

**KENTUCKY RIVERPORTS, HIGHWAY
& RAIL FREIGHT STUDY**

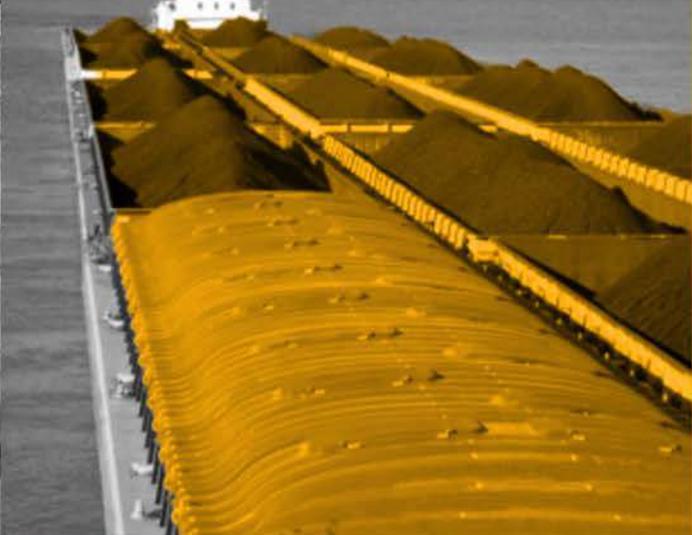


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KENTUCKY RIVERPORTS, HIGHWAY & RAIL FREIGHT STUDY

EXECUTIVE SUMMARY

INTRODUCTION

Riverports are facilities that handle the shipment of goods by water. They serve as transfer points between waterborne transportation and rail or highway modes. They also serve as access points for waterways that connect Kentucky to trading partners along the Ohio and Mississippi Rivers and beyond. Kentucky has eleven publicly-owned riverports in addition to multiple private riverports throughout the Commonwealth. Kentucky's riverports give the Commonwealth and its businesses access to one of the most affordable modes of transportation available.¹ The Commonwealth of Kentucky's ability to use riverports to move goods in a changing economy is vital to Kentucky's economic competitiveness and quality of life. The Kentucky Riverports, Highway & Rail Freight Study was conducted to consider changes that are affecting Kentucky's waterways, their role in the economy, and choices about how to best use them in the future.

QUESTION #1: **WHAT IS THE VALUE OF KENTUCKY'S WATERWAYS?**

Kentucky's Waterways Create Value by Enabling the Commonwealth to Trade with the World: In 2018, Kentucky traded over **89 million tons** of freight using inland waterways, valued at over **\$18 billion**. About 79% of Kentucky's waterborne trade (by tonnage) is exchanged with trading partners outside of the Commonwealth, pointing to the importance of Kentucky's waterborne commerce to the larger national economy. The most-traded waterborne commodities include coal, nonmetallic minerals, petroleum or coal products, and agricultural production & livestock.

Kentucky's Waterways Are More Efficient for Business than Other Modes: While waterways move more slowly than other modes, the costs of moving goods by water are significantly less than by other modes of transportation. For example, one 15 barge tow is the equivalent to 1,050 semis and tractor-trailers. Assuming one large semi moves 25 tons, 89

¹ National Waterways Foundation, A Modal Comparison of Domestic Freight Transportation Effects on the General Public: 2001–2019 (updated January 2022).

million tons would require over 3.5 million trucks on Kentucky’s roadways.² Through this type of efficiency, Kentucky’s waterborne transportation system overall saves approximately **2.3 billion** vehicle-miles of travel (VMT) and over **43 million** vehicle-hours of travel (VHT) each year in ground transportation costs.³ Annually, these reductions correlate with over 4,000 fewer commercial truck crashes and over 3 million fewer tons of pollutants. From 1997 to 2017 Kentucky’s waterways have saved the US economy over **\$74 million** in transportation costs, 58% of which were accrued in Kentucky. This translates into a **\$43 million** cumulative 20-year benefit Kentucky has enjoyed from the riverports. This monetary benefit has enabled Kentucky’s businesses to make and sell approximately \$1.5 billion worth of additional goods and services, contributing \$627 million annually to Kentucky’s gross domestic product (GDP), sustaining over 6,000 jobs and enabling Kentuckians to earn over \$365 million in annual wage income.

Our Waterways Support Kentucky’s Supply Chains: As shown in **Table 1**, Kentucky’s energy, chemical, agriculture/food/lumber, and metals/minerals supply chains are highly dependent on Kentucky’s waterways.

Table 1: Value of Supply Chain to Kentucky

Kentucky Supply Chain	Value of Kentucky’s Waterways in 2018
Energy	Traded over 42 million tons of coal, petroleum, coal products, and crude petroleum/natural gas, valued at more than \$7.1 billion. Effectively 65% of goods in these commodity groups currently move by water.
Chemical & Plastics Manufacturing	Moved 3.8 million tons by water, valued at more than \$3.9 billion and accounting for 33% of all goods in chemical and allied manufacturing commodities.
Agriculture, Food, & Lumber	Collectively moved over 6.1 million tons valued at over \$1.4 billion. Represents 11% of Kentucky’s trade in this supply chain.
Metals & Minerals	Moved 32 million tons of freight valued at over \$4.3 billion. Accounted for 34% of goods in these commodity groups.

QUESTION #2: **HOW WILL ECONOMIC CHANGES AFFECT KENTUCKY’S WATERWAYS?**

Coal, Fuels, and Minerals Will Play Less of a Role in Kentucky’s Waterborne Economy: The most notable change affecting Kentucky’s waterborne commerce market is the shift away from dependence on coal and sand. By 2045, Kentucky is projected to be trading 22.3 million tons **less** in coal than in 2018. This change will affect how Kentucky uses its rivers and riverports. While much of Kentucky’s coal is handled by private riverports, Kentucky’s ability to provide affordable transport for non-coal

² Ibid, i.

³ Economic benefits and impacts derived using KYTC TREDIS model with TRANSEARCH data as shown in **Appendix 1.1**.

commodities will be essential to maintaining the cost competitiveness of Kentucky’s overall freight market. The condition of the public riverports which already handle much of Kentucky’s non-coal freight will play a key role in the Commonwealth’s ability to offer affordable waterborne transportation through this shift. **Table 2** demonstrates how Kentucky’s shift away from waterborne coal has exceeded the national shift, changing the role that Kentucky’s riverports play in both the national and state economy. The cost and efficiency advantages that Kentucky’s riverports have afforded the Commonwealth to date will depend on the Commonwealth’s ability to move future new commodities with the same efficiency that they have historically moved coal.

Table 2: Shift from Coal and Sand

Key KY Waterborne Trade Market	Historic Changes 1997-2017 (FAF) as described in Chapter 1	Anticipated Forecast Changes 2018-2045 (TRANSEARCH)	Strategic Implications
Fuels: Coal, Gasoline, Fuel Oils	 Declined by 48% even as national market increased by 67%.	Expected to lose an additional 62% of its market by 2045.	Ports dependent on coal, petroleum, shipping stone, gravel, and non-metallic minerals for significant shares of business should explore new markets in trade partners trafficking in grains, food, plastics, rubber, and other manufactured goods.
Minerals: Sand, Stone, Non-Metallic Minerals	 Declined by 95% with no significant decline in the national market.	Expected to lose an additional 26% of its market.	

Kentucky's Ports Will Have to Compete for New Markets in Plastics, Chemicals, and Agricultural Products: A central challenge for the ongoing use of Kentucky’s waterways is the need for waterborne transportation to compete with other modes for new markets. While declining commodities like coal, gravel, and some metallic minerals already have established Kentucky riverport clients, emerging growth commodities such as chemicals, plastics, and manufactured goods largely move by truck and rail and do not yet have as many anchor riverport clients. For this reason, a key success factor for riverport investment will be (1) attracting clients in these sectors to areas served by Kentucky’s riverports and (2) promoting the riverports to growing firms already trading these commodities in Kentucky. **Table 3** shows some of the key growth markets to target for new riverport clients.

Table 3: Trade Markets Increasing

Key KY Waterborne Trade Market	Historic Changes 1997-2017 (FAF) as described in Chapter 1	Anticipated Forecast Changes 2018-2045 (TRANSEARCH)	Strategic Implications
Manufactured Goods: Plastic/Rubber, Textiles, Machinery 	Increased 17x nationally and 11x in Kentucky.	Kentucky is projected to experience a 23% increase in waterborne trade in chemical and allied products. 9% projected increase in tonnage of machinery traded with Kentucky by water.	Ports should work with KY Cabinet for Economic Development and local economic development authorities to identify manufacturers, buyers, and suppliers of waterborne goods, especially plastics, rubber, machinery, and chemical and allied products, to attract and grow firms in the riverport hinterlands of Kentucky's riverports.
Perishables: Grains & Alcoholic Beverages 	Despite a 6% national decline in waterborne trade of grains and alcoholic beverages from 1997 to 2017, Kentucky retained this market during the 20-year historic period.	Projected to increase its waterborne trade in food and kindred products by 144% and its trade in agricultural products and livestock by 81%.	

QUESTION #3: **WHAT KIND OF INVESTMENTS ARE NEEDED FOR KENTUCKY'S PUBLIC RIVERPORTS?**

Riverports Need Preservation, Modernization and Expansion Investments: Kentucky's public riverports currently have a backlog of **\$12.3 million** in identified five-year capital needs to **preserve** their existing capacity, facilities, and equipment. This is a one-time \$12.3 million investment required just to keep the riverports in good condition and ready to continue the role they have played to date. An additional **\$51.6 million** of five-year improvement needs are identified to **modernize** the ports to enable them to handle their existing cargo types at lower costs than competing ports in other states. An additional **\$158.2 million** in five-year improvement needs have been identified to **expand** the capacity of the riverports to handle new commodity types, keep pace with changing markets, and provide amenities that would attract anchor tenants in new industries to Kentucky. **Figure 1** below demonstrates these different levels of investment.



Figure 1 - Total Investment Needs

Kentucky Currently Invests Less than Other States in Riverports:

Currently, Kentucky invests \$500,000 per year in its riverports through its Kentucky Riverport Improvement (KRI) Grant program, matched with \$500,000 from local entities, making a total investment of **\$1 million** per year. This investment level (allowing for \$5 million in five years) is significantly short of the \$12.3 million preservation need or the modernization and expansion needs identified. If KRI and local match funds are combined as 20% matches for additional federal grant programs, it could make a total of **\$25 million** available in five years. However, many of the preservation outlays may not qualify for federal programs which also may have additional requirements, adding to the cost of improvements. Kentucky’s \$500,000 grant program for 11 public port terminals is significantly less than neighboring states, such as Ohio’s \$7.5 million program (eight public port terminals), Missouri’s \$10 million program (15 public port terminals), or Illinois’s \$150 million program (19 public port terminals). **Table 4** compares Kentucky’s state funding for public riverports with peer states.

Table 4: Funding Comparison to Other States

	Kentucky	Ohio	Indiana ⁴	Illinois	Missouri	Tennessee	Virginia
Number of Public Port Terminals	11	8	3	19	15	5	5
State Budget Dedicated Funds	\$500K	\$7.5 M	\$0	\$0	\$600 K	\$0	\$42 M
State Ports Grant Program	\$0	\$23 M	\$0	\$150 M	\$9.4 M	\$0	\$5 M

QUESTION #4: **WHAT ARE THE BENEFITS AND IMPACTS OF INVESTING IN RIVERPORTS?**

Investing Maintains Competitive Transportation Costs for Kentucky Businesses: For every dollar invested in Kentucky’s public riverports, the Commonwealth can anticipate between \$2.40 and \$5.30 in return to the national economy.⁵ Approximately 58% of this return can be expected to occur in Kentucky. The fact that Kentucky riverport investment generates returns both for Kentucky and for the nation shows a strong business case for state riverport funding to attract federal matches. The return will depend on the degree to which investment can extend beyond preserving existing capacity and toward enabling more efficient or expanded service to growing new markets. **Table 5** shows the costs and benefits of investing at different levels in Kentucky’s public riverport system.

⁴ Indiana Ports are state owned.

⁵ Ibid, ii.

Table 5: Benefit-Cost Ratio of Investing in Kentucky Riverports

Investment Category	Five-Year Capital Costs	Benefits to 2045	Benefit-Cost Ratio
Preserve: Business as Usual	\$12.3 million	\$29.1 million	2.4
Modernize: Optimize Port Efficiency	\$51.6 million	\$153.4 million	3.0
Expand: New Market Positioning	\$158.2 million	\$834.3 million	5.3
Combined Total	\$222.1 million	\$1.02 billion	4.6

Investing Supports Jobs, Business Sales, and GDP: The benefits of investing in Kentucky’s riverports enable Kentucky businesses to produce more output at more competitive prices, hire more workers, pay better wages, and retain more profits for the state’s GDP. Kentucky can anticipate over **\$660 million** in business sales, over **\$300 million** in GDP gain, and over **\$200 million** in household earnings in a 25-year period by fully investing in the public riverports. **Table 6** below shows how each level of port investment can contribute to Kentucky’s long-term economic performance.

Table 6: Gross Domestic Product Increase Projection (in \$ millions)

Scenario	Undiscounted Outlays	Business Sales	GDP	Household Earnings
Preserve: Business as Usual	\$12.3	\$36.9	\$16.8	\$11.2
Modernize: Optimize Port Efficiency	\$51.6	\$154.4	\$70.5	\$46.8
Expand: New Market Positioning	\$158.2	\$473.1	\$216.2	\$143.5
Combined Total	\$222.1	\$664.4	\$303.5	\$201.5

Attract Investing Business to Kentucky: The riverports play a constructive role in attracting new business to the Commonwealth. Riverports increasingly rely on new clients in key growth industries such as textiles, machinery, and chemical manufacturing (which includes plastics and compounds used in automotive supply chains as well as fabrics used in medical devices). By offering affordable transportation, riverports make Kentucky an attractive place to do business and benefit from the new clients the Commonwealth attracts. Because the supply chains of these new waterborne commerce markets are more complex than the legacy markets like coal, fuels, and raw minerals, riverports can potentially enable Kentucky to offer a competitively priced location for higher-paying firms than riverports have supported in the past.

QUESTION #5: **WHAT ROLE CAN STATE FUNDING PLAY?**

A \$12.3 Million Investment Will Preserve Riverport Assets: Preserving Kentucky's riverport assets is the foundational investment for realizing the greatest benefits and impacts of waterborne commerce in Kentucky. Because preservation outlays often are associated with maintaining a baseline of condition and capacity, these investments may be more limited in their eligibility for federal programs than new enhancements aimed at sustainability, new technology, and social equity. Essential preservation needs may not be able to wait for uncertain grant funding or match up with existing grant cycles. For these reasons, basic riverport preservation is recommended as a top priority for state-funded investment.

Investment Enables Ports to Qualify for Larger Federal Matches: In addition to the one-time \$12.3 million for preserving Kentucky's public riverports, investing \$51.6 million for modernization and \$158.4 million for riverport expansion over five years is essential to enable the riverports to re-design, upgrade, and tailor their offerings to cater to a new and increasingly diverse clientele of shippers. These expansion enhancements may range from additional berth space and warehousing to new conveyance, loading, and technology systems to handle more chemicals, textiles, plastics, advanced manufacturing components, and health product components expected to account for a growing share of Kentucky's waterborne commerce in the next 25 years. These types of investments can be eligible for a host of federal grant programs because they are associated with the transition from the coal economy to more sustainable commodities and can create jobs and opportunities for many of Kentucky's rural and disadvantaged areas.

For this reason, if Kentucky's KRI Grant Program (state grants and local matches combined) can provide a 20% share for federal programs like the U.S. Department of Transportation's (USDOT) Rebuilding American Infrastructure with Sustainability and Equity (RAISE) or the USDOT Maritime Administration's Port Infrastructure Development Program (PIDP), the five-year state and local contribution to reaching the \$51.6 million modernization level would be \$10.32 million (or \$2.1 million per year). The five-year state and local contribution to reaching the combined modernization and expansion level of \$222 million would be \$54.5 million (or \$10.9 million per year).

Proposed Structure of Kentucky Port Funding Enhancement: Because of the different investment objectives (preservation, modernization, and expansion) and the significant federal funding available through the Bipartisan Infrastructure Law (BIL), it is recommended that the Kentucky General Assembly consider (1) funding the Riverport Financial Assistance Trust Fund to cover the \$12.3 million port preservation backlog in a five-year period and (2) expand the KRI Grant Program to an annual state funding level of **\$6.7 million**, focusing primarily on enabling Kentucky's

public riverports to obtain federal matches for modernization and expansion investments to support new and growing markets.

By committing a pool of funds to address Kentucky riverports’ preservation backlog independently of the KRI Grant Program, Kentucky can leverage the KRI grants to support the sustainability, social equity, and technology policy objectives to qualify for federal programs. **Table 7** below demonstrates how a dedicated five-year preservation program underlying an enhanced KRI Grant Program of between \$1.6 million and \$6.7 million can combine with local 20% matches and leverage federal contributions to bring Kentucky’s **\$222 million** investment level within reach.

Table 7: Leveraging Federal Contributions

Program	Investment Purpose	Period	State Funding	Local Matches	State + Local Combined	Federal Contribution (80%)
New KY Port Preservation Fund	Preservation Only	Dedicated funding pool to be used anytime during a five-year period	\$12.3 million	None	\$12.3 million	Not Assumed
KRI Grant Program (Dedicated to Modernization & Expansion)	Modernization Only	Annual for Five Years	\$1.6 million	\$0.4 million	\$2.0 million	\$8.3 million
	Modernization & Expansion	Annual for Five Years	\$6.7 million	\$1.7 million	\$8.4 million	\$33.5 million

QUESTION #6: WHAT POLICY ACTIONS ARE RECOMMENDED TO SUPPORT THE SUCCESS OF KENTUCKY’S WATERWAYS?

Build Kentucky’s 21st Century Waterborne Economy: State funding to optimize access to federal programs and modernize Kentucky’s riverport infrastructure is only one success factor. Sustaining the efficiency of waterborne transportation also entails building a new sustainable market base to utilize the infrastructure. Key policy objectives for utilizing the riverports center around building a strong “home market” of locally based clients for Kentucky’s riverports, identifying ongoing riverport infrastructure needs beyond those identified in the current study, and sustaining a robust business community for waterborne commerce throughout the Ohio River region.

Action #1: Pass State Funding Package for Riverports: The Kentucky General Assembly is recommended to pass a new funding bill to establish the preservation program and enhanced KRI Grant Program as described in **Table 7**. The table shows how such a funding level has the potential to attract up to \$33.5 million each year for five years, totaling **\$167.5 million** of new federal money to Kentucky's public riverports predicated on the benefits and impacts that full investment can provide. The legislation can be drafted to create a dedicated one-time appropriation of \$12.3 million to clear the public riverport preservation backlog (without requiring local match) over a five-year period and make additional funding available for an enhanced KRI Grant Program adequate for Kentucky's public riverports to qualify for federal grant funding sufficient to meet the modernization and expansion goals identified in this study. The enhanced KRI Grant Program is recommended to require a lower match as most Kentucky riverports and communities are unable to raise dollar amounts at 50% of the recommended funding level.

Action #2: Develop Kentucky Waterways Legislative Caucus: The Kentucky Association of Riverports is recommended to invite legislators from districts covering the Kentucky counties within a 90-mile drive of the riverports, or the "hinterland region," to create a waterways caucus in the Kentucky General Assembly. A legislative caucus can help articulate the strategic objectives of this study within Kentucky's overall legislative environment. For example, a caucus can help secure funding if such is deemed in the Commonwealth's interest as well as in advising the governor and other state entities regarding the collaboration among states, regions, and governmental entities. A legislative caucus could then draft or propose appropriate legislation for acting on subsequent recommendations to shape how actions for riverports fit into Kentucky's larger policy environment. The caucus could develop, and advance proposals related to creating a Riverport Hinterland Compact (RHC) as described below, pass funding legislation, and follow through on initiatives that governors may develop in inter-state collaborations around the Ohio River. The caucus can be formed in the same way as other Kentucky transportation-related caucuses, such as the Aerospace/Aviation Caucus and the Bourbon Trail Caucus.

Action #3: Call Governor's Summit on Ohio River Economy: It is recommended that the governor of Kentucky reach out to governors of other states sharing in the Ohio River waterborne economy to develop business attraction, technology, workforce, and infrastructure initiatives to support the overall transition of the Ohio river economy. The recommended agenda for this summit includes (1) prioritizing infrastructure and business attraction objectives for the changing waterborne economy (2) addressing ways for states sharing the river to optimize its economic potential and (3) identifying legislative and executive initiatives that will maximize efficiencies of waterborne transportation for all existing and potential riverport users in the long term.

Action #4: Develop Riverport Hinterland Compact: It is recommended that the Kentucky Association of Riverports together with a waterways legislative caucus commission a multi-jurisdictional Riverport Hinterland Compact (RHC). While the caucus recommended in Action #2 refers to Kentucky counties in a 90-mile drive of a Kentucky Riverport, the trade “hinterland” is defined as all the communities potentially using Kentucky’s public riverports. The area reaches seven states, spanning different municipal, regional, and county boundaries. **Figure 2** shows the entire hinterland area including both Kentucky counties and areas in surrounding states. The figure highlights the fact that anchor clients in Indiana, Ohio, West Virginia, Tennessee, Arkansas, Missouri, or Illinois can be potential Kentucky Riverport clients. A shared compact is important because there is no one state or region for which utilization of the Ohio River is a top priority, yet utilization of the river plays a key role in transportation efficiency and economic vitality for all the states and regions it touches.

DEFINITION OF A RIVERPORT HINTERLAND COMPACT

The proposed *Riverport Hinterland Compact* (RHC) is defined as a new quasi-public entity with primary mission of supporting the economic transition of the Ohio River Hinterland and its port infrastructure from the coal-centered market of today to new and more competitive future markets.

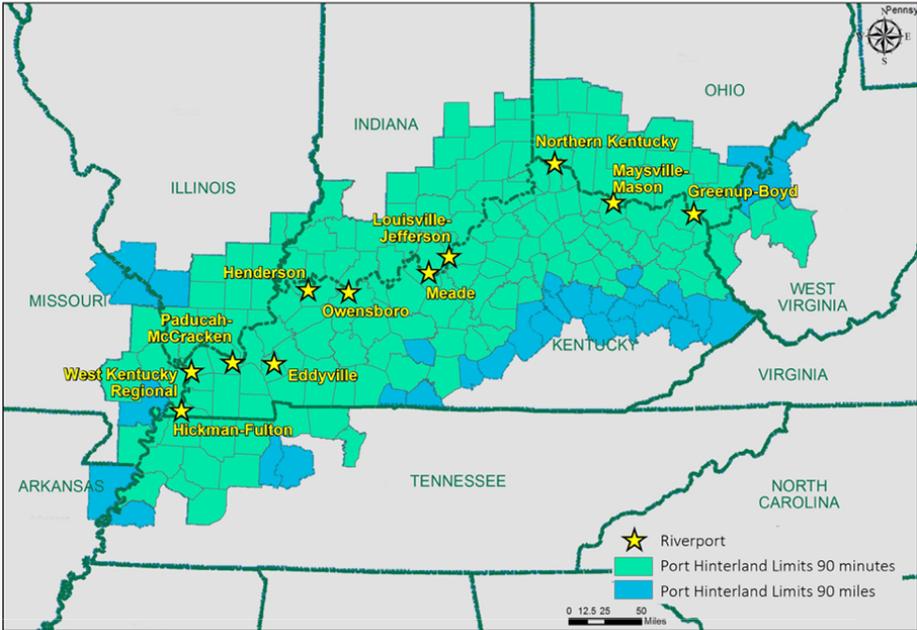
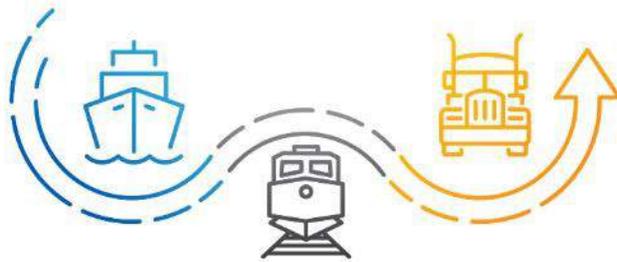


Figure 2 - Kentucky Riverport Hinterlands

First steps to creating an RHC include (1) forming a coalition of state and regional entities with a shared interest in the riverport market and (2) pursuing funding for an initiation study to create a concept of operations for the RHC. Recommended sources of funding for a compact initiation study include Economic Development Administration (EDA) grants, the Kentucky General Assembly and RAISE Planning grants. The concept of operations for an RHC is recommended to include identifying needs for riverport capital programming, developing sites to attract new riverport clients, executing a strategic funding program, and implementing an ongoing collaborative riverport marketing and promotion function.



CHAPTER 1

KENTUCKY RIVERPORTS, HIGHWAY & RAIL FREIGHT STUDY

AN INTRODUCTION TO KENTUCKY'S RIVERPORTS, HIGHWAY, AND RAIL FREIGHT STUDY

In partnership with the Kentucky Cabinet for Economic Development (CED), the Kentucky Transportation Cabinet (KYTC) initiated this *Kentucky Riverports, Highway, and Rail Freight Study* to help find better ways to support waterborne commerce and to further economic growth across the Commonwealth. The inland river system, particularly the Ohio River feeding into the Mississippi River, is essential for the movement of freight into, through, and beyond Kentucky. As shown in **Figure 1-1**, alongside four developing public port facilities, seven operating public ports across the Commonwealth provide access to 1,590 miles of Kentucky's navigable inland waterways, an important part of a larger, interconnected freight network.



Figure 1-1: Kentucky's Public Riverports and Multimodal Freight System

At a high level, this study is intended to help identify how Kentucky can better use these waterways to spur economic growth. The study is organized into six tasks, as illustrated in **Figure I-2**, culminating in a series of technical memoranda and this report. Project materials are available on the KTYC Planning website.¹



Figure 1-2: Kentucky Riverports Six Study Tasks

Throughout this study, the project team conducted extensive coordination with individual port directors, industry representatives, and key stakeholders. A 14-person steering committee met at study milestones. Moreover, two rounds of in-person port visits were conducted to inventory existing conditions and understand strategic visions for each facility. Three virtual summits were held to present technical findings, engage with industry leaders, and establish/enrich contacts. Each engagement opportunity supplemented technical analyses, discussed throughout this document. **Appendix 1.1** describes data used in the technical memoranda of the study in relation to this final report and how available market forecasts and findings can be interpreted in context.

¹ Online at <https://transportation.ky.gov/MultimodalFreight/Pages/Kentucky-Riverports,-Highway-and-Rail-Freight-Study.aspx>

1.1 REPORT ORGANIZATION

This report is organized into five chapters:

Chapter 1: Why Are Riverports and Waterborne Commerce Important to Kentucky's Economy? defines existing riverport hinterland market areas and current trends influencing markets and trade patterns, exploring supply chains and the role of Kentucky's public ports in the larger economy. **Technical Memorandum 1** provides a more robust discussion of the current state of individual ports with statistics about 2018 commodity flows through each region.

Chapter 2: What Is Changing in Kentucky's Waterborne Economy? discusses anticipated market changes looking towards 2045 and how individual ports should respond. **Technical Memorandum 2** explores the TRANSEARCH forecasts² for each port in greater depth.

Chapter 3: How Prepared Are Kentucky's Riverports for the Future? assesses strengths, weaknesses, opportunities, and threats (SWOT) then recommends steps to successfully adapt to the future. **Technical Memorandum 3** includes an overview SWOT assessment for the statewide system.

Chapter 4: What Actions Can Be Taken and What Are the Benefits? presents the business case for investing in ports (costs and benefits), looking at the statewide public port network and individual facilities. Scenarios to preserve, modernize, and expand the system are discussed, followed by policy recommendations. Additional discussions on the investment strategies are included in **Technical Memorandum 4**.

Chapter 5: How We Can Build a Home Market around the Riverports? dives deeper into economic development initiatives, recommending mechanisms to support increased funding needs and to increase market capture.

The five chapters are supplemented by a marketing toolkit, which contains marketing strategies and promotional materials to assist each port in its upcoming business development efforts.

² TRANSEARCH is a comprehensive, subscription-based freight database developed to forecast future freight demands by origin, destination, commodity, and mode.

WHY ARE RIVERPORTS AND WATERBORNE COMMERCE IMPORTANT TO KENTUCKY'S ECONOMY?

This chapter provides the historical context of waterborne commerce and its value to the Commonwealth of Kentucky. It also stresses how waterborne commerce provides value today to Kentucky industries as well as an overview of each riverport. Most importantly, **Chapter 1** lays the groundwork for subsequent chapters: systemwide and individual port analyses of strengths, weaknesses, opportunities, and threats (SWOT); five-year capital improvement needs to preserve, modernize, and expand riverport services; and policy recommendations for the Kentucky Riverport system.

Note that this report includes in its appendices source data describing riverport infrastructure, markets, and operations. To make the full body of this information available for Kentucky's riverport stakeholders, tables are included; some of which are not otherwise referenced in this report.

1.2 A CRITICAL JUNCTURE FOR WATERBORNE COMMERCE

This study occurs at a critical juncture in the overall development of both Kentucky's waterborne commerce economy and the nation's evolution in its use of waterways. Vital changes are occurring in commodity markets, trading partners, competitors, and technologies that shape Kentucky's waterway system. **Figure 1-3** and **Figure 1-4** look at the past highlights of a rich, dynamic history of change along the inland river system, which continues to influence the Commonwealth's economy.

1.2.1. Two Centuries of Evolution



Figure 1-3: Steamboat on the Ohio River near Maysville, 1899. Photo by J.T. Kackley. Kentucky Historical Society

Trade has continued to evolve along the Ohio River since the first flatboat carrying a commodity (flour) traversed the Ohio and Mississippi Rivers to the Port of New Orleans in 1782. As early as 1816, the burgeoning U.S. Board of Fortifications identified Kentucky rivers as essential to the defense of the United States. Following the Industrial Revolution, Kentucky's economy was able to build on the infrastructure of the steamboat era to arrive at a new and competitive waterborne economy. In 1830, the Louisville and Portland Canal was opened to bypass the Falls of the Ohio River—a canal that also still operates today, though modernized in 1962 as part of the McAlpine Locks and Dam. In 1870, plans for the comprehensive lock and dam system were initiated, revolutionizing trade on the Ohio River. That same lock and dam system remains a vital part of the Marine Transportation System today, helping manage navigation from Pittsburgh to Southeast Pass.

Seen within this historic context, three key facts resonate today:

- Kentucky's riverports can adapt to changing market conditions and policy environments.
- Changing uses of the Ohio River drive innovation and opportunity for Kentucky's economy.
- Strategic investment in riverport infrastructure is a long-standing success factor for Kentucky's economy. Despite wars and economic repressions, Kentucky's economy was able to build on the infrastructure of the steamboat era to arrive at a new and competitive waterborne economy. While today's infrastructure grew from historic investments, the continued use of aging infrastructure requires significant investments.

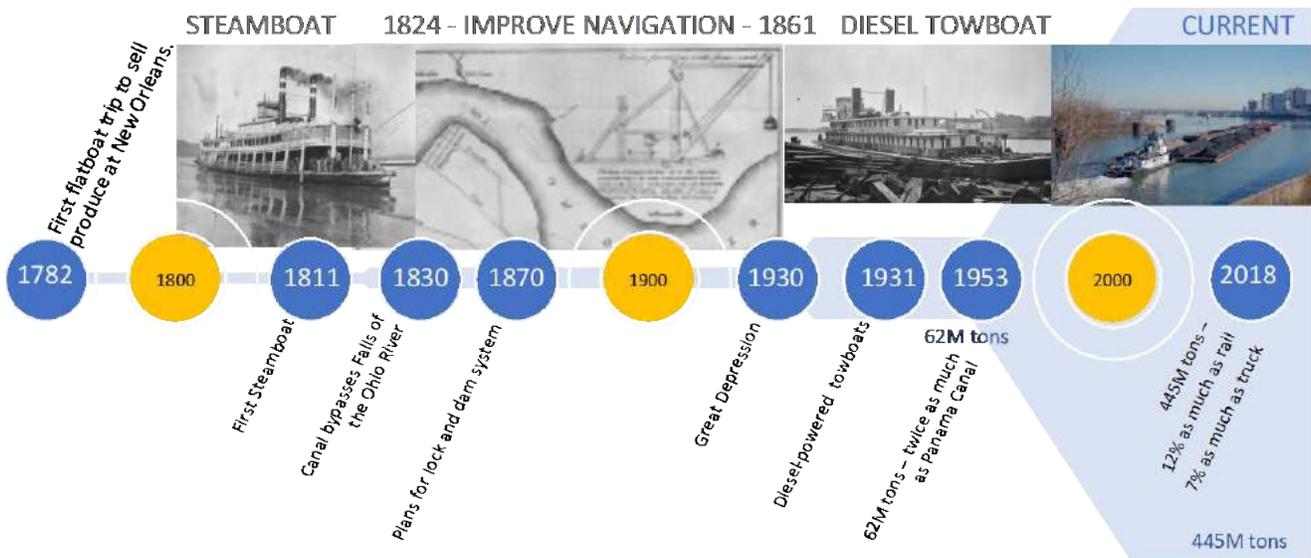


Figure 1-4: Short History of Kentucky's Waterways

(Image sources: explorekyhistory.ky.gov, wisconsinhistory.org, library.wisc.edu,

Wikimedia.org)

Whether it is the transition from steam to diesel or from coal to the more sustainable resources of the future, stakeholders in Kentucky's waterways have proven they are more than capable of meeting the challenges of an ever-changing world.

1.2.2. Twenty Years of Shifting Commodity Trends

In the last 20 years, Kentucky’s prominence in the national waterway market has been declining, underlain by a dependence on a few diminishing commodities. According to the U.S. Department of Transportation’s (USDOT) Freight Analysis Framework (FAF), Kentucky’s overall share of the U.S. waterborne transportation market has fallen significantly over the last two decades.³ In 1997, approximately 14% of the nation’s waterborne trade involved Kentucky. As recently as 2017, just over 7% of waterborne commodities were traded with Kentucky, representing a decrease of approximately 22 million tons during this period.⁴

The most notable shift in Kentucky’s waterborne commerce market relative to the nation has been a sharp drop in coal, gasoline, and fuel oils, commodities upon which the Commonwealth has historically been dependent. In **Table 1-1**, FAF shows tonnage of coal, gasoline, and fuel oils falling 48% in Kentucky, while at the same time increasing by 67% nationally from 1997 to 2017. **Table 1-1** also shows a steep decline in minerals (sand, stone, and nonmetallic mineral products)—declining 95% in tonnage from 1997 to 2017 while nationally increasing by approximately 2%. **Appendices 1.3** and **1.4** show changes in the composition of Kentucky’s waterborne economy (in terms of percentages of commodities) from 1997 to 2017 (according to FAF).

Table 1-1: Major Shifts in Kentucky’s National Waterways Market Position per FAF

Key Market	% Change in National Waterborne Market Size (Tons 1997-2017)	% Change in Kentucky Waterborne Market Size (Tons 1997-2017)
Fuels: Coal, Gasoline, Fuel Oils	+ 67%	– 48%
Minerals: Sand, Stone & Non-Metallic Minerals	+ 2%	– 95%
Manufactured Goods: Plastic/Rubber, Textiles, Machinery	+ 1700%	+ 1100%
Perishables: Grains & Alcoholic Beverages	– 6%	<i>Sustained at 1997 Level</i>

Consistent with losing national market share in waterborne trade, goods transported by water to Kentucky declined by 31% between 1997 and 2017. Moreover, many historically strong commodities diminished, including coal, fuel oils, and gasoline, signifying that such goods should be prioritized less by Commonwealth riverports for future infrastructure investment. **Table 1-2** summarizes differences in commodity volumes between 1997 and 2017 FAF data sets, arranged from high to low by the amount of growth.

³ FAF data from 2017 are used for this part of analysis because it is a national database with 20 years of history. Note that FAF uses STCC commodities while TRANSEARCH uses STCC commodities.

⁴ Note that FAF does not capture a large share of chemical commodities.

Table 1-2: Shifts in Kentucky Waterborne Commerce Market Composition, 1997-2017

Commodities	1997 Tons	2017 Tons	1997 Share	2017 Share	Growth
34-Machinery	0	14	0%	0%	>100%
08-Alcoholic beverages	0	100	0%	0%	>100%
16-Crude petroleum	1	1,775	0%	7%	>100%
36-Motorized vehicles	0	4	0%	0%	>100%
32-Base metals	69	2,096	0%	8%	>100%
24-Plastics/rubber	0	2	0%	0%	>100%
30-Textiles/leather	3	31	0%	0%	>100%
02-Cereal grains	83	453	0%	2%	>100%
29-Printed prods.	0	0	0%	0%	>100%
41-Waste/scrap	239	1,202	1%	5%	>100%
03-Other ag prods.	275	701	1%	3%	>100%
12-Gravel	1,782	4,085	5%	15%	>100%
39-Furniture	0	0	0%	0%	88%
19-Coal-n.e.c.	572	875	1%	3%	53%
13-Nonmetallic minerals	1,366	1,856	4%	7%	36%
33-Articles-base metal	2	2	0%	0%	-13%
15-Coal	17,389	12,836	45%	48%	-26%
35-Electronics	6	4	0%	0%	-39%
21-Pharmaceuticals	0	0	0%	0%	-66%
20-Basic chemicals	888	229	2%	1%	-74%
27-Newsprint/paper	0	0	0%	0%	-79%
23-Chemical prods.	4	1	0%	0%	-80%
28-Paper articles	1	0	0%	0%	-87%
40-Misc. mfg. prods.	3	0	0%	0%	-90%
18-Fuel oils	1,929	170	5%	1%	-91%
14-Metallic ores	115	9	0%	0%	-92%
37-Transport equip.	2	0	0%	0%	-94%
05-Meat/seafood	0	0	0%	0%	-95%
17-Gasoline	9,638	159	25%	1%	-98%
07-Other foodstuffs	79	0	0%	0%	-99%
11-Natural sands	2,896	17	7%	0%	-99%
26-Wood prods.	15	0	0%	0%	-99%
06-Milled grain prods.	9	0	0%	0%	-100%
04-Animal feed	65	0	0%	0%	-100%
31-Nonmetal min. prods.	1,364	2	4%	0%	-100%
22-Fertilizers	100	0	0%	0%	-100%
01-Live animals/fish	0	0	0%	0%	-100%
09-Tobacco prods.	0	0	0%	0%	-100%
10-Building stone	0	0	0%	0%	-100%

While overall market trends point to a strong dependence on falling markets, specifically fossil fuels, Kentucky can realize significant economic opportunities by cultivating small but growing markets. From **Table 1-2**, relative growth markets for Kentucky's waterways have been in manufactured goods—including plastics, rubber, textile products, and machinery—which have seen an eleven-fold increase in their utilization of Kentucky's waterways and a seventeen-fold increase in waterway utilization nationally. Grains and alcoholic beverages are another potential growth market, having maintained their tonnage of waterborne trade with Kentucky despite the national downturn of approximately 6% in tonnage on U.S. waterways. Crude petroleum has also increased its prominence on Kentucky waterways since 2017.

1.2.3. Two Years of Supply Chain Issues

The long-term downward trend of the coal market and other fossil fuel industries is pushing Kentucky and its ports to pivot to offset the ongoing decline. More immediately, the COVID-19 pandemic and recent climate change challenges highlighted the crucial importance of adaptability, flexibility, and reliability of the supply chain to support Kentucky's overall economy.

The supply chain challenges of the COVID economy shifted away from prioritizing fuel efficiency toward faster, more flexible modes of transport, emphasizing speed as e-commerce experienced a rapid expansion. This moved shipping modes away from maritime and barge transport and toward rail, truck, and air transport. Thus, water-based transport must consider new strategies to increase reliability and flexibility to be competitive. These challenges do not preclude waterway transport as an option for large e-commerce clients such as Amazon.

Figure 1-5 illustrates how overall barge volumes carrying Kentucky's top commodities—coal, petroleum, farm/food products, and chemicals—all declined sharply during 2020. The influence of the pandemic demonstrates that though demand for many of Kentucky's core waterborne commodities has been considered largely inelastic, there can be disruptions that affect the demand pattern in both the near and long term.

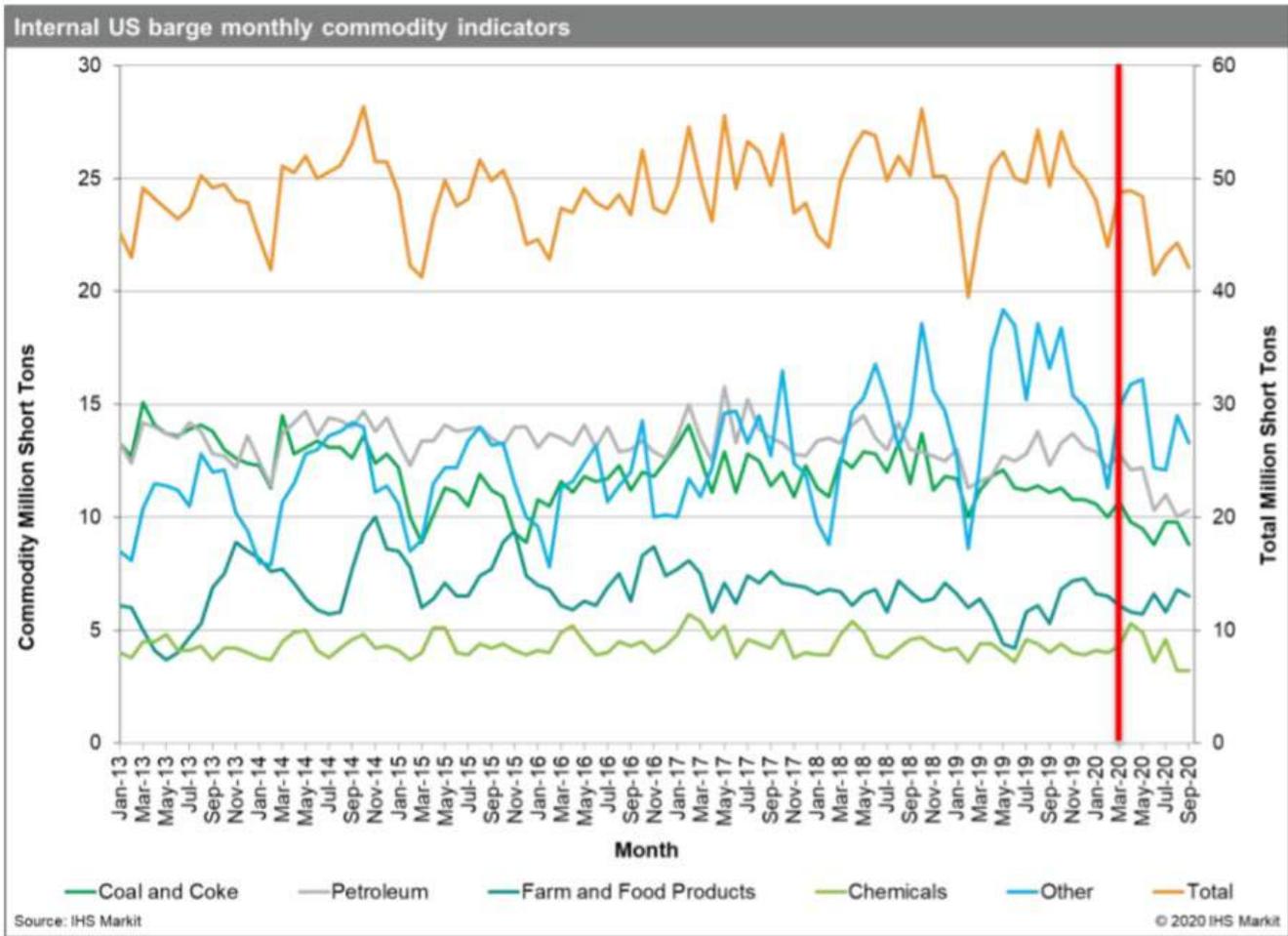


Figure 1-5: COVID-19 Impact on Barge Volumes

Throughout this study, several emergency events underscored how Kentucky’s inland waterways are critical to global trade networks:

- Closure of the I-71/I-75 Brent Spence Bridge following a truck fire (November 2020), shut down portions of the Ohio River near Cincinnati
- Blockage of the Suez Canal by a grounded container vessel during March 2021, which continues to disrupt global supply chains already strained by the pandemic
- High-water incidents and supply chain disruptions from Hurricane Ida throughout September 2021 led to additional delays throughout the inland waterway system

1.3 KENTUCKY RIVERPORTS TODAY

TRADE WITH ASIA

Asian markets show significant growth in demand, consuming record-setting levels of American soy, with 65% of that volume moving on the inland waterway system.

Kentucky remains centrally located to move goods to two-thirds of the U.S. population. Its extensive network of interstates and parkways, Class I, II, and III rail infrastructure, and waterways ensure that industry in the Commonwealth remains vital to the rest of the country.

Kentucky ports provide access to the Gulf of Mexico via the Ohio, Tennessee, and Mississippi rivers and from there, the world. The regional and global connectivity of Kentucky’s riverports competitively positions nearby farmers to reach domestic markets but also the growing markets of Asia and Latin America. Outbound agricultural shipments are feeding the world while fertilizers and other chemicals traveling inbound continue to support the agricultural industry.

Kentucky’s waterborne transportation economy plays a vital role both in the Commonwealth’s business competitiveness and in the U.S. economy overall. In 2018, Kentucky traded over 89 million tons of freight using inland waterways, valued at over \$18 billion.⁵ About 79% of Kentucky’s waterborne trade (by tonnage) is exchanged with trading partners outside of the Commonwealth, pointing to the importance of Kentucky’s waterborne commerce to the larger national economy. **Table 1-3** and **Table 1-4** demonstrate the top sources of inbound and outbound waterborne trade with Kentucky in 2018 by both tonnage and value.

Table 1-3: Top 10 Inbound Waterborne Trading Partners in 2018 per TRANSEARCH

Origin	1,000 Tons	% Of Tons	\$ Million	% Of Value
Charleston, WV	4,835	21%	\$ 2,772	24%
Wheeling, WV	3,237	14%	\$ 137	1%
New Orleans, LA	2,971	13%	\$ 2,812	25%
St. Louis, MO	1,567	7%	\$ 92	1%
Evansville, IN	1,509	7%	\$ 370	3%
Clark Co., IN	1,388	6%	\$ 35	0%
Cleveland, OH	1,092	5%	\$ 434	4%
Memphis, TN	1,077	5%	\$ 725	6%
Tupelo, MS	893	4%	\$ 186	2%
Cincinnati, OH	821	4%	\$ 290	3%
Others	3,587	16%	\$ 3,527	31%
Total Inbound	22,976	100%	\$ 11,379	100%

⁵ IHS Markit TRANSEARCH 2021 purchased for KYTC.

Table 1-4: Top 10 Outbound Waterborne Trading Partners in 2018 per TRANSEARCH

Destination	1,000 Tons	% Of Tons	\$ Million	% Of Value
New Orleans, LA	10,107	21%	\$ 1,448	27%
Nashville, TN	9,550	20%	\$ 338	6%
Baton Rouge, LA	4,145	9%	\$ 280	5%
Charleston, WV	3,586	8%	\$ 472	9%
Clark Co., IN	3,419	7%	\$ 127	2%
Cincinnati, OH	2,284	5%	\$ 673	12%
Lake Charles, LA	1,870	4%	\$ 45	1%
Wheeling, WV	1,268	3%	\$ 63	1%
Pittsburgh, PA	1,124	2%	\$ 202	4%
Memphis, TN	1,085	2%	\$ 37	1%
Others	8,713	18%	\$ 1,762	32%
Total Outbound	47,151	100%	\$ 5,447	100%

Kentucky exchanged over \$4.2 billion of trade on the Mississippi River System with the New Orleans region in 2018, accounting for more than 25% of all value traded with Kentucky by water.⁶ An additional \$3.2 billion was exchanged with the Charleston, West Virginia region, accounting for another 20% of the value of goods moving by water in Kentucky. (Appendix 1.1 includes a summary of all the 2018 TRANSEARCH findings for top commodities and trading partners for Kentucky across all modes.) However, Kentucky’s waterways carry a small share by volume compared to other modes moving goods to, from, though, and within Kentucky. Figure 1-6 demonstrates modal shares of Kentucky’s overall freight tonnage in 2018.

Current Kentucky Freight Movements by Mode, Percent of Tons

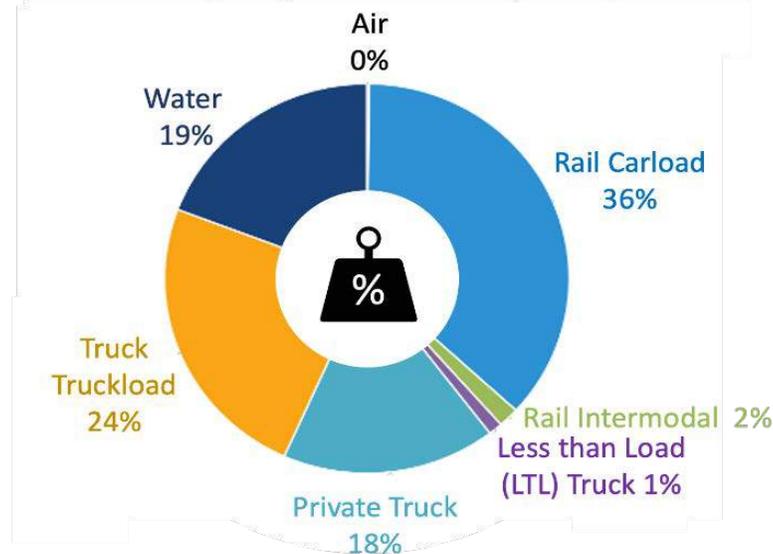


Figure 1-6: Modal Shares of Kentucky Freight per TRANSEARCH

⁶ Regions as defined as U.S. Bureau of Economic Analysis (BEA) region.

Access to the Ohio, Tennessee, and Mississippi rivers means Kentucky's river ports are an integral piece of its overall freight system, particularly in terms of carrying heavy cargo and as a connector in multimodal routes. Kentucky's eleven public ports and hundreds of private ports provide access to 1,590 miles of inland waterways. With the fourth-largest waterway network in the nation, the system carried more than 89 million tons of freight worth over \$18 billion in 2018.

Offering low-cost and reliable transportation for a wide range of materials, Kentucky waterways serve a variety of businesses in the state. Business at the ports helps attract investments; many companies have established locations and other facilities in the Commonwealth, fueling job creation for Kentucky's residents. As part of an interconnected system, the impacts made by Kentucky riverports resonate around the world, such as with the barge pilots accessing each port, the Kentucky businesses importing and exporting raw materials, their employees, as well as the families in Asia consuming American products. At the center of this complex web of influence, each Kentucky riverport plays a unique role in attracting and maintaining business and creating Kentucky jobs.

1.4 EFFICIENCIES OF WATERBORNE TRADE

While waterways move more slowly than other modes, the costs of moving goods by water are significantly less than by other modes of transportation.

- Trucks commonly move individual loads shorter distances—generally less than 500 miles—at a relatively high cost per ton.
- Rail moves larger volumes of goods greater distances—generally more than 500 miles—at a medium to low cost per ton.

Domestic (U.S. flag) commercial water transportation is comparable to rail for shipment sizes and travel distances. However, it moves goods at the lowest cost per mile, providing a distinct advantage to Kentucky given its seven public riverports. Agricultural products, raw materials, fuels, and other critical elements of the economy depend on Kentucky's waterways to power supply chains in Kentucky and throughout the nation.

Kentucky's waterborne transportation system overall saves approximately 2.3 billion vehicle-miles of travel (VMT) and over 43 million vehicle-hours of travel (VHT) each year in ground transportation costs.⁷ Annually, these reductions correlate with over 4,000 fewer commercial truck crashes and over 3 million fewer tons of pollutants.

⁷ Economic benefits and impacts derived using KYTC TREDIS model with TRANSEARCH data as shown in **Appendix 1.1**.

