Technical Memorandum #1- Kentucky Riverport 2020 Status

REPORT OBJECTIVE

The Kentucky Riverports, Highway & Rail Freight Study team, as part of the overall study, has conducted online research and on-site visits, where possible, to develop a basic understanding of Kentucky's freight transportation economy for its 11 public riverports. Efforts included identifying the existing conditions, inventorying the strengths and weaknesses, and understanding the roles of the public riverports. An overview of coordination efforts to-date, key takeaways from the port visits, and Kentucky Riverport Profiles are attached to this memorandum. Kentucky Riverport Profiles are presented in alphabetical order and include:

- A summary of the riverport director meetings
- Market profiles for a 90-minute drive-time hinterland[1]
- Volume and value of commodities moved by mode
- Volume of divertible freight
- Key infrastructure
- Freight generators

This is the first step of the study to assess the existing status of the ports, engage with the public riverport stakeholders, and identify new issues or dimensions of understanding about each port. This will help craft the overall Riverports, Highway & Rail Freight Study. The outcome of the study is to better understand the breadth and depth of Kentucky's multi-modal freight infrastructure, recommend a priority list of improvements based on potential return, identify potential partnerships and funding sources, and to better communicate overall strengths with businesses who have a need for these services.

[1] A "port market hinterland" is an area for which cargo can be potentially drawn to and from competitively. Each hinterland is defined by counties that can be reached in a driving time of roughly 90 minutes.

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OVERVIEW AND SUMMARY

The study team conducted in-person interviews with the Kentucky public riverport directors and key team members at the seven operating ports and with organizers or representatives at three of the four developing ports. An in-person interview for the Northern Kentucky Riverport could not be coordinated. The interviews were conducted during the week of September 28 through October 2, 2020. The ordered list is shown in **Table 1**.

Table 1: Kentucky Riverports Director In-Person Interview Schedule

Organization Interviewed	Status	Visit Date
West Kentucky Regional Riverport Authority	Developing	September 28, 2020
Paducah-McCracken County Riverport Authority	Operating	September 28, 2020
Eddyville Riverport and Industrial Development Authority	Operating	September 29, 2020
Henderson County Riverport Authority	Operating	September 29, 2020
Meade County Riverport Authority	Developing	September 30, 2020
Louisville-Jefferson County Riverport Authority	Operating	September 30 2020
Maysville-Mason County Riverport Authority	Developing	October 1, 2020
Greenup-Boyd County Riverport Authority	Operating	October 1, 2020
Owensboro Riverport Authority	Operating	October 2, 2020
Hickman-Fulton County Riverport Authority	Operating	October 2, 2020
Northern Kentucky Port Authority[1]	Developing	January 13, 2021

[1] Conducted as phone interview

The in-person interviews sought to confirm basic descriptive metrics of each riverport and to gain an understanding of each riverport's history, needs, and competitiveness. During the interviews, the representative market hinterland, freight generators and connector maps were presented and used as illustrations to gain further perspectives of each riverport. In this project, TRANSEARCH commodity flow data from IHS Markit was used to determine the freight volume and value per port in 2018 (project base year). The mode utilized within each port market hinterland is shown to gauge the port activity compared to the overall regional activity. The Kentucky riverports and market hinterland, are shown in **Figure 1**.

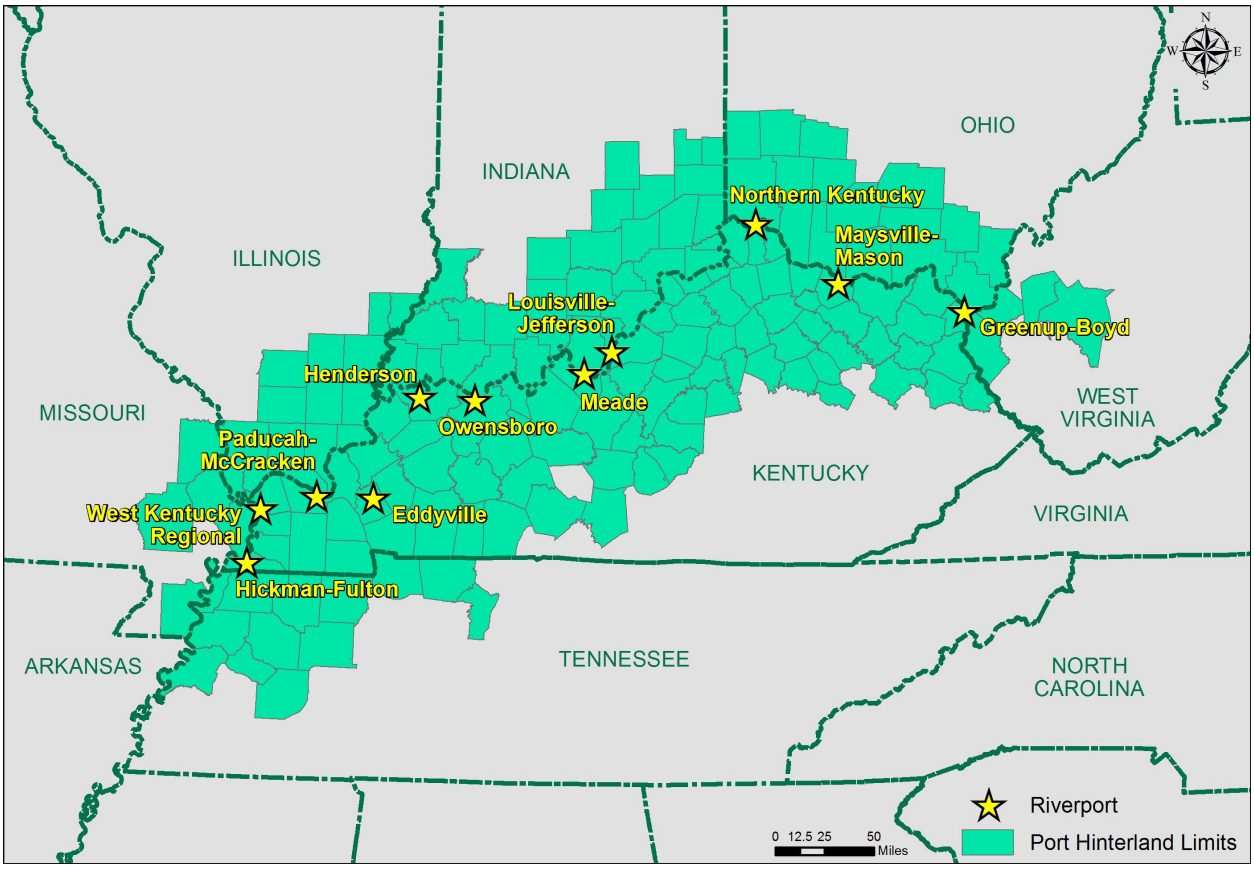

Figure 1: Kentucky Riverport Authorities and Market Hinterland

Comment Themes from Port Visits

Following conversations with ten public ports, several themes emerged from the stakeholder interviews, including but not limited to:

- All participants were thankful that the Kentucky Transportation Cabinet (KYTC) has undertaken an overdue and important study of Kentucky's riverports, welcoming the opportunity to be involved throughout the study effort, and receiving the representative maps and data presented during the interview meetings.

- All appreciate that the Commonwealth of Kentucky makes available an annual grant matching program for riverports to submit proposals to support their infrastructure and operations. However, because the funds are somewhat limited and distributed across the public riverports of Kentucky, it is difficult to obtain a sizeable and continuing funding level to program port capital improvements which require extensive investment. Current state investment level limits such opportunities. The rules of the grant program require the funds to be used during the fiscal year issued with no carryover into another year.

- Several comments were made with respect to the state port structures of Indiana and Missouri. These states have a different funding and organizational relationships with the public ports. The specific interests are listed in the specific Kentucky port writeups. A comparison of Kentucky's waterway program and neighboring state will be completed in a subsequent technical memorandum.

- Many envision KYTC coordinating and leading efforts with the Kentucky Cabinet for Economic Development (CED) in representing the interests of Kentucky's waterways and riverport infrastructure.

- Waterway and port infrastructure were mostly built during and for a previous era. Among the ports, there is a collective identification of need and desire to modernize the infrastructure.

- Some riverports had sold waterfront land in the past which has led to disjointed ports.

- Some riverports were set up to serve local farmers as a mechanism to submit grants for economic development and infrastructure funding.

- Each riverport has local governance and influence; each has a six-member board of directors that includes representation from the city and or county governments of the representative area. The respective mayors or County Judge-Executives appoint board members, while the local commissions approve the appointments. Across Kentucky there are roughly 42 board members representing the local interests of the seven operating ports.

Report Organization

The remainder of this report includes a summary of the in-person interviews, the port market profiles, potentially divertible freight, key infrastructure and freight generators for each port. The market profiles include the market reach or hinterland of each port as a 90-minute drive from that port's location. The volume and value of commodities moved by mode in and through that hinterland or market area are discussed. Potentially divertible freight (for inland waterway transport) is defined as a commodity type that is currently being moved via another mode, but traditionally can be carried by barge.

EDDYVILLE RIVERPORT AND INDUSTRIAL DEVELOPMENT AUTHORITY

State of Port

Chartered by the City of Eddyville, the Eddyville Riverport and Industrial Development Authority is located in Lyon County. The Eddyville Riverport lies along the Cumberland River/Lake Barkley at river mile 43 on a 250-acre property adjacent to I-24, within one mile of I-69. The riverport has a public dock and a multi-national grain company operating a grain barge loading facility. The riverport owns a separate 120-acre industrial park, located about six miles from the riverport, that is served by the Paducah & Louisville (PAL) short line railroad. **Figure 2** illustrates the port and industrial park locations, freight routes, and freight generators in the vicinity.

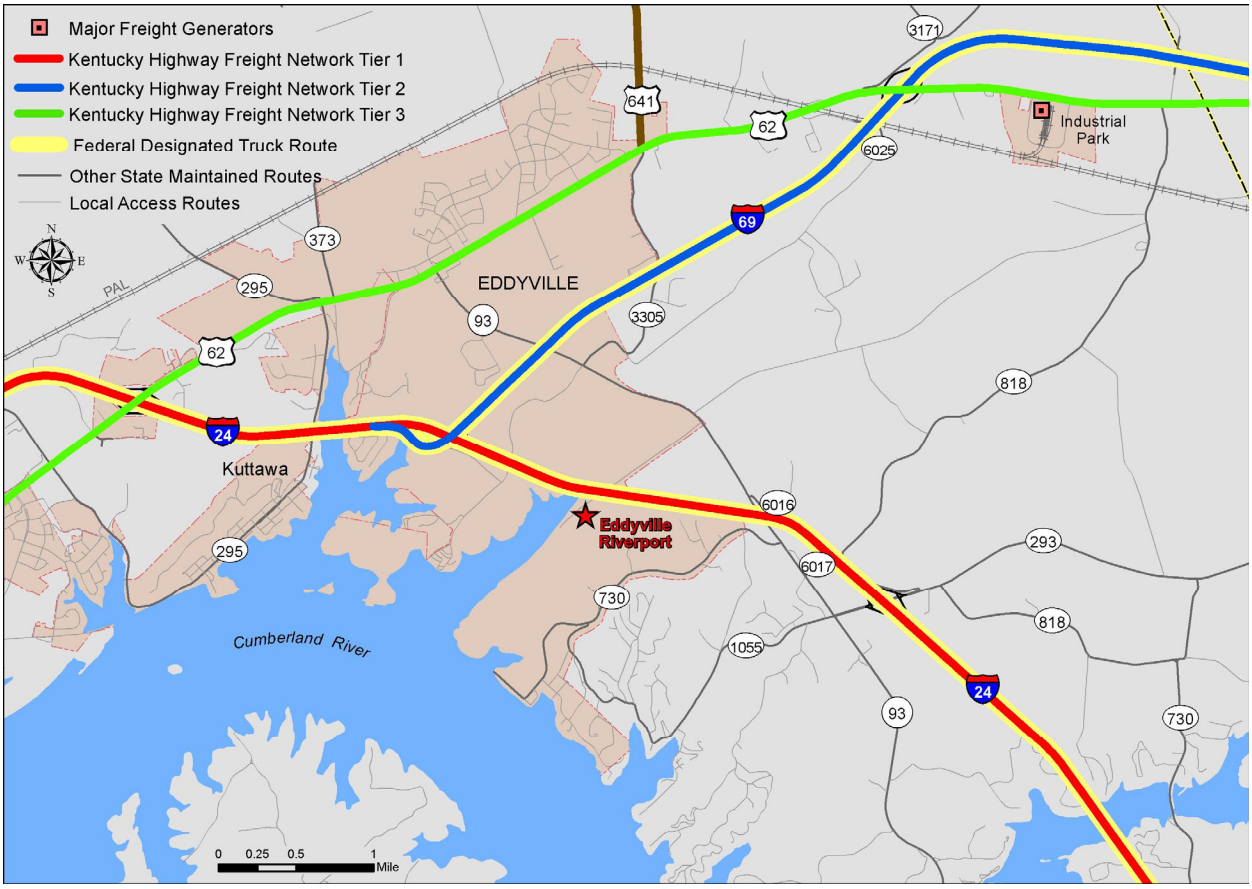

Figure 2: Eddyville Riverport Freight Infrastructure

As an operating port, the port director manages the port, leads a crew of employees who operate equipment and lead maintenance efforts. The Eddyville Riverport largely serves the agricultural sectors loading barges with grain and discharging fertilizer for crop production, while having capabilities to handle other commodities and products through its public dock. Other tenants include two fish plants, a barge repair company, and marina support service.

A master plan is being developed and will help guide future investment at the port, but one key infrastructure consideration is to expand its footprint while planning a new access road to the river channel.

Figure 3: Eddyville Riverport Public Dock, Truckload of Soybeans being Loaded into a Covered Hopper Barge

Port Market Hinterland

A port market hinterland is an area for which cargo can be potentially drawn to and from competitively. The Eddyville Riverport hinterland is defined by counties that can be reached in a driving time of roughly 90 minutes; it includes 32 counties in Kentucky, Illinois, and Tennessee centered on the Tennessee River and surrounding counties as shown in **Figure 4.**

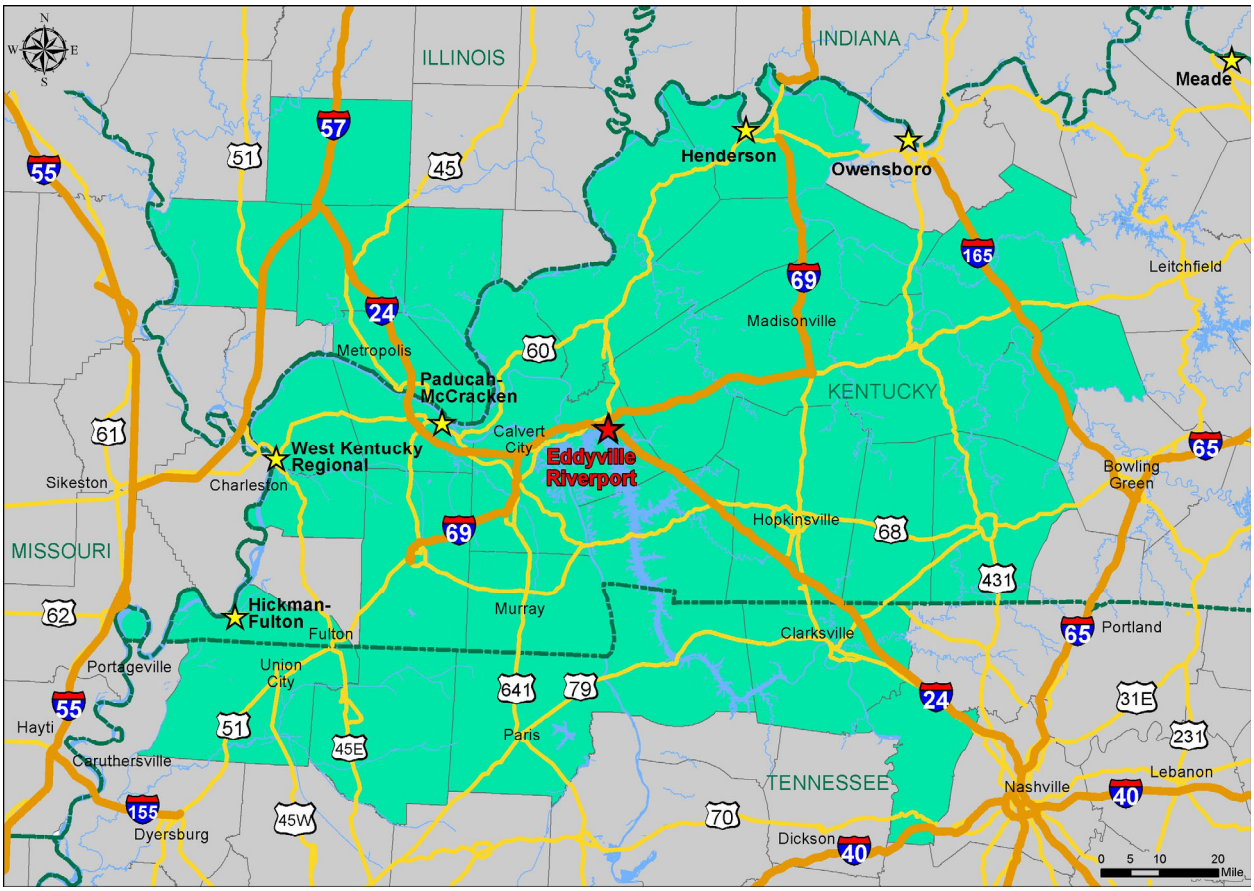

Figure 4: Eddyville Riverport Market Hinterland

Commodity Flows

As shown in **Table 2**, 1.5 trillion tons of freight moved through the hinterlands during 2018, totaling $2.4 trillion by value. Top commodities were agriculture, construction materials, consumer products, coal, and petroleum products that were broken down between highway, rail, and waterway modes.

Table 2: Eddyville Riverport 2018 Market Hinterland Total Tons and Values by Mode

	Tons (000s)	Value (millions USD)
Truck	738,862	1,194,576
Water	56,041	7,023
Rail	794,907	1,201,620
Total	1,589,811	2,403,218

Highway/Truck Mode

A total of 739 million tons of freight were carried by truck in 2018 in the Eddyville Riverport market area. Most (92%) of the truck traffic was passing through the area, while outbound and inbound truck shipments were evenly split at four percent. Value of trucked goods moved in the Eddyville Riverport market area in

2018 is estimated at $1.2 trillion (**Table 2**). The trucked commodities were 97% of the total share measured by value, because freight moving through has a generally higher than average value per ton. Truck traffic that is long-haul[2] is more likely to be higher value commodities because transportation costs for these goods are a smaller share of the price of those goods.

Eddyville Riverport market area trucking volumes include a variety of commodities with agriculture, construction materials, consumer products, coal, petroleum products, and beverages as the key drivers of road freight in the market area.

