Appendix G:
Rail And Riverport

GET THERE TOGETHER.

Kentucky's Long-Range
Transportation Vision

FREIGHT MOVEMENT

Freight movement plays a vital role in the economic well-being of Kentucky, with over $578 billion in freight moved through the state on an annual basis and 40 percent of Kentucky's GDP originating from freight-dependent industries. The Commonwealth maintains a strategic and central geographic position, which makes it an important gateway for freight flows and access to many consumer markets across the nation. Within a 600-mile radius of Kentucky's borders, the transportation system can reach 65 percent of the nation's population and facilitates freight movement to nearly 30 other states.

According to the 2017 Kentucky Freight Plan[1], the statewide freight network includes the following components:

- Highways: 16 interstates, 11 state parkways, and over 500 miles designated on the Primary Highway Freight System (PHFS).
- Aviation: 6 commercial service airports, 3 major shipping hubs, and 59 general aviation airports.
- Railroads: 5 Class I railroads, 1 regional railroad, and 9 short line railroads
- Inland Waterways: Over 1900 miles of designated navigable waterways.
- Pipelines: 37,000 total miles of pipeline network, moving oil, natural gas, and other commodities.

While each component has its own individual needs, they must work together to ensure a truly connected, efficient, and resilient system for freight movement in Kentucky. The following sections highlight freight-related planning documents, resources, and initiatives either completed or underway by KYTC.

Multimodal Freight Plans, Studies, and Documents

Kentucky Freight Plan (2017): KYTC recognizes the importance of maintaining a connected, efficient, and resilient freight network, which involves routine investments in maintenance, capacity, and infrastructure improvement. The most recent update of Kentucky's Freight Plan (KFP) was completed in 2017 as a supplement to the Long-Range Statewide Transportation Plan (LRSTP, developed 2014) in compliance with the Fixing America's Surface Transportation (FAST) Act. The KFP tells the story of freight movement in Kentucky and its long-term future as a vital component of the statewide economy. It includes an inventory of statewide freight assets, assesses performance and the current and future needs of the freight network, and serves as the guide for statewide freight policy and investment decisions across all modes – highway, rail, aviation, and waterway.

[1] "2017 Kentucky Freight Plan." 04 Dec. 2017, https://transportation.ky.gov/MultimodalFreight/Documents/2017%20Kentucky%20Freight%20Plan/2017%20Kentucky%20Freight%20Plan%2012-4-2017.pdf.

While pipelines are also a key part of Kentucky's freight network, the plan does not make any specific recommendations for those facilities. Mode specific trends from the KFP are highlighted throughout the subsections that follow.

The KFP shares the same goals as the 2014 LRSTP, which are divided into the categories of Project and Process. These goals were also developed to align closely with those established by the National Multimodal Freight Policy and National Highway Freight Program (NHFP).

Project Goals

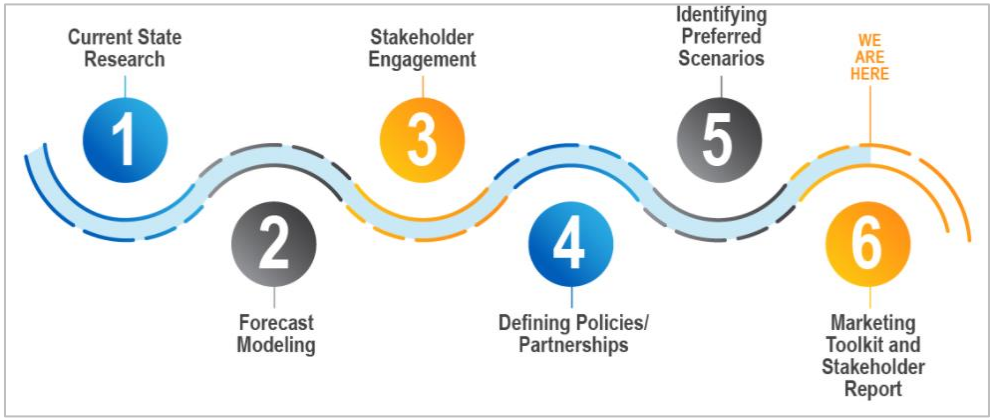
1. Providing a safe and secure system
2. Maintaining and improving existing infrastructure on a continual basis
3. Ensuring dependable, effective, and efficient facilities
4. Improving local, regional, and global connectivity and access
5. Including all appropriate modes of transportation within a fully integrated system

Process Goals

1. Dependable access to markets, jobs, and resources
2. Consideration of human and natural resources
3. Efficient and flexible use of available resources
4. Transparent decision-making processes

Each goal includes a set of objectives, performance measures, and indicators that assist in tracking implementation progress. Most measures established are quantitative in nature and are related to things within KYTC's control or are established by USDOT. The plan also maintains a listing of projects that aim to improve freight movement, which is known as a Freight Investment Plan. This project listing is required to be fiscally constrained and, through documentation in the KFP, makes those projects eligible for federal funding through the NHFP.

Figure 1: Process for Freight Projects



Source: KYTC, Kentucky Riverports, Highway, and Rail Freight Study Webpage

Freight Modes Book (2019)

The Kentucky Freight Modes Book is a comprehensive resource document that offers general information, statistics, maps, and contacts for multimodal freight facilities throughout the state. Systems addressed in the booklet include highways, airports, railroads, waterways, and pipelines. The Freight Modes Book is updated every two years to account for changes or additions to the statewide multimodal freight network.

Riverports, Highway, and Rail Freight Study (Underway)

The Kentucky Riverports, Highway, and Rail Freight Study is currently underway and will analyze the strengths and weaknesses of the state's existing multimodal freight infrastructure. Facilities and networks included in the study area are the state's public ports, railroads, and highway networks. While transportation is a central focus of the study, it also takes into account the economic development impacts in order to make recommendations that promote business growth and retention. Along with the freight network, the study will also consider industrial warehousing capacity in its analyses.

The study will include a listing of prioritized recommendations and improvements to the freight network, identify partnerships and funding sources, and a marketing strategy for stakeholders in promoting and facilitating transactions both domestically and internationally.

A final report, including study findings, has yet to be released; however, it will be made available on the KYTC website when complete. The study is entering its final phases, which includes the development of a stakeholder report and the marketing strategy.

Highways

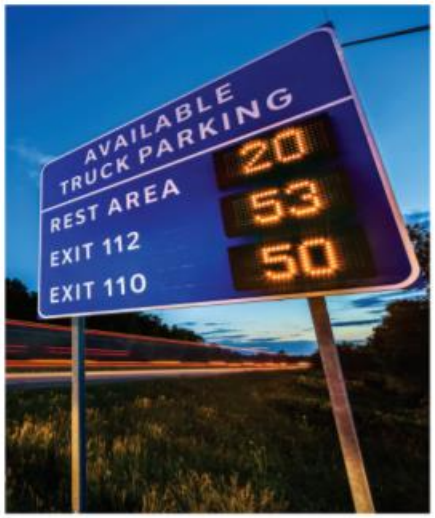
Specific to highways, Kentucky's major roadways provide critical connections for freight movement across the nation. Nearly 800 miles of highway make up the state's share of the National Highway Freight Network (NHFN), a national system of highways that supports the efficient movement of freight. Beyond the NHFN, the Commonwealth also has over 3,600 miles of highways that are designated as federal or state truck routes. According to the Freight Analysis Framework (version 3) analysis conducted in the KFP, trucking accounted for over 558 million tons of freight moved in 2011 and estimates a 65 percent increase in the value of freight moved by truck by 2045.

