders: $246,000; Reconstruction: $25,000,000; Potential Lane Additions: $10,000,000 (if done in coordination with reconstruction)

**Timing:** Immediate

**Implementing Agency:** KYTC

### 7.5.2 Local Truck Access Projects

Through outreach with local officials, a number of issues with truck traffic were identified that cause congestion, safety, and pavement condition issues. None of these local roads will experience the truck volume of the Brent Spence Bridge, yet existing freight issues for these communities will only be exacerbated when truck volume increases as forecasted over the next 30 years. These local roads are often referred to as the “last mile” in the freight distribution network where congestion, geometric deficiencies, overhead bridge clearances, and pavement condition can hamper efficient freight transportation. Furthermore, in older neighborhoods and the urban core of the region, narrow streets and traffic congestion can hamper local delivery trucks, which are vital to retail commerce and small businesses.

This freight plan recommends that the following highway improvements be evaluated and programmed with local public sponsors. Locations on the federal aid highway system would be eligible for federal funds through the states or through OKI. The region can accommodate these projects as part of OKI’s 2030 planning process, and fund them through a combination of (1) existing allocation of federal-aid highway funds; (2) federal freight funding (being discussed as part of transportation reauthorization proposals); and (3) local matching funds. OKI encourages each

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\(^{38}\) Source: OKI 2006
implementing agency to consider Complete Streets policies as they plan, design and build roadway recommendations to provide complete, safe access to all road users. The Complete Streets approach would further address the accommodation of trucks and parcel delivery vans that serve businesses in the urban core. Project recommendations are organized alphabetically by jurisdiction.

**Boone County, Kentucky**

**Gunpowder Road Improvement**

Looking ahead at truck volumes and freight demands, a long-term project for Boone County entails an improvement of Gunpowder Road from US 42/127 to Mt. Zion Road. North of US 42/127, Gunpowder Road is KY 237. Improvements for this northern segment of KY 237 are already underway which, when combined with enhancements to Gunpowder Road, would create a direct connection to I-71/I-75. Gunpowder Road is a two-lane corridor. This recommendation calls for Gunpowder Road to be widened to a five-lane roadway.

**Cost:** $21,000,000  
**Timing:** Long Term  
**Implementing Agency:** KYTC

**I-71/I-75 Richwood and Mt. Zion Interchanges**

Richwood Road and Mt. Zion Road carry high volumes of truck traffic traveling from Boone County distribution and manufacturing centers to I-71/I-75. The KYTC Six-Year Plan includes upgrades of the Richwood Road interchange, creating a diverging diamond configuration, and the Mt. Zion Road interchange at I-71/I-75. For efficient and safe traffic flow, the Richwood Road interchange project should include a grade separation for the NS railroad crossing, which is located within 1,500 feet of the interstate. Mt. Zion Road already has a grade separation in place along this same NS rail line.

**Cost:** Richwood: $22,750,000 and Mt. Zion: $19,750,000  
**Timing:** Mid Term  
**Implementing Agency:** KYTC
Butler County, Ohio

Hamilton-Mason Road Mouse Hole

With a growing suburban population, Butler County has a number of east-west arterial roadways that pass beneath an elevated, north-south oriented rail line. These roadway tunnels are colloquially known as “mouse holes.” Several “mouse holes” are becoming choke points for the roadway network in terms of width, clearance and capacity issues. These issues are a recurring concern for the NS railroad bridges passing over Hamilton-Mason, Cincinnati-Dayton, Princeton, Kyles Station and West Chester roads in southeastern Butler County. In particular, Hamilton-Mason Road’s five-lane section to the west is reduced to one lane in each direction at the NS bridge overpass.

While not a truck freight issue, per se, addressing these “mouse holes” will require the cooperation and active participation of NS railroad, as construction could disrupt their operations.

To address this immediate roadway capacity issue, the “mouse hole” at Hamilton-Mason is of the highest priority to Butler County. To efficiently streamline implementation of this improvement with minimum disruption and cost to freight operations and the public, a private-public collaborative effort will be required between Butler County and NS. As the scope of this project is developed, improvements to the railroad trackage and/or bridge structure may also be advantageous.

Cost: $12,000,000

Timing: Immediate

Implementing Agency: Butler County

Subsequently, Butler County’s other “mouse holes” require improvements due to width and clearance issues. Again, a private-public partnership between Butler County and NS is vital to accomplishing these improvements with the investment of time and money.

Cincinnati-Dayton Road Mouse Hole

Cost: $13,000,000

Timing: Mid Term

Implementing Agency: Butler County
**Kyles Station Road Mouse Hole**

**Cost:** $14,000,000  
**Timing:** Long Term  
**Implementing Agency:** Butler County

**Princeton Road Mouse Hole**

**Cost:** $12,000,000  
**Timing:** Long Term  
**Implementing Agency:** Butler County

**West Chester Road Mouse Hole**

**Cost:** $16,000,000  
**Timing:** Long Term  
**Implementing Agency:** Butler County

**I-75/Union Centre Boulevard Interchange**

Rapid growth in West Chester Township continues to stress capacity of the recently constructed Union Centre Boulevard interchange at I-75. Butler County reports that the interchange is currently operating at capacity. Major retail, light industrial and school district developments to the west of this interchange have been a major contributor to traffic volumes of all types. Between 2003 and 2007, truck counts on I-75 increased 29 percent (18,920 trucks per day to 24,500 trucks per day). Property to the east of the interchange is beginning to develop with more of a focus on both heavy- and light-industrial land uses. It is a major distribution hub for the entire county.

The scope of the project is to improve the operations of the interchange without increasing the volume of traffic on I-75. The improvement will include adding lanes to both I-75 exit ramps and reconfiguration of Union Centre Boulevard.

**Cost:** $4,000,000  
**Timing:** Immediate  
**Implementing Agencies:** Butler County and ODOT
South Hamilton Crossing

The South Hamilton Railroad Grade Separation Project will replace an existing at-grade railroad crossing on Central Avenue with a grade separation created by extending Grand Boulevard to the west in the city of Hamilton. This will connect SR 4 (Erie Boulevard) on the east side of the four existing railroad tracks with US 127 (Pleasant Avenue) and University Boulevard to the west. The Butler County Transportation Improvement District (TID) is leading the project and following ODOT’s 10-Step Project Development Process for Minor Projects. The project has been identified as one of the top priorities of the city of Hamilton Council and Butler County Engineer’s Office to enhance economic development and improve the transportation network on the south side of Hamilton and relieve congestion in the Central Business District. The CSX rail line involved in this project carries 55 trains a day, which are estimated to create blockages for 11,100 Grand Boulevard travelers daily.

Cost: $28,000,000

Timing: Immediate

Implementing Agency: Butler County TID and city of Hamilton

Campbell County, Kentucky

US 27 Improvements

Over 500 trucks travel US 27 daily between Sunset and AA Highway. The OKI I-471 Corridor Study (October 2008) recommended the implementation of a non-traversable median with mid-block U-turns at some locations along this highway segment. This recommendation is included in this plan because of its recognized congestion management and safety benefits.

Cost: $20,000,000

Timing: Long Term

Implementing Agency: KYTC
Clermont County, Ohio

SR 125/Ohio Pike Access Management
SR 125/Ohio Pike carries a significant volume of truck traffic between I-275 and the town of Amelia, which is located less than 10 miles to the east. Congestion and traffic flow problems on SR 125 are exacerbated by the lack of any access management controls. ODOT has begun an access management effort (PID 81425) to address access management controls and improve truck traffic flow for the remaining four miles to Amelia.

Cost: $10,000,000
Timing: Long Term
Implementing Agency: ODOT

US 50/Roundbottom Road Intersection
US 50 carries the second-highest volume of truck traffic in the county, particularly between the Roundbottom Road intersection and the town of Owensville. At the intersection with Roundbottom Road, turning movements for trucks are problematic. Improvements would include a comprehensive upgrade of the intersection as well as turning radii.

Cost: $200,000
Timing: Mid Term
Implementing Agency: ODOT and Clermont County

US 50/SR 132/SR 276 Intersection
A second intersection along US 50 experiencing heavy truck volumes (averaging 1,402 trucks a day) and problems with truck turning movements is at SR 132/SR 276. To improve geometric deficiencies, some additional roadwork would be required in this project recommendation.

Cost: $300,000
Timing: Mid Term
Implementing Agency: ODOT
US 50/SR 222 Intersection
Another intersection along US 50 that experiences heavy truck volumes (approximately 1,643 trucks a day) and problems with truck turning movements is at SR 222.

Cost: $100,000
Timing: Long Term
Implementing Agency: ODOT

Dearborn County, Indiana

South SR 1 Corridor Improvement
SR 1 suffers high congestion as it meets US 50 and nears the I-275 interchange. Traffic backups occur frequently along SR 1 (as far north as the intersection at Nowlin Avenue) and impede freight and commuter traffic. There has been discussion about rebuilding this segment of SR 1 to alleviate congestion and create more efficient traffic flow through the area. INDOT has tried to address some of the issues with the intersection of US 50/SR 1 and the I-275 connector by adjusting signal timings and adding turn lanes, yet congestion issues persist.

Cost: $3,000,000
Timing: Long Term
Implementing Agencies: INDOT and Dearborn County

SR 1 Intersection Improvements
SR 1 travels north-south across the county from St. Leon to Lawrenceburg. SR 1 carries traffic volumes as high as 14,000 vehicles per day near US 50 and I-275. This roadway is also heavily traveled by trucks. While signs discouraging truck traffic are posted, the industry continues to use the roadway as a shortcut between I-74 and I-275, as well as a non-highway alternative route into Lawrenceburg. The route is plagued with steep grades, poor sight distances, numerous access points, uneven pavement and rolling topography. Although SR 1 is far from an optimal roadway for trucks, drivers continue to ignore...
posted signs and use the route. With continued truck usage and forecasted higher truck volumes, Dearborn County officials stress the need for greater maintenance and improvements, including adding a passing blister and turn lanes at each intersection along the corridor, including Pribble, Mt. Pleasant, York Ridge, Sawdon Ridge, and North Dearborn roads.