WATERWAYS ARE MORE EFFICIENT THAN OTHER MODES

The National Waterways Foundation noted that a single 15-barge tow and towboat of the type commonly utilized on Kentucky’s inland waterway network moves the freight equivalent of six locomotives and 216 railcars. This same 15-barge tow moves the equivalent to 1,050 large semis / tractor trailers as shown in **Figure 1-7**.

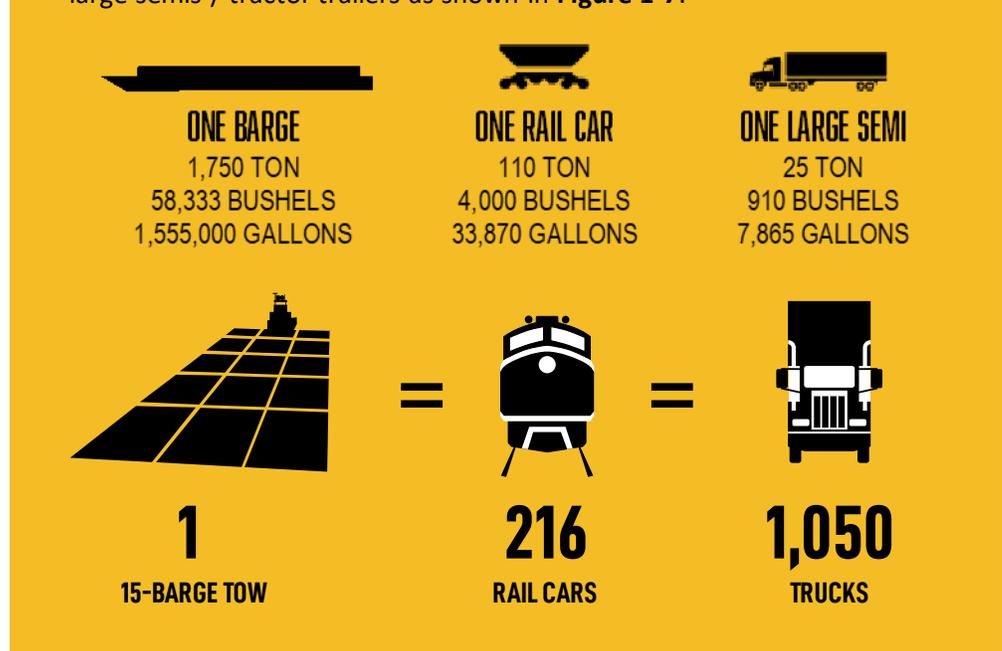


Figure 1-7: Equivalent Freight Efficiency

From 1997 to 2017, Kentucky’s riverports saved the U.S. economy over \$74 billion; **Table 1-5** summarizes the national transportation cost savings enabled by modal efficiencies of Kentucky’s riverport system.

Table 1-5: Cost Savings by KY Riverports 1997-2017

Cumulative Savings to Ground Transportation Systems Enabled by Use of KY Waterborne Transportation during 1997-2017 ⁸ (In \$ Millions)	
Vehicle Operations (Truck & Rail)	\$36,120
Business Time & Reliability	\$24,308
Safety/Reduction in Crashes	\$4,046
Shipper/Logistics (lost time of goods awaiting delivery)	\$314
Social/Environmental Benefits	\$9,664
TOTAL	\$74,453

⁸ Benefits from VMT and VHT savings derived from TRANSEARCH 2018 origin-destination patterns for Kentucky waterborne markets interpolated to 1997 using compound annual growth from 1997-2017 in FAF. USDOT accepted per-mile and per-hour factors for crashes, emissions and value of time, mileage applied. KYTC TREDIS model used to calculate cumulative totals.

Of the \$74 billion cumulative benefit from Kentucky's waterways, approximately 58% of the savings accrue in Kentucky (due to the percentage of shipments either inbound to Kentucky shippers or internal to Kentucky as shown in TRANSEARCH). This translates into a \$43 billion cumulative 20-year benefit Kentucky has enjoyed from the riverports between 1997 and 2017, or an annual undiscounted value of approximately \$1.7 billion of savings to Kentucky's economy by moving goods by water instead of by rail and truck.

The efficiencies offered by Kentucky's waterway system account for approximately \$1.5 billion in annual business sales from Kentucky, contributing \$627 million annually to Kentucky's gross domestic product (GDP)—sustaining over 6,000 jobs and enabling Kentuckians to earn over \$365 million in annual wage income.⁹ These savings benefit Kentucky's households and businesses, enabling them to produce and consume products, sustain profits, employ workers, and pay wages supporting Kentucky's economic performance.

1.5 SUSTAINING INDUSTRY AND SUPPLY CHAINS

Kentucky's waterways are important because of the quantifiable efficiency they offer to the economy and the specific industries and supply chains they serve. The energy, chemical, agriculture/food/lumber, and metals/minerals supply chains are highly dependent on Kentucky's waterways.

- For the energy sector, Kentucky's waterways moved over 42 million tons of coal, petroleum, coal products, and crude petroleum/natural gas, valued at more than \$7.1 billion during 2018. Effectively 65% of goods in these commodity groups traded with Kentucky currently move by water.
- Supply chains involving the use of nonmetallic minerals, metallic ores, and primary metal products also heavily utilize Kentucky's waterways, moving 32 million tons of freight valued at over \$4.3 billion during 2018. These flows accounted for 34% of goods in these commodity groups traded with Kentucky.
- Kentucky waterways are likewise very important to Kentucky's chemical and allied manufacturing supply chains, moving 3.8 million tons by water in 2018, valued at more than \$3.9 billion and accounting for 33% of all goods in chemical and allied manufacturing commodities traded with Kentucky.
- Waterborne commerce factors prominently in the agriculture/lumber/food supply chains as well—which collectively utilized the waterways to move over 6.1 million tons worth of lumber, agriculture, livestock, and food products valued at over \$1.4 billion during 2018. This represents 11% of Kentucky's trade in this supply chain.

Table 1-6 and **Table 1-7** demonstrate the top waterborne commodities traded with Kentucky in 2018 by tonnage and value.

⁹ Excludes stimulus effects of grant money or outlays to directly employ workers/vendors at port properties.

Table 1-6: Top 10 Inbound Waterborne Commodities 2018 per TRANSEARCH

<i>Inbound Commodity</i>	<i>1,000 Tons</i>	<i>% Of Tons</i>	<i>\$ Million</i>	<i>% Of Value</i>
Petroleum or Coal Products	6,136	27%	\$ 4,108	36%
Coal	5,071	22%	\$ 158	1%
Nonmetallic Minerals	3,287	14%	\$ 39	0%
Chemicals or Allied Products	2,744	12%	\$ 3,364	30%
Crude Petroleum or Natural Gas	1,597	7%	\$ 703	6%
Primary Metal Products	1,322	6%	\$ 2,385	21%
Metallic Ores	958	4%	\$ 81	1%
Lumber or Wood Products	920	4%	\$ 161	1%
Waste or Scrap Materials	356	2%	\$ 112	1%
Agriculture Production & Livestock	239	1%	\$ 77	1%
Others	345	2%	\$ 192	2%
Total Inbound	22,975	100%	\$ 11,380	100%

Table 1-7: Top 10 Outbound Waterborne Commodities 2018 per TRANSEARCH

<i>Outbound Commodity</i>	<i>1,000 Tons</i>	<i>% Of Tons</i>	<i>\$ Million</i>	<i>% Of Value</i>
Nonmetallic Minerals	20,067	43%	\$ 195	4%
Coal	14,342	30%	\$ 446	8%
Agriculture Production & Livestock	4,167	9%	\$ 904	17%
Petroleum or Coal Products	3,063	6%	\$ 1,173	22%
Clay, Concrete, Glass or Stone	2,576	5%	\$ 648	12%
Primary Metal Products	1,059	2%	\$ 1,326	24%
Chemicals or Allied Products	1,010	2%	\$ 566	10%
Food or Kindred Products	624	1%	\$ 114	2%
Waste or Scrap Materials	144	0%	\$ 47	1%
Metallic Ores	77	0%	\$ 6	0%
Others	21	0%	\$ 22	0%
Total Outbound	47,150	100%	\$ 5,447	100%

1.5.1. Supporting Kentucky’s Industrial Sectors

Understanding the commodities and supply chains utilizing Kentucky’s waterway system illuminates how the waterways support jobs, business sales, income, and profitability within Kentucky. The USDOT Bureau of Transportation Statistics (BTS) uses *Transportation Satellite Accounts (TSAs)* to demonstrate how it is possible to track what each industry in the U.S. consumes from each mode of transportation to produce a dollar of output.¹⁰

To produce each dollar of output, each sector of the US economy must make outlays in in-house, for-hire, pipeline, or other transportation services. **Figure 1-8** illustrates that these outlays vary by industry and mode of transportation. As shown, the wholesale and retail trade sector used the most transportation (\$344 billion); it required the most transportation (8.9 cents) to produce one dollar of output.

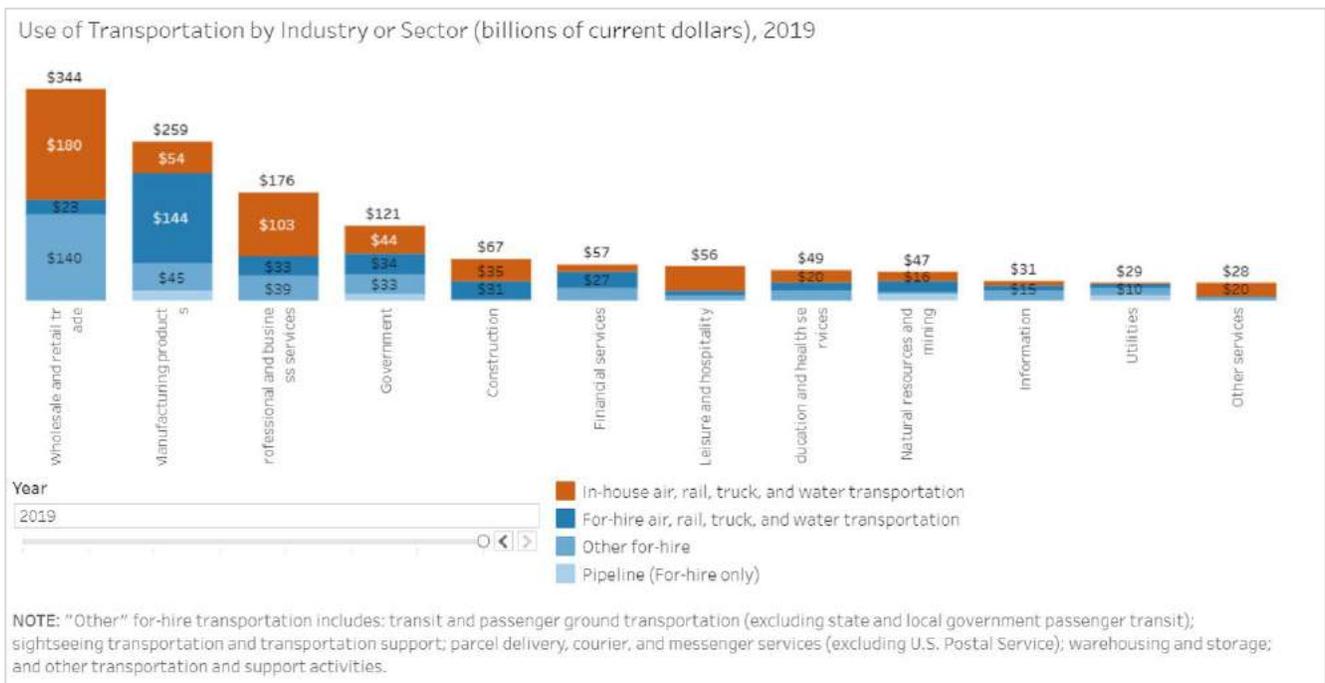


Figure 1-8: Transportation Costs by Industry for BTS TSA’s

By applying the input-output data available from KYTC’s Transportation Economic Development Information System (TREDIS) software, it is possible to quantify how each of Kentucky’s major industries depends on each mode of transportation. These data further demonstrate how riverports fit into Kentucky’s current economic success. The following graphics illustrate where Kentucky’s overall freight-dependence is located, and which industry sectors are the most dependent on water transportation.

¹⁰ USDOT, BTS, Transportation Economic Trends, available at www.bts.gov/product/transportation-economic-trends

Figure 1-9 identifies the counties in Kentucky that produce the most business output. Green and yellow shading show urban areas where the highest concentrations of business activity are compared to public riverports, shown with red stars.

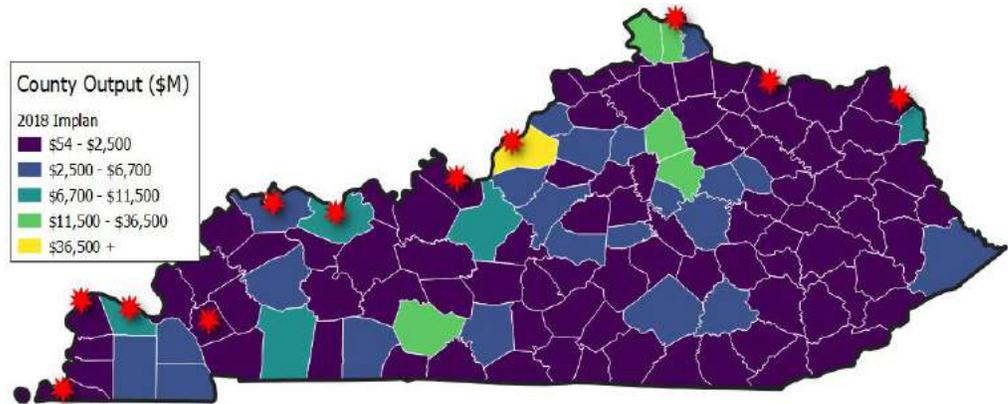


Figure 1-9: Business Output by County per TREDIS

The bar chart in Figure 1-10 demonstrates overall which statewide industries by employment are the most dependent on freight to produce output. As shown, Manufacturing is the most freight-dependent, followed by Agriculture/Mineral Extraction.

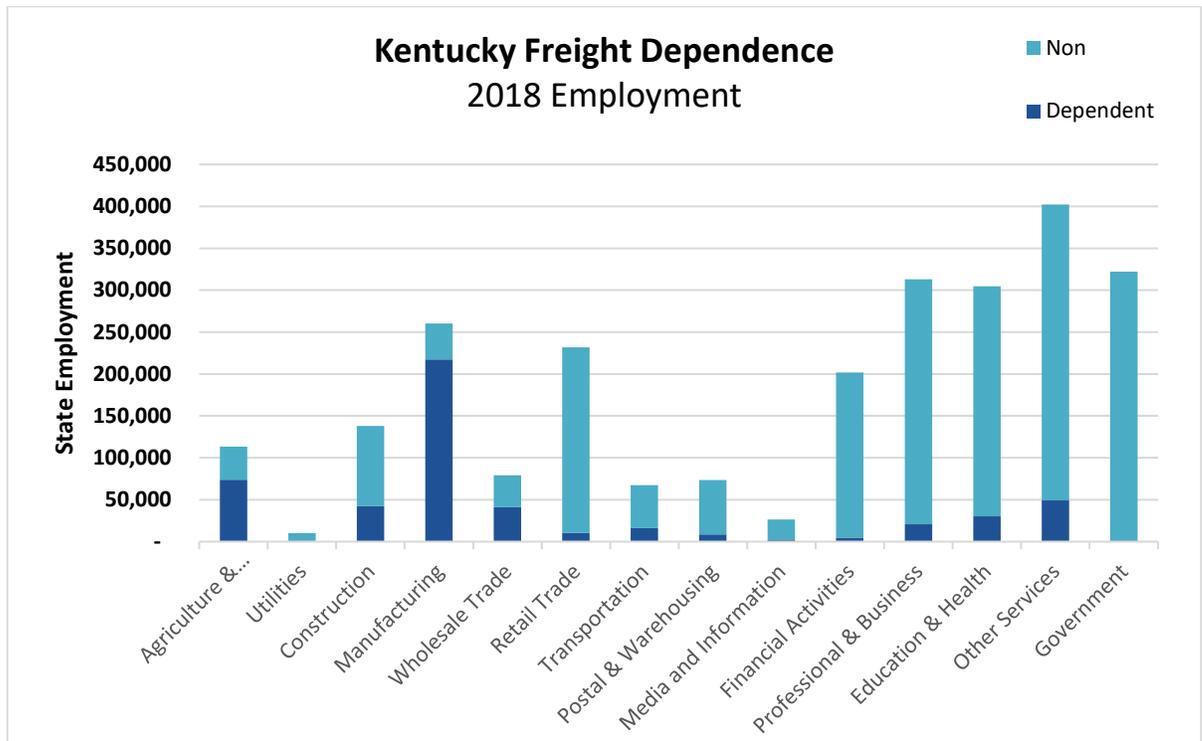


Figure 1-10: Kentucky Freight Employment Dependence by Industry per TREDIS

Figure 1-11 highlights how major industries rely on different freight modes. As shown, each is primarily dependent on trucking; for example, the Agriculture/Mineral Extraction industry in the far-left column spends 77% of its total transportation costs on trucking. The purple shade reveals that Kentucky’s Agriculture/Mineral Extraction, Utilities, and Transportation sectors have the highest outlays on water transportation per dollar of output produced.

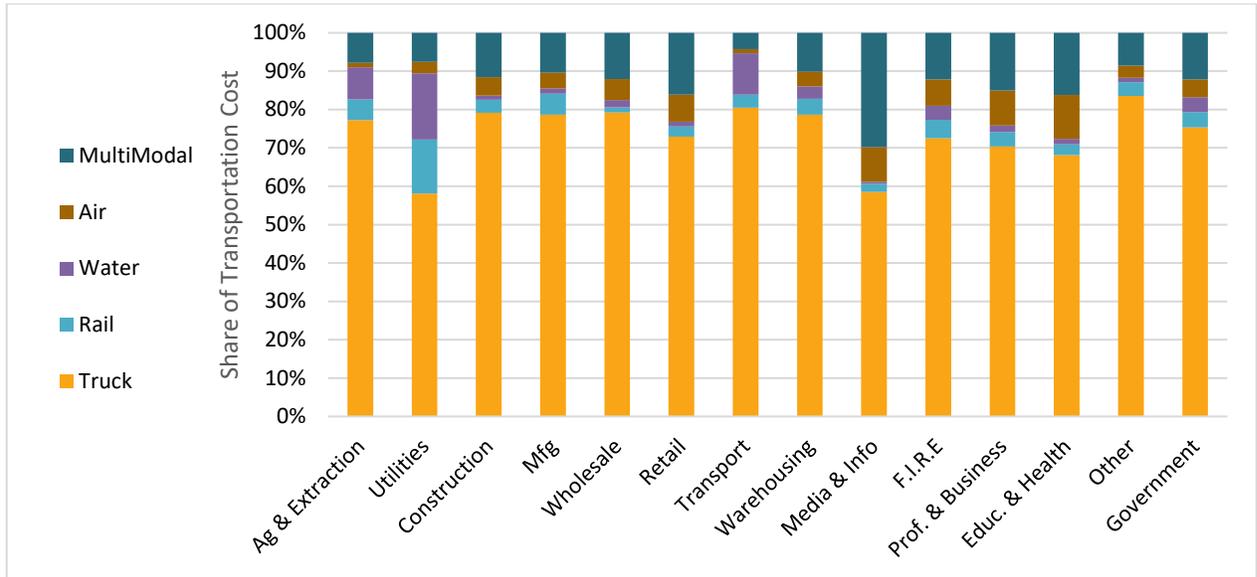


Figure 1-11: Share of Modal Transportation Cost per Industry per TREDIS

Figure 1-12 illustrates which counties in Kentucky require the largest outlay in freight transportation to produce a dollar of output. Counties shown yellow have the highest freight outlays per dollar of output, showing concentrations of the most freight-dependent industries.

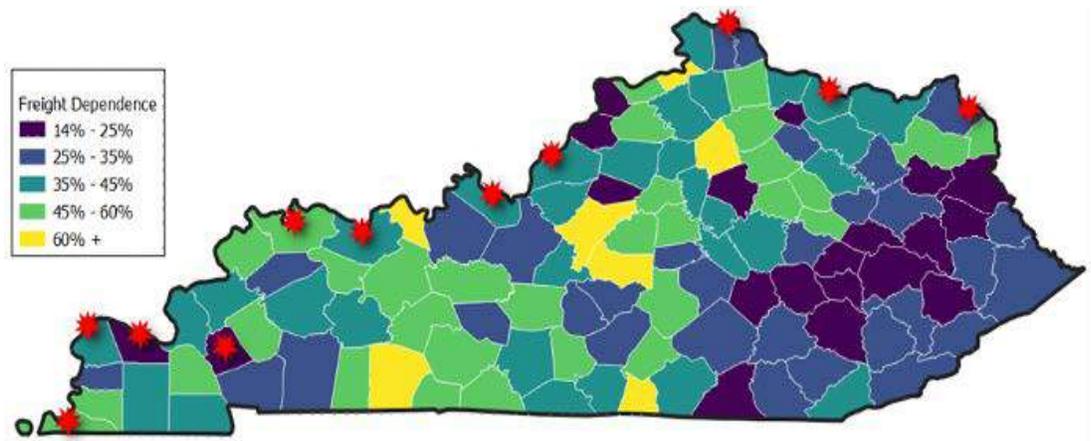


Figure 1-12: Kentucky Freight Dependence by County per TREDIS

These findings further underscore the role of the commodity movements shown previously in **Table 1-6** and **Table 1-7** in supporting Kentucky’s ability to make and sell its products and services. Notably, the most water-dependent sectors include utilities and agriculture/food, which are staple sectors without which the other sectors would be unable to produce anything in the economy.

1.6 KENTUCKY'S SEVEN OPERATING PUBLIC RIVERPORTS

The *Kentucky Riverports, Highway and Rail Freight Study* offers insight into each of Kentucky's public riverports obtained through site visits, surveys, and discussions—forming the foundation for much of this report and its findings. While **Technical Memorandum 1** contains additional information, this section provides a high-level overview with basic facts for each of the seven operating ports, arranged alphabetically.

The “hinterland” concept appears throughout these discussions and future chapters. A port market hinterland is an area for which cargo can be potentially drawn to and from competitively. In this report each hinterland is defined by counties that can be reached within a 90-mile driving radius¹¹. **Figure 1-13** combines the individual port hinterlands onto a single statewide map that illustrates the overlap; nearby ports serve some of the same market draw areas, sometimes fostering a competitive relationship between public facilities.

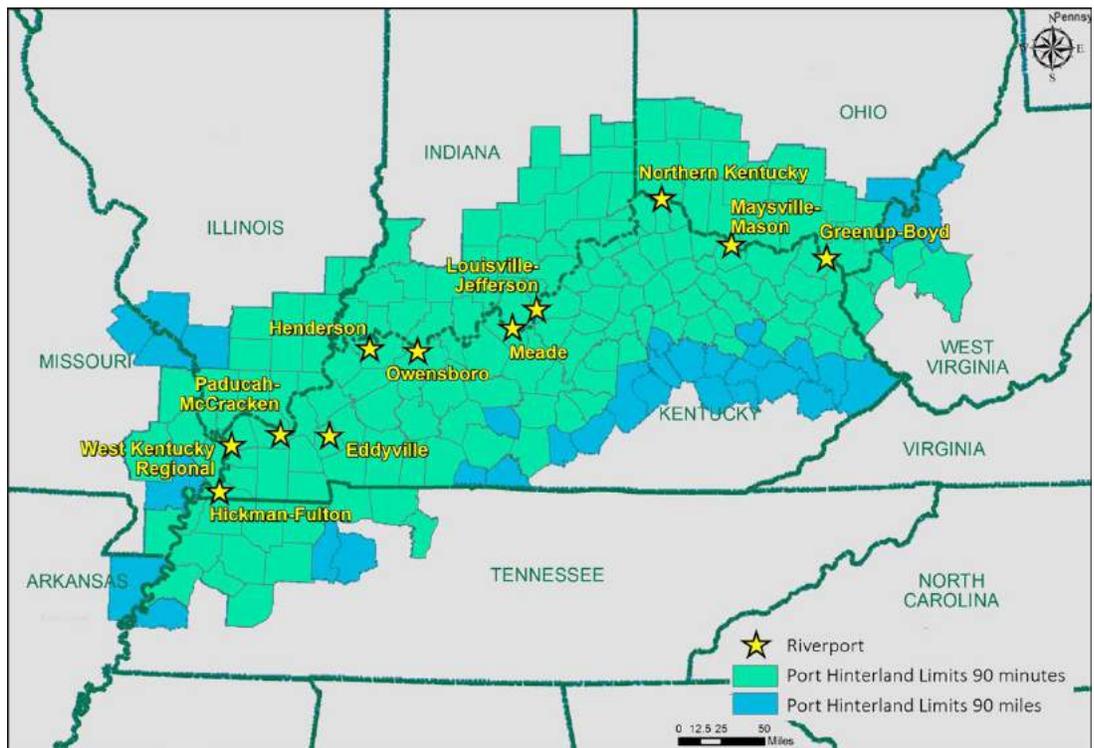


Figure 1-13: Kentucky Public Riverports and Statewide Market Hinterland

¹¹ The initial analysis in the technical memoranda, port profiles and summits proceeding this report considered a 90-minute drive time when assessing hinterlands. However, because drive times can be subject to peak or seasonal capacity or speed issues and may change in the future, the final analysis in this report regards the hinterland as a fixed 90-mile driving distance. Reporting 90-mile hinterlands enables consistent reporting of base and future market and economic conditions appropriate for the forecasting and impact assessments done in this and subsequent chapters. This relationship to the initial analysis is fully described in **Appendix I.1** and **Figure 1-10** demonstrates both the current 90-minute drive time and the set 90-mile hinterland as applied throughout this report. The figure can aid in understanding differences in how markets are presented between the initial memoranda and the current report.

1.6.1. Eddyville Riverport

The Eddyville Riverport and Industrial Development Authority (ERIDA) was established in 1976 in the city of Eddyville in Lyon County. The 252-acre port sits on Lake Barkley on the Cumberland River where it supports the agricultural business community in transporting grains and fertilizers to, from, and through the surrounding rural area of western Kentucky. The terminal operations area offers 2700 feet of water frontage and sits on river mile 43 on the Cumberland River. The riverport currently has a public dock, grain facility, and fertilizer operation. Key facts are summarized in **Figure 1-14**, including the extent of its hinterland area. Independent of this study, ERIDA completed a master plan for their facility in 2020, addressing future land use, policy recommendations, and a marketing strategy for both the port and the nearby industrial park.

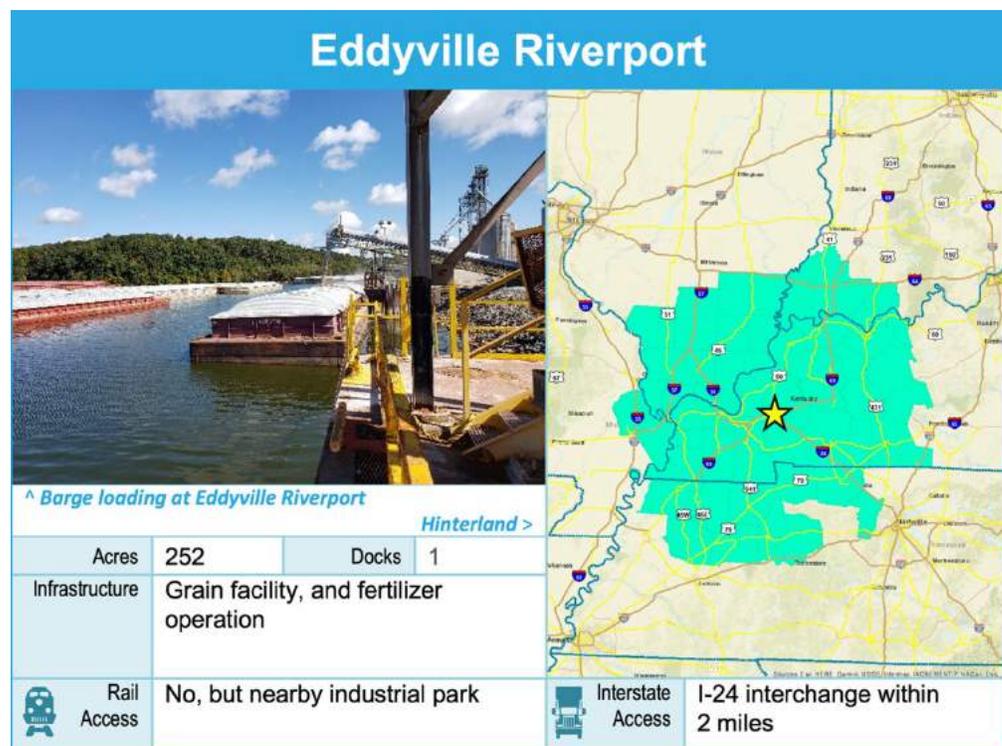


Figure 1-14: Eddyville Riverport Profile

These services have attracted several local Kentucky businesses: Agri-Chem, a farmer-owned agricultural business; family-owned and operated BGB Trucking; and Paducah Barge, which operates out of Eddyville’s port facilities. The port and Paducah Barge are partnered with the local technical school, promoting a curriculum tailored to a future career in the industry. The Eddyville Riverport and Industrial Development Authority has also attracted other nationally recognized businesses such as DHL Supply Chain to its nearby industrial park. These businesses provide not only jobs in the Eddyville community and surrounding areas but also supplies and connections to national and international markets for Kentucky’s farmers. Some of the top traded waterborne commodities within the Eddyville Riverport hinterland are coal, nonmetallic minerals, agricultural production & livestock, petroleum or coal products, and chemicals or allied products.

Figure 1-15 illustrates supporting freight infrastructure in the vicinity. Located two miles from U.S. 62, I-24, 1.5 miles southeast of the port entry road, I-69 approximately 6 miles away via I-24 W, and only four miles from the Paducah & Louisville (P&L) Railroad mainline, this connectivity allows the Eddyville port to expand its reach to major urban areas throughout the nation.



Figure 1-15: Eddyville Freight Infrastructure in the Vicinity

1.6.2. Greenup-Boyd County Riverport

Established in 2001, the Greenup-Boyd County Riverport Authority is located on the banks of the Ohio River in Wurtland and currently serves a unique niche in handling a specialty imported aggregate. This riverport is located on the Ohio River at river mile 332. It covers 29 acres with 1,120 feet of river frontage plus two additional properties nearby, totaling 35 more acres. Rail service via CSX Railroad is offered on-site at the port facilities while its convenient location—only a mile from U.S. 23—offers access to communities and businesses in eastern Kentucky, West Virginia, southern Ohio, and beyond. **Figure 1-16** summarizes key facts for the facility.

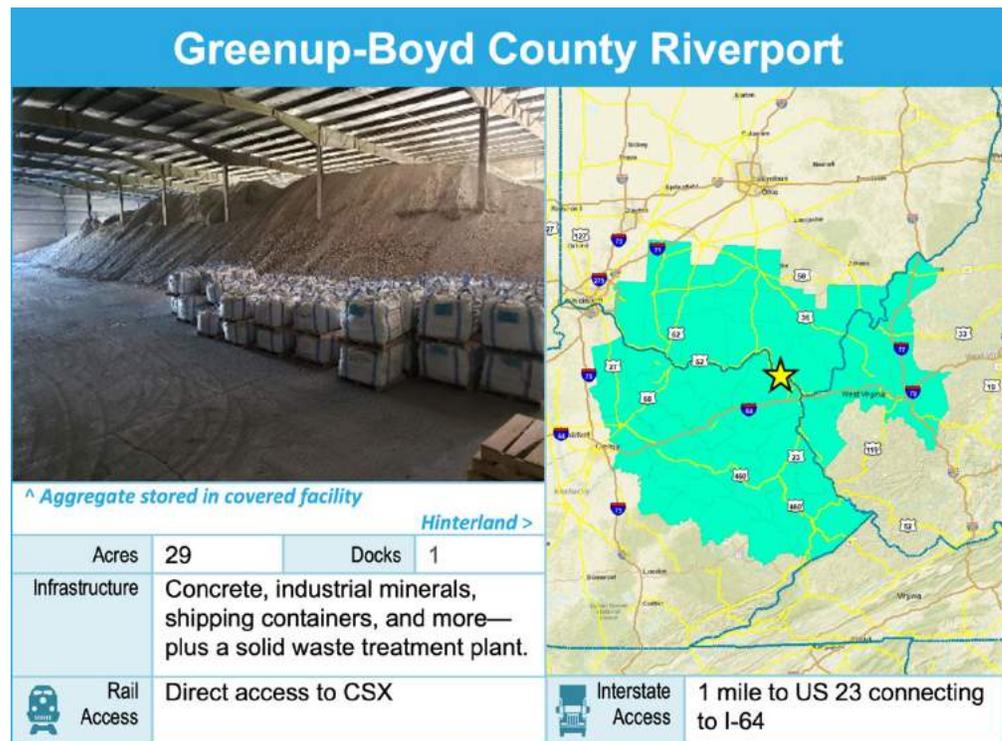


Figure 1-16: Greenup-Boyd County Riverport Profile

The Greenup-Boyd County Riverport developed as a high-volume throughput port serving the needs of the coal industry. With the demise of coal, the regional economy and freight volumes have fallen significantly. Today, the port facilities provide jobs through its stevedore arrangement¹² with McGinnis, Inc. as well as through businesses that have purchased and developed land in the port’s industrial park. These businesses have brought industrial and service jobs to the community—such as Vesuvius U.S.A. in metals and ceramics, mineral processing by Great Lakes Minerals, and concrete supplies and services from the Wells Group (General Concrete, Inc). Moreover, some of the top traded waterborne commodities within this riverport hinterland are coal, petroleum or coal products, nonmetallic minerals, clay/concrete/glass/stone, and crude petroleum or natural gas.

¹² A stevedore is a contractor engaged at a dock to manage terminal operations, loading and unloading cargo from ships.

Figure 1-17 illustrates the port location and freight routes in the vicinity, highlighting rail connections and designated truck routes to the nearest interstate connection (I-64, 13 miles south). There is also a general aviation airport nearby.

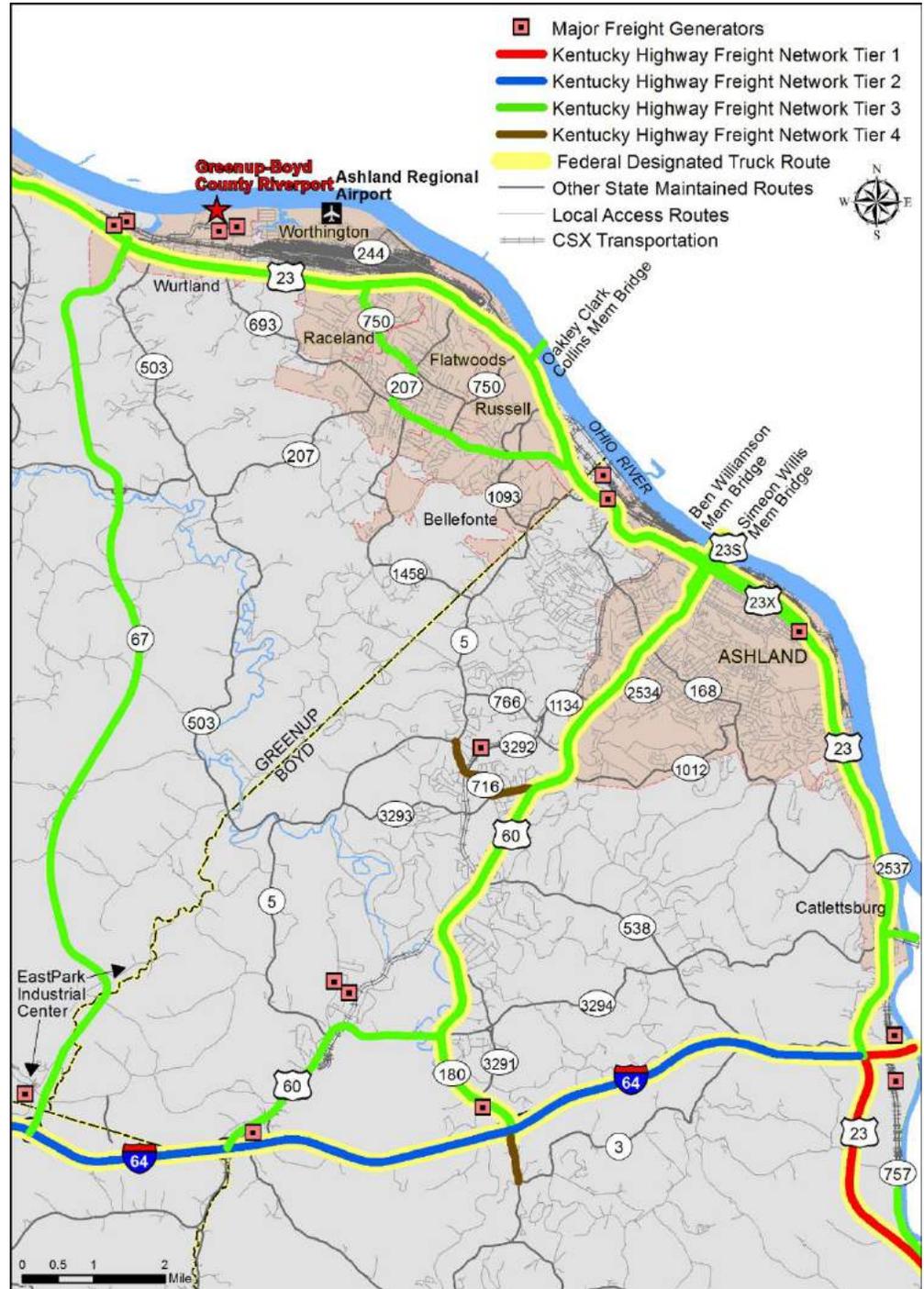


Figure 1-17: Greenup-Boyd County Freight Infrastructure in the Vicinity

1.6.3. Henderson County Riverport

Operational since 1981, Henderson County Riverport overlooks the Ohio River in the City of Henderson in Henderson County. It lies at river mile 808 on a 102.5-acre property with 40 acres utilized for terminal operations. The Henderson County Riverport offers 4,000 feet of river frontage. One mile away from the port lays US-60, and also connects with US-41 approximately three miles from the port. Some of the top traded waterborne commodities within the Henderson County Riverport hinterland are coal, nonmetallic minerals, agricultural production/livestock, petroleum or coal products, and chemicals or allied products. **Figure 1-18** summarizes key facts for the port.



Figure 1-18: Henderson County Riverport Profile

Henderson also operates a Foreign Trade Zone which allows clients to store imported goods then defer—and often reduce or even eliminate—duty payments on those goods until the client decides to clear them through customs into the U.S. market.

Long-term business clients include Eastern Alloys, which maintains a zinc alloy manufacturing plant, and the international aluminum remelting corporation Hydro Aluminum. In 2015, Security Seed and Chemical constructed a new nitrogen fertilizer loading and distribution center at the riverport that can service nitrogen crop nutrient needs for the tri-state regional farming community.

As shown in **Figure 1-19**, the port is located only 1.5 miles from U.S. 60 with access to I-69, one mile from the Henderson City-County Airport. The port also offers on-site connection via CSX Railroad, providing businesses with a variety of multimodal shipping options. An ongoing bi-state project is under development to connect I-69 between Henderson, KY and Evansville, IN with a new Ohio River crossing.

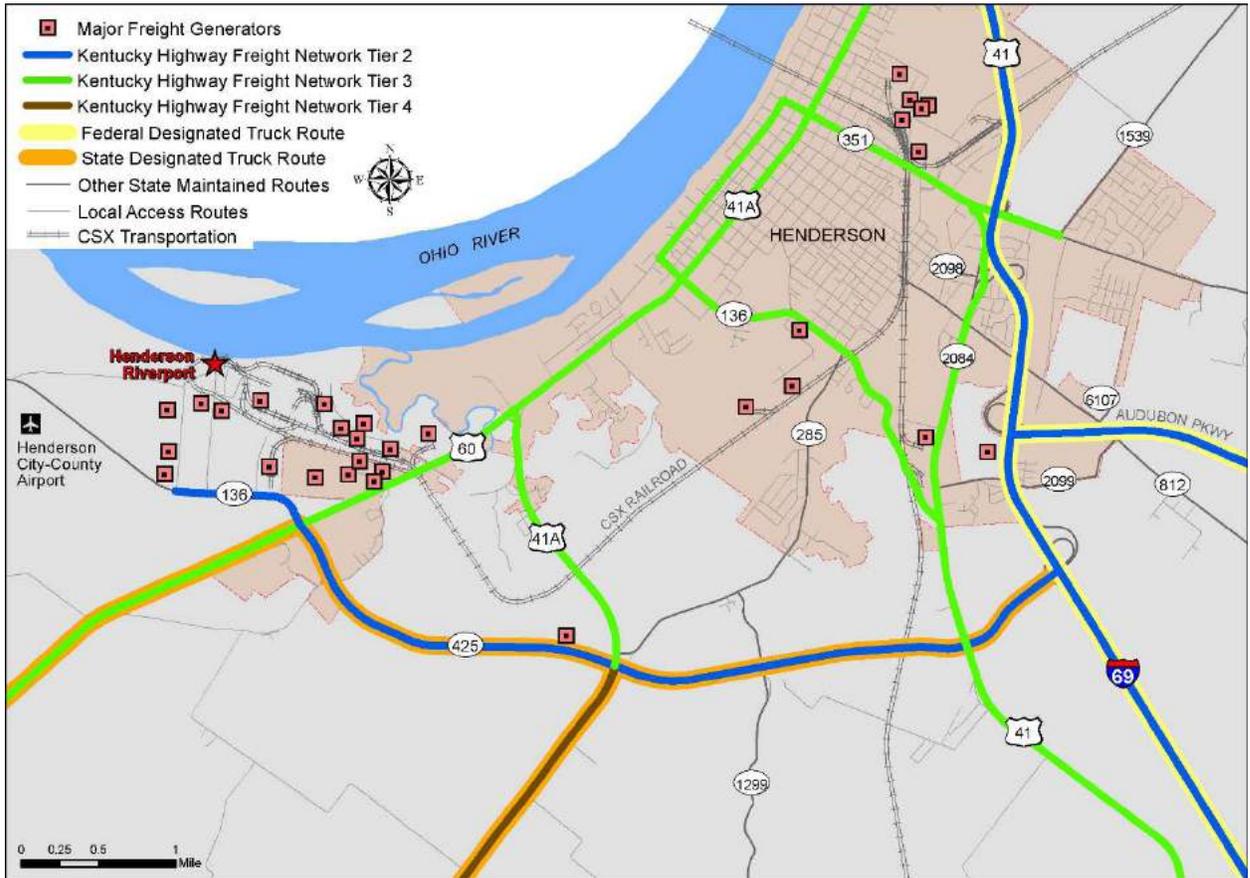


Figure 1-19: Henderson Freight Infrastructure in the Vicinity

1.6.4. Hickman-Fulton County Riverport

Established in 1964 by ordinance of the City of Hickman and Fiscal Court of Fulton County, the Hickman-Fulton County Riverport is the only Kentucky public riverport currently operating on the Mississippi River. This riverport offers 1,400 feet of linear river frontage at river mile 922 on the Mississippi River and is located roughly 20 miles from I-69. Founded in 1964, it sits on 10 acres with an additional 210 adjacent acres available for purchase and development. The top waterborne commodities by volume passing through the port’s hinterland consist of nonmetallic minerals, coal, agricultural production/livestock, chemicals or allied products, and petroleum or coal products. The commodities handled at the port consist of fertilizer, coke, grain, steel wire rod, steel shapes, and other general cargo commodities.

Figure 1-20 presents key facts for the port. Hickman-Fulton has attracted some of industry’s largest corporations as clients. Some of these corporations include steel Industries, one of the nation’s leading manufacturers of wire products; Cargill Inc., which provides grain marketing assistance to the area’s farming community via storage and transportation; SGL Carbon Group, one of the world’s leading manufacturers of carbon-based products; Harold Coffey Construction Co., Inc.; and Bunge North America, Inc. (soon to be CGB Enterprises, Inc.).

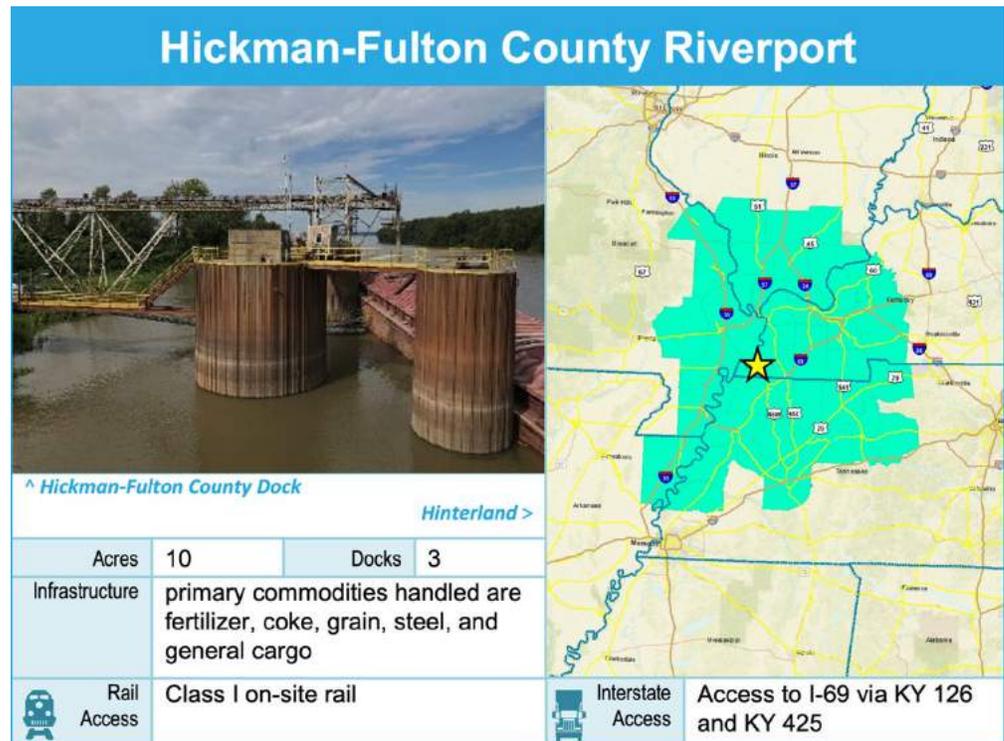


Figure 1-20: Hickman-Fulton County Riverport Profile

Strategically located in the geographic center of a major grain-producing area, the port aspires to collaborate with surrounding stakeholders to continue to identify opportunities for growth in waterway barge service to better serve Kentucky's grain and associated industries.

Situated on KY 94, the port is 18 miles from U.S. 51. On-site service by the TennKen short line railroad provides connections to Dyersburg, Tennessee, and the Canadian National (CN) Railway. **Figure 1-21** illustrates modal connections in the vicinity.

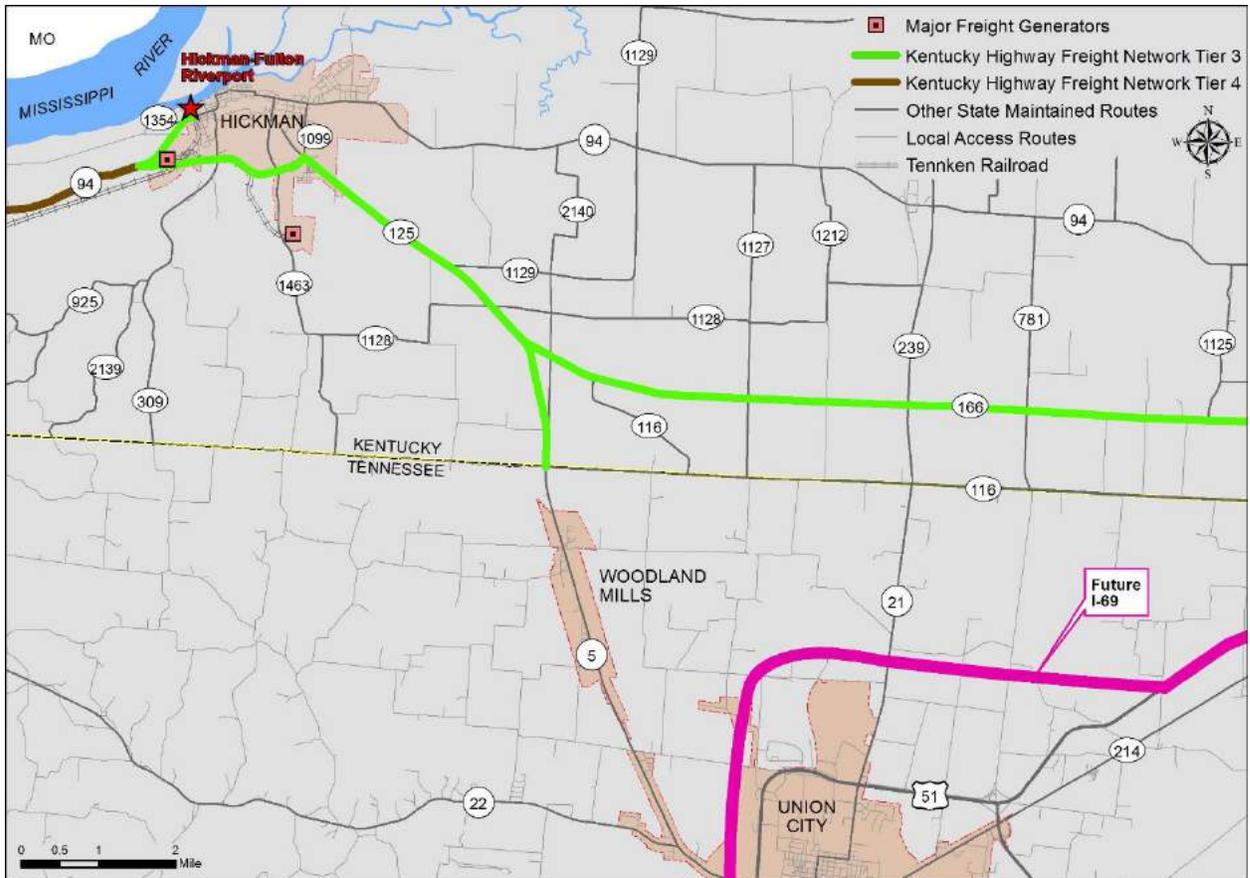


Figure 1-21: Hickman-Fulton Freight Infrastructure in the Vicinity

1.6.5. Louisville Riverport

The Louisville-Jefferson County Riverport Authority was initiated in 1965 in the bustling city of Louisville on the Ohio River. The site is 2,000 acres and is located at river mile 618 on the Ohio River with total river frontage being approximately 8,000 feet. With I-264 nearby, connecting to I-64, I-71, I-65, and US-31 West, as well as thirteen miles of on-site railroad track connecting to CSX, Norfolk Southern, and Paducah & Louisville (P&L) Railroads, the port provides numerous options to link their clients with multimodal land networks that reach far and wide. The port facilities are also located within minutes of the UPS Worldport at Louisville Muhammad Ali International Airport, which is Louisville’s biggest employer and connects Kentucky’s ports and people to aviation shipping facilities around the world. The top waterborne commodities by volume passing through the port’s hinterland consist of coal, nonmetallic minerals, petroleum or coal products, agricultural production/livestock, as well as clay/concrete/glass/stone.

The port is home to over 120 diverse companies that employ over 6,500 Kentuckians in industries including advanced manufacturing, logistics, business services, and retail. Just a few of their many client businesses include Honeywell Logistics, Coca-Cola Bottling Consolidated, Kentucky Trailer, Louisville Kitchen, and Dollar General Store. Along with Henderson County Riverport, Louisville also brings another Foreign Trade Zone to Kentucky, expanding the geographic options and facilities making Kentucky an attractive option for businesses that seek to import and store goods most economically.