A network of critical freight corridors throughout Kentucky was established through the annually updated Kentucky Highway Map, which established the Kentucky Highway Freight Network through a data-driven process. The Kentucky Highway Freight Network allows KYTC to address freight mobility concerns throughout the state and is annually updated to reflect network changes. In 2017, KYTC partnered with its MPOs and other planning partners to designate Critical Urban Freight Corridors (CUFCs), a series of first-last mile connectors that support freight movement within urbanized areas that are nominated by states and certified by the United States Department of Transportation (USDOT). Kentucky has a federally set mileage cap of 75 miles for CUFC designation and the full mileage has since been designated and certified. Critical Rural Freight Corridors

(CRFC) are also designated for connections outside of urbanized areas. KYTC uses a similar data driven process to identify these corridors along with input from its' partners. The state CRFC cap is 150 miles. As CRFCs are designated, KYTC will amend the KFP. To date, no CRFC mileage has been designated. The certification of these corridors allows for KYTC to extend the use of its allocation of National Highway Freight Program funds for improvements on those corridors.

Six main interstate highways offer critical network connectivity for freight movement by truck, including I-64, I-24, I-69, I-75, I-65, and I-71. These highways also include several weigh stations and rest areas equipped with innovative technologies to enhance freight travel by truck in the state.

Truck Parking Assessment (2019)



Truck drivers are required to follow federal regulations regarding the number of consecutive hours they can drive at one time, known as "hours-of-service." Current regulations state that truck drivers must not drive longer than 11 hours without 10 hours of rest. The implementation of Electronic Logging Devices accelerated this demand as they strongly enforce these hours-of-service regulations and place additional pressures on drivers to find parking before their allowable shift comes to an end. Availability and quality of truck parking has been a national issue for many years as concerns of driver fatigue, risk of non-compliance fines, and safety of drivers and the traveling public due to parking in inadequate locations.

In recognition of this ongoing issue, KYTC initiated the development of a Truck Parking Assessment in 2019. The assessment evaluated five former rest areas or weigh stations for their potential to be reopened or repurposed for dedicated truck parking. The sites that were included in the assessment are still owned by the KYTC with ranging conditions and are all located along heavily traveled truck corridors such as I-24, I-65, and I-71. The report's goals were to:

- Develop a snapshot of the existing conditions at each site
- Develop conceptual layouts to accommodate truck parking at each site
- Estimate costs associated with repurposing the sites
- Explore opportunities to maximize the number of truck parking spaces

The study recommended over $34 million in conceptual improvements across the five sites in both north and southbound directions. The study offered high level findings for each site and recommends additional analyses if repurposing were to be pursued. It strongly recommends a more comprehensive study of truck parking needs across the Commonwealth and will involve significant coordination with federal and state partners.

Partnerships have already been established to start addressing parking concerns. KYTC partnered with seven other states on a real-time commercial vehicle parking information system. Through a Truck Parking Information Management System managed at a regional level, some of Kentucky's high-volume roadways offer dynamic road signage that displays the number of truck parking spots available at nearby locations. Connectivity to this system continues to be a significant opportunity as truck parking facilities are available or expanded.

KEY TRENDS, CHALLENGES, AND OPPORTUNITIES

Trends

Energy

Significant coal production shifts, geographically or by volume, continue to have a dramatic impact on the Kentucky Freight Network. For example, roads that currently serve coal mining operations could continue to see heavy truck traffic, or if projections are correct, the same roads could see a dramatic decrease in heavy-haul traffic. Similarly, the inland waterway system carries a significant amount of Kentucky coal to customers throughout the Mississippi and Ohio River valleys. This excess capacity could provide opportunities to innovate and explore container-on-barge shipping within the Midwest and to the Gulf Coast ports.[2]

Automotive

Kentucky is a major player in the auto industry, with four assembly plants and over 450 parts suppliers located in-state. In 2013, Kentucky manufactured over 1.2 million automobiles, which accounted for 11.2 percent of total U.S. auto production, ranking Kentucky third overall (behind Michigan and Ohio) in auto production by state. In 2012, motorized vehicles were the fourth ranked commodity transported from Kentucky and the eighth ranked commodity to Kentucky by ton-miles. By value, motor vehicles rank as the top commodity shipped within, from, and to Kentucky. Continued growth of Kentucky's automotive industry, represented by the growth in commodity ton miles and commodity value share, will put increased pressure on the freight transportation system in Kentucky, particularly on the rail and highway systems, which bear the brunt of movement of motor vehicles.

Agriculture

Agricultural production depends on a complete transportation system that includes all major modes of transportation (truck, rail, barge, aircraft, and ocean vessel), with their complementary and competitive roles in transporting farm goods. Kentucky's agricultural producers rely heavily on rural infrastructure to transport farm products, as crops are moved from production regions by truck, rail, or barge to elevators and processing facilities. As with most commodities, trucks are often the first and last mode in the transport of agricultural products. Due to its cyclical nature during annual periods of growth in volume, agriculture, in turn, puts pressure on the transportation system. Many agricultural commodities are perishable, seasonal, and of relatively low value, making efficient and appropriate transportation challenging but critical.

---

[2] CDM Smith, *2017 Kentucky Freight Plan,* Frankfort, KY. Kentucky Transportation Cabinet. 2017, https://transportation.ky.gov/MultimodalFreight/Documents/2017%20Kentucky%20Freight%20Plan/2017%20Kentucky%20Freight%20Plan%2012-4-2017.pdf

Challenges

The Panama Canal, completed in 1914, created one of the most important trade routes in the world, linking the Atlantic and Pacific oceans. After nearly a century, the canal underwent a $5.25 billion expansion in 20005 which was completed in 2016 to increase capacity and accommodate larger ships. The scale of the change in the demands on transportation networks, service, and operations are still being determined.

In 2015, the EPA proposed rulemaking that would require manufacturers of heavy-duty trucks to increase fuel efficiency by 40 percent over 2010 standards. Current heavy-duty truck fleets average around 6 miles of travel per gallon of diesel fuel. As heavy-duty trucks become more fuel-efficient, Kentucky will likely generate less funding from the state fuel tax.

Air quality regulation under the Clean Air Act is yet another factor driving environmental improvements in truck emissions and fuel use. As trucking companies are required to retrofit exhaust systems or purchase new compliant trucks to meet more stringent requirements, the associated costs will mean higher operating expenses for shippers, which in turn will lead to higher costs to transport goods.