**Cost:** $2,000,000 (all five intersections)

**Timing:** Mid Term

**Implementing Agencies:** INDOT and Dearborn County

**SR 1 Northbound Climbing Lane**

Truck usage of SR 1 as an alternative route to I-74/I-275 has been detailed previously. Adding to the long list of SR 1 deficiencies is the fact there are no passing lanes along the entire SR 1 corridor however, automobiles often pass slower-traveling trucks (even with double-striped center lines) which creates safety concerns.

The 1-mile segment of northbound SR 1 (located 1.5 miles south of Dover) has a severely steep grade, which reduces truck speeds to well below posted limits. It is recommended that the steep grade segment on SR 1 be analyzed for truck climbing lanes and, if warranted, a climbing lane be constructed to separate trucks from other northbound, uphill through traffic.

**Cost:** $3,000,000

**Timing:** Mid Term

**Implementing Agencies:** INDOT and Dearborn County

**US 50/State Line Road Intersection**

There are no dedicated turn lanes at the US 50/State Line Road intersection. This creates two separate situations where truck congestion occurs, turning movements are hindered, and safety is jeopardized. There is a historic monument located on the northeast corner of the intersection. Dearborn and Hamilton county officials have discussed the possibility of creating a free-flowing right turn lane from westbound US 50 onto State Line Road. The design of this improvement
would create a safe median around the monument in its current location while permitting traffic the appropriate turning radii necessary for safe transition onto US 50 without impeding US 50 westbound through traffic.

The other turning concern at the intersection is for movements from southbound State Line Road onto US 50. One lane handles all traffic at this intersection where State Line Road terminates at US 50. A two-lane approach is needed that would separate westbound and eastbound traffic turning movements. An eastbound left turn lane would decrease traffic congestion by removing eastbound left turning traffic from the inside through lane.

**Cost:** $500,000

**Timing:** Immediate

**Implementing Agencies:** Dearborn and Hamilton counties

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Hamilton County, Ohio

**Ancor Connector**

The existing NS Pea Vine railroad underpass on Mt. Carmel Road near Roundbottom Road is too small for many trucks to pass. As a result, truck traffic chooses an alternative route along Broadwell Road. Trucks are also prohibited on the portion of Mt. Carmel Road south of Broadwell Road, further exacerbating the situation. One possible solution for this area is construction of the proposed Hamilton County Ancor Connector project that would create a two-lane facility with appropriate turn lanes between Broadwell Road and SR 32 east of Roundbottom Road. Officials noted that the Ancor area is one of the few remaining locations available for development within the entire county. The Ancor Connector could provide an alternate route for truck traffic, while opening up land for development.

**Cost:** $15,000,000

**Timing:** Mid Term

**Implementing Agency:** Hamilton County
**East Sharon Road Study**

There are significant trucking issues on East Sharon Road around the truck entrance/exit to the Sharon NS Railroad Yard and Medallion Drive. Daily truck traffic in and out of the yard is significant. If double-stack trains begin traveling the NS line from Columbus into Cincinnati, container off-loading and truck activity could increase proportionately. Turning movements in and out of the yard are impacted by poor sight lines because of topography and the proximity of a rail overpass. Highlighting the hazardous condition, there was a fatal crash at this intersection in 2010 involving freight and passenger vehicles. The access to/from the yard is within 300 feet of Medallion Drive, which adds to the unsafe conditions. Also, Sharon Yard is not paved, so the cities of Sharonville and Evendale have reported concerns regarding truck trackage of dirt and mud onto East Sharon Road.

East Sharon Road is the location of manufacturing facilities such as Ford’s Sharonville Transmission Plant, as well as a number of distribution and light manufacturing facilities. The road carries daily traffic volumes of 19,397 and is the major corridor linking Sharonville with I-75.

NS sets their capital improvements plan annually. Based on current freight volumes, the Sharon Yard is not scheduled for any improvements. The recommendation is to analyze this segment of East Sharon Road, including both the intersection of Medallion and entrance/exit to Sharon Yard and determine a comprehensive strategy for improving multi-modal transportation movements that benefit both the Sharonville and Evendale communities, as well as facilitate potential growth in NS freight activities.

**Cost:** $250,000

**Timing:** Immediate

**Implementing Agencies:** Cities of Sharonville and Evendale

**Governor’s Way/Union Cemetery Road Intersection**

While turning radius issues were noted as a general concern throughout Hamilton County, the intersection at Governor’s Way and Union Cemetery Road was identified as a major concern with current volumes of truck traffic.

**Cost:** $1,000,000

**Timing:** Mid Term

**Implementing Agency:** Hamilton County
New Ohio River Crossing Future Study

There has been discussion regarding the construction of a new Ohio River bridge that would connect western Hamilton County to Boone County between the Brent Spence and Carroll C. Cropper bridges. This has been a controversial topic with much community opposition in the past amongst long-established residential communities in western Hamilton County. All agree that the political will for such a project is not present. However, the project is not without transportation and economic development interest to the region. Two OKI studies have recommended this new crossing or study of this new crossing. One study estimated that the forecasted volume of a western county river crossing could be as many as 50,000 vehicles per day, much of it from the heavily congested Brent Spence Bridge. A new crossing could also provide intermodal access from the regional freeway system to barge terminals in Boone County. Because of extremely steep topography and narrow two-lane facilities, roadway access to barge facilities in Boone County along KY 8 is lacking. A study for a potential new Ohio River crossing should consider freight access to US 50 in Hamilton County and KY 8 in Boone County that serves barge terminals.

It is emphasized that prior to any future discussion or study of a new Ohio River crossing, the OKI region’s foremost priority is the full funding and completed construction of all Brent Spence Bridge improvements. Once completed, the improved Brent Spence Bridge may show that consideration of a new Ohio River Crossing is unwarranted.

Cost: $350,000

Timing: Long Term

Implementing Agencies: Hamilton and Boone Counties

Kenton County, Kentucky

Grand Avenue Improvement, Taylor Mill

In Kenton County, there is redevelopment potential on the western banks of the Licking River, near the I-275 crossing. Much of this stretch of riverfront was formerly occupied by CSX and its Decoursey Yards rail operations. The former L&N classification yard at Decoursey closed when CSX initiated operations at Queensgate in 1981. Over the last several years, the use of this property for yard service has diminished. As a result, CSX has removed large amounts of yard rail track from this area, leaving prime undeveloped parcels with good rail and water access available for brownfield redevelopment. Efficient truck access between I-275 and the Decoursey Yards area along KY 177/Decoursey Pike is lacking. A recommended solution involves the improvement of Grand Avenue between KY
177/Decoursey Pike and KY 16/Taylor Mill Road, so that it can handle future truck traffic. Improvement of mobility from the river to I-275 would also assist in reducing the amount of freight traffic traveling through Ritte’s Corner and other local roadways to the north.

**Cost:** $4,500,000

**Timing:** Immediate

**Implementing Agencies:** Kenton County and city of Taylor Mill

**KY 16/KY 17 Intersection**

Tight turning radius issues exist at the KY 16/Decoursey Avenue and KY 17/Madison Pike intersection. The recommendation would entail redesign for safe and efficient turning movements for all vehicle types.

**Cost:** $20,000,000

**Timing:** Long Term

**Implementing Agencies:** City of Covington, Kenton County and KYTC

**KY 536 Road Improvements**

Recent improvements to major north-south routes in Kenton County have highlighted the need for better east-west access. Both KY 16 and KY 17 provide excellent access to I-275. KY 536 currently connects to I-71/I-75 in neighboring Boone County (Mt. Zion Road). However, sections of KY 536 (Bristow Road/Shaw Road/Harris Pike) are unimproved, narrow two-lane roads with numerous intersections that are deficient for truck traffic. Recent residential and commercial developments in the city of Independence have increased congestion. Improvement of this route would provide much needed congestion relief and open more of the southern portion of Kenton County for development. KY 536 improvements could also provide a more direct connection across the tri-county area to the I-71/I-75 corridor and reduce more circuitous routing for traffic heading south on I-71/I-75. There are alternative solutions that would create a Mt. Zion Road to the AA Tri-County Connector. In the absence of I-71 and I-471 connections, Kenton and Campbell counties access is greatly hindered. The design phase for KY 536’s reconstruction and widening to five lanes from the Boone County Line to KY 17 has been completed. This project’s right-of-way and utility phases are listed in the OKI Transportation Improvement Program (TIP) and slated for completion in fiscal year 2012. Design, right-of-way, and utilities are estimated at $31,410,000. The project is listed in the OKI 2030 Regional Transportation Plan (June 2008) however, the construction phase is currently unscheduled and unfunded.
Mary Grubbs Highway Extension

County officials are also interested in the potential to extend the Mary Grubbs Highway that currently dead ends into an industrial park on the Boone County border. This highway provides a direct interchange connection with I-71/I-75. Eastward extension would provide access needed to support additional industrial tenants in this rapidly developing area. A structure was recently built in Walton, Kentucky (Boone County) to move trucks into/out of the industrial park by traveling under the railroad tracks. The route for this proposed roadway extension in Kenton County would be from the new Mary Grubbs Highway railroad bridge, proceeding eastward along a new alignment to KY 17 near the KY 17/KY 16 intersection.