Figure 1-22 summarizes key facts for the port; **Figure 1-23** highlights key components of the multimodal freight network in the vicinity.

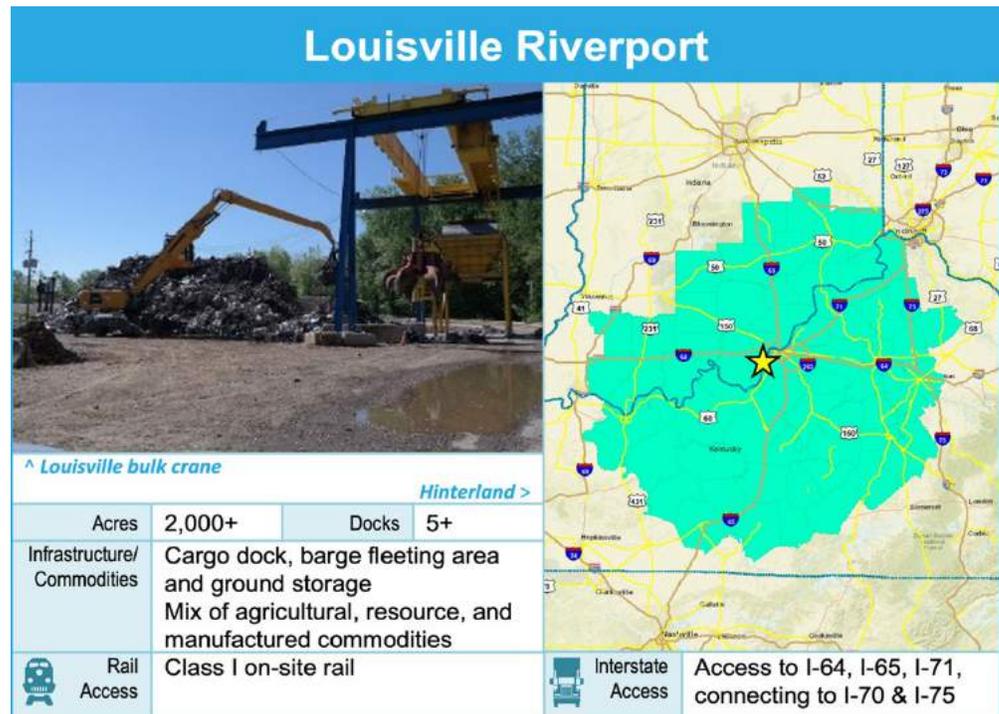


Figure 1-22: Louisville Riverport Profile

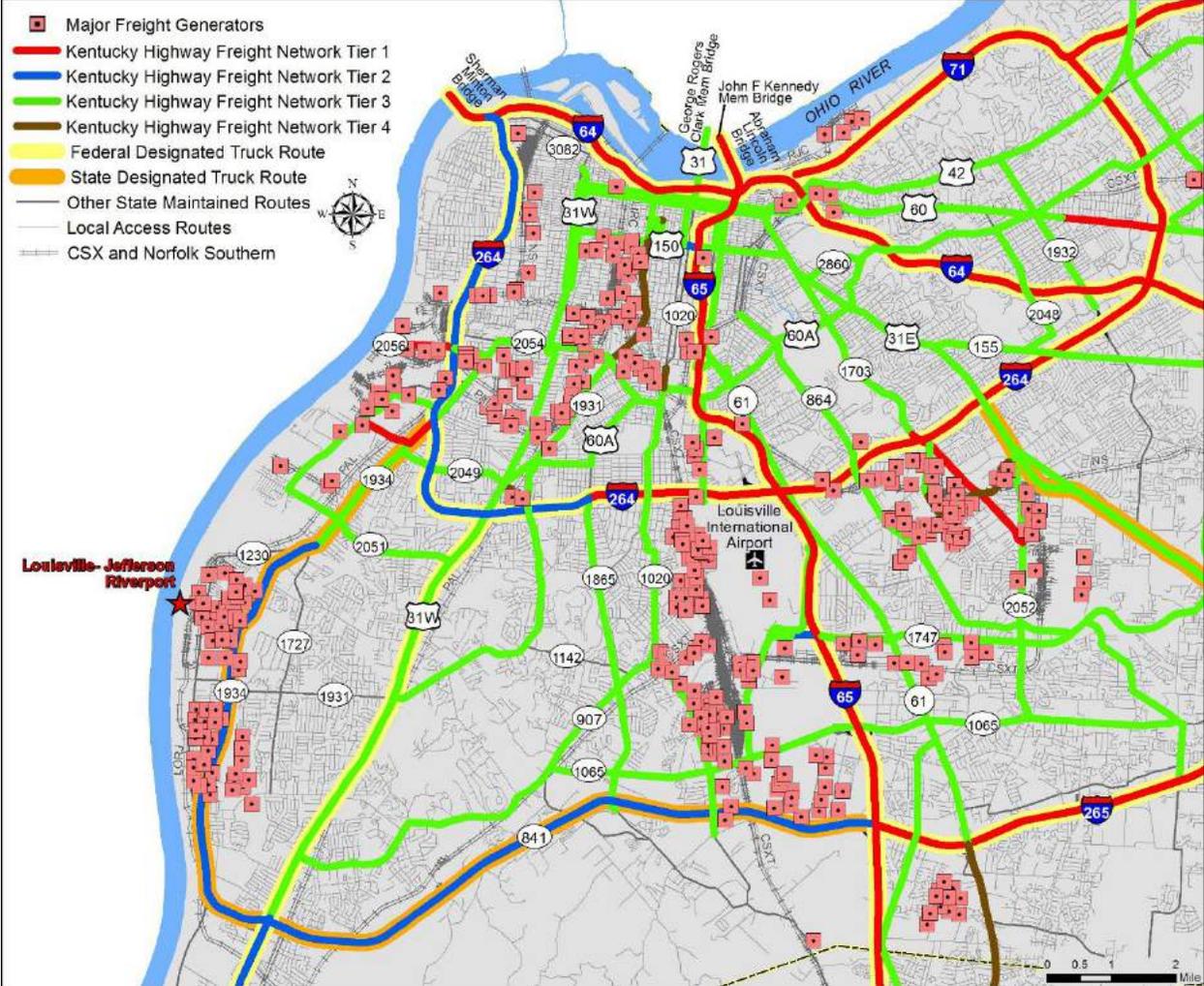


Figure 1-23: Louisville Freight Infrastructure in the Vicinity

1.6.6. Owensboro Riverport

The Owensboro Riverport Authority is based on the Ohio River in the city of Owensboro in Daviess County. It lies at river mile 759 on a 420-acre property that forms the northwest boundary of the city. The river frontage at Owensboro Riverport is 4700 feet. Nearby is access to I-64 via US-231. Owensboro-Daviess County Regional Airport is a regional airport located approximately 5 miles away from the riverport. Owensboro Riverport was founded in 1966, beginning operations in 1975 as both an operating and proprietor port. Originally it was established as an agriculturally based riverport but has been expanding opportunities for aluminum as a primary depot. **Figure 1-24** summarizes key facts for the facility.



Figure 1-24: Owensboro Riverport Profile

Estimates suggest that just the terminal operations at Owensboro Riverport have directly created 102 area jobs and \$15.8 million annually in economic activity; it has indirectly created 449 jobs and \$88.7 million annually in economic activity for Kentucky.¹³ In addition to bringing another geographical option to the Foreign Trade Zones available throughout Kentucky’s port system, it is also a delivery point on both the London Metal Exchange and the Chicago Mercantile Exchange, making Owensboro Riverport the ideal home for companies involved in the shipping and processing of aluminum products. It is also a Homeland Security Port given the types and volume of chemicals handled. The top waterborne commodities by volume passing through the Owensboro Riverport’s hinterland consist of coal, nonmetallic minerals, agricultural production/livestock, petroleum or coal products, and chemicals or allied products.

Figure 1-25 illustrates key freight connections in the vicinity. The city received a federal BUILD grant in 2018 to upgrade the KY 331 (Industrial Drive) connection to accommodate freight traffic. CSX provides rail connectivity to the port with a 5,700-foot rail loop that can handle 84 railcars on-site.

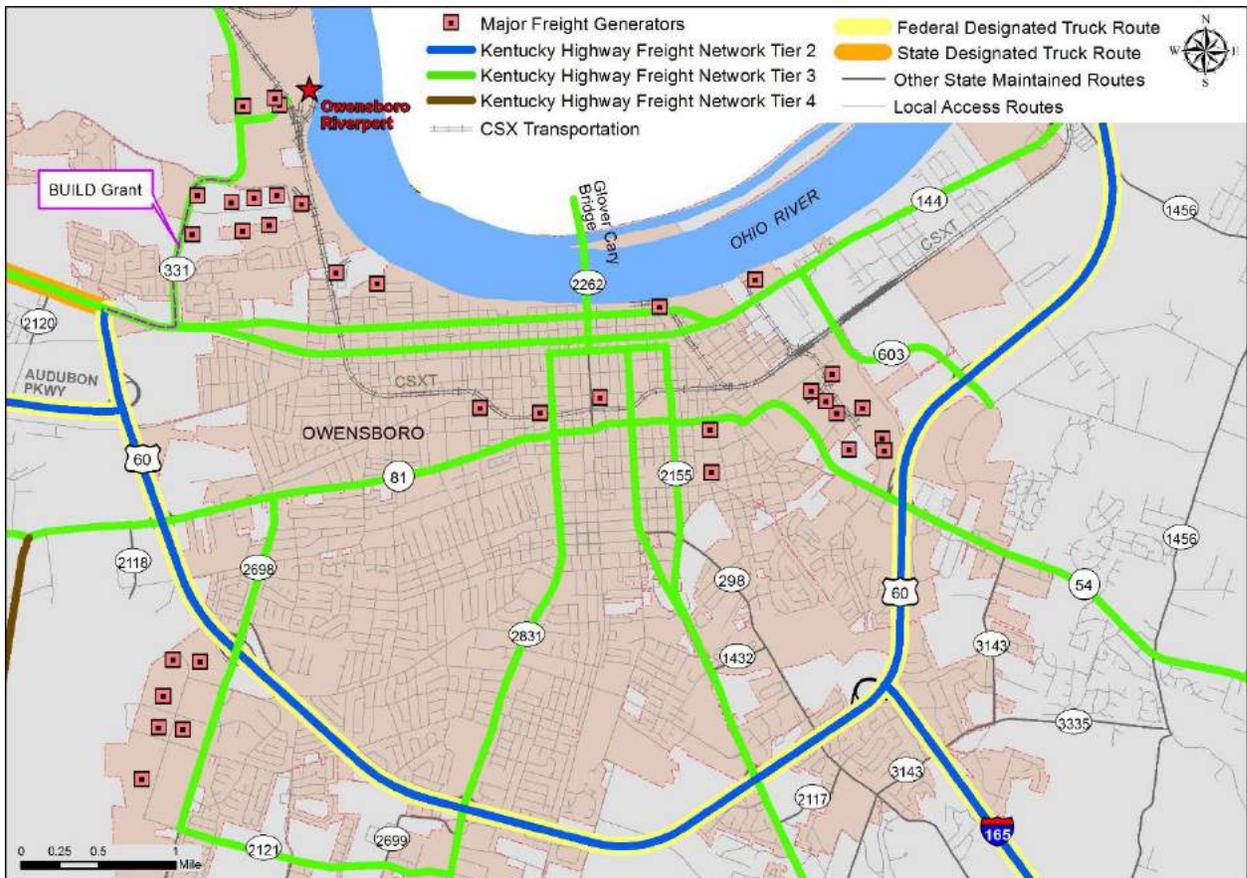


Figure 1-25: Owensboro Freight Infrastructure in the Vicinity

¹³ Online at <http://www.owensbororiverport.com/operations>

1.6.7. Paducah-McCracken County Riverport

The Paducah-McCracken County Riverport Authority was established in 1964 in the city of Paducah in McCracken County. The port's 48-acre facilities are at the confluence of the Tennessee and Ohio rivers, between river mile 1.3 and 2 on the Tennessee River. with nearby access to the Cumberland and Mississippi rivers as well. The port boasts 2,300 feet of river frontage, two berths, and multiple mooring facilities. Paducah-McCracken County Riverport is also a standalone Foreign Trade Zone. The facility is connected to US-60 and US-60 via Wayne Sullivan Drive, a four-lane primary city access route. Moreover, I-24 is located only 4 miles from the port. The top waterborne commodities by volume passing through the Paducah-McCracken County Riverport's hinterland consist of coal, nonmetallic minerals, agricultural production/livestock, chemicals or allied products, and petroleum or coal products. Twenty-three barge companies have operating or corporate headquarters near the port, and a rolling fleet of loaders, forklifts, trucks, and portable conveyors transport goods throughout the property while also providing a livelihood to many in the surrounding area. **Figure 1-26** summarizes key facts for the port.

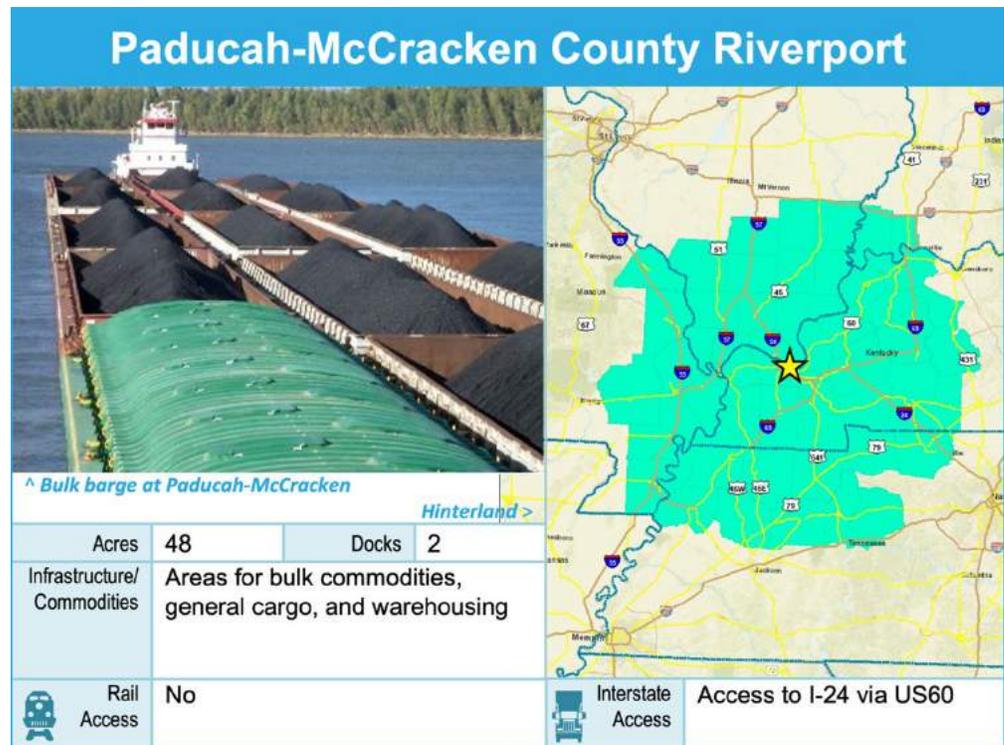


Figure 1-26: Paducah-McCracken County Riverport Profile

Pine Bluff Materials is a key tenant for bulk operations. The port received a federal grant in 2020 to obtain equipment necessary to begin regularly scheduled container-on-barge (COB) service.

U.S. 60X and KY 1954 (John Puryear Dr) provide four- to five-lane connections to I-24 (Exit 11), U.S. 60, and U.S. 62. Several bridges provide cross-river mobility in the vicinity. While there is no on-site rail access, Barkley Regional Airport is 14 miles to the west. **Figure 1-27** shows freight infrastructure in the region.

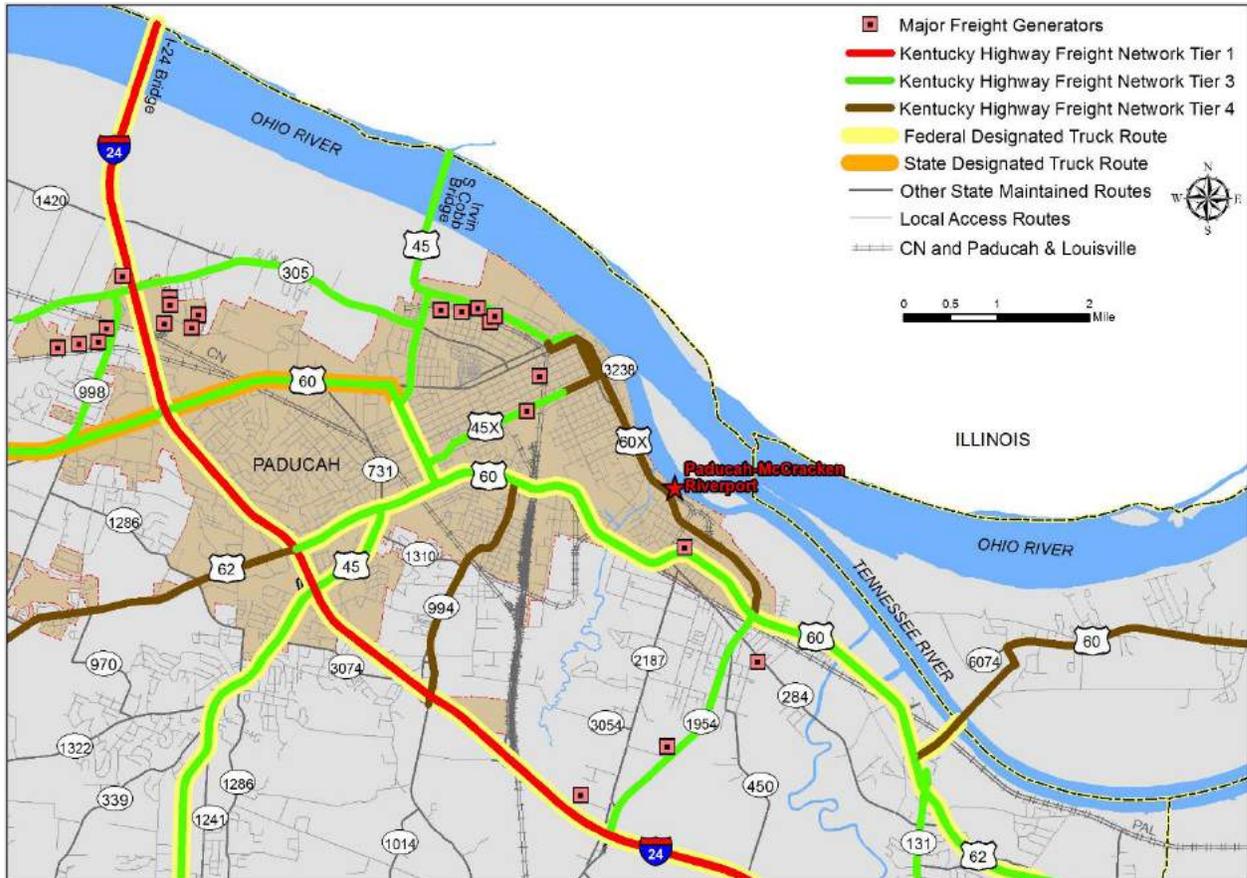


Figure 1-27: Paducah-McCracken Freight Infrastructure in the Vicinity

1.7 KENTUCKY'S FOUR DEVELOPING PUBLIC RIVERPORTS

In addition to the seven operating ports described above, public riverport authorities exist for four other locations shown in **Figure 1-28** that do not have on-the-ground infrastructure at the time of this study. For simplicity, these are categorized as "developing" ports though each situation is unique. Discussions are arranged alphabetically.

Kentucky's developing ports are actively seeking new ways to take advantage of existing infrastructure, develop new infrastructure and facilities, and increase water-based commodity transport. They are particularly focused on attracting the local high-volume commodities that can benefit most from the lower cost of waterway transportation. These developing ports are striving to build on the strengths already well-established by the Kentucky riverport system by creating jobs that pay livable wages, making state and local highways safer while lowering maintenance costs, and reducing the environmental impact of commodity transport.

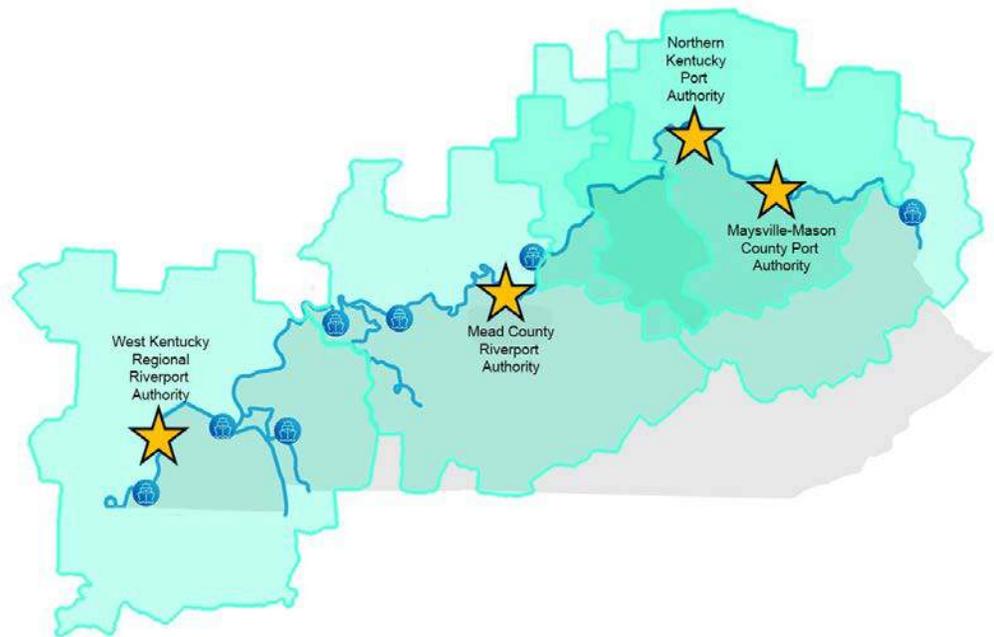


Figure 1-28: Kentucky's Four Developing Public Riverports Hinterlands

1.7.1. Maysville-Mason County Riverport

Chartered by Mason County in 1978, the Maysville-Mason County Riverport Authority is in Mason County in northeastern Kentucky. It has been under development for more than 40 years. While the exact location is not set, the 2015 *Marketing and Economic Development Analysis* identifies the Charleston Bottom area as the recommended site, located just north of the U.S. 68 William Harsha Ohio River Bridge. **Figure 1-29** illustrates the recommended port location and freight routes in the vicinity.



Figure 1-29: Maysville Freight Infrastructure Near Recommended Port Development Site

If located at the recommended site in the Charleston Bottom area, the port would offer easy rail and highway access and deep waterway bank access for mooring opportunities. Locating facilities on a high flood plain with low floodwater impacts would also contribute to the flexibility and resilience of water-bound commercial transport through the port. If located at the recommended site, the waterway that would be served would be the Ohio River between river mile points 410 and 420. CSX Transportation would provide rail service to the area. Fleming-Mason Airport is located approximately 10 miles southeast of the proposed site.

1.7.2. Meade County Riverport

Prior to its recent acquisition, the Meade County Riverport covered 550 acres along the Ohio River. Nucor Steel is constructing a \$1.7 billion steel plant using scrap steel as a feedstock to manufacture flat plate steel products. Because of the location where Nucor is building, the grain barge loading facility at the riverport was removed to accommodate Nucor’s needs. Plans are underway to consider another grain barge loading operation at two different port locations; port leadership is seeking support to permit and fund the operation, estimated to cost \$12 million.

As shown in **Figure 1-31**, this hinterland region represents 66 counties including portions of both Kentucky and Indiana. Commodities that are already being transported by waterway within the hinterland include coal, nonmetallic minerals, agricultural production/livestock, petroleum or coal products, and primary metal products. Divertible freight opportunities include iron and steel products, cement, stone, chemicals, refined petroleum products, and grain. If marketed and developed strategically, this also translates into the potential to attract businesses in these industries as well as the jobs and human capital that come with them.

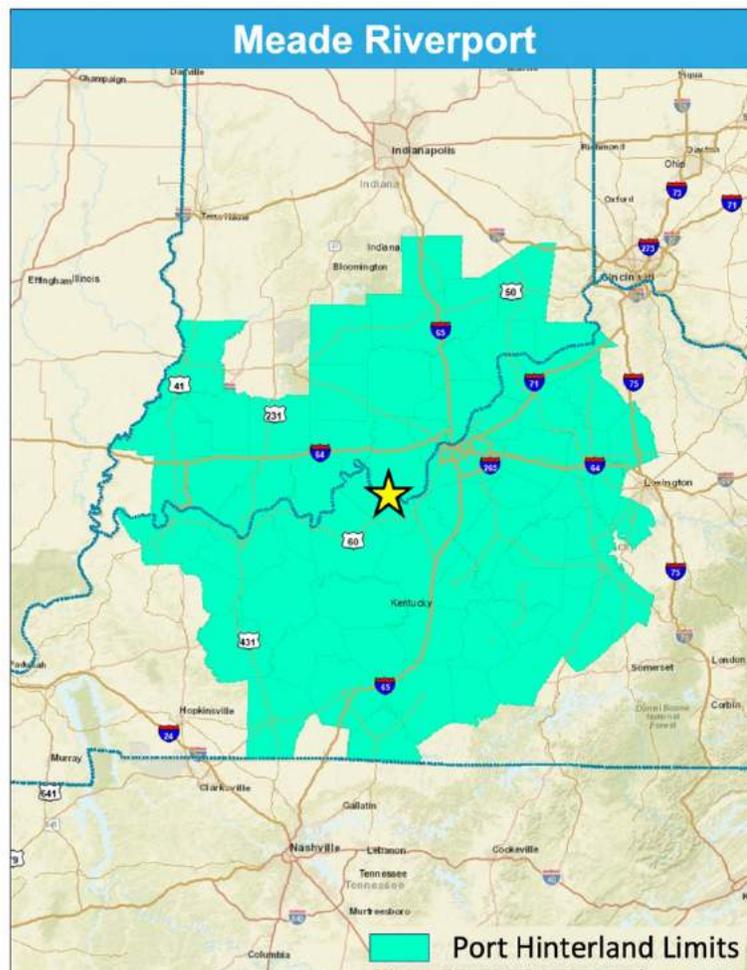


Figure 1-31: Meade County Port Hinterland Area

1.7.3. Northern Kentucky Port Authority

The Northern Kentucky Port Authority was established in 1968 by Boone, Campbell, Gallatin, and Kenton counties, and coordinates with the Central Ohio River Business Association (CORBA) to serve 226.5 miles of commercially navigable waterways of the Ohio River and seven miles of the Licking River (Figure 1-32) without any dedicated port infrastructure. The CORBA collaboration was formed in 2012 and involves 15 counties located in Kentucky and Ohio. Kentucky counties include Carroll, Gallatin, Boone, Kenton, Campbell, Pendleton, Bracken, Mason, and Lewis. Counties from Ohio involved include Hamilton, Clermont, Brown, Adams, and part of Scioto County. The Ports of Cincinnati and Northern Kentucky combined comprise the second-largest inland ports in the United States in terms of tonnage.

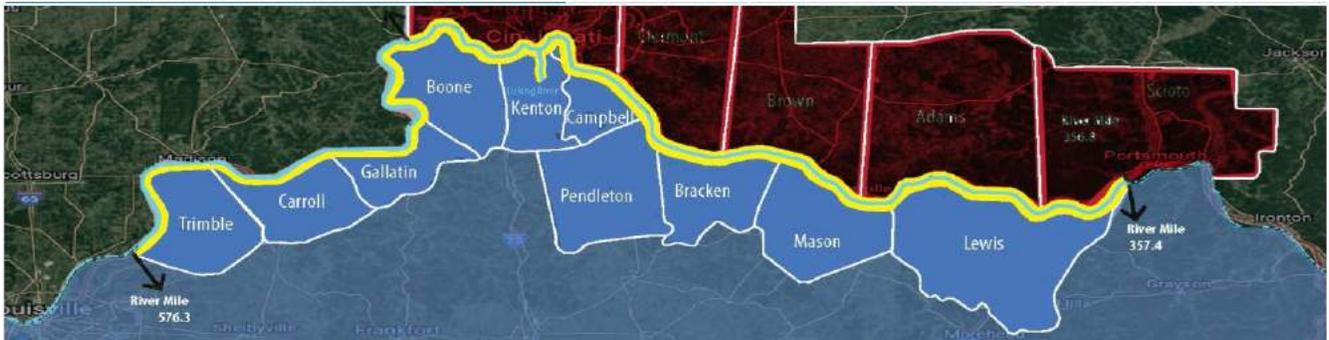


Figure 1-32: Service area for CORBA/Northern Kentucky Port Region

The proposed development is located on the Mississippi River in Wickliffe and would offer considerable multimodal access via Canadian National (CN) Railroad and three U.S. highways: U.S. 51, U.S. 60, and U.S. 62. These amenities, combined with an existing partnership with Phoenix Paper, give the port a unique advantage. A business survey conducted as part of a March 2021 riverport feasibility study commissioned by the West Kentucky Alliance for a Vibrant Economy (WAVE) indicated that up to six companies are highly motivated to establish or grow operations at the project site over the next two years.¹⁴ The proposed site and surrounding freight connections are illustrated in **Figure 1-35**.

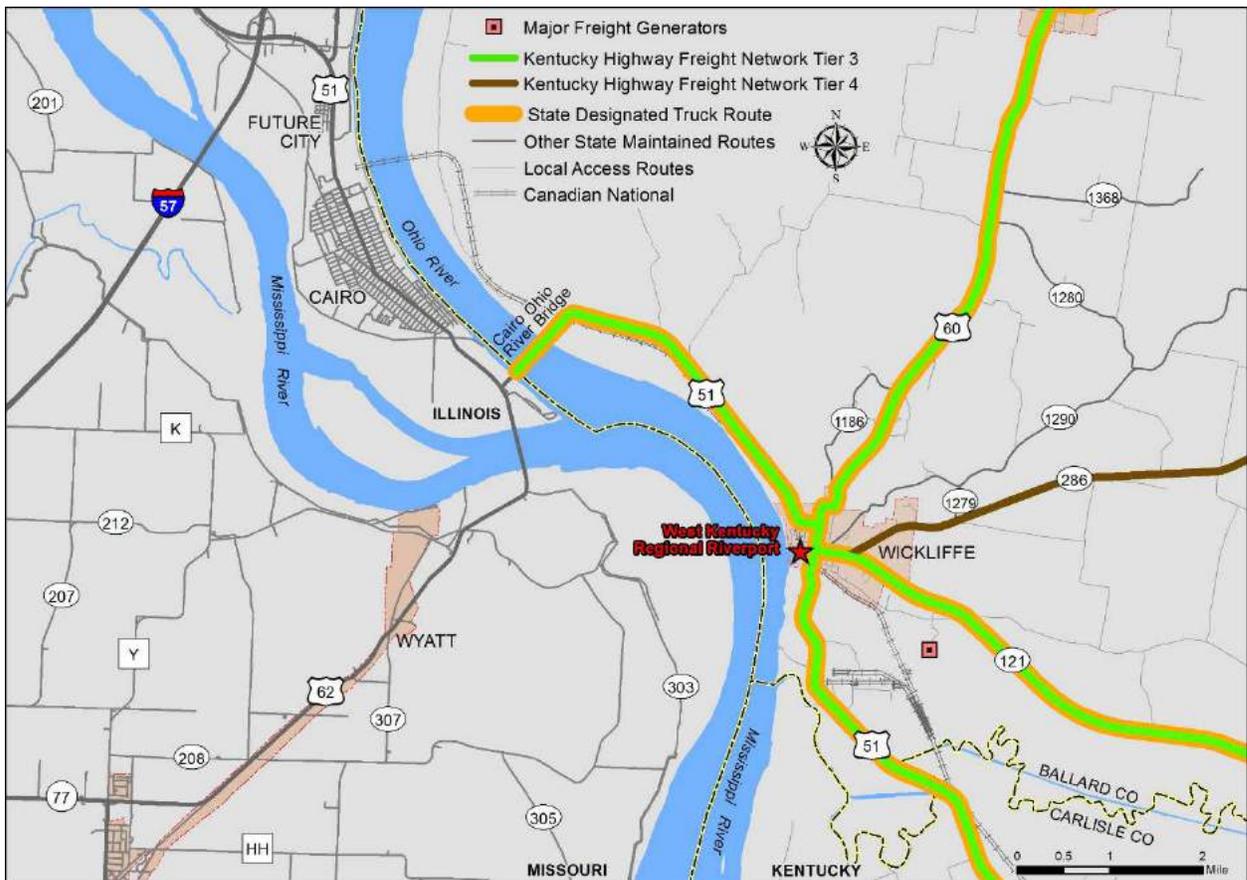


Figure 1-35: Western Kentucky Riverport Freight Infrastructure in the Vicinity

Top commodities that are already being transported by water within the hinterland include coal, nonmetallic minerals, agricultural production/livestock, chemicals or allied products, and petroleum or coal products. Many top commodities are projected to grow within this market area, including mixed consumer products, grain, waste or scrap, and plastic/synthetic fibers.

¹⁴ Commonwealth Economics, “West Kentucky Regional Riverport Project Feasibility Analysis,” March 2021.

1.8 UNDERSTANDING CURRENT OPPORTUNITIES

The history and status of Kentucky’s waterborne economy as documented above clearly demonstrate that public riverports have an impactful, resilient presence in Kentucky’s economy. Based on this contribution, riverports and their stakeholders have a strong business case to safeguard and take actions to lead this economic contribution moving forward. For over 200 years, waterborne commerce in Kentucky demonstrated the ability to evolve with changing national and global markets, technology, workforce, and physical conditions. Now, the ongoing conversation between Kentucky public port leaders distills to three main topics:

- **Collaboration** | To be competitive, individual ports should collaborate system wide.
- **Innovation** | Each port represents a potential catalyst to promote innovation at the local level.
- **Investment** | Additional funding is critical to continue serving the Commonwealth.

These themes resonated throughout the study analyses, at each one-on-one coordination meeting and at all the virtual summits. Each theme is explored further in subsequent chapters.

INCREASED COLLABORATION

The summits held in 2020 and 2021 initiated dialogue about new collaborative approaches for riverports to successfully secure federal funding by pooling their resources to apply for grants. Healthy competition in the riverport industry can be fostered between individual riverports while also making them more competitive with private ports and public port systems in other states.

Nearby riverports often compete for commodities, trading partners, and funding, but a collaborative partnership can promote a stronger, integrated market position. The 2020-2021 dialogue reveals interest among stakeholders to promote a collective business and economic position: to speak with one, louder voice about economic, physical, and policy change affecting the Kentucky riverport system. Overall, engaged stakeholders are willing to collaborate to enhance the resilience of Kentucky’s overall waterborne economic position against growing challenges posed by technology shifts, changing markets, global trade, and climate change.

An innovative strategy for Kentucky’s riverports is to empower their surrounding communities to build “homegrown” markets through business attraction, retention, creation, and expansion. Consistent discussions consider partnerships with client businesses, community organizations, and local high schools and colleges to invest in job training programs that provide a pathway to employment, particularly for youth in low-income households. Today’s leaders are interested in incentives to promote equipping students for real-world career paths in the industry—with the long-term potential to lift at-risk teens (and often their descendants and communities) out of poverty. Not only do such programs provide a living for individuals and an increase in qualified labor for businesses, but eventually, they have the potential to reduce government spending on poverty relief.

New human capital eventually helps attract new businesses to Kentucky, further contributing to the rich tapestry of interdependent relationships that promote the economic development of surrounding communities and for Kentucky as a whole. **Chapter 5** focuses on economic development strategies.

It is vital to invest in safeguarding Kentucky’s ability to move goods by water. The benefits, supply chains, and industries discussed above rely on a vibrant, multimodal freight network—including Kentucky’s public riverports. In turn, many of the operating riverports rely on aging infrastructure and are dependent on limited, competitive funding streams to maintain critical assets in a functional state of good repair.

The existing value of Kentucky’s riverports to local, state, national, and international economies is already quite extensive. The question remains where that value can be increased, expanded, and in other ways enhanced.

- What kinds of investments need to be made?
- Where will those investments provide the greatest return on investment to the overall system?
- What paradigm shifts need to occur in the ways that stakeholders conceptualize the riverports?
- How do ports fit into the larger structure of Kentucky’s economy and transportation system as a whole?

BULK COMMODITY TYPES

Major commodities

include iron ore, coal (coking coal and steam coke) and grain, which account for more than 65% of dry bulk.

Minor commodities

include fertilizers, steel, other agricultural products, cement, and petroleum coke (pet coke), which account for the remaining 35% of dry bulk.

1.8.1. Market Conditions—Demand from China

No conversation about current opportunities is complete without acknowledging ongoing trade demands in Asian markets—China in particular. Economic growth in China means sustained demand for goods including energy (major bulk) and agricultural (minor bulk) products.

According to IHS Markit, “Capacity in the dry bulk fleet is projected to rise 2.0% in 2021 and just 0.8% in 2022, compared with 3.2% last year and 4.1% in 2019.”¹⁵ As shown in **Figure 1-36**, predictions estimate that “the global dry bulk trade will increase by 3.2% in 2021, mainly driven by coal (4.4%) and minor bulk trade (8.0%).”¹⁶ It is expected to continue growing by 5.8% in 2022 and 2.7% in 2023 supported by industrial materials and agricultural goods in the current post-pandemic economic recovery. Growth of the dry bulk fleet is expected to remain 2-3% over the next three years, supporting the dry bulk market in Kentucky.

¹⁵ <https://www.marinelink.com/news/fewer-shipbuilding-orders-supports-dry-487272>

¹⁶ <https://ihsmarket.com/Info/0821/freight-rate-forecast-dry-bulk-market-briefing-2021-en.html>

FACTORS AFFECTING COAL DEMAND

“Environmental policies that favor renewables and gas over thermal coal and favor scrap over coking coal and iron ore will lead to more widely available coal demand to be down.

Metallurgical coal trade will recover from its 2020 levels and grow in 2021 and 2022 by 5-7% every year but annual growth will start to slow once it becomes near its 2019 level.”

Source: “Dry bulk Market: Vaccine, a double-edged sword,” April 9, 2021. Available at <https://www.hellenicshippingnews.com/dry-bulk-market-vaccine-a-double-edged-sword/>

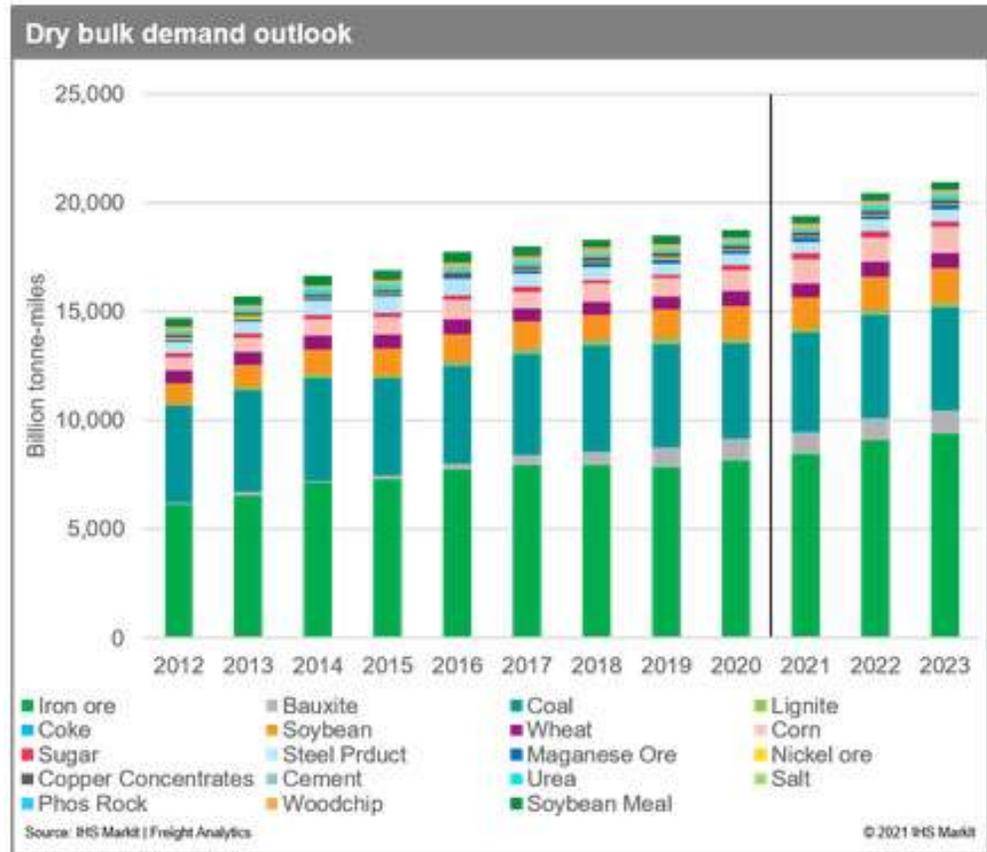


Figure 1-36: Industry Dry Bulk Demand Outlook

Soybean trade growth will likely continue from 2022 to 2023. China’s meat consumption will also increase due to continued urbanization. Corn trade will also be expected to increase between 2021 and 2023 due to China’s economic growth. Thermal coal demand is expected to remain strong in the near future due to energy demand and high gas prices, but it will eventually decline with new priorities in energy production. This means Kentucky riverports that handle coal or petroleum coke, known as “pet coke,” should look to new commodities that can be handled by their existing equipment and new directions of investment to remain viable. This includes storage, equipment, and information technology. Minor bulk trade is set to be the best performing in 2021 with 8% growth.

1.9 FROM CURRENT POSITION TO FUTURE CHOICES

Based on Kentucky's current waterborne commerce market base, national position, and overall industry utilization, the Commonwealth can make strategic choices about the role public riverports will play in its future. Some key considerations informing the interpretation of future trends in subsequent chapters include:

- **Preserve Capacity:** It is vital to invest in safeguarding Kentucky's ability to move goods by water. During 1997-2017, Kentucky riverports provided \$43 billion in benefits for Kentucky with \$74 billion for the U.S.
- **Explore Growing Asian Agriculture and Food Markets:** Given the downward trend in coal and the shift away from fossil fuels, which have constituted a large share of the commodities transported through Kentucky's riverport system, it is vital that the riverports both invest and proactively market their bulk-shipping capability to capture growing international agricultural markets. The inland river system is critical to the trade of agricultural products between the U.S. and Asia, which is expected to continue to be a growth market. Grain and other agricultural products can help make up for declining coal shipments, serving as a low-cost way for farmers to access international markets.
- **Shift to Manufacturing Supply Chains:** As markets such as coal, gas, and minerals serving long-standing energy and mining supply chains have declined, smaller but rapidly growing supply chain opportunities for waterborne commerce have begun to open in areas of manufactured goods—notably plastics, rubber, textiles, and machinery. Kentucky has also done better than the nation in sustaining its waterborne commerce share in grains and alcohol movement. However, a port system that competes for commodities like plastic, rubber, and machinery (which are more modally diverse than coal and nonmetallic minerals) can require new technical and marketing capabilities.
- **Seek Collective Market and Investment Perspectives:** While each of Kentucky's riverports has its own business situation, a competitive analysis of Kentucky's waterborne economy finds that the riverports share a common market position with respect to commodities, trading partners, and investment needs. Consequently, this report emphasizes ways that individual port-level investments, state funding programs, and strategies can fit into innovative collective programs or collaboratives to achieve an improved market position for the changing riverport economy.
- **Define New Needs, Investments, and Strategies:** A pivot in the capacity, marketing, and local market development for Kentucky riverports is supported by observations that can readily be made in existing commodity markets and economic relationships as demonstrated in the 2017 FAF and the 2018 TRANSEARCH data. Subsequent chapters explore and recommend specific statewide and port-specific strategies appropriate to this economic position.



CHAPTER 2

WHAT IS CHANGING IN KENTUCKY'S WATERBORNE ECONOMY?

Changes in Kentucky's waterborne commodity mix, trading partners, and economic role can have profound implications for both the port communities and the "hinterlands" within a 90-mile one-way drive from the nearest public riverport. This chapter offers a detailed assessment of economic and market changes anticipated for Kentucky's waterborne economy to the year 2045, including key growth and decline markets for each port, significant shifts to expect in trading partners, ways that specific investments in Kentucky's public riverports can be responsive to this change, and how Kentucky's positioning for future change relates to practices of other states. **Technical Memorandum 2** provides additional detail on these forecasts, both statewide and for individual port hinterlands. The remaining chapters of the study will then directly address the benefits and impacts of investing in riverports under these changing conditions, key actions to support market capture, and strategic objectives for implementing a riverport hinterland investment and market strategy to 2045.



Figure 2-1: Covered barge at Eddyville Riverport

2.1 CONNECTING KENTUCKY TO 2045 NATIONAL MARKETS

Under any economic scenario, Kentucky's waterborne transportation economy will continue to play a vital role both in the Commonwealth's business competitiveness and in the United States economy for the foreseeable future. Under the most likely scenario, even with projected declines, Kentucky will continue to trade over 64 million tons of freight using inland waterways in 2045, valued at over \$20 billion.¹ The percentage of Kentucky's waterborne trade (by tonnage) exchanged with trading partners outside of the Commonwealth is projected to increase from 78% in 2018 to 85% in 2045, pointing to the ongoing long-term importance of Kentucky's waterborne commerce to the larger national economy.

Even with declining tonnages overall, the value of freight Kentucky exchanges with the New Orleans region is expected to increase from \$4.2 billion in 2018 to \$5.5 billion in 2045, increasing its share of Kentucky's overall waterborne commerce by 3% (from 25% to 28%). Kentucky's other waterborne trading relationships are expected to become increasingly diverse, with major current trading partners reducing their share of waterborne trade with Kentucky and new partners playing more of a role. Most notably declines in coal markets are expected to cause trade with the Charleston, West Virginia region to decline from 20% of the overall value of Kentucky's water commerce in 2018 to less than 11% in 2045 as new trading partners—such as Chattanooga, TN; Knoxville, TN; and Greenville, MS—rise into the top ten trading partners.

2.1.1 Changes in Trading Partners

Tables 2-1 and 2-2 demonstrate the top sources of inbound and outbound trade with Kentucky anticipated in 2045 by both tonnage and value. For comparison, Tables 1-3 and 1-4 in Chapter 1 show the 2018 top waterborne trading partners.

Table 2-1: Top 10 Inbound Waterborne Trading Partners in 2045 per TRANSEARCH

Origin	1000 Tons	% Of Tons	\$ Million	% Of Value
New Orleans, LA	3,246	15%	\$3,618	27%
Charleston, WV	2,995	14%	\$1,665	12%
Evansville, IN	2,084	10%	\$455	3%
Tupelo, MS	1,759	8%	\$321	2%
Wheeling, WV	1,605	7%	\$58	0%
Memphis, TN	1,502	7%	\$1,014	8%
St. Louis, MO	1,327	6%	\$135	1%
Lafayette, LA	1,086	5%	\$3,886	29%
Cincinnati, OH	1,043	5%	\$429	3%
Louisville, KY (Out-of-State Portion of Region)*	889	4%	\$90	1%
Others	3,872	18%	\$1,726	13%
Total Inbound	21,408	100%	\$13,397	100%

¹ Source: IHS Markit TRANSEARCH 2021.

Table 2-2: Top 10 Outbound Waterborne Trading Partners in 2045 per TRANSEARCH

Destination	1000 Tons	% Of Tons	\$ Million	% Of Value
New Orleans, LA	9,513	29%	\$1,877	33%
Nashville, TN	6,861	21%	\$284	5%
Baton Rouge, LA	4,163	13%	\$394	7%
Charleston, WV	1,774	5%	\$502	9%
Clark Co, IN	1,579	5%	\$628	11%
Cincinnati, OH	871	3%	\$26	0%
Lake Charles, LA	680	2%	\$48	1%
Wheeling, WV	648	2%	\$47	1%
Pittsburgh, PA	585	2%	\$6	0%
Memphis, TN	541	2%	\$12	0%
Others	5,939	18%	\$1,803	32%
Total Outbound	33,154	100%	\$5,627	100%

Projected declines will require riverports to place a growing emphasis on capturing and serving those commodities and trading partners where market size is expected to increase. Key trading partners with projected growth in waterborne commerce with Kentucky from 2018 to 2045 include:

- Tupelo, MS expected to trade more than 862,000 tons of freight
- Evansville, IN expected to increase by 342,000 tons
- Baton Rouge, LA expected to increase by 202,000 thousand tons
- Knoxville, TN expected to increase by more than 120,000 tons
- Houston, TX expected to increase by more than 100,000 tons

These top five growing trade partners are expected to increase their trade with Kentucky by 17% by tonnage, representing over 1.6 million tons valued at over \$2.6 billion in the 2018-2045 period. **Table 2-3** presents trade volume projections for the top ten growth markets. **Section 2.2** of this chapter will further explore which of Kentucky's riverport hinterlands are expected to experience trade with each of these partners, and in which waterborne commodities.

Table 2-3: Top 10 Growth Partners in Waterborne Trade with Kentucky

Trading Partner	Market Size		Projected Growth in Tonnage 2018-2045	
	1000 Tons in 2018	1000 Tons in 2045	Difference	% Growth 2018-2045
Tupelo, MS	946	1,807	862	91%
Evansville, IN	2,421	2,764	342	14%
Baton Rouge, LA	4,751	4,953	202	4%
Knoxville, TN	440	562	122	28%
Houston, TX	714	818	104	15%
Little Rock, AR	189	288	99	53%
Huntsville, AL	186	253	66	36%
Fort Smith, AR	12	30	18	154%
Peoria, IL	67	83	16	24%
Tampa, FL	6	20	15	256%

2.1.2. Changes in Waterborne Commodities

Despite a significant contraction in market size, the energy, chemical, agriculture/food/lumber, and metals/minerals supply chains described in Chapter 1 are expected to remain highly dependent on Kentucky's waterways.

- The agriculture/lumber/food supply chains represent a projected growth area in which overall economic trends are expected to favor an increase in Kentucky's waterborne commerce market. For these commodities, tonnage traded with Kentucky by water is expected to move nearly 12 million tons of lumber, agriculture or livestock, and food products valued at nearly \$2.6 billion—up from the 6.1 million tons and \$1.4 billion traded with Kentucky by water in 2018.
- Growth is also expected in demand for waterborne trade of chemicals and allied products with Kentucky, by 2045 expected to be trading 4.7 million tons valued at nearly \$5.9 billion; up from the 3.8 million valued at \$3.9 billion traded in 2018.
- While volumes are anticipated to decline in supply chains related to energy and mining, Kentucky waterways are projected to continue to play an important role. For the energy sector in 2045, Kentucky's waterways are expected to move nearly 18 million tons of coal, petroleum, coal products, and crude petroleum/natural gas, valued at more than \$5 billion. While down from 42 million tons valued at \$7.1 billion in 2018, commodities in this supply chain will still account for significant shares in Kentucky's top waterborne commodities by volume.
- Supply chains involving the use of nonmetallic minerals, metallic ores, and primary metal products are also expected to decline in volume but are expected to heavily utilize Kentucky's waterways, moving nearly 25 million tons of freight valued at over \$4.9 billion in 2045; down from 32 million tons valued at \$4.3 billion in 2018.

Table 2-4 and Table 2-5 demonstrate the top commodities traded with Kentucky from outside the Commonwealth in 2045 by water by tonnage and value. (Note the tables demonstrate national trade and do not account for intra-state trade, which is also included in the above-referenced totals). For comparison, Table 1-6 and Table 1-7 in Chapter 1 provide corresponding values for 2018.