Opportunities

Near-shoring

In a concept known as near-shoring, more U.S. businesses are opting to return manufacturing processes to North America from overseas in response to reduced cost advantages of manufacturing in low-cost countries as well as changes in supply chains. Near-shoring allows businesses to streamline their distribution processes so that they are leaner, more efficient, and more collaborative. However, increased investment in freight transportation infrastructure in the U.S., as well as Kentucky, will be needed to improve these supply chains.

Dedicated Truck Lanes

As freight volumes have increased across the U.S. during the past several decades, concepts for dedicated freight infrastructure, such as autonomous freight vehicles and dedicated truck lanes, increasingly have entered the transportation discussion. Dedicated truck lanes physically separate commercial vehicles from passenger vehicles or mixed traffic flows. Benefits associated with dedicated truck lanes include significant safety gains, the potential of adopting high productivity vehicle (HPV) configurations, and the possibility of advanced technologies such as Intelligent Vehicle Initiatives (IVI) and the autonomous truck or self-driving truck.

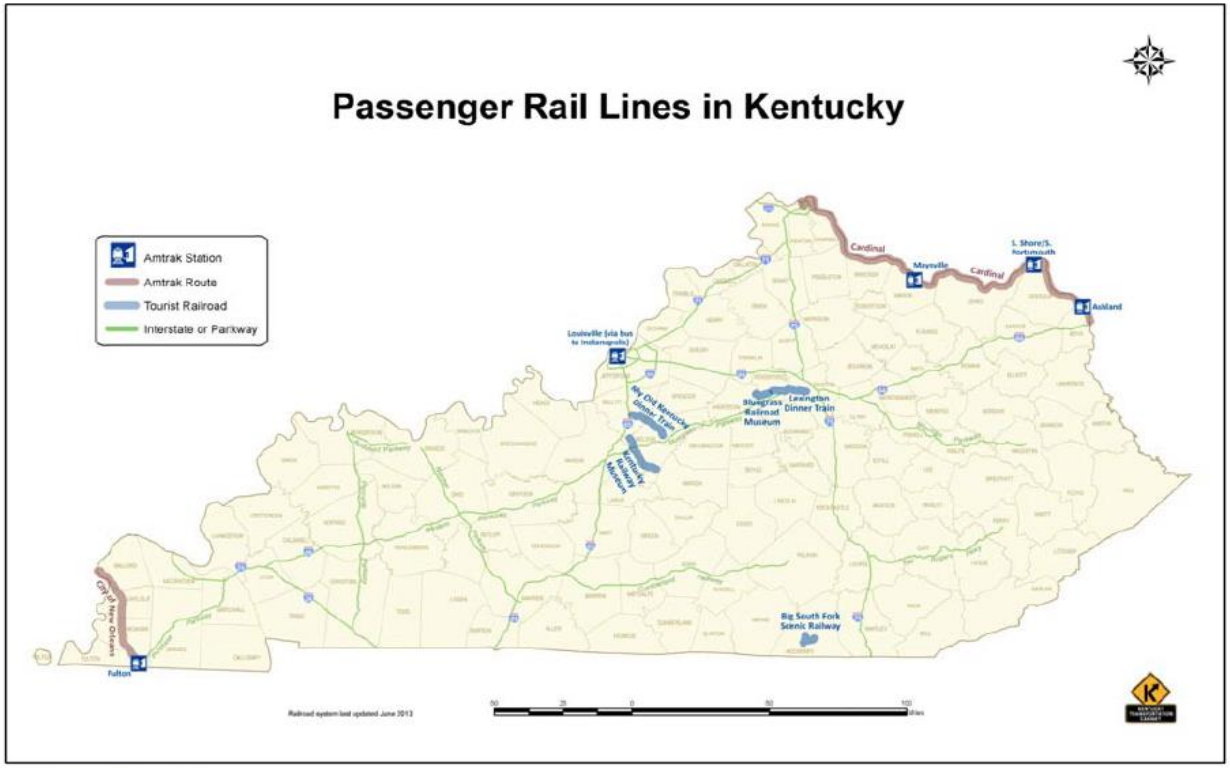
PASSENGER RAIL OVERVIEW

Passenger rail in Kentucky includes Amtrack along with several tourist or excursion rail lines. Amtrak provides passenger rail service connecting over 500 communities in 46 states, the District of Columbia, and three Canadian provinces. In addition to its intercity service, Amtrack is the nation's largest provider of contract-commuter rail service for state and regional authorities.

Amtrak Routes in Kentucky

Amtrak trains stop at four stations in Kentucky. The Cardinal train stops in the Kentucky cities of Maysville, South Portsmouth, and Ashland. The Cardinal runs three trains per week between Chicago, Illinois and Washington, D.C., offering both sleeper and diner cars. The City of New Orleans train provides service between Chicago and New Orleans, Louisiana, with a stop in Kentucky in the city of Fulton. The City of New Orleans offers daily service with sleeper and diner cars.

Figure 2: Kentucky Passenger Rail Lines



Source: KYTC, 2014

Bus Services Connecting Passengers to Amtrak Routes

Thruway Motorcoach Service, operated by Greyhound, provides bus connections from Amtrak stations to other communities not currently served by Amtrak. Guaranteed connections to an Amtrak train station, through-fares, and common ticketing are provided in most cases. A Thruway bus connection is provided at Louisville, connecting Louisville and Indianapolis, Indiana, and continuing on to Chicago, Illinois. The Thruway connection out of Cincinnati provides a link to Columbus, Ohio and Pittsburgh, Pennsylvania. Bus connections are also available to Amtrak passengers at Ashland and Fulton.

Tourist/Excursion Rail Lines

Throughout the Commonwealth, there are currently five tourist/excursion trains that operate. They are as follows:

Big South Fork Scenic Railway, Stearns

This excursion railroad includes a 14-mile roundtrip tour for passenger and includes a trip to the National Park Service's Blue Heron Coal Mining Camp representation within the Big South Fork National River Recreation Area. The line which it operates on is owned by the McCreary County Heritage Foundation in McCreary County. Some of the assets of the line include tunnels, walking paths, and an abandoned mine.

Bluegrass Scenic Railroad and Museum, Versailles

This railroad provides passengers with an 11-mile/90-minute roundtrip tour from Versailles toward the Kentucky River. This railroad line is the only one in Kentucky not being used to transport freight as it was part of the now defunct Louisville Southern Railroad.

Kentucky Railway Museum, New Haven

This railway includes a 22-mile roundtrip excursion through Nelson and Larue counties. It was part of the Lebanon Branch of the Louisville & Nashville Railroad, a predecessor to CSXT. It also offers passenger boarding in Boston.