Cost: $18,300,000 (in OKI 2030 Regional Transportation Plan)
Timing: Mid Term
Implementing Agency: Kenton County

Ritte’s Corner

As identified in the Northern Kentucky Area Planning Commission’s Latonia Small Areas Study Existing Conditions Report (February 2011), freight traffic from the Mobil Terminal and Lally Pipe and Tube on Locust Pike in Taylor Mill regularly travel through Latonia to reach I-275. All freight traffic is routed through the five-leg intersection of KY 16/Winston, Decoursey and Southern avenues which is locally referred to as “Ritte’s Corner.” Kenton County and city of Covington officials also shared concern over this intersection and its inability to handle truck traffic. Heavy truck traffic moving through this intersection from KY 16/Winston Avenue to the south on Decoursey Avenue must negotiate a sharp right turn of approximately 45 degrees. As a result, trucks frequently over track onto the adjacent sidewalk and evidence of contact with existing utility poles have been identified. This over tracking creates maintenance issues with sidewalks and utility poles and poses a serious safety hazard to pedestrians. These turning movements also require large trucks to travel slowly, which often results
in intermittent periods of delay at and around this intersection. To avoid this maneuver, some northbound trucks have been observed turning right onto Southern Avenue rather than using Decoursey Avenue. This route creates additional problems in the area such as large trucks operating in areas not intended or constructed for such heavy usage. The residential areas on Southern Avenue and within the vicinity of Holy Cross High School are generally the most affected by this alternate route.

The Latonia Small Areas Study made a short-term (0 – 5 years) recommendation that the intersection at Ritte’s Corner be improved to allow for smoother freight operations. Improvements to the intersection should include minor changes at the southeast corner of Winston Avenue and Decoursey Pike, including the relocation of the utility pole on the corner. Redesign of the corner may also be warranted however, any redesign of the pedestrian area must not negatively affect the Korean War Memorial Park. Changes to the intersection may provide an easier turning path for truck traffic, relieving some of the associated congestion.

**Cost:** $75,000

**Timing:** Immediate

**Implementing Agencies:** Cities of Covington and Latonia

**Truck Access South of I-275**

In southern Kenton County, below I-275, roadway access is a problem between the river, KY 177, and KY 16. Locust Pike is a north/south route that runs parallel and on the west side of the Licking River. This roadway cannot handle large volumes of heavy trucks because of its narrowness and geometric limitations. Improving connections to KY 177 and KY 16 via Porter and Wolf roads could be another solution to these I-275 truck access problems.

**Cost:** $11,500,000

**Timing:** Mid Term

**Implementing Agency:** Kenton County
Warren County, Ohio

Columbia Road Improvement and Kings Island Drive Extension
To support future development of the Columbus Business Place, improvements on Columbia Road and a northern extension of Kings Island Drive are needed. Improvements to Columbia Road include the introduction of a continuous center lane to enable left turning movements from both directions. Kings Island Drive will be extended from its current north terminus to Columbia Road. The Kings Island Drive extension will incorporate improvements to Mason-Morrow-Millgrove Road, including intersection reconstruction, additional turn lanes, and correction of geometric deficiencies.

Cost: $11,000,000
Timing: Immediate
Implementing Agency: Warren County Engineers Office

Gateway Boulevard Extension
To further support economic development, Warren County has plans to extend Gateway Boulevard south from Mason Road to connect with Butler Warren and the Liberty Way Interchange with I-75.

Cost: $20,000,000
Timing: Long Term
Implementing Agency: Warren County Engineers Office

King Avenue/Grandin Road Horizontal Curve Correction
A major truck access issue in Warren County is an impassable bridge and a hairpin turn on King Avenue/Grandin Road in the Kings Mills area. The Sumco Phoenix Corporation is located on Grandin Road and receives several trucks per day. The county has tried to communicate drivers’ use of alternate routes to the trucking industry, including the SR 48/I-71 Interchange and Fujitec Drive, with limited success.

Cost: $500,000
Timing: Immediate
Implementing Agency: Warren County Engineers Office

New Connector Road
Because of growing freight volumes, a new connector road is needed between the Cincinnati Premium Outlets development and Butler-Warren Road to provide an alternative route for truck deliveries to light industrial customers and outlet mall customers. This recommendation should take into consideration the Cox Road Extension completed under the direction of the Butler County Transportation Improvement District.

Cost: $5,000,000
Timing: Immediate

Implementing Agency: Warren County Engineers Office

SR 123 Improvements
High volumes of truck traffic were a problem on SR 123 when the Texas Eastern Gas company, located on SR 123 south of SR 122, was in operation. Texas Eastern was a major jet fuel supplier to the former DHL facility in Wilmington. Truck volumes are not as high since the DHL facility relocated to CVG however, Texas Eastern has the capacity to provide major fuel supplies should another customer purchase their services and reopen the site. Improvements to SR 123 could help attract new business relocation and use of this corridor.

Cost: $18,000,000
Timing: Long Term

Implementing Agency: Warren County Engineers Office

Turtlecreek Road Bridge and Intersection
County officials noted truck-turning radius issues on the Turtlecreek Road Bridge, just east of US 42, and at the Lebanon Commerce Park near the Turtlecreek and Kingsview roads intersection. This recommendation would enable safe and efficient travel through the intersection for all vehicles.

Cost: $1,600,000
Timing: Immediate
**Implementing Agency**: Warren County Engineers Office

**Union Road Improvements**
Warren County is planning to improve Union Road between SR 63 and SR 123 interchanges with I-75 to address heavy local truck volumes, noting that in the last 10 years, SR 63 truck traffic has increased dramatically.

- **Cost**: $23,000,000
- **Timing**: Long Term
- **Implementing Agency**: Warren County Engineers Office

### 7.5.3 Truck Freight Policy Recommendations

**National Highway System (NHS) Intermodal Connectors and Facilities**
Intermodal connectors are primary links for the movement of freight and passengers from intermodal facilities to the interstate and principal arterials on the NHS. Because of the number of physical and operational concerns associated with intermodal connectors across the nation, they may be addressed in future federal transportation legislation reauthorization. This is not only a freight issue. Following the events of September 11, 2001, connectors are seen as a national security issue as well, providing intermodal choice to shippers and the defense industry when, and if, an event of national or local emergency occurs.

In advance of potential federal funding, OKI took the opportunity of the Regional Freight Plan to better understand the importance and needs on the NHS connectors. Staff also examined where additional connectors or facilities should be authorized to effectively bring attention to these short, but important, NHS segments for potential future improvements and support.

**Sharon Intermodal Yard and East Sharon Road/I-75 Intermodal Connector**
NS’s Sharon Intermodal Yard is not designated as an intermodal facility. With an estimated 50,000 20-foot Equivalent Units (TEUs)—a measure of intermodal container volume per year, or 100 trucks per day—in each direction on Sharon Road (the principal connecting route), the yard meets primary intermodal facility criteria for truck/rail. Trucks are defined as large single-unit trucks or combination vehicles carrying freight. With local and regional support, this plan recommends that
Sharon Yard be designated as an intermodal facility in Ohio and Sharon Road, from its access drive just east of Medallion Drive to I-75, as an intermodal connector.

**Cost:** Administrative

**Timing:** Immediate

**Implementing Agency:** OKI

**Dixie Highway/I-71/I-75 Intermodal Connector**

In eastern Boone County, between I-71/I-75 and the Kenton County border, there is an extremely dense pocket of freight-related industry and distribution centers. More than 18 manufacturers located on or adjacent to Dixie Highway (US 25) between KY 18 and KY 338, use rail and truck for their operations. An examination of truck count data collected along this intermodal freight corridor shows extremely high daily truck volumes. Because of the high volumes of rail for raw materials and semi-finished goods and trucks for outbound shipments, this plan recommends, with local and regional support, that Dixie Highway between KY 18 and KY 338 and the east/west roadways linking Dixie Highway to I-71/I-75 (KY 18, US 42/125, KY 536/Mt. Zion Road, and KY 338/Richwood Road) be designated collectively as an intermodal connector (Table 7-5).

**Cost:** Administrative

**Timing:** Immediate

**Implementing Agency:** OKI

**Table 7-5: Dixie Highway/I-71/I-75 Intermodal Connector Links**

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Segment Description</th>
<th>Actual Truck Count</th>
<th>Count Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ramp from I-71 SB</td>
<td>To US 127</td>
<td>887</td>
<td>2006</td>
</tr>
<tr>
<td>Ramp from I-71 NB</td>
<td>To US 127</td>
<td>539</td>
<td>2006</td>
</tr>
<tr>
<td>Ramp to I-71 SB</td>
<td>From Burlington Pike And US 127</td>
<td>1,304</td>
<td>2006</td>
</tr>
<tr>
<td>Dixie Hwy (US-25)</td>
<td>South of Industrial Rd (SR 1829)</td>
<td>858</td>
<td>2006</td>
</tr>
<tr>
<td>Ramp from I-71/I-75 SB</td>
<td>To Mt Zion Rd</td>
<td>642</td>
<td>2005</td>
</tr>
<tr>
<td>Ramp to I-71/I-75 SB</td>
<td>From Mt Zion Rd</td>
<td>542</td>
<td>2005</td>
</tr>
<tr>
<td>Ramp from I-71/I-75 NB</td>
<td>To Mt Zion Rd</td>
<td>480</td>
<td>2005</td>
</tr>
<tr>
<td>Ramp to I-71/I-75 NB</td>
<td>From Mt Zion Rd</td>
<td>979</td>
<td>2005</td>
</tr>
<tr>
<td>Mt Zion Rd (SR-536)</td>
<td>West of Dixie Hwy (US 25)</td>
<td>1,885</td>
<td>2006</td>
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<tr>
<td>Dixie Hwy (SR-25)</td>
<td>South of Mt Zion Rd</td>
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<td>2006</td>
</tr>
<tr>
<td>Ramp from Richwood Rd</td>
<td>To I-71 NB</td>
<td>681</td>
<td>2006</td>
</tr>
<tr>
<td>Ramp to I-75-71 SB</td>
<td>From Richwood Rd</td>
<td>862</td>
<td>2005</td>
</tr>
<tr>
<td>Richwood Rd (SR-338)</td>
<td>East of I-71-75</td>
<td>1,048</td>
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</tr>
<tr>
<td>Richwood Rd (SR-338)</td>
<td>West Of Dixie Hwy</td>
<td>1,921</td>
<td>2006</td>
</tr>
</tbody>
</table>