Waterway Mode

In 2018 approximately 56 million tons valued at $7 billion moved by waterway to and from the Eddyville Riverport market area (**Table 2**). Of those, approximately 18% were inbound moves and 82% were outbound. Eddyville Riverport market area waterway volumes include a variety of commodities with coal, petroleum products, fertilizers, construction materials, agricultural commodities, metal scrap, and chemicals as the top categories.

Rail Mode

Rail plays a critical role specializing in moving bulk goods long distances and across land routes that lack sufficient access to inland waterway infrastructure, and at lower unit rates than by truck. Many of the raw materials required to produce energy, supply food, and construct buildings and infrastructure depend on rail transportation. The PAL short line railroad serves the Eddyville Industrial Park with direct interchanges with four Class I railroads – UP, BNSF, CSX, and CN. There is no direct rail service to the Eddyville Riverport.

In 2018, 795 million tons valued at $1.2 trillion moved by rail to and from the Eddyville Riverport market area (**Table 2**). Of those, approximately five percent of the total were inbound moves, 10% were outbound, and 85% were through rail flows.

Eddyville Riverport market area rail volumes include a variety of consumer goods, grain and other agricultural commodities, construction materials, coal, and petroleum products.

Divertible Freight[3]

Estimated tonnage of potentially divertible freight for inland waterway transport in the market is largely in the miscellaneous coal or petroleum products category. That is, coal/petroleum products represent high

[2] Long-haul trips usually have a driving radius of 250 miles or more.

[3] Divertible Freight (for inland waterway transport) is defined as a commodity type that is currently being moved via other mode, but traditionally can be carried by barge. Future analysis will determine if the tons shown can logistically be transferred and if the port has the infrastructure to accommodate the transfer.

volume, low-cost movements today traveling via truck or rail that could feasibly shift to water-based modes, an ideal market focus to attract additional tonnage to the port facility. The other highest-ranked potentially divertible commodities include grain, plastics, stone, and chemicals as summarized in **Figure 5**.

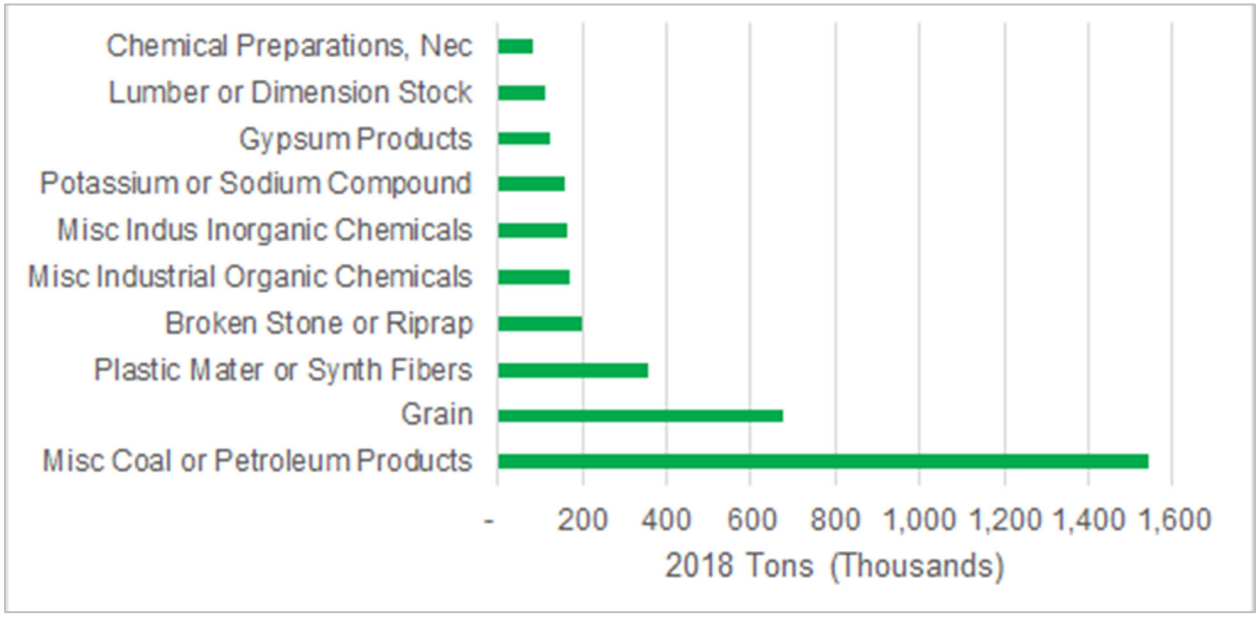

Figure 5: Eddyville Riverport Divertible Freight

Freight Accessibility Considerations

Figure 6 illustrates potential obstacles to highway freight mobility near the port. Interstate access is provided at I-24 Exit 45 via KY 93 and KY 293, less than two miles from the port's access road. KY 93 and KY 293 are two-lane highways with 10-foot lanes; large turning radii at key intersection ease truck movements to/from the port. Recent crash data highlights elevated crash trends at the KY 93 intersection with the port entrance and the KY 93/KY 293 intersection. Mostly rural in nature, few bottlenecks are noted that contribute to congestion or delay. There are dedicated turn lanes on northbound and southbound KY 93 into the riverport.

PAL Railway (Class II) provides the nearest rail access at the nearby Eddyville Industrial Park. US 62 provides highway freight access to the industrial park, with several elevated crash sections nearby.

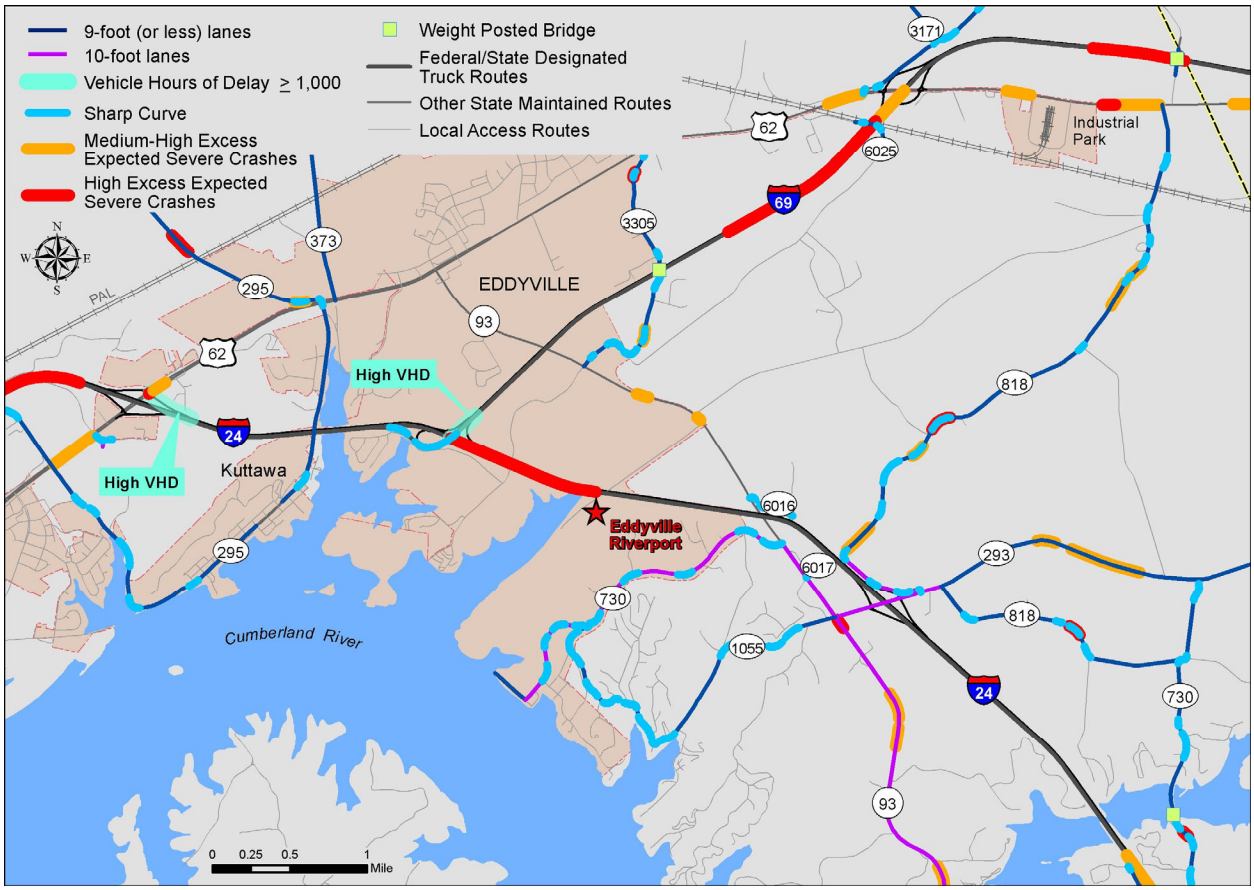

Figure 6: Eddyville Riverport Potential Obstacles to Freight Mobility

GREENUP-BOYD COUNTY RIVERPORT AUTHORITY

State of Port

Chartered jointly by Greenup and Boyd counties, the Greenup-Boyd County Riverport Authority is located in Wurtland in Greenup County. The Greenup-Boyd County Riverport lies along the Ohio River at river mile 332. The site includes 29 acres with 1,120 feet of river frontage plus two additional properties nearby, totaling 35 more acres. Port leaders are interested in exploring increased connectivity to the riverport's associated EastPark Industrial Center that covers 3,000 acres, with an additional 17,000 acres adjacent to the industrial park. **Figure 7** illustrates the port location and freight routes in the vicinity.

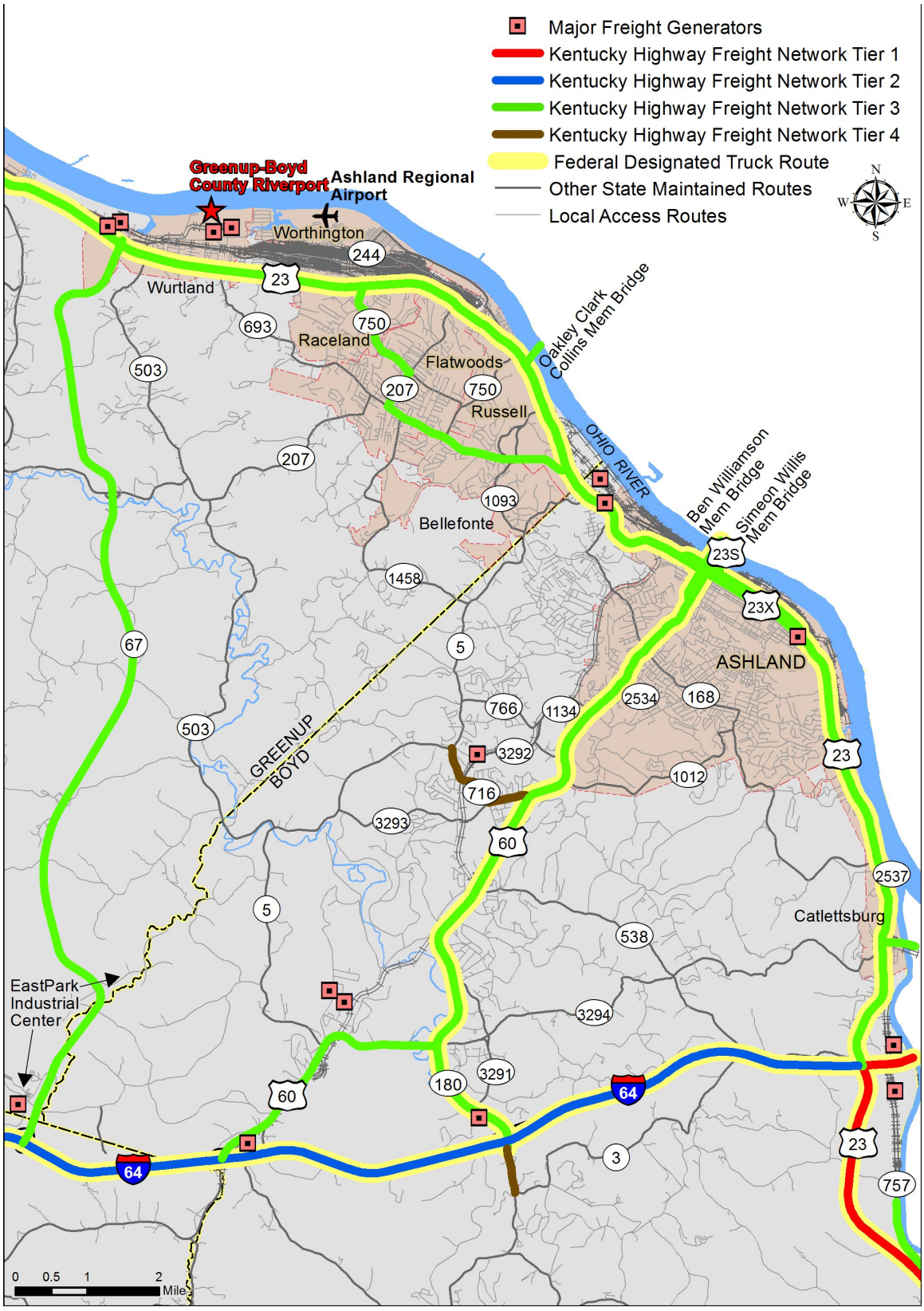

Figure 7: Greenup-Boyd County Riverport Freight Infrastructure

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. Now, the focus of the port is to attract business. The port benefits from having infrastructure that was built for other industries such as a solid waste treatment plant. Port leadership believes the operation would benefit from increased attention from the Kentucky CED.

Riverport leadership emphasized there is a population of greater than 300,000 people within 50 miles of the riverport. The population base provides a supportive workforce while being a formidable consumer base to support commodity and product flows into and out of the riverport. In the meanwhile, key support services such as a local hospital recently closed.

Figure 8: Greenup-Boyd County Riverport Public Dock

There is a collaborative effort in the Kentucky-Ohio-West Virginia tri-state area to become an attractive economic magnet for the region, replacing industries that have closed. One initiative of the tri-state group was establishing a young professionals leadership program. The program annually attracts eight to ten professionals to immerse them into the regional economy to educate and expose them to regional

opportunities and cooperation. The program includes an introduction and visit to the Greenup-Boyd County Riverport.

Port Market Hinterland

The Greenup-Boyd County Riverport market hinterland—defined by counties that can be reached in a driving time of roughly 90 minutes—includes 25 counties on both sides of the Ohio River as shown in **Figure 9**. This includes portions of Kentucky, Ohio, and West Virginia.

Commodity Flows

As shown in **Table 3**, 840 million tons of freight moved through the hinterlands during 2018, totaling $1.0 trillion by value. Top commodities of agriculture, construction materials, consumer products, coal, and petroleum products were broken down between highway, rail, and waterway modes.

Table 3: Greenup-Boyd County Riverport 2018 Market Hinterland Total Tons and Value by Mode

	Tons (000s)	Value (millions USD)
Truck	334,222	487,144
Water	41,853	10,495
Rail	463,017	576,603
Total	839,092	1,074,242

Highway/Truck Mode

A total of more than 334 million tons of freight were carried by truck in 2018 in the Greenup-Boyd County Riverport market area. Through shipments were most (88%) of the truck traffic in the area, while outbound and inbound truck freight flows were evenly split at six percent. Truck freight moved in the Greenup-Boyd County Riverport market area in 2018 is estimated at $487 billion (**Table 3**). The value of through truck freight share was even higher (94%) than the tonnage shares in 2018. The through truck freight is generally of higher unit value (per ton) because this freight traffic is generally longer-haul freight and transport costs are a lower share of overall prices of these goods.

The Greenup-Boyd County Riverport market area truck volumes include a variety of commodities with construction materials, petroleum products, chemicals, agriculture, consumer goods, and forest materials as the key categories of truck freight in the market area.

Waterway Mode

In 2018, 42 million tons valued at $10.5 billion moved by waterway to and from Greenup-Boyd County Riverport market area (**Table 3**). Of those, approximately 54% were inbound moves and 46% were outbound waterway barge flows.

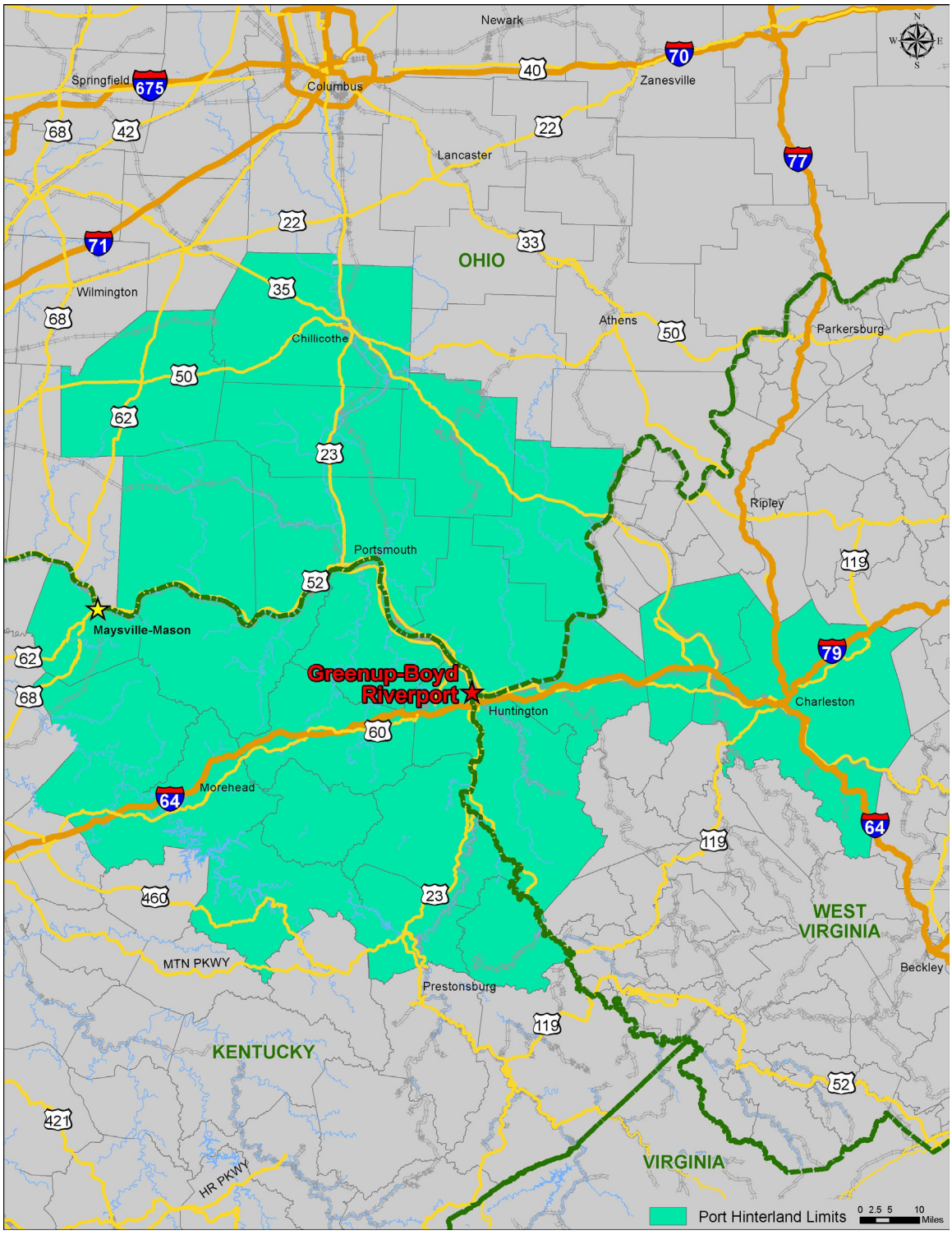

Figure 9: Greenup-Boyd County Riverport Market Hinterland

The Greenup-Boyd County Riverport market area waterway volumes include a variety of commodities with coal, construction materials, petroleum products and crude, chemicals, metal scrap and iron ore, as the key categories of waterway freight in the market area.