My Old Kentucky Dinner Train, Bardstown

Since 1988 this train has traveled through the Bernheim Forest, the Jim Beam distillery property, Limestone Springs and Bardstown through a 37-mile roundtrip. It operates on a line originally constructed by the Bardstown and Louisville Railroad in 1860. The line was later purchased by the R.J. Corman Railroad Group. The train.

R.J. Corman Lexington Dinner Train, Lexington

The dinner train started operating in 2013 and involves a 30-mile roundtrip from R.J. Corman's Lexington Station past the Keeneland Race Course, the Village of Pisgah, to the city of Versailles. It operates on the R.J. Corman Railroad Group's Central Kentucky Line in Fayette and Woodford counties.

Studies Regarding Passenger Rail in Kentucky

Several studies exploring the potential expansion and feasibility of passenger rail in Kentucky have been completed by various entities. The most relevant studies are described below. The 2015 Kentucky Statewide Rail Plan provided the following descriptions of each.

Ohio-Kentucky-Indiana Light Rail Project (1998-2001)

In March 1998, the Ohio-Kentucky-Indiana Regional Council of Governments (OKI), the MPO for the Cincinnati – Northern Kentucky urbanized area, completed the I-71 Major Investment Study (MIS). The MIS included the selection of a locally preferred alternative that recommended the design and construction of a 43-mile light rail transit (LRT) line.

Louisville Transportation Tomorrow Light Rail Project (1995-2006)

The Transit Authority of River City (TARC), Louisville, Kentucky's urban transit service provider, examined the feasibility of LRT in the Louisville and southern Indiana region through the development of the Transportation Tomorrow (T2) MIS.

Examination of I-75, I-64, and I-71 High Speed Rail Corridors (1999)

A review of high-speed rail services, proposals, and a preliminary assessment of the potential for high-speed rail transportation between three Kentucky cities (Louisville, Lexington, and Covington) was performed for the KYTC in 1999. Connections to Frankfort, Kentucky and Cincinnati, Ohio were also evaluated in the study.

Midwest Regional Rail Initiative Executive Report (2004)

The Midwest Regional Rail Initiative (MWRRI) was formed in 1996 by several states including Illinois, Indiana, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, and Wisconsin, to improve and expand passenger rail services in the Midwest. Its objectives are to increase operation speeds, train frequencies, system connectivity over the existing network, and service reliability.

FREIGHT RAIL OVERVIEW

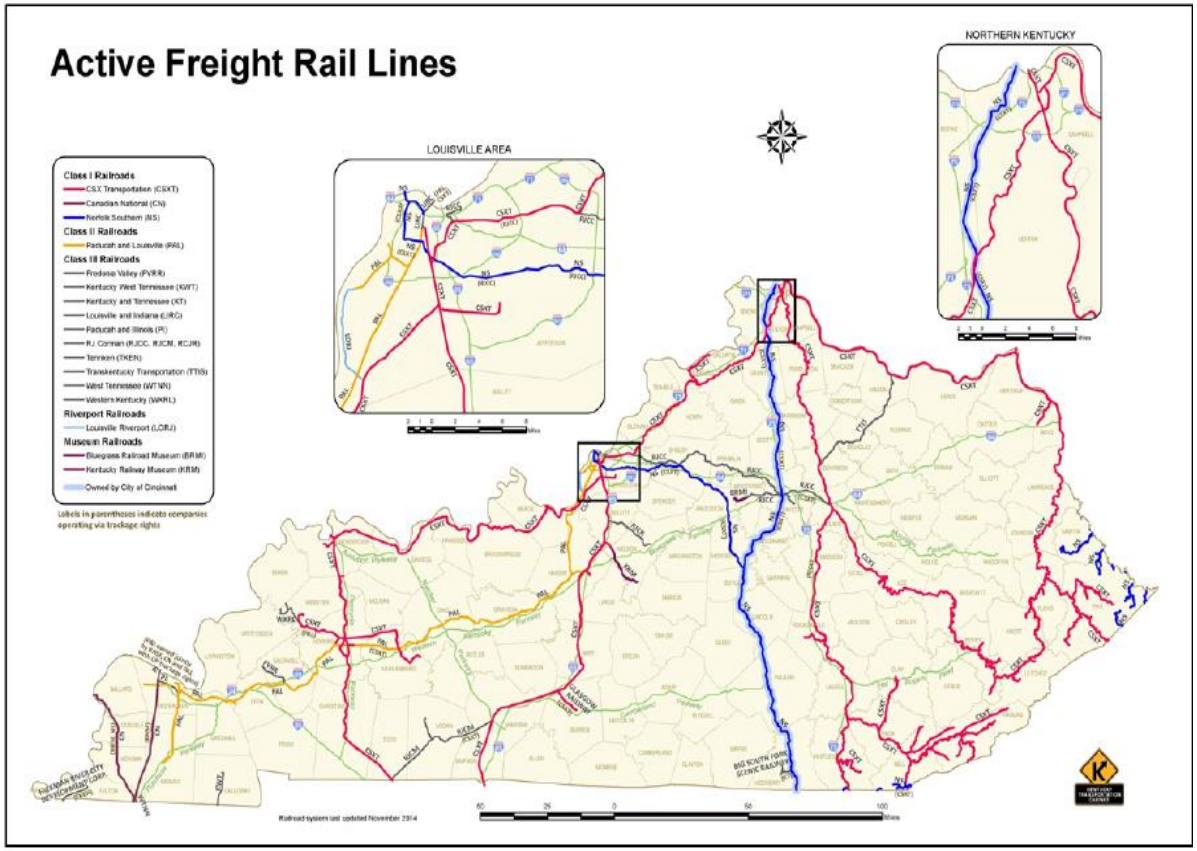
According to the 2017 Kentucky Freight Plan, in 2011, Kentucky's railroad system ranked 11th in the nation for total tonnage of freight carried as well as the third largest source of coal shipped by rail. In 2019, Kentucky's freight railroads carried 232 million tons of freight, removing an equivalent of 13 million trucks from the state's highways. The Freight Plan also used the Federal Highway Administration's (FHWA's) Freight Analysis Framework (version 3.4) to forecast freight movement by rail to a horizon year of 2040. These forecasts show that Kentucky's originating rail freight to decline

through 2020, likely because of the decline in coal production. Inbound freight tonnages are predicted to grow, reaching 30 million tons in 2040; while outbound is expected to decline from 90 million (2011) to 80 million in 2040.[3]

The Kentucky freight rail system, as seen in Figure 3, is comprised of 23 railroads (owning, operating, or having trackage rights in Kentucky), including one port railroad and five museum/tourist railroads, three of which operate on private track. Kentucky railroads range in size from short line railroads to the nation's largest railroads serving the United States, Canada, and Mexico.[3]

Railroads operating within Kentucky through ownership or trackage rights include five Class I railroads, one Class II or regional railroad, nine Class III railroads, one passenger railroad, and three tourist railroads. Class I railroads, as defined by the Surface Transportation Board (STB) for 2012, are those with annual gross revenue of $452.7 million or more. Class II railroads, also referred to as regional railroads, are those with annual gross revenue greater than $36.2 million but less than $452.7 million. Class III railroads, also known as short line railroads, are those with annual gross revenue less than $36.2 million. Additional information about class thresholds can be found on the STB website, www.stb.dot.gov/.[4]

Figure 3: Kentucky Freight Rail Lines



Source: KYTC, 2014

[3] "2017 Kentucky Freight Plan." https://transportation.ky.gov/MultimodalFreight/Documents/2017%20Kentucky%20Freight%20Plan/2017%20Kentucky%20Freight%20Plan%2012-4-2017.pdf.
[4] "Surface Transportation Board." https://www.stb.gov/.