Count Source: OKI
AK Steel/I-75 Intermodal Connector

The Middletown Works is AK Steel’s manufacturing site located in Butler County. AK Steel is the third largest steel company in the U.S. Its carbon-steel melting, casting, hot and cold rolling and finishing operations cover more than 2,791 acres. A set of roadways link this huge industrial facility with I-75. The main roadway for transport of raw materials by truck from I-75 to the Middletown Works facility is Jefferson and Oxford State roads. The main roadway for transport of finished products by truck from the Middletown Works facility to I-75 is SR 122 (Roosevelt Boulevard). In the first quarter 2005, AK Steel reported shipments of 1,520,500 tons from the Middletown facility. A large amount of raw materials arrive by CSX or NS rail on one of the numerous spurs. AK Steel determines which mode to use based on price and timing. AK Steel has been relying more heavily in the past year on using trucks for delivery to customers because of shortened lead time. Businesses are keeping inventories low, which requires more frequent deliveries within shorter time intervals. Trucks shipping from AK Steel contribute to high daily truck counts. Because of its dependence on rail and trucks and the high volume of trucks shipping from the facility, this plan recommends, with local and regional support, that SR 122, Oxford State Road, and Jefferson Road be designated collectively as an intermodal connector for AK Steel to and from I-75.

Cost: Administrative

Timing: Immediate

Implementing Agency: OKI

Table 7-6: AK Steel/I-75 Intermodal Connector Links

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Segment Description</th>
<th>Actual Truck Count</th>
<th>Count Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roosevelt Blvd (SR-122)</td>
<td>East of Jackson Ln*</td>
<td>878</td>
<td>2004</td>
</tr>
<tr>
<td>Roosevelt Blvd (SR-122)</td>
<td>East of Elliot Dr</td>
<td>1,049</td>
<td>2009</td>
</tr>
<tr>
<td>Oxford State Rd</td>
<td>East of Main St</td>
<td>1,123</td>
<td>2009</td>
</tr>
</tbody>
</table>

Count Source: OKI. (*ODOT is source)

Regional Express Truck Lanes Feasibility Study

Traffic forecasts for the regional highway network suggest that most roadways will experience severe peak-hour congestion by 2030. This includes all sections of I-71, I-74, I-75 and most of I-275. These forecasts include the improvements underway on I-75 (Mill Creek Expressway and Thru the Valley projects) and the most recent investment study for I-71 from downtown Cincinnati to Kings Mill, which, by OKI policy, sets capacity at three lanes in each direction.

The OKI region, like most other metropolitan areas of similar size in the country, is following a pattern of highway-capacity building based on the Interstate Highway Program of the mid-1950s. Under this pattern, which has been extended to the present day, state DOTs and MPOs make incremental capacity
improvements with the limited funding they have available.

Larger urban areas, with more acute highway and freight congestion, are considering new programs to accommodate current and future truck growth—including dedicated truck lanes, which can be self-financed by tolls. Looking forward, such truck toll policies may become the norm for regional freight mobility, but are currently only considered or implemented in the most-congested parts of the country (e.g., Los Angeles, Atlanta, New Jersey). In light of freight growth and regional traffic congestion, there are two provocative questions to consider for area transportation policy makers:

- If the OKI region implemented truck toll lanes, what competitive advantage would the region have in 30 years, compared to regions that did not implement truck lanes?
- Conversely, what logistical disadvantages would the OKI region have if competitive regions such as Columbus and Indianapolis developed truck toll lanes and the OKI region did not?

The OKI region could take the offensive and move forward in terms of freight mobility by evaluating and implementing toll truck lanes on a regional basis or on specific freeway corridors. It is recommended that OKI sponsor a study of truck lane potential and feasibility for the region. Truck lanes could offer a competitive advantage for the region and an opportunity for the OKI region to advance ahead of the status quo in most Midwest urban areas.

**Cost:** $ 250,000

**Timing:** Immediate

**Implementing Agencies:** OKI, ODOT, KYTC and INDOT

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**Regional Truck Size and Weight Regulation**

Truck weight regulation is a top policy concern of the transportation community. Heavy trucks cause severe pavement damage, especially on the local road system which often does not have sufficient pavement thickness to handle heavy loads. The adequacy of local bridges to handle heavy trucks is also a critical safety concern.

Even in the face of these legitimate policy concerns, there is industry and political pressure to increase truck weight limits. The reason for increasing weight limits lies with productivity: with driver shortages, increased fuel costs, and more strict insurance and safety regulations, trucking productivity is in decline. A prime way to increase truck productivity is through higher loads per truck which brings into play all of the public policy concerns indicated above.

While interstate size and weight regulations are determined at the federal level, there is latitude at the state level for issuing oversize/overweight truck permits. For example, Ohio has two permits that directly affect overweight trucking in the OKI region. Ohio allows three steel coils of up to 120,000 pounds—a permit used extensively, for example, by AK Steel in Middletown. Ohio also has a special permit for agricultural exports. The CSX Queensgate and NS Gest Street Yards are designated as
agricultural export terminals by Ohio, meaning they can receive 94,000 pound loads on five axles for intermodal containers.

Through these special permit mechanisms, truck weights are being legally increased on a commodity-by-commodity basis. Not surprisingly, there are some roads and bridges that are deteriorating under heavy trucks, such as the route from the Gest Street Yard in which trucks use Spring Grove Avenue, Winton Road, North Bend Road, and Hamilton Avenue to reach the I-275 corridor and points north.

A state, region or local jurisdiction can rely on federal officials to manage truck size and weight regulations or work constructively with the trucking industry and state regulators to shape the parameters of overweight permits and regulations. It is recommended that regional leaders take the latter approach and actively engage with the trucking industry and state regulators to address, at a minimum, the following critical policy issues:

- Identify appropriate truck routes for overweight trucks, based on sufficiency in terms of geometric design, pavement thickness, and bridge condition.
- Modify existing ODOT permit language, as appropriate, to define the routes that are most adequate for heavy trucks.
- In establishing permit routes with state government, extract state maintenance or improvement funding for roads if the routes are currently inadequate from a structural standpoint.
- Map and communicate eligible heavy truck routes and terminals to freight stakeholders (e.g., specific terminals and commodities, like agricultural exports from NS Gest Street and CSX Queensgate Yards, or general permit conditions like Ohio three steel coil permit).
- Include law enforcement officials, to ensure strict enforcement of routes and permits. If appropriate, consider a necessary fee structure to finance heavy truck enforcement.
- Identify other businesses in the tri-state area that would benefit from heavy truck routes and develop a regional permit as appropriate.

An overarching objective of this recommendation is to provide local governments with a voice in determining oversize/overweight permit routes, so that the state regulatory agencies will select routes with the least public impacts in terms of maintenance cost, safety, and congestion.

To carry out this recommendation, regional leaders should meet with trucking industry representatives and state transportation officials from Ohio, Kentucky and Indiana to investigate the parameters of existing overweight permits, modify the route specifications if necessary, and explore options for regional permitting of heavy trucks where there is evidence of economic benefit.

**Cost:** Administrative only

**Timing:** Immediate

**Implementing Agencies:** ODOT, KYTC and INDOT, convened by a regional agency
Alternative Fuel Stations for Truck Fleets

The trucking industry is understandably concerned about environmental regulations and increasing diesel fuel costs. In congested areas such as southern California, trucking companies are turning to alternative fuels—especially Compressed Natural Gas (CNG) and Liquefied Natural Gas (LNG)—to meet California’s strict environmental emissions standards. Vehicles using CNG or LNG emit 25 percent less greenhouse gases than those using petroleum, according to the U.S. Department of Energy.

There are several necessary economic precursors to CNG/LNG freight fuels. First, the price of CNG/LNG must be competitive to diesel fuel. At the time of this report, with diesel prices rising, LNG holds a 20-cent per mile advantage over diesel. The other economic precursors are the availability of trucks on a mass-market basis and the infrastructure for CNG/LNG fueling.

Manufacturers are responding to demand and developing more CNG/LNG options, but fueling infrastructure takes longer to develop. There are a large number of stations in southern California and the Northeast, and growing CNG/LNG availability in the Midwest. However, the OKI region has no CNG/LNG fuel stations. The closest stations are in Indianapolis and Columbus.

The city of Hamilton is in the process of constructing a CNG fueling station in late 2012 or 2013, which could fuel public and private trucks. To help the trucking industry adapt to alternative fuels while addressing air quality concerns and enhancing the attractiveness of the region to new business development, OKI could sponsor commercial CNG/LNG fueling stations in partnership with the private sector.

OKI funding support could be a catalyst for encouraging the development of alternative fuel fleets. Any sponsorship would be conditional on markets showing increased demand for CNG/LNG vehicles and an appropriate funding partnership and risk sharing with the private sector. Area governments could provide additional market demand by converting their fleets (e.g., garbage trucks or service trucks) to run on alternative fuel. OKI and potential project sponsors should coordinate on the location of one or more fueling stations in the region to ensure that the stations serve regional truck fleets efficiently and on the publicity of the new fuel source to broadcast its availability.