Rail Mode

Rail freight is often bulk goods moving long distances and across land routes that lack sufficient access to inland waterway infrastructure to move by barge, typically shipped at lower unit cost than by truck. Many of the raw materials required to produce energy, supply food, and construct buildings and infrastructure depend on rail transport. Greenup-Boyd County Riverport is served by the CSX Class I railroad.

In 2018, 463 million tons valued at $577 billion moved by rail to and from Greenup-Boyd County Riverport market area (**Table 3**). Of those, approximately 16% were inbound moves, 12% were outbound and 72% were through rail flows.

Greenup-Boyd County Riverport market area rail volumes include a variety of commodities with coal, construction materials, petroleum products, chemicals, agricultural commodities, and consumer goods.

Divertible Freight

Estimated tonnage of potentially divertible freight for inland waterway transport in the market is led by the primary iron and steel products and liquefied gases categories. Other high-ranked potentially divertible commodities include grain, chemicals, plastics, refined petroleum products, and oil seeds, as shown in **Figure 10.**

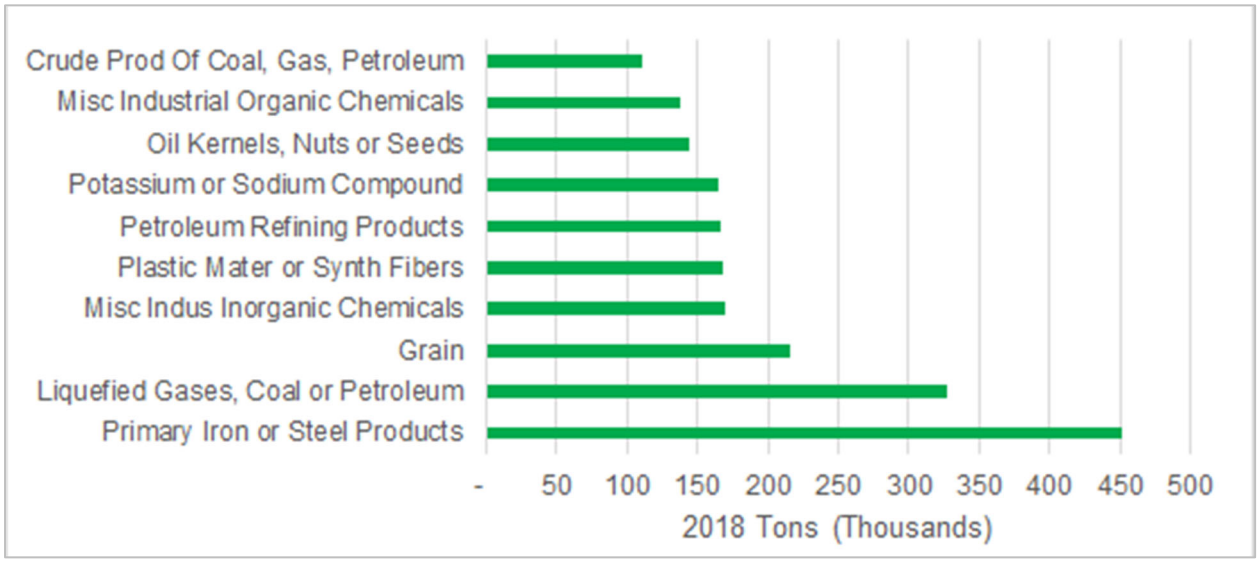

Figure 10: Greenup-Boyd County Riverport Divertible Freight

Freight Accessibility Considerations

The nearest interstate is I-64, located 13 miles south. **Figure 11** (page 16) illustrates potential obstacles to highway freight mobility near the port.

Three designated freight routes link the port to I-64:

- US 23, running parallel to the river, provides a four-lane divided typical section with 12-foot lanes, connecting to I-64 Exit 191, the last exit before West Virginia.
- US 60/KY 180 provides a four-lane connector to I-64 Exit 185 but requires trucks to navigate tight turns within the City of Ashland to/from US 23. A KYTC project to widen the two-lane portion of US 60 and improve access to I-64 Exit 181 is ongoing with FY 2020 federal construction funds noted in the current FY2020-2026 Highway Plan.
- KY 67 (Industrial Parkway) provides a two-lane connector to I-64 Exit 179, commonly used by freight traffic though not a designated truck route. This is the most direct link between the port and the EastPark Industrial Center.

Stakeholders identified developing a four-lane highway to the industrial park as a key need connecting the riverport and developing industrial park.

Recent crash data highlights elevated crash trends along each of these routes. The nearest cross-river highway bridge is located between Ironton, OH and Russell, KY—roughly five miles southeast of the port along US 23.

The Ashland Regional Airport is located immediately east of the riverport. This public use, general aviation facility provides a 5,600-foot paved runway and serves an average 28 flights per day. See **Figure 11** for Ashland Regional Airport location.

CSX maintains extensive rail facilities parallel to the Ohio River and provides direct access to the riverport. Greenup-Boyd County Riverport Authority owns the newly renovated rail infrastructure on-site and in the surrounding industrial park. See **Figure 11** for CSX rail facilities.

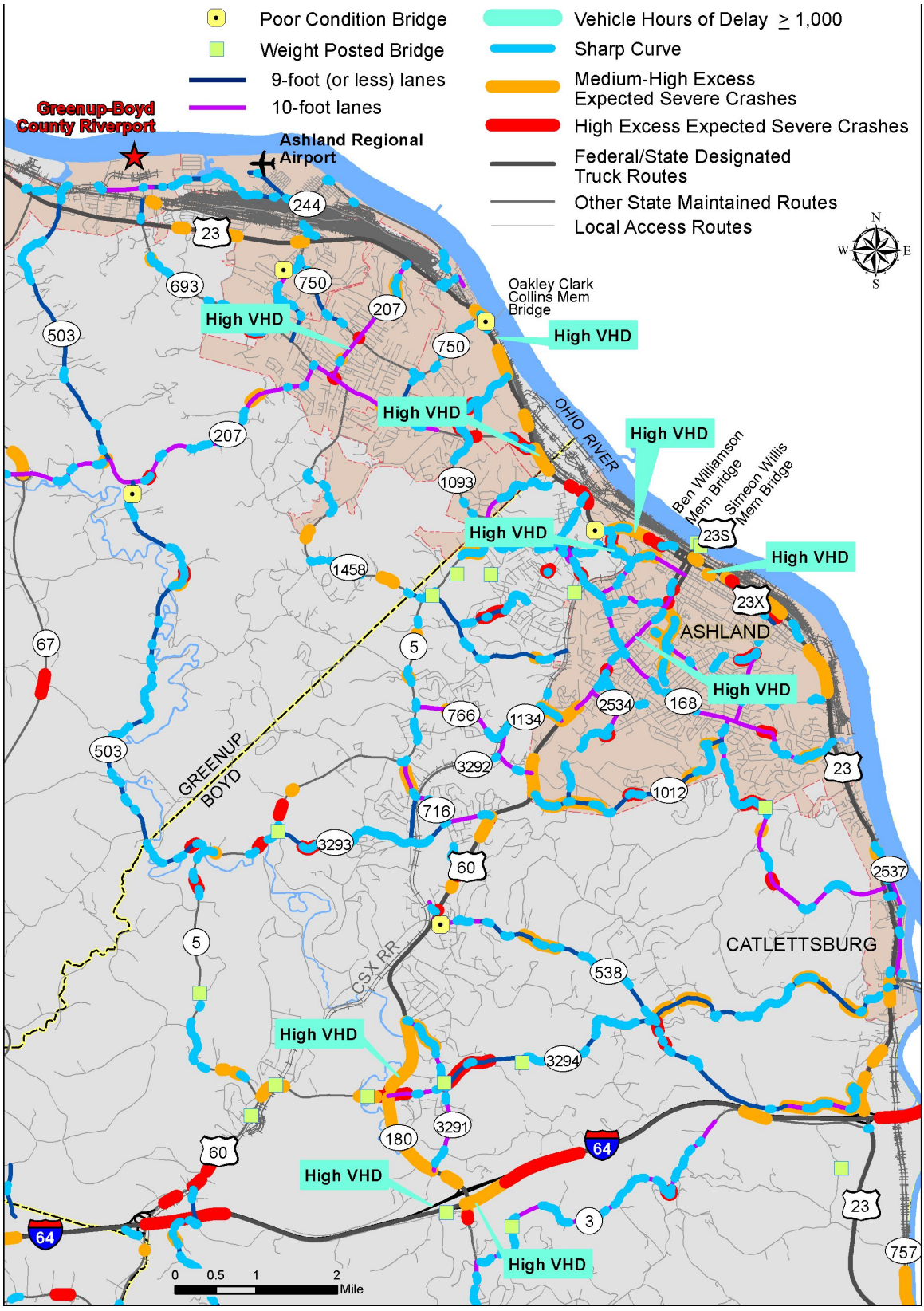

Figure 11: Greenup-Boyd County Riverport Potential Obstacles to Freight Mobility

HENDERSON COUNTY RIVERPORT AUTHORITY

State of Port

Chartered by Henderson County, the Henderson County Riverport Authority is located west of the City of Henderson. The Henderson County Riverport lies along the Ohio River at river mile 808 on a 102.5-acre property (40 acres utilized for terminal operations). The riverport was founded in 1970 and became operational in 1981.

Figure 12 illustrates the riverport location and freight routes in the vicinity. I--69 provides the nearest interstate access, relying on state-designated truck routes along KY 136 and KY 425 (Henderson Bypass) to connect the port and I-69 Exit 148.

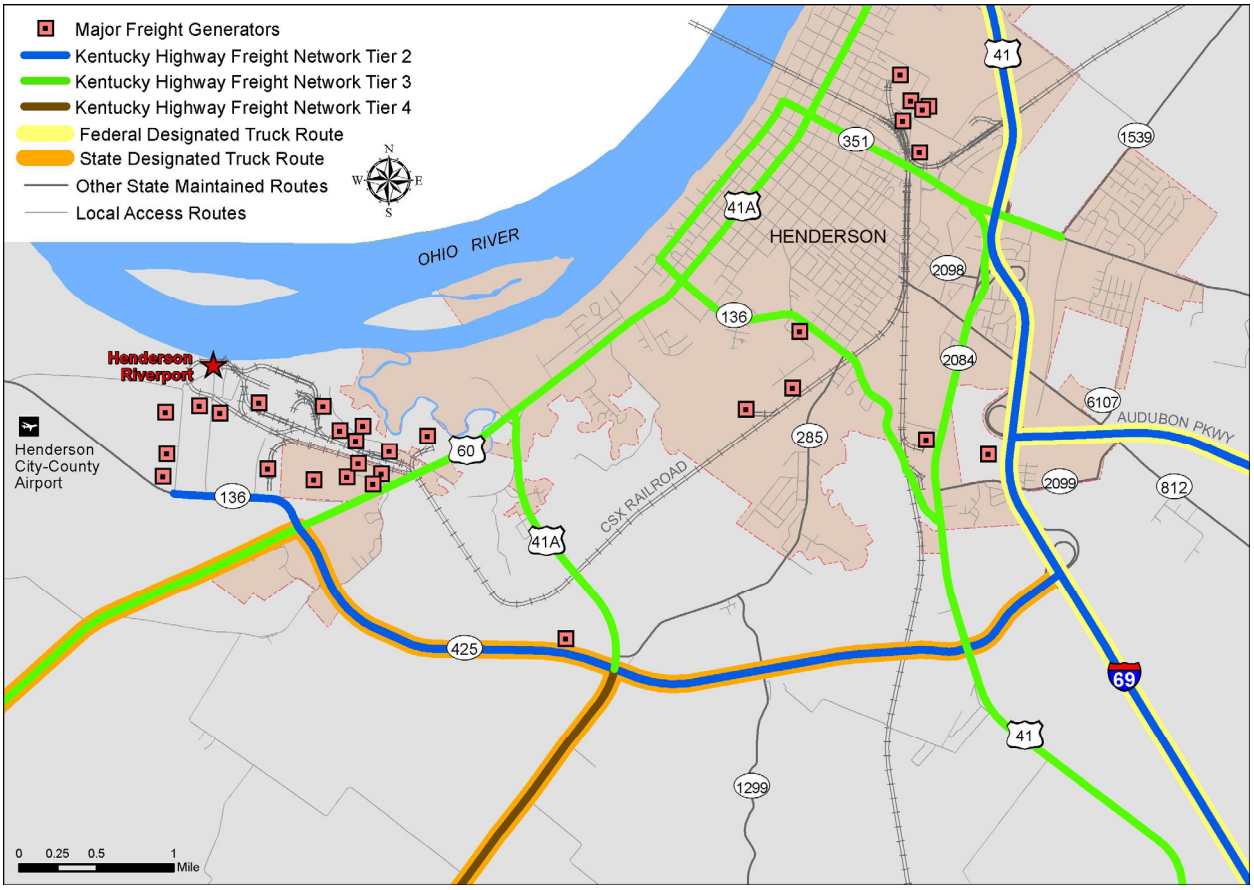

Figure 12: Henderson County Riverport Freight Infrastructure

As a long established riverport, needs identified for Henderson include increasing upkeep and restoring existing assets—including docks and warehouses. Business and economic development opportunities require fortifying existing customer relationships and identifying new customers while offering solutions for logistics needs. From the current study, port leadership would like to obtain a matrix on available business

and commodity flows and resources of rates and services among the modes to use for planning, execution, and sales opportunity.

Figure 13: Henderson County Riverport Public Dock and Crane

Port Market Hinterland

The market hinterland area for the Henderson County Riverport includes 30 counties within 90 minutes drive time. These counties are on both sides of the Ohio River capturing potential economic geography served by the port as shown in **Figure 14**.

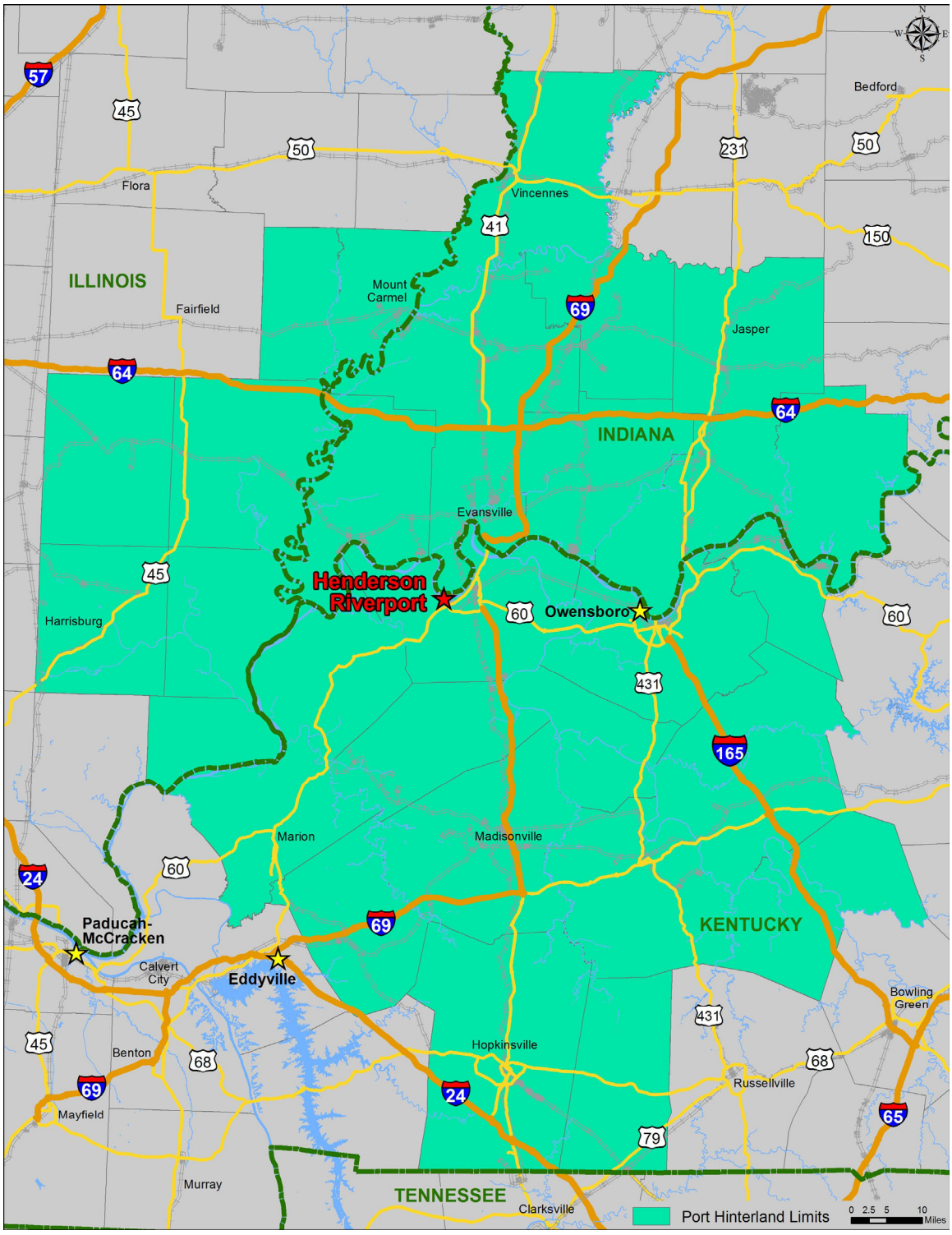

Figure 14: Henderson County Riverport Market Hinterland

Commodity Flows

As shown in **Table 4**, 1.5 billion tons of freight moved through the hinterlands during 2018, totaling $1.6 trillion by value. Top commodities of agriculture, construction materials, coal, food products, and chemicals were broken down between highway, rail, and waterway modes.