Kentucky has a geographical advantage when it comes to the ability to reach many major consumer markets, especially those on the east coast and in the Midwest. Because of this Kentucky ranks high in terms of freight movement including 267.5 million tons of freight on the rail network in 2011 The Association of American Railroads (AAR) using 211 data gave Kentucky the following rankings:

- 6th among all states for originated tonnage
- 11th for originated carloads/units
- 11th for total tons carried,
- 3rd largest source of coal shipped by rail after Wyoming and West Virginia. ."[5]

According to Kentucky Statewide Rail Plan, "The largest share of freight on the Kentucky rail network in 2011 was overhead freight, the phrase for movements that cross through Kentucky, both originating and terminating in other states. Outbound freight, which originates in Kentucky and terminates in another state, was almost double the tonnage of inbound freight, which originates in another state and terminates in Kentucky. Intrastate freight, freight movements that take place within Kentucky, comprised the smallest percentage of freight movements in 2011, at less than two percent of carloads/units and less than three percent of tonnage that year. Intermodal freight is freight carried by more than one mode. Most transportation of freight from origin to destination is carried by more than one mode. Rail freight is no exception. Other transportation modes will generally be needed for the first or last segments of freight shipments." Table 1 below displays the volume of freight through (Overhead), from (Outbound), to (Inbound), and within (intrastate) Kentucky.

Table 1: Tonnage and Carloads/Units by Movement Type, 2011

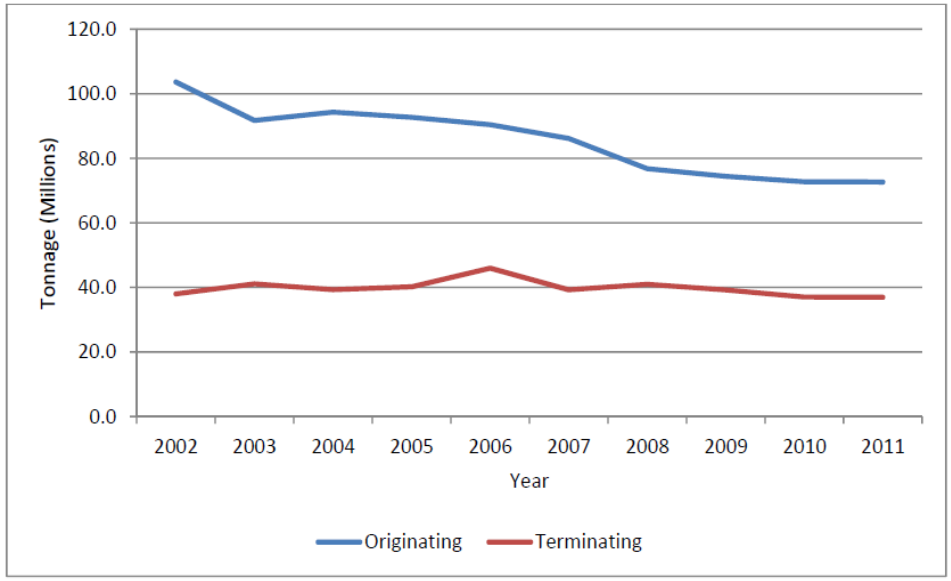
Direction	Tons	Percent	Carloads/Units	Percent
Overhead	165,172,308	61.7	3,251,725	74.7
Outbound	65,439,913	24.5	690,064	15.9
Inbound	29,713,888	11.1	340,599	7.8
Intrastate	7,216,502	2.7	69,042	1.6
Total	**267,542,611**	**100.0**	**4,351,430**	**100.0**

Source: STB CWS. 2011

Freight forecasts are completed using the FHWA's Freight Analysis Framework (FAF) - Version 3.4 freight flow database. According to FAF terminating inbound rail movements in Kentucky are expected to increase from 27 million tons in 2011 to 30 million tons in 2040. However, during this same time period, originating outbound rail movements are expected to decline from just over 90 million tons to 80 million tons"

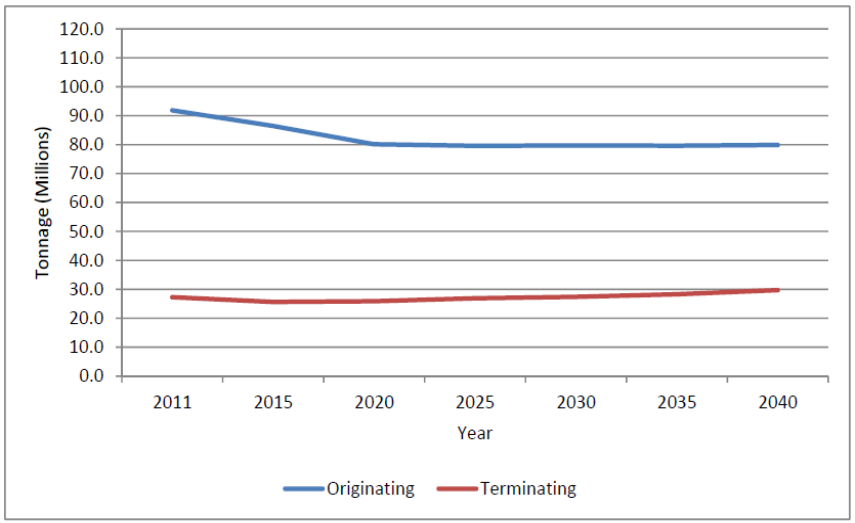
[5] Microsoft Word - KYSRP Executive Summary Final Print 042915.docx

Figure 4: Rail Tonnage Originating and Terminating in Kentucky



Source: BTS, Kentucky State Transportation Profiles Sample, 2014

Figure 5:Projected Rail Tonnage Inbound and Outbound in Kentucky, 2011-2040



Source: FAF, 2013

KEY TRENDS, CHALLENGES AND OPPORTUNITIES

The volume of originating and terminating rail movements in Kentucky declined between 2002 and 2011, according to data from the USDOT's Bureau of Transportation Statistics (BTS). The following is a discussion of trends in rail freight in Kentucky, particularly with regards to three important commodities in the state: coal, automotive products, and oil.