Cost: Varies by the size and capacity of the station; planning estimate: $5,000,000

Timing: Mid Term

Implementing Agency: Local public agency, possibly in partnership with OKI and private sponsor

7.6 Rail Freight Recommendations

After review of the railroad operation in the OKI region, the following comments and recommendations are made to prepare the OKI region for the 38 percent increase in rail traffic forecasted over the next 30 years.
7.6.1 Regional Public-Private Freight Rail Partnership

The OKI region suffers from major rail bottlenecks from both Class 1 operators. The bottlenecks create conflict between NS and CSX, which share trackage rights and must carefully coordinate daily operations to minimize delays. Congested railroad operations in the region also raise significant public policy concerns. Blocked grade crossings are a frequently cited issue in every OKI county and one that could be exacerbated given the forecast growth in rail traffic over the next 30 years. Also, freight railroads sometimes have poor coordination with public officials on critical matters such as closing grade crossings for maintenance activities.

The status quo of communication between railroads and local public officials is not acceptable. The two sectors must engage to resolve public-private conflicts, develop projects that will improve freight transportation in the region and take action to see immediate results. Every railroad recommendation that follows in this section will depend on communication, cooperation and partnership between railroads and the public sector.

An example of such a partnership comes from Chicago, where the Chicago Region Environmental and Transportation Efficiency (CREATE) program was formed to address and resolve regional railroad issues. CREATE partners include six freight railroads, Amtrak, commuter rail agencies and local and state elected officials. CREATE has developed a comprehensive program of freight infrastructure projects that will improve safety, reduce congestion for rail passenger and freight trains and provide environmental benefits. CREATE has also been successful at applying for federal grants and leveraging private dollars to fund infrastructure improvements that have public and private benefits.

A similar partnership program for the OKI region could focus on the following OKI regional issues:

- Apply for federal funding to meet railroad freight infrastructure deficiencies, such as the Reading Road Grade Separation project, and others mentioned in this plan. There are some existing funding sources, such as the federal Congestion Mitigation Air Quality Improvement Program, which can fund freight infrastructure. On the horizon, Congress may enact new streams of funding for freight projects. To compete against other metropolitan areas across the country, the OKI region must be coordinated and prepared before such programs or funding becomes available. In Chicago, for example, CREATE was able to secure significant federal grants from the federal stimulus program.
• Train blockage of at-grade crossings is a concern throughout the region. This freight plan identifies critical highway-rail at-grade crossings for safety review and grade separation. However, numerous other highway-rail crossings exist throughout the region, including Augsberger Road in Butler County, Reading Road in Sharonville and multiple crossings in the communities of Lockland, Reading, and Wyoming. Many of these blockages are not just for passing trains but for trains idling for switching activities or awaiting entry into yards or terminals. Solutions to these frustrating problems are sometimes inexpensive changes to railroad operating practices. OKI will assist this Public-Private Freight Rail Partnership to inventory these locations and develop an action plan in cooperation with the communities and railroads as part of an ongoing activity.

• Improve communication between railroad companies and local public officials, especially for railroad construction projects that close public roadways and/or require local permitting approval prior to commencement. Also, better communication would support more collaborative partnerships when local roadway improvements may have rail impacts such as Butler County’s mouse hole recommendations.

• Address maintenance of railroad overpasses and at-grade crossings. Crumbling structures provide safety hazard to motorists, and rough crossings can damage automobiles.

• Address shipper concerns (e.g., access and switching fees) to promote economic competitiveness for the region and address opportunities to reduce truck traffic by providing direct rail service to industry.

• Improve railroad at-grade signage which are posted with 1-800 call numbers and location identification information to report grade crossing safety equipment malfunctions or other emergencies.

• Introduce railroad mile markers to enable accurate location identification for communication between railroads and local communities for trackage not associated with at-grades or overpasses.

• Work collaboratively to create public-private solutions should passenger rail gain local, regional and state support.

• Continue long-range planning coordination, so that OKI and other regional stakeholders can respond to industry trends and business needs, as well as leverage the region’s transportation assets for economic development (i.e., container growth at Sharon Yard, which would affect the number of trucks entering/exiting the yard and using local roadways, as well as may affect length of at-grade crossing blockages).

The structure of such an organization would be left to regional stakeholders to decide. While not ruling out a new entity, existing organizations such as OKI or the Port of Greater Cincinnati Development Authority could be tasked by local leaders to accept this role.

Cost: Administrative only, up to $100,000 annually

Timing: Immediate

Implementing Agency: Regional interests should determine the form and content of this partnership
At-grade railroad or highway crossings are a large safety concern of local governments in the OKI region. As train volumes increase, the potential for collisions at these crossings grows as well, so the rail freight growth forecasted for the region adds to the concern of local agencies. This recommendation is for OKI to coordinate efforts with rail grade crossing safety programs administered by Ohio, Kentucky and Indiana, and where appropriate, to assist in funding grade crossing safety improvements. There are different types of warning devices and safety improvements available for at-grade crossings:

- Crossbucks/warning signs
- Flashing lights
- Flashing lights and gates
- Traffic channelization (to prevent motor vehicles from driving around gates) or four-quadrant gates
- Closing at-grade crossings (often in concert with other improvements above)
- Rail-highway grade separation projects

In developing this recommendation, OKI referenced the FRA’s Web Accident Prediction System (WBAPS), an analytical tool that can—combined with other site-specific information such as sight-distance, highway congestion, bus or hazardous material traffic, and local topography—assist in determining where scarce highway-rail grade crossing resources can best be directed. By applying the WBAPS, the five at-grade crossings listed in Table 7-7 represent the top locations as ranked by predicted accidents per year as of December 31, 2009 for the OKI region.

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<thead>
<tr>
<th>Crossing Number</th>
<th>Railroad</th>
<th>County</th>
<th>City</th>
<th>Road</th>
<th>Total Trains per Day</th>
<th>Average Annual Daily Traffic (count for highway vehicles)</th>
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<td>Mason</td>
<td>West Main St.</td>
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</tbody>
</table>


State transportation agencies in Ohio, Kentucky and Indiana administer the following federal funding programs for grade crossing safety:

- **Ohio**: The Public Utilities Commission of Ohio, in partnership with the Ohio Rail Development Commission, selects Ohio highway-railroad crossings for federally funded upgrades based on a
priority list that ranks the crossings in order of risk of accident. Criteria used in ranking each crossing relative to the risk of accident include number of tracks, average daily traffic count, crash history, number of highway lanes, maximum speed of trains and number of trains per day. While the average cost of upgrading a crossing is $160,000, the local community incurs no costs under this program. Waneta Street in Middletown is already part of the ongoing NS “CJ” Corridor Projects that are currently planned for an improvement under agreement between the Ohio Rail Development Commission, city of Middletown and NS. Waneta Street has been the site of two fatal grade crossing crashes (2006 and 2008).

- **Kentucky**: The Highway-Rail Grade Crossings Program, codified as Title 23 USC Section 130, provides federal money to states to fund projects intended to reduce accidents at railroad crossings. According to Section 130, the money can be used to install or upgrade signs, pavement markings, signals, gates, crossing surfaces, and lighting. The FHWA administers the Highway-Rail Grade Crossings Program. This program is a continuation from ISTEA. The national program is funded from a portion of the Surface Transportation Program (STP). Annually, Kentucky receives $1.268 million to be administered through the KYTC Division of Right of Way and Utilities for highway-rail grade crossing improvements.

- **Indiana**: Formerly a set-aside of the STP program, the Highway-Rail Grade Crossing Program (Title 23 USC Section 130) provides funding for projects that reduce the number of fatalities and injuries at public highway-rail grade crossings by eliminating hazards or installing/upgrading protective devices at crossings. Legislation requires that states set aside at least 50 percent of the funding allocation for the installation of protective devices at highway-rail crossings. If all needs for installation of protective devices have been met, the funds available can be used for other at-grade crossing projects eligible under this program. Eligible projects include grade separation or protection of at-grade crossings, such as through installing active or passive warning devices, reconstructing existing railroad grade crossing structures, and relocating highways or rail lines to eliminate grade crossings.

The intent of this recommendation is for OKI to coordinate with existing rail grade crossing safety programs so that the region can maximize the efficacy of public funds.

**Cost**: $25,000, includes review of five at-grade crossings listed in Table 7-8

**Timing**: Immediate

**Implementing Agencies**: Cities of Mason, Fairfield, Middletown, Sharonville and Hamilton

### 7.6.3 Rail Quiet Zones

Trains can create a number of public nuisance issues, especially when they blow their horns approaching grade crossings. In a number of communities, such as Wyoming, the amount of train traffic and the noise from their horns is especially bothersome. It is anticipated that the problem will worsen with forecasted increases in rail freight traffic throughout the region.

One way to address train noise is through the establishment of “quiet zones” where trains are prohibited from sounding their horns approaching grade crossings. To address public safety at grade crossings, quiet zones include additional safety features, such as four-quadrant gates that completely block crossings (thus preventing vehicular traffic from driving around typical gate arrangements).
Quiet zones might also close some at-grade crossings that have lower vehicle volume. Establishing quiet zones requires cooperation between railroads and communities to plan and implement quiet zones, including necessary capital improvements.

The FRA has a Quiet Zone Creation process that should be used to designate new locations. To support immediate action within the OKI region, it is recommended that the Public/Private Rail Freight Partnership take proactive measures to identify potential quiet zone corridors and support dialogue between local communities and railroads. Furthermore, to assist in the creation of a quiet zone should physical safety improvements to at-grade crossings be determined, steps should be taken to coordinate public and private funding sources.