Table 2-4: Top 10 Inbound Waterborne Commodities in 2045 per TRANSEARCH

Inbound Commodity	1000 Tons	% Of Tons	\$ Million	% Of Value
Petroleum or Coal Products	5,150	24%	\$3,417	26%
Chemicals or Allied Products	3,680	17%	\$5,244	39%
Nonmetallic Minerals	3,204	15%	\$39	0%
Coal	2,522	12%	\$78	1%
Lumber or Wood Products	1,890	9%	\$331	2%
Primary Metal Products	1,780	8%	\$3,116	23%
Crude Petroleum or Natural Gas	1,283	6%	\$565	4%
Metallic Ores	498	2%	\$45	0%
Agricultural Production & Livestock	454	2%	\$145	1%
Clay, Concrete, Glass or Stone	431	2%	\$84	1%
Others	517	2%	\$334	2%
Total Inbound	21,409	100%	\$13,398	100%

Table 2-5: Top 10 Outbound Waterborne Commodities in 2045 per TRANSEARCH

Outbound Commodity	1000 Tons	% Of Tons	\$ Million	% Of Value
Nonmetallic Minerals	13,389	40%	\$122	2%
Agricultural Production & Livestock	7,522	23%	\$1,586	28%
Coal	4,130	12%	\$128	2%
Clay, Concrete, Glass or Stone	2,209	7%	\$575	10%
Petroleum or Coal Products	2,186	7%	\$989	18%
Food or Kindred Products	1,568	5%	\$289	5%
Primary Metal Products	943	3%	\$1,269	23%
Chemicals or Allied Products	941	3%	\$584	10%
Waste or Scrap Materials	190	1%	\$62	1%
Metallic Ores	59	0%	\$4	0%
Others	16	0%	\$19	0%
Total Outbound	33,153	100%	\$5,627	100%

As market conditions point to less global demand for waterborne trade with Kentucky, riverports will have to adapt for new commodities. Key commodity groups with projected growth in waterborne commerce with Kentucky from 2018 to 2045 include the above-mentioned supply chains in agriculture/food production/lumber and chemicals/allied products as well as primary and fabricated metal products. **Table 2-6** below gives an overview of the commodities projected to grow in waterborne trade with Kentucky from 2018 to 2045, showing the growth in overall trade by tonnage for each.

Table 2-6: Commodities with Projected Growth in Waterborne Tonnage Traded with Kentucky, 2018-2045

Commodity Group	Market Size		Projected Growth in Tonnage 2018-2045	
	1000 Tons in 2018	1000 Tons in 2045	Difference	% Growth 2018-2045
Agricultural Production & Livestock	4,406	7,976	3,570	81%
Food or Kindred Products	728	1,776	1,048	144%
Lumber or Wood Products	920	1,890	969	105%
Chemicals or Allied Products	3,754	4,621	868	23%
Primary Metal Products	2,380	2,723	343	14%
Fabricated Metal Products	12	17	6	51%
Combined Total	12,200	19,003	6,803	56%

These six commodity groups are the only ones with a projected increase in waterborne trade between Kentucky and the rest of the United States over time. For these six combined, waterborne trade with Kentucky is expected to increase by nearly 56% in terms of tonnage, increasing by 6.8 million tons of additional water trade valued at nearly \$12.8 billion worth of freight annually by 2045. **Section 2.2** of this chapter will further explore how growth in commodity markets relates to each of Kentucky's hinterland areas.

2.1.3. Comparison with National Trends

Because USDOT has not yet published a current national FAF forecast of waterborne trade flows, it is not possible to compare the TRANSEARCH forecasts for Kentucky's trade with a comparable national forecast, synonymous with **Table 1-2** in **Chapter 1**. However, the Kentucky forecasts shown in **Table 2-1** through **Table 2-6** can be understood within the larger context of national trends. Trends can identify major sectors of waterborne freight growth and decline which can drive Kentucky's regional and local riverport market capture and economic development strategies.

For example, the overall rise in demand for grains, alcohol, food, and kindred products suggests not only that riverports may market directly to firms shipping these goods by water, but also work with local economic development entities to attract and retain their trading partners. These supply chain opportunities may be even more significant in manufacturing sectors such as rubber, plastic, and machinery where Kentucky's waterborne commerce share is anticipated to be small but increasing. The increase can be greatly enhanced if firms that supply manufacturers of these goods locate within the hinterland areas, thereby attracting new local customers for the port.

Table 2-7 gives a summary interpretation of the observed trends together with the forecast trends above to inform statewide strategies for port market development. **Section 2.2** of this chapter will further explore market dynamics for individual riverports as related to investment and infrastructure needs. **Chapters 3** and **4** will further explore how attraction and capture of new markets through riverport investment may enhance both the Kentucky and national economy, and **Chapter 5** will address concepts for developing local "home markets" for riverports in this changing economic context.

Table 2-7: Markets to Watch – Strategic Implications of Market Forecasts

Key KY Waterborne Trade Market	Historic Changes 1997-2017 (FAF) as Described in Chapter 1	Anticipated Forecast Changes 2018-2045 (Transearch)	Strategic Implications
Fuels: Coal, Gasoline, Fuel Oils	 Waterborne trade with Kentucky declined by 48% even as national market increased by 67%	Kentucky is expected to lose an additional 62% of its market by 2045 in coal, petroleum, and gas fuel waterborne trade.	Ports dependent on coal, petroleum, shipping stone, gravel, and non-metallic minerals for significant shares of business should explore new markets in trade partners trafficking in grains, food, plastics, rubber, and other manufactured goods.
Minerals: Sand, Stone & Non-Metallic Minerals	 Waterborne trade in sand, stone and non-metallic minerals with Kentucky declined by 95% and there was no significant decline in the national market.	Kentucky is expected to lose an additional 26% of its market in non-metallic mineral waterborne trade and clay, concrete, glass, and stone.	Ports should work with KY Cabinet for Economic Development and local economic development authorities to identify manufacturers, buyers, and suppliers of waterborne goods, especially plastics, rubber, machinery, and chemical & allied products to attract and grow firms in riverport hinterlands of Kentucky's riverports.
Manufactured Goods: Plastic/Rubber, Textiles, Machinery	 Waterborne trade in plastic/rubber, textiles and machinery increased 17x nationally and 11x in Kentucky.	Kentucky is projected to experience a 23% increase in waterborne trade in chemical and allied products (which include plastics, rubber, and similar goods). A 9% increase in tonnage of machinery traded with Kentucky by water is also projected.	
Perishables: Grains & Alcoholic Beverages	 Despite a 6% national decline in waterborne trade of grains and alcoholic beverages from 1997-2017, Kentucky retained this market during the 20-year historic period.	In the period from 2018 to 2045, Kentucky is projected to increase its waterborne trade in food and kindred products by 144% and its trade in agricultural products and livestock by 81%	

2.1.4. Supporting Data

Appendix 2.1: Includes dot-density maps showing the geographic distribution of waterborne commodity growth markets for each Kentucky riverport hinterland.

Appendix 2.2: Includes a detailed reporting of commodity and trading partner forecasts for 2045 trade conditions—both statewide and for each riverport—including inbound, outbound, and internal waterborne trade in Kentucky. Key elements include:

Appendix 2.2a: Summary of top inbound and outbound waterborne commodities, as well as water-divertible commodities currently transported by truck or by rail. Organized by commodity type and trading partner, this appendix compares tonnage and value of waterborne and water-divertible commodities in 2018 to projected tonnage and value in 2045.

Appendix 2.2b: Summary of internal trade within Kentucky in 2045 by commodity for both waterborne and potentially divertible truck traffic based on commodity types.

Appendix 2.2c: Summary of market change projected from 2018-2045 by tonnage and value for waterborne commodities and trading partners.

Appendix 2.2d: Summary of projected market tonnage growth by commodities and trading partners for waterborne and potentially water-divertible rail and truck trade with Kentucky from 2018-2045.

Appendix 2.2e: Summary of 2018 Riverport Markets by commodity and trading partner, broken down for the hinterlands of each of Kentucky's 11 riverport areas.

Appendix 2.2f: Summary of truck-divertible growth markets for hinterlands of each of Kentucky's 11 public riverport areas for the period 2018-2045.

Appendix 2.2g: Detailed summary of growing and declining commodities at the 4-digit commodity detail for hinterlands of each of Kentucky's 7 public operating riverports.

Appendix 2.3: Includes notes from in-person interviews with Kentucky public riverport directors and key team members conducted in April 2021.

Appendix 2.4: Details on-site port capital improvement needs.

Appendix 2.5: Explains how 90 mile/minute hinterland calculations apply.

Appendix 2.6: Explains the Truck Trips Development Methodology

Chapter 5 of this report as well as the accompanying Marketing Toolkit will further explore ways to utilize these market and forecast summaries together with available sourcing databases and go-to-market strategies to develop call lists, identify new port customers, and directly generate business for Kentucky's public riverports.

2.2 IMPLICATIONS OF CHANGE FOR THE RIVERPORT SYSTEM

This section describes in detail (1) how each of Kentucky's public riverports may experience changes in the waterborne commerce markets (as shown in **Section 2.1** above) and (2) implications these changes have for capital programming, market capture, and other strategies at each port. The analysis given below offers strategic guidance for riverport stakeholders in support of recommendations both for the Commonwealth and individual riverports to be given in **Chapter 4**.

The observations below are reflective of the most detailed forecasts to date for each riverport interpreted within the context of site visits to each public riverport conducted in 2020 and 2021. The findings explicitly address new infrastructure needs (**Appendix 2.3**), with specific on-site port capital improvement needs shown in **Appendix 2.4**. The analysis offers a strategic overview of how the infrastructure needs and market conditions for each riverport relate to each port's overall positioning in the face of anticipated economic change to the year 2045. All forecasts given pertain either to (1) explicit projections for waterborne demand in commodities handled by (or potentially handled by) a public riverport or (2) explicit projections of divertible freight that may be captured by riverports.

2.2.1. Restructuring of the Coal Economy and The Public Riverports

The restructuring of the Ohio River waterborne commodity market in Kentucky as described in **Section 2.1** above has profound implications for each of Kentucky's public riverports. While only some of the public riverports handle coal directly (with private riverports handling a significant share), the magnitude of the waterborne coal market has effects on each public riverport. In some cases, riverports do not handle coal directly, but face concerns regarding competition as private coal-handling ports may compete for minerals, crops, and agricultural products currently handled by the public riverport. These instances highlight the importance of modernizing port properties to ensure cost-competitive movement of those non-coal commodities that may grow in their reliance on the river.

In other cases, conversion from coal to different commodities is already posing new investment needs (such as Hickman and Louisville where there is a need to upgrade conveyance equipment to handle outbound grain instead of inbound coal). The decline in the waterborne movement of petroleum, fuel oils, and bituminous coal can be understood not as a disappearance of coal and petroleum from Kentucky's economy but as a change in the types of commodities made with these inputs. Just as the forecasts in **Section 2.1** show steep declines in the bituminous coal currently moved by water, growth is projected in many coal and petroleum-derived products carried by truck.

The following analysis of each public riverport's 90-mile hinterland market considers (1) projected market changes in commodities each port currently handles and targets for new business and (2) projected growth in potentially divertible commodities and trading partners which a port could feasibly target.

Appendix 2.2g shows a detailed hinterland forecast of specific waterborne commodities where river trade is expected to grow and decline for each of the seven public operating riverports in Kentucky to the year 2045.

2.2.2. Potential Diversion to Waterborne Mode

CHANGES IN PETROLEUM AND COAL MARKETS

While Kentucky is expected to lose between 20 and 30 million tons of waterborne coal traffic by 2045, some coal and petroleum derived products currently moving by truck could represent market capture opportunities for riverports. Petroleum and coal derived products like asphalt, liquified natural gas (LNG) and chemicals used refining petroleum and LNG are often carried by truck or rail but may represent market capture opportunities for some riverports as shown in the following section.

One of this study's emphases is on divertible freight: commodities that can be shifted from truck or rail to the waterway system. Not all goods can be diverted to water from another mode without an effect on consumer prices. Growth in a divertible commodity cannot lead to market capture for a port unless (1) a port begins offering better performance and amenities than the current mode, (2) a competing mode suffers a decline in performance or increase in price, or (3) market growth exceeds the capacity of the currently preferred mode. For example, containers transported from Michigan to Chicago are more cost-effectively moved by truck instead of via Lake Michigan due to the time and cost to transfer the box between truck and vessel. Further, the roll-on/roll-off Lake Express service between Muskegon, MI and Milwaukee, WI does not accommodate trucks. Likewise, Kentucky's north-south bulk aggregate can be moved domestically by container but is more cost-effectively moved in barges, given its weight and value. Unless investments in specific capabilities can change these competitive dynamics, divertible freight is unlikely to change the size of the waterborne market from what is shown in the forecasts. Investment in on-port amenities is emphasized in this section as potential opportunities for divertible freight market capture.

The below analysis considers truck- and rail-divertible commodities as well as trading partners for each port.

- **Potential Rail to Water Capture Market:** Diversion from rail to water is a consideration given rail typically moves goods longer distances and competes with water in markets such as the north-south Mississippi Valley corridor between Kentucky and the Gulf Coast. However, rail commodities typically traded with Canada are subject to U.S. customs regulations, which may complicate the opportunity for modal diversion.²
- **Potential Truck to Water Capture Market:** Diversion from truck is also considered. Given the shorter distance associated with truck flows and the variety of origins and destinations—including Mexico and Canada—truck diversion is seen as a more viable source of market capture for Kentucky's public ports. On average, trucks carry almost 90% of divertible commodities moving between Kentucky riverports and other regions around the United States. For this reason, divertible truck commodities are described with respect to specific trading partners in the following analysis of each public riverport market.

² For further information, see <https://www.cbp.gov/bulletins/41genno37.pdf>.

Potential capture markets for competitive diversion to riverports are defined to include water-divertible goods from truck on moves less than 400 miles and water-divertible goods from rail for moves more than 400 miles.³ The potential for modal capture from rail is dependent on the distance and cargo value; however, such shifts can also depend on the specific trading partners. The analysis also considered modal shares (truck versus rail) for each origin-destination pair. This allowed the team to conduct a TRANSEARCH analysis of goods between BEA sectors based on goods moved, mode, and distance.⁴

The results of the analysis show that dry bulk goods are the preferred divertible commodities. Moreover, **Technical Memorandum 2** discusses international market impacts on the Kentucky economy with insights on coal, aluminum, agricultural products, unfinished lumber, and manufactured goods. Finally, dry bulk transportation market conditions help determine port impacts.

Specific insights and forecasts on both currently waterborne and potentially divertible commodities are presented for each port in the following subsections, complementing forecast data in **Technical Memorandum 2**. The commodity forecasts presented below in **Section 2.2.3** to **Section 2.2.13** represent market dynamics in ways not previously addressed in **Technical Memorandum 2** or the port profiles; they do not directly correlate due to three key differences in the approach.

- 1) The 90-mile hinterland definition is adopted in this final analysis because it is consistent from base to future traffic conditions and does not vary based on future, seasonal, or periodic congestion. (**Appendix 2.5** provides complete documentation of how hinterland markets given in this final report relate to initial estimates in earlier technical memoranda, port profiles, and summit presentations.)
- 2) Broader overall commodity groupings are shown herein to allow for a more holistic view of the market with two-digit commodity (STCC) level to enable a concise summary. (A complete appendix of all commodities at the four-digit STCC as summarized in **Technical Memorandum 2** would be too cumbersome to include in a single document. The source data from IHS Markit used for the below analysis are available at the four-digit STCC level in a MS Access database provided to both KYTC and the KAR with this report.)
- 3) Data herein focuses on the waterborne share of specific commodities handled by individual riverports versus mode-neutral freight totals given in the earlier documents.

For these reasons the overall growth rates, commodity definitions, and groupings are not directly comparable to **Technical Memorandum 2**, but instead provide additional information not previously reported.

³ Water-divertible commodities are defined as commodities that (1) are known to move by water in the US and (2) are traded with regions that can be reached by a waterway.

⁴ The analysis does not consider a potential subsidy for a service comparable to the 64-Express or former Port of Albany container-on-barge service. Each of these services was awarded a Federal Highway Service Congestion Mitigation and Air Quality Program grant.

2.2.3. Eddyville Riverport

In Lyon County, Eddyville Riverport serves the Tennessee and Cumberland Rivers and has a nearby industrial park. Based on volume, the current regional intermodal split is 60 percent truck, 35 percent rail, and five percent water. The expected (2045) regional intermodal split is 74 percent truck, 24 percent rail, and two percent water; the relative use of trucking is expected to increase.

Current commodities handled at the port and targeted for ongoing market capture are dry bulk goods that include fertilizer, grain, sand/gravel, and soybeans (major and minor bulk goods). The expected growth between 2018 and 2045 for waterborne trade in these port commodities within the hinterland forecast is shown in **Table 2-8**. In addition, **Table 2-8** provides the current and future shares of commodity flow (inbound and outbound).⁵ Given that sand/gravel anticipates stagnant growth in waterborne trade, the riverport can benefit from adapting its infrastructure and operations for growing markets in grain and soybeans and consider new/other commodities that can be moved by water instead of or in addition to truck and rail.

Table 2-8: Eddyville Top Waterborne Commodities—Expected Growth, Current and Future In/Outbound Shares

Commodity	Overall Growth	In/Outbound Split (%) - 2018	In/Outbound Split (%) - 2045
Fertilizer	3%	80/20	94/6
Grain	40%	63/37	69/31
Sand/Gravel	-1%	0/100	0/100
Soybean	24%	3/97	5/95



In addition to the commodities currently handled at Eddyville’s port (**Table 2-8**), the overall hinterland can anticipate growth in waterborne travel demand for natural oils (including soybean oils) and petroleum refining products which may complement the growth in grains and soybeans currently handled (**Appendix 2.2g**). The market decline in coal and petroleum in the hinterland (forecast to decline by more than 18 million tons by 2045) may not affect Eddyville as directly as some ports; however, it is likely to make competition with private ports more intense, highlighting the importance of modernization to ensure efficient and cost-competitive operations for agricultural commodities.

Table 2-9 provides volume estimates for divertible freight movements. It lists the top three potentially divertible commodities for each of the top three trading

⁵ For each port discussion, figures in **Technical Memorandum 2** show change for inbound and outbound commodity flow.

partners.⁶ Forecasts show 1.48 million tons of new petroleum/coal products moving between two geographic areas over the 37-year analysis period (2018-2045): within 90 miles of the Eddyville riverport to/from the Nashville BEA region.

Table 2-9: Eddyville Regional Divertible Truck Commodities – Tons Difference

Nashville, TN	Tons Diff	Huntsville, AL	Tons Diff	Greenville, MS	Tons Diff	Other Partners	Tons Diff
Petroleum or Coal Products	1,480,761	Nonmetallic Minerals	533,640	Agricultural Production & Livestock	313,068	Petroleum or Coal Products	205,467
Clay, Concrete, Glass or Stone	637,020	Agricultural Production & Livestock	154,166	Nonmetallic Minerals	531	Agricultural Production & Livestock	177,455
Agricultural Production & Livestock	81,819	Clay, Concrete, Glass or Stone	11,434	Clay, Concrete, Glass or Stone	305	Clay, Concrete, Glass or Stone	155,691
Other Commodities	56,854	Other Commodities	19,270	Other Commodities	175	Other Commodities	313,989
Total	2,256,454	Total	718,510	Total	314,079	Total	852,602

Diversion from truck is possible for commodities based on the difference in shipping time, cost, and the value of goods. In this case, the drive time from Eddyville to Nashville is 1.5 hours for the 103-mile route in contrast to barge transit time of 3-4 days based on the navigation conditions.

In summary, the growth in Eddyville’s current market favors a strong case for maintaining the port’s capacity to competitively handle agricultural commodities such as grain and soybeans which will grow consistent with national and global demand. However, amenities and strategies aimed at making water transportation more competitive for petroleum and coal-derived products as well as nonmetallic minerals traded with partners in Nashville, TN; Huntsville, AL; and Greenville, MS can access growing trade markets supported by national forecasts. Growth in housing and construction markets both in Eddyville’s hinterland and in these waterborne trade markets are key indicators to watch when seeking new port users that may be attracted from truck to rail.

Finally, ERIDA recently applied for a grant through Kentucky CED and the Kentucky Association for Economic Development Product Development Initiative to further develop its industrial park, providing further growth potential for the riverport and industrial development authority.⁷ Local and state economic development agencies can leverage the port in Eddyville by seeking prospects known to trade in agricultural commodities and trading in coal or nonmetallic mineral products with the above-referenced growth markets.

⁶ For each port discussion, regional commodities were assessed from 2018 TRANSEARCH data which is a database of commodities greater than that which is handled by the port.

⁷ Source: “Community leaders talk industrial park, U.S. 641 project,” The Herald Ledger, September 8, 2021. Available at https://www.heraldedger.com/uncategorized/community-leaders-talk-industrial-park-u-s-641-project/article_8dc6b14a-11cb-5b58-8d52-94a70a840c5c.html.

2.2.4. Greenup-Boyd County Riverport

The Greenup-Boyd County Riverport is a small riverport on the Ohio River with 14 developed and 15 undeveloped acres near Wurtland, KY, which means it has the capacity to grow. By volume, the current regional modal split is 67 percent truck, 24 percent rail, and 9 percent water. The expected (2045) regional intermodal split is 77 percent truck, 17 percent rail, and six percent water; the relative use of trucking is expected to increase.

The riverport currently handles inbound dry bulk goods including aggregates and minerals (minor bulk goods) whose markets are expected to decline despite post-pandemic growth in the construction/housing market and a projected Compound Annual Growth Rate (CAGR) of 12.4% in the global mining market.⁸ The expected growth in commodities currently traded and targeted by this port between 2018 and 2045 for this port commodity is shown in **Table 2-10** along with current and future shares of commodity flow (inbound and outbound).

Table 2-10: Greenup-Boyd County Waterborne Commodities— Expected Growth, Current and Future In/Outbound Shares

Commodity	Overall Growth	In/Outbound Split (%) - 2018	In/Outbound Split (%) - 2045
Aggregates/ Minerals	52%	33/67	33/67



Aggregates and minerals are expected to grow as a key market for Greenup-Boyd. In addition to the commodities currently handled at Greenup-Boyd shown in **Table 2-10**, the overall hinterland can anticipate growth in waterborne travel demand for metal and ceramic products and chemical preparations. While the aggregates shown in **Table 2-10** represent concrete, other mineral products (such as gypsum and metallic ores) also may represent growth markets for this waterborne market (**Appendix 2.2g**). The market decline in coal and petroleum in the hinterland (forecast to decline by more than 14 million tons by 2045) highlights the importance of modernization to ensure efficient and cost-competitive operations for minerals and related growth commodities.

⁸ Source: "Global Mining Market Report 2021," Cision PR Newswire, May 5, 2021. Available at Global Mining Market Report 2021 (prnewswire.com).

Table 2-11 lists the top three divertible freight trading partners with the top three potentially divertible commodities listed for each.

Table 2-11: Greenup-Boyd Regional Divertible Truck Commodities – Tons Difference

Charleston, WV	Tons Diff	Detroit, MI	Tons Diff	Knoxville, TN	Tons Diff	Other	Tons Diff
Petroleum or Coal Products	61,999	Agricultural Production & Livestock	51,399	Agricultural Production & Livestock	38,283	Agricultural Production & Livestock	34,671
Clay, Concrete, Glass or Stone	35,946	Clay, Concrete, Glass or Stone	39,676	Nonmetallic Minerals	32,294	Lumber or Wood Products	23,293
Lumber or Wood Products	23,605	Nonmetallic Minerals	29,998	Clay, Concrete, Glass or Stone	8,839	Clay, Concrete, Glass or Stone	13,713
Other Products	15,326	Other Products	(26,175)	Other Products	(1,296)	Other Products	(61,754)
Total	136,877	Total	94,898	Total	78,120	Total	9,922

Diversion is considered for commodities given the difference in transportation, cost, and the value of goods. In this case, the drive time from Greenup-Boyd to Charleston is 1.5 hours for the 93-mile trip versus the transit time for barge being 3-4 days based on the navigation conditions.

In summary, growth is projected for Greenup-Boyd’s target market in aggregates and minerals, despite the significant reduction in the local market for bituminous coal and petroleum refining products. Investments that enable the port to be competitive with truck transportation in terms of cost and reliability for moving derivative petroleum and coal products (other than bituminous), non-metallic mineral products, and lumber or wood products, especially with partners in the surrounding regions—Charleston, WV; Detroit, MI; and Knoxville, TN—can optimally position Greenup-Boyd to sustain projected changes in the market. Planned investment in additional warehousing is advantageous for existing and new commodities, but long-term needs including expansion on undeveloped land can also play a role in enhanced port capacity supportive of regional economic development. Such opportunities complement the 2021 Robert C. Byrd Institute’s (Marshall University) grant “...to provide services to dislocated workers, new entrants to the workforce, including students or the long-term unemployed, incumbent workers looking to improve their career prospects...” with hands-on career training for a region hard hit by downturns in the coal industry. This includes the Advanced Construction Manufacturing and Construction Skills Training initiative.⁹

⁹ “RCBI receives \$1.49 million grant for targeted workforce training initiative,” The Herald Dispatch, October 1, 2021. Available at https://www.herald-dispatch.com/business/rcbi-receives-1-49-million-grant-for-targeted-workforce-training-initiative/article_d2c9af81-ba9a-56b3-96de-437babb1cc1e.html

2.2.5. Henderson County Riverport

Henderson County Riverport covers 102 acres along the Ohio River with a designated Foreign Trade Zone. The current regional modal split by volume is 49 percent truck, 47 percent rail, and four percent water. The expected (2045) regional intermodal split is 60 percent truck, 37 percent rail, and three percent water. That is, the relative use of trucking is expected to increase.

The riverport currently handles inbound aluminum, steel coils, and fertilizer; outbound dry bulk goods including soybeans and grain; as well as break/neo-bulk (palletized/project cargo) products. The expected growth between 2018 and 2045 for these port commodities is shown in **Table 2-12**. In addition, **Table 2-12** provides the current and future shares of commodity flow (inbound and outbound) for the riverport to consider. While waterborne demand for steel and aluminum is expected to grow to 2045, the riverport can also consider investments to serve a growing market for grain, soybeans, and other agricultural products as well.

Table 2-12: Henderson County Riverport Waterborne Commodities—Expected Growth, Current and Future In/Outbound Shares

Commodity	Overall Growth	In/Outbound Split (%) - 2018	In/Outbound Split (%) - 2045
Fertilizer	-3%	39/61	47/53
Grain	39%	62/38	82/18
Steel/aluminum	37%	57/43	79/21
Soybean	21%	6/94	8/92



In addition to the commodities currently handled at Henderson (**Table 2-12**), the overall hinterland can anticipate growth in waterborne travel demand for natural oils, petroleum refining products, forest materials, and concrete (**Appendix 2.2g**). The hinterland market decline in coal (forecast to decline by more than 19 million tons by 2045) may not affect Henderson as directly as some ports given its current market; however, the change is likely to make competition with private ports more intense, highlighting the importance of modernization to ensure efficient and cost-competitive operations.

Table 2-13 lists the top three divertible freight trading partners with the top three potentially divertible commodities listed for each. Tonnages represent the total difference between 2018 volumes and 2045 forecasts between respective regions.

Table 2-13: Henderson County Riverport Divertible Truck Commodities – Tons Difference

Nashville, TN	Tons Diff	Huntsville, AL	Tons Diff	Chicago, IL	Tons Diff	Other	Tons Diff
Petroleum or Coal Products	1,134,929	Nonmetallic Minerals	233,151	Agricultural Production & Livestock	142,660	Clay, Concrete, Glass or Stone	154,764
Clay, Concrete, Glass or Stone	601,723	Agricultural Production & Livestock	128,505	Clay, Concrete, Glass or Stone	79,963	Agricultural Production & Livestock	139,517
Agricultural Production & Livestock	67,065	Clay, Concrete, Glass or Stone	10,819	Nonmetallic Minerals	69,429	Agricultural Production & Livestock	110,335
Other Products	(128,056)	Other Products	14,589	Other Products	(16,946)	Other Products	397,058
Total	1,675,661	Total	387,064	Total	275,106	Total	801,674

Diversion is considered for commodities given the difference in transportation, cost, and the value of goods. In this case, the drive time from Henderson to Nashville is about 2 hours for the 150-mile trip versus 5+ days by barge depending on navigation conditions.

In summary, metallic ores are expected to continue to grow as a waterborne commodity for Henderson, fueled by increasing demand by Kentucky-based auto parts suppliers and other manufacturers for metals. However, agricultural and food products are also expected to grow as are some chemical commodities. Competitiveness to serve these commodity markets efficiently is a key consideration for Henderson’s long-term capital strategies as coal-handling riverports will likely seek to enter markets currently served by the public riverports. New equipment, improved loading and offloading capability, on-site rail infrastructure, and additional warehouse space could be considered to continue supporting goods movement. Specific port investments will be most effective if scoped in consultation with existing and new regional businesses such as Pratt Industries’ two new nearby paper mill facilities with 1.15 million square feet.¹⁰

¹⁰ Source: “Henderson Welcomes Pratt Industries,” Henderson Economic Development, September 2021. Available at investor_insider_091721.pdf (hendersonkyedc.com).

2.2.6. Hickman-Fulton County Riverport

Hickman’s riverport is located on the Mississippi River with no locks south of St. Louis, enabling the port to offer highly competitive waterborne shipping costs relative to other Mississippi River ports. By volume, the current regional modal split is 69 percent truck, 29 percent rail, and two percent water. The expected (2045) regional intermodal split is 77 percent truck, 21 percent rail, and two percent water. The relative use of trucking is expected to increase.

The riverport currently handles dry bulk goods including pet coke and grain (outbound) as well as sand (inbound). The expected change between 2018 and 2045 for these port commodities is shown in **Table 2-14** along with current and future shares flow (inbound and outbound) for each.

Table 2-14: Hickman-Fulton County Riverport Waterborne Commodities – Expected Growth, Current and Future In/Outbound Shares

Commodity	Overall Growth	In/Outbound Split (%) - 2018	In/Outbound Split (%) - 2045
Grain	29%	1/99	1/99
Petroleum Coke	-51%	5/95	10/90
Sand	-16%	8/92	15/85



Given that waterborne markets for petroleum/coal products and sand (nonmetallic minerals) are expected to decrease, the riverport can consider investment for grain (agricultural products) as well as other waterborne commodities projected to grow to 2045.

In addition to the commodities currently handled at Hickman (**Table 2-14**), the overall hinterland can anticipate growth in waterborne travel demand for natural oils, fertilizers, aggregates (cement and concrete products), and some petroleum refining products (not petroleum coke), which may complement the growth in grains (**Appendix 2.2g**). The hinterland market decline in waterborne gravel and sand (a decline of over 1.4 million tons by 2045) will directly affect Hickman to a larger degree than the decline in petroleum coke (coal or petroleum products) and blast furnace/coke. The decline in bituminous coal (projected to decline by over 5 million tons to 2045) is likely to make the overall waterborne market more competitive and highlights the importance of modernization to respond to the need to shift to new growth markets, especially in food and agricultural commodities, fertilizers, and aggregates.

Table 2-15 lists the top three divertible freight trading partners with the top three potentially divertible commodities listed for each.

Table 2-15: Hickman-Fulton County Regional Divertible Truck Commodities

Nashville, TN	Tons Diff	Huntsville, AL	Tons Diff	Greenville, MS	Tons Diff	Other	Tons Diff
Petroleum or Coal Products	606,579	Nonmetallic Minerals	534,419	Agricultural Production & Livestock	405,441	Petroleum or Coal Products	536,450
Clay, Concrete, Glass or Stone	438,877	Agricultural Production & Livestock	72,362	Nonmetallic Minerals	991	Clay, Concrete, Glass or Stone	262,353
Agricultural Production & Livestock	51,416	Petroleum or Coal Products	11,351	Lumber or Wood Products	42	Agricultural Production & Livestock	137,379
Other Products	(152,151)	Other Products	16,491	Other Products	(688)	Other Products	(312,392)
Total	944,721	Total	634,623	Total	405,786	Total	623,790

Diversion is considered for commodities given the difference in transportation, cost, and the value of goods. In this case, the drive time from Hickman to Greenville is almost five hours for the 276-mile trip versus 8 or more days by barge based on navigation conditions.

In summary, two of the three commodities that Hickman-Fulton County Riverport currently handles are expected to decline. Consequently, long-term sustainability is a priority for marketing and infrastructure choices. Planned investment to support greater traffic in goods other than sand or petroleum coke (such as in improved unloading conveyor systems) is advantageous for existing and new commodities. The degree to which new infrastructure can support the movement of grain, natural oils, fertilizers, and aggregates may optimally position Hickman for projected waterborne growth commodities. Long-term needs to facilitate further traffic growth in a wider mix of commodities are understood as ongoing priorities supportive of regional economic development. While forecasts do not point to manufactured goods as a natural growth area for divertible and waterborne freight in the Hickman hinterland area, if economic development strategies of the type described in **Chapter 5** can establish a home market for waterborne inputs to manufacturing sectors, the port can benefit from such strategies. Modernization of the port to support a shifting market entails on-site port investment in addition to consideration of more frequent flooding on the Mississippi (and Ohio) River.¹¹

¹¹ Source: "Flooding on the Mississippi River Becoming More Common and Severe," Delta Business Journal, June 15, 2018. Available at <https://deltabusinessjournal.com/flooding-on-the-mississippi-river-becoming-more-common-and-severe/>.

2.2.7. Louisville Riverport

The Louisville Riverport is a large riverport along the Ohio River in a metropolitan area with barge fleeting, cargo handling, and ground storage capabilities. The ongoing “Phase 5” expansion will add 100+ acres about a mile from the port’s riverfront facilities. The current regional modal split is 63 percent truck, 35 percent rail, and two percent water. The expected regional modal split is 68 percent truck, 30 percent rail, and two percent truck. That is, the relative use of trucking is expected to increase.

The riverport currently handles dry bulk goods including fertilizer as well as gypsum, minerals, and steel coils. The expected growth between 2018 and 2045 for these port commodities is shown in **Table 2-16**, along with current and future shares of commodity flow.

Table 2-16: Louisville Regional Riverport Waterborne Commodities—Expected Growth, Current and Future In/Outbound Shares

Commodity	Overall Growth	In/Outbound Split (%) - 2018	In/Outbound Split (%) - 2045
Fertilizer	-5%	64/36	88/12
Gypsum	52%	66/34	68/32
Steel products (coils)	295%	100/0	100/0



Despite some decline in waterborne fertilizer demand, the other commodities that the riverport handles are expected to grow to 2045, the share of inbound and outbound commodity flows for gypsum and steel products will remain relatively stable.

In addition to the commodities currently handled at Louisville’s port (**Table 2-16**), the overall hinterland can anticipate growth in waterborne travel demand primary forest materials, gravel and sand, concrete products, natural oils (both soybean and cottonseed), and grain (**Appendix 2.2g**). The hinterland market decline in waterborne bituminous coal (projected to decline by more than 14 million tons) and in waterborne petroleum refining products will indirectly affect Louisville. Furthermore, while the specific commodity of steel products (coils) is poised to grow robustly to 2045, Louisville can expect competition for this commodity from private coal-handling ports that may seek to shift to these growing markets.

Table 2-17 lists the top three divertible freight trading partners with the top three potentially divertible commodities listed for each.

Table 2-17: Louisville Riverport - Regional Divertible Truck Commodities

Nashville, TN	Tons Diff	Knoxville, TN	Tons Diff	Detroit, MI	Tons Diff	Other Locations	Tons Diff
Petroleum or Coal Products	570,712	Nonmetallic Minerals	243,004	Primary Metal Products	189,921	Nonmetallic Minerals	146,816
Clay, Concrete, Glass or Stone	136,394	Agricultural Production & Livestock	110,092	Clay, Concrete, Glass or Stone	75,832	Nonmetallic Minerals	115,944
Agricultural Production & Livestock	45,263	Clay, Concrete, Glass or Stone	40,501	Chemicals or Allied Products	47,712	Agricultural Production & Livestock	96,465
Other Products	(18,130)	Other Products	7,977	Other Products	20,117	Other Products	871,890
Total	734,239	Total	401,574	Total	333,583	Total	1,231,115

Diversion is considered for commodities given the difference in transportation, cost, and the value of goods. In this case, the drive time from Louisville to Knoxville is 3.5 hours for the almost 250-mile trip versus the transit time for barge of 7+ days based on navigation conditions.

The takeaway is that while the Louisville Riverport is expanding facilities, it could use additional waterfront berth space, unloading capability, and warehousing to expand its capabilities further, capture modal share, and support local economic development. This includes for bulk products and potentially manufactured goods, given the development of the Park Hill Industrial Corridor, the JLL Income Property Trust's acquisition of an existing one-million-square-foot plus distribution center near Louisville, and the recently announced \$5.8 billion plan to build twin battery manufacturing plants in nearby Hardin County.¹²

¹² Source: "What to know about Ford's \$5.3B, 5,000-job battery park in Hardin County, Kentucky," Courier Journal, September 28, 2021. Available at <https://www.courier-journal.com/story/news/2021/09/28/what-to-know-about-fords-new-battery-park-kentucky/5890741001/>

2.2.8. Maysville-Mason County Riverport

The Maysville-Mason County Riverport is a developing riverport on the Ohio River in northeast Kentucky. For the hinterland region, the current modal split for regional goods by volume is 59 percent truck, 40 percent rail, and one percent water. The projected modal split for the region is 64 percent truck, 35 percent rail, and one percent water.

The expected growth between 2018 and 2045 for waterborne commodities that are generated by, are destined for, or pass through the hinterland area is shown in **Table 2-18**. In addition, **Table 2-18** provides the current and future shares of commodity flow (inbound and outbound) to consider.

Table 2-18: Maysville-Mason County Potential Waterborne Commodities—Regional Growth with In/Outbound Shares

Commodity	Overall Growth	In/Outbound Split (%) - 2018	In/Outbound Split (%) - 2045
Bituminous Coal	-64%	89/11	68/32
Petroleum Refining Products	-21%	13/87	20/80
Gravel Or Sand	-27%	39/61	62/38
Broken Stone Or Riprap	-24%	65/35	59/41
Blast Furnace Or Coke	16%	74/26	90/10
Crude Petroleum	4%	91/9	53/47
Oil Kernels, Nuts Or Seeds	44%	1/99	1/99
Primary Iron Or Steel Products	26%	61/39	66/34
Grain	44%	0/100	0/100
Fertilizers	11%	100/0	99/1
Lime Or Lime Plaster	-17%	26/74	59/41
Misc. Industrial Organic Chemicals	40%	82/18	97/3
Other Commodities	75%	82/18	82/18

There is expected regional growth in the agricultural and food products (especially grains and natural oils) as well as for chemical or allied products and other commodities. There are expected declines in waterborne demand for coal and petroleum, sand, and other mineral products. Given these factors, the development of new inland marine facilities is recommended to emphasize the needs of agriculture and food sectors (and supply chains using these products).

Table 2-19 lists the top three divertible freight trading partners with the top three potentially divertible commodities listed for each.

Table 2-19: Maysville-Mason County Regional Divertible Truck Commodities

Detroit, MI	Tons Diff	Knoxville, TN	Tons Diff	Charleston, WV	Tons Diff	Other Locations	Tons Diff
Primary Metal Products	140,674	Nonmetallic Minerals	189,053	Clay, Concrete, Glass or Stone	76,184	Nonmetallic Minerals	86,964
Clay, Concrete, Glass or Stone	129,872	Agricultural Production & Livestock	62,024	Lumber or Wood Products	37,189	Clay, Concrete, Glass or Stone	57,262
Chemicals or Allied Products	94,381	Clay, Concrete, Glass or Stone	36,099	Petroleum or Coal Products	32,514	Clay, Concrete, Glass or Stone	47,547
Other Products	(22,448)	Other Products	(68,445)	Other Products	20,004	Other Products	235,786
Total	342,479	Total	218,731	Total	165,891	Total	427,559

Diversion is considered for commodities given the difference in transportation, cost, and the value of goods. In this case, the drive time from Maysville to Detroit is 5 hours for the 320-mile trip versus the transit time for barge being more than seven days via the Mississippi River, Lake Michigan, and Lake Huron based on the navigation conditions.

In summary, future riverport investments will be most effective when directed towards existing growth markets related to agricultural and food commodities already projected to have growth in waterborne demand. However, if economic development strategies can attract and retain new clients into the hinterland for commodities not currently forecast for growth (such as paper manufacturing or chemical and allied commodities including plastics and fabrics supporting health care products such as the developing PatienTech, LLC facility nearby), the port may create a wider market space than is currently forecast.¹³ Consideration for investments in declining commodity markets will hinder long-term economic growth for the region, which has historically been lower than the U.S. average.

HEALTH CARE PRODUCTS

Kentucky's growing sector in health care technology products creates increasing demand for plastics, rubber, and chemicals used to make mattresses, pads, and medical devices.

Establishments like the PatienTech, LLC facility in the Maysville-Mason County hinterland represent potential opportunities to use the river to transport a growing volume of chemical and allied products. The 2021 site visit to the Maysville-Mason County Riverport area, found market opportunities related to healthcare products.

¹³ Source: "PatienTech moving forward." Available at <https://thinkmaysvilleky.com/?p=1024>.

2.2.9. Meade County Riverport

The Meade County Riverport, managed by the Brandenburg Industrial Development Authority, is a redeveloping marine cargo facility southwest of Louisville along the Ohio River. By volume, the current regional modal split is 67 percent truck, 30 percent rail, and three percent water. The expected (2045) regional intermodal split is 72 percent truck, 26 percent rail, and two percent water. Again, the relative use of trucking is expected to increase.

The expected growth between 2018 and 2045 for regional commodities is shown in **Table 2-20**. In addition, **Table 2-20** provides the current and future shares of waterborne commodity flow (inbound and outbound) for the riverport to consider.

Table 2-20: Meade County Potential Waterborne Commodities—Regional Growth with In/Outbound Shares

Commodity	Overall Growth	In/Outbound Split (%) - 2018	In/Outbound Split (%) - 2045
Bituminous Coal	-69%	85/15	78/22
Gravel Or Sand	8%	20/80	15/85
Broken Stone Or Riprap	-57%	8/92	29/71
Petroleum Refining Products	-13%	93/7	74/26
Grain	46%	1/99	1/99
Oil Kernels, Nuts Or Seeds	29%	9/91	13/87
Gypsum Products	45%	51/49	52/48
Blast Furnace Or Coke	10%	50/50	71/29
Primary Forest Materials	106%	100/0	100/0
Primary Iron Or Steel Products	37%	57/43	57/43
Fertilizers	1%	72/28	92/8
Metal Scrap Or Tailings	4%	65/35	87/13
Other Commodities	70%	90/10	90/10

There is expected regional growth in mining and mineral sectors, including gypsum and primary iron or steel products as well as forestry products and some agricultural commodities including grain and fertilizers. There are expected declines in coal, petroleum refining products, and stone/riprap (despite some potential growth in non-bituminous coal and petroleum products). Given these factors, it is recommended that the development of new inland marine facilities emphasize the needs of growing markets and consider the direction of commodity flow.

Table 2-21 lists the top three divertible freight trading partners with the top three potentially divertible commodities listed for each.

Table 2-21: Meade County Regional Divertible Truck Commodities

Nashville, TN	Tons Diff	Detroit, MI	Tons Diff	Chicago, IL	Tons Diff	Other Products	Tons Diff
Petroleum or Coal Products	1,000,381	Primary Metal Products	179,710	Agricultural Production & Livestock	126,096	Nonmetallic Minerals	122,422
Clay, Concrete, Glass or Stone	199,722	Clay, Concrete, Glass or Stone	54,418	Clay, Concrete, Glass or Stone	69,288	Agricultural Production & Livestock	120,599
Agricultural Production & Livestock	58,193	Chemicals or Allied Products	29,349	Rubber or Miscellaneous Plastics	34,877	Nonmetallic Minerals	105,094
Other Products	(93,225)	Other Products	11,219	Other Products	36,238	Other Products	869,183
Total	1,165,072	Total	274,696	Total	266,498	Total	1,217,297

Diversion is considered for commodities given the difference in transportation, cost, and the value of goods. In this case, the drive time from Meade County to Detroit is 6 hours for the 400-mile trip, compared to 7+ days by barge.

In summary, appropriate strategies entail aligning the port infrastructure capability with the projected commodity growth sectors, as well as planned industrial development in Meade County. This includes commodities associated with developments like the Glendale Ford plant and the Nucor Steel establishment, as well as key business locations such as the Buttermilk Falls Industrial Park and the Consolidated Grain and Barge Company. Investments and marketing entail accounting for the shift from declining commodity markets into emerging opportunities.

2.2.10. Northern Kentucky Port

The Northern Kentucky Port Authority is a developing port managed by an authority on the Ohio River near Cincinnati, Ohio.¹⁴ By volume, the current regional modal split is 72 percent truck, 27 percent rail, and one percent water. The expected regional modal split is 75 percent truck and 25 percent rail. Currently, the one percent traded by water is not handled by an active public riverport facility and is likely due to private operators.

The expected growth between 2018 and 2045 for regional waterborne commodities is shown in **Table 2-22**. In addition, it provides the current and future shares (inbound and outbound) of key commodity flows.

Table 2-22: Northern Kentucky Potential Waterborne Commodities—Regional Growth with In/Outbound Shares

Commodity	Overall Growth	In/Outbound Split (%) - 2018	In/Outbound Split (%) - 2045
Bituminous Coal	-64%	93/7	68/32
Gravel Or Sand	10%	20/80	16/84
Petroleum Refining Products	-23%	95/5	83/17
Broken Stone Or Riprap	-46%	42/58	62/38
Blast Furnace Or Coke	17%	75/25	90/10
Oil Kernels, Nuts Or Seeds	44%	2/98	2/98
Primary Iron Or Steel Products	26%	65/35	70/30
Grain	47%	1/99	1/99
Fertilizers	11%	100/0	99/1
Lime Or Lime Plaster	-55%	0/100	1/99
Misc. Industrial Organic Chemicals	25%	88/12	98/2
Metal Scrap Or Tailings	15%	60/40	80/20
Other Commodities	80%	85/15	86/14

There is expected regional growth in a host of waterborne agricultural products including grain, fertilizers, and oil/nut kernels. Growth in waterborne mining and extraction commodities like primary iron or steel products and blast/furnace coke can offer potential markets for this developing riverport. By contrast, bituminous coal, petroleum refining products, and stone/riprap are waterborne commodities expected to decline as a riverport market in the hinterland. Given these factors, it is recommended that the development of any new inland marine facilities emphasize the needs of growing markets and consider the direction of commodity flow.

¹⁴ Northern Kentucky will likely operate as part of the Port of Cincinnati.

Table 2-23 lists the top three divertible freight trading partners with the top three potentially divertible commodities listed for each.

Table 2-23: Northern Kentucky Regional Divertible Truck Commodities

Detroit, MI	Tons Diff	Knoxville, TN	Tons Diff	Chicago, IL	Tons Diff	Other	Tons Diff
Primary Metal Products	165,901	Nonmetallic Minerals	234,074	Nonmetallic Minerals	91,183	Nonmetallic Minerals	99,907
Clay, Concrete, Glass or Stone	117,229	Agricultural Production & Livestock	47,564	Agricultural Production & Livestock	53,188	Clay, Concrete, Glass or Stone	61,137
Chemicals or Allied Products	96,946	Clay, Concrete, Glass or Stone	44,784	Clay, Concrete, Glass or Stone	45,946	Clay, Concrete, Glass or Stone	57,842
Other Products	(8,121)	Other Products	35,246	Other Products	70,590	Other Products	424,079
Total	371,954	Total	361,668	Total	260,907	Total	642,965

Diversion is considered for commodities given the difference in transportation, cost, and the value of goods. In this case, the drive time from Northern Kentucky to Detroit is about four hours for the 260-mile trip versus 8+ days by barge via the Mississippi River, Lake Michigan, and Lake Huron.

The takeaway is that a future riverport, if developed, can integrate an understanding of growing agricultural, food production, mineral, and chemical markets into its long-term programming. There appears to be enough growth to accommodate new entrants to the market. Further, a future riverport can benefit from limiting its intended dependence on declining markets, including coal, despite its historical precedence as an energy product in Kentucky. The restructuring of the energy economy will play a critical role in targeting markets and infrastructure for riverport development in Northern Kentucky.

2.2.II. Owensboro Riverport

The Owensboro Riverport covers 420 acres along the Ohio River with a Foreign Trade Zone designation. The current regional modal split by volume is 46 percent truck, 51 percent rail, and three percent water. The expected (2045) regional intermodal split is 61 percent truck, 38 percent rail, and one percent water. The relative use of trucking is expected to increase.

The riverport currently handles dry bulk goods including fertilizer and jeep frames inbound plus surplus metals (aluminum) and steel outbound. These markets are expected to grow as a result of the post-COVID economy in part due to the need for agricultural products and automotive parts. The expected growth between 2018 and 2045 for these port commodities is shown in **Table 2-24** alongside current and future shares of commodity flow (inbound and outbound).

Table 2-24: Owensboro Regional Riverport Waterborne Commodities—Expected Growth, Current and Future In/Outbound Shares

Commodity	Overall Growth	In/Outbound Split (%) - 2018	In/Outbound Split (%) - 2045
Agricultural Production & Livestock	47%	7/93	9/91
Aluminum	61%	97/3	96/4
Structural Metal Products (Jeep Frames)	20%	93/7	100/0



Because markets for current commodities are expected to continue growing with additional growth in the waterborne commerce market for automotive parts, the riverport can benefit from investment in equipment and facilities to sustain and increase volumes.

In addition to the commodities currently handled at Owensboro (**Table 2-24**), the overall hinterland can anticipate growth in waterborne travel demand for chemicals, liquors, primary forest materials, gravel and sand, concrete products, natural oils (both soybean and cottonseed), and grain (**Appendix 2.2g**). The hinterland market decline in waterborne bituminous coal (projected to decline by more than 16 million tons) and in waterborne stone and riprap may add to the competitive dynamics of the Owensboro hinterland market. Furthermore, while overall waterborne traffic in aluminum products is poised to grow by 61%, bauxite and aluminum ores are projected to decline by over 425,000 tons by 2045. For this reason, Owensboro’s outlook (and associated infrastructure and market strategies) will benefit from carefully monitoring supply chains related to aluminum in relation to its specific customers, utilizing the Marketing Toolkit

and the GOTO Market strategies as well as sourcing recommendations of **Chapter 5** in pursuing its long-term market.

Table 2-25 lists the top three divertible freight trading partners with the top three potentially divertible commodities listed for each.

Table 2-25: Owensboro Riverport Regional Divertible Truck Commodities

Nashville, TN	Tons Diff	Huntsville, AL	Tons Diff	Chicago, IL	Tons Diff	Other Locations	Tons Diff
Petroleum or Coal Products	1,152,878	Nonmetallic Minerals	173,922	Agricultural Production & Livestock	161,821	Agricultural Production & Livestock	144,659
Clay, Concrete, Glass or Stone	594,679	Agricultural Production & Livestock	129,169	Clay, Concrete, Glass or Stone	86,669	Agricultural Production & Livestock	132,152
Agricultural Production & Livestock	71,161	Clay, Concrete, Glass or Stone	10,125	Rubber or Miscellaneous Plastics	28,471	Agricultural Production & Livestock	114,978
Other Products	(202,871)	Other Products	20,334	Other Products	(17,184)	Other Products	549,693
Total	1,615,847	Total	333,550	Total	259,778	Total	941,481

Diversion is considered for commodities given the difference in transportation, cost, and the value of goods. In this case, the drive time from Owensboro to Chicago is 6 hours for the 330-mile trip versus the transit time for barge being about five days based on navigation conditions.

In summary, the Owensboro Riverport can consider new warehouse space to provide covered storage to customers to support continued growth in Owensboro. However, long-term needs for increased throughput capacity are a recommended consideration for future investment. Currently, the automobile parts market is expected to grow by at least two percent CAGR over the next five years.

2.2.12. Paducah-McCracken County Riverport

The Paducah-McCracken County Riverport is located at the confluence of the Tennessee and Ohio rivers in western Kentucky. By volume, the current regional modal split is 64 percent truck, 34 percent rail, and two percent water. The expected (2045) regional intermodal split is 75 percent truck, 24 percent rail, and one percent water. That is, the relative use of trucking is expected to increase.