Recent Trends

Kentucky has seen a 30 percent drop in originating rail tonnage with 103 million tons in 2002 to less than 73 million tons in 2011. However, terminating rail tonnage only dropped less than two percent in the same time period going from 38 million tons in 2002 to 37 million tons in 2011 Figure 4 shows rail tonnage originating and terminating in Kentucky from 2002 to 2011. If interstate movements both originate and terminate in Kentucky, they will appear in both the originating and the terminating totals in Figure 4.

The trends shown in the figure reflect a number of commodity-specific changes, some of which counteract each other. Some commodities, such as chemicals and primary metal products, have mirrored recent changes in the economy, declining during the recession of 2008-2009. Inbound and outbound volumes of these commodities declined after 2006, and bottomed out in 2009, but increased through 2011. Petroleum shipments declined during the time period shown. For example, in 2005, 11 million tons of petroleum products were shipped to and from Kentucky, whereas by 2010, this number had dropped to less than one million tons.

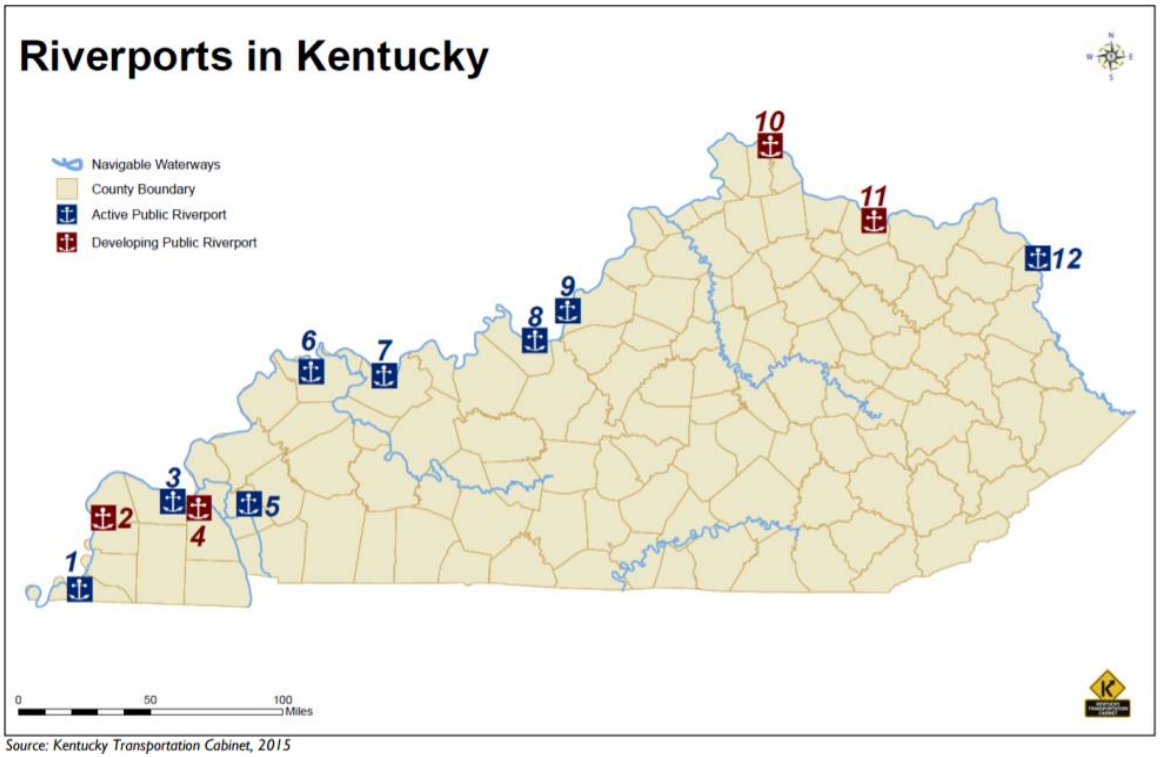
Forecasted Trends

As shown in Figure 5, for Kentucky inbound and outbound rail traffic, the FAF predicted Kentucky originating rail freight to decline through 2020, a trend driven by expected declines in coal tonnage. In Kentucky, termination inbound rail movements are expected to increase slightly from 27 million tons in 2011 to 30 million tons in 2040. Origination outbound rail movements are expected to decline from just over 90 million tons in 2011 to 80 million tons in 2040. This also takes into account potential increases for the automobile and oil industries.

MARINE AND WATERWAYS

Riverports Overview

Figure 4: Kentucky Riverports



Source: Kentucky Transportation Cabinet, 2015

Kentucky is well-positioned along the banks of several major waterways – the Ohio River, the Mississippi River, Big Sandy River, and Tug Fork – offering year-round freight transport of bulk cargo and containerized freight. This includes over 1,590 miles of U.S. Army Corps of Engineers (USACE) certified inland waterways, which makes the state a strategic gateway to access markets in the northeast United States, Canada, and Mexico as well as deep water ports in New Orleans, Louisiana, and Mobile, Alabama, for international markets. Many marine industries are located along Kentucky's extensive network of inland waterways, depending on the state's 12 public riverports – seven of which are operating and three of which are developing. The ports largely do not compete with one another, and each has the ability to stimulate economic development in the surrounding region. Some of the most common commodities handled by the public riverports in Kentucky are coal, fertilizer, grain, sand, aluminum, and steel.[6]

In addition, there are over 160 private riverport terminals in Kentucky. According to the Kentucky Riverport Improvement Project, the Commonwealth's private terminals that handle specific commodities such as coal or grain or exclusively serve only one company's barging needs ship over 100 million tons each year, as compared to about 4 million tons handled by the public ports. Coal and non-metallic minerals (sand and gravel, etc.) make up as much as 80 percent of the shipments by the private terminals.[7]

[6] Kentucky Transportation Cabinet. Kentucky Riverport Improvement Project. January 22, 2008
[7] Kentucky Transportation Cabinet, Kentucky Riverport Improvement Project. January 22, 2008

Kentucky's riverports play an important role in facilitating access to the Commonwealth's freight transportation system. For example, rail is a vital part of riverport operations for transferring large bulk commodities from one mode to another. The 2014 USACE Port Facility Spreadsheet listed 83 rail lines accessed riverport terminals in Kentucky.[8]

Kentucky Riverport Improvement Project (2008)

In recognition of the importance of riverports to the statewide economy, the Kentucky Riverport Improvement Project report was developed in 2008 with the intent of identifying strategies to assist in promoting Kentucky's riverports and making them more competitive in global, national, and regional consumer markets. The report examines the Commonwealth's individual riverports including their needs, unique characteristics, and opportunities to spur economic development. It also conducts a comparative analysis to port programs in other states including Illinois, Indiana, Missouri, Ohio, Tennessee, Virginia, and West Virginia among others.

The Kentucky Riverport Improvement Project also highlights specific trends related to the movement of freight and specific commodities within each public port. Each port poses its own advantages to regional economies and statewide economy, as none of these ports are largely competing with one another. The public riverports handle a wide variety of commodities including coal, fertilizer, grain, sand, steel, and aluminum and ship approximately 4 million tons annually. Private terminals have more specific operations, whether that is handling a certain commodity or all freight from one private company. Collectively, these facilities ship over 100 million tons annually.