**Cost:** $50,000 to $100,000 per crossing

**Timing:** Immediate

**Implementing Agencies:** Local governments, private railroads, OKI and the Ohio Rail Development Commission

### 7.6.4 Hopple Street Passing Track and Crossovers

Railroad choke points in the Millcreek Valley north of Queengate Yard are a major source of train delays in the OKI region. Although there are three main line tracks in the Mill Creek Valley, trains often must idle, sometimes occupying all three main lines while waiting to enter and exit the CSX.
Queensgate and NS Gest Street Yards. This is the single biggest source of railroad delays in the region.

The NS and CSX mainlines narrow from three main tracks to two tracks for approximately 1,000 feet, in order to pass through the Hopple Street Viaduct piers. This effectively creates a choke point. The major problem is the inability of NS southbound traffic to move from the third track (NS Main Line) north of Hopple Street into the Gest Street Yard while NS trains depart northbound from the Gest Street Yard at the same time. This choke point creates delays for both NS and CSX through trains.

Reconstructing a portion of the Hopple Street Viaduct in this area to provide additional horizontal clearance, accommodating construction of approximately 1,000 feet of additional track, would minimize through train delay and improve railroad operations at the NS Gest Street Yard.

In addition to the additional track at Hopple Street, constructing crossovers or connecting rail track south of the Hopple Street Viaduct, would allow through trains to access the two main tracks for northbound and southbound movements.

Resolving this bottleneck condition involves the following project elements:
- Reconstruction of a portion of the Hopple Street Viaduct to provide additional horizontal clearance
- Dispatching changes and software upgrades as needed for revised track configuration
- Approximately 1,000 feet of new track
- Three to four new crossovers

**Cost:** $8,000,000 to $10,000,000

**Timing:** Immediate

**Implementing Agencies:** CSX, NS and a public partner to be determined

### 7.6.5 Mill Creek Additional Track

Next to Hopple Street, the other major source of train delay for the region is in the Mill Creek area, especially from the RH Tower (located at the north end of the CSX Queensgate Terminal) to the NA Junction. The convergence of CSX traffic from the north, traffic in and out of Queensgate Terminal and the NS through trains makes this one of the busiest, if not the busiest, stretch of railroad in the OKI region. This choke point adds to the delays of NS and CSX through movements, and makes the coordination of train movements to and from the Gest Street Yard extremely challenging.

The solution to this choke point is to increase rail capacity by adding approximately 8,600 feet of fourth track in this corridor from the RH Tower to the NA Junction. While not a fourth mainline, this length of track will provide capacity for a 156-car train, which will allow better dispatching into the Gest Street Yard by spreading out train arrivals, instead of idling numerous trains while other traffic clears.

Prior recommendation for a fourth main line track north of RH Tower—exceeding 14,000 feet in length and costing in excess of $50 million—had been discussed as part of planning for future
passenger rail access to Cincinnati Union Terminal. This recommendation suggests a much more cost-effective solution. Implementation will require a public-private partnership between NS, CSX and local public agencies.

**Cost:** $15,000,000 to $20,000,000

**Timing:** Mid Term

**Implementing Agencies:** CSX, NS and a public partner to be determined

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### 7.6.6 Capacity Improvements to CSX’s Cincinnati Terminal Subdivision north of NA Junction

The existing CSX Cincinnati Terminal Subdivision includes a grade-separated, single-tracked segment of track approximately 1,500 feet in length from just south of Mitchell Avenue to just east of Spring Grove Avenue in Winton Place. If an additional track is constructed from NA Junction southward, this segment of track (also known as the “head on connection”) will likely be a capacity constraint to northbound CSX and NS directional running trains to Hamilton and points north. It is recommended that approximately 1,500 feet of additional track be constructed. This will require new railroad bridge structures over Spring Grove and Mitchell Avenues as well as right-of-way acquisition.

**Cost:** $7,500,000 to $10,000,000

**Timing:** Mid Term

**Implementing Agencies:** city of Cincinnati
7.6.7 Rail Corridor Banking

It is expensive to develop and expand transportation infrastructure, especially in urban areas, because of the cost of right-of-way acquisition. Yet there are a number of rail corridors that are underused and therefore potential candidates for abandonment. With rail freight demand forecasted to increase 38 percent over the next 30 years, these underused rail lines could have benefits for future freight handling, if they do not fall into abandonment.

Cincinnati articulates a policy of rail corridor preservation, wherever possible, for future rail freight or passenger service. Examples of current railbanked lines include the Wasson Line (NS Hyde Park Branch Line) and CSX Cincinnati industrial track north of Gest Street Yard.

A policy of rail corridor banking seems prudent from a regional standpoint, as there are a few rail lines where service has been reduced to three or fewer trains a day. For example, the Pea Vine line in Clermont County used to connect Cincinnati to Portsmouth, Ohio and NS's Heartland Corridor. This line was recently “embargoed” by NS near the village of Peebles, meaning that NS has rendered the track unusable by piling gravel and other material across the tracks, thereby blocking passage. Although NS has customers using the line, Clermont County officials are concerned that service on the remaining Pea Vine may be terminated.

Each of the railroads have shared their interest and support in keeping current rail freight operations active, if not expanding service, should new customer demand arise or current needs increase. However, where rail service is being diminished, a rail corridor banking program would seek to preserve it through the following:

- Preserve for freight service with the current rail operator
- Identify a purchaser, such as a short line, to assume freight operation of the line
- “Bank” the rail line for future transportation use, including public transit, pedestrian and bicycle

Rail lines, which are potentially threatened by abandonment, include those with less than three trains per day and unused industrial leads. On a continuing basis, the implementing agency should monitor these railroad lines and meet with railroad strategic planning staff to assess their viability and identify any plans for abandonment. The implementing agency may also want to establish a formal notification process with the local jurisdictions beyond the Public Utilities Commission of Ohio or the Ohio Rail Development Commission regarding any potential abandonments prior to filing with the Surface Transportation Board, so that discussions and any potential action plan for rail corridor banking can be implemented. When rail lines move into an abandonment phase, the implementing agency will meet with local stakeholders to create a preservation plan for the line.

Cost: Administrative only

Timing: Immediate

Implementing Agency: Regional Public/Private Freight Rail Partnership
7.6.8 Railroad Economic Development Properties

Within the OKI region, there are a number of properties that are available for economic development that have railroad access:

- Clermont County SR 32 (across from the Ford facility), 650 acres. Clermont County officials have a great interest in developing rail-related business to this and other sites along the NS Pea Vine line in the county.
- The CSX line west of the Mill Creek is also known as the CSX Cincinnati industrial track. The only current active customer is S&B Industrial Minerals Inc. north of NS’s Gest Street Yard. The line is currently railbanked north of S&B. The city of Cincinnati intends to discuss potential for future rail service on this line with CSX to foster industrial development on the adjacent property.
- In Kenton County, there is redevelopment potential on the Licking River’s western banks, near the I-275 crossing. Much of this stretch of riverfront was formerly occupied by CSX and its Decoursey Yards rail operations. The former L&N classification yard at Decoursey closed when CSX initiated operations at Queensgate in 1981. Over the last several years, CSX has decreased service and removed large amounts of yard trackage from this area, leaving prime undeveloped parcels with good rail and water access.

Developing businesses on these properties can have several benefits for the region:

- Economic activity (employment, sales, tax revenue, etc.) from the property itself
- Increasing the rail traffic density on some of these lines will increase their viability and make abandonment less likely
- Environmental benefits of rail transportation as compared to trucking

This recommendation involves inventorying property that has rail access and other development attributes such as zoning, water, sewer and power service, so that regional economic development agencies can market their availability. The inventory itself could be developed and maintained by coordinating with railroads and commercial real estate companies. Also, the inventory of economic development properties should also be made available to, and coordinated with, the state economic development programs of Ohio, Kentucky, and Indiana. Kentucky, for example, has a comprehensive GIS inventory of its freight railroad network, which is used in concert with the marketing of economic development properties. The Ohio Department of Development has programs to assist in identification, marketing and development of properties with excellent rail access. INDOT’s Rail Office administers the Industrial Rail Service Fund—for Class II and III freight railroads to upgrade physical plants and assist in railroad track improvements related to new business development—with $1.5 to $1.7 million in grants per year.

This recommendation could be combined with the Regional Public/Private Freight Rail Partnership such that rail economic development initiatives could be added to the mission of a Regional Freight Rail Partnership.

**Cost:** Administrative only

**Timing:** Immediate

**Implementing Agency:** Regional Public/Private Freight Rail Partnership
### 7.6.9 Reading Road Grade Separation, Sharonville

The NS railroad line through Sharonville presents a critical freight issue for the region, as well as a critical safety issue for the city. Sharon Yard offers relief for rail congestion at Gest Street Yard. Sharon Yard handles one or two intermodal single-stacked trains per day. With the Heartland Corridor connection from Rickenbacker Intermodal Facility in Columbus to Sharonville, these one or two trains could double their intermodal cargo loads with the use of double-stacking. Timing for this increase in freight depends on market and regional freight demand. As the national economy recovers and local business interest in intermodal increases, demand for double-stack will grow as customers see it as a more efficient freight transportation mode to trucking.

A critical issue in Sharonville involves NS trains blocking the Reading Road at-grade crossing. The yard tracks do not offer enough length for NS to assemble trains for outbound movement, so they must be “doubled” which means that half the train parks on the mainline, blocking Reading Road, while the other half of the train is switched and assembled. The delays are not trivial, as train crews must perform inspections and brake testing of the assembled train before departure.