Table 4: Henderson County Riverport 2018 Market Hinterland Total Tons and Values by Mode

	Tons (000s)	Value (millions USD)
Truck	476,558	657,702
Water	47,047	8,344
Rail	999,794	986,476
Total	1,523,398	1,652,521

Highway/Truck Mode

A total of almost 477 million tons of freight were carried by truck in 2018 in the Henderson County Riverport market area. Through traffic has the highest share of truck traffic in the area (84%), while outbound and inbound are nine and seven percent, respectively. The value of trucked goods moved in the Henderson County Riverport market area in 2018 is estimated at $658 billion (**Table 4**). Most (90%) of this truck traffic was through traffic. Because the through truck share by value is higher than the share by weight, the through cargo has a higher unit value (per ton). As through traffic is longer-haul transport, this cargo has a lower share of their price made up of the transport cost.

Henderson County Riverport market area trucking volumes include a variety of commodities with agriculture, construction materials, coal, food products, chemicals, and consumer goods as the leading truck categories in the market area.

Waterway Mode

In 2018, 47 million tons valued at $8.3 billion moved by waterway to and from the Henderson County Riverport market area (**Table 4**). Of those, approximately 25% are inbound moves and 75% are outbound waterway flows.

Henderson County Riverport market area waterway volumes include a variety of commodities with coal, agricultural products, petroleum products, chemicals, construction materials, and fertilizers as the leading categories of barge freight in the market area.

Rail Mode

Rail freight is often bulk goods moving long distances and across land routes that lack sufficient access to inland waterway infrastructure to move by barge, typically shipped at lower unit cost than by truck. Many of the raw materials required to produce energy, supply food, and construct buildings and infrastructure depend on rail transportation. Henderson County Riverport is served by CSX and the port owns 12,800 feet of rail track.

In 2018, close to one billion tons valued at $986 billion moved by rail to and from Henderson County Riverport market area (**Table 4**). Of those, approximately eight percent were inbound moves, 29% were outbound and 63% were through rail flows.

Henderson County Riverport market area rail volumes include a variety of commodities with coal, grain and other agricultural commodities, fertilizer, consumer goods, iron and steel products, construction materials, and petroleum products as key rail commodities in the market area. Coal has been the largest rail tonnage category, making up 33% of total rail tonnage in 2018.

Divertible Freight

Estimated tonnage of potentially divertible freight for inland waterway transport in the market area is largely in the primary iron and steel products category as shown in **Figure 15**. The other highest-ranked potentially divertible commodities include grain, plastics, and other organic chemicals, as shown in the chart below.

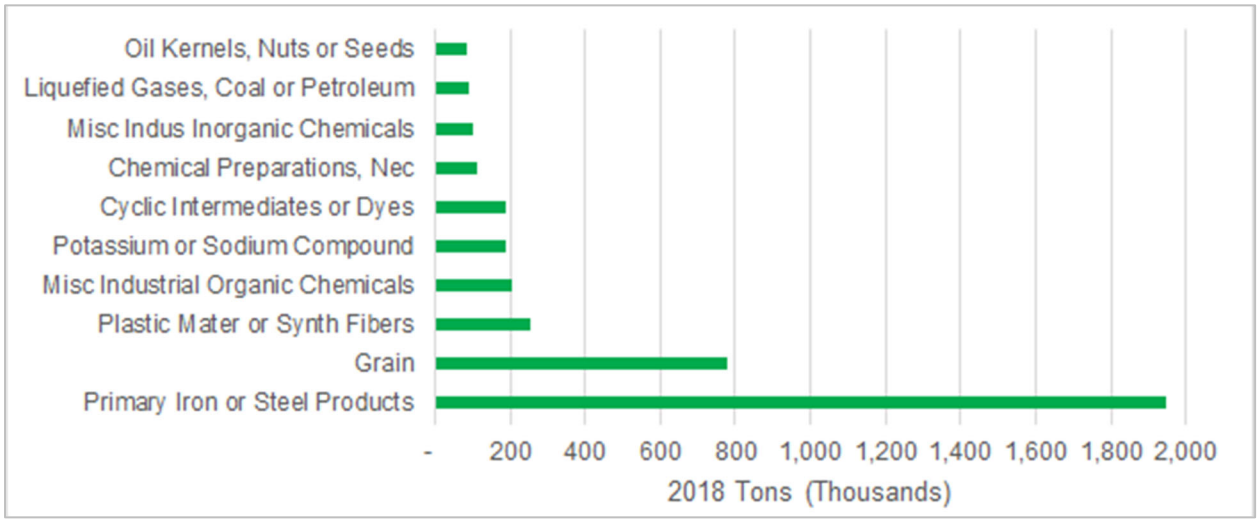

Figure 15: Henderson County Riverport Divertible Freight

Freight Accessibility Considerations

Figure 16 illustrates potential obstacles to highway freight mobility near the port. KY 136 and KY 425 provide two-lane connections to the I-69, with 11- and 12-foot lane widths, respectively. Recent crash data highlights elevated crash trends concentrated at intersections along each route. One substandard curve along KY 136 is signed with chevron shields to warn eastbound motorists, which is located west of the city and south of the port. No bottlenecks are noted in the vicinity that contribute to congestion or delay.

An ongoing bi-state project is under development to connect I-69 between Henderson, KY and Evansville, IN with a new Ohio River crossing. Construction funding is anticipated to begin as early as fiscal year 2022. Today, the US 41 twin bridges provide the nearest cross-river highway link, about three miles from the port.

The Henderson City-County Airport is approximately a mile west of the riverport. It serves as a regional general aviation airfield with a 5,500-foot paved runway.

The Henderson County Riverport is served directly by CSX Railroad with switching four times per week; the site contains about 12,800 feet of rail track including four spurs.

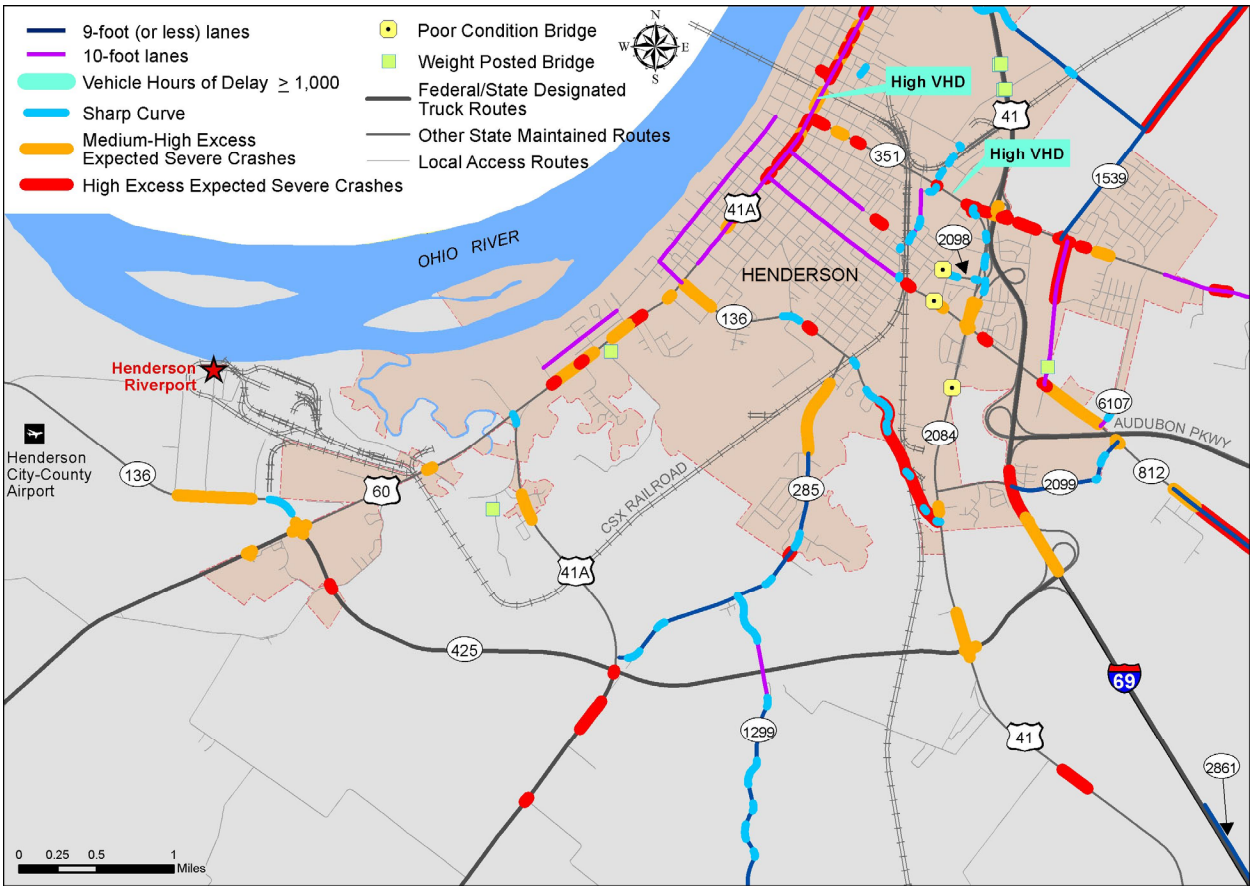

Figure 16: Henderson County Riverport Potential Obstacles to Freight Mobility

HICKMAN-FULTON COUNTY RIVERPORT AUTHORITY

State of Port

Chartered by Fulton County, the Hickman-Fulton Riverport Authority is located in Fulton County. The Hickman-Fulton County Riverport lies along the Mississippi River at river mile 922. Founded in 1964 as an operating riverport, it sits on 10 acres with an additional 210 acres available for purchase and development. The riverport handles agriculturally based commodities, wire rod, coke, steel, and general cargo. The port infrastructure has exceeded its designed life and needs substantial investment to modernize and expand. **Figure 17** illustrates the port location and freight routes in the vicinity.

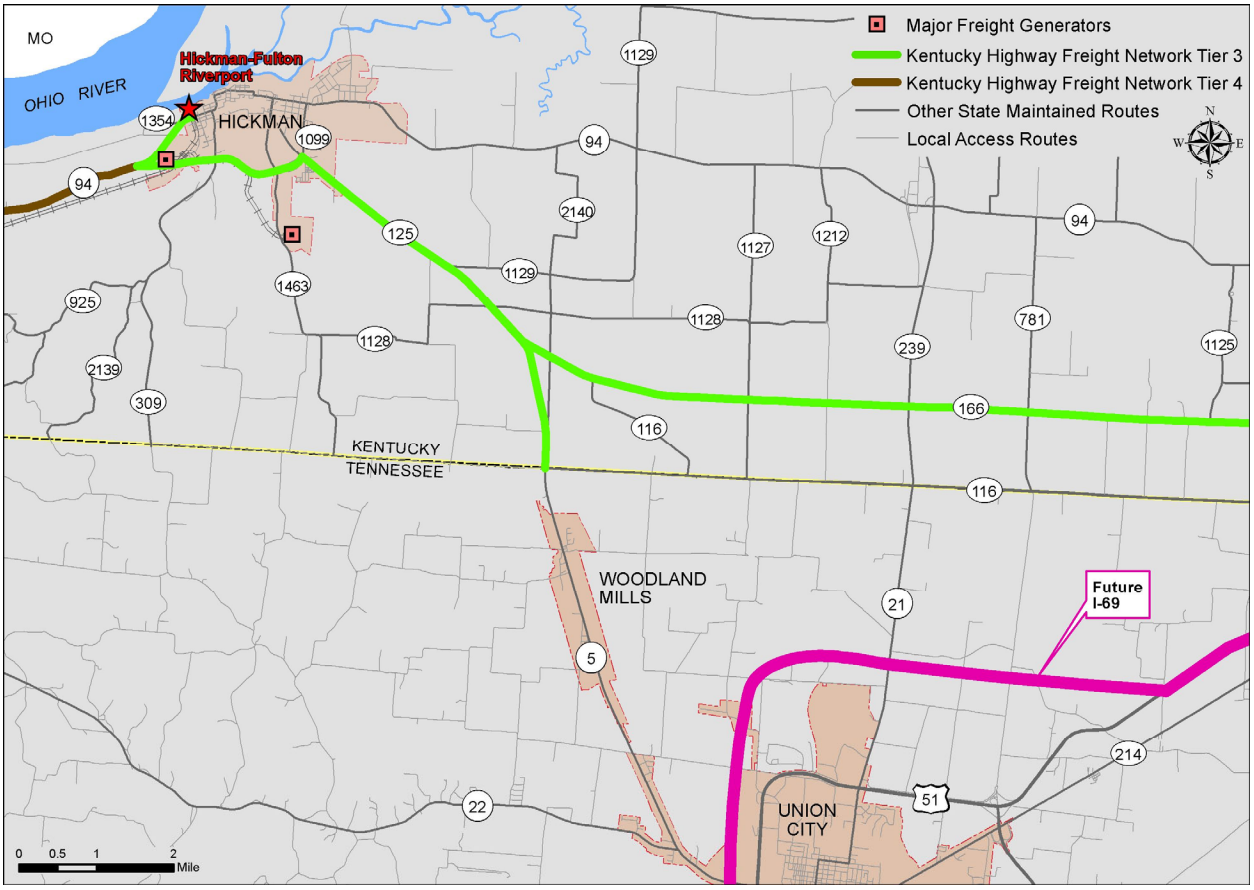

Figure 17: Hickman-Fulton County Riverport Freight Infrastructure

The TennKen short line railroad serves the port, connecting to the CN railroad in Dyersburg, TN. The railroad is owned and structured through a joint arrangement between the states of Kentucky and Tennessee. However, the line between the riverport and Dyersburg needs substantial investment to modernize it to serve modern rail car dimensions and carrying capacities of trains.

Port Market Hinterland

A port market hinterland is an area for which cargo can be potentially drawn to and from competitively. The Hickman-Fulton County Riverport is defined by counties that can be reached in a driving time of roughly 90 minutes, and includes 21 counties in Kentucky, Illinois, Tennessee, and Missouri centered on the Mississippi River as shown in **Figure 18**.

Commodity Flows

As shown in **Table 5**, 1.0 billion tons of freight moved through the hinterlands during 2018, totaling $1.5 trillion by value. Top commodities of agriculture, construction materials, petroleum, and chemicals were broken down between highway, rail, and waterway modes.

Table 5: Hickman-Fulton County Riverport 2018 Market Hinterland Total Tons and Values

	Tons (000s)	Value (millions USD)
Truck	425,010	657,702
Water	10,470	5,253
Rail	633,458	896,789
Total	1,068,937	1,559,744

Highway/Truck Mode

A total of 425 million tons of freight were carried by truck in 2018 in the Hickman-Fulton County Riverport market area. Most (91%) of this truck freight was through traffic while outbound and inbound shipments were five and four percent, respectively. The value of trucked goods moved in the Hickman-Fulton County Riverport market area in 2018 is estimated at $658 billion (**Table 5**). Through traffic represents a comparable percentage of the total share when measured by value compared to weight, accounting for about 90% of all cargo in 2018.

Hickman-Fulton County Riverport market area trucking volumes include a variety of commodities with agriculture, construction materials, chemicals, and consumer goods as the key drivers of road freight in the market area.

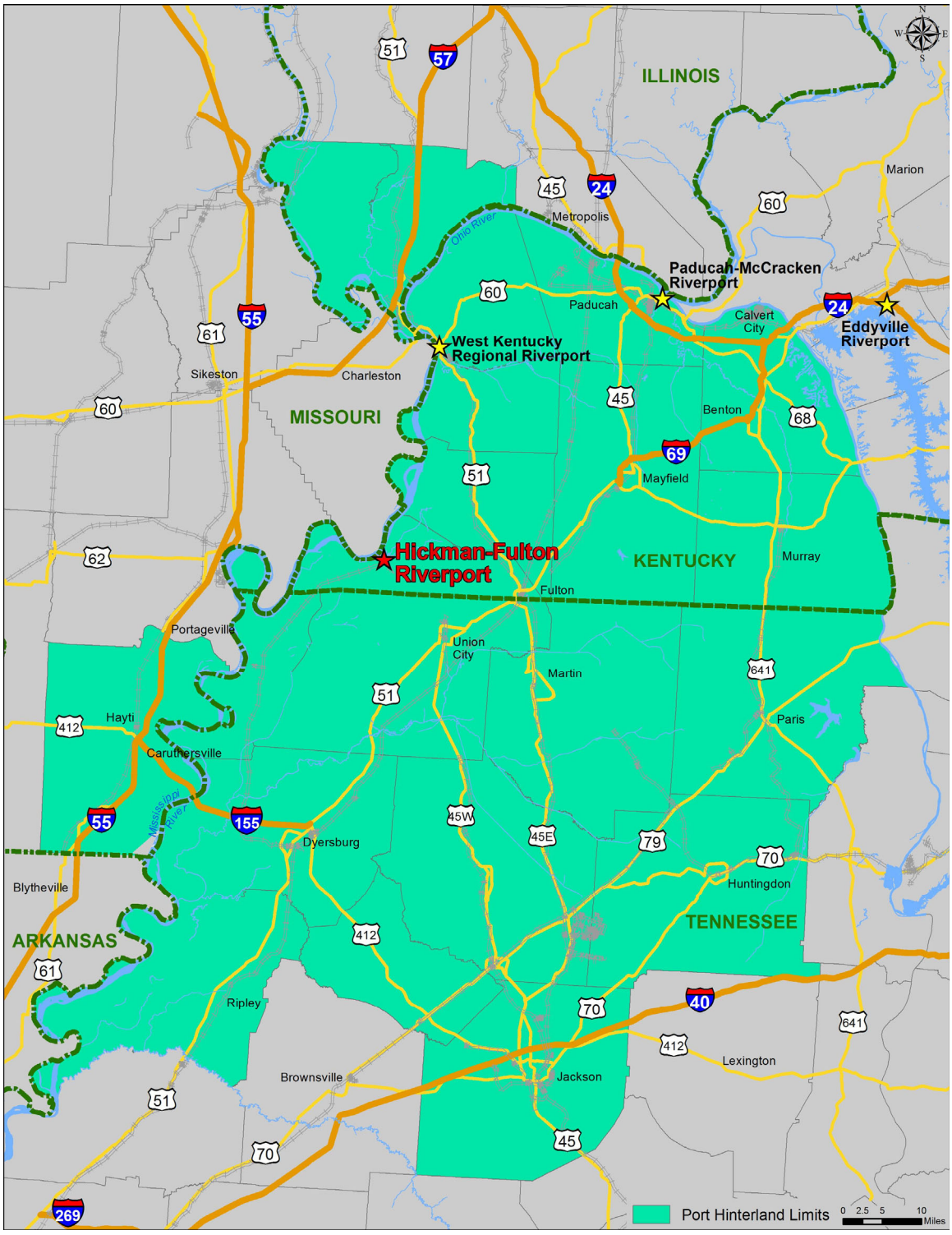

Figure 18: Hickman-Fulton County Riverport Market Hinterland

Waterway Mode

In 2018, 10 million tons valued at $5.2 billion moved by inland waterway to and from Hickman-Fulton County Riverport market area (**Table 5**). Of those, approximately 45% were inbound moves and 55% were outbound barge flows.