Recommendations and considerations were formulated in the areas of Governance and Organizational Structure, Financial Assistance Program, Port Loan Program, Marketing Program, and Other (e.g., comprehensive studies, etc.). One of the most important result of the reports development was the establishment of the Water Transportation Advisory Board (WTAB) in 2010 through legislation passed by the General Assembly. The WTAB serves in an advisory role to Kentucky's leaders and legislature on water transportation related matters and serves as a resource in planning for Kentucky's inland waterways.

Kentucky Riverport, Highway and Rail Freight Study (2020-2021)

KYTC led the development of the freight study to examine the freight and rail assets that would aid in economic development plan and promote growth and retention of businesses in Kentucky. This included descriptions of both strengths and weaknesses of the current freight network, recommended improvements to create efficiencies and strengthen the system, and ways to better connect markets and supplies domestically and abroad.

[8] Kentucky Transportation Cabinet, 2015 Kentucky Statewide Rail Plan.

KYTC's study assessed:

1. Kentucky planning and port leadership's current understanding of its market conditions
2. Models and market data to forecast and understand the impact of potential changes
3. Engagement of the Kentucky business and economic development community to understand needs and potential impact of improvements
4. A pragmatic, defensible strategy for investing in and leveraging freight transportation infrastructure for the long-term

A final report documenting all methods, findings, and recommendations of the study is available on this website, https://transportation.ky.gov/MultimodalFreight/Pages/Kentucky-Riverports,-Highway-and-Rail-Freight-Study.aspx.

From a riverport perspective, the study included the 12 public ports across Kentucky. These riverports provide access to 1,590 navigable inland waterway miles and connections to the Great Lakes, Canada, and Mexico. In addition, the study considers the rail and truck freight networks across the state, as well as warehousing capacity. The intention of the Riverports, Highway & Rail Freight study was to:

- Better understand the breadth and depth of Kentucky's multi-modal freight infrastructure
- Recommend a priority list of improvements that would produce a return on investment
- Identify potential partnerships
- Identify funding sources
- Create a marketing toolkit to promote the ports

WATERWAYS OVERVIEW

Kentucky lies in the heart of the nation at the hub of the nation's inland waterways as shown in Figure 8. With the Ohio River, Mississippi River, Big Sandy River, and Tug Fork bordering the Commonwealth, this location offers unique advantages for efficient year-round freight transport of bulk

materials, agricultural products, chemicals, minerals, metals, wood, manufactured goods, and containerized freight. Kentucky's well-developed terminals and riverports—supported by enterprise zones, warehouse facilities, ports of entry, and foreign trade zones—link with an intermodal transportation system that forms a network with the world.

Containing over 1,590 miles of USACE navigable inland waterways, Kentucky is the linchpin between the Great Lakes, Canada, and Mexico, as well as the deep-draft ports of New Orleans, Louisiana and Mobile, Alabama for shipments overseas.[9] The Ohio River accounts for over 30 percent of these miles on Kentucky's navigable waterwaysThe USACE owns and/or operates the locks and dams on the Ohio River, Green River, Cumberland River, and Tennessee River. The locks and dams on the Kentucky River are owned and operated by the Kentucky River Authority.

The majority of the locks and dams are over 50 years old, and the seven built in the 1930s and 1940s are in need of major rehabilitation or replacement. The Locks and Dams 52 and 53 Replacement Project, known as the Olmsted Locks and Dam, replaced two locks and dams on the Ohio River. These were put into operation in 1928 and 1929, respectively. The Licking River, which connects to the Ohio River, is a navigable waterway that supports the Ports of Cincinnati and Northern Kentucky. The most northern seven miles of the Licking River can accommodate moving heavy cargo and barge storage. This segment has no locks or dams and can support commercial development.[10]

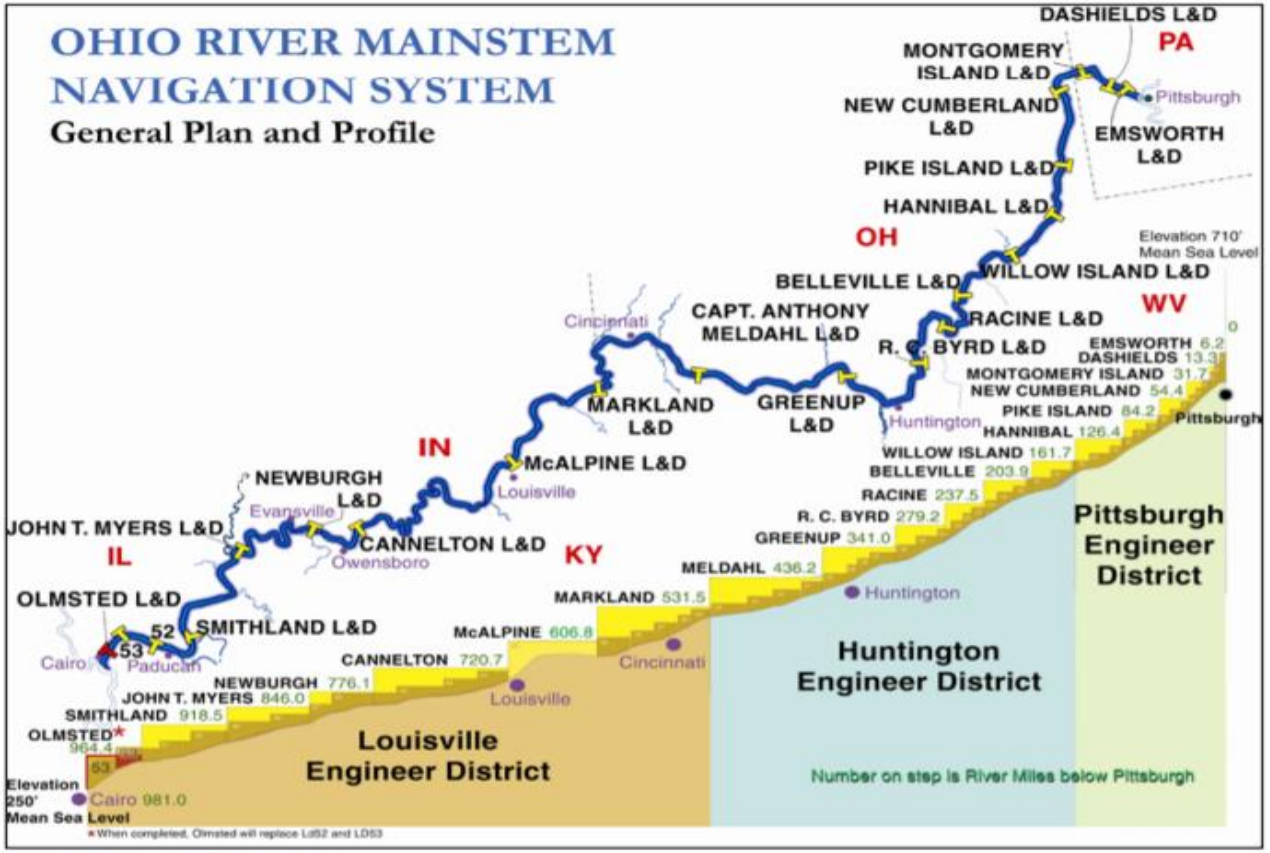
Figure 5: Kentucky Waterways

Source: Kentucky Riverport Improvement Project, 2008

[9] Kentucky Transportation Cabinet, Kentucky Riverport Improvement Project. January 22, 2008
[10] Kentucky Freight Plan, Kentucky Transportation Cabinet, September 2016.

The USACE Louisville District operates the two locks and dams on the Green River. The Green River Locks and Dam No. 1 is located near Henderson. The Green River Locks and Dam No. 2 is located near Calhoun. Both locks and dams were constructed in the 1950s. The only Cumberland River lock and dam in Kentucky is operated by the USACE Nashville District. Constructed in the 1960s, this lock and dam is located near Grand Rivers. The USACE Nashville District also operates the only Tennessee River lock and dam in Kentucky. This lock and dam is located 20 miles east of Paducah. The majority of the locks and dams on the rivers in Kentucky are over 50 years old. Those constructed in the 1930s and 1940s are in need of major rehabilitation or replacement.

Figure 6: Ohio River Navigation System



Source: U.S. Army Corps of Engineers

Waterway Performance

Kentucky's waterways are used to transport large quantities of agricultural and industrial commodities. For example, from 2000 to 2010, barges on the Ohio River carried a yearly average of 234 million short tons of commodities on all navigable rivers within the basin. Coal, petroleum products, aggregates, agricultural products, construction raw materials, and chemicals are some of the predominant commodities carried by barge on the Ohio River. The Ohio River locks have the ability to handle forecasted levels of coal and grain exports; however, the age of the lock and dam infrastructure affects reliability, which in turn has an effect on the competitiveness of coal and grain exports.

KEY TRENDS, CHALLENGES AND OPPORTUNITIES

Trends

According to the US Energy Information Administration (EIA), Kentucky is a leading coal-producing state, ranking third* in 2013 with an output of 80 million short tons of coal, accounting for 8.2 percent of the total U.S. coal production. Approximately 60 percent of Kentucky's coal comes from underground mines in Kentucky's eastern Appalachian counties and in western Kentucky. The rest of the coal comes from surface mines. For electricity generation, coal-burning plants produce approximately 91 percent of Kentucky's electric power. However, many coal-fired generation plants on the Ohio River are anticipated to convert to natural gas over the next decade. Hydroelectric utilities, such as the Barkley and Kentucky dams, produce almost 4 percent of the electric power, followed by natural gas at 3 percent. Significant coal production shifts, geographically or by volume, continue to have a dramatic decrease impact on the Kentucky Freight Network. For example, the inland waterway system carries a significant amount of Kentucky coal to customers throughout the Mississippi and Ohio River valleys. This excess capacity could provide opportunities to innovate and explore container-on-barge in the Midwest.

*Note: In 2021 Kentucky ranked 5th.[11]

Table 2: Kentucky River Descriptions

River	Length (Miles)	Authority	Description
Ohio	665	Jurisdictional List	Near MP 317 Catlettsburg to 982 between Wickliffe and Cairo
Green	199	Jurisdictional List	MP 108 is at Dam #3 at Rochester on Muhlenberg/Butler/Ohio county line (199 miles is from Mouth to Davis Island)
Tennessee	62	Nav Charts	MP at southern boundary of Calloway County
Cumberland	255		Nav Charts only have from MP 0 at Ohio River to 75 at TN line, not MP 381 to 561 (180 mi) from TN into KY and to eastern extent of Lake Cumberland, Nashville USACE jurisdiction list includes to confluence of Poor Fork and Clover Fork at Harlan, KY. Bureau of Transportation Statistics Waterway File (attributed to the Corps) extends to eastern extent of Lake Cumberland at MP 561 for a total of 255 miles.
Mississippi	63	Nav Charts	905 to 954 and 883 to 897, not 8 miles of loop in TN
Licking	226	Jurisdictional List	MP 7 is approximately east of Fairview and Taylor Mill (226 miles is from mouth to West Liberty)
Big Sandy	27	Jurisdictional List	MP 12 is near the Lawrence County line, near Runyon Rd (27 miles is from Catlettsburg to Louisa, confluence of Tug Fork and Levisa Fork)
Big Sandy - Russell Fork	17	Jurisdictional List	from Millard, KY to the Virginia State Line near Potters Flats, WV
Big Sandy - Tug Fork	58	Jurisdictional List	from Louisa, KY to Williamson, WV
Big Sandy - Levisa Fork	130	Jurisdictional List	from Louisa, KY to Virginia State Line near Toonerville, KY
Kentucky	255	Jurisdictional List	MP 82 is Frankfort dam, no Corps navigation map for KY River (255 miles is from Outh to junction of North and South Forks, Kentucky River)
Salt River	26	Jurisdictional List	From mouth to approximately Floyds Fork
Total	**1983**		

[11] https://www.eia.gov/tools/faqs/faq.php?id=69&t=2

Challenges

Connectivity

Navigable rivers in Kentucky depend on the lock and dam system. For instance, the purpose of the Ohio River's locks and dams is to maintain a minimum depth of 9 feet for commercial navigation. The locks and dams constructed in the 1930s and 1940s are aging and are in need of major rehabilitation or replacement.

System Operation

The freight rail reorganization bypasses large sections of the Ohio River Basin, limiting inland connectivity. Potential exists for the creation of a container-on-barge terminal on a waterway in the western part of Kentucky; however, the challenges include an aging and less reliable lock and dam system and the breakdown of the container recycling circuit. Because containers are not currently shipped down the Ohio River, containers being shipped up the Ohio River would stockpile. Kentucky's involvement in the movement of Post-Panamax freight remains uncertain unless commitments to infrastructure investment are made.[77] Post-Panamax container ships are vessels that have a capacity range of 4,000-15,000 twenty-foot equivalent units (TEUs).

Opportunities

Initiate a Commonwealth-wide program to impact Kentucky's ability to compete in regional, national, and global markets for many years to come, based on the recommendations in the 2008 Kentucky Riverport Improvement Project report. One of the recommendations is to conduct a detailed, comprehensive study of the economic impacts of water transportation to better understand the importance of Kentucky's ports and waterways to its economy and quality of life and prepare western Kentucky for the flow of Post-Panamax freight, including developing coordinated plans of action and improvements to ports, railroads, and interstate highways.[12]

[12] Kentucky Freight Plan, Kentucky Transportation Cabinet, September 2016.