Blocking Reading Road creates critical safety and congestion problems for Sharonville. From a safety standpoint, the blocked crossing delays the efficiency and speed of emergency response vehicles, which must otherwise route around the grade crossing. The congestion gridlocks Sharonville and hampers truck movements to local businesses and Sharon Yard itself.

In 1999, ODOT initiated a grade-separation program and the Sharonville Reading Road crossing was selected for preliminary engineering development. The state hired a consultant to perform alternatives and cost estimates but later withdrew its commitment to the project when it deemed the capital cost too excessive.

The Reading Road grade separation is critical to the safety and efficient traffic flow of the region. As such, it is a priority for immediate attention in the OKI Regional Freight Plan. It is recommended that regional leaders review the Reading Road grade crossing hazards, and preliminary work that was performed for the grade separation, in order to prioritize the project for federal funding. In turn, Sharonville should approach ODOT to lay out this regional transportation concern and prepare a new application for state safety and major new funding to build the project.

**Cost:** $25,000,000

**Timing:** Immediate

**Implementing Agency:** Local sponsor city of Sharonville; federal funding through OKI and ODOT and private partnership with NS
### 7.6.10 Western Hills Viaduct

In the central part of Cincinnati, the Western Hills Viaduct, spanning the CSX Queensgate Yard, is under study for rehabilitation or replacement. If a replacement of the Viaduct is warranted, there is an opportunity to design a structure with fewer piers, presenting the opportunity to cost-effectively increase rail capacity and improve access at the Queensgate Yard.

The preliminary evaluation and design of the Western Hills Viaduct is underway and is being managed by the city of Cincinnati. Capital costs of rehabilitation versus replacement will be a key decision in the scope and design of the project. However, project development should include consultation with NS and CSX to determine and assess any benefits a reconstruction might have to freight rail operations and the costs/benefits of various alternatives. Such rail freight benefits may help support private funding participation in the project.

**Cost:** Undetermined at this time  
**Timing:** Long Term  
**Implementing Agency:** city of Cincinnati

### 7.7 River/Inland Waterway Freight Recommendations

In the OKI region, Ohio River barge terminals have the largest amount of capacity to expand freight transportation. Barge transportation is low cost and environmentally superior to other modes of transportation (in terms of pollutants per ton of cargo moved). With barge transportation, the region has a clear competitive advantage over regions that lack such access. The existing Port of Cincinnati, as designated by the US Army Corps of Engineers, extends 30 miles along both sides of the Ohio River. However, there is no promotion of the region’s barge terminals and no active political, physical, or financial support for terminal expansion and broader intermodal access. To capitalize on the potential for barge transportation in the region, the OKI Regional Freight Plan makes the following recommendations.

#### 7.7.1 Activate the “Port” in the Port of Greater Cincinnati Development Authority

Port authorities can exercise significant powers to develop transportation, such as planning and promotional activities, and the authority to tax and issue debt to finance capital improvements. The OKI region has two port authorities active and with jurisdiction along the Ohio and Licking Rivers.
Port of Greater Cincinnati Development Authority

To date, the Port of Greater Cincinnati Development Authority has been successful in providing public finance for construction and brownfield redevelopment projects throughout Hamilton County, but has not been given the charge and related funding to provide leadership or coordination of port or river facility development. Talks are currently underway with the city of Cincinnati and Hamilton County regarding the utilization of the port authority. The intention is to hire a new executive director of the port authority and possibly identify ongoing funding appropriations for development activity.

Northern Kentucky Port Authority

The Northern Kentucky Port Authority (NKPA) was formed in 1968 to facilitate riverport projects along the Ohio and Licking rivers. All three northern Kentucky counties jointly contributed to its formation. NKPA’s enabling statute permits it to operate in the economic environs of the Ohio and Licking rivers in Boone, Campbell and Kenton counties. The NKPA Board of Directors oversees activities that include industrial park development and management of NKPA’s assets. NKPA’s assets primarily consist of real estate in the Wilder area along or near the Licking River. Through an informal understanding and agreement, NKPA is administered by the staff of the Northern Kentucky Tri-ED. Tri-ED reports that northern Kentucky is home to two major barge companies and links to 140 other barge lines. The three-county area has nine public river terminals.

Clermont and Dearborn Counties Ohio River Freight

No port authorities currently exist in Clermont and Dearborn Counties, the remaining two counties in the OKI region with land along the Ohio River. In lieu of a port authority, the Clermont County Office of Economic Development, Clermont Chamber of Commerce, and Clermont County Transportation Improvement District are the economic development and transportation-related agencies serving the county that can address river freight interests in their jurisdiction and collaborate at the regional level. In the same regards, the Dearborn County Chamber of Commerce, which has voiced their interest in supporting river freight economic development, has barge members such as Consolidated Grain & Barge Co.

The following recommendations address the deficiencies of current port or river facility development and identify the above organizations as the implementing agencies of each initiative. The Port of Greater Cincinnati Development Authority is identified to serve as the lead implementing agency because of its port authority status and jurisdiction, which encompasses the majority of current barge terminal operations in the OKI region. The cost estimate is intended to cover only administrative costs for the Port of Greater Cincinnati Development Authority to assume this role. Land acquisition, remediation or construction costs are not included in the estimate.
Cost: $300,000 annually for administrative costs to undertake each of the following policy/advocacy recommendations

Timing: Immediate

Implementing Agency: Port of Greater Cincinnati Development Authority as directed by its board and funding agencies (Hamilton County and the city of Cincinnati)

Port Marketing

Many barge terminal operators in the region endorse the establishment of a public or private non-profit entity which would take on the role of promoting economic development for the region’s river freight assets. The suggested activities align with the mission of the Port of Greater Cincinnati Development Authority. Specific recommendations and activities include the following:

- Create a vision and plan for the region’s barge/river terminals which would:
  - Identify market sectors and customers—domestic and international—that can take advantage of the region’s location, commodities and other freight assets;
  - Identify areas for expansion of commodity handling businesses, as warranted by cargo demand
- Interface with state and regional economic development agencies, to expand the promotion of barge terminals as part of the region’s transportation assets
- Represent the river businesses at trade and industry conferences and events
- Coordinate efforts with port authorities in Clermont County, Dearborn County and Northern Kentucky

Port Access

Intermodal access is a very important consideration for barge terminals and many terminals in the region have been designated by the USDOT as “National Highway System Intermodal Connectors.” Adequate highway and rail access ensures that barge terminals can efficiently serve important regional markets, such as the agribusiness and steel industries.

Problems with barge terminal access can be either physical or institutional. Physical access problems involve the road or rail infrastructure, where available, that connects with barge terminals.

Institutional issues with barge terminal access include policies or business practices that prevent the transfer of cargo between modes. Two examples in the OKI region include:

- Competing railroad access, such as where one railroad physically prohibits another from connecting to a terminal.
- Railroad switching fees (a charge between railroads to interchange rail cars) can make connection by two or more railroads economically unfeasible.
**Lock and Dam Funding Advocacy**

The average tow barge can carry the equivalent of 870 tractor-trailer loads. Of the 257 locks still in use on the nation’s inland waterways, 30 were built in the 1800s and another 92 are more than 60 years old. The average age of all federally owned or operated locks is nearly 60 years, which is well past their planned design life of 50 years. The cost to replace the present system of locks is estimated at more than $125 billion.

As with many parts of the nation’s infrastructure, the inland waterway system of locks and dams is not receiving adequate funding for maintenance and modernization. By 2015, more than half of the current navigation structures will be past their structural design life. Replacements for a number of locks are under construction. Some of the new designs being implemented will reduce the number of locks required and therefore, reduce time lost because of stoppages.

The OKI region is especially dependent on such modernization as the Mississippi/Ohio River system, north of St. Louis, has a number of lock and dam structures that determine the speed and reliability of barge transportation.

The OKI region should recognize the importance of modernizing the locks and dams on the Ohio River system and join other inland waterway policy groups in advocating for the adequate funding of this infrastructure.

**Barge Terminal Site Development Planning**

The OKI region’s barge terminals should be actively promoted in economic development efforts. In turn, there are a number of issues with regard to developing the economic potential of the region’s existing barge terminals given the scarcity of waterfront resources including:

- Marketing available, adjacent land for existing barge terminal expansion, such as sites on the Ohio River and Licking River waterfronts
- Funding redevelopment of currently idle, riverfront brownfield properties for potential reuse as river terminals
- Identifying sites that are appropriate and supported publicly for river terminal use
- Encouraging river terminals and railroad operators to collaborate and combine resources to create larger tracts of potential multimodal zones along the river

Implementing this recommendation of Barge Terminal Site Development Planning would involve some basic planning steps, such as building upon current data inventories held by local jurisdictions that illustrate properties with barge access and other development
attributes like water, sewer and utilities; identifying development requirements; and identifying potential public funding sources such as for brownfield remediation. The compatibility of barge terminals with adjacent land uses should also be considered, so that planning measures can be taken that will avoid the creation of any additional nuisance burdens such as noise, light, dust pollution, roadway debris, and the safety of truck access/egress from the site. The overall goal would be to improve the region’s terminal competitiveness and operating efficiency.

### 7.8 Air Freight Recommendations

In the wake of Delta Airline’s downsizing of its hub operations, increasing flight activity at CVG is a vital economic development priority for the region and of the utmost importance. Since its peak year in 2005, CVG daily departures have decreased from 673 to 200 in 2010, and annual passengers from 22 million to eight million. However, air freight is a positive growth opportunity for CVG. With the return of DHL’s hub operation to CVG in 2009, total freight at CVG increased 190% (137,837 tons in 2009 to 400,278 tons in 2010). Additionally, DHL is currently expanding its warehouse/cargo handling facility at the airport. In another positive action, CVG management is updating their airport master plan (due summer 2012) which will provide a 20-year recommended program of projects to meet airport demand under different market scenarios.