The riverport currently handles sand, fertilizer, pet coke, and gravel (inbound) as well as aluminum, steel, and manufactured goods (outbound). The expected growth between 2018 and 2045 for these port commodities is shown in **Table 2-26**, alongside current and future shares of commodity flows (inbound and outbound).

Table 2-26: Paducah-McCracken County Riverport Waterborne Commodities—Expected Growth, Current and Future In/Outbound Shares

Commodity	Overall Growth	In/Outbound Split (%) - 2018	In/Outbound Split (%) - 2045
Agricultural Production & Livestock	31%	2/98	2/98
Aluminum/Steel	29%	74/26	73/27
Petroleum Coke	-49%	13/87	23/77
Gravel	-11%	15/85	24/76



Given that agricultural products are expected to increase, and that gravel is expected to decrease, the riverport can consider investments supporting improved dry bulk handling (addressed in **Chapters 3 and 4**). In addition to the commodities currently handled at Paducah-McCracken County Riverport (**Table 2-26**), the overall hinterland can anticipate growth in waterborne travel demand in natural oils, kernels, nuts and seeds; petroleum refining products; fertilizers; cement; and chemicals (**Appendix 2.2g**). The hinterland market decline in gravel (shown in **Table 2-26**) represents over 1 million tons of lost waterborne traffic for the Paducah-McCracken County Riverport hinterland by 2045. Additionally, waterborne bituminous coal is projected to decline by nearly 18 million tons by 2045. This will affect the Paducah-McCracken County Riverport hinterland market both directly and indirectly through a changed competitive environment and more intense competition from private ports.

Table 2-27 lists the top three divertible freight trading partners with the top three potentially divertible commodities listed for each.

Table 2-27: Paducah-McCracken County Riverport Regional Divertible Truck Commodities

Nashville, TN	Tons Diff	Huntsville, AL	Tons Diff	Greenville, MS	Tons Diff	Other Locations	Tons Diff
Petroleum or Coal Products	1,256,097	Nonmetallic Minerals	530,352	Agricultural Production & Livestock	404,026	Petroleum or Coal Products	534,294
Clay, Concrete, Glass or Stone	630,065	Agricultural Production & Livestock	131,070	Nonmetallic Minerals	1,622	Clay, Concrete, Glass or Stone	179,209
Agricultural Production & Livestock	66,342	Clay, Concrete, Glass or Stone	10,660	Primary Metal Products	220	Agricultural Production & Livestock	152,701
Other Products	33,487	Other Products	19,891	Other Products	(263)	Other Products	79,276
Total	1,985,990	Total	691,972	Total	405,605	Total	945,479

Diversion is considered for commodities given the difference in transportation, cost, and the value of goods. In this case, the drive time from Paducah to Nashville is two hours for the 137-mile trip versus at least five days by barge.

In summary, the Paducah-McCracken County Riverport can benefit from strategies and investment aimed at the needs of growth markets such as aluminum and steel in addition to potential divertible commodities as shown in **Table 2-27**, in contrast to petroleum coke and gravel. Market strategies can benefit from insights from the City of Paducah's and the Paducah Chamber of Commerce's targeted 15-county markets, with a focus on commodities that may support manufacturing and healthcare supply chains in the region (with associated potential markets for plastics, rubber, and chemical and allied commodities as inputs to production).

2.2.13. Western Kentucky Regional Riverport

The Western Kentucky Regional Riverport is a planned riverport on the Mississippi River near Wickliffe, just south of the confluence of the Mississippi and Ohio rivers. By volume, the current regional modal split is 74 percent truck, 24 percent rail, and two percent water. The expected regional modal split is 81 percent truck, 17 percent rail, and two percent water. There is likely to be an increasing reliance on truck transportation.

The expected growth between 2018 and 2045 for regional commodities is shown in **Table 2-28** that provides the current and future shares of commodity flow (inbound and outbound) for the riverport to consider.

Table 2-28: Western Kentucky Regional Riverport Potential Waterborne Commodities – Regional Growth

Commodity	Overall Growth	In/Outbound Split (%) - 2018	In/Outbound Split (%) - 2045
Bituminous Coal	-74%	2/98	4/96
Broken Stone or Riprap	-52%	3/97	8/92
Gravel or Sand	-18%	6/94	11/89
Oil Kernels, Nuts Or Seeds	20%	2/98	2/98
Grain	33%	1/99	1/99
Fertilizers	43%	90/10	93/7
Petroleum Refining Products	41%	92/8	88/12
Misc. Coal or Petroleum Products	-52%	5/95	10/90
Portland Cement	75%	3/97	3/97
Concrete Products	55%	10/90	10/90
Chemical Preparations, Nec	63%	99/1	100/0
Potassium or Sodium Compound	6%	12/88	12/88
Other Commodities	27%	53/47	55/45

There is expected regional growth in a host of waterborne agricultural commodities including fertilizers, grain, oil kernels/nuts/seeds that may utilize this developing riverport in addition to a host of mineral and mining products including petroleum refining products, concrete, and cement commodities. Chemicals (including plastics and rubber) also represent growth areas in waterborne commerce for the hinterland. Port infrastructure and market strategies focusing on the supply chains of these types of goods will likely be more productive than those which may focus on declining commodities such as bituminous coal and stone/riprap.

Table 2-29 lists the top three divertible freight trading partners with the top three potentially divertible commodities listed for each.

Table 2-29: Western Kentucky Regional Riverport – Divertible Truck Commodities

Nashville, TN	Tons Diff	Huntsville, AL	Tons Diff	Greenville, MS	Tons Diff	Other Locations	Tons Diff
Petroleum or Coal Products	597,349	Nonmetallic Minerals	443,749	Agricultural Production & Livestock	413,312	Petroleum or Coal Products	552,104
Clay, Concrete, Glass or Stone	471,000	Agricultural Production & Livestock	96,745	Nonmetallic Minerals	1,583	Clay, Concrete, Glass or Stone	157,637
Agricultural Production & Livestock	51,797	Petroleum or Coal Products	9,110	Primary Metal Products	220	Agricultural Production & Livestock	138,377
Other Products	(177,552)	Other Products	17,434	Other Products	(580)	Other Products	(333,122)
Total	942,594	Total	567,039	Total	414,535	Total	514,997

Diversion is considered for commodities given the difference in transportation, cost, and the value of goods. In this case, the drive time from Wickliffe to Huntsville is 4.5 hours for the 250-mile trip versus 4+ days by barge via the Mississippi River and Tennessee-Tombigbee Waterway.

In summary, the future riverport will benefit from infrastructure capabilities and market strategies targeting key (1) agricultural supply chains utilizing fertilizers, grain, and seeds/kernels, (2) construction supply chains utilizing concrete and related products, (3) energy supply chains that may utilize targeted petroleum manufacturing goods currently moved by water and (4) manufacturing supply chains that may utilize targeted chemical products (such as rubber and plastics). In addition to the above-mentioned waterborne commodities already forecast to grow due to national and global trends, local economic development initiatives can offer additional “home-grown” markets. For example, the local paper mill can create a potential market for waterborne inputs to pulp and paper-related commodities. A critical question is whether there is enough market share for those currently handling these commodities, especially once the new port in Cairo, Illinois is developed. Further, the future riverport can benefit by limiting its intended dependence on declining markets—including bituminous coal, despite its historical precedence as an energy product in Kentucky (possibly seeking market shares in currently truck-dependent secondary coal and petroleum-derived products instead).

2.2.14. Assumptions about Modal Split

One of the factors affecting expected trade growth by commodity in each port is the intermodal split. This can be determined by direct rail access and other factors including proximity to rail. However, in almost all cases, expected truck share increases and water decreases as illustrated for each port hinterland in Figure 2-2.

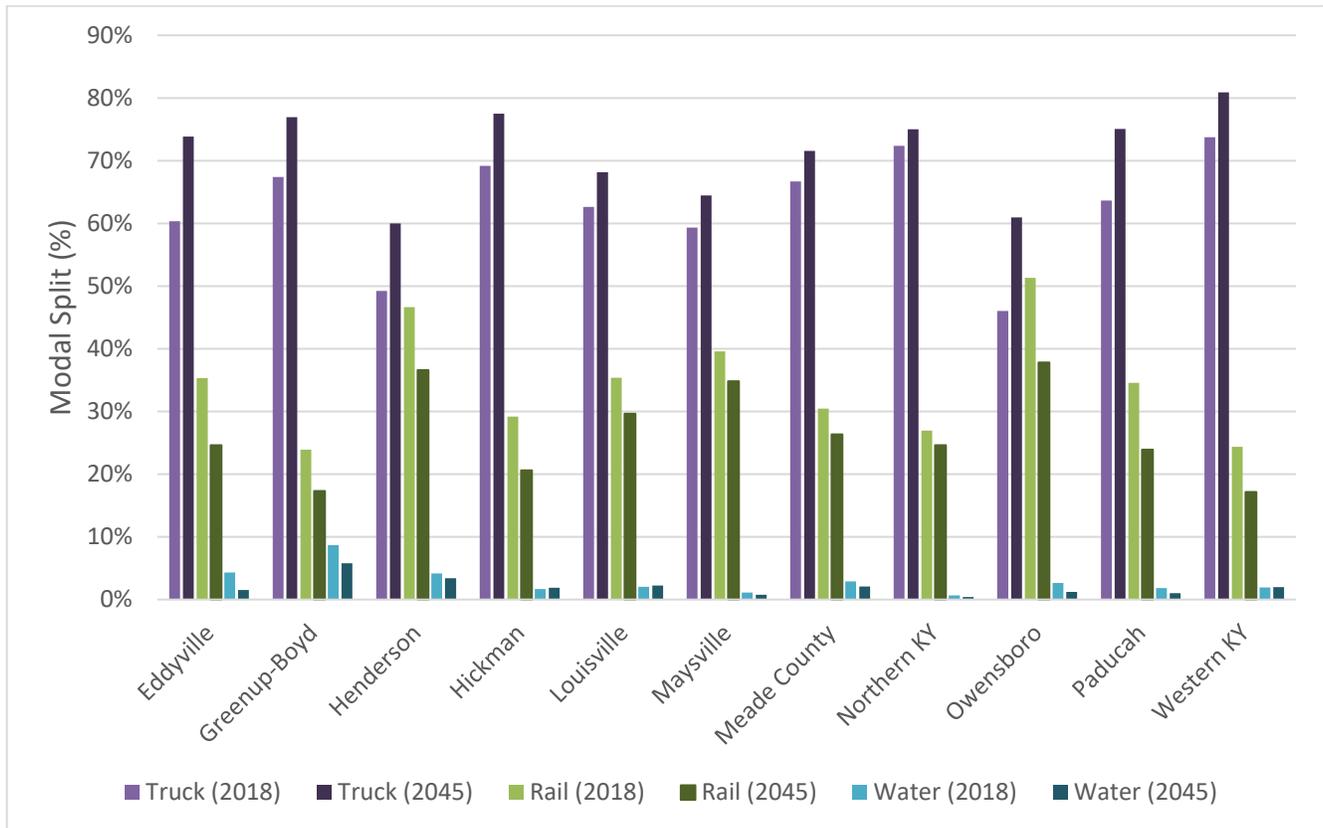


Figure 2-2: Riverport Intermodal Split Comparison (2018 & 2045)

However, the likely modal diversion is from truck, given origins and destinations for Kentucky riverport hinterland commodities moved by rail are in Canada. Consistent truck origins and destinations include Nashville, TN; Greenville, MS; Huntsville, AL; Chicago, IL; and Detroit, MI.

2.3 OTHER STATES' RESPONSES TO SYSTEMIC CHANGE

The market restructuring described in **Section 2.1** is not unique to Kentucky but is a feature of the overall Ohio River system—and to some extent, of the overall waterborne transportation sector. For Kentucky's public riverports to serve an integral role in a river system involving its Ohio River partners, it is helpful to understand how other states are responding to changing markets.¹⁵ Furthermore, beyond the Ohio River system, states in the larger Mississippi River system and even deep-water coastal ports have also been developing innovative ways for ports to collaborate in funding the infrastructure, services, and initiatives necessary for changing markets.

In recent years both Illinois and Tennessee decision-makers have been re-examining the ways that they can increase their investments in port and port-related improvements. Some of their decisions have entailed more direct allocation of state funds, supporting and/or creating grant programs, and finding ways to leverage existing funding programs in more strategic ways. Explored further during the March 2021 virtual summit, each has helped to improve the overall multimodal functionality of their larger transportation systems.

¹⁵ **Technical Memorandum 3** compares financial assistance programs provided by peer states of Ohio, Indiana, Illinois, Missouri, Tennessee, Virginia, and Florida.

2.3.1. Illinois: Investing in a Multimodal Vision

ILLINOIS VISION

Illinois' vision for transportation is for all modes to be integrated, coordinated, planned, and built with the idea that present and future travel options are user-focused, economically supportive, and ecologically sensitive.

Source: IDOT "Planning" at idot.illinois.gov/transportation-system/transportation-management/planning/index

In 2017, the Illinois Department of Transportation (IDOT) added a marine transportation section to its Long-Range Transportation Plan (LRTP). This *Marine Systems Transportation Plan* included an economic impact analysis that helped identify and communicate to legislators the need for additional port funding that resulted in \$150 million directly allocated for ports in 2019. While as of March 2021 guidance and applications for the capital investment program were still being developed, all nineteen Illinois public port districts will be eligible to apply for these funds. The stated goals for these funds are to address safety, modal connectivity, state of good repair, economic competitiveness, mode shift, and environmental sustainability. Additional funds were also made available in the form of a one-time fund of \$24 million through the competitive port investment program as well as through State Planning Research funds.¹⁶

IDOT invested in research to collect usable data to describe the condition of their public ports and ports' role in the multimodal network supporting Illinois' economy. This story was presented to the appropriate audience in a way that resonated with them; in this case, the result of that resonance was more funding available directly to public ports to address clearly targeted measures—many of which coincide with larger multimodal system performance measures being pursued by IDOT.¹⁷

¹⁶ Murray, B.J., Section Chief, Marine & Aviation Transportation Program Planning, IDOT, *Session 3: What's New in the Neighborhood? Updates from Adjacent State Riverports*, presented at the Second Kentucky Summit on Economic Development Strategies to Leverage Kentucky Riverports and Freight Network, March 24 - 26, 2021.

¹⁷ "Our Story," Illinois Department of Transportation (IDOT), 2021 [Online]. Available: <https://idot.illinois.gov/about-idot/our-story/index> (accessed Oct. 2, 2021).

2.3.2. Tennessee: Supporting Ports Through Supporting Multimodal Infrastructure

One of the ways that the Tennessee Department of Transportation (TDOT) has found to increase business for Tennessee's waterways has been by leveraging state-based funds through Competitive Rail Connectivity Grants. These grants are part of a larger Transportation Equity Fund intended to strategically expand rail access and opportunities throughout the state while providing the following benefits:

- Impact job creation and capital investment by industries that require rail access
- Enhance the marketability of available industrial sites
- Reduce highway and bridge maintenance costs by diverting heavy freight from the roadway network to rail

In 2018, \$10.3 million (with a 10% match) in these competitive rail connectivity grants were opened to rail authorities, port authorities, local governments, industrial development corporations, and other government entities. The types of projects that were eligible to be funded included spurs, sidings, truck-rail trans-load and river-rail trans-load facilities, and bridge rehabilitation projects, with a \$2 million limit per project application.

In 2019, TDOT announced that three of these grants were awarded to projects that benefitted the operation of Tennessee riverports.

- The City of Memphis and Shelby County Port Commission were awarded funds to build 4900 feet of new track and four switches to serve the riverport and its customers on President's Island.
- Cheatham County, in the Nashville area, was granted funds for a project that includes improvements to 2000 feet of current rail bed and line, as well as the construction of a rail spur to serve a new, multi-modal barge port on the Cumberland River. The spur itself will be approximately 2600 feet along with around 650 feet of storage/loading tracks on the county-owned site.
- Marion County, in the Chattanooga area, was awarded funds towards building a rail spur to facilitate an expansion at Colonial Chemicals and the Nickajack Port Industrial Park.¹⁸

While several of these projects still have other hurdles to jump before they can reach completion, they serve to illustrate how Tennessee has been able to leverage funds for rail improvements to bolster rail infrastructure while also improving public port access and functionality.

¹⁸ Pallme, D., Assistant Chief of Freight & Logistics Environment & Planning Bureau, TDOT, *Session 3: What's New in the Neighborhood? Updates from Adjacent State Riverports*, presented at the Second Kentucky Summit on Economic Development Strategies to Leverage Kentucky Riverports and Freight Network, March 24 - 26, 2021.

2.4 CHANGES IN FUNDING AND POLICY ENVIRONMENT

Changes in Kentucky's waterborne commerce markets will require Kentucky's riverports to navigate federal and state policies and funding opportunities to adapt their infrastructure to the new realities. Other states are providing examples of ways to leverage funding programs and economic development strategies in new ways. More funding is being made available through the passage of new federal policies and programs. Potential exists for new, mutually beneficial partnerships between riverports and economic development programs, like those offered by Kentucky Innovation and the Kentucky CED Development. All these changes represent real options and possibilities for the future adaptation and development of Kentucky's riverports and their important role in Kentucky's economy.

2.4.1. Changes and Funding at the Federal Level

A key consideration for investing in riverports is the evolving versions of the federal infrastructure bills that have been making their way through the halls of Congress. The *Infrastructure Investment and Jobs Act* (2021) authorizes \$450 million for port infrastructure and \$5 million annually for marine highways (short sea shipping). Such funding can help the riverports consider new directions including domestic marine services that help reduce highway congestion by removing truckloads.

Other changes in the funding landscape are also indicative of some policymakers beginning to prioritize investment in transportation infrastructure.

One big change to how construction and rehabilitation projects on inland waterways are being funded took effect in December 2020 with the *Water Resources Development Act*. Before the passage of this act, commercial operators paid 50% of the cost of new construction and major rehabilitation projects on waterways via a 29¢ per gallon diesel fuel tax that was deposited into the Inland Waterways Trust Fund and then evenly matched by federal funds. The *Water Resources Development Act* changed this ratio to a 35% commercial operator contribution, now matched with a 65% contribution of federal funds. This is estimated to provide an additional \$1 billion for inland waterway construction and rehabilitation projects over a 10-year period, which will provide benefits that can filter throughout the US inland waterways system as a whole.¹⁹

USDOT's Maritime Administration's (MARAD) Marine Highway Grant Program is of particular interest to Kentucky because the Ohio River is Marine Highway designated route M-70 (**Figure 2-3**), which allows public entities along that route to apply for a new or expanded marine highway service.

¹⁹ Calhoun, D., "WCI and Its Mission: Funding for the Inland Waterways System," Presented in *Session 2: Changes in Federal Transportation and Trade Policies* at the Second Kentucky Summit on Economic Development Strategies to Leverage Kentucky Riverports and Freight Network, March 24 - 26, 2021.



Figure 2-3: Map of America's Marine Highway Routes

Once that application has been approved to be designated as a Marine Highway Project, that project becomes eligible to apply for Marine Highway Grant funding. Facilities in both Paducah and Brandenburg have been recipients of these grants in years past. The program was founded under the *Clean Energy Act*; so public benefits gained from funded projects are calculated, such as the number of truck-miles traveled that are removed from the highways as well as reductions in road maintenance, carbon emissions, congestion, and fatalities.

State or local government agencies, ports, tribal authorities, or metropolitan or regional planning organizations can sponsor project applications. To receive designation, the project must use US documented vessels loaded and unloaded at a US port or Canadian port in the Great Lakes region. Most significantly, Marine Highway Grant funds can be used for the development and expansion of port and landside infrastructures—such as cargo handling equipment, the development and expansion of documented vessels, and planning, preparation, and design efforts in support of marine highway projects (other than market-related studies).

The Ports of Cincinnati and Northern Kentucky received a Marine Highway Grant for M-70 barge service. This project will create a barge service to replace trucks between Nucor Steel's manufacturing facility in Gallatin County, KY and regional customers along the M-70. The grant funds will be used to convert a former casino barge to a manufacturing facility and another barge to be used for transportation and will replace 500 tractor-trailers a month from a 66-mile stretch of I-71, saving at least \$42,000 a year in highway maintenance costs.²⁰

²⁰ Pickering, T., "Maritime Administration Marine Highway Program Overview," Presented in *Session 2: Changes in Federal Transportation and Trade Policies* at the Second Kentucky Summit on Economic Development Strategies to Leverage Kentucky Riverports and Freight Network, March 24 - 26, 2021.

The most recent round of grant funding was announced in May 2021; \$12.6 million in total funding opportunities were opened for applications. It is significant to note that this amount has continued to rise with each subsequent round of funding, continuing to increase the total pool of federal funds available for port projects.²¹

2.4.2. Kentucky's Funding Programs

The Kentucky Riverports Improvement program (KRI) is an annually authorized legislative funding program totaling \$500,000 competitively awarded amongst its public riverports. The program requires a 50 percent match for grants by which the public riverports can fund dredging or improve facilities, infrastructure, and/or critical material-handling equipment. The program essentially provides improvements within a port property. A common concern about this program mentioned during interviews with port directors is the "use it or lose it" stipulation preventing the carryover of funds across years.

2.4.3. Highway Funding Program

State highway programs can play an integral role for off-site improvements by (1) improving access to nearby developable sites, (2) ensuring reliable and competitive access to ports from hinterland markets or inter-modal facilities, and (3) in some cases, ensuring appropriate ground access to riverport properties themselves. For this reason, riverport market stakeholders can understand changes in Kentucky's highway program as potential ingredients to infrastructure investment and amenity packages that help the ports adapt to significant market changes.

Kentucky's highways are funded through a Six-Year Highway Plan (SYP) that is developed by the KYTC and recommended to the Kentucky General Assembly every two years. For example, the funding breakdown for the estimated \$6.1 million budget for SYP FY 2020-2026 is illustrated in **Figure 2-4**.

²¹ Maritime Administration, "Notice of Funding Opportunity for America's Marine Highway Projects," *The Federal Register*, May 24, 2021 [Online]. Available: <https://www.federalregister.gov/documents/2021/05/24/2021-10914/notice-of-funding-opportunity-for-americas-marine-highway-projects> (accessed Oct. 2, 2021).

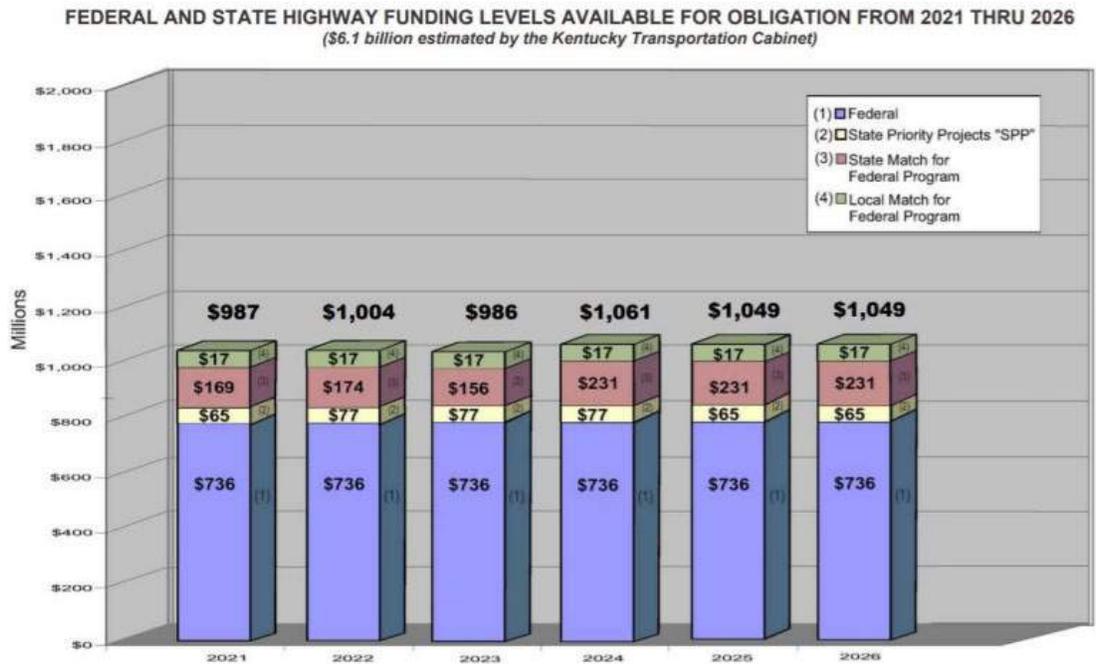


Figure 2-4: Six-Year Plan Funding Levels FY 2020-2026 (Source: KYTC)

It is important to put this budget in context by considering that Kentucky has the ninth-largest road system in the nation in terms of mileage and the seventh-largest inventory of state-maintained bridges, making the process of identifying and prioritizing capital improvement projects essential. KYTC uses its Strategic Highway Investment Formula for Tomorrow (SHIFT) process to ensure that highway projects are evaluated and prioritized by uniform standards. This process starts with a list of potential projects. Regional, state, and local transportation leaders sponsor a set number of projects for evaluation. The projects are then scored on a scale of 0-100 using a formula of five objective measures: safety, asset management, congestion, economic growth, and cost/benefit analysis. Projects of statewide significance are scored first, followed by regional projects that local transportation leaders can “boost” to account for subjective priorities.

Then KYTC combines both statewide and regional priorities to develop the Governor's recommended Highway Plan. This plan is then presented to the Kentucky General Assembly where lawmakers can refine recommendations based on any additional information or funding. What results becomes the Enacted Highway Plan that funds two years of projects and defines the following four years of spending priorities.

The most significant part of this process is understood in terms of the list of infrastructure needs that provides the basis for the overall selection process. The SHIFT process is a potential resource for developing new ground-access opportunities as the riverport market restructures. There are no new SHIFT projects explicitly recommended in the current study, however, SHIFT can play a role in funding strategies described in the final recommendation.

2.4.4. Economic Development Initiatives

Investing in new equipment and infrastructure to adapt to changing commodities, modes, and markets is only one strategic perspective. Like highway investment, economic development programs can offer significant resources to attract, create, expand, or retain riverport customers in growing market segments. Economic development programs offered through Kentucky Innovation promote opportunities for private companies to work with riverports in a variety of creative ways:²²

- 1) The **Kentucky Commercialization Ventures (KCV) program** helps commercialize university technology, expand applied research programs, and gain a higher share of federal research grants and private foundation research grants. Its goal is to work directly with inventors at public universities to help turn their ideas and research programs into marketable, scalable growth companies within the communities around the university system. Through its entrepreneurial residence program, KCV brings successful entrepreneurs—who have marketed and commercialized technology and sold it—into universities to help figure out what assets these universities have and what research could be commercialized and marketable.
- 2) The **Kentucky Innovation Investment Program (KIIP)** provides micro-grants and free professional services to better prepare Kentucky companies to win and manage federal Small Business Innovation Research (SBIR) or Small Business Technology Transfer (STTR) grants—the federal government's largest programs to fund commercialization. KIIP works directly with companies to help them get SBIR/STTR grants and then provides a matching program. The program has seen a lot of success among participating companies, which has generated jobs and helped to recruit and attract companies from outside the Commonwealth. KIIP just created an accelerator program within the SBIR/STTR grant program specifically focused on Department of Defense (DOD) grants. Because DOD SBIR/STTR awards come with a contract (i.e., if you can figure out how to make it work, they will buy it from you), they provide an exciting opportunity for Kentucky to grow and expand its DOD grant funding. Other capital and state funding opportunities include the Kentucky Enterprise Fund, Commonwealth Seed Capital, Angel Tax Credit/Fund Tax Credit, Kentucky Small Business Tax Credit, and Kentucky Small Business Credit Initiative.
- 3) The **Kentucky Innovation Network** works to establish regional networking hubs to connect and maximize the potential innovation in a region. It has already established regional hubs at three Kentucky riverports. Regional hubs serve as an entryway for any company looking to get involved in the innovation ecosystem. These hubs are public-private partnerships that identify and connect resources that exist in a community, creating a network of corporations, startups, and investors in the region, or in technologies,

²² Ellis, A., "Kentucky Innovation," Presented in *Session 7: Economic Development and Riverport Markets* at the Second Kentucky Summit on Economic Development Strategies to Leverage Kentucky Riverports and Freight Network, March 24 - 26, 2021.

university partners that are helping with commercialization and licensing, and government programs that promote innovation. There are several potential advantages to being aligned with the innovation hub program. If there is an innovation hub either at a port or in the adjacent community, the port could be more attractive to public and private investors because they may see the benefits of the link to new pools of talent and areas of innovation tied to investments in infrastructure and education. Also, if the hubs are in port communities, then the ports' communities may become more prosperous. When the cities become more prosperous, they could develop tax incremental finance districts, community improvement districts, business improvement districts, and partnerships with the ports and the ports could possibly receive direct revenue streams.

Another strategic perspective is economic development resources and relationships that would enable the ports to attract more public and private investment and strategize generating more return-on-investment. There could be significant benefits to attracting businesses that can benefit, in certain cases, from the expansion of existing port capabilities, as opposed to retooling a facility to handle new commodities.

Port operators provide one of the most important voices in the discussion about riverport economic development possibilities. One port official stated the economic function of a port very simply: "ports are catalysts for economic development."²³ He went on to explain that ports alone do not create large numbers of jobs. Ports provide options for sourcing commodities and in turn, make Kentucky a more advantageous location to do business, thus attracting jobs and other economic benefits.

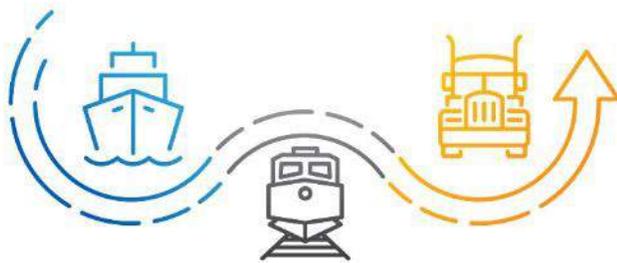
A key component in capitalizing on this function is building the relationships and communication networks between the ports and CED. For example, a local manufacturer might be making large expenditures on truck transportation and could potentially benefit from services offered by a nearby port; however, if this information is known by an economic development program but never communicated to the port—an opportunity is lost on all sides. Another example is the added value of riverports for a business considering locating in Kentucky. Riverport directors want to become a more active partner with the Kentucky CED in developing a state-level strategy, such as those employed by Illinois, Ohio, and Indiana, to market the riverports for the mutual benefit of Kentucky as a whole. In sum, the message is about the potential in creating a stronger relationship with CED in terms of business recruitment and retention. It's about enabling Kentucky riverports to be more competitive and thus making Kentucky more competitive.

²³ Yates, M., Vice President Louisville Riverport Authority, Presented at *Session 7: Economic Development and Riverport Markets* at the Second Kentucky Summit on Economic Development Strategies to Leverage Kentucky Riverports and Freight Network, March 24 - 26, 2021.

2.5 CONCLUSION

Kentucky's waterborne economy is in the midst of a significant transformation from a system carrying primarily fossil fuels to a system that will have to be increasingly competitive for modally divertible freight including food, agricultural products, plastics, rubber, chemicals, machinery, and other goods. Each of Kentucky's public riverports is found to have specific commodity and trading market segments representing growth markets in both waterborne and divertible freight in the available 2045 forecasts. However, these changes require investment in new and modernized equipment on port properties, acquiring funding in a rapidly changing federal and state policy environment, and leveraging relationships with other states which are developing their own programs and strategies for responding to economic change.

The chapters ahead will explore the benefits of investing in Kentucky's riverports, the wider impacts that such investments can have on Kentucky's performance, key strategic actions that can be taken at both the system and individual port level to weather these changing times, and ultimately policy priorities to overcome the significant challenges of economic restructuring.



KENTUCKY RIVERPORTS, HIGHWAY
& RAIL FREIGHT STUDY

CHAPTER 3

ARE WE PREPARED FOR CHANGES IN THE WATERBORNE ECONOMY?

Given the role that waterborne transportation plays in Kentucky's economy (as documented in **Chapter 1**) and the projected market changes anticipated for Kentucky's public riverports (as documented in **Chapter 2**), **Chapter 3** provides a detailed assessment of the strengths, weaknesses, opportunities, and threats (SWOT) analysis of Kentucky's 11 public riverports. With a potential decline of between 20 and 30 million tons of coal in Kentucky's waterborne economy through 2045, Kentucky's riverports will be challenged by (1) a more competitive market environment and (2) a growing need to cater to a more diverse mix of commodities. **Appendix 2.4** outlines a program of capital improvements to support the outset of this evolution. However, before offering specific policy recommendations in **Chapter 4**, it is helpful to consider the current status of Kentucky's riverports and their competitive position with respect to their economic role and the market changes discussed in the current study. The following analysis highlights specific factors driving the need for port investment and provides vital context for recommendations and implementation steps for acting on the findings of this study.

3.1 WHAT ARE THE SYSTEM AND EACH PORT'S STRENGTHS, WEAKNESSES, OPPORTUNITIES, AND THREATS?

The SWOT of Kentucky's overall waterborne economy and public riverport network is holistically presented in **Technical Memorandum 3**, which provides context for this more detailed consideration of each riverport's position in 2021. This chapter also defines specific infrastructure needs that can enhance the efficiency and competitiveness of each of the 11 public riverports and that can be implemented through the policy recommendations in **Chapter 4**.

3.2 RIVERPORT SYSTEM STRENGTHS, WEAKNESSES, OPPORTUNITIES, AND THREATS

The Kentucky Riverport System SWOT analysis identifies factors supporting, hindering, providing greater potential for, and potentially risking the system’s ability to sustain, adapt, and/or grow. **Table 3-1** shows the SWOT summary from **Technical Memorandum 3**, followed by the SWOT for each riverport given the unique operating conditions of each port. Based on the system and individual port SWOTs, key policy recommendations are provided.

Table 3-1: Kentucky Riverport System SWOT Analysis

Strengths	Weaknesses
<ol style="list-style-type: none"> 1. Multimodal System with Strategic Location 2. Federal Designations for Freight Routes 3. Foreign Trade Zone designations 4. New Port Development 5. Local Support from Development Advocates 	<ol style="list-style-type: none"> 1. State Funding (\$500K is Less Than Many Other States) 2. Limited Port Personnel 3. Aging Federal Lock and Dam Infrastructure 4. Port Space and Budget Limitations 5. Need for Rail Infrastructure Improvement 6. Public Understanding/Perception 7. Lack of Human Resources to Pursue Funding and Other Opportunities on Behalf of All the Riverports
Opportunities	Threats
<ol style="list-style-type: none"> 1. Lock and Dam Maintenance/Improvement 2. New Development along Licking River 3. Availability of Federal Funding 4. Expansion via Kentucky Legislation¹ 5. Available Land 6. New Tenants Interested in Leasing 7. Existing and New Markets 8. Need for More Berth Space 9. Container-on-Barge (COB) Services 10. Kentucky Strategic Highway Investment Formula for Tomorrow (SHIFT) 	<ol style="list-style-type: none"> 1. Limited U.S. Army Corps of Engineers Lock & Dam Infrastructure Budget 2. Riverport Competition Within/Between States 3. Reliability of Short Line Rail Service 4. Port Equipment Needs 5. Rail Competition with Kansas City Southern’s Acquisition 6. Seasonal/Nonseasonal River Conditions 7. Supply Chain Disruptions

*See **Technical Memorandum 3** for a more robust discussion of statewide SWOT analysis.

Synonymous with the first strength identified in **Table 3-1**, Kentucky is in an ideal location in the United States. This location highlights service by major interstates (not including municipal beltways), highway routes, and rail lines. See **Table 3-2** for interstates providing service to and beyond the Commonwealth.²

¹ According to law, any governmental unit in Kentucky may establish a riverport authority with the KYTC Secretary’s approval. Riverport authorities provide oversight on riverport development activities as well as conduct normal business.

² For a more complete list of interstates, highways, and parkways, see <https://transportation.ky.gov/MultimodalFreight/Documents/Kentucky%20Highway%20Freight%20Network.pdf>.

Table 3-2: Major Interstate Corridors in Kentucky

Designation	Origin	Destination	KY Ports Directly/Indirectly Served*
I-24	Marion, IL	Chattanooga, TN	Eddyville Paducah-McCracken County
I-69	Port Huron, MI	Memphis, TN	Eddyville Henderson County Hickman-Fulton County Louisville-Jefferson County Meade County Northern Kentucky Owensboro Paducah-McCracken County Western Kentucky
I-165	Owensboro, KY	Bowling Green, KY	Owensboro
I-65	Mobile, AL	Chicago, IL	Louisville-Jefferson County Meade County
I-64	St. Louis, MO	Lexington, VA	Greenup-Boyd Louisville-Jefferson County Maysville-Mason County Meade County Owensboro
I-75	Naples, FL	Sault St. Marie, CN	Greenup-Boyd Louisville-Jefferson County Maysville-Mason County Northern Kentucky
I-71	Louisville, KY	Cleveland, OH	Louisville-Jefferson County Northern Kentucky

* "Indirectly served" includes corridors that are near and that likely handle truck traffic for the relative riverport(s) in lieu of a full TRANSEARCH analysis.

Further, the Commonwealth has four tiers of classification for its highway freight network. These routes provide service from riverports to and between respective inland destinations for goods that the port handles or could handle (Figure 3-1).



Figure 3-1: Kentucky Highway Freight Network

Table 3-3 shows the Class I, II, and III railroads and the ports they serve or could serve. Given the extensive network each railroad can have, aside from sharing agreements, the extent of each network beyond Kentucky is less relevant here compared to the ports served.

Table 3-3: Kentucky Railroads

Railroad	Class	Ports Served
CSX	I	Greenup-Boyd Henderson Louisville-Jefferson County Maysville-Mason County Meade Northern Kentucky Owensboro Paducah-McCracken County*
Canadian National	I	Hickman-Fulton County Western Kentucky
Norfolk Southern	I	Louisville-Jefferson County Northern Kentucky Paducah-McCracken County*
Paducah & Louisville	II	Eddyville Industrial Park Louisville-Jefferson County Paducah-McCracken County*
TennKen	III	Hickman-Fulton County

* Discussed in an interview with the port director on August 16, 2021.

Table 3-2 and **Table 3-3** show the locations served beyond Kentucky in many cases, highlighting the Commonwealth’s key location as well as its connectivity to the rest of the United States between the Gulf Coast and Great Lakes as well as the Mississippi River and East Coast. There are also nine Class III railroads in the Commonwealth:

1. Fredonia Valley
2. Kentucky West Tennessee
3. Kentucky and Tennessee
4. Louisville and Indiana
5. Paducah and Illinois
6. RJ Corman³
7. TennKen
8. Transkentucky Transportation
9. West Tennessee

Figure 3-2 shows a complete map of the riverports, railroads, interstates, and parkways.

³ RJ Corman operates 3 separate railroads in Kentucky. RJ Corman/Central Line, RJ Corman/Memphis Line, and RJ Corman/Bardstown Line.

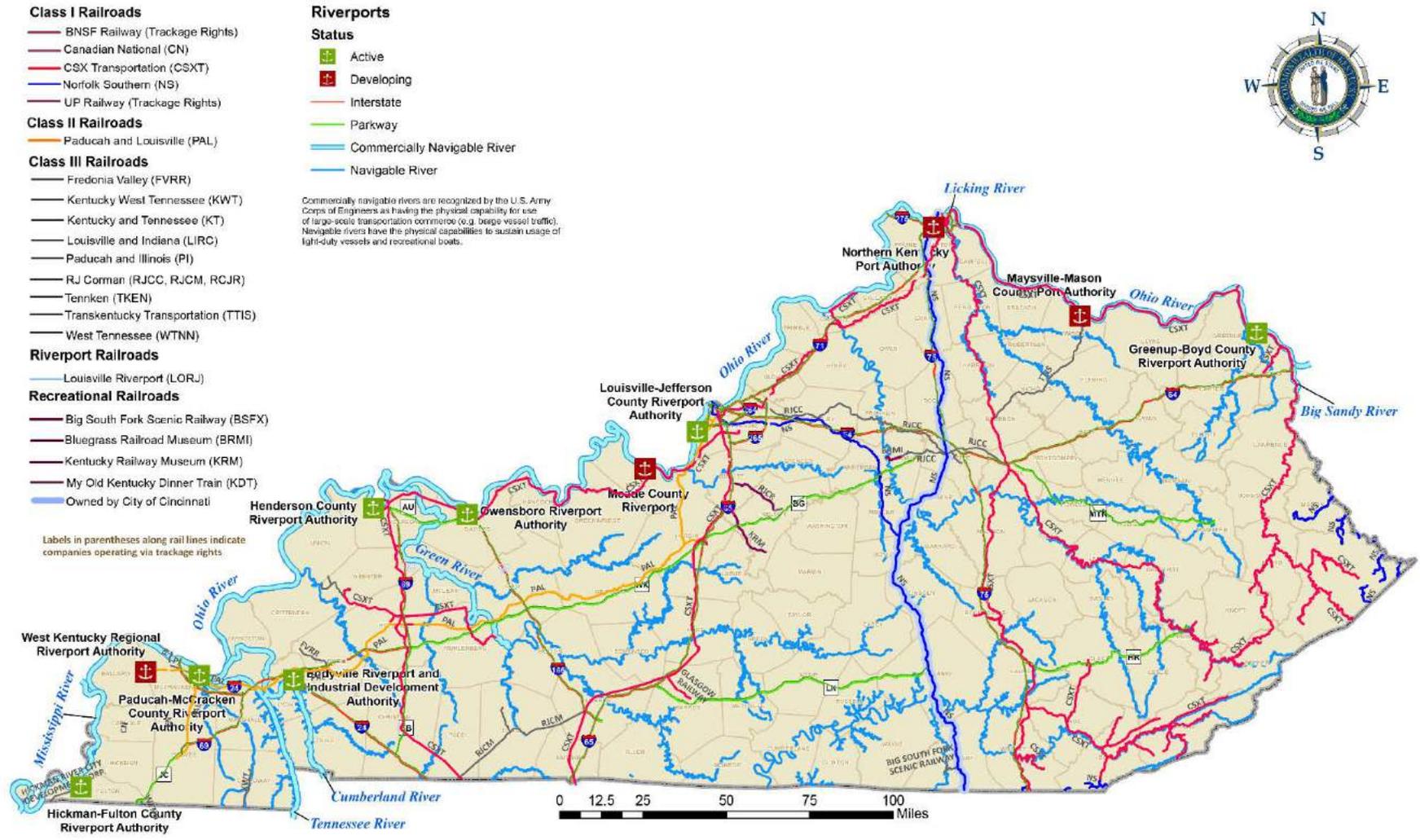


Figure 3-2: Kentucky Intermodal Map

3.2.1. Individual Port SWOT Assessments

As they develop, some ports can benefit from improved truck access, for which the Kentucky SHIFT program can be leveraged.⁴ Additionally, although some ports have rail access, it can still be improved to provide greater capacity to move more goods through the respective port’s hinterland to markets beyond.

Most ports need additional covered storage, expanding their storage capability and variety of products handled. Further, many ports need additional berthing/mooring space, allowing them to save time by removing the need to shuffle barges during loading/unloading. This improvement would complement some ports’ need to replace riverfront equipment to achieve greater reach and weight capacity, or merely to improve loading/unloading time. The following subsections present the 2021 SWOT analyses for each riverport, which supplement the 2008 SWOT analyses for each riverport.

3.2.2. Eddyville Riverport

The Eddyville Riverport Authority’s capital improvement needs through fiscal year 2026 total \$15.480 million, comprised of the breakdown in **Table 3-4**. These needs were identified based on the 2020 Master Plan.

Table 3-4: Eddyville Riverport Needs

Type	Cost
Equipment	\$400,000.00
Highway Access	\$5,000,000.00
Land Acquisition & Development	\$2,500,000.00
Rail Access	\$7,500,000.00
Warehousing	\$80,000.00

Forty-eight percent (48%) of the riverport’s needs are rail access. Thirty-two percent (32%) entail improved highway access, while seven percent (7%) are based on an expansion of the port through land acquisition and development. To consider the riverport’s goals, the 2008 SWOT analysis was reviewed. **Figure 3-3** shows truck operations for existing bulk operations. The riverport can benefit from additional laydown area (open storage), truck access, and rail access.

Table 3-5 shows the 2008 and 2021 SWOT analyses.



Figure 3-3: Eddyville Riverport Bulk Truck Operations

⁴ “The Strategic Highway Investment Formula for Tomorrow (SHIFT) is KYTC’s data-driven, objective approach to compare capital improvement projects and prioritize limited transportation funds.” See <https://transportation.ky.gov/SHIFT/Pages/default.aspx> for more information.

Table 3-5: Eddyville Riverport SWOT Analysis

	2008 Study SWOT	2021 Updated SWOT
Strengths	<ul style="list-style-type: none"> Port facilities offer nearby access to U.S. highways and interstates. This is the only operating Kentucky public riverport on the Cumberland River/Barkley Lake. Additional acreage is available for development at the port facility; similarly, acreage is available in the area's industrial parks for industries to efficiently use port operations. Area government and community leaders are verbally supportive of the port to attract new and expanded industries. 	<ul style="list-style-type: none"> In 2020, the port developed its first master plan to help guide its future development. Strengths included waterfront and highway access, developable acreage, rail-served sites at its industrial park, and financial stability and access to capital. One of its major tenants handles grain, a growth market for Eddyville. The port is located on Lake Barkley, which provides a more placid water environment so that the port does not have to contend with wide river gauge variations.
Weaknesses	<ul style="list-style-type: none"> There is no existing crane to efficiently handle general cargo commodities. There is no rail at the port facility. There is no improved hardstand storage area for storage/handling of general cargo commodities. There is no marketing program, including website. 	<ul style="list-style-type: none"> The 2020 Master Plan cited lack of storage, lack of public awareness/visibility (combined with no marketing plan), lack of direct rail access and need to expand it at the nearby industrial park, and lack of key utilities. To handle grain and soybeans, the port needs new investment to protect truck traffic delivering grain to the riverport while supporting other commodity flow activity and industrial development of the riverport.
Opportunities	<ul style="list-style-type: none"> The Caldwell-Lyon Partnership is active in attracting new industry to the area with the potential to use port facilities and services. Aggressive marketing programs could generate additional commodity handling opportunities to more populated areas south of the port. There could be future marketing emphasis for handling import commodities moving through the deep-water port of Mobile. 	<ul style="list-style-type: none"> The 2020 Master Plan addressed infrastructure and partnerships as potential opportunities for the riverport. ERIDA applied for a grant through the Kentucky CED and Kentucky Association for Economic Development Product Development Initiative for the Eddyville Industrial Park. The former weakness for rail is now an opportunity, given investment by Cargill. Grain and soybeans within Eddyville's hinterland will support its growth prospects. There is available waterfront land near the Cumberland River and within an established agricultural footprint that supports inbound grains and outbound fertilizer movements.
Threats	<ul style="list-style-type: none"> The primary threat appears to be a lack of funding to allow quick responses to opportunities for handling general cargo commodities for existing or future industries. Consumption of corn by proposed ethanol plants could dramatically reduce the available corn for movement through the port. 	<ul style="list-style-type: none"> The 2020 Master Plan cited limited workforce, population, and industry diversity; industry risks including consumption and trade wars; and economic uncertainty. The consumption of corn by proposed ethanol plants has continued to increase, thereby remaining a means of competition to the port.

The infrastructure needs survey conducted in early 2021 identified highway access needs, including the following:

- KY 93 improvements are needed from U.S. 62 to the riverport because there are currently narrow lanes and geometric deficiencies.
- KY 730 is not currently on the Kentucky Highway Freight Network and needs to be upgraded to support heavy truck traffic associated with the expansion of the port and a secondary entrance to the facility.
- Turn lanes are needed from KY 93 onto KY 730.

3.2.3. Greenup-Boyd County Riverport

Greenup-Boyd County Riverport’s capital improvement needs through fiscal year 2026 total \$1.526 million, as the breakdown in **Table 3-6** shows. These needs were identified based on an interview with port leadership.

Table 3-6: Greenup-Boyd Riverport Needs

Type	Cost
Equipment	\$20,000.00
Land Acquisition & Development	\$100,000.00
Rail Access	\$6,000.00
Warehousing	\$800,000.00
Waterfront Infrastructure	\$600,000.00

Fifty-two percent (52%) of the riverport’s needs are additional/new warehousing, thirty-nine percent (39%) entail additional berth/mooring space to facilitate unloading, and seven percent (7%) are based on an expansion of the port through land acquisition and development—specifically, repaving on-site roadways. To consider the riverport’s goals, the 2008 SWOT analysis was reviewed.



Figure 3-4: Warehouse at Greenup-Boyd County Riverport

Table 3-7 compares the 2008 SWOT analysis to the 2021 one.

Table 3-7: Greenup-Boyd SWOT Analyses (2008 & 2021)

	2008 Study SWOT	2021 Updated SWOT
Strengths	<ul style="list-style-type: none"> • The port location offers good highway connections, especially east-west. • Four counties verbally support further development of port facilities on a regional basis. • Rail service appears good in the area, with the port facilities having adequate internal rail tracks. 	<ul style="list-style-type: none"> • There is good rail access. • The port has a new truck scale.
Weaknesses	<ul style="list-style-type: none"> • The existing dock facility could be inefficient for handling general cargo commodities. • Roads from U.S. 23 to the port site are challenging for trucks to travel. • Additional acreage in the immediate dock facility is currently not available. • Greenup-Boyd has no marketing program, and the operating stevedore appears to have no marketing for port services. 	<ul style="list-style-type: none"> • The port needs more covered storage (warehouse space). • Despite adequate berth space, the port layout hinders the ability to offer multiple loading and unloading opportunities to/from water. • There is a need for additional berth space.
Opportunities	<ul style="list-style-type: none"> • A regional industrial park is located near the port, offering opportunities for the location of industries that could use port services. • Existing industries in the general area are potential customers representing marketing opportunities. • There is awareness of increasing imports/containers for handling in the tristate area; marketing opportunity 	<ul style="list-style-type: none"> • Nearby farmland supports the handling of additional grains, which is an expected growth market. • The ability to export aggregate via New Orleans provides significant opportunities. • Proximity to a wastewater treatment facility may offer a new market opportunity. • There is available space to offer intermodal connectivity to Columbus, Ohio (via CSX Rail)
Threats	<ul style="list-style-type: none"> • One threat is the potential development of adjacent acreage into a private terminal facility. • Another threat is the development of terminal facilities in Southern Ohio before further development of Greenup-Boyd facilities. 	<ul style="list-style-type: none"> • There is and will be continued competition from nearby Cargill, the Canadian minerals market, and companies like Vesuvius U.S.A.

The infrastructure needs survey conducted in early 2021 showed that the Greenup-Boyd Riverport’s access includes dedicated truck access. An existing CSX rail right of way constrains highway access. There are only two crossing options viable for trucks. Neither collector route is included in the Kentucky Highway Freight Network. KY 503 provides the most direct link to U.S. 23, but this short segment has nine-foot-wide lanes and transits through a residential community. Further, KY 3105 is a residential route and is signed for “no trucks.”

3.2.4. Henderson County Riverport

Henderson County Riverport’s five-year capital improvement needs total \$21.15 million, as the breakdown in **Table 3-8** shows.

Table 3-8: Henderson County Riverport Needs

Type	Cost
Equipment	\$3,750,000.00
Land Acquisition & Development	\$600,000.00
Rail Access	\$3,000,000.00
Warehousing	\$1,800,000.00
Waterfront Infrastructure	\$12,000,000.00

Fifty-seven percent (57%) of the riverport’s needs are for waterfront infrastructure that would expand the dock, eighteen percent (18%) are for equipment replacement, and fourteen percent (14%) are for rail access improvements. To consider the riverport’s goals, the 2008 SWOT analysis was reviewed.



Figure 3-5: Henderson County Riverport Waterfront

Table 3-9 compares the 2008 and 2021 SWOT analyses.