Hickman-Fulton County Riverport market area waterway volumes include a variety of commodities with agricultural products, petroleum products, chemicals, fertilizer, coal, construction materials, and metal scrap as the key inland waterway freight commodities in the market area.

Rail Mode

In 2018, 633 million tons valued at $897 billion moved by rail to and from Hickman-Fulton County Riverport market area (**Table 5**). Of those, approximately 15% were inbound moves, six percent were outbound and 79% were through rail flows.

Hickman-Fulton County Riverport market area rail volumes include a variety of commodities with coal, grain and other agricultural commodities, consumer goods, construction materials, chemicals, and plastics as the key rail freight commodities in the market area.

Divertible Freight

Estimated tonnage of potentially divertible freight for inland waterway transport in the market is largely in the miscellaneous coal or petroleum products category as shown in **Figure 19**. The other highest-ranked potentially divertible commodities include chemicals, grain, and plastics.

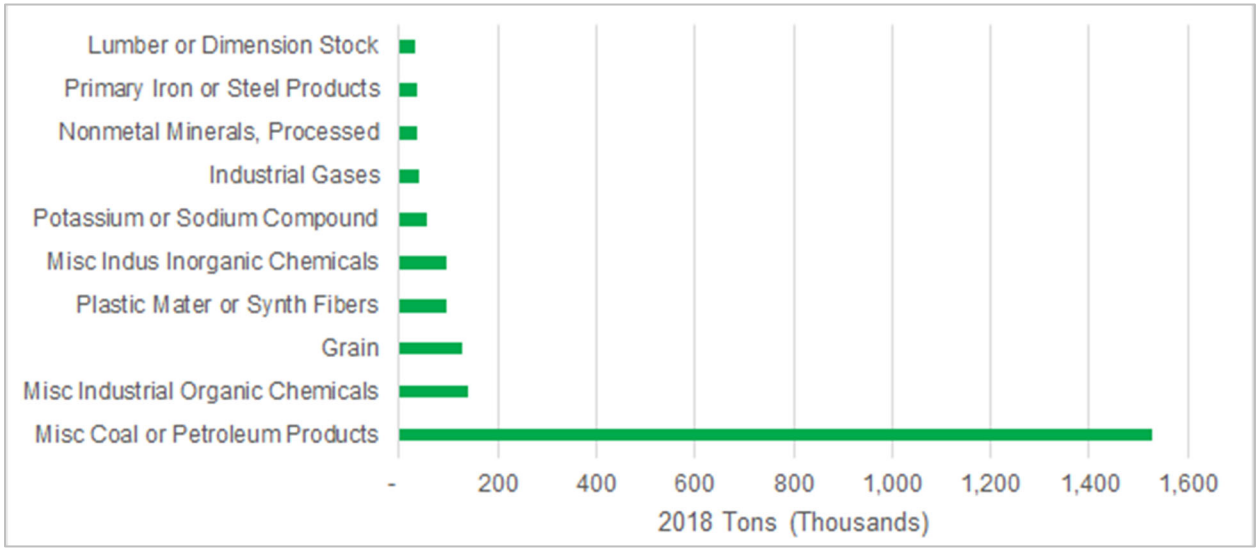

Figure 19: Hickman-Fulton County Riverport Divertible Freight

Freight Accessibility Considerations

Figure 17, found on page 23, illustrates the port location and freight routes in the vicinity. While there are no federal or state-designated truck routes in this section of the state, a series of projects by KYTC and the Tennessee Department of Transportation are underway to extend I-69 south from Mayfield, KY—passing near Fulton, Union City, and Dyersburg.

Figure 20 illustrates potential obstacles to highway freight mobility in Kentucky near the Hickman-Fulton County Riverport. Narrow, two-lane highways serve the largely rural region, with numerous substandard curves, poor condition or weight posted bridges, and elevated crash trends as shown.

While the Dorena-Hickman ferry provides the nearest cross-river mobility to Missouri, the nearest highway bridges are located near Wickliffe, KY (30 miles north) and along I-155 between Tennessee/Missouri (40 miles southwest). An ongoing bi-state project is in design to replace the aging US 51 bridge at Wickliffe.

Rail service is provided by short line TennKen Railroad Company (Class III); it connects to CN (Class I) at Dyersburg. All rail tracks on-site are owned and maintained by the port authority.

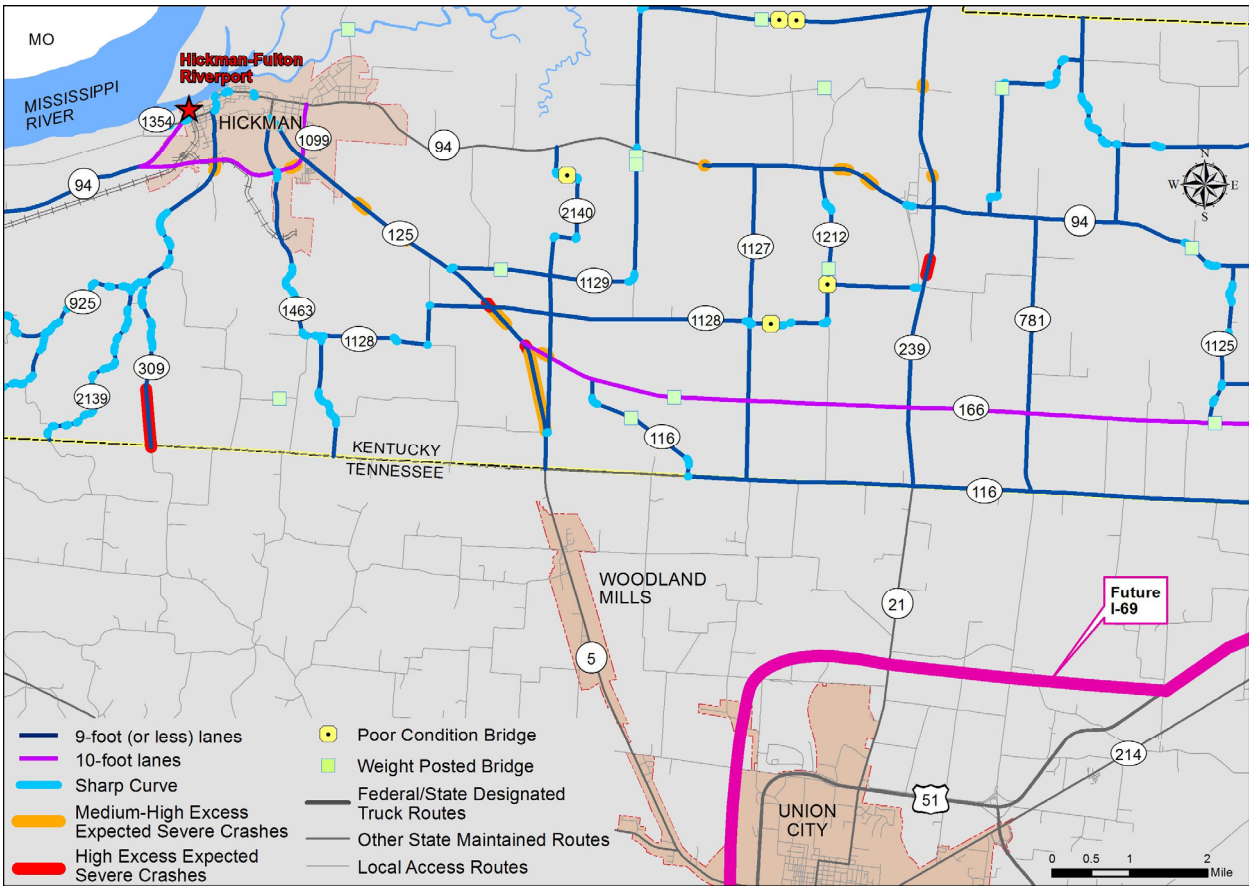

Figure 20: Hickman-Fulton County Riverport Potential Obstacles to Freight Mobility (Kentucky)

LOUISVILLE-JEFFERSON COUNTY RIVERPORT AUTHORITY

State of Port

Chartered by the City of Louisville, the Louisville-Jefferson County Riverport Authority is located in Jefferson County. For marketing purposes, the Louisville-Jefferson County Riverport Authority recently modified its name to the Louisville Riverport Authority, but for the sake of this technical memorandum, it will be referred to as the Louisville-Jefferson County Riverport Authority. The Louisville-Jefferson County Riverport lies along the Ohio River at river mile 618 on a 2,000-acre property with 1.5 miles of river frontage and 13 miles of rail line across the property. The Louisville-Jefferson County Riverport was founded in 1965 as a landlord port, struggling to transition from a coal economy to handling other commodities and providing other services.

With its rail connections and on-property rail network, the riverport is positioning itself as a multimodal operation that considers all modes of operations to serve customers and the economy. **Figure 21** illustrates the port location and freight routes in the vicinity. The nearest interstate facility is I-264 (Watterson Expressway), providing direct access to both I-64 and I-65 for east/west and north/south trips beyond the metropolitan area. CSX, NS, and PAL (shortline) provide rail connections.

The Louisville-Jefferson County Riverport looks to use this study to develop its key performance indicators to enhance its offerings and position. To develop the key performance indicators requires key data that is substantial and relevant to assist with capital investments. Having a clearinghouse of core data would be valuable.

The Louisville-Jefferson County Riverport has identified requirements for faster, better equipment for the needs of customers and changing economic dynamics. They have a steady flow of customers interested in what the riverport has to offer, while there are key developments and operations near the riverport that could exploit the benefits of waterway navigation. Controlling its own destiny requires proper use of land and looking for opportunities to acquire more, developing a stronger marketing program, and being flexible to handle multiple commodities and products.

The Louisville-Jefferson County Riverport leadership is focusing its approach to a return-on-investment emphasis.

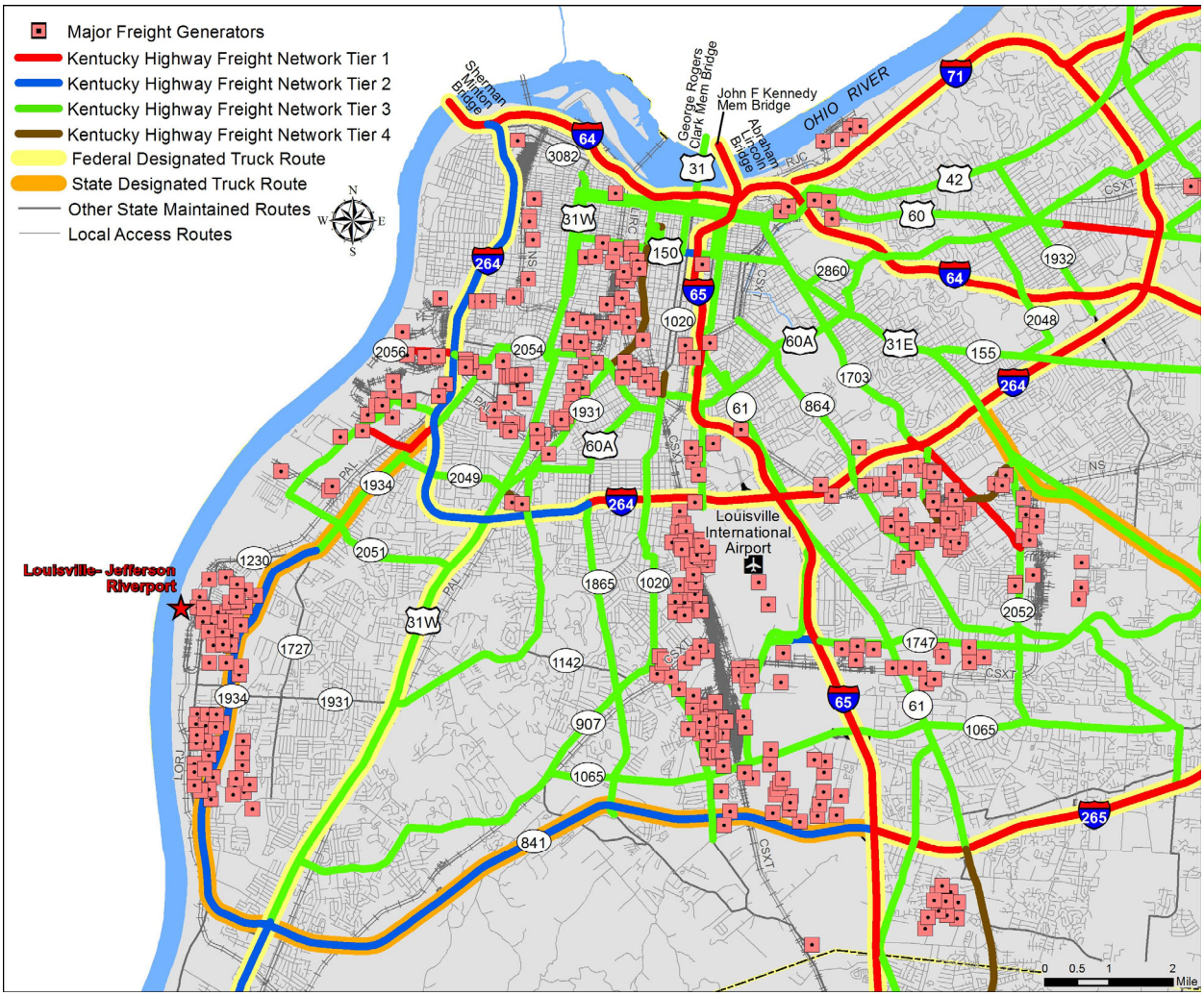

Figure 21: Louisville-Jefferson County Riverport Freight Infrastructure

Port Market Hinterland

The Louisville-Jefferson County Riverport market hinterland includes 37 counties in Kentucky and Indiana centered on the Louisville metropolitian area around the Ohio River as shown in **Figure 22**.

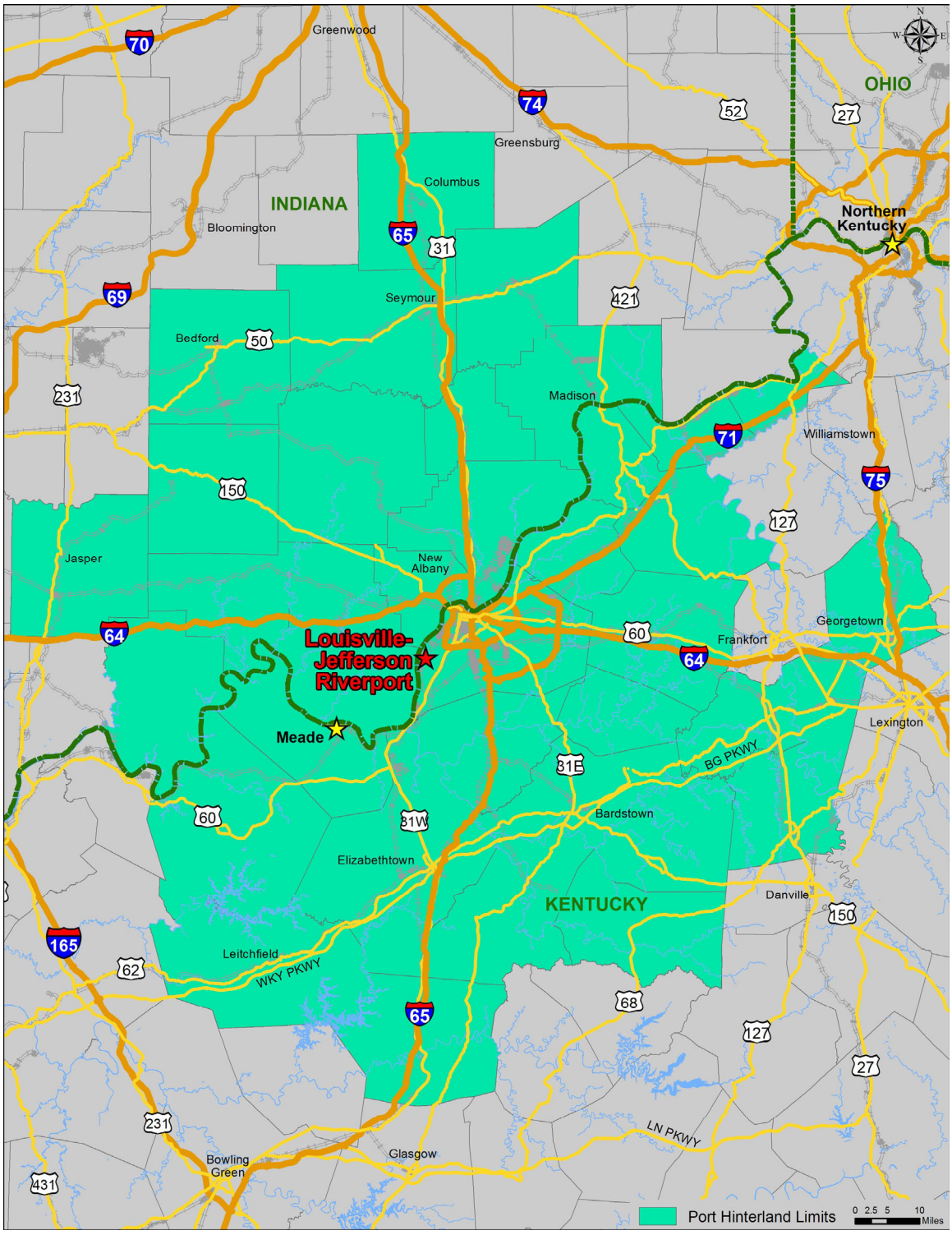

Figure 22: Louisville-Jefferson County Riverport Market Hinterland

Commodity Flows

As shown in **Table 6**, 2.8 billion tons of freight moved through the hinterlands during 2018, totaling $4.5 trillion by value. Top commodities of agriculture, construction materials, chemicals, and plastics were broken down between highway, rail, air, and waterway modes.

Table 6: Louisville-Jefferson County Riverport 2018 Market Hinterland Total Tons and Values by Mode

	Tons (000s)	Value (millions USD)
Truck	1,106,458	1,854,564
Water	50,763	7,118
Rail	1,637,330	2,684,401
Air	350	40,677
Total	2,794,901	4,586,760

Highway/Truck Mode

A total of 1.1 billion tons of freight were carried by truck in 2018 in the Louisville-Jefferson County Riverport market area. Through truck traffic has the highest (90%) share of truck tonnage, while outbound and inbound were six and four percent, respectively. The value of trucked goods moved in the Louisville-Jefferson County Riverport market area in 2018 is estimated at $1.9 trillion (**Table 6**).

Through traffic in value terms, at 91% of total truck freight value, is a higher share than measured in weight terms in 2018. Because the through truck share by value is higher than the share by weight, the through cargo has a higher unit value (per ton). Discussed below, the UPS Worldport freight hub at Louisville Mohammad Ali International Airport is a large freight generator of truck activity in the market area although most all of the air cargo tons handled at the airport is interchanged between aircraft and not otherwise in the riverport market area or reliant on trucks in the area.