#### 7.8.1 Cincinnati/Northern Kentucky International Airport Air Cargo Park

Expanding CVG’s air cargo business could provide an increase in traffic and an economic development boost for the region. One way to expand this business is through an air cargo park concept, which would increase CVG service offerings beyond cargo transfer operations to an integrated, value-added logistics and manufacturing center.

**Elements of Air Cargo Park**

The concept of an air cargo park is to provide logistics service offerings, which are far superior to a warehouse or distribution center where air freight is offloaded, sorted, and stored for distribution by truck or air.

An air cargo park is a state-of-the-art transportation hub that combines all transportation modes, distribution centers, logistics service providers and advanced manufacturing facilities, which process near-finished goods for just-in-time delivery. The air cargo park becomes an economic development magnet, where advanced logistics services provides a competitive advantage for area business, including access to better and more frequent transportation service, as well as access to all modes of transportation.

An air cargo park would include:
Ability to handle all-cargo aircraft in operation today
Connection to all modes of transportation including air, rail, truck and barge
Full cargo handling capabilities
Direct aircraft ramp access to cargo handling facilities
Facilities for freight handling and manufacturing activities (on site and in close proximity)
Facilities with flexible space for multiple tenants
Real estate services, to build and manage facilities for tenants
Third party logistics, forwarder and broker services
On-site customs and homeland security clearance
Foreign trade zone status

Examples of Similar Facilities

The air cargo park envisioned for CVG would have few peers in the Midwest. The Rickenbacker Inland Port in Columbus, Ohio aspires to a similar economic development strategy and has had success as a logistics center. A CVG air cargo park would have advantages over the Rickenbacker Inland Port, as the Cincinnati region has a larger industrial base than Columbus, and thus more potential for value-added manufacturing. In addition, the Cincinnati region has access to barge transportation services, providing the full spectrum of intermodal transportation, short of direct ocean access.

Other air cargo park concepts in operation or under development include the Alliance Global Logistics Park (Texas) with 17,000 acres for logistics development; Huntsville International Airport (Alabama) with a 4,000-acre industrial park and rail intermodal terminal on-site; and the Port of San Antonio (Texas) with 1,900 acres of property on or adjacent to the airport (the former Kelly Air Force Base).

Potential Infrastructure Requirements

As CVG develops its master plan and considers the air cargo park development, intermodal connections will be critical to attracting potential tenants. OKI will coordinate with CVG, Boone County and other local officials to identify the infrastructure needed to support an air cargo park. Examples of critical infrastructure improvements include:

- A connector road from the expanded DHL facility and CVG property to the future South Airfield Road, which would help accommodate additional DHL truck traffic, as well as provide more convenient freight access to I-75, while opening additional land for commercial, industrial, and other airport-related development.
- Proposals to study a possible new river crossing connecting western Hamilton County to the CVG/Mineola Pike area between the Brent Spence and Carroll C. Cropper bridges.
- Freight railroad connection.
- Barge/river terminal access.
Defining and advancing the vision for a CVG air cargo park will require master planning by CVG and the coordination of area stakeholders.

The capital cost of this recommendation will depend on freight carrier and shipper requirements.

In terms of infrastructure, for comparative purposes, the NS intermodal facility at Rickenbacker Airport in Columbus cost approximately $60 million. Similarly, roadway improvements might be necessary, but are determined based on the logistics requirements of shippers using the facility.

There will be significant private-sector capital costs in terms of real estate and new facilities for warehouses and distribution centers. Using the Rickenbacker Airport as an example, there is more than 6.8 million square feet of new construction in 13 industrial parks around the area. Through industrial revenue bonds and county, state, and federal funding, more than $72 million was spent on the airport by 2000, even before the NS intermodal facility was built.

As another example of air cargo park capital costs, in Kinston, North Carolina, state and federal governments have spent $42 million on the Global TransPark cargo airport.

Based on the investments of similar air cargo parks, this freight plan estimates an initial public investment of $50 million over five years to provide the necessary public infrastructure—rail and road—to support an airport logistics hub.

**Cost:** $50,000,000

**Timing:** Immediate

**Implementing Agencies:** CVG and Boone County, and other regional stakeholders
8 Implementation and Next Steps

The OKI Regional Freight Plan provides a snapshot of the region’s freight transportation system, a forecast of future freight demand and recommendations to address regional freight deficiencies. The utility of the plan will relate directly to the extent to which it is implemented—this chapter suggests actions for OKI to take in regard to implementation and maintaining momentum for freight planning in the region.

8.1 OKI Freight Planning Capacity

OKI has demonstrated leadership and strong capabilities in regional freight planning. From a leadership standpoint, OKI has taken the initiative to contact railroad company executives and meet with them in their local offices and headquarters, which has established relationships and built goodwill between the parties. OKI staff has developed strong knowledge of freight transportation from both a carrier and shipper standpoint. To maintain its proficiency in freight planning, OKI should consider the following actions:

- OKI should continue periodic outreach to railroad companies, with expanded outreach to barge lines, trucking industries and air cargo carriers to build similar relationships with those modes of freight transportation.
- Travel Demand Model staff should stay current on developments in freight data, such as FAF3. Also, OKI should consider partnering with the states of Ohio, Kentucky and Indiana, and other metropolitan planning organizations (MPOs) in those states, to purchase and maintain a license for TRANSEARCH data and updates.
- As an enhancement to its Congestion Management System, OKI could consider accessing the American Transportation Research Institute's Freight Performance Measures website (FPMweb) to establish a baseline of commercial vehicle mobility through the region. FPMweb is new, so trend information is not available. Through a cyclical planning process, OKI could provide a report card on regional freight mobility and its changes over time, as part of congestion management. Also, OKI could use FPMweb to perform comparative analyses with other regions and promote the freight mobility of the region.
- OKI’s freight planning staff stays current on many carrier and logistics developments which are happening on a regional, national and international basis. However, there is no formal way to share this “freight news” among OKI freight stakeholders and local governments. To promote the agency’s profile in freight planning as well as serve its freight constituents, OKI could use its freight webpage to update stakeholders on freight transportation developments such as new truck weight regulations, changes in supply chains, or significant changes in the cargo services offered by railroad and ocean carriers. Other online communication methods may also be utilized for outreach and education.
8.2 Implementing Partnership Strategies

A number of freight plan recommendations call for maintaining public-private forums to address certain freight issues and drive toward implementing solutions. Examples from the preceding chapter include:

- Regional Public/Private Freight Rail Partnership
- Regional Truck Size and Weight Regulation

Through its Freight Working Group, it is appropriate for OKI to maintain a leadership role in organizing the forums and partnerships necessary to address complex freight infrastructure issues. Developing the Regional Freight Plan has demonstrated that private freight carriers will participate in the MPO planning process and the freight plan itself can represent the beginning of a more cooperative public-private relationship that results in actions to address freight deficiencies.

8.3 Engaging in Freight Planning and Project Development

Another example of partnership includes engaging in project planning where OKI is not the lead agency. A prime example includes highway-rail grade crossing safety projects, where at-grade crossings are ranked by the state DOT, which in turn implements improvements with the railroad and local public agencies. By participating in these types of planning efforts, OKI could bring forth a deeper understanding of freight issues within the regional context and even participate in project funding if appropriate.

In a similar vein, there are other freight planning activities which are not led by OKI but where OKI has an interest. Examples include statewide freight plans in Ohio, Kentucky and Indiana, as well as more concentrated studies such as the CVG master plan and any future planning for Ohio River facilities. OKI can both contribute to these planning efforts, and draw on their outcomes in order to update its regional freight plan.

8.4 Freight Plan in Context with other OKI Planning Products

Development of the OKI Regional Freight Plan illustrates the differences between freight planning and the more conventional metropolitan planning process. Namely, that regional freight planning requires an understanding of supply chain trends, underlying freight data, and the formation of partnerships with private sector freight carriers which are not traditional MPO stakeholders. OKI has demonstrated its understanding in these areas.

The next major planning effort for OKI is developing its regional transportation plan update. As part of that update, freight system needs and strategies can be incorporated into the regional plan context, with freight goals articulated as part of the overall plan.

On a regional basis, the OKI Board of Directors will also consider the menu of high priority freight projects which were identified in this plan. Projects will require initiation by local jurisdictions as public sponsors to solicit possible funding opportunities at the regional, state and federal levels.
8.5 Freight Plan Updates

It is typical for MPO and DOT transportation plans to have a 30-year horizon. In contrast, shippers and carriers rarely have business plans that exceed 24 months. OKI recognizes this fact and is mindful of the speed at which business decisions move.

Updating the freight plan will require OKI to be agile, as well. It is recommended that OKI monitor freight transportation trends and provide a four-year update of the major changes affecting the region in terms of freight. Such updates can precede the four-year update of the regional transportation plan and be posted on the OKI freight website.

Similarly, OKI can monitor major infrastructure developments through a database and/or GIS platform and track changes such as river terminal or railroad capacity expansions, new services like the NS double stack to Sharonville, and other freight investments that may come in the future.

Finally, OKI should establish a program to monitor freight mobility on local roads in the region, including truck safety and mobility. Through a combination of truck traffic counts and road congestion monitoring, OKI can identify future truck congestion issues and work with local governments to develop truck access improvement projects. Such a systematic, regional assessment will eliminate the intensive outreach and interview effort that went into this plan.

By conducting the freight activities above, OKI will maintain a dynamic freight planning process that reflects changes in the supply chain as well as carrier initiatives. Most importantly, OKI will be able to keep its freight plan current and avoid extensive updates on a recurrent basis.