

EXECUTIVE SUMMARY

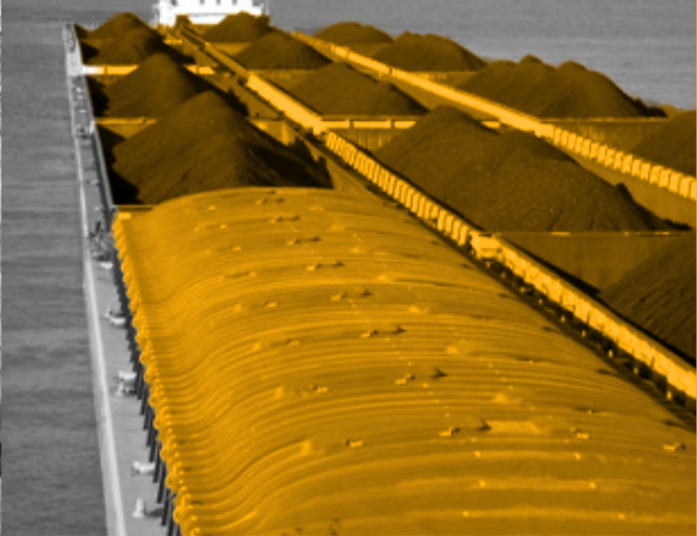


TABLE OF CONTENTS

EXECUTIVE SUMMARY

Introduction	ES-1
QUESTION #1: What Is the Value of Kentucky’s Waterways?	ES-1
QUESTION #2: How Will Economic Changes Affect Kentucky’s Waterways?	ES-2
QUESTION #3: What Kind of Investments Are Needed for Kentucky’s Public Riverports?	ES-4
QUESTION #4: What Are the Benefits and Impacts of Investing in Riverports?	ES-5
QUESTION #5: What Role Can State Funding Play?	ES-7
QUESTION #6: What Policy Actions Are Recommended to Support the Success of Kentucky’s Waterways?	ES-8
Report Organization	ES-11

TABLE OF FIGURES

Figure EX-1: Total Investment Needs	EX-4
Figure EX-2: Kentucky Riverports Hinterlands	EX-10

TABLE OF TABLES

Table 1: Value of Supply Chain to Kentucky	EX-2
Table 2: Shift from Coal and Sand	EX-3
Table 3: Trade Markets Increasing	EX-4
Table 4: Funding Comparison to Other States	EX-5
Table 5: Benefit-Cost Ratio of Investing in Kentucky Riverports	EX-6
Table 6: Gross Domestic Product Increase Projection	EX-6
Table 7: Leveraging Federal Contributions	EX-8



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.

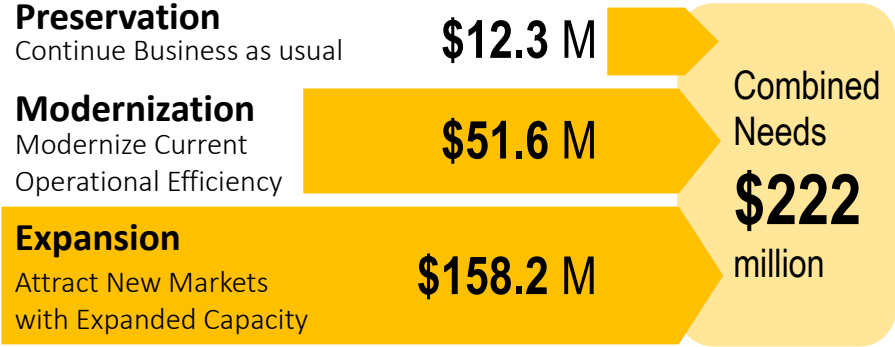


Figure 1 - Total Investment Needs

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.

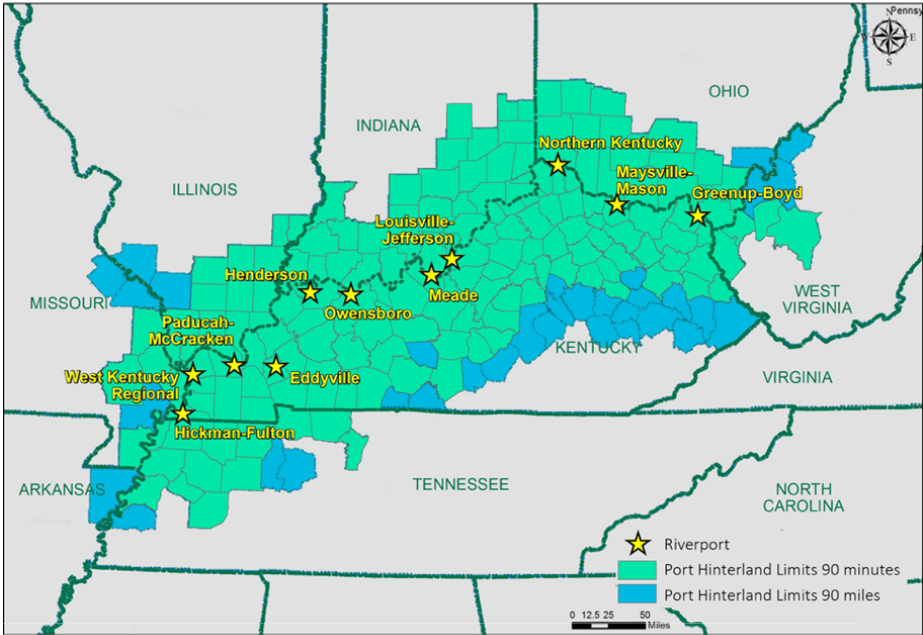


Figure 2 - Kentucky Riverport Hinterlands

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.

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 forecasts⁶ 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.

⁶ TRANSEARCH is a comprehensive, subscription-based freight database developed to forecast future freight demands by origin, destination, commodity, and mode.