Air Mode

Air freight carries mostly high value, lightweight goods. Air freight handled by Louisville's UPS Worldport hub brings great economic impact to the region, from goods in the market worth $41 billion. Top commodities were small packaged goods, electronics, textile products, goods classified for transportation services rate classifications as "freight of all kinds", transportation equipment, and medical equipment and instruments. Outbound was 61% of total air freight in tons and 49% of total value in 2018.

Waterway Mode

In 2018, 51 million tons valued at $7 billion moved by waterway to and from Louisville-Jefferson County Riverport market area (**Table 6**). Of those, approximately 56% of total were inbound moves, 40% were outbound flows, and 4% were flows between other water facilities in the region. Louisville-Jefferson County Riverport market area waterway volumes include a variety of commodities with coal, construction materials,

petroleum and crude products, chemicals, and metal scrap as the key categories of waterway freight in the market area.

Rail Mode

In 2018, 1.6 billion tons valued at $2.7 trillion moved by rail to and from Louisville-Jefferson County Riverport market area (**Table 6**). Of those, approximately 10% were inbound moves, eight percent were outbound and 82% were through rail flows.

Louisville-Jefferson County Riverport market area rail freight includes a variety of commodities with coal, construction materials, consumer goods, grain and other agricultural commodities, iron and steel products, motor vehicles, chemicals, and petroleum products as the key categories of rail freight in the market.

Divertible Freight

Estimated tonnage of potentially divertible freight for inland waterway transport in the market is largely in the primary iron and steel products category. The other highest-ranked potentially divertible commodities include chemicals, oil seeds, liquefied gases, plastics, and fertilizers as shown in **Figure 23**.

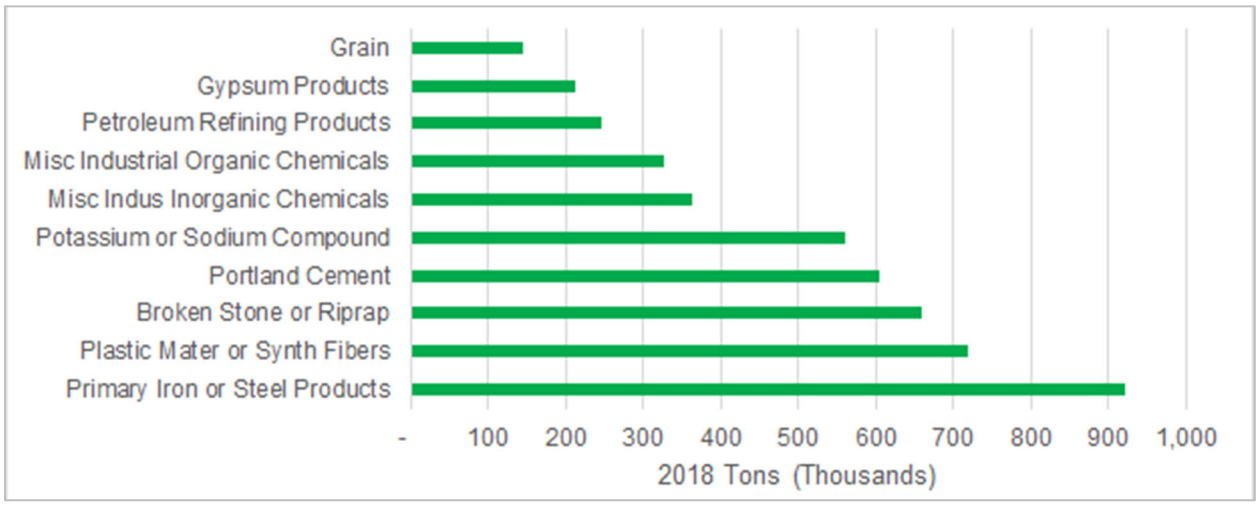

Figure 23: Louisville-Jefferson County Riverport Divertible Freight

Freight Accessibility Considerations

Figure 24 illustrates potential obstacles to highway freight mobility between the Louisville-Jefferson County Riverport and interstate. KY 1230 (Cane Run Road) provides north/south accessibility through the port and adjacent industrial areas; the state-maintained highway has two 10-foot lanes and several substandard curves.

- For trips to/from the north, KY 1934 is a state-designated truck route that provides four 12-foot lanes to I-264 Exit 5.
- For trips to/from the south, KY 1934 connects to KY 841 (Gene Snyder Freeway), providing a fully controlled access, four-lane expressway to I-65 and I-265.

As shown, elevated crash rates and congestion/delay are common for each of these key urban highway connections.

The riverport site includes 13 miles of railroad track, with service provided by CSX, NS, and PAL. The facility incorporates a 23,000-foot double-loop track with 120-car capability.

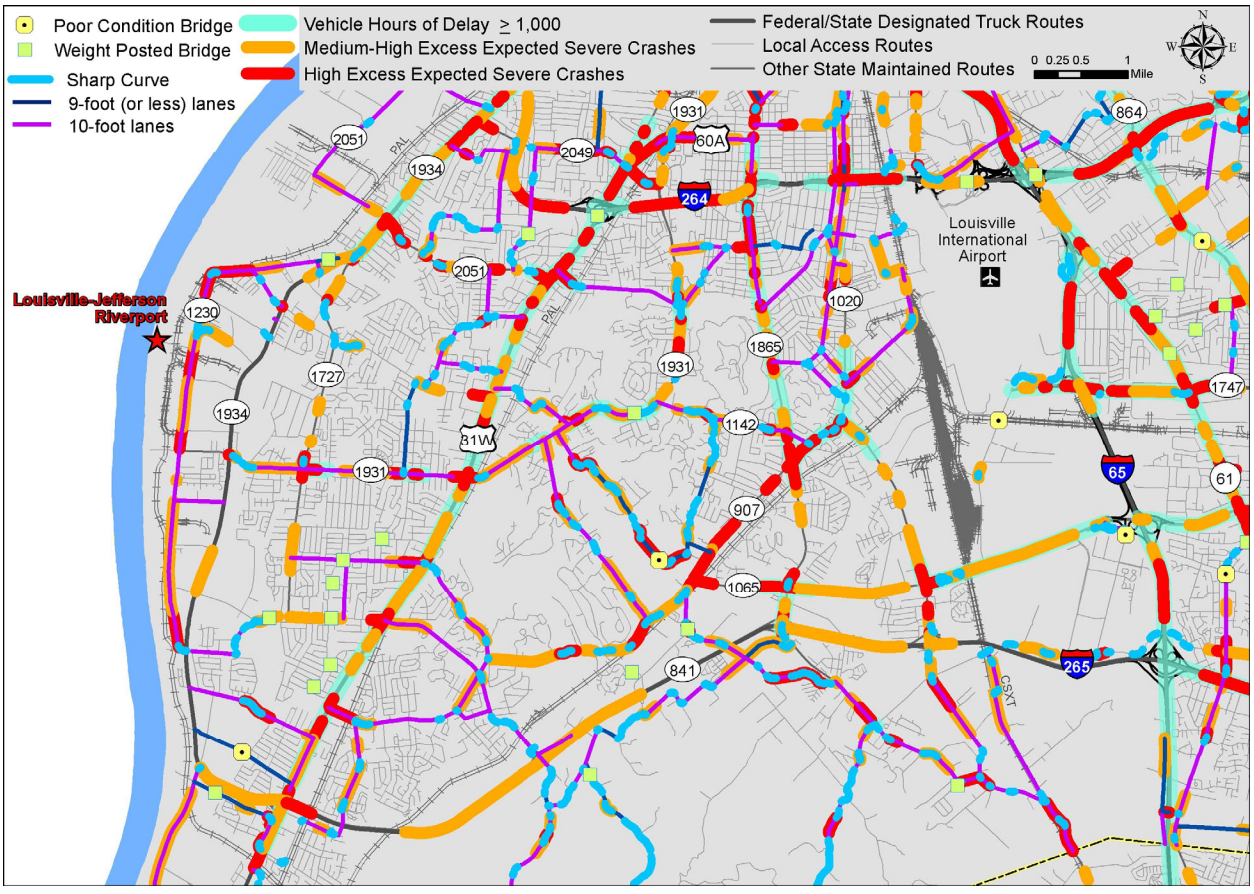

Figure 24: Louisville-Jefferson County Riverport Potential Obstacles to Freight Mobility

MAYSVILLE-MASON COUNTY RIVERPORT AUTHORITY

State of Port

Chartered by Mason County, the Maysville-Mason County Riverport Authority is located in Mason County in northeastern Kentucky. The Maysville-Mason County Riverport 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 US 68 William Harsha Ohio River Bridge. **Figure 25** illustrates the recommended port location and freight routes in the vicinity.

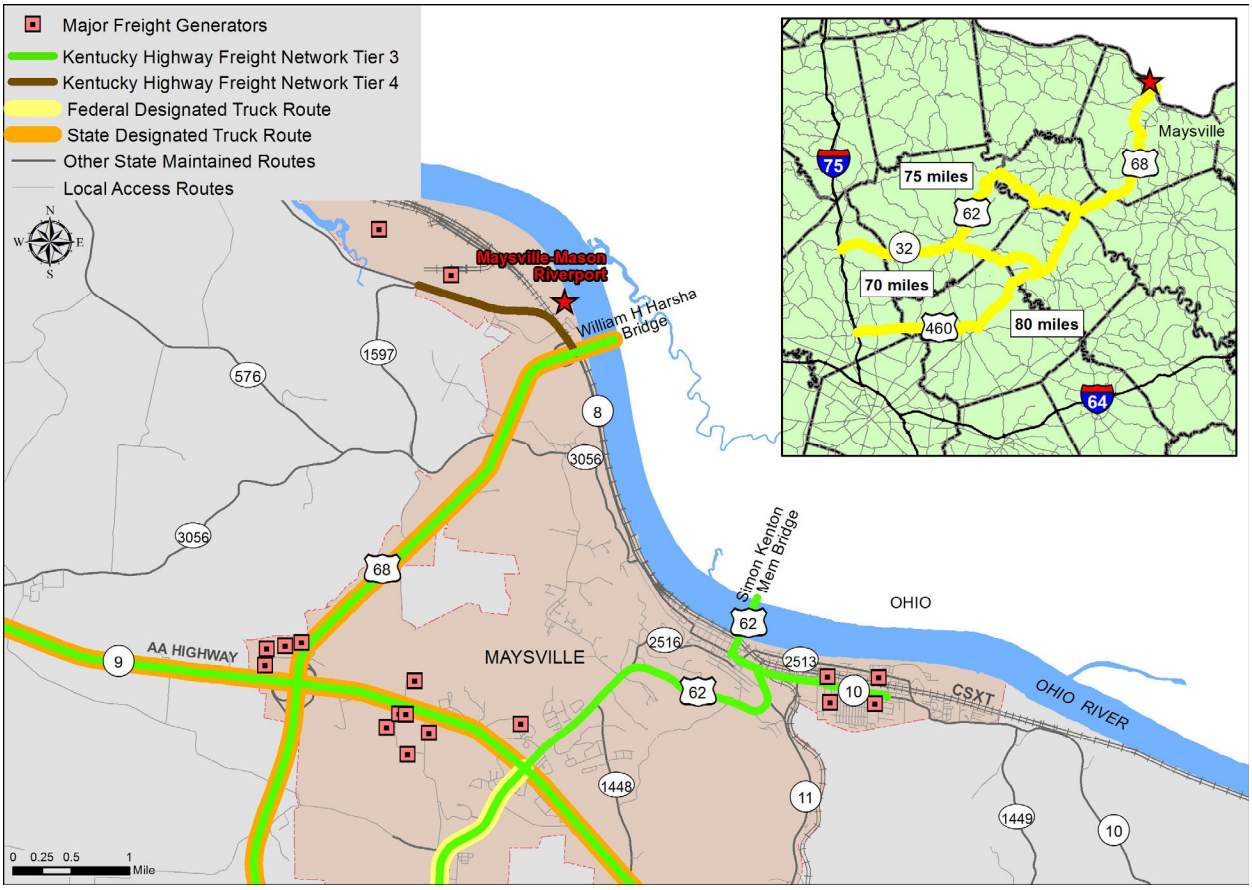

Figure 25: Maysville-Mason County Riverport Freight Infrastructure

The Maysville-Mason County Riverport is centrally located between Northern Kentucky and West Virginia. The Maysville-Mason County Riverport works with the Central Ohio River Business Association (CORBA) to enhance the regional approach of the organization, to attract customers to the region, and to position itself within CORBA as a key industrial throughput position of the region. Through the TTI shortline railroad (owned by CSX railroad) there is opportunity to access Central and Southeastern Kentucky to reduce truck traffic and increase economic development opportunities using a multimodal option.

Port leaders look to this study to define demand and help attract port infrastructure investment. Having two bridges crossing the Ohio River, they look to having financing tools to support infrastructure development. A key deliverable is the overall annual industry census with information from TRANSEARCH and IHS Markit to help inform marketing priorities.

Moving forward the antiquated, unnecessary flood wall and levee wall are a concern; these were installed in the 1930s, prior to the lock and dam system being constructed. These structures require maintenance and block direct access to the river. When landside construction or dredging efforts commence, there are archeological studies that must be conducted, and these can be quite expensive to fund at the outset.

Port Market Hinterland

The market hinterland area for the Maysville-Mason County Riverport includes 32 counties. These counties are on both sides of the Ohio River capturing potential economic geography in Northeastern Kentucky and Southern Ohio served by the Maysville-Mason County Riverport as shown in **Figure 26** (page 36).

Commodity Flows

As shown in **Table 7**, 4.2 billion tons of freight moved through the hinterlands during 2018, totaling $3.2 trillion by value. Top commodities of agriculture, construction materials, chemicals, and petroleum products were broken down between highway, rail, and waterway modes.

Table 7: Maysville-Mason County Riverport 2018 Market Hinterland Total Tons and Values by Mode

	Tons (000s)	Value (millions USD)
Truck	806,255	1,246,391
Water	30,956	8,711
Rail	1,290,965	1,998,740
Total	4,252,961	3,253,842

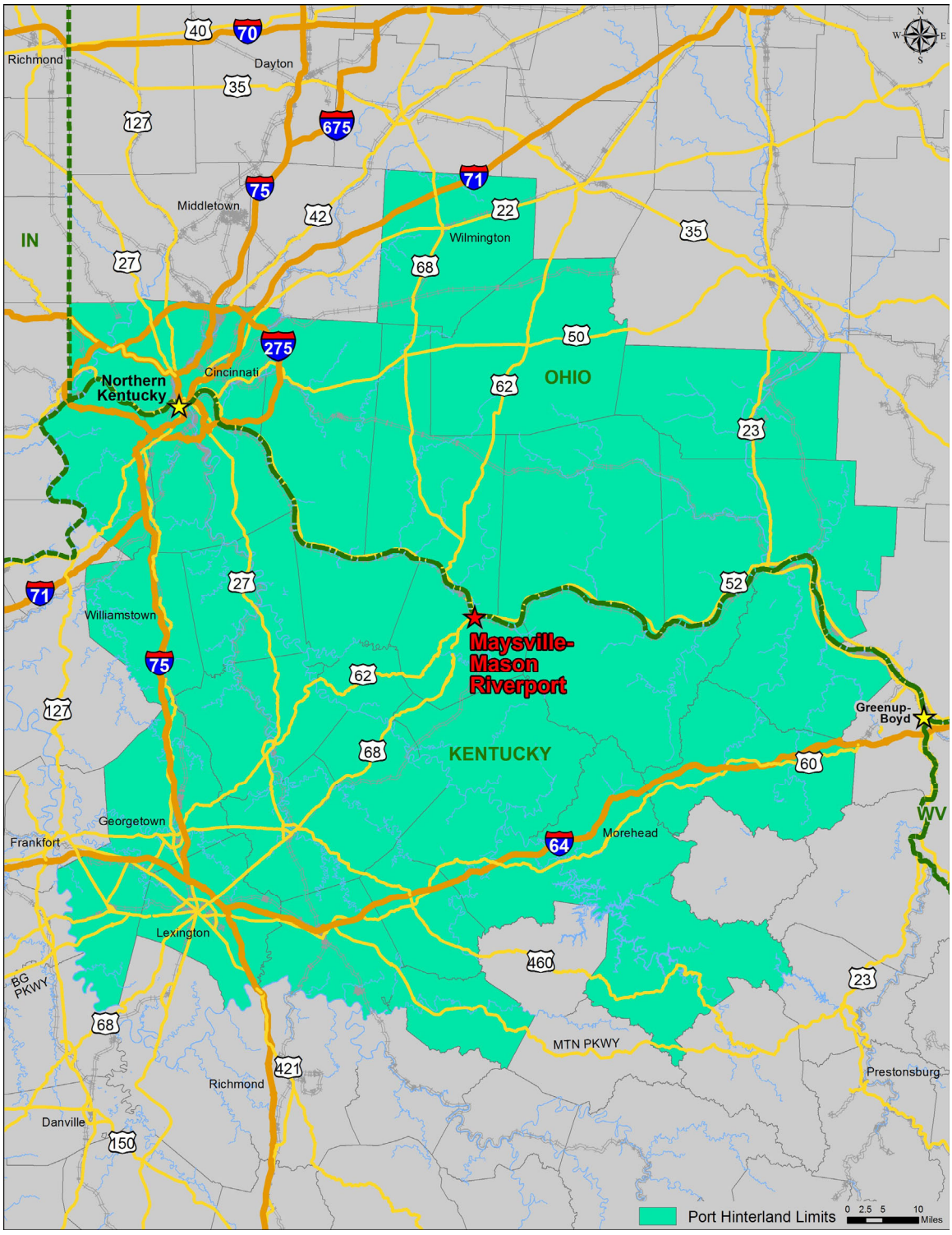

Figure 26: Maysville-Mason County Riverport Market Hinterland

Highway/Truck Mode

A total of 806 million tons of freight were carried by truck in 2018 in the Maysville-Mason County Riverport market area. Most (85%) truck freight was through traffic, while outbound and inbound truck shipments were seven and eight percent, respectively. In value terms, trucked goods moved in, out, and through the Maysville-Mason County Riverport market area in 2018 is estimated at $1.2 trillion (**Table 7**). Because the through truck share by value is higher than the share by weight, the through cargo has a higher unit value (per ton). As through traffic is longer-haul transport, this cargo has a lower share of their price made up of the transport cost.

Maysville-Mason County Riverport market area trucking volumes include a variety of commodities with agriculture, construction materials, chemicals, petroleum products, beverages, and consumer goods as the key categories of road freight in the market area.

Waterway Mode

In 2018, approximately 31 million tons valued at $8.7 billion moved by inland waterway to and from the Maysville-Mason County Riverport market area (**Table 7**). Of those, approximately 69% were inbound moves and 31% were outbound waterway flows by barge.

Maysville-Mason County Riverport market area waterway volumes include a variety of commodities with coal, petroleum and crude products, construction materials, agricultural commodities, chemicals, and metal scrap as the key categories of waterway freight in the market area.

Rail Mode

In 2018, 1.3 billion tons valued at $2.0 trillion moved by rail to, from, and through the Maysville-Mason County Riverport market area, as shown in **Table 7**. Of those, approximately eight percent were inbound moves, seven percent were outbound, and 85% were the through rail shipments.

Maysville-Mason County Riverport market area rail volumes include a variety of commodities with coal, construction materials, consumer goods, grain and other agricultural commodities, chemicals, iron and steel products, and motor vehicles as the key railway freight categories in the market area.

Divertible Freight

Estimated tonnage of potentially divertible freight for inland waterway transport in the market is largely in the primary iron and steel products category. The other highest-ranked potentially divertible commodities include chemicals, oil seeds, liquified gases, plastics, and fertilizers as shown in **Figure 27**.

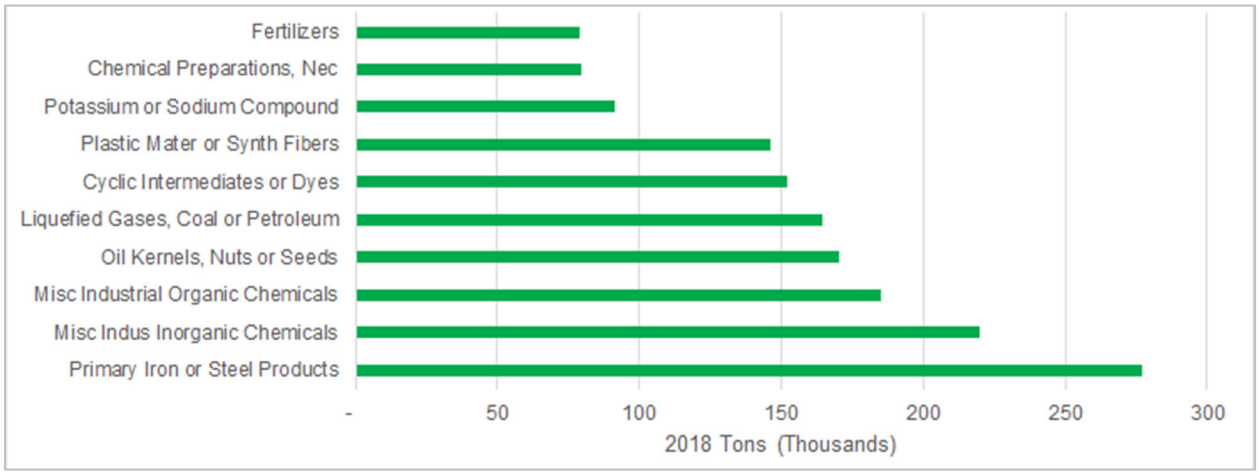

Figure 27: Maysville-Mason County Riverport Divertible Freight

Freight Accessibility Considerations

While the nearest interstate access is more than 70 miles west, US 68 and KY 9 (AA Highway) provide two-lane designated truck routes to access the port. **Figure 28** illustrates potential obstacles to highway freight mobility near the port. Beyond the City of Maysville, the area is largely rural with few bottlenecks that contribute to congestion or delay. Instances of elevated crash rates, narrow lanes, and substandard curves are highlighted on the map, mostly associated with smaller routes in the vicinity.

A CSX rail line parallels the 140-acre Charleston Bottom site, which is large enough to accommodate a 150-car rail track turnaround.

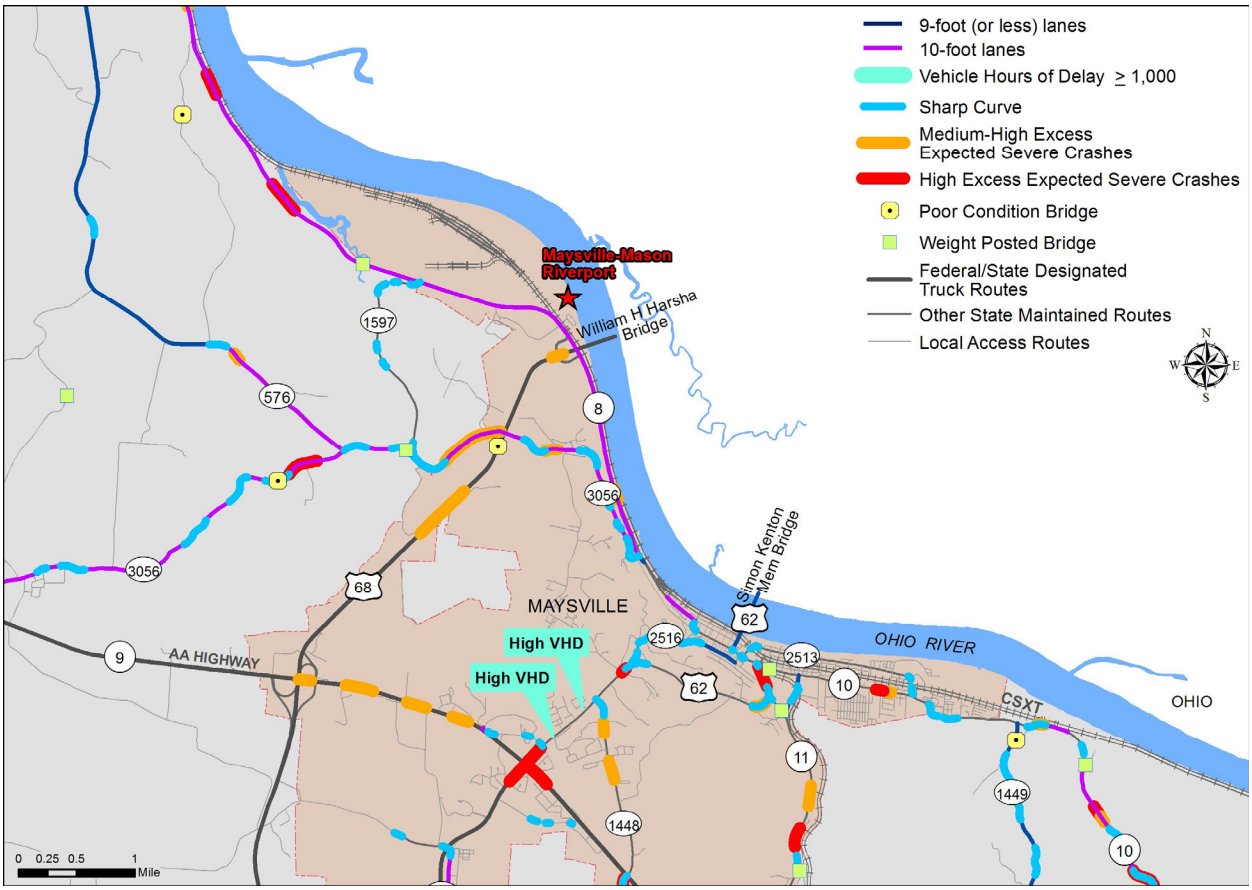

Figure 28: Maysville-Mason County Riverport Potential Obstacles to Freight Mobility

MEADE COUNTY RIVERPORT AUTHORITY

State of Port

Chartered by Meade County, the Meade County Riverport Authority was located east of the City of Brandenburg. The Meade County Riverport covered 550 acres along the Ohio River but will be relocated. **Figure 29** illustrates the former port location and freight routes in the vicinity; the Authority is searching for a suitable replacement site within the county.

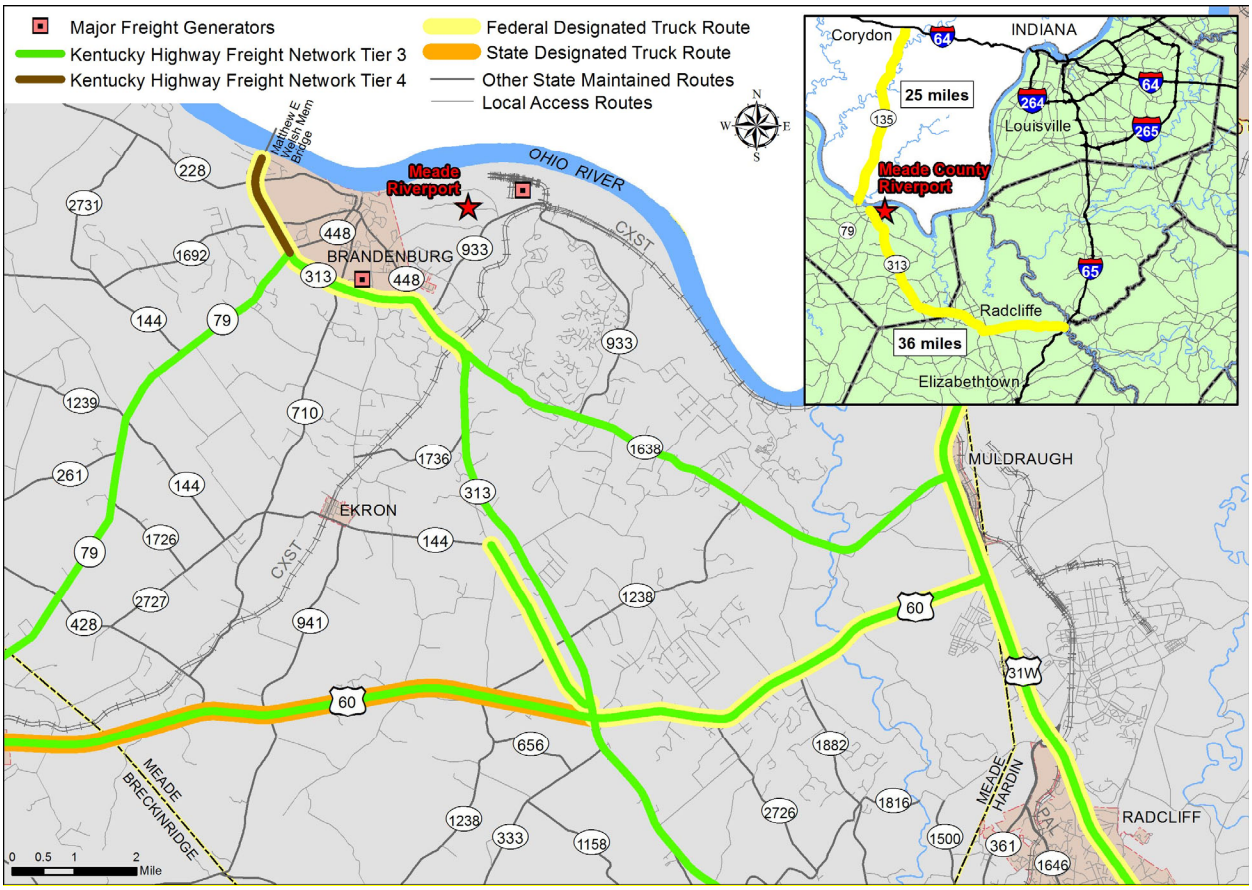

Figure 29: Meade County Riverport Freight Infrastructure

The riverport was founded to serve local agricultural interests. As of this report, Nucor Steel is building a 1.5 million square foot building on land purchased from the port. As part of that effort, the only grain barge loading operation was removed to accommodate the Nucor project construction. 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.

Additionally, the riverport is in leadership transition with a new county judge having been appointed to replace the previous judge who passed away in September 2020.

Port Market Hinterland

The Meade County Riveport market hinterland, defined by counties that can be reached in a driving time of roughly 90 minutes, includes 29 counties on both sides of the Ohio River as shown in **Figure 30**.

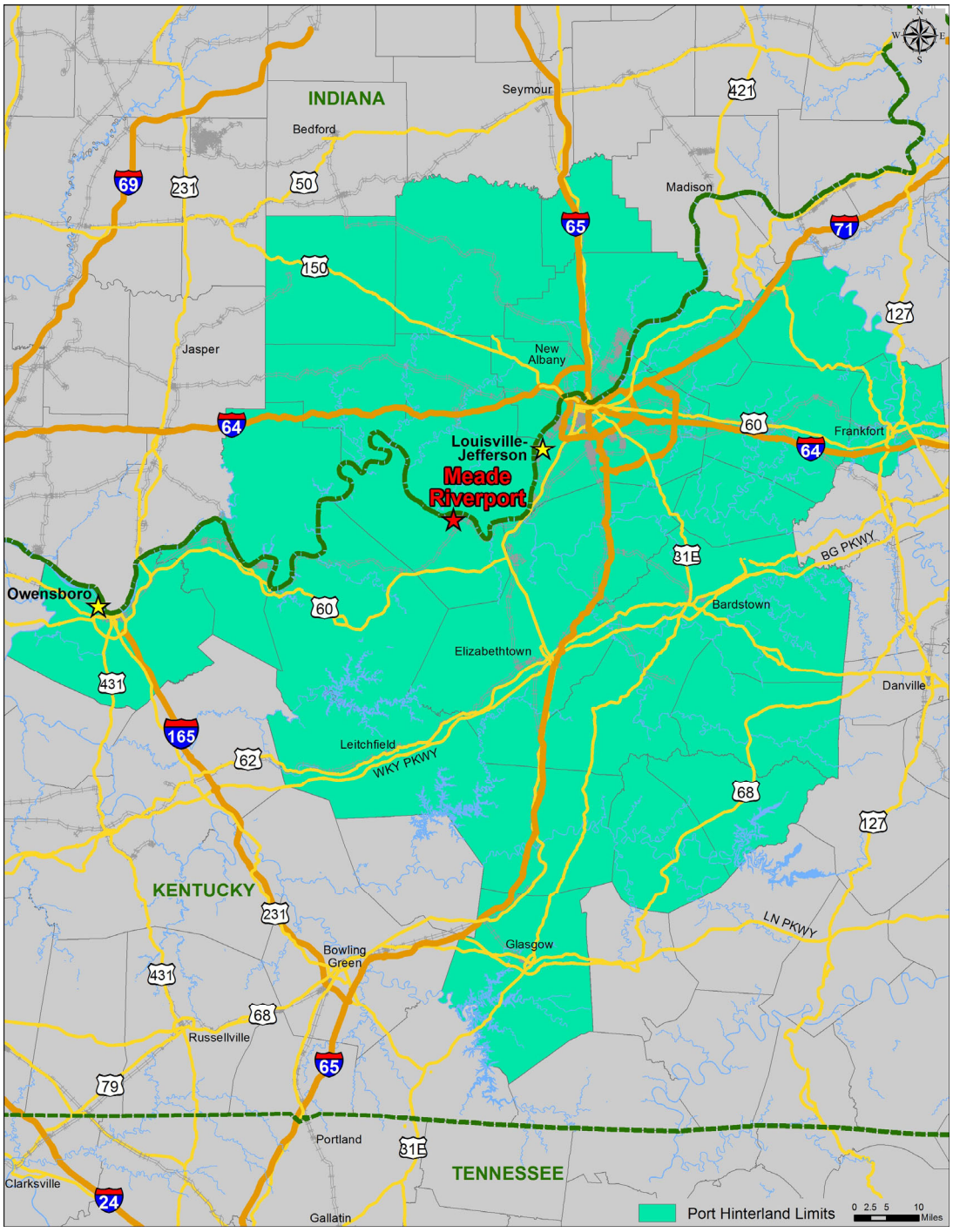

Figure 30: Meade County Riverport Market Hinterland

Commodity Flows

As shown in **Table 8**, 2.0 billion tons of freight moved through the hinterlands during 2018, totaling $3.4 trillion by value. Top commodities of construction materials, agriculture, chemicals, petroleum products, and consumer goods were broken down between highway, rail, and waterway modes.

Table 8: Meade County Riverport 2018 Market Hinterland Total Tons and Values by Mode

	Tons (000s)	Value (millions USD)
Truck	827,121	1,392,576
Water	34,802	6,371
Rail	1,174,439	1,998,016
Total	2,036,363	3,396,963

Highway/Truck Mode

A total of 827 million tons of freight were carried by truck in 2018 in the Meade County Riverport market area. Most truck traffic is through shipments (90% of the total tons). Outbound and inbound truck freight tonnage were six and four percent, respectively. In value terms, trucked freight moved in and through the Meade County Riverport market area in 2018 is estimated at $1.4 trillion (**Table 8**). The through truck traffic market share in value terms is even higher (94%) compared with through truck traffic in weight terms in 2018.

Meade County Riverport market area trucking volumes include a variety of commodities with construction materials, agriculture, chemicals, petroleum products, and consumer goods representing the key categories of truck freight in the market area.

Waterway Mode

In 2018, approximately 35 million tons valued at $6.4 billion moved by waterway to and from the Meade County Riverport market area (**Table 8**). Of those, approximately 36% were inbound moves and 58% were outbound waterway barge flows. Other flows include internal to the market area flows.

Meade County Riverport market area waterway volumes include a variety of commodities with petroleum products, construction materials, agricultural commodities, fertilizer, forest products, ores, and metal scrap as the key categories of waterway freight in the market area.

Rail Mode

In 2018, 1.2 billion tons valued at $2.0 trillion moved by rail to and from Meade Country Riverport market area (**Table 8**). Of those rail shipments, approximately 10% were inbound moves, 10% were outbound and 80% were through rail flows. From its former site, Meade County Riverport was accessible from the nearby CSX Class I railroad.

Meade Country Riverport market area rail volumes include a variety of commodities with construction materials, coal, consumer goods, grain and other agricultural commodities, motor vehicles and parts, petroleum products, iron and steel products, and chemicals as the key categories of railway freight in the market area.

Divertible Freight

Estimated tonnage of potentially divertible freight for inland waterway transport in the market is led by the primary iron and steel products, cement, stone, and plastics categories. Other high-ranked potentially divertible commodities include chemicals, refined petroleum products, and grain, as shown in **Figure 31**.

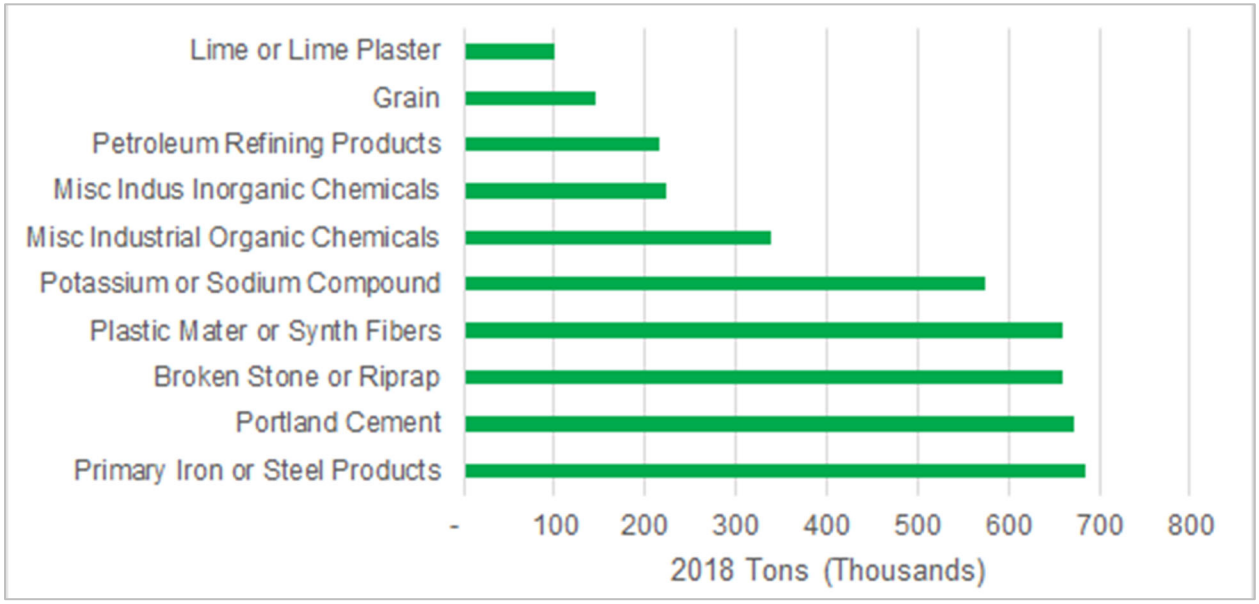

Figure 31: Meade County Riverport Divertible Freight

Freight Accessibility Concerns

Shown in **Figure 29,** on page 40, the nearest interstate facilities serving the port are I-64 near Corydon, IN (25 miles north) and I-65 in Hardin County (36 miles southeast). The nearest cross-river bridge is KY 79/SR 135 on the west side of Brandenburg.