Table 3-9: Henderson County Riverport SWOT Analyses (2008 & 2021)

	2008 Study SWOT	2021 Updated SWOT
Strengths	<ul style="list-style-type: none"> • Geographic location is near major highway transportation routes. • The riverport has a reputation for successfully attracting river-related industries, with ample acreage for future industry locations. • The riverport has the heavy lift capacity of the existing crane, with highway and rail for transport of heavy equipment. • Population, industries, and agricultural activities generate inbound and outbound commodities for handling at the port facility. • Area government, regulatory, and community leaders are verbally supportive of the port operations and their importance to the region. 	<ul style="list-style-type: none"> • The 2021 strengths were cited as consistent with the 2008 ones.
Weaknesses	<ul style="list-style-type: none"> • Current debt load restricts additional borrowing for needed capital expansions. • There is lack of management time to explore potential new markets. • There are no funding sources for needed capital expansions. 	<ul style="list-style-type: none"> • There is a need for more management resources to explore potential new markets. • There is a need for improved utilities for customers. • There is a need to upgrade the covered storage.
Opportunities	<ul style="list-style-type: none"> • Henderson has 279 acres available for development, offering opportunities for future expansion of facilities and services. • The port is strategically located to become a regional port operation, serving developing industrial parks in the geographical area. • Additional marketing efforts offer the opportunity to expand the customer base at the facility. 	<ul style="list-style-type: none"> • Henderson has 50 acres available for development, offering opportunities for future expansion of facilities and services. • The port is strategically located to become a regional port operation, serving developing industrial parks in the geographic area. • Additional marketing efforts offer the opportunity to expand the customer base at the facility, for example, as a closed-loop service of goods for manufacturing, consolidation, and export. • Grain and soybean markets show growth potential.
Threats	<ul style="list-style-type: none"> • The aging of equipment, primarily the 125-ton crane, is a threat to future business. • Inbound rail track to the port facilities and tenants is in danger of diminishing, which is a potential threat to the future viability of the rail service. • The abundance of existing general cargo terminals in the geographic region, plus the announced plans for new terminals, could dilute the potential terminal business. 	<ul style="list-style-type: none"> • If current rail lines are not preserved, there is a potential threat to the future viability of the rail service. • The abundance of existing general cargo terminals in the geographic region, plus the announced plans for new terminals, could dilute the potential terminal business.

The infrastructure needs survey conducted in early 2021 showed that the Henderson County Riverport’s needs include resurfacing of KY 425 to improve truck access. Providing a link from the port to the KY 425 Henderson Bypass, KY 136 has two 11-foot lanes with one-foot paved shoulders that can be too narrow for truck traffic. Further, KY 425 is only two lanes despite the right of way accommodating four lanes. Increased traffic volumes may warrant widening the roadway to a four-lane facility, maintaining the current 12-foot lanes with 10-foot shoulders.

3.2.5. Hickman-Fulton County Riverport

The Hickman-Fulton County Riverport five-year capital improvement needs total \$18.1 million, as the breakdown in **Table 3-10** shows.

Table 3-10: Hickman-Fulton County Riverport Needs

Type	Cost
Equipment	\$4,500,000.00
Land Acquisition & Development	\$2,100,000.00
Rail Access	\$11,300,000.00
Waterfront Infrastructure	\$200,000.00

Sixty-two percent (62%) of the riverport’s needs are for improving rail access with \$10 million to establish a new rail terminal, twenty-five (25%) are for equipment replacement, and 12 percent (12%) are for land acquisition and development. To consider the riverport’s goals, the 2008 SWOT analysis was reviewed.



Figure 3-6: Hickman-Fulton County Riverport along the Mississippi

Table 3-11 compares the 2008 SWOT analysis to the 2021 one.

Table 3-11: Hickman-Fulton County Riverport SWOT Analyses (2008 & 2021)

	2008 Study SWOT	2021 Updated SWOT
Strengths	<ul style="list-style-type: none"> The port maximizes operations to achieve the tonnage and revenue generated through limited acreage. This is the only operating Kentucky public riverport located on the Mississippi River, thus offering growth opportunities. Additional acreage is available in the immediate area of the port for operational and industrial development opportunities. Area government and community leaders are verbally supportive of the port as a means to attract new and expanded industries. 	<ul style="list-style-type: none"> The riverport continues to maximize operations in achieving additional tonnage and revenue with the capacity to expand. This is the only operating Kentucky public riverport located on the Mississippi River, thus offering growth opportunities. Additional acreage is available in the immediate area of the port for possible development of new land for operational and industrial development opportunities. Area government and community leaders are verbally supportive of the port to attract new and expanded industries. The riverport added a new crane in 2017, replacing the 1974 model crane.
Weaknesses	<ul style="list-style-type: none"> None of the highways in the immediate vicinity of the port are designated as National Highway System roadways, thus limiting access to the port. There is no bridge across the Mississippi River near the port, thus limiting marketing opportunities to neighboring states to the west. The port lacks additional property to allow for expansion opportunities. The proximity of the two barge positions creates congestion of barges, thus affecting productivity. The declining population and limited industries in the county negatively affect growth opportunities. 	<ul style="list-style-type: none"> Highways in the immediate vicinity of the port are not designated as National Highway System roadways and are limited in the amount of truck traffic they can handle. There is no bridge across the Mississippi River near the port, thus limiting marketing opportunities to neighboring states to the west. The port is limited in expansion opportunities because of the lack of development-ready property available for expansion. The proximity of the two barge positions still creates congestion of barges, thus affecting productivity. Declining population and limited industries in the county negatively affect growth opportunities. Railroad access available by short line rail is not reliable and limited to seven or eight railcars at a time. Aging infrastructure is becoming a big problem for the riverport.
Opportunities	<ul style="list-style-type: none"> The port staff has generated numerous opportunities for expansion of services. These include the publicized proposed Hickman Energy Island to attract a renewable energy system operation. Other proposed projects not publicized to date are dependent on the port's ability to expand services. County-wide industrial development efforts are active to attract new industry with the potential to use port facilities. 	<ul style="list-style-type: none"> The riverport continues to competitively serve agriculture and local industry. The port is working to replace and upgrade its aging infrastructure. The Fulton County Economic Development Partnership is working to take advantage of the county's transportation resources. In Fulton, the county has Class I rail and I-69 Interstate access. In Hickman, Fulton County has the riverport. The Fulton County Fiscal Court has been exploring ways of improving rail to the riverport and, at the same time, developing better roads into the riverport. One of the projects being explored is the development of a bulk terminal in Fulton to load bulk materials from the river into railcars directly on the Class I rail. This would require trucking to the Class I rail, but it would be an alternative to the 40-mile short line railroad connection currently available to the riverport.
Threats	<ul style="list-style-type: none"> The primary threat for the future viability of Hickman-Fulton is the proposed new port facility of Cates Landing in Tennessee, only 18 river miles south of Hickman. This proposed port has already received \$5.5 million in federal and local funding to commence dredging of the waterway and construction of a harbor. The State of Tennessee, in collaboration with the federal government, is planning the construction of roadways for better access to this new port site. 	<ul style="list-style-type: none"> The biggest threats to the riverport are the aging docks and conveyors and the need to expand the loading and unloading areas for handling barges. The maintenance of the harbor is always a threat if dredging does not occur. The United States Army Corps of Engineers has been able to get funding to maintain the harbor. If this changes and the harbor does not get dredged, then commerce in the harbor and riverport will come to a halt.

The access needs that were identified through the infrastructure survey conducted in early 2021 are as follows:

- KY 125/KY 166 corridor has narrow lane widths and geometric deficiencies.
- The KY 1099/KY 1354 loop has issues with lane widths and intersection geometries that create difficulties for truck traffic.
- A rail/highway upgrade project is needed that would link Hickman to I-69 via KY 125 and TN 5 to Union City. This would provide a shorter route to the interstate via KY 125/KY 166 to Fulton.

3.2.6. Louisville Riverport

Over the next five years, the Louisville Riverport capital improvement needs total \$24 million, as the breakdown in **Table 3-12** shows.

Table 3-12: Louisville Riverport Needs

Type	Cost
Equipment	\$2,000,000.00
Rail Access	\$1,000,000.00
Warehousing	\$12,000,000.00
Waterfront Infrastructure	\$9,000,000.00

Fifty percent (50%) of the riverport’s needs are for warehousing (**Figure 3-7** shows the currently available open storage), thirty-eight (38%) are for waterfront infrastructure, and eight percent (8%) are for equipment. To consider the riverport’s goals, the 2008 SWOT analysis was reviewed. **Table 3-13** compares the 2008 SWOT analysis to the 2021 one.



Figure 3-7: Louisville Riverport Open Storage

Table 3-13: Louisville Riverport SWOT Analyses (2008 & 2021)

	2008 Study SWOT	2021 Updated SWOT
Strengths	<ul style="list-style-type: none"> • Geographic location with excellent transportation connections via highways, rail, river, and air. • Variety of industries within the industrial park. • Louisville-Jefferson County is financially sound, which is important for operations, capital expansion, and development. • The Metro government and economic development organizations are verbally supportive of the port. • The population base of the area offers an educated workforce, promoting further expansion of industry. • The facility has additional acreage to expand general cargo operations and industrial park facilities. 	<ul style="list-style-type: none"> • Most, if not all, the regional rail services move through Louisville. The riverport has three rail delivery locations through the port property.
Weaknesses	<ul style="list-style-type: none"> • The general cargo facility located on the river side of the floodwall/levee is subject to closure during high pool stages of the Ohio River. • The existing bridge crane offers challenges for handling some general cargo commodities. 	<ul style="list-style-type: none"> • The 2021 weaknesses were cited as consistent with the 2008 ones.
Opportunities	<ul style="list-style-type: none"> • Construction of a second dock, with a crawler-type crane, could create opportunities to handle more general cargo that is currently being handled at a nearby Indiana State Port. • The geographic location is a major distribution area for the Midwest. It has the potential for becoming a major COB handling facility in the future. • There is potential for marketing efforts to be increased with the assistance of Kentucky transportation and economic development organizations. There is also potential for additional acreage to be obtained for the continued expansion of the industrial park. 	<ul style="list-style-type: none"> • The Louisville Riverport Authority has undertaken an engineering study to determine design features and related permitting required to completely rebuild the Marine Terminal with the expectation that substantial parts of the operation will be above the 100-year flood mark. Any expansion would also include the addition of a heavier lift and more flexible cranes to accommodate the high-velocity, high-volume movement of diverse commodities. It is also desired but yet to be determined as feasible that any new dock construction include direct rail access to the terminal area and crane system. The addition of strategic warehouse facilities at the port facility would potentially increase multimodal volumes of freight.
Threats	<ul style="list-style-type: none"> • Continued capital expansion of the Indiana State Port, with no expansion of river facilities at the Louisville port, remains a threat to general cargo handling success. • Developing the available acreage without purchasing additional acreage will inhibit further expansion of the industrial park. 	<ul style="list-style-type: none"> • Louisville port expansion has commenced since 2008. • The other 2021 threats were cited as consistent with the 2008 ones.

The infrastructure needs survey conducted in early 2021 identified a few infrastructure needs in order to improve port access: traffic signals at all the roads to Louisville Riverport from the Green Belt Highway (KY 1934) and substandard bridge clearance at the I-264/U.S. 31 W interchange.

3.2.7. Maysville-Mason County Riverport

The Maysville-Mason County Riverport (**Figure 3-8**) five-year capital improvement needs total \$5 million, comprised solely of land acquisition and development and covering an estimated 1,350 acres in two locations. To consider the riverport’s goals, the 2008 SWOT analysis was reviewed.



Figure 3-8: Example of Potential Riverport Waterfront Site

Table 3-14 compares the 2008 and 2021 SWOT analyses.

Table 3-14: Maysville-Mason County Riverport SWOT Analyses (2008 & 2021)

	2008 Study SWOT	2021 Updated SWOT
Strengths	<ul style="list-style-type: none"> Multiple sites are reportedly available for development. Area government and community leaders, plus the Maysville-Mason board of directors, are verbally supportive of the development of a public riverport. There are no operating general cargo terminals in the immediate area, offering opportunities for development of river facilities to support new industries. Rail and barge service appears excellent in the geographic area. A modern bridge connects Kentucky to Ohio, offering an opportunity for highway modernization in both states. 	<ul style="list-style-type: none"> Local area government and community leaders continue to support the development of a public riverport in Maysville and Mason County. Maysville and Mason County are advantageously positioned between Charleston WV, Cincinnati/Northern Kentucky, Lexington, Columbus, and other urban areas as well as within a day's drive of over three-fourths of the total U.S. population. Rail and barge service is excellent, with CSX Class I rail running along the river and prospects for new leadership with the Trans-Kentucky rail line growing. This can provide a north/south option into southern Kentucky and Tennessee. The Meldahl Pool of the Ohio River is optimal for river transport and an overall public riverport with deep waters and a slower current. Working in concert with the Meldahl Pool qualities, identified developable sites in Mason County, for the most part, sit up and are elevated out of the floodplain. Maysville and Mason County have two bridges offering some of the only options spanning the Ohio River and accessing Southern Ohio.
Weaknesses	<ul style="list-style-type: none"> Interstate highway connections are 50–60 miles from proposed port sites. There are no known industries currently in the general area that are would-be clients for a port facility. 	<ul style="list-style-type: none"> Interstate highway access is 40–60 minutes from the proposed site, represented in I-275 in Northern Kentucky and I-64 at Morehead. Additional investments in road infrastructure will be needed for access to KY 8; however, all engineering and geotechnical site work has been completed.
Opportunities	<ul style="list-style-type: none"> New industries can be attracted to justify the development of a public riverport. Maysville-Mason warehousing facilities can be built to support existing and future industries. Marketing services by area organizations and the Commonwealth of Kentucky can be expanded. 	<ul style="list-style-type: none"> With growing development interest in the Mason County and Northeastern Kentucky Region, opportunities exist to attract additional investment in the area. These opportunities will grow exponentially with the addition of infrastructure and the overall development of a public port in Mason County. Mason County has a growing number of warehousing and logistics opportunities that would be complementary to an active public port. Given Mason County's optimal geographic location equidistant to several urban markets, investments in a public port can offer new economic opportunities.
Threats	<ul style="list-style-type: none"> There are no current operations to be threatened. 	<ul style="list-style-type: none"> With no public port or infrastructure, no current operations would be threatened.

The infrastructure needs survey conducted in early 2021 noted that geotechnical issues are common, particularly along KY 8, given its proximity to the Ohio River.

3.2.8. Meade County Riverport

In the future, the Meade County Riverport capital improvement needs will total \$12 million, comprised solely of equipment. To consider the riverport’s goals, the 2008 SWOT analysis did not address Meade County’s riverport. **Table 3-15** compares the 2008 SWOT analysis to the 2021 one.

Table 3-15: Meade County Riverport SWOT Analyses (2008 & 2021)

2008 Study SWOT		2021 Updated SWOT
Strengths	Not available	<ul style="list-style-type: none"> • U.S. 60 to the south of Brandenburg is two lanes to Owensboro, giving the port proximity to a stream of truck traffic via KY-79. • There is consistent local demand by about 60 regional farmers.
Weaknesses	Not available	<ul style="list-style-type: none"> • There is a need for a new grain elevator and a loading facility for local farmers. • The configuration of the mooring dolphins only allows two barges to be unloaded at any given time. • Riverport Authority does not own a riverport site.
Opportunities	Not available	<ul style="list-style-type: none"> • There are new tenant opportunities • A new grain elevator for hinterland farmers means a demand for riverport services. • Barge service to the Port of New Orleans for bulk or general cargo means a good connection to international import and export liner services. • The acquisition of new waterfront land and implementation of new infrastructure including equipment would mean better leveraging resources for the growing grain market.
Threats	Not available	<ul style="list-style-type: none"> • No threats were cited for the Meade County Riverport.

The infrastructure needs survey conducted in early 2021 showed that the Meade County Riverport can benefit from enhanced access routes and designated truck routes, especially in light of the Nucor plant’s development.

3.2.9. Northern Kentucky Port

The Northern Kentucky Port Authority coordinates with CORBA to serve 226.5 miles of the Ohio River and seven miles of the Licking River without any dedicated port infrastructure. **Table 3-16** contains a SWOT analysis for this prospective and developing riverport.

Table 3-16: Northern Kentucky Port SWOT Analyses (2008 & 2021)

2008 Study SWOT		2021 Updated SWOT
Strengths	Not available	<ul style="list-style-type: none"> Northern Kentucky has exceptional planning and economic development support, including the following: The Ohio-Kentucky-Indiana Regional Council of Governments serves as NKY’s leading public agency in freight transportation planning. https://www.oki.org/transportation-planning/ CORBA serves as NKY’s leading private organization for inland waterway freight commerce. https://centralohioriverbusinessassociation.com/ Designation of the expanded port with the Port of Cincinnati allows the Northern Kentucky Port to leverage the above-mentioned planning capabilities to support funding and client development.
Weaknesses	Not available	<ul style="list-style-type: none"> There can be a general lack of interest and understanding of the inland waterway freight network among the public and decision-makers. Congested roadways due to high volume and density of logistics businesses hinders hinterland and market access beyond.
Opportunities	Not available	<ul style="list-style-type: none"> Given NKY’s heavy dependence on truck traffic, container-on-barge pilot projects may provide opportunities for increasing safety and mobility. Given KY and Ohio’s high number of aerospace and automobile-related industries, opportunities may be available for transport of oversized/heavy components on the Ohio River for short-haul to other Ohio River marine terminals. There is land along the Licking River with industrial opportunities that could support river traffic and economic activity in Northern Kentucky.
Threats	Not available	<ul style="list-style-type: none"> No threats were cited for the NKY.

Further study of specific clients and port design specifications is needed before particular infrastructure needs can be defined for this port.

3.2.10. Owensboro Riverport

Over the next five years, the Owensboro Riverport capital improvement needs total nearly \$25 million, as the breakdown in **Table 3-17** shows.

Table 3-17: Owensboro Riverport Needs

Type	Cost
Equipment	\$7,581,660.00
Highway Access	\$1,497,500.00
Land Acquisition & Development	\$4,160,000.00
Other (Planning, Engineering, Economic Studies, etc.)	\$500,000.00
Rail Access	\$355,000.00
Security & Technology	\$30,000.00
Warehousing	\$6,124,000.00
Waterfront Infrastructure	\$4,737,395.00

Thirty percent (30%) of the riverport’s needs are for equipment replacement, twenty-five percent (25%) are for warehousing, and nineteen percent (19%) are for waterfront infrastructure and seventeen percent (17%) for land acquisition and development. The 2008 SWOT analysis was reviewed.

Table 3-18 compares the 2008 SWOT analysis to the 2021 one.

Table 3-18: Owensboro Riverport SWOT Analyses (2008 & 2021)

	2008 Study SWOT	2021 Updated SWOT
Strengths	<ul style="list-style-type: none"> • There is an abundance of area industries to consume/produce commodities for handling at port. • Premier facilities and equipment for commodity handling and storage are available. • Expertise of personnel in terminal and warehousing operations is available. • There is diversification of commodities handled. • Successful marketing programs exist. 	<ul style="list-style-type: none"> • CSX serves the riverport from East Owensboro Rail Yard five days/week. • Expertise of personnel in terminal and warehousing operations is available. • Successful marketing programs exist.
Weaknesses	<ul style="list-style-type: none"> • There is no interstate highway in the greater Owensboro area. • Dock facilities restrict operations during periods of high water. • Dock facilities do not allow heavy lift capability. 	<ul style="list-style-type: none"> • Based on new COB services, there could be a need for a container stacker (assuming CSX provides the ability to load/unload railcars.) • There is a need for an additional 300 acres, including a lighted railcar load area.
Opportunities	<ul style="list-style-type: none"> • Port facilities can be further promoted as regional port facilities to support regional industries parks and industrial sites in surrounding counties. • New facilities can be constructed to provide equipment and infrastructure for heavy lift capacity. • There is potential for container-on-barge movements and the development of a container handling facility in Owensboro. • The Coleman Terminal can be developed for industries or future terminal and warehousing operations. 	<ul style="list-style-type: none"> • The potential exists for creating bulk storage capacity with river unloading capability. • Plastic products are forecasted to see substantial growth.
Threats	<ul style="list-style-type: none"> • Changes in the international economic trade of specific commodities currently handled at the port could present a threat. • Further dilution of the general cargo handling in the area can occur if additional facilities are constructed. • The aging of major equipment is a threat unless replaced prior to lengthy downtime. 	<ul style="list-style-type: none"> • The port faces rising competition from other states’ public port authorities as well as private terminals in Kentucky and other states. • Seasonal and nonseasonal flood stages can occur.

The infrastructure needs survey conducted in early 2021 identified improved interstate connectivity across the river as an access need for the Owensboro Riverport. An improvement to I-69 serving Evansville is anticipated to address this need. Although KY 331 historically limited mobility, it is currently being reconstructed with federal grant funding.

3.2.II. Paducah-McCracken County Riverport

Paducah-McCracken County Riverport capital improvement needs total \$81.64 million, as the breakdown in **Table 3-19** shows.

Table 3-19 Paducah-McCracken County Riverport Needs

Type	Cost
Equipment	\$19,597,000.00
Land Acquisition & Development	\$50,700,000.00
Other (Planning, Engineering, Economic Studies, etc.)	\$25,000.00
Warehousing	\$521,000.00
Waterfront Infrastructure	\$400,000.00

Seventy-one percent (71%) of the riverport’s needs are for land acquisition and development, twenty-seven percent (27%) are for equipment, and the remaining two percent (2%) are split between warehousing and waterfront infrastructure. To consider the riverport’s goals, the 2008 SWOT analysis was reviewed. **Table 3-20** compares the SWOT analyses.



Figure 3-10: Paducah-McCracken County Riverport Waterfront

Table 3-20: Paducah-McCracken County Riverport SWOT Analyses (2008 & 2021)

	2008 Study SWOT	2021 Updated SWOT
Strengths	<ul style="list-style-type: none"> • Geographic location near the confluence of the Tennessee River and Ohio River. • The City of Paducah has become a major hub for barge line repair and operations facilities. • Through proper management of facilities and personnel, the port maximizes operations to handle tonnage and generate revenue through limited acreage at the port. • The port is located very near two U.S. highways and one major interstate. • Population, industries, and agricultural activities generate inbound and outbound commodities for handling at the port. • There is enhanced security at the facilities following the installation of fences, lighting, and cameras, meeting the requirements of the Transportation Security Administration (TSA) and the Coast Guard. • Area government, regulatory, and community leaders are verbally supportive of the port operations and their importance to the region. • The port is strong financially, which is important for operations, capital expansion, and borrowing leverage. 	<ul style="list-style-type: none"> • The riverport is strategically located at the heart of the inland waterway system near the confluence of four major rivers (Mississippi, Ohio, Tennessee, and Cumberland). • Interstate 24 and major state roadways provide an excellent truck distribution network as the port services over 30 counties in Kentucky, Tennessee, Illinois, and Missouri. • Two berthing facilities offer cost-effective, reliable transshipment cargo solutions across multiple cargo and commodity sectors for regional supply chain requirements within the industrial, manufacturing, construction, and agricultural business sectors. • General cargo facility can accomplish up to 50-ton cargo lifts to an 80,000-square-foot hardened concrete yard with two adjacent warehouses. Further, the bulk facility uses a Sennebogen material handler with commodities conveyed overhead to a 20-acre storage facility with both dry and open storage solutions for multiple bulk commodities. • Port has secured Marine Highway Designation status via the Maritime Administration and is Grantee for Foreign Trade Zone (FTZ) #294 enhanced procedures, security features, lighting, and fencing at facilities to meet the requirements of the U.S. Coast Guard, Transportation Security Administration (TSA), and U.S. Customs.
Weaknesses	<ul style="list-style-type: none"> • The lack of available property at the port site could limit the ability to attract future tenants or expand services requiring substantial acreage. • The city street dissecting port properties creates a challenge to operations and is a potential safety hazard. • Rail track within the port needs major rehabilitation; it can hinder the ability to attract additional rail business. 	<ul style="list-style-type: none"> • The port property consists of forty-eight acres, with only ten acres available for potential expansion or new tenants. • Current rail infrastructure is not operative and would require major rehabilitation. • A prior expansion site identified in the 2008 SWOT has since been sold, leaving the port without property to expand.
Opportunities	<ul style="list-style-type: none"> • Paducah-McCracken County obtained the 242 acres known as Riverport West, creating opportunities for future expansion of facilities and services. • A recently completed strategic market assessment addresses the potential for the port to be a major container-on-barge handling facility. The port is strategically located to qualify as a regional port operation, serving industry throughout the region. 	<ul style="list-style-type: none"> • Current and planned bulk commodity facility infrastructure improvements and expansion will allow for continued cost-effective and reliable supply chain bulk commodity solutions, leading to continued annual growth. Current competition in this sector is limited within a 90-mile service area, with entry into the marketplace requiring \$10 million or more initial investment. • General cargo facility utilization capacity is currently less than five percent (5%) and therefore provides excellent upside potential in association with Marine Highway Designation and FTZ to secure new opportunities relating to container-on-barge cargo, metal products, general cargo, and project cargo.
Threats	<ul style="list-style-type: none"> • The developing public riverport in Marshall County, only 10 river miles from Paducah-McCracken County, could be a threat for future business if fully developed. • The developing public riverport of Cates Landing in Northwest Tennessee could be a future threat if fully developed. 	<ul style="list-style-type: none"> • The port currently has four Kentucky Riverports within its 90-mile service radius. Proposed additional KY Ports within this area will further introduce direct competition while also creating additional competition for the limited KRI Grant Funding. • KRI funding was cited as “very limited,” so major funding must come via federal or other grant sources. • Surrounding states within a 90-mile delivery radius have increased their state port grant funding programs substantially. This could potentially introduce new or increased competition, thus reducing revenue/market share.

The infrastructure survey conducted in early 2021 showed that the Paducah-McCracken County Riverport’s needs include improving truck access to the port.

3.2.12. Western Kentucky Regional Riverport

The Western Kentucky Regional Riverport’s needs total nearly \$18.238 million, as the breakdown in **Table 3-21** shows.

Table 3-21: Western Kentucky Regional Riverport Needs

Type	Cost
Equipment	\$4,600,000.00
Highway Access	\$162,000.00
Land Acquisition & Development	\$985,000.00
Other (Planning, Engineering, Economic Studies, etc.)	\$400,000.00
Rail Access	\$750,000.00
Security & Technology	\$630,000.00
Warehousing	\$9,300,000.00
Waterfront Infrastructure	\$1,411,000.00

Fifty-one percent (51%) of the riverport’s needs are for warehousing for the new/developing port, twenty-five percent (25%) are for equipment, and eight percent (8%) are for waterfront infrastructure at the site (depicted in **Figure 3-11**). To consider the riverport’s goals, the 2021 SWOT analysis was considered. **Table 3-22** contains a side-by-side comparison of the 2008 and 2021 SWOT findings.



Figure 3-11: Western Kentucky Riverport Region – Developing Riverport Site

Table 3-22: Western Kentucky Regional Riverport SWOT Analyses (2008 & 2021)

	2008 Study SWOT	2021 Updated SWOT
Strengths	<ul style="list-style-type: none"> The proposed site has good highway access via U.S. highways and access to three interstates. It is near two bridges, one crossing the Mississippi River and one crossing the Ohio River. The county has an 80-acre industrial site with a spec building located approximately five miles from the proposed port site. Area government and community leaders are verbally supportive of developing a public riverport to attract new and expanded industries. The site is near the confluence of the Mississippi River and Ohio River, so significant barge traffic is present in the area. 	<ul style="list-style-type: none"> The Western Kentucky Riverport is supported by West Kentucky Alliance for a Vibrant Economy (WAVE). The innovative leadership of the four county judge executives banded together to develop a cohesive strategy to expand regional assets, capitalize on joint resources, and promote the region. The proposed site is the largest available site (approx. 69 acres) in Kentucky on the Mississippi River. The site is centrally located near the confluence of the Mississippi and Ohio Rivers. Projected elevation of the site (340+ feet) is above the historic flood level of the 2011 floods. The site is being designed to employ the most up-to-date technology in the most environmentally friendly manner. Currently, over 300 public acres are available for economic development within a 10-mile radius of the site, with additional acres available from private owners. The authority has letters of intent to lease 15 acres, generating a private investment of over \$13 million for the project/region.
Weaknesses	<ul style="list-style-type: none"> The quantity of acreage available is relatively small for the development of a port facility. There is a question concerning the acreage permitted within existing site elevations for development. There are no known industries currently in the county that would be obvious clients for a port facility. 	<ul style="list-style-type: none"> The current two-lane U.S. Highway system with high truck percentage is one weakness. The port believes that expanding the current Wickliffe Bridge crossing and U.S. highways in the region to a four-lane system would promote public safety, increase access, and foster economic development.⁵
Opportunities	<ul style="list-style-type: none"> A potential use of port facility is for grain handling. Based on conversations, Economy Boat Store has expressed an interest to use the port facilities, ideally resulting in the growth of their operations. 	<ul style="list-style-type: none"> The Western Kentucky Riverport can provide enhanced export opportunities to domestic and international markets for the agricultural community via the Gulf Coast (creating connectivity for diverse economic opportunities in the WAVE Region).
Threats	<ul style="list-style-type: none"> There are no current operations to be threatened. 	<ul style="list-style-type: none"> Not addressing current highway connectivity weaknesses and access to available federal and state funding sources is one threat. Continuing development of the Port of Cairo across the Mississippi River means development ahead of the WKRRRA's completion.

The infrastructure needs survey conducted in early 2021 showed that the Western Kentucky Regional Riverport has a development concept that is comprehensive with respect to its prospective market position. Because of the developing port's remote location to development, truck, and potentially rail access, as well as site surveying by the U.S. Army Corps of Engineers, permitting will be key.

⁵ KYTC plans to reconstruct a parallel replacement structure as a two-lane facility. For more information, see <https://us51bridge.com/>

3.2.13. Summary of Needs

Port needs generally include additional warehouse space, waterfront improvements to accommodate additional barge mooring/berthing to unload cargo, and new equipment. Expansion of facilities means substantial improvements, for which riverports would benefit from additional state and federal funding. An additional less-noted consideration is the need for information technology comparable to deep-water coastal ports' operating systems technologies as the supply chain increasingly becomes based on e-commerce.

Critical needs for the Western Kentucky riverport market area are defined largely by dry-bulk tenants and their role in the existing Commonwealth economy. For example, the region has a significant need for improved access to auto parts in support of automotive manufacturers in Bowling Green. Container on barge has been considered on the entirety of the Mississippi River and its tributary rivers such as the Ohio River. Its development has been hindered on the Upper Mississippi River and tributary rivers such as the Ohio River by the need for lock and dam improvements by the U.S. Army Corps of Engineers. This also affects many of the riverports in Kentucky.

Today, there are two new port developments on the Lower Mississippi River that will improve cargo transfer from overseas markets to and from the inland waterway system. Plaquemines Parish is developing FuturePort, a 1,000-acre container terminal at Mile 50 Above Head of Pass (AHP). The Port of New Orleans is developing the Louisiana International Terminal, a 350-acre container terminal, in St. Bernard Parish at Mile 85 AHP. Both terminals will likely be able to handle cargo types other than containers, supporting inland riverport development and cargo throughput.

3.3 NEXT STEPS FOR PORTS

The ports' respective SWOT analyses describe their current capabilities and challenges. The view of current investments programmed and planned at each riverport is the most comprehensive to date, informed as it is by the summits and forecasts provided in the current study. However, in the long term, there is a need to continue to develop and enhance infrastructure concepts at each port associated with the market changes described in **Chapter 2**. The challenge to diversion is based on the value of the cargo, the time to move the goods (versus another mode), and the cost to move them, which are all market dynamics. Diversion could also be more likely based on improving the complete intermodal move, which considers modal transfer and route optimization (beyond riverport property). **Chapter 4** will further explore mechanisms for an ongoing program of modernization for Kentucky's riverports as a system. Therefore, the key issue for each port is to become a better part of the regional supply chain for the targeted commodities. Specific recommendations for each port are provided below.

3.3.1. Eddyville Riverport Authority

Eddyville's riverfront facilities currently lack direct rail access and require an expanded and relocated frontage road for improved truck access. In addition, while there is currently open uncovered storage, additional open space to store dry bulk or general cargo would improve the riverport's capabilities and coincide with the improved access. To complement the landside improvements, additional unloading capacity with a new crane would serve both the dry bulk and general cargo markets. These improvements will help the port grow given its ideal location on the Cumberland River, providing access to the Gulf of Mexico via New Orleans and Mobile (respectively via the Mississippi/Ohio and Tennessee Rivers).

3.3.2. Greenup-Boyd County Riverport Authority

Although a significant share of Greenup-Boyd's improvements relates to maintenance and efficiency improvements, principal investment needs entail adding berth capacity and covered storage (warehouse). These can improve current operations and attract new business. Current practices of moving barges add cost and time to unloading. Therefore, the perception of being unable to accommodate marine traffic for unloading operations means carriers (tug and barge operators) and shippers will go elsewhere to move their goods to or from market (the port's hinterland).⁶

⁶ **Technical Memorandum 2** shows that Kentucky riverport hinterlands overlap as well as have the factor of competition from ports in other nearby states.

3.3.3. Henderson County Riverport Authority

Although twenty-three percent (23%) of Henderson County Riverport's improvements relate to maintenance and efficiency, principal investment needs entail adding berth capacity, unloading capabilities, covered storage (warehouse), and on-site rail improvements. Such items can improve current operations and attract new business. The addition of a second crane and associated dock space to supplement the 125-ton pedestal crane will enhance the port's capacity to unload more barges simultaneously, transfer goods or commodities from dock to storage, and then move off-site. The expected additional demand from the new Pratt paper facility and the planned growth of the Kentucky market, such as the market for automotive parts (for which Henderson handles steel coils) implies a need for investment. This is because carriers (tug and barge operators) and shippers could go elsewhere to move their goods to or from the port's hinterland without the planned investment.

3.3.4. Hickman-Fulton County Riverport Authority

Although twenty-five percent (25%) of Hickman's Riverport's improvements relate to maintenance and efficiency, principal investment needs entail adding berth to storage or berth to train/truck loading capacity, allowing the port to potentially double capacity. The current needs assessment suggests a need for at least one new conveyor belt that is faster and wider for added capacity. However, this assumes improving docking facilities to increase berth utilization or to match its capabilities with improved conveyor systems. The port must currently relocate empty barges to unload additional barges, which means more time and cost. Ultimately, this could equate to carriers (tug and barge operators) and shippers going elsewhere, including outside Kentucky, to move their goods to or from the port's hinterland.

3.3.5. Louisville-Jefferson County Riverport Authority

One hundred percent (100%) of the Louisville Riverport Authority's improvements pertain to market expansion; therefore, principal investment needs entail adding berth capacity, unloading capabilities, covered storage (warehouse), and on-site rail improvements. These can help improve current operations and attract new business. For example, the replacement of the existing 30-ton crane above the 100-year flood mark would provide new capacity and more resilience for high water events. Additionally, improvements to the rail loop would allow additional train movements so that another train can be loaded. According to estimates from riverport staff in a site visit, rail access improvements are expected to have the potential to increase capacity by fifty percent (50%).

3.3.6. Maysville-Mason County Riverport Authority

As a developing port, one hundred percent (100%) of the Maysville-Mason County Riverport Authority's improvements pertain to market expansion. The planned riverport can achieve a favorable position by acquiring land to create operational capacity leveraging nearby CSX freight rail access. The \$5 million needed investment (as described in **Appendix 2.4**) would provide for more than 1,350 acres, helping the port serve new customers such as those undertaking paper manufacturing, discount retail, and even industrial supply. The acreage is comprised of two sites, one of 350 acres and the other of 1,000 acres, in proximity to private waterway facilities and potential customers. Although two market studies were completed for the riverport in 1979 and 2015, these studies have not explicitly considered the investment relative to the use of the land acquisitions.⁷

3.3.7. Meade County Riverport Authority⁸

As a developing port, any investment in the port's capacity will present an opportunity for market expansion. Therefore, the emerging riverport's strategy can benefit from a focus on purchasing land, adding a grain elevator, installing dolphins for barge mooring and unloading, and making access road improvements. The board has not met as of the date of this publication to consider funding options and next steps.

3.3.8. Northern Kentucky Port Authority

Because of the unique structure of the Northern Kentucky Port Authority, its infrastructure needs cannot be assessed. The size of the Northern Kentucky market and the planning resources available from planning and economic development organizations serving the area provide resources for identifying future needs. However, the infrastructure needs for the Northern Kentucky Port Authority are not presently differentiated from those of the port of Cincinnati. A riverport compact of the type recommended in **Chapter 4** may provide opportunities to further assess opportunities as conditions change.

⁷ **Technical Memorandum 2** shows that Kentucky riverport hinterlands overlap as well as have the factor of competition from ports in other nearby states. (1) "Maysville-Mason County Port Authority Riverport Study, Phase One Feasibility, Maysville, Kentucky", 1979. Available at <https://trid.trb.org/view/155512>. (2) "Marketing and Economic Development Analysis for the Maysville-Mason County Port Authority," Kentucky Transportation Center, University of Kentucky, 2015. Available at <https://thinkmaysvilleky.com/wp-content/uploads/2020/07/Maysville-Mason-KTC-Feasibility-Study-Draft.pdf>.

⁸ The riverport authority currently operates as the Brandenburg Industrial Development Authority in Meade County. It does not have marine facilities.⁹ "Kentucky Needs Trade Agreements to Grow," Business Roundtable, 2020. Available at https://s3.amazonaws.com/brt.org/BRT_General_Trade_KY_2020.pdf.

3.3.9. Owensboro Riverport Authority

Although the majority of the Owensboro Riverport's improvements pertain to maintenance and efficiency improvements, the riverport can still benefit from capacity enhancements to increase market share. Such investments improve road and rail access (mostly to handle aluminum). Recommended capacity enhancements also include on-site improvements at the rail loop on the north side of the port while Industrial Drive is being redeveloped and the road access improvements can increase access to Rinaldo Road. These improvements can safeguard Owensboro's market capture potential.

3.3.10. Paducah-McCracken County Riverport Authority

Thirty-eight percent (38%) of the Paducah-McCracken County Riverport's improvements pertain to maintenance and efficiency improvements. In order to increase market share, it is advisable for the riverport to focus on acquiring land and increasing static storage capacity. This would increase its throughput storage capacity. These improvements would complement existing facilities and support current customer needs supported by the riverport's tariff rates. Moreover, the port would keep its dock and storage facilities dedicated to containerized cargo, developed through its 2018 Marine Highway Grant Award. The port expects to at least maintain its market share; however, expansion of its facilities complementing its newer Sennebogen crane would mean more cargo and therefore more revenue.

3.3.11. Western Kentucky Regional Riverport Authority

Although the Western Kentucky Regional Riverport is currently a planned port, its capital improvement program (CIP) line items were still considered for maintenance, improved efficiency, and preservation or growth of market share. Sixty-nine percent (69%) of its CIP line items pertain to maintenance and efficiency improvements, which include a feasibility study, various professional services, new equipment, and security/technology. Therefore, thirty-one percent (31%) of its CIP line items pertain to market expansion.

Capital improvement items for market growth include waterfront amenities, new equipment, and landside access. Western Kentucky Regional Riverport's needs can be understood relative to other Kentucky riverports' handling capabilities and the continued development of the Port of Cairo across the Mississippi River in Illinois.

3.3.12. From SWOT to Policy: The Need for a Unified Strategy

KENTUCKY FOREIGN TRADE ZONES

Kentucky currently has three foreign trade zones (FTZs), including No. 47 in Cincinnati, No. 29 in Louisville at the Riverport Authority, and No. 294 in the Port of Paducah. Number 47 has six subzones, No. 29 has 16 subzones, and No. 294 has one subzone. Subzones include Toyota, United Parcel Service, and Mitsubishi Electric Automotive. Owensboro Riverport and Henderson Riverport are also subzones.

Source: "Just the Facts: U.S. Foreign Trade Zones – Kentucky Tax Advantages," Kentucky Cabinet for Economic Development. Available at <http://www.ced.ky.gov/kyed/c/pdfs/usftznky.pdf>.

Uniform funding priorities among the riverports include berth space, unloading ability, storage, and capacity to transfer to storage. Site visits in late 2020 and early 2021, as documented in **Appendix 2.3**, revealed the importance of further landside (road and rail) access. Because each riverport is unique, there are multiple possible solutions, depending on the facility, location, markets served, among other variables. Riverports can benefit from joint efforts between the Kentucky Riverport Association and the Economic Development and Transportation Cabinets (as described in **Chapter 4**). Such collaboration offers a path for the more equitable and successful pursuit of Federal Highway, Maritime Administration and Federal Railroad Administration formula and even discretionary (grant) funds. If each port continues to pursue discretionary funding individually, it is possible that competition for scarce funding may undermine collaborative opportunities for larger awards.

Currently, sixty-one percent (61%) of the five-year riverport capital investment needs involve improvements that extend beyond simple maintenance or modernization and entail expansion of facilities to support market growth. However, although each riverport has specific needs, there are benefits to considering the riverports as one system. These include marketing the Commonwealth as a single destination for the regional distribution of goods to nearby states such as Ohio and Indiana. Moreover, foreign trade zones could be leveraged better for the consolidation of imported goods; for example, in 2018, \$12.4 billion of Kentucky's goods exports (thirty-eight percent [38%]) went to Free Trade Agreement (FTA) partners.⁹

Peer states offer instructive examples regarding statewide collaborative riverport strategies. Coastal and inland ports are generally competitive, vying for market shares relative to overseas destinations and inland markets served. For example, port authorities such as the Virginia Port Authority will develop inland port facilities like the Virginia Inland Port more than 200 miles from the coast. In Virginia's case, the collaborative initiative offers the benefit of dedicated rail access from the coastline to inland markets. This collaboration enhanced access between the Port of Baltimore and points west at a lower cost to shippers with less highway congestion.

Ports and operators also often develop trade agreements with inland and overseas destinations. In July 2021, the Port of New Orleans began working with the Port of Caddo-Bossier in Shreveport to move steel coils from Taiwan. Further, American Patriot Holdings (APH) will begin providing marine services for the Port Plaquemine's new terminal 50 miles AHP for its inland partner network, which includes St. Louis,

⁹ "Kentucky Needs Trade Agreements to Grow," Business Roundtable, 2020. Available at https://s3.amazonaws.com/brt.org/BRT_General_Trade_KY_2020.pdf.

TERMINAL OPERATING SYSTEMS

Terminal Operating Systems (TOS) were not specifically requested by riverport directors in the call for capital improvement needs but were noted during the late 2020 survey of infrastructure needs as well as by one riverport customer interviewed in Fall 2021. A TOS allows a port to operate its marine and multimodal facilities more efficiently as well as to track cargo operations for the benefit of its customers. Investment in such systems for ports lacking them would provide benefits to the entire Commonwealth via the region the port serves.

Memphis, Joliet, Kansas City, Cairo, and Western Arkansas.¹⁰ Although none of these partners are in Kentucky, teaming arrangements with coastal ports and APH would prove beneficial for the Commonwealth for existing moves from Asia. In 2015, the Port of New Orleans and CORBA agreed to jointly promote waterborne commerce, providing benefits to the Commonwealth in regard to the U.S. Army Corps of Engineers' expanded boundaries for the Port of Cincinnati and Northern Kentucky.¹¹ Moreover, consolidating under one port authority like the Ports of Seattle and Tacoma in 2015 could have similar benefits such as more negotiating power. Today, one company (Northwest Seaport Alliance) manages facilities 32 miles apart. Other benefits include leveraging tariff rates in one location for improvements in another, even if they are for a different commodity or cargo.¹²

For Kentucky, a collaborative arrangement that transcends existing state agencies can offer distinct advantages. Such an arrangement allows for a regional focus on the riverport hinterland without distracting from other statewide priorities. An independent collaborative would also not entail direct oversight by a statewide port authority. Instead, an independent hinterland collaborative can provide a flexible structure based on voluntary cooperation. **Chapter 4** offers substantive recommendations for how such an entity can enable the joint funding of full-time staff support for pursuing federal funding, implementing market capture strategies, developing ongoing capital improvement recommendations, and advocating for waterborne business interests. Furthermore, initiatives like Terminal Operating System (TOS), if applied throughout the Commonwealth, can offer benefits that span across ports, with economies of scale not available from any singular port enacting such a system.

In addition to the previous example given for Virginia, Florida's experience is another instructive example of how a peer state benefits from collaboration among ports. Collaborative arrangements inform Florida's prioritization of the 15 ports along its 1,350 miles of coastline, the second-most extensive in the United States (compared to Kentucky's 664 miles on the Ohio River).¹³ Florida's process originated with the engagement of the Florida Ports Council in 1989, the Florida Seaport Transportation and Economic Development (FSTED) Program in 1990, and the Florida Ports Financing Commission (FPFC) in 1996. The council exists to serve as the professional association for the ports, providing advocacy, leadership, and information on seaport-related issues before the governor, the Florida Legislature, and Congress. The FSTED Program finances port transportation projects on a 50-50 matching basis, and the FPFC provides a cost-effective means of financing various capital projects by issuing bonds and transferring the proceeds to the individual ports.

¹⁰ "Plaquemines Port project finds a powerful potential partner," MarineLog, May 7, 2021. Available at <https://www.marinelog.com/inland-coastal/inland/plaquemines-port-project-finds-a-powerful-potential-partner/>.

¹¹ "Could New Orleans help us grow jobs?," The Enquirer, October 14, 2015. Available at <https://www.cincinnati.com/story/money/2015/10/14/could-new-orleans-help-us-grow-jobs/73904874/>.

¹² "Why Seattle and Tacoma, Maritime Rivals, Merged Their Ports," CityLab, January 19, 2017. Available at <https://www.bloomberg.com/news/articles/2017-01-19/why-seattle-and-tacoma-maritime-rivals-merged-their-ports>.

¹³ The Commonwealth of Kentucky is bordered by the Mississippi, Big Sandy, and Ohio Rivers. More than 50 miles of the Mississippi River border the western end of the Commonwealth; and 664 miles of the Ohio River border the Commonwealth on the northwest and northern ends.

Under the Florida arrangement, the Florida Ports Council does not determine which port handles which cargo. Instead, each port remains individually competitive, serving its respective hinterland markets. For example, Port Everglades handles fuel for South Florida but specializes in bananas for Dole from South America. Port Miami is known for importing flowers from South America, and JAXPORT has been developing its Liquefied Natural Gas (LNG) market for the past 10 years. In contrast, these and other Florida ports all handle containers. The priority is the interaction and communication among the ports given the state's support and recognition of their importance to the state's economy. Maritime activities in Florida account for thirteen percent (13%) of its gross state product; in Kentucky, transportation and warehousing comprise about five percent (5%) of the Commonwealth's gross state product.¹⁴

The following chapter explores in more detail the type of collaborative arrangement that can work for Kentucky's riverports, in addition to specific policy recommendations for each riverport and for the Kentucky riverport system as a whole.

¹⁴ "PY2018 Kentucky Economic Analysis," Kentucky Center for Statistics, September 2019. Available at <https://kystats.ky.gov/Content/Reports/KYPY18EconomicAnalysisReport.pdf?v=20201228060347>.



CHAPTER 4

WHAT ARE THE BENEFITS OF INVESTING IN RIVERPORTS AND RESULTING POLICY RECOMMENDATIONS?

Based on the current role of riverports in Kentucky's economy (as given in **Chapter 1**), the future market and economic needs of Kentucky's waterborne economy (as given in **Chapter 2**), and the strategic position of Kentucky's public riverport system (as given in **Chapter 3**), this chapter points the way forward for the public riverport system. This chapter (1) describes the economic benefits and wider economic impacts of investing in sustaining, modernizing, and improving Kentucky's riverport system and (2) offers a host of statewide and port-specific policy and investment recommendations to realize these benefits.

The analysis in this chapter expands on **Technical Memorandum 4**, which offers a high-level understanding of the basis for riverport needs, opportunities, and prioritization. **Table 4-1** provides the annual riverport investment needs by port¹ (The analysis is limited by the fact that some riverports did not offer information on capital programming. For this reason, some riverports do not have improvements or benefits listed in **Technical Memorandum 4** but have some programmatic needs shown in this final report that are consistent with general port characteristics derived from the port visits.) The current chapter describes how the investments made at each port relate to larger state and national benefits. This discussion is helpful both for framing grant applications and new funding opportunities and for creating an apparatus to secure funding, market share, and infrastructure opportunities for the public riverports.

¹ All investment needs and benefits are in 2021 dollars.

Table 4-1: Annual Port Investment Needs (2021 \$'s)^{2&3}

Riverport Authority	2021/2022	2022/2023	2023/2024	2024/2025	2025/2026	5-Year Total Port Needs
Eddyville	\$5,000,000	\$980,000	\$7,500,000	\$2,000,000	n/a	\$15,480,000
Greenup-Boyd County	\$20,000	\$1,500,000	n/a	\$6,000	n/a	\$1,526,000
Henderson County	\$600,000	\$750,000	\$1,500,000	\$3,000,000	\$15,300,000	\$21,150,000
Hickman County	\$2,500,000	\$3,500,000	\$2,100,000	n/a	\$10,000,000	\$18,100,000
Louisville	\$500,000	\$11,500,000	\$12,000,000	n/a	n/a	\$24,000,000
Maysville Mason	n/a	n/a	n/a	n/a	\$5,000,000	\$5,000,000
Meade County	n/a	\$12,000,000	n/a	n/a	n/a	\$12,000,000
Owensboro	\$10,489,029	\$4,284,175	\$3,660,250	\$3,737,000	\$2,815,100	\$24,985,554
Paducah McCracken County	\$13,243,000	\$400,000	\$51,000,000	n/a	\$17,000,000	\$81,643,000
West Kentucky Regional	\$234,000	\$15,354,000	\$1,950,000	\$350,000	\$350,000	\$18,238,000
Grand Total	\$32,586,029	\$50,268,175	\$79,710,250	\$9,093,000	\$50,465,100	\$222,122,554

4.1 RIVERPORT CAPITAL IMPROVEMENT PROGRAMS

The *Kentucky Riverports, Highway, and Rail Freight Study* includes a review of capital needs for each of Kentucky's eleven public riverports. Eight of the eleven participated in the review, with the other three not offering suggested new capital needs. To understand how the investment needs can improve port operations, the process of developing capital needs has entailed (1) two site visits to each port property, (2) multiple interviews with senior riverport staff, and (3) a review of findings in relation to the prevailing costs of riverport improvements and market conditions as described in **Chapter 2**. The 177 Capital Improvement Program (CIP) line items were grouped into relevant programs based on cargo type. **Chapter 2** provides the capital improvement program needs for each port by cargo type (dry bulk or general cargo).⁴ **Appendix 2.4** in **Chapter 2** includes a complete listing of each improvement project comprising the totals in **Table 4-2**.

² Some ports did not provide the data for a particular year.

³ From **Technical Memorandum 4**.

⁴ Capital needs are described in terms of the cargo type served (dry bulk vs. general cargo), and it is a summary of the detailed projects described in **Appendix 2.4**.

Table 4-2: Annual Port Investment Needs by Cargo Type⁵

Riverport	Cargo Type	2021/2022	2022/2023	2023/2024	2024/2025	2025/2026	Total
Eddyville	Dry Bulk	\$5,000,000	\$980,000	\$7,500,000	\$2,000,000	n/a	\$15,480,000
Greenup-Boyd	Dry Bulk	\$20,000	\$1,500,000	n/a	\$6,000	n/a	\$1,526,000
Henderson County	General Cargo	\$600,000	\$750,000	\$1,500,000	\$3,000,000	\$15,300,000	\$21,150,000
Hickman	Dry Bulk	\$2,500,000	\$3,500,000	\$2,100,000	n/a	\$10,000,000	\$18,100,000
Louisville	Dry Bulk	\$500,000	\$11,500,000	\$12,000,000	n/a	n/a	\$24,000,000
Maysville Mason	Dry Bulk	n/a	n/a	n/a	n/a	\$4,000,000	\$4,000,000
	General Cargo	n/a	n/a	n/a	n/a	\$1,000,000	\$1,000,000
Meade	Dry Bulk	n/a	\$12,000,000	n/a	n/a	n/a	\$12,000,000
Owensboro	Dry Bulk	\$6,060,573	\$245,000	\$1,335,000	\$840,000	\$1,872,900	\$10,353,473
	General Cargo	\$844,456	\$2,907,500	\$2,325,250	\$1,397,000	\$892,200	\$8,366,406
	N/A	\$3,584,000	\$1,131,675	n/a	\$1,500,000	\$50,000	\$6,265,675
Paducah McCracken	Dry Bulk	\$2,608,000	\$400,000	\$50,000,000	n/a	\$12,000,000	\$65,008,000
	General Cargo	\$10,635,000	n/a	\$1,000,000	n/a	\$5,000,000	\$16,635,000
West Kentucky Regional	Dry Bulk	\$234,000	\$15,354,000	\$1,950,000	\$350,000	\$350,000	\$18,238,000
Total		\$32,586,029	\$50,268,175	\$79,710,250	\$9,093,000	\$50,465,100	\$222,122,554

For each of the improvements identified in **Table 4-2**, the analysis herein quantifies transportation user benefits, including savings derived from vehicle miles traveled (VMT) and vehicle hours traveled (VHT) as well as savings associated with more efficient port operations and streamlined maintenance outlays resulting from timely attention to existing facility needs.

4.2 BENEFITS AND IMPACTS OF INVESTING IN RIVERPORTS

Maintain Competitive Transportation Costs for Kentucky Businesses: For every dollar invested in Kentucky's public riverports, the Commonwealth can anticipate between \$2.40 and \$5.30 in return to the national economy. Approximately 58% of this return can be expected to occur in Kentucky. The return will depend on the degree to which investment can extend beyond preserving existing capacity and toward enabling more efficient or expanded service to growing new markets. **Table 4-3** shows the costs and benefits of investing at different levels in Kentucky's public riverport system. **Appendix 4.1** provides a detailed description of investment benefits and impacts and the methods by which they are computed.

⁵ Some ports did not provide the data for a particular year.

Table 4-3: Benefit-Cost Ratio of Investing in Kentucky Riverports

Investment Category	Present Value: Five-Year Capital Costs	Present Value: Benefits to 2045	Benefit-Cost Ratio
Preserve: Business as Usual	\$12.3 million	\$29.1 million	2.4
Modernize: Optimize Port Efficiency	\$51.6 million	\$153.4 million	3.0
Expand: New Market Positioning	\$158.2 million	\$834.3 million	5.3
Combined Total	\$222.1 million	\$1.02 billion	4.6

Support Jobs, Business Sales, and GDP: The benefits of investing in Kentucky’s riverports enable Kentucky businesses to produce more output at more competitive prices, hire more workers, pay better wages, and retain more profits for the state’s GDP. Kentucky can anticipate over **\$660 million** in business sales, over **\$400 million** in GDP gain, and over **\$200 million** in household earnings in a 25-year period by fully investing in the public riverports. **Table 4-4** below shows how each level of port investment can contribute to Kentucky’s long-term economic performance.

Table 4-4 - Gross Domestic Product Increase Projection

Scenario	Undiscounted Outlays	Business Sales	GDP	Household Earnings
Preserve: Business as Usual	\$12.3	\$36.9	\$16.8	\$11.2
Modernize: Optimize Port Efficiency	\$51.6	\$154.4	\$70.5	\$46.8
Expand: New Market Positioning	\$158.2	\$473.1	\$216.2	\$143.5
Combined Total	\$222.1	\$664.3	\$303.6	\$201.4

Attract Business to Kentucky: The riverports can play a constructive role in attracting new business to the Commonwealth. Riverports increasingly rely on new clients in key growth industries such as textiles, machinery, and chemical manufacturing (which includes plastics and compounds used in automotive supply chains as well as fabrics used in medical devices), making riverports have a business interest in actively attracting new firms to the state. Because the supply chains of these new waterborne commerce markets are more complex than the legacy markets like coal,

fuels, and raw minerals, riverports can potentially enable Kentucky to offer a competitively priced location for higher-paying firms than riverports have supported in the past. However, leveraging riverports to attract industries with complex supply chains will require a better understanding of which products can move by water and pro-actively engaging riverports in the economic development conversation. A multi-state and multi-regional Riverport Hinterland Compact can provide an entity to do this type of research, marketing, and economic development customized to new riverport clients.

4.3 POLICY RECOMMENDATIONS TO IMPROVE RIVERPORTS' MARKET POSITIONS

Policy recommendations are based on the riverport system and individual port SWOT analyses addressed in **Chapter 3** and the benefits of investing highlighted above. Recommendations are also grouped by type, including on-site improvements, off-site improvements, funding, human resources, and those policy issues that should be addressed by other organizations, including the Kentucky Association of Riverports. Further, **Chapter 5** includes policy recommendations for economic development. The recommendations addressed here focus on the sustainable provision of riverport transportation in and supporting the Commonwealth's freight system. There are 20 policy recommendations outlined below:

4.3.1. On-Site Improvements

On-site improvements include those on riverport properties and may be eligible for state or federal funding (e.g., federal discretionary grants and other sources). In addition, on-site improvements likely require permitting as well as commitments from private carriers/shippers, such as the current arrangement between Pine Bluff Materials and the Paducah Riverport. Therefore, on-site improvements vary by port depending on which component of the port needs operational or capacity improvements. Policy recommendations include the following:

1. Undertake a capacity assessment of each riverport by on-site operational component (mooring/berthing, apron-to-storage transfer capability, covered and uncovered storage) for the respective current and targeted commodities.
2. Target improvements based on the capacity assessment of each riverport to ensure the current and foreseeable throughput is addressed; in other words, there is a need to ensure the ability to unload barges equates to the ability to move goods to storage, which is unimpeded by the ability to move goods through storage (contingent on static storage) and then to move goods from the port.
3. Leverage return-on-investment analyses for more significant improvements, such as rail facilities, to ensure the funding yields achievable benefits for the riverport.

4. Review applicable terminal operating systems (TOS) to help Kentucky riverports keep track of commodities traversing wharves, docks, storage yards, and warehouses to consider for the riverports. Moreover, a TOS would help attract new business to any of the Kentucky riverports depending on the shipper, commodity origin/destination, and port location.
5. Explore the use of business intelligence databases to assess waterborne markets and pinpoint customers on an ongoing basis.

4.3.2. Off-Site Improvements

Off-site improvements include those beyond riverport property supported by the riverport. Off-site improvements can be led by the Commonwealth, county government, metropolitan planning organization (MPO), and/or a private sector sponsor through a public-private partnership (P3). Off-site improvements also support on-site improvements and include roadway maintenance, rail improvements, new intermodal facilities, and other infrastructure or operational enhancements. Off-site improvements also vary by port, depending on which port needs improved access. Policy recommendations include the following:

1. Leverage MPO projects such as those outlined in their Unified Planning Work Programs to support riverport access, given the greater weight load requirements associated with trucks, including those requiring oversize/overweight permits.
2. Review the freight (truck and rail) bottlenecks assessed by the Federal Highway Administration with the help of the Kentucky Transportation Cabinet to determine targeted improvements in support of one or more riverports.⁶
3. Review the Kentucky traffic demand models, notably for those small urban areas, to support riverport access critical issues.⁷

4.3.3. Funding

Funding entails public and private sector monies from the federal, state, and local levels. Federal and state dollars include discretionary and formula monies, whereby some state money and most local money can flow down from the higher level, e.g., federal formula funding is administered by the Kentucky Transportation Cabinet and the respective MPO.

⁶ Current freight bottlenecks can be found at https://ops.fhwa.dot.gov/freight/freight_analysis/mobility_trends/national_list_2019.pdf.

⁷ More information for Kentucky's traffic demand models can be found at <https://transportation.ky.gov/Planning/pages/traffic-demand-modeling.aspx>.

Funding is vital to the on-site and off-site improvements to maintain facilities, improve efficiency, and add capacity to each of the seven operating riverports as well as help any of the four developing riverport facilities. New riverport facilities can add capacity to the Commonwealth's complete marine capabilities. In addition, new inland transfer (intermodal) facilities for existing commodities and new services (such as container-on-barge) can add capacity. Policy recommendations include the following:

1. Provide a one-time \$12.3 million state-funded riverport preservation program to allow for an unmatched pool of funding for improvements of the type described in **Chapter 2** of this report for preserving Kentucky's existing public riverport infrastructure. This program is envisioned not to require local matches, and to support qualified preservation needs occurring in a five-year period (unlike the KRI grant program which provides annual program with a required local match).
2. Make the Kentucky Riverport Improvement (KRI) Grant Program an annual \$6.7 million program, without the need for annual reauthorization, dedicated to modernization and expansion investments that can both qualify for federal funding and equip the public River Ports to competitively handle emerging commodities in the post-coal economy. (If the \$12.3 million preservation funding is provided, then the KRI grant funding can be used exclusively for those projects that enhance and upgrade the market capacity of Kentucky's public riverports).
3. Redevelop the KRI Program criteria to channel KRI grants into investments with the greatest likelihood for federal matches, and with the greatest impact for enabling public riverports to play an active role in emerging commodities (such as chemicals, plastics, advanced manufacturing products and others described in **Chapter 2**). Such criteria would include recognizing projects with social equity, carbon reduction/sustainability benefits, and technology investments consistent with a host of federal funding programs. New KRI grant criteria are also recommended to consider whether the riverport is an operating or developing facility.
4. Establish a 20% cap on the local match requirement that can be imposed on local contributions for the new modernization/expansion oriented KRI program. Capping the local match at 20% will ensure that smaller riverports can reach the match threshold for the higher investment amounts enabled by this program.
5. Leverage the resources of multi-state and multi-regional economic and infrastructure groups (as described later in **Table 4-12**) as partners in riverport funding and infrastructure priorities.
6. Explore the development of a Waterways Caucus in the Kentucky General Assembly similar to the Aeronautics/Aviation Caucus developed in 2021.

Table 4-5 assesses funding available through the *2021 Kentucky Riverport Highway & Rail Freight Study* and represents a starting point for the identification of future funding opportunities. Specific programs, criteria, and levels associated with the Bipartisan Infrastructure Law (BIL) will be defined through and beyond the 2022 release of the current study, and they represent emerging opportunities that may be addressed through the means described in **Section 4.6** of this study.

Table 4-5: Representative Funding Sources for Riverports

Type	Program	Type	Program			
Infrastructure	ATCMDTP	Resiliency	Disaster Loan Assistance	In 2022 More than \$41.7 Billion in federal funds were available		
	BUILD		Emergency Relief			
	Farm Storage		HSGP			
	INFRA		PSGP			
	Marine Highway		SaTC			
	PIDP		TSGP			
	RRIF	Environment	Clean Diesel	Additional funds are expected to be programmed in 2022 through the Bipartisan Infrastructure Law (BIL)		
	Transp Alts Set Aside		CMAQ			
	WIFIA		Endangered Species			
	Econ Dev Assistance		Marine Debris			
Economic Development	Planning Grant		Pollution Prevention		Kentucky's \$222 Million Riverport Need is less than 1% of available federal funding if KRI grants are fully leveraged for available programs	
	APRA-E		SRA			
			Targeted Airshed			
					Wetland Program Development Grants	

Source: *Federal Funding Handbook for Marine Transportation System Infrastructure 4th Edition, US Committee on the Marine Transportation System, November 2019 (Corrected 2020)*

4.3.4. Commonwealth Focus

The Commonwealth should continue to support the eleven public riverport authorities based on the various agencies' mission statements and resources. Agencies and supporting entities include the Cabinet for Economic Development, the Kentucky Association of Riverports, the Water Transportation Advisory Board, and the Kentucky Transportation Cabinet. In addition, local resources, including county transportation departments, MPOs, municipal agencies, and local economic development agencies (chambers of commerce) should be leveraged. Policy recommendations include the following:

1. Maintain the Kentucky Riverports, Highway, and Rail Freight Study and Kentucky Association of Riverports (KAR) websites.
2. Update the descriptions and contact information for each riverport on the Kentucky Association of Riverports website with relevant information from this study. Also, connect the Kentucky Association of Riverports website to the Kentucky Cabinet for Economic Development's (CED) website, citing the connection between cargo movements, Kentucky commercial/industrial development, and jobs.
3. Consider the riverports strategically within the Commonwealth for hinterland markets served, current and potential commodities handled, and potential external domestic and international markets that could be served.

4. Leverage the Water Transportation Advisory Board and Governor's Office of Agricultural Policy for new or expanded sources of funding, including those from the Kentucky Agricultural Development Fund, Environmental Protection Agency, and other sources highlighted in the US Committee on the Marine Transportation System's MTS Federal Funding Handbook, the American Association of Port Authorities, and the US Environmental Protection Agency.⁸
5. Seek a MARAD Marine Highway project designation for the Ohio River in Kentucky and submit new Marine Highway Project applications for funding eligibility.
6. Designate Critical Rural Freight Corridors (CRFCs) in the Commonwealth based on an accepted methodology that includes riverport access. Similarly, reconsider Critical Urban Freight Corridors (CUFCs) based on riverport access. This would, in turn, help increase federal funding for transportation.⁹
7. Leverage the resources available from the Kentucky Transportation Center to develop feasibility studies in considering new projects, funding, and benefits.

"X's" in bold show the organization suggested to take lead on the recommendation.

Table 4-6 provides a matrix of the policy recommendations for the suggested responsible organizations within or pertaining to the Commonwealth. "X's" in bold show the organization suggested to take lead on the recommendation.

⁸ For more information on the MTS Federal Funding Handbook, see <https://www.cmts.gov/topics/infrastructure>. The latter respective sources can be found at <https://www.aapa-ports.org/files/PDFs/Federal%20Funding%20for%20Ports.pdf>.

⁹ For more information how CUFCs and CRFCs can increase funding, see https://ops.fhwa.dot.gov/fastact/crhc/sec_1116_gdnce.htm.

Table 4-6: Policy Recommendations - Stakeholder Involvement

Rec #	Description	Kentucky General Assembly	KYTC	KCED	KAR	WTAB	DRA	KY Office of Ag Policy	Kentucky Transportation Center	USDOT	EPA	Riverports	Counties/MPOs
1	Capacity assessment	X			X							X	
2	Target improvements	X			X							X	
3	Return on Investment analyses			X	X							X	
4	Review TOS				X							X	
5	Metropolitan Planning Organization Unified Planning Work Programs											X	X
6	Review Freight Bottlenecks		X							X		X	
7	KY Travel Demand Model		X									X	
8	Establish dedicated \$12.3 million preservation program to clear Kentucky's public riverport preservation backlog												
9	Make Kentucky Riverport Improvement (KRI) annual and fund at \$6.7 million annually	X			X							X	
10	Dedicate KRI Grant funding to expansion and modernization needs to expand and upgrade riverports and maximize federal matches	X			X							X	
11	Maximize allowable cap for local KRI grant matches to 20% of total project	X			X							X	
12	Leverage the resources of the Delta Regional Authority				X		X						
13	Explore the development of a Waterways Caucus and Riverport Hinterland Compact (RHC)	X			X								
14	Prioritize foci including economic impacts			X	X							X	
15	Maintain KY Riverport System & Kentucky Association of Riverport (KAR) websites				X							X	
16	Update KAR website with study info and hyperlink to Kentucky Cabinet for Economic Development				X							X	
17	Consider riverports strategically in the Commonwealth and internationally				X							X	
18	Leverage funding information provided by other organizations					X		X			X	X	
19	Submit new Marine Highway Project applications		X							X		X	
20	Update Critical Urban/Rural Freight Corridors (CUFC/CRFCs)		X									X	
21	Leverage resources from the Kentucky Transportation Center to develop feasibility studies								X			X	

The goal of the recommendations is to increase demand for Kentucky Riverports, which in turn will improve the Commonwealth's economy. This is intended to be through collaboration, initiative, reprioritization of criteria for funding, new federal designations for freight, and funding itself. The goal is to improve infrastructure on- and off-site that connects to markets beyond Kentucky in the Midwest and along the Gulf Coast. **Figure 4-1** shows a tug and barge departing Greenup-Boyd County Riverport.



Figure 4-1: Tug and Barge Leaving the Greenup-Boyd County Riverport

4.4 RECOMMENDATIONS FOR THE IMPLEMENTATION OF RIVERPORT HINTERLAND COMPACT (RHC)

The above recommendations can be greatly enhanced through a dedicated quasi or intergovernmental entity responsible for undertaking the findings of this study as a top priority. For this reason, a Riverport Hinterland Compact or RHC is recommended as an implementation entity.

4.4.1. Designating a Riverport Hinterland Compact (RHC)

Key findings of this study indicate that in the absence of a concerted effort to enhance and protect its waterborne commerce markets, Kentucky is expected to lose between 20 and 30 million tons of waterborne commerce by 2045 (as shown in **Chapter 2**). The shift in Kentucky's waterborne commerce market away from coal, petroleum, and fossil fuels to agricultural commodities, manufacturing inputs, and chemical/allied products (including rubber and plastics) is expected to transform the capital requirements on Kentucky's riverports (as also shown in **Chapter 2**). Federal programs are available to support a new role for riverports and associated capital needs (as shown in **Chapter 3**). However, Kentucky currently secures only a small portion of the federal funding available and relies heavily on Kentucky's \$500,000 Kentucky Riverport Improvement (KRI) grant program.

Unique Challenges of Hinterland Market Development: The above findings point to unique challenges that the restructuring of the Ohio River poses to the riverport “hinterland,” which is defined in the Technical Memoranda of this study as a 90-minute drive time/delivery radius of Kentucky’s public riverports (shown in green below). In this report, a riverport’s hinterland is defined as a 90-mile drive radius of the ports (shown in green and blue below in **Figure 4-2**).

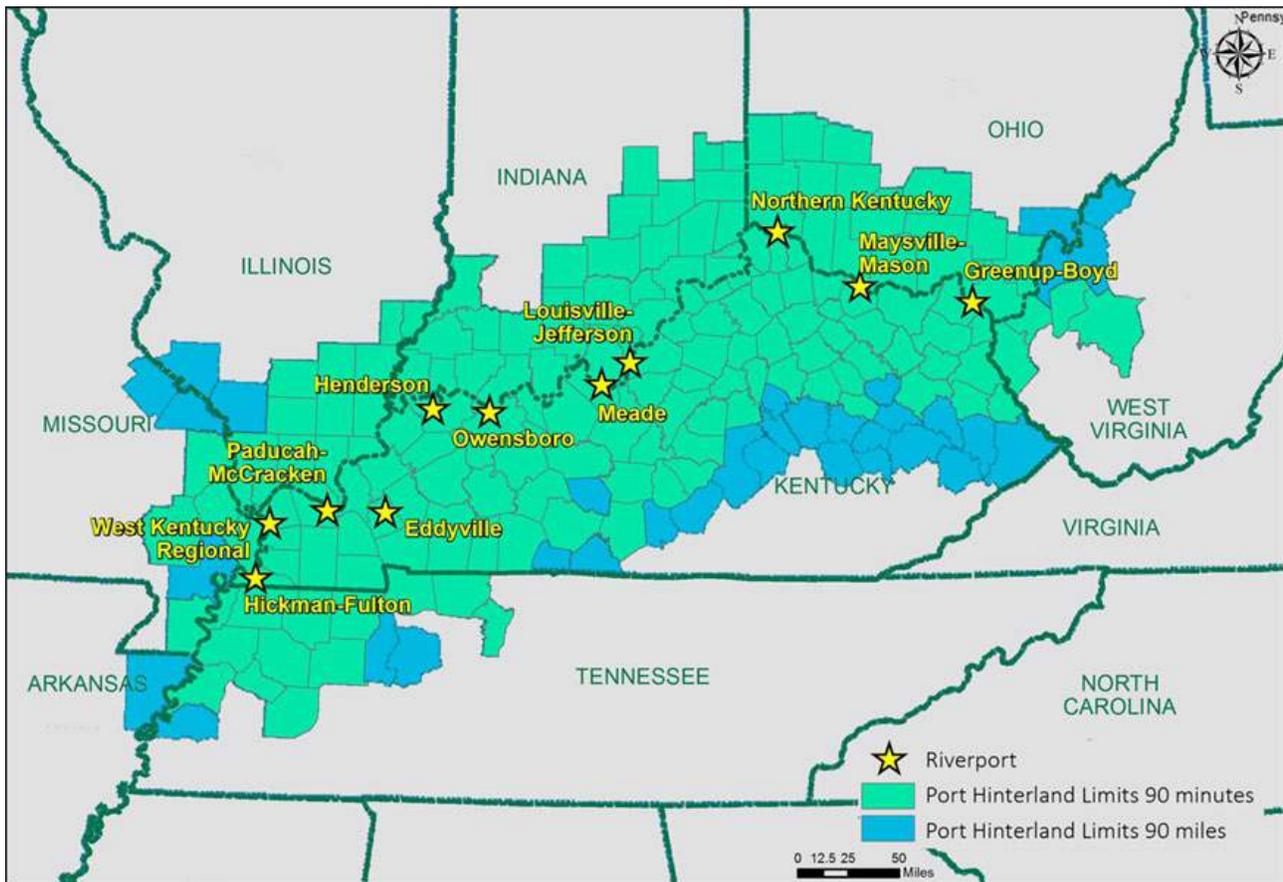


Figure 4-2: Kentucky Riverport Hinterlands

Kentucky’s riverport hinterland market includes not only Kentucky but also significant portions of West Virginia, Ohio, Indiana, Illinois, Missouri, and Tennessee. For this reason, the development and use of Kentucky’s riverports are tied in many ways to the competitiveness, supporting infrastructure, and overall conditions in neighboring states in terms of the attraction and retention of riverport clients and readiness to accommodate the overall restructuring of the Ohio River’s waterborne commerce markets.

For this reason, the strategic objectives for sustaining and leveraging Kentucky’s public (and private) riverports do not easily fall within the mission and jurisdiction of any single Kentucky state or local agency. For

example, the Kentucky Cabinet for Economic Development provides a strong focus on developing Kentucky’s statewide economic position, just as county and local entities provide a strong focus on local development opportunities. However, the attraction of firms into home markets leveraging Kentucky’s riverports may, in many cases, not represent a statewide priority. For example, a major top prospect for leveraging a riverport may not represent the best and highest use of the Kentucky Cabinet for Economic Development staff when weighing priorities against the entirety of Kentucky’s business attraction, creation, retention, and expansion (ACRE) opportunities. Furthermore, because the hinterland includes counties both within and outside of Kentucky, there are cases in which a riverport client (or prospective client) may be located in a neighboring state. In such cases, the attraction or retention of such a client would naturally not fall within the mission of the Kentucky Cabinet for Economic Development. Similarly, needed activities like the development of complementary ports, ground infrastructure, or amenities in other states can support the attraction and expansion of Kentucky riverport clients are all activities squarely outside the purview of the Kentucky Transportation Cabinet or any other local entity within Kentucky.

**DEFINITION OF A
RIVERPORT
HINTERLAND
COMPACT**

The proposed *Riverport Hinterland Compact* (RHC) is defined as a new quasi-public entity with a stated mission of supporting the economic transition of the Ohio River Hinterland and its port infrastructure from the coal-centered market of today to new and more competitive future markets.

When considering overall statewide economic development or multimodal freight priorities in West Virginia, Ohio, Indiana, Illinois, Missouri, and Tennessee—no single state has an entity explicitly focused on the unique economic restructuring of the Ohio River market. However, the findings of the current study clearly indicate that if concerted actions are not taken in the areas of (1) securing funding to develop capital projects for new market sectors; (2) attracting, creating, retaining, and expanding riverport clients in the hinterland; and (3) actively marketing the riverports to strategic markets in the long-term, then Kentucky will be unable to competitively sustain its riverport market. Even if Kentucky is unable to sustain its current public and private riverport markets, there is no entity with a clear mission that would facilitate decisions about channeling investment to consolidate, privatize, or otherwise adapt the riverport infrastructure in the face of declining markets. For all of these reasons, it is recommended that an implementation agent for the findings of the current study be created that will be referred to herein as a Riverport Hinterland Compact (RHC).

The RHC is envisioned to have from one to three FTE staff with expertise in economic development, marketing, and marine planning explicitly dedicated to these functions in support of the development of the Ohio River and the larger Ohio/Mississippi trade market in and around Kentucky. It is recommended that in the formation of the RHC, an initiatory study is undertaken to determine the specific governance, funding, and detailed operations of the compact. Kentucky’s experience with the Tennessee-Tombigbee Waterway Development Authority provides a useful precedent for the type of collaboration which a RHC may enable.

While the recommendations in the remainder of this section have value even without a compact, the compact is recommended for a number of reasons. First, a compact can offer a coordinated response to the market changes described in **Chapter 2**. Second, without collaborative focus there is a risk that the riverports will simply be competing for diminishing shares of a declining long-term market. Finally, a compact can make the strongest possible case for funding and new business by framing the riverports as national assets as opposed to local concerns.

4.4.2. Mission and Strategic Objectives for a Riverport Hinterland Compact

The overall mission of an RHC would be to create a vibrant, sustainable, and economically prosperous waterborne commerce market for the Ohio River and the community it serves by attracting and channeling investment into a new generation of riverport clients, port facilities, and carriers through the economic transitions of the Ohio River market.

This mission is envisioned to overlap with a host of allied organizations both in Kentucky and in neighboring states and at the national level. **Table 4-7** suggests a host of state, multistate, and national collaborators that may have missions that in some way overlap with and support an RHC for the Ohio River. The table includes all potentially interested states with the understanding that in the formation of the RHC, some states (such as Missouri and Tennessee) may participate with less investment than states with higher frontage and commerce on the Ohio River – such as Kentucky, Ohio, Indiana, and Illinois). It is recommended that the Kentucky Association of Riverports use **Table 4-7** as a starting point for recruiting potential cosponsors and members that would have a specific interest in the modernization of port infrastructure and transition of the riverport commerce market in the long term. The RHC would differ from each of the existing organizations listed in **Table 4-7** concerning the following:

1. A detailed focus on the waterborne commerce market of the Ohio River as it relates to the demand for riverport facilities and infrastructure
2. The availability and competitiveness of riverports on the Ohio River for funding of riverport as well as lock and dam infrastructure to maximize the value and impact of the river as an economic resource
3. The concentration on specific business attraction, creation, retention, and expansion (ACRE) activities to draw together businesses, clusters, and supply chains using the Ohio River as a resource in the long term.

Table 4-7: Potential Collaborating Partners for RHC

Local Entities	State Entities		Multistate/National Entities
<ul style="list-style-type: none"> • All regional economic development organizations serving counties in the hinterlands • All Metropolitan Planning Organizations (MPOs) in the hinterland 	<ul style="list-style-type: none"> • Kentucky Association of Riverports • Kentucky Cabinet for Economic Development • Kentucky Transportation Cabinet • Tennessee Department of Economic & Community Development • Tennessee Department of Transportation • Ohio Department of Development • Ohio Department of Transportation 	<ul style="list-style-type: none"> • Indiana Economic Development Corporation • Indiana Department of Transportation • Illinois Department of Commerce and Economic Opportunity • Illinois Department of Transportation • Missouri Department of Transportation • Missouri Department of Economic Development • West Virginia Department of Economic Development • West Virginia Department of Transportation 	<ul style="list-style-type: none"> • American Waterway Operators • Delta Regional Authority • Appalachian Regional Commission • Mid-America Freight Coalition • Mississippi Ohio River Confluence Economic Alliance • Army Corps of Engineers • Institute for Trade and Transportation Studies

4.4.3. Riverport Hinterland Compact: Concept of Operations

The concept of operations for the RHC is envisioned to cover four strategic areas: (1) developing and advocating for a program of infrastructure improvement/modernization needs; (2) identifying and executing a series of site development and business attraction, creation, retention, and expansion (ACRE initiatives to develop sites, support business, and otherwise support shippers and carriers using the Ohio River and its ports; (3) advocating and acquiring funding for both the infrastructure and the ACRE needs of the riverport hinterland through competitive grants, state, and MPO funding processes, and public-private partnerships; and (4) actively marketing the system of Ohio River ports to shippers and carriers using the Marketing Toolkit provided in the current study as well as sourcing databases and other resources as described in **Chapter 5**.

Initiation: It is recommended that an RHC is initiated through the action steps given in the section below. Because the Kentucky riverports are shown by the current study to have a significant interest in the restructuring of the Ohio River commerce market, it is recommended that the Kentucky Association of Riverports use the current study and its findings to work with Kentucky legislators representing hinterland market areas to form a legislative caucus and pursue appropriate grant funding to support the action steps given in the following section.

Organization and Staffing: It is recommended that an RHC be organized to have two to three FTE staff with expertise in economic development, marketing, and transportation planning in a combination of positions with roles as shown in **Table 4-8**.

Table 4-8: RHC Staffing Roles, Qualifications, and Responsibilities

Staff Role & Qualifications	Key Qualifications and Responsibilities
<p>Marketing & Promotion Principal (1 FTE): Proven background in economic development and marketing with a strong track record in (1) business location strategy and attracting targeted businesses to sites in a region; (2) marketing infrastructure and service assets leveraging price of services or location, amenity mix and promotional channels (social media, networking, direct outreach, and other avenues); and (3) a successful track record in competitive federal and state grant applications for transportation infrastructure.</p>	<p>Develops and executes a detailed marketing and outreach plan for attracting new clients to riverport communities in growth sectors found in this 2021 Kentucky Riverport, Highway, and Rail Freight Study and other similar market studies. This includes maintaining an active list of prospective sites, new riverport customers to locate to the region, and modal capture opportunities for riverports to serve more volume from customers currently in the region. Develops and executes a detailed annual funding plan to include identifying and securing competitive grants, state or local matches, and capital programming for on-port and grand transportation improvements supportive of riverport competitiveness.</p>
<p>Infrastructure & Planning Principal (1 FTE): Planner or engineer with proven experience identifying physical on-site requirements for port expansion or adaptation, evaluating on-port and supporting ground transportation needs associated with changing market and business objectives, developing projects meeting DOT and MPO capital programming requirements, and demonstrating engineering/performance case for port and related infrastructure improvements.</p>	<p>Develops and executes a program of specific on-port investments in modernizing riverports each year, building from the initial capital program list given in Chapter 2 of this 2021 Kentucky Riverport, Highway, and Rail Freight Study. Identifies new/additional modernization and investment needs each year, which may include either expansion, consolidation, or repurposing of port properties based on market conditions.</p>
<p>Technical and Administrative Support: Experience with document production, meeting and event coordination, schedule/calendar management, and maintaining databases/contact lists for public or quasi-public entities.</p>	<p>Technical/administrative support staff to assist with the production of documents, coordination of meetings and outreach activities, and other functions enabling two principals to succeed.</p>

Business Planning: It is recommended that an RHC carry out an annual business planning process to include the following:

1. Reporting on funds expended and results achieved in relation to the prior year’s business plan.
2. Updating a specific prioritized list of prospective sites and related new riverport customers growth industry/market segments within the hinterlands, with specific marketing services, infrastructure investments, and other needs to capture sites in the year and funding sources to be pursued for each.

Updating a specific list of prioritized on-port or client-site development infrastructure projects needed to acquire business at the indicated sites (or in the indicated segments) with cost estimates and recommended funding sources to be pursued for each.

3. Creating an estimate of the annual costs for the above FTEs to execute the annual RHC development program and the sources of operating funds sought, including contributions/subscription fees from the riverports themselves as well as sponsoring/collaborating agencies derived from **Table 4-7**. It should be noted that if each entity shown in **Table 4-7** contributed \$10,000 per year, it would fund the FTEs given in **Table 4-8** at a total staff budget of \$230,000/year (assuming \$100,000 for an infrastructure planning principal, \$80,000 for a marketing & promotion principal, and \$50,000 for administrative support and other overhead).

Accountability: It is recommended that an RHC board be appointed each year to consist of representatives of both (1) entities that fund the RHC annual operations and (2) entities identified as potential sponsors of RHC infrastructure projects or with enough overlap in RHC's mission to provide meaningful input in its direction and support for allied organizations. The board is recommended to be drawn from the entities shown in **Table 4-7** as a starting point.

The board would meet at designated intervals during each year to do the following:

1. Review quarterly progress toward business plan objectives and offer adjustments to the program or business plan based on developments during the year.
2. Review and approve each year's business plan.
3. Identify and pass resolutions directing the staff to specific actions and opportunities in collaboration with allied entities.
4. Perform an annual closed-door review of RHC performance and assessment of ongoing staffing requirements and sufficiency.

4.4.4. Action Steps for Initiating a Riverport Hinterland Compact

As the entity presently charged with advocating for the Kentucky riverports and their overall investment needs and market position, it is recommended that the Kentucky Association of Riverports leverage the findings of the current study to initiate the steps for the creation of an RHC as described in this section.

Action #1: Develop Kentucky Waterways Legislative Caucus

It is recommended that the Kentucky Association of Riverports share the executive summary of this *2021 Kentucky Riverport, Highway, and Rail Freight Study* with legislators from districts covering the Kentucky counties

in the hinterland region as shown in **Figure 4-2** to explore the creation of a waterway’s caucus in the Kentucky General Assembly. Although a waterway’s caucus is not necessary to implement the findings of the current study, a legislative caucus can be helpful in articulating the strategic objectives of an RHC within the context of Kentucky’s overall legislative environment. For example, a caucus can be helpful in securing funding if such is deemed in the Commonwealth’s interest as well as in advising the governor and other state entities regarding the collaboration of an RHC with both Kentucky governmental entities and others identified in **Table 4-7**. A legislative caucus could then draft or propose appropriate legislation for acting on these recommendations that would consequently shape how actions are taken within the larger policy context that may extend beyond the scope of the current study. The caucus could also support the passage of resolutions and otherwise provide guidance for the RHC in keeping with the interests of stakeholders as expressed through elected representatives. The caucus can be formed in the same way as other Kentucky legislative transportation-related caucuses, such as the Aerospace/Aviation Caucus and the Bourbon Trail Caucus.¹⁰

Action #2: Call Governor’s Summit on Ohio River Economy

The governor of Kentucky can reach out to governors of other states sharing in the Ohio River waterborne economy to develop business attraction, technology, workforce, and infrastructure initiatives to support the overall transition of the Ohio river economy. This initiative may lead to legislation in areas of both infrastructure investment and economic development to enable the states’ shared interest in continuing to enjoy the efficiencies of waterborne transportation as commodity markets shift from coal to other goods.

Action #3: Develop Riverport Hinterland Compact

Task 1: Pursue Funding for Initiatory Study: The US Department of Commerce, through the Economic Development Administration (EDA), provides grants for which nonprofit, governmental, and nongovernmental entities are eligible to apply. EDA makes planning and local technical assistance investments to support economic development, foster job creation, and attract private investment in economically distressed areas of the United States. The grant funding ranges from \$500,000 to \$5 million. There is an 80 percent federal allocation that requires a 20 percent local match. The match can be in-kind but must be carefully documented by person, percent of time, and tracking of hours. The top priority for receiving funds is equity. Each application must also state that the strategic economic plan ensures that fair labor practices are followed. The best source of EDA funding for an Ohio River RHC is likely Public Works and Economic Adjustment Assistance funding, which includes the Assistance to Coal Communities funding.

APPLY FOR EDA GRANTS

US Economic Development Administration
401 W. Peachtree St. NW
Suite 1820
Atlanta, GA 30308
(404-987-2887)

¹⁰ <https://General Assembly.ky.gov/Committees/Caucuses>

Kentucky's riverport hinterlands are eligible for such grant assistance, and it is recommended that the Kentucky Association of Riverports apply for such a grant to undertake an initiatory study leading to the creation of an Ohio RHC entity in 2022. Grant funds would be used to procure the services of a qualified vendor with experience in economic development initiatives to create a foundational study and policy framework for an RHC.

The application should identify (1) the potential for the RHC to facilitate sustainable and equitable economic growth, (2) the role of the RHC enabling the hinterland economy's transition from coal-fuel markets to more sustainable waterborne commodities, and (3) the contribution of the RHC in diversifying the hinterland economy and to reach new manufacturers and implement socially equitable development strategies, including poverty elimination and clean industry sectors. The strategic plan should document emerging or existing public-private partnerships and potential new sectors, help with recruitment, and outline the role of the statewide entity as an effective arrow in the quiver of Kentucky Economic Development. To the extent possible, the application should document the following:

- Loss of coal jobs
- Loss of pandemic income
- Diversification of different sectors
- Any new economic stability or resiliency

The Economic Development Administration (EDA) offers the Kentucky riverports substantial new funding opportunities to enable large transformative investments, such as those recommended in this document. Specific applications should be started early and in partnership. Planning and Technical Assistance Grants are a specific additional resource opportunity. This program grant is designed to build the capacity of a region. State organizations are eligible to undertake and promote innovative economic development programs by funding feasibility studies, plans, and impact analyses. The scope of the foundational study in the grant would include the following activities:

Task 2: Articulate Economic Stakes of Ohio River Waterborne Market Restructuring: Building from the analysis presented in **Chapters 2 and 4** of the *2021 Kentucky Riverport, Highway, and Rail Freight Study Final Report*, quantify economic and business impacts of the economic restructuring of the Ohio River on each affected state, including Kentucky, Tennessee, Missouri, Illinois, Indiana, Ohio, and West Virginia, to the year 2045. Expanding the analysis of the current study to demonstrate the potential losses to each of the respective states in terms of jobs, wage income, employment, and GDP provides a rationale for not only Kentucky's interest in the Ohio River economy but also for the business case for why the other states may be motivated to invest in and collaborate in an RHC. It is likely that marine and waterway transportation studies and

freight plans in the other states have not isolated the unique impact of Ohio River economic change to the degree Kentucky has. This is because, unlike Kentucky, the other states have Great Lakes commerce and/or Mississippi River commerce that may make it difficult to see the strong business case for investing in the Ohio River hinterland as has been demonstrated for Kentucky by the present study. Because the mission of the RHC is to support Ohio River waterborne commerce through the economic restructuring described in **Chapter 2**, expanding the business case (and body of support) beyond Kentucky to federal and neighbor-state partners can help build consensus and resources for an RHC that would benefit the Commonwealth.

**INFRASTRUCTURE
INVESTMENT & JOBS
ACT: SECTION 21106.**

The IIJA authorizes states and certain other local governmental entities that are regionally linked with an interest in a specific multistate freight corridor to enter into multistate compacts to promote the improved mobility of goods. This section requires the Secretary to establish a grant program to provide financial assistance to compacts in amounts up to **\$2 million** for a new multistate compact and **\$1 million** for an existing multistate compact.

Task 3: Identify and Recruit RHC Partners and Roles: Identify and recruit interested entities for serving on the RHC board and to sponsor/subscribe to the RHC on an ongoing basis. Identify (1) specific RHC performance outcomes for each entity shown in **Table 4-7** and additional participating entities as appropriate and (2) convene a series of up to three initiatory workshops to present and take comments from prospective RHC collaborating entities on (a) the RHC concept of operations as given in the above section of this report, (b) potential funding requirements and appropriate levels of investment and models for subscription/sponsorship of compact members, and (c) potential timelines for creation of a compact. A key aspect of Task 2 in RHC development includes the assessment of potential funding under the 2021 *Infrastructure Investment and Jobs Act* (IIJA). The act provides for \$1–2 million in federal funding (with a 25 percent cumulative local match) for interstate compacts or collaboratives that manage corridors. The Ohio River is recognized as a corridor under federal transportation law, and the RHC initiation study should entail (1) outreach to all of the entities shown in **Table 4-7**, (2) assessment and presentation of the business case for a matching contribution under IIJA, and (3) the administration of the application/request for IIJA funding of such a compact if found to be feasible and justifiable under the act.

Task 4: Draft First-Year RHC Business Plan: Based on the findings of the 2021 *Kentucky Riverport, Highway, and Rail Freight Study* (including the guidance for RHC business planning given in the above *Concept of Operations*), draft a synopsis of a first-year business plan (including a one-page executive summary) to articulate the costs, objectives, actions, capabilities, and intended outcomes of the RHC for its first year. This draft business plan can then be used (together with the findings of Task 1) to establish buy-in and expectations for participating entities.

Task 5: Draft RHC Charter and Operating Agreement: Based on the results of Tasks 1 and 2, draft a formal charter for the RHC with a plan to have the RHC recognized as necessary by any legislative and executive authorities with a target date to commence operations and a strategy for proposing policy or legislation in each participating state or district to support both funding and ongoing participation in the compact.

Action #4: Implement First-Year Operations of the RHC

Task 6: Implement First-Year Operations of the RHC: In 2022 and 2023, the RHC can be expected to commence operations according to the charter created in Task 5. It is recommended that the RHC proactively pursue both the key infrastructure and funding recommendations presented in this chapter as well as recommendations in **Chapter 5** regarding strategic economic development.

If EDA Grants are not available, it is recommended that other assistance may be sought through collaboration among the entities shown in **Table 4-7**.

Action #5: Pass State Funding Package for Riverports

It is recommended that the Kentucky General Assembly pass a new funding bill to establish the preservation program and enhanced the KRI Grant Program. Enhanced state funding levels are *described in*

Table 4-9: The table shows that such a funding level has the potential to attract up to **\$167.5 million** of new federal money to the Kentucky's Public Riverports predicated on the benefits and impacts that full investment can provide (as described subsequently in **Section 4.5** and **Table 4-9**). The legislation is recommended to create a dedicated one-time appropriation of \$12.3 million to clear the public riverport preservation backlog (without requiring local match) over a five-year period. The legislation is also recommended to make additional funding available for an enhanced KRI Grant Program sufficient for Kentucky's public riverports to qualify for federal grants aimed at modernization and expansion needs. The enhanced KRI Grant Program is recommended to lower the required match from 50% to 20% as most Kentucky riverports and communities would be unable to raise dollar amounts at 50% of the recommended funding level. The RHC described in Action #4 could prioritize and leverage the enhanced KRI Grant Program with economic development funding, site support, and marketing resources to support maximum utilization of new riverport infrastructure supported by the new program.

4.5 RECOMMENDED STATE FUNDING ENHANCEMENT

\$12.3 Million Will Preserve Riverport Assets: Preserving Kentucky's riverport assets is the foundational investment for realizing the greatest benefits and impacts of waterborne commerce in Kentucky. Because preservation outlays often are associated with maintaining a baseline of condition and capacity, these investments may be more limited in their eligibility for federal programs than new enhancements aimed at sustainability, new technology, and social equity. Preservation needs are also essential in ways that cannot be contingent on the probability of an uncertain grant awards in any given cycle. For these reasons, basic riverport preservation is recommended as a top priority for state funded investment.

Enable Ports to Qualify for Larger Federal Matches: In addition to the \$12.3 million for preserving Kentucky's private riverports, the \$51.6 million for modernization and \$158.2 million for riverport expansion are essential to enable the riverports to re-design, upgrade, and tailor their offerings to cater to a new and increasingly diverse clientele of shippers. These expansion enhancements may range from additional berth space and warehousing to new conveyance, loading, and technology systems to handle more chemicals, textiles, plastics, advanced manufacturing components, and health product components expected to account for a growing share of Kentucky's waterborne commerce in the next 25 years. These types of investments can be eligible for a host of federal grant programs because they are associated with the transition from the coal economy to more sustainable commodities and can create jobs and opportunities for many of Kentucky's rural and disadvantaged areas.

For this reason, if Kentucky's KRI Grant Program (state grants and local matches combined) can provide a 20% share for federal programs like RAISE and Port Infrastructure Development Program (PIDP), the five-year state and local contribution to reaching the \$51.6 million modernization level would be \$10.32 million (or \$2.1 million per year). The five-year state and local contribution to reaching the combined modernization and expansion level of \$209.8 million would be 54.5 million (or \$10.9 million per year).

Proposed Structure of Kentucky Port Funding Enhancement: Because of the different investment objectives (preservation, modernization and enhancement) and the significant federal funding available through the Bipartisan Infrastructure Law (BIL), it is recommended that the Kentucky General Assembly consider (1) creating a dedicated state-funded one-time port preservation fund to cover the \$12.3 million port preservation backlog in a five-year period and (2) expand the KRI Grant Program to an annual state funding level of **\$6.7 million**, focusing primarily on enabling Kentucky’s public riverports to obtain federal matches for modernization and expansion investments to support new and growing markets. It is also recommended that the local match for the KRI Grant Program is reduced from 50% to 20% to enable the riverports to reach the appropriate threshold to qualify for the larger state grant amounts.

By committing a pool of funds to address Kentucky riverports’ preservation backlog independently of the KRI Grant Program, Kentucky can leverage the KRI grants to support the sustainability, social equity, and technology policy objectives to qualify for federal programs. **Table 4-9** below demonstrates how a dedicated five-year preservation program underlying an enhanced KRI Grant Program of between \$1.6 million and \$6.7 million can combine with local 20% matches and leverage federal contributions to bring Kentucky’s **\$222 million** investment level within reach.

Table 4-9: Leveraging Federal Contributions

Program	Investment Purpose	Period	Total Five-Year Outlay	State Funding	Local Matches	State + Local Combined	Federal Contribution (80%)
New KY Port Preservation Fund	Preservation Only	Dedicated funding pool to be used anytime during a five-year period	\$12.3 million	\$12.3 million	None	\$12.3 million	Not Assumed
KRI Grant Program (Dedicated to Modernization & Expansion)	Modernization Only	Five-Year Program	\$51.6 million	\$8.3 million	\$2.0 million	\$10.3 million	\$41.3 million
		Annual for Five Years	\$10.3 million	\$1.6 million	\$0.4 million	\$2.0 million	\$8.3 million
	Modernization + Expansion	Five-Year Program	\$209.8 million	\$33.5 million	\$8.5 million	\$42.0 million	\$167.5 million
		Annual for Five Years	\$42.0 million	\$6.7 million	\$1.7 million	\$8.4 million	\$33.5 million

4.6 CONCLUSION

Kentucky's riverports are at a critical juncture in the development of Kentucky's economy and the use of the Ohio and Mississippi River. A \$12.3 million investment in riverports over the next four years can preserve existing infrastructure to support the ongoing use of the ports for commodities currently moving by water. However, the restructuring of the economy from coal to other waterborne commodities represents both a challenge and an opportunity for the ports. Key policy recommendations pertain to (1) additional investment of up to \$210 million to upgrade and modernize ports to make waterborne transportation competitive for additional post-coal commodities; (2) utilization of a range of federal funding programs to sponsor this investment; (3) implementation of an RHC to actively seek funding, support ports in assessing changes in specific infrastructure needs, and actively attract new anchor clients to riverport hinterlands. **Table 4-10** below summarizes key policy questions addressed in the current study and specific recommendations of the current study.

Table 4-10: Policy Summary of Questions Addressed and Recommendations

Key Policy Question	Answer	Recommendation
How is the role of Kentucky's riverports changing in the next 25 years?	The waterborne commerce market is shifting largely from a coal-based economy to a more competitive economy moving agricultural goods, plastics, and manufactured goods.	Preserve existing capacity while investing in additional capacity, new equipment, and ground access to enable ports to handle more manufactured goods.
What are the benefits of investing in new or updated riverport infrastructure?	If riverports can carry a different commodity mix in the future, they can continue to move Kentucky's goods at lower cost than other modes, enabling Kentucky businesses to invest in making and selling more products, employing more workers and paying better wages.	Target riverport promotion to agriculture, plastics/chemicals, secondary coal products, and other emerging sectors described in Chapter 2 .
What types of improvements should be funded?	Improvements that upgrade equipment; redesign berth access; and ground access for chemicals, metals, and manufactured goods at developing and high-capacity ports are the most promising expansion investments.	Pinpoint infrastructure grant programs and public-private partnerships catering to specific manufactured goods movement supply chains and sectors.
Where will the market for Kentucky's waterborne transportation come from?	The market will rely heavily on pinpointing specific emerging sectors in agriculture and primary manufacturing (metals, plastics, agricultural commodities, and chemicals used in supply chains).	Implement an RHC to (1) identify emerging port-by-port opportunities to serve newly attracted and emerging firms trading in these targeted sectors, (2) acquire funding for infrastructure, and (3) actively promote both the ports and the hinterland region.
What are the next steps?	Promote Kentucky's riverports to target industry segments through the Kentucky Cabinet for Economic Development and local economic development initiatives, prioritize grant applications under the IJJA/BIL Act for riverport investments aimed at manufactured products, form a Waterways Caucus in the Kentucky General Assembly, and commission a multistate and multiregional Riverport Hinterland Compact.	



CHAPTER 5

DEVELOPING A HOME MARKET FOR KENTUCKY'S RIVERPORT HINTERLANDS

This final chapter of the *Kentucky Riverports, Highway & Rail Freight Study* addresses strategies to leverage Kentucky's riverports to serve emerging industries in Kentucky's economy with affordable transportation by growing a strong home-market for 21st century waterborne commerce. With the transition from coal to a different commodity mix, the use of Kentucky's riverports will depend on attracting businesses and supply chains that will utilize the efficiency of riverport transportation. This chapter offers both strategic constructs and action steps for such strategies as well as case examples of how other states have addressed the role of riverports in economic development. The chapter serves as an economic and market development playbook for local and regional development partners as well as a Riverport Hinterland Compact (RHC) as recommended in **Chapter 4 (Section 4.4)**.

5.1 KEY FINDINGS UNDERLYING ECONOMIC STRATEGY

Proactive Development Can Leverage the Cost Advantage of River Transportation: Chapter 1 of this study demonstrates the cost efficiency and economic payoffs of moving goods by water in Kentucky's economy. For decades, Kentucky has enjoyed an economy that relies on riverports as a highly affordable mode of transportation for a large percentage of the Commonwealth's trade, with products such as coal and agricultural products readily moving by water. However, as Kentucky moves to an economic base with a wider range of commodities, higher reliance on more expensive modes such as truck and rail can increase the costs of doing business in Kentucky. For Kentucky to continue to offer the cost advantages of moving commodities by river, proactive strategies to attract business and to market riverports will play a key role. They will do so by leveraging the ability of riverports to move an increasingly complex array of goods in the supply chain.

A New Role for Riverports in a More Complex Market: The findings provided in **Chapter 2** of this study forecast a significant restructuring of Kentucky's waterborne commerce economy. The findings demonstrate that with the decline in coal and petroleum products, Kentucky's riverports are increasingly dependent on moving agricultural goods, primary metals, kindred products and chemicals, and allied products (including plastics and rubber). The changes projected in **Chapter 2** make it clear that to maintain riverport commerce as a competitive sector, Kentucky will have to acquire significantly more than its "share" of new tonnage in these growth sectors.

Suppose Kentucky's riverports simply maintain a constant share of new business in the growth commodities listed above. In that case, the loss of fossil fuel traffic at private riverports will likely warrant a combination of (1) significant closure of private riverports, (2) intensified public riverport competition from private riverports, or (3) a heightened statewide economic dependency on more costly truck and rail modes for new commodity mix by 2045. With Kentucky's overall waterborne tonnage in existing commodities declining by between 20 and 30 million tons by 2045 (as shown in **Table 2-1**), the ability of Kentucky's ports to move new commodities for a changing client base is the central challenge before Kentucky's public riverport system. **Chapter 3** considers the prospect of the ports within this changing context, including strengths, weaknesses, opportunities, and threats facing the riverport system and individual riverports. **Chapter 4** quantifies the benefits of investing in riverports and the degree to which Kentucky's jobs, income, gross domestic product, and business sales can be supported at different investment levels, and it provides port and state/regional policy recommendations for supporting and leveraging this investment. Taken together, the findings suggest the need for a concerted market-based strategy to ensure Kentucky uses riverports efficiently in the long term. The following sections describe key success factors for such a strategy.

5.1.1. Focus on New Hinterland Markets More than Modal Diversion

Riverport market strategies focusing on modal diversion face the following principal challenge: no projected change would prompt shippers to divert existing trade from highway or rail to water transportation. Mere promotion of riverports will not change the underlying reasons of time, cost, access, and availability that presently motivate shippers to move commodities via other modes. For this reason, it is expected that (1) the majority of new or replacement markets will need to come from establishments not currently using other modes and (2) the Attraction, Creation, Retention, or Expansion (ACRE) of new riverport customers will require a coordinated effort to demonstrate that Kentucky has the workforce, supply chain partners, and other amenities to leverage Kentucky's public riverports for emerging markets.

Kentucky's success in attracting advanced manufacturing establishments (such as the new Ford Battery plant announced in Hardin County,

Kentucky, in September 2021) demonstrates how economic restructuring can create riverport opportunities. Strategies can map out which suppliers of advanced manufacturing business will use the riverports if critical water-associated elements of supply chains are pinpointed. While attracting markets to use the economic advantages of waterborne commerce can reduce overall costs for Kentucky's economy, such strategies can also support wider goals of environmental sustainability, social equity, and technological advancements. By achieving these wider objectives, Kentucky's riverport market development initiatives can qualify the riverports and their communities for a range of economic development funding and investment opportunities. The topic of funding riverport investment within the context of federally and privately funded development policies is further explored in the current chapter (in discussion of **strategic objective #1**).

5.1.2. Rationale for “Home Market” Growth for Leveraging Riverports

As discussed in the Riverport Hinterland Compact (RHC) recommendation of **Chapter 4 (Section 4.4.1)**, Kentucky can accomplish home-market growth by developing mutually beneficial compacts among governments and ports. The compact can implement statewide, private equity, and multi-state collective funding strategies for developing a “home market strategy” focused on social equity (higher-paying jobs and opportunities for lower-income areas) and rural and urban regeneration opportunities. A strategy makes the case for investment in the overall hinterland when it aims at not only providing amenities to attract port clients, but also demonstrating how the growth of the riverport home market is beneficial to both private investors and federal or other public sponsors. Key features of such a strategy include:

1. Enhanced reputation of riverports and communities as innovative sites for new investment.
2. Increased eligibility for federal programs aimed at social equity, poverty, and sustainability
3. Increased ability to develop and attract knowledge workers through educational and occupational programs aimed an emerging riverport market sector (such as chemical manufacturing and advanced manufacturing).
4. Increased, measurable new tax revenues for port operations and expansion from:
 - a. Community Improvement Districts (CIDs), Tax Increment Financing (TIFs), Business Improvement Districts (BIDs)
 - b. New Market Tax Credits
 - c. Innovation Hubs
 - d. Free Trade Districts

MATH OF POVERTY

The strategy of measurably reducing the public sector cost of public health, affordable housing, courts, jails, policing, and social service delivery expenses by incentivizing actions that prevent or alleviate poverty by attracting, creating, retaining, and expanding business.

- e. Multimodal Logistics Industrial Parks
 - f. Recreation and tourism
 - g. Mixed-use, commercial, live-work developments
5. Increased household income, reduced poverty and associated reduction in the public welfare burden for Kentucky agencies as well as municipal and county governments.

A market development strategy focused on social equity, youth poverty, workforce upskilling, and entrepreneurship presents both a worthy challenge and a financial return on investment (ROI) including “math of poverty” and tax dividend opportunities. This type of strategy qualifies for a growing range of funding programs to be discussed further in this chapter. The creation of revenue-producing public-private partnerships, regional alliances, a formal system connecting education to the economy, and other ROI models for “future-proofing” Kentucky and the entire riverport economic system are suggested.

5.1.3. Practical Elements of Home Market Economic Development Strategy

The elements of a home-market strategy include (1) strategic objectives and tactics for leveraging riverports to develop the hinterland economy informed by (2) case studies and lessons learned from other states that have leveraged riverports for economic development and (3) practical indicators and action items to diagnose, advance and track riverport-based economic performance moving forward.

The strategy is recommended in the following sections addressing:

- 6. **Strategic Objectives of Riverport Economic Strategy:** Rationale for strategic objectives guiding an economic development strategy to leverage Kentucky’s riverports
- 7. **Case Studies and Lessons Learned for Kentucky’s Riverports:** Examples of how other states are leveraging riverports in the economic development process and their potential relevance for Kentucky
- 8. **Pathway to Implementation—Five Practical Steps:** Five initial steps that Kentucky’s riverports and economic development partners can take to use the current study and its findings to build home markets for Kentucky’s riverports in the economic conditions projected by the current study

These strategic elements can be understood as local, regional, and statewide strategic actions that provide a market and economic development complement to the public riverport infrastructure and policy recommendations offered in **Chapter 4**.

5.2 THREE STRATEGIC OBJECTIVES

A Vision for Riverport Economic Development: Three Strategic Objectives

Kentucky's home-market development strategy will rest primarily on three strategic objectives:

1. Providing for a public-private riverport compact (as recommended in **Chapter 4 (Section 4.4)**) that has within its mission specific economic development actions
2. Developing and implementing a statewide collective funding strategy for riverport modernization and ACRE activities
3. Implementing a home market business attraction strategy for establishments moving waterborne commerce growth markets

Strategic Objective #1—Define the Economic Development of an RHC: **Chapter 4** in particular calls for both a legislative caucus and RHC, and the concept of operations for such a compact should be specific regarding economic development objectives. A compact that focuses exclusively on funding for riverport infrastructure or the promotion of riverport business without addressing the growth and vitality of home markets in the hinterlands is unlikely to be successful for the reasons given in **Chapter 2**. Therefore, it is recommended that both the formative study and ultimate charter of such a compact include the following:

1. Securing funding for infrastructure, services, workforce competitiveness, and other factors necessary to attract, create, retain, and expand establishments in the riverport hinterland
2. Implementing proactive strategies to prepare and market sites in the hinterlands to firms dealing in waterborne commodities while working from a strategic plan with measurable goals in terms of overall waterborne market size and mix of commodities and industries served

It is recommended that the RHC have at least one full-time employee (or staff with hours equivalent to one full-time employee) focused specifically on funding and market attraction for both the compact itself and for the riverport hinterland region.

Strategic Objective #2—Develop and Implement Statewide Collective Funding Strategy for Riverport Modernization and ACRE Activities: **Chapter 4 (Section 4.3.3)** names federal programs available to support the modernization of riverport infrastructure. Some of the programs identified are precisely designated for economically challenged areas or areas working to facilitate an economic transition from fossil fuel markets to more sustainable markets. It is recommended that the RHC include a funding strategy that does the following:

3. Identifies specific sources for all the public and private sector infrastructure needs identified in **Chapter 2** (not already funded)

4. Identifies an investment package of workforce, community infrastructure, technology, Kentucky innovation hub development, and other amenities that would differentiate the hinterland market area from competing regions in terms of
 - a. Specific line items to be invested
 - b. Total investment needs
 - c. Likely funding sources (including grants, private investment, or investment matches as part of business attraction packages) to be pursued and secured by the compact

If this objective is achieved, Kentucky's riverport hinterland will be equipped with the complimentary amenities and workforce needed to attract, create, retain, and expand riverport client establishments and increasingly target new types of client establishments in growth markets identified in **Chapter 2 (Section 2.1.4)**.

KEY AMENITIES FOR BUILDING A HOME-MARKET FOR RIVERPORTS

- Business Real Estate Sites
- Workforce training, mentoring and youth development programs aimed at emerging riverport industries
- Talent Pool for Advanced Manufacturing
- Innovation Hubs and Districts
- Awards & Recognition
- Public-Private Partnership Apparatus
- Commodity-Sourcing Business Intelligence Platform (See **Appendix 5.1**)

Strategic Objective #3—Strategically Develop “Home Market Strategy” for New Commerce in Riverport Hinterlands: Concurrent with Objective #2 (which focuses on developing a portfolio of competitive amenities and funding for such amenities) is the objective of actively securing riverport clients to locate in the hinterland. This entails charging the riverport compact with an annual business planning process that will create and update:

1. A working list of available riverport hinterland market development sites
2. A working list of industries and specific firms to be monitored for development on these sites
3. A working list of specific infrastructure or service investments to be made and staff actions to be taken for each prospect (including specific requests for statewide and regional economic development partners)

A home-market business development strategy can enable individual riverports or local and state economic development agencies to effectively leverage the port profiles, marketing tool-kit and the self-assessment (given with Strategic Objective #3) to prioritize specific development and workforce programs that can best leverage the riverport amenity in each of Kentucky's public riverport communities.

A development focus that extends beyond simply obtaining grants for on-site riverport infrastructure and addresses workforce, fiscal, environmental and technology outcomes of riverport market development can “future-proof” Kentucky's riverport economies. A riverport economy may be considered “future-proof” when it demonstrates multiple sources of value for a range of public and private stakeholders achieving returns through ongoing investment in the riverport markets. For example, a riverport that has (1) multiple available clients, deriving value from not only the port but the associated workforce and other amenities, and (2)

multiple sources of potential funding, qualifying for a diversity of public grant programs and offering a strong business case for private equity will be more resilient than a port that relies on one or two public programs to sustain a small number of footloose anchor tenants. “Future-proof” Kentucky riverport economies are the ultimate outcome of a successfully home-market development strategy.

5.2.1. Unifying Success Factors for Home Market Development

LEARNING FROM HOLISTIC FUNDING STRATEGIES IN OTHER STATES

Both Florida and California have leveraged statewide port entities to obtain funding, channel investment, and better leverage port infrastructure assets. For Florida ports, a statewide port entity addresses the economic needs in port communities and provides a chief liaison for port industry needs in the state — whether fiscal, talent based, policy, technology, operations, or information. This creates a clear messaging system with a strong podium while maintaining the local autonomy of ports. In Florida, communication and cooperation between the statewide port authority and Enterprise Florida (an economic recruiter) has been powerful and effective, with Florida going from \$5 million annual allocations to nearly \$61 million during the past 20 years. California ports, including the Inland Empire and other multimodal land-based logistics hubs, and their seaport counterparts are requesting \$250 billion in federal funding. Although Kentucky is not a coastal state, the model of collective port investment and market development strategies can help address many of the market challenges described in **Chapter 2**.

Achieving the above three objectives require a consistent and unified approach to developing the riverport market. Three unifying success factors offer points of consistency for how the economic development objectives (as well as the policy recommendations of **Chapter 4**) can be understood and interpreted to maximize the effectiveness of public riverports as a catalyst for Kentucky's economy:

Success Factor #1 - Focus Holistically on Ohio River Markets and Goals:

A successful market and economic development strategy requires unifying local, state, and regional development strategies around a larger objective of optimally utilizing the riverport system. Achieving this success will require leadership to transcend often competitive individual jurisdictions and agency missions. For example, the Kentucky Cabinet for Economic Development (CED) focuses strongly on developing Kentucky's statewide economic position, just as county and local entities focus strongly on local development opportunities. However, attracting firms to home markets leveraging Kentucky's riverport hinterland (which spans across Kentucky's boundary) may not always be a statewide priority. A major prospect for leveraging a riverport may not represent CED staff's best and highest use when weighing priorities against the entire universe of Kentucky's business ACRE opportunities. Furthermore, because the hinterland includes counties both within and outside of Kentucky, there are cases in which a riverport client (or prospective client) may be in a neighboring state. Attracting such a client would not fall within the CED's mission. In a similar way, the development of complementary ports, ground infrastructure, or amenities in other states do not fall within the purview of the Kentucky CED, the Transportation Cabinet, or any local entity in Kentucky.

For the above reasons, it is advisable for the Kentucky riverport compact to both:

1. Be chartered and defined through a caucus of Kentucky Legislators specifically representing the riverport counties
2. If possible, consider inclusion and collaboration with neighboring states as described in **Chapter 4 (Section 4.4)**

Success Factor #2 - Specifically Define the Business and Economic Role of the RHC: While the RHC proposed in **Chapter 4** is recommended to focus on infrastructure priorities and funding, giving the RHC a clear economic development mission will empower the entity to develop the home market for the river ports. While such a compact for Kentucky would not be a new state agency per se (as it could be an expansion of the Kentucky Riverport Association or may come to be defined in quasi-governmental terms), a review of other states (such as the Florida Ports Council and California Public Ports Program, as described in the below text box) include:

- **Statewide or Multi-State:** A compact should be understood as a "state port advocacy entity," with logistics in state or multi-state transportation missions and an economic development "innovation hub" business expansion agenda.
- **Quasi-Governmental:** A compact should be understood as a quasi-governmental (including both public and private members) agency collaborating with appropriate entities to recruit industry to ports and port cities and counties.
- **Self-Funding:** A compact should be envisioned as self-sustaining by establishing formal roles for collaborating on federal funding applications; marine industry partnerships with cities, counties, businesses, and education; back-office operations; and applications to global private sector infrastructure investors.
- **Wider Economic Objectives:** A compact should identify and promote quantifiable objectives empowering riverports to channel new revenue to strategic priorities across the riverport system. Formalizing collaborations for strategic economic objectives can create a broader base of support and a broader business case for investing in amenities that grow riverport markets. Economic objectives include eliminating youth poverty, formulating equity initiatives, and connecting education to the logistics industry sector (and waterborne commerce growth market sectors) in each hinterland community.

Success Factor #3 - Collaboration Between Individual Port Authorities and Local Entities: While a holistic regional focus is recommended, it is also recommended that riverports engage directly with county and municipal entities. Important areas for riverports to engage directly at the county and municipal level include workforce, land development, education, related services, and community relationships with their host cities and counties to accelerate business attraction, talent development, real estate joint ventures, equity economic development initiatives, and education partnerships to help eradicate youth in poverty. CEO Roundtables such as those being launched in Owensboro by the Greater Owensboro Economic Development Corporation (EDC), the CED Innovation Hubs system, and the Cabinet for Education Innovation District program can be replicated in other riverport communities.

5.2.2. Supportive Role of Existing State Agencies

As described above concerning Success Factor #1, a hinterland regional focus is intrinsically different from the statewide focus and mission of either the Kentucky Transportation Cabinet (KYTC) or the CED. However, there are supportive roles that both the KYTC and CED are recommended to play in ensuring a riverport hinterland market strategy is successful. These roles pertain to functions that fall clearly within the mission and purview of these existing state agencies and are described as follows:

KYTC: In association with the update of Kentucky's statewide freight plan to reflect the capital needs and investments described in the current study, it is recommended that KYTC address the potential role of a waterways legislative caucus and/or RHC in meeting future multimodal freight needs in its statewide freight plan update. KYTC is federally charged with identifying performance and needs-based plans for freight. Its previous statewide freight plans have accounted for grant outlays and addressed waterborne transportation infrastructure at the policy level and decisions made by the Water Transportation Advisory Board (WTAB). Recognizing a more expansive universe of needs within the statewide freight planning process would provide important context for an independent RHC and leverage an opportunity to engage key stakeholders in determining how waterway investments fit into KYTC's overall multimodal performance.

It is also recommended that KYTC appoint a staff member to serve as a liaison to a riverport compact during its formation and operation. The member can pinpoint the subset of infrastructure needs identified in statewide planning that fall within the purview of KYTC and the complementary roles that KYTC can play with a riverport compact in applying for grants, securing matches, and scoping projects that may include both ground access and on-port improvement opportunities.

Kentucky CED: Although the CED is understood to have a broader focus than the riverport hinterland, it is recommended that the CED share with a new riverport compact its understanding of potential business attraction sites and prospects within the riverport hinterland. This would be a starting point for hinterland-specific ACRE activities focusing specifically on port properties. The CED is also recommended to appoint a staff member who can serve as the liaison with the RHC in its formation and ongoing operation and who can pinpoint where prospects for hinterland market development align with statewide ACRE priorities to develop joint strategies for those sites and prospects. The CED is recommended to review ROI on projects and programs generating economic impacts in relation to state goals. The goal is to validate the allocation of state economic development resources to port communities. The CED may consider software platforms like *Envision Tomorrow*, *LOCI*, *ERP*, and other ROI tools to assess initiatives or recommendations from local port communities or the RHC.

These allocations would include:

- Innovation hub startup funding
- Focused new training in small business logistics opportunities
- Connection of education to the Kentucky economy, focusing on low-income youth

The Kentucky Riverport system is a unique and robust economic asset to the state economy. In reviewing business intelligence on competitors and growing and shrinking economic cluster industry sectors, it is critical that the lead economic agency add the port system to its portfolio of assets to be marketed. A riverport compact would serve as a companion organization to the CED much the same way that other regional entities pursue regional objectives while also collaborating with the CED in cases where regional pursuits match statewide objectives.

The following guidance includes recommended action items for realizing each of the three strategic objectives for developing a home market for Kentucky's riverports, consistent with the suggested tactics above.

Strategic Objective #1:

Leverage Riverport Hinterland Compact

The first strategic economic objective entails leveraging the RHC recommended in **Chapter 4 (Section 4.4.1)** to establish legislative support; prioritize funding opportunities for the economic concept of operations (as developed through the process in **Chapter 4**); and provide a prioritized economic development action list of key sites, amenities, and other economic development capabilities for the RHC in its first year of operations.

Action 1A: Convene Legislative Stakeholders to Discuss Trends and Invite Solutions		
Key Agent: <ul style="list-style-type: none"> • Kentucky Association of Riverports 	Time Frame (From RHC Inception): <ul style="list-style-type: none"> • First 3 Months 	Outcomes: <ul style="list-style-type: none"> • Legislative Caucus Introduced • Path for Legislative Recognition of Hinterland Compact Formalized
Action 1B: Engage State and Local Agencies to form RHC Finance Committee		
Key Agent: <ul style="list-style-type: none"> • Kentucky Association of Riverports 	Time Frame: (From RHC Inception): <ul style="list-style-type: none"> • Second 3 Months 	Outcome: <ul style="list-style-type: none"> • RHC Finance Committee and Initial Funding Sources/Priorities Established
Action 1C: Engage Riverports for RHC Implementation Committee		
Key Agents: <ul style="list-style-type: none"> • Kentucky Association of Riverports • Kentucky Cabinet for Economic Development 	Time Frame: (From RHC Inception) <ul style="list-style-type: none"> • Second 3 Months 	Outcomes: <ul style="list-style-type: none"> • Prioritized Economic Development Action List for Compact Year 1

RIVERPORT HINTERLAND COMPACT

Formal language recognizing an RHC around the Ohio River as a response to the conversion from the coal economy can make the RHC (and the areas it serves) eligible for economic and environmental programs associated with this economic shift, as is further described in Strategic Objective #2.

Recognize Decline in Waterborne Coal as a Specific Mission Area for RHC: The most identifiable trend described throughout the current study is the significant decline in coal as the predominant commodity handled by Kentucky's riverports. It is shown in **Chapter 2 (Section 2.1.3, Figure 7)** that this change will lead to an overall decline in waterway traffic throughout the Commonwealth. A statewide legislative agreement to address the loss of this economic asset should be formalized as a key RHC objective. Legislative language should be introduced for both a legislative caucus and the role of the RHC in the Commonwealth's development. The relapse of the coal sector has precipitated the need for a strategic rethinking of the commodity alternatives and for the immediate diversification and restructuring of riverport economies. These two trends reinforce the need for better teamwork and collaboration among all stakeholders.

VEHICLE MILES OF TRAVEL (VMT) INCREASE

The findings of this study directly quantify the decline of waterborne coal as a potential source of truck VMT increase and quantify VMT savings from sustained riverport use (as described in **Chapter 4**). This study also quantifies the specific the economic and environmental benefits of VMT savings from riverport use. Recognizing the control of truck VMT growth and the associated economic and environmental efficiency in RHC economic strategies can enhance participation and funding eligibility for a host of programs.

Structure Agreements Around the Economic Costs of the Decline in Waterborne Coal: Nationwide, utility consumption of coal declined 22% in 2020, according to the US Energy Information Administration. The Kentucky Energy and Environment Cabinet and the Department for Energy Development and Independence, in partnership with the Kentucky Coal Industry, reports that Kentucky coal production decreased in 2016 by 29.9% from 2015 to 42.9 million tons, a production level not seen since 1922. Eastern Kentucky coal production decreased in 2016 by 39% from 2015 to 17 million tons. Production slowed at both underground and surface mines. Eastern Kentucky coal production has declined by 87% since peak production at 131 million tons in 1990. Western Kentucky coal production decreased by 22.4% from 2015 to 25.9 million tons.¹

According to a May 2021 Ohio Valley Resource Organization report, coal employment in Kentucky recently fell by 14.6% to 3,983 workers. Within the state, “Western Kentucky produced 4.3 million tons compared to 2.3 million tons mined in the east. Union, one western Kentucky county, produced more coal than the entire eastern coalfield. However, total employment remained higher in the east, with 2,366 workers. Western Kentucky mines employed 1,617 workers.” In 2010, Kentucky produced 108 million tons annually, employing more than 18,000 workers. Based on a further port-by-port analysis, assuming that all modernization and infrastructure improvements that are planned or currently underway are completed but that no other improvements are made, the following points can also be concluded:

- Even with the most optimistic forecasting, all but two Kentucky public port hinterlands will see negative growth in waterway traffic.
- Seven of the eleven port hinterlands will experience negative rail growth, mainly due to coal decline.
- There will be significant growth in trucking across all port hinterlands.²

Align RHC Agreements with National Economic Policy Objectives: **Chapter 4 (Section 4.4)** identifies the US Economic Development Administration (EDA) as a potential source of grant funding for the inception and development of an RHC serving Kentucky and its surrounding areas. Making regional collaboration and the enhancement of US global competitiveness a specific focus of charter documents, mission statements, and yearly plans will be essential to maximize funding and policy support eligibility.

¹ Kentucky Energy and Environment Cabinet and the Kentucky Department for Energy Development and Independence, Kentucky Coal Facts, 17th Edition (2017), [https://eec.ky.gov/Energy/Coal%20Facts%20%20Annual%20Editions/Kentucky%20Coal%20Facts%20-%2017th%20Edition%20\(2017\).pdf](https://eec.ky.gov/Energy/Coal%20Facts%20%20Annual%20Editions/Kentucky%20Coal%20Facts%20-%2017th%20Edition%20(2017).pdf)

² Curtis Tate, “Kentucky Coal Production, Employment Decline Slows in 1st Quarter,” Ohio Valley Resource, May 18, 2021, <https://ohiovalleyresource.org/2021/05/18/kentucky-coal-production-employment-decline-slows-in-1st-quarter/>.

US EDA MISSION

To lead the federal economic development agenda by promoting innovation and competitiveness, preparing American regions for growth and success in the worldwide economy. This foundation builds upon two key economic drivers: innovation and regional collaboration. Innovation is key to global competitiveness, new and better jobs, a resilient economy, and the attainment of national economic goals. Regional collaboration is essential for economic recovery because regions are the centers of competition in the new global economy and those that work together to leverage resources and use their strengths to overcome weaknesses will fare better than those that do not. EDA encourages its partners around the country to develop initiatives that advance new ideas and creative approaches to address rapidly evolving economic conditions.

The US EDA's 2021 investment policy is designed to establish a foundation for sustainable job growth and for the building of durable regional economies throughout the United States. States and regions that practice greater teamwork and collaboration will benefit in the form of federal funding. The goals of economic resilience, social equity, and the generation of new public-private revenues represent a shift to "foundational" cash-positive changes that can improve regional and statewide prosperity through economic cooperation.

California, Illinois, and Indiana are just three logistics sector port states forming collective, statewide, regional, and multi-state shipping alliances to capture market share. Kentucky can benefit from understanding these examples and convening appropriate stakeholders to consider developing similar or superior riverport community roles as tuned-up prosperity engines for state finances.

Demonstrate Economic Opportunities for Disadvantaged Populations and Communities: A strong federal policy focus on social equity can offer opportunities for riverport communities to qualify for funding and reduce the overall costs of poverty and income disparities. If riverport market targets are aimed at creating jobs and income for the "disadvantaged" communities³ identified by the national Justice40 initiative, the market development can both support utilization of low-cost waterborne transportation while also reducing the cost of social services, law enforcement public health and other public costs of poverty and income disparity.

Currently, the Kentucky Association of Riverports offers a limited portfolio of advocacy for riverports. The general objectives are as follows:

- Serve as a voice of the Kentucky waterborne transportation industry
- Promote and assist in the development of multimodal transportation systems
- Serve freight needs across state and interstate regions

³ Each of the six disadvantage indicators are assembled at the Census Tract level using data from the- CDC Social Vulnerability Index, Census America Community Survey, EPA Smart Location Map, HUD Location Affordability Index, EPA EJ Screen, FEMA Resilience Analysis & Planning Tool, and FEMA National Risk Index. <https://usdot.maps.arcgis.com/apps/dashboards/d6f90dfcc8b44525b04c7ce748a3674a>

- **Transportation Access disadvantage** identifies communities and places that spend more, and longer, to get where they need to go. (CDC Social Vulnerability Index, Census America Community Survey, EPA Smart Location Map, HUD Location Affordability Index)
- **Health disadvantage** identifies communities based on variables associated with adverse health outcomes, disability, as well as environmental exposures. (CDC Social Vulnerability Index)
- **Environmental disadvantage** identifies communities with disproportionate pollution burden and inferior environmental quality. (EPA EJ Screen)
- **Economic disadvantage** identifies areas and populations with high poverty, low wealth, lack of local jobs, low homeownership, low educational attainment, and high inequality. (CDC Social Vulnerability Index, Census America Community Survey, FEMA Resilience Analysis & Planning Tool)
- **Resilience disadvantage** identifies communities vulnerable to hazards caused by climate change. (FEMA National Risk Index)
- **Social disadvantage** identifies communities with a shared history of discrimination, racism, or other forms of disadvantage that warrant consideration along with each/any of the above measures. (CDC Social Vulnerability Index)

FEDERAL POLICY DEVELOPMENTS OPENING OPPORTUNITIES FOR AN RHC

- On January 27, 2021, President Biden signed Executive Order 14008 “Tackling the Climate Crisis at Home and Abroad,” which created the government wide Justice40 Initiative.
- Justice40 aims to deliver 40% of the “benefits” of relevant federal investments to “disadvantaged” communities.
- USDOT will undertake a comprehensive approach to advance environmental justice, including for individuals who have been historically underserved and adversely affected by persistent poverty or income inequality.
- USDOT will collect community input on transportation challenges in “disadvantaged” communities and desired “benefits,” or what direct positive impacts USDOT programs could have on their community.

KAR is currently composed of seven public operating ports and four developing public ports authority members, and representatives from the Kentucky Transportation Cabinet.”⁴

The RHC offers an opportunity to create a more robust and formalized advocate to advance a larger Kentucky Public/Private agenda. RHC responsibilities can include applying for federal dollars for the port system; implementing statewide riverport agendas; attracting private investment to port counties and cities; fostering partnerships for expanding innovation hubs; connecting education, STEM, and entrepreneurship to the riverport and state economies; recruiting and developing manufacturing and distribution sites to appropriate mega sites in riverport counties; and conducting homegrown port economy economic activities. The Department of Local Government has been suggested as a potential partner, as has the network of Metropolitan Councils of Governments (COGs), including the Ohio-Kentucky-Indiana Regional Council of Governments (OKI) and the Kentuckiana Regional Planning & Development Agency (KIPDA).) Finally, collaboration among Kentucky’s 15 area economic development agencies and others provides an additional opportunity to introduce inland port economic development into all 120 counties in the Kentucky hinterland.

⁴ Kentucky Association of Riverports, “About KAR,” Kentucky Association of Riverports (KAR), 2008, http://kentuckyriverports.com/about_kar/.

Consider the Role of Economic Compacts in Other States: In forming the RHC, Kentucky will benefit from reviewing and implementing successful models of logistics and transportation operations/investment compacts in other states. California, for example, is introducing a 24-hour logistics economy into its new statewide approach to trade, a streamlined system of management connecting seaports to inland ports and warehousing to buyers. Other examples of statewide leadership in connecting inland ports include Indiana, which is using a statewide port agency. As described in **Chapter 3 (Section 3.2)**, Florida uses Enterprise Florida for statewide economic recruitment and investment attraction, and the Florida Council of Ports, which serves a transportation advocacy function like the Kentucky Riverport Association.

PEER STATE EXAMPLE: FLORIDA PORTS COUNCIL

Florida Ports Council is a nonprofit corporation serving the 15 public ports and governed by a board of directors. It considers itself a “state port entity to maximize commercial and tourism activity” and a quasi-governmental agency with a collective formal role in collaborating on legislation, research, and back-office operations and formalizing collaborations for strategic objectives.

The Florida example can build on the existing Kentucky Association of Riverports, whether through a new legal regime, an expanded existing entity, or a public enterprise for optimizing future funding and resource allocations. The Florida Ports Council represents the collective needs of Florida ports. It is the chief liaison for port industry needs in the state, whether fiscal, policy, operations, or information. This provides one message and a strong podium while maintaining the ports’ local autonomy. The Ports Council built a constituency from \$5 million annual allocations to nearly \$61 million during the past 20 years. The Florida Ports Financing Commission is a sister entity created to vet and supply dollars for the implementation of Florida-Port-Council-supplied port modernization projects.

Legislative History Chapter 311 in the Florida Statutes created the Florida Seaport Transportation and Economic Development Council with the authority to collectively advocate for funding, distribute funds, develop a project review and ranking process, provide data and marketing resources, produce an annual mission plan strategic report, meet with state agency partners, and provide a public forum for input into funds allocation and investment strategies.

There is more power in teamwork than there is not. Federal dollars are available to explore the creation of a strategic riverport economic plan to assist in Kentucky’s restructuring, economic recovery, and capturing of economic benefits for citizens and local businesses, especially considering the negative impact of the diminished coal industry sector.

Strategic Objective #2:

Funding Strategy for Anchor Client Sites AND Infrastructure

The second strategic economic objective entails the RHC developing a funding strategy to support promotional activities for riverport clients, the development of sites for riverport trade partners, and the ongoing operation of the RHC. In the inception study/process for the RHC, it is recommended that a prioritized list of grant and private investment sources for already identified infrastructure needs (described in **Chapter 2** of this report and in preexisting grant applications) be organized and matched to potential funding sources. However, it is further recommended that programs for the development of sites and amenities for riverport anchor clients also be developed with a strong business case that development of such sites and attraction of such clients meet the key policy criteria of

3. Addressing social equity by supporting disadvantaged communities
4. Supporting sustainable transportation by encouraging the use of river transportation, which is more affordable and sustainable than other modes
5. Facilitating the transition of the RHC economy from waterborne coal dependence to a more diverse and sustainable economic base

It is also recommended that new concepts not yet identified in **Chapter 2** or prior grant applications be identified to specifically qualify key RHC development sites (and ports) for new technology programs aimed at sustainability and social equity outcomes.

Action 2A: Identify and Leverage Grants		
Key Agents: <ul style="list-style-type: none"> • RHC aided by • KYTC and CED 	Time Frame (From RHC Inception): <ul style="list-style-type: none"> • First Year 	Outcome: <ul style="list-style-type: none"> • Prioritized List of Grant and Private Investment Pursuits and Partners of \$200M or more
Action 2B: Prioritize and Submit Grants or Investment Pitches for Already-Identified Site, Port, and Other Development Needs for New Riverport Anchor Clients		
Key Agents: <ul style="list-style-type: none"> • RHC aided by • Kentucky Association of Riverports • CED and Other State/Regional Partners 	Time Frame: (From RHC Inception): <ul style="list-style-type: none"> • First Year 	Outcome: <ul style="list-style-type: none"> • Generate On-Site Visits By investors and submit Grant Applications from Relevant Programs
Action 2C: Develop New Project (Technology/Sustainability Concepts) On-Port or at Development Sites Aimed Specifically at Qualifying for Technology/Sustainability Programs		
Key Agents: <ul style="list-style-type: none"> • RHC aided by • Kentucky Association of Riverports • CED and Other State/Regional Partners 	Time Frame: (From RHC Inception) <ul style="list-style-type: none"> • First Year 	Outcome: <ul style="list-style-type: none"> • Cargo and Technology Grants Submitted

Implement Business Intelligence Resources with New Data and New Partners: Use business intelligence information derived from the current study and documented infrastructure needs identified in on-site port visits, to propose pragmatic public-private partnerships for attracting grants, low-interest loans, private investments, and local matching dollars to obtain funding to modernize the Kentucky Riverport Network and address statewide economic goals.

Pursue Statewide Riverport Needs through Equity-Based Funding Opportunities: For example, in FY 22 nationally the federal government announced \$1.5 billion for RAISE grants, \$2.25 billion for PIDP grants, \$25 million in Marine Highway program. To compete for the sizable unmet needs in intermodal port infrastructure funding, identified as \$200 million, it is recommended that the Commonwealth of Kentucky present to federal agencies a comprehensive application outlining a societal ROI strategy. This ROI strategy should utilize new business intelligence data and the best regional, traditional, and equity-based economic development practices. These strategies are included in this study and illustrate how the joint intra-agency and riverports funding application addresses KYTC and EDA safety and economic requirements, produces positive ROI, provides private sector leveraging of government investments, and promotes national American Rescue development goals.

Define Clear Contributions for Diverse Agencies and Riverports: It is recommended that the business planning and board of a RHC proactively engage agencies across different policy areas to offer the strongest possible social-equity base business case for funding and investment. Kentucky will make its strongest investment case through an interdisciplinary team of state economic, education, workforce, and local government agencies describing how funding would be leveraged to meet national goals. The CED would be invited to bridge the gap between transportation infrastructure funding and leveraging of commercial, taxable outcomes with innovation hubs, trade, and small business implementation initiatives. Education agencies would be invited to further engage innovation districts, entrepreneurship, and workforce training. The Kentucky Association of Riverports (KAR) would be invited to identify and liaison legislative support, regional partnerships, and private infrastructure investment.

Individual participating ports would be invited to offer evidence of innovative strategies and strategic economic plans taking advantage of new funding streams with actions for meeting federal equity and grant requirements. Additionally, individual port executives and transportation, economic, and education Cabinets can team up to highlight the port system as a catalyst for “future-proofing” the state. They will provide ample evidence to federal reviewers that Kentucky intends to restructure its economy around sound economics, innovation, regional collaboration, and private firm investments.

Invite City and County Financial Participation for Small and Rural Ports:

The marketing toolkit of the current study is offered as a guide for individual riverports to implement local strategies that can fit into a larger regional effort as envisioned in this chapter. Local ports will need to identify partnerships capable of producing a substantial local funding match for grants. The self-assessment in the following section (**Strategic Objective #3**) is offered to help port executives provide detailed information on local conditions and ensure focused pursuits with the strongest economic development business case. The Kentucky Association of Riverports can support grant applications at ports by brokering collaborative pursuits with community, business and public agency partners.

The Role of Equity in Awarding Infrastructure and Transportation Grants: USDOT funding options have traditionally been discretionary, formula funds, loans, and P3s. However, currently, readiness, evidence of private investment, public-private partnerships, and equity are the priorities. ROI, P3 partnerships, and equitable economic development are the highest "rated" criteria.

For the most competitive funding bid, it is advisable to create a policy framework "application" for the state and riverport system that is equitably and economically powerful. The current study offers business intelligence regarding economic payoffs for the hinterland of continued riverport use. The best applications will address new DOT and EDA priorities. This criterion requires applicants to leverage infrastructure dollars; foster equity; create workforce innovations; install port city innovation hubs (consistent with the CED's innovation hub initiatives that are currently underway), joint city-county port industrial, office, and mixed-use business parks; develop alternatives to coal dependence; apply business intelligence and smart technology; and cultivate P3s. The resulting Kentucky port network strategy will be nationally replicable, resilient, and data driven, with measurable cash-positive ROI. Tapping underutilized youth in the poverty talent pipeline and attracting matching resources from local cities and counties is a collective value-added impact approach that optimizes state and federal dollars.

Grant Opportunities Specifically Aimed at RHC Objectives: Chapter 4 (Section 4.4) identifies a wide range of port investment programs. Defining an RHC specifically in terms of social equity, sustainability, conversion to sustainable energy, and technology can qualify the compact for funding opportunities. Specific economic development grant programs can support development sites and anchor riverport clients if they are framed as part of a riverport utilization strategy for sustainable and equitable use of transportation. These programs according to the US EDA include:

The Statewide Planning, Research & Networks Program: This program provides \$59 million for statewide planning grants and \$31 million for research and network grants to invest in research that assesses the

effectiveness of the EDA's programs and provides support for stakeholder communities.

Economic Adjustment Grants: This program is designed to provide a wide range of financial assistance to communities and regions as they respond to, and recover from, the economic impacts of the coronavirus pandemic, including long-term recovery and resilience to future economic disasters. Under this announcement, the EDA solicits applications under the authority of the Economic Adjustment Assistance (EAA) program, which is flexible and responsive to the economic development needs and priorities of local and regional stakeholders. A \$500 million allocation was made and used in 2021, and another smaller round of grants is expected in 2022.

Strategic Objective #3: Riverport Home-Market Creation - Self-Assessment and Resources

The first two strategic objectives highlight actions that will (1) establish an apparatus for building up Kentucky's riverport hinterland with clients in the economic climate described in **Chapter 2 (Section 2.1.2)** and (2) secure resources to identify and implement a program of modernization for the riverport hinterland economy. With these resources in place, individual riverports, local economic development partners, and state entities will be equipped to apply the Marketing Toolkit to develop business for the ports themselves and attract newly locating clients.

Riverport Self-Assessment: The following questions are offered as discussion items for riverport directors and other stakeholders:

Question 1: Has the riverport considered collaborative land development initiatives with county or municipal governments?

Plans for new development centers in and around riverports can be convincing scenarios when pursuing federal grants and private investors. These centers might also reduce commute costs for government agencies and citizens, increase local family disposable income, reduce pollution and congestion, foster small business, enhance "live-work" quality of life, and benefit ports and cities/counties with tax-producing new revenue streams. Potential tax improvement districts include Tax Increment Financing (TIFS), Community Improvement Districts (CIDS), Business Improvement Districts (BIDS), and Port Improvement Districts (PIDs).

Question 2: Does the riverport have a cooperative agreement for tax incentives?

Tax incentives targeted to specific industry sectors or business types that may leverage riverports or complement riverport services can be a valuable mechanism for growing home markets for riverports. For example, a tax incentive could (1) make a site in proximity to a riverport attractive enough to secure the location of a key riverport client, who would then operate more efficiently in the entire transportation system by using water transportation; or (2) attract a complementary supplier or companion firm that, while not using the riverport directly, makes the area more attractive to other supply chain partners that move commodities by water. The overview of growth commodities in Kentucky's riverport hinterland markets in **Chapter 2 (Section 2.1.2)** provides a starting place for identifying such prospects.

Question 3: Is there a CEO network that meets annually on workforce needs related to waterborne transportation markets?

Creating an executive roundtable or advisory committee of both riverport executives and senior human resource/workforce officers from firms among existing and potential riverport clients can be a vital asset to building home markets. Frank and structured discussions about trade school and public-school curricula, internship/co-op programs, STEM, and logistics occupational needs and capabilities can help pinpoint and address the staffing needs of riverports and the business case to attract clients to an area. For example, the riverport in Owensboro, KY, is currently engaged in a CEO-driven project for youth. Initiatives of this type specifically address USDOT criteria for the funding mentioned above.

Question 4: Is the riverport connected to existing state and local adult workforce initiatives?

In addition to CEO perspectives, riverport and RHC participation in adult workforce initiatives can give riverports direct access to information and resources for connecting workforce needs to specific clients. For example, the Kentucky Department of Education and the Department of Agriculture have specific programs related to the workforce in sectors within emerging riverport markets, including:

- Kentucky Department of Education: <https://education.ky.gov/CTE/nsfy/Pages/KY-NSFY.aspx>; A New Vision for Kentucky Youth, Innovation Districts
- Kentucky Department of Agriculture: <https://www.kyagr.com/ky-agnews/press-releases/2021/KDA-KAM-announce-fifth-year-of-LAND-forums.html>; Partnerships with Manufacturing/<https://transportation.ky.gov/Education/Pages/default.aspx>; Scholarships

Question 5: Is the riverport using available sourcing and customer databases?

Although the long-term commodity and industry targets discussed in **Chapter 2 (Section 2.1.2)** provide a structure for defining a new home-market economy for the riverport hinterland, syndicated databases can provide a critical tool for motivating specific prospects to both use a port and locate themselves in the riverport hinterland. Using waybill data, business intelligence firms can provide actual establishment names, business characteristics, and contact information for businesses trading specific goods by water in the hinterland of each Kentucky riverport. **Appendix 5.1** provides an example of how business intelligence information can be used to pinpoint specific riverport customers and hinterland development prospects as call lists, in this case using the Datamyne platform. The appendix also has examples of specific firm listings that both riverports and economic development entities may use in outreach strategies, as described in the Marketing Toolkit and the business attraction tactics in this chapter.

Question 6: Is the riverport leveraging Public-Private Partnerships (P3s)?

Done properly, P3s such as jointly owned industrial parks, logistics hubs, innovation hubs, mixed-use developments, and targeted business recruitments and expansions can produce an ROI that will improve the bottom line of port authorities. Educational partnerships can produce considerable dividends in talent for port management, client companies, and real estate partners. These public-private partnership revenues offer the potential to generate matching dollars for state and federal grants and to supplement operational and maintenance budgets.

The concise list in **Appendix 5.2** is a sample of technical assistance providers, potential investors, and partnership concepts that can aid the long-term economic resilience of ports and governments.

5.3 CASE STUDIES AND LESSONS LEARNED

In addition to the case examples cited above regarding how riverport compacts collaborate to secure funding and prioritize infrastructure, there are examples of how states leverage riverports to achieve economic impacts and development. The cases are relevant to Kentucky as they demonstrate how state, regional, and riverport partners can define roles to create new opportunities. The cases also demonstrate how complementary fiscal and workforce strategies can encourage private investment and generate positive cash flows for all partners involved.

Lessons Learned: The economic strategies of Illinois, Georgia, California, and Louisiana are examples of regional or statewide networks adopting diverse, effective approaches to future growth. Lessons can also be learned from how existing Kentucky strategies can be most effectively leveraged to enhance the prosperity of the riverport network and its hinterland market. These include CED initiatives such as (1) the Innovation Kentucky Hubs Initiative, (2) the Small Business Initiatives, and (3) the education-based Innovation District Programming.

The strength of the Kentucky riverport system relies upon its central location, aggressive marketing strategies, and ability to adapt to rapidly changing conditions. The successful Ohio-River-based Kentucky port system carries more freight than any in the region. Coal currently accounts for half of Kentucky's waterborne freight. Crude materials, petroleum, farm produce, and chemical and manufacturing goods are the primary freight sourced to the ports now experiencing significant shifts in the market. The tendency to adapt away from the diminishing coal supply is notable in the main ports. The challenge of modernizing the riverports with technology, multimodal connectivity, and strong talent is addressed in the evaluation of case studies in this chapter and in subsequent recommendations for the CED and KYTC.

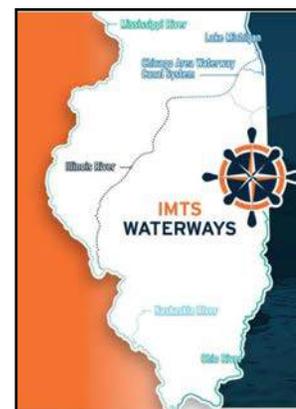
The following case studies provide a sampling of investments and roles those public agencies and other entities play in port development to achieve economic outcomes in various parts of the United States and abroad.

5.3.1. Illinois Marine Transportation System Plan

The Illinois Department of Transportation (IDOT) provides an example of a state using a study like the current study to establish an apparatus for managing waterway investment and prioritizing funding and economic opportunities. The Illinois recommendation regarding multi-state partnerships is relevant to Kentucky's findings in the current report on an RHC focusing on the Ohio River. The IDOT finalized the Illinois Marine Transportation System (IMTS) Plan and Economic Impact Analysis Study. The plan includes a profile of each of the state's 19 public port districts and eight key recommendations. The plan found that the marine transportation industry supports 166,000 jobs and contributes \$36 billion to the state's economy; that is 4% of Illinois gross state product (GSP). IDOT evaluated proposed projects based on the following criteria: implementing a goal within the state's long range transportation plan, implementing a performance-based program, and implementing asset management to benefit disadvantaged and economically distressed communities.

ILLINOIS MARINE TRANSPORTATION SYSTEM PLAN 8 RECOMMENDATIONS

1. Re-Establish a Marine Section Within IDOT
2. Fully Integrate IMTS Modal System Planning Within IDOT
3. Fully Integrate Statewide IMTS Planning to Stakeholders
4. Improve Port District Structure and Appointment Process
5. Streamline Dredging Process
6. Strengthen Federal Agency and Multi-State Partnerships
7. Leverage Existing Illinois Funding
8. Establish Long-Term, Sustainable IMTS Funding Program



5.3.2. Georgia Waterways Program Partners

Georgia DOT provides an example of a state where a DOT provides in-kind support for strategic port assets. The Georgia DOT Waterways Program partners with the US Army Corps of Engineers to maintain the navigability of the Atlantic Intracoastal Waterway (AIWW) and Georgia's deep-water ports in Savannah and Brunswick. These port facilities are operated by the Georgia Ports Authority (GPA). Further, the program has assessed Georgia's ports and inland terminals, finding that 396,000 jobs are supported by deep water ports and inland terminals. Key contributions Georgia DOT makes to the program include:

Savannah Harbor: The DOT provides easements and rights of way for upland disposal areas and covers 35% of the cost to raise dikes at the upland disposal areas for the harbor. The DOT is also providing technical support for the Savannah Harbor Expansion Project, which is expected to create more than 11,000 jobs in the southeast and nationally, reduce shipping costs by \$213 Million a year, provide \$282 Million in net economic benefits, and yield a 7.3/1 ROI for the national economy.

Brunswick Harbor: The Georgia DOT has been the local sponsor for Brunswick Harbor since April 5, 2002. The department provides easements and rights of way for upland disposal areas and 35% of costs required to raise dikes at Andrews Island, the main upland disposal area in Brunswick Harbor.

5.3.3. California Public Ports Program⁵

21ST-CENTURY INFRASTRUCTURE PLAN

“The link between infrastructure and economic competitiveness is proven. The strength of any urban economy is based on the productivity of its human capital and its access to natural resources.”

Los Angeles Chamber of Commerce

Although California’s port network is far more expansive than Kentucky’s, California (i.e., the LA and Long Beach Ocean ports linked to the “Inland Empire”) offers examples of realistic and successful financing options. Additionally, the connectivity of seaports to inland ports is an example of comprehensive economic planning.

California’s public ports will receive \$250 million as part of the state’s allocation of funding from the American Rescue Plan⁶, in recognition of the important role of California’s ports in moving commerce safely, maintaining critical infrastructure, and managing sovereign public trust lands and resources for the benefit of all Californians. Integral to the communities where they operate, California ports will be a critical part of the recovery of local and regional economies.⁷

California’s waterways planning specifically seeks to advance racial and economic justice by redirecting resources to marginalized communities; better connecting individuals to jobs, health care, education, and other opportunities; improving environmental justice; and amplifying the voices of those who have been historically excluded from the transportation decision-making process. Further, leveraging private sector investment is a priority recommendation of the 21st Century LA Infrastructure Plan.⁸ Key economic development provisions of the plan include:

- *Technology and Density/Topography Considerations for Delivery of Waterway Projects:* The Los Angeles plan requires that local governments work closely with the private sector to draft an infrastructure delivery strategy that identifies technologies appropriate for the density and topography of the region. This creates a specific place in the waterway project development process to assess technology investments, land development, and other factors that may leverage waterway infrastructure.
- *Specific Call for Public-Private Initiatives:* The plan identifies a role for the private sector in sharing the risks and rewards of port and related investment. The proposed funding models are offered to secure public and private commitment over the longer term so that high-quality operations/maintenance can be sustained as the economy changes. The private sector in the LA/Long Beach port community has been found eager to work extensively with local governments.

⁵ California Association of Port Authorities, “CA Ports to Receive \$250M in Funding from American Rescue Plan,” CAPA: California Ports, 2022, https://californiaports.org/arp_250/.

⁶ California State Transportation Agency, California Transportation Plan 2050, California Department of Transportation, 2020, <https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/ctp-2050-v3-a11y.pdf>.

⁷ Eleanor Lamb, “Freight Economy Among Priorities of California’s Long-Term Plan,” Transport Topics, March 5, 2021, <https://www.ttnews.com/articles/freight-economy-among-priorities-californias-long-term-plan>.

⁸ Los Angeles Area Chamber of Commerce and Siemens, A Blueprint for a 21st Century Los Angeles Infrastructure, http://www.lachamber.com/clientuploads/Infrastructure/15_Blueprint21stCenturyLA_Web.pdf.

5.3.4. New Orleans Port Master Plan

The New Orleans Port Strategic Master Plan⁹ provides an instructive example of economic revitalization initiatives integrated into specific port planning concepts. Although New Orleans ports are larger than most Kentucky riverports, many features of its plan may be relevant to Kentucky's developing and existing port properties.¹⁰ The New Orleans Port's Strategic Master Plan, published in Spring 2018, is a bold vision that paves a path forward to ensure that the port meets market demand and leads the region to greater sustained prosperity. The Port NOLA Inner Harbor Economic Revitalization Plan (PIER Plan) resulted from a collaborative planning project with the City of New Orleans, New Orleans Regional Planning Commission, the Louisiana Department of Environmental Quality, and the Deep South Center for Environmental Justice. The PIER element of the plan focuses on the future development of the port's inner harbor and its surrounding communities. A US Environmental Protection Agency Brownfields Area-Wide Planning Grant funded this planning effort. Additionally, Louisiana and its ports and port communities are developing public-private partnerships to regenerate local communities, address equity, and further state and federal goals.¹¹

⁹ Joseph Arcado, Jr., "PAL Presentation," Louisiana Department of Transportation & Development, November 9, 2016, http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Administration/GTFTII/Docs/11.09.16%20Task%20Force%20Meeting/PAL%20Presentation.pdf.

¹⁰ "Future Projects," Port NOLA, <https://www.portnola.com/business/real-estate/future-projects>.

¹¹ "2017 Louisiana Infrastructure Report Card," 2021 Report Card for America's Infrastructure, <https://infrastructurereportcard.org/state-item/louisiana/>.

5.4 PATHWAY TO IMPLEMENTATION: **Five Practical Actions**

In summary, the fundamental changes in Kentucky's waterborne economy represent both a challenge and an opportunity for economic development. The analysis offered in the current study provides both a map of promising commodity and industry targets in **Chapter 2 (Section 2.1)** and a Marketing Toolkit with a practical structure for each riverport to enhance its market capture potential. These elements can be optimally leveraged through an RHC as described in **Chapter 4 (Section 4.4)**, with ample funding programs, successful examples from other regions, and supportive state and local programs to build a revitalized home market for Kentucky's riverports.

The five practical steps for developing the riverport hinterland home market are understood to occur in concert with (and often integrated with) the overall riverport development policy actions offered in **Chapter 4 (Section 4.3)**. The steps are not in competition or in contrast to the recommendations of **Chapter 4**; rather, they should be understood in the context of the key role economic development stakeholders play in realizing the overall riverport opportunities offered in the previous chapter:

Action #1: Define Economic Development Focus for Riverport Legislative Caucus

Engage the Kentucky Association of Riverports to establish a legislative caucus defining equitable and sustainable development of the riverport hinterland economy as a specific focus.

Action #2: Inventory Major Employers and Prospects

Take an inventory of major employers trading in the growth commodities of farm products, plastics, chemicals, metals, and others shown in **Chapter 2 (Section 2.1)** to develop a list of potential supply chain partners and commodities that may efficiently locate to the region and trade by water.

Action #3: Inform and Engage Economic Development Agencies with Study Findings

Reach out to state, local, and regional economic development entities to review potential development sites for firms consistent with opportunities from Action #2 and schedule quarterly reviews of prospects and sites attracting potential riverport customers.

Action #4: Use Port Profiles and Marketing Toolkit for Economic Development

While the port profiles associated with the current study and Marketing Toolkit can be used to simply promote ports, they can also provide an essential tool for promoting the overall hinterland. Therefore, users of the current study are recommended to present (1) the port profiles, (2) the executive summary presentations, and (3) available materials from the 2021 summits to local and regional economic development and industry groups highlighting the key attractive features of ports and ideal port-using development prospects.

Action #5: Pursue Funding to Develop RHC as an Economic Development Entity

By defining the RHC recommended in **Chapter 4** as not just an infrastructure planning entity but an economic development entity, riverport champions can more widely pursue grant funding through US EDA, MARAD PIDP grants, or other programs identified in this chapter (as well as **Chapter 4**) to develop a concept of operations for an RHC, as called for in **Chapter 4 (Section 4.4)**.