Figure 32 illustrates potential obstacles to highway freight mobility near the former port site. Interstate access is provided at I-64 Exit 105 via SR 135 through southern Indiana, a two-lane highway with wide paved shoulders. Locally, KY 933 connects KY 313 to the port entrance, with 2-3 through lanes and 10-foot

paved shoulders. KY 313 provides two 12-foot through lanes to US 60. As shown, elevated crash rates and substandard curves are common for truck-based trips accessing the site.

CSX provides the nearest rail access to the former facility, serving the large chemical plant immediately east of the former port property.

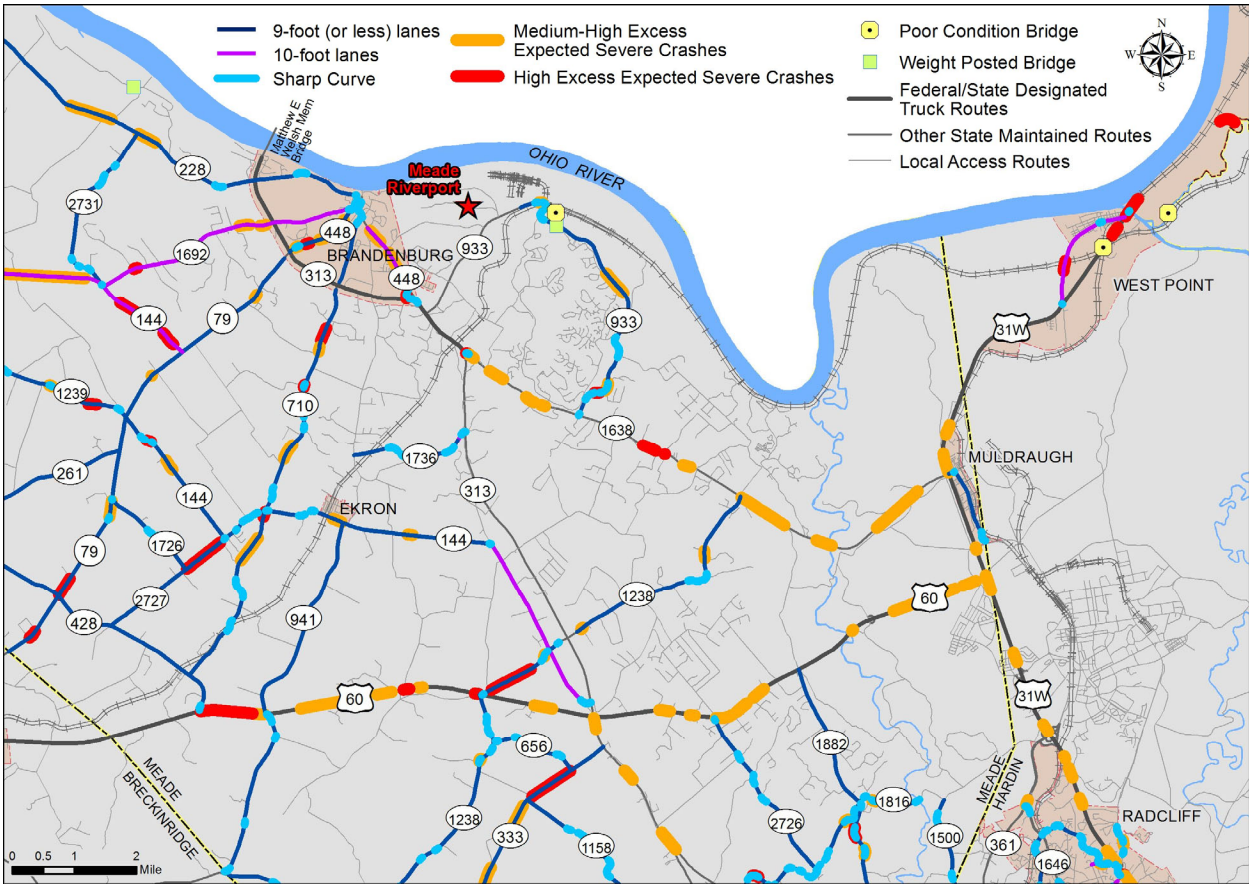

Figure 32: Meade County Riverport Potential Obstacles to Freight Mobility

NORTHERN KENTUCKY PORT AUTHORITY

State of Port

The Northern Kentucky Port is somewhat unique. Unlike other public port operations in Kentucky, there is no dedicated infrastructure that comprises a public port. As an entity they can collect tax money, and other moneys from the state for investment, condemnation, acquire land for development, etc. This entity is not set up to be an operational riverport. Rather, in partnership with the Port of Cincinnati, statistics for the region encompass facilities along 219 miles of the Ohio River and 7 miles of the Licking River: 68 docks and terminals on the Ohio side and 54 on the Kentucky side plus seven on the Licking River.

Port Market Hinterland

The Northern Kentucky Port market hinterland—defined by counties that can be reached in a driving time of roughly 90 minutes—includes 44 counties in Kentucky, Ohio, and Indiana centered in the Northern Kentucky and Cincinnati metropolitan area as shown in **Figure 33** (page 46).

Commodity Flows

As shown in **Table 9**, 3.7 billion tons of freight moved through the hinterlands during 2018, totaling $5.7 trillion by value. Top commodities, including agriculture, construction materials, consumer products, coal, and petroleum products, were broken down between highway, rail, and waterway modes. During the port interview, it was noted that a new air hub is scheduled to open in September 2021.

Table 9: Northern Kentucky Port 2018 Market Hinterland Total Tons and Values by Mode

	Tons (000s)	Value (millions USD)
Truck	1,509,989	2,382,181
Water	52,316	11,029
Rail	2,140,140	3,301,042
Total	3,702,445	5,694,252

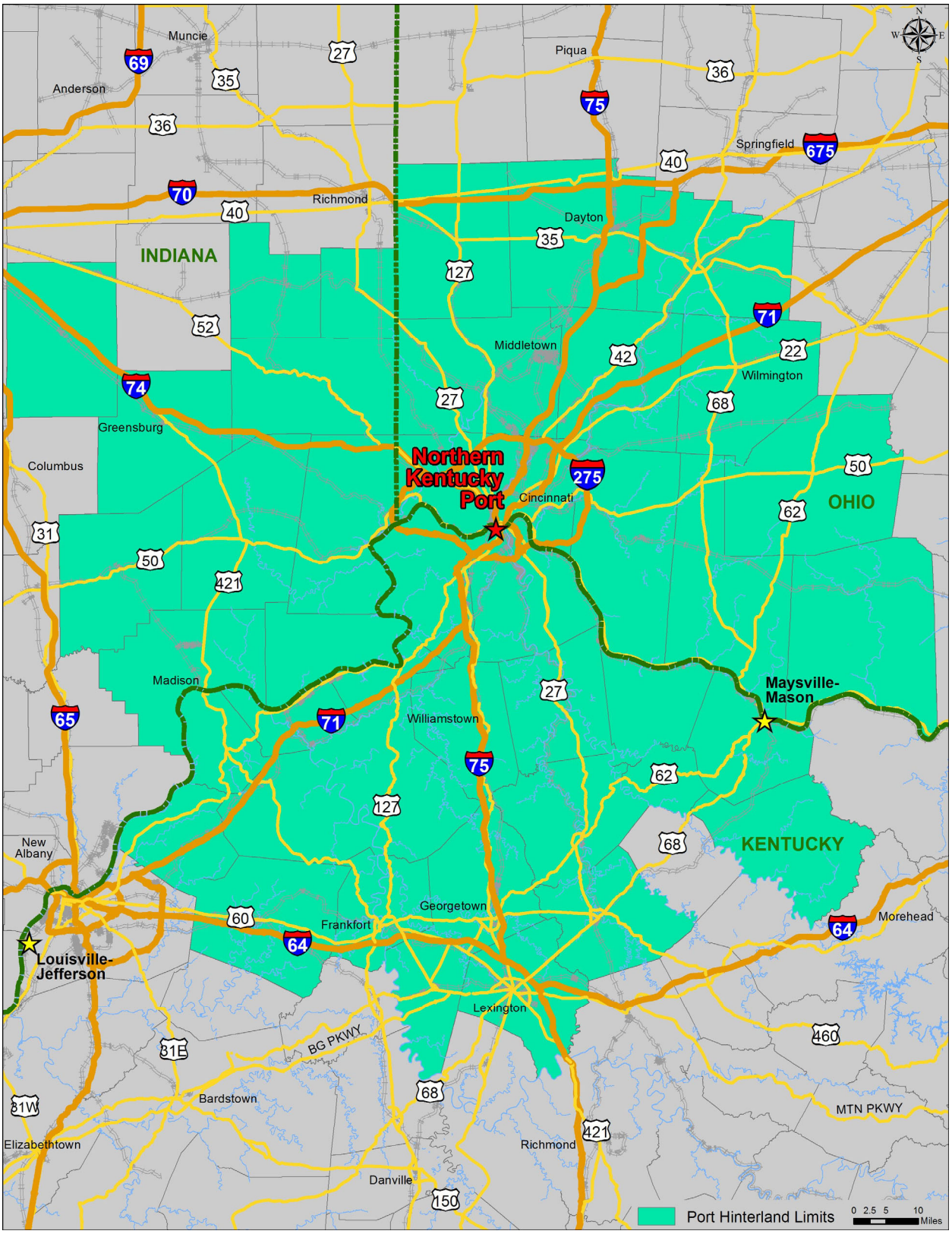

Figure 33: Northern Kentucky Port Market Hinterland

Highway/Truck Mode

A total of 1.5 billion tons of freight were carried by truck in 2018 in the Northern Kentucky Port market area. Through freight traffic has the highest share of truck traffic in the area (87%), while outbound and inbound are six and seven percent, respectively. Additional patterns emerge when viewing truck freight from the perspective of commercial value. Value of trucked freight moved in the Northern Kentucky Port market area in 2018 is estimated at $2.4 trillion (**Table 9**). Through traffic represents an even higher percentage of the total share when measured by value compared to weight, accounting for about 92% of all cargo in 2018.

Northern Kentucky Port market area trucking volumes include a variety of commodities with construction materials, agriculture, consumer products, petroleum products, and beverages as the key drivers of road freight tonnage in the port's market area.

Waterway Mode

In 2018, approximately 52 million tons valued at $11 billion moved by waterway to and from the riverport market area (**Table 9**). Of those, approximately 78% were inbound moves and 22% were outbound water flows.

Northern Kentucky Port market area inland waterway volumes include a variety of commodities with petroleum products, construction materials, agricultural commodities, iron and steel, and metal scrap as the key drivers of regional inland waterway freight.

Rail Mode

The Northern Kentucky Port area is served with CSX railroad and is near a Norfolk Southern mainline.

In 2018, 2.1 billion tons valued at $3.3 trillion moved by rail to and from Northern Kentucky Port market area, as shown in **Table 9**. Of those, approximately eight percent were inbound moves, five percent were outbound, 85% were through rail flows, and the remainder were internal to the market area.

Northern Kentucky Port market area rail volumes include a variety of commodities with construction materials, coal, consumer goods, grain and other agricultural commodities, iron and steel products, chemicals, and motor vehicles as the key drivers of railway freight in the market area.

Divertible Freight

Estimated tonnage of potentially divertible freight for inland waterway transport in the market is largely in the primary iron and steel products category. The other highest-ranked potentially divertible commodities include chemicals, gypsum, and plastics as shown in **Figure 34**.

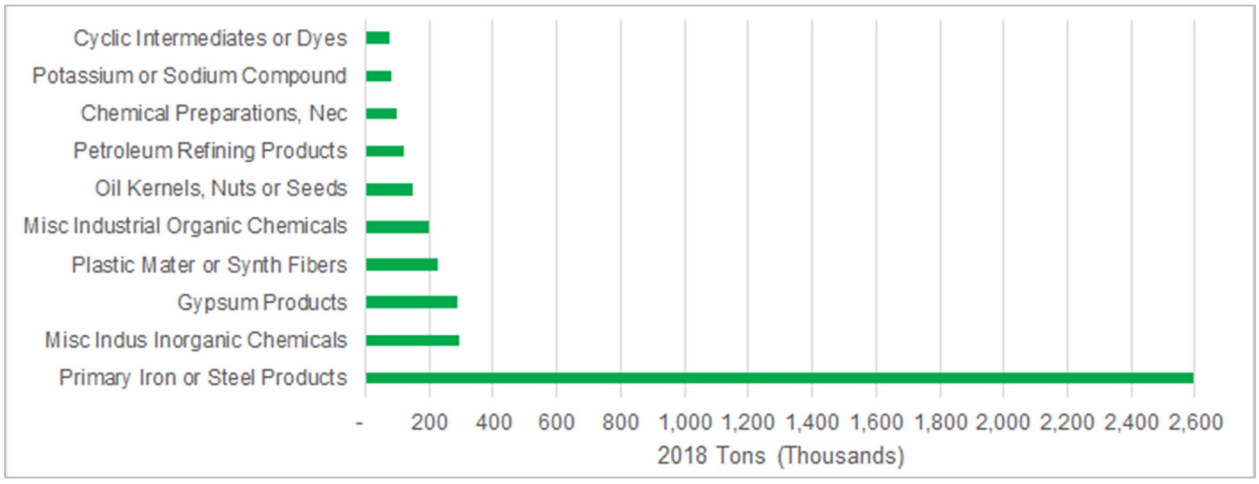

Figure 34: Northern Kentucky Port Divertible Freight

Freight Accessibility Concerns

With an extensive network of highways, interstates, rail lines, and the Cincinnati/Northern Kentucky International Airport in Covington, the region is well positioned for intermodal access and freight mobility. Congestion/delay and elevated crash locations occur throughout the urban network with a series of large-scale improvement projects underway on key facilities to address highway needs.

OWENSBORO RIVERPORT AUTHORITY

State of Port

Chartered by the City of Owensboro, the Owensboro Riverport Authority is located in Daviess County. The Owensboro Riverport lies along the Ohio River at river mile 759 on a 420-acre property that forms the northwest boundary of the city. **Figure 35** illustrates the Owensboro Riverport location and freight routes in the vicinity.

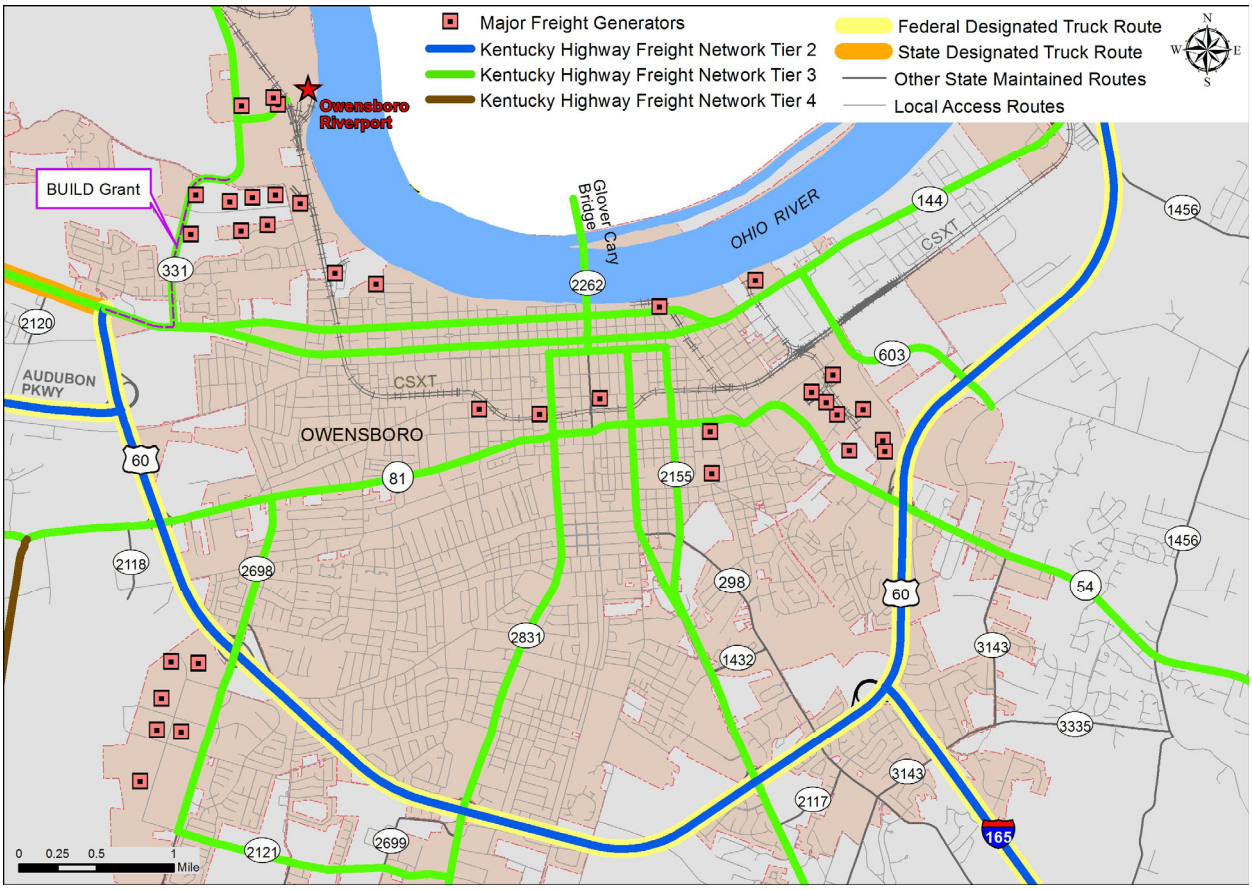

Figure 35: Owensboro Riverport Freight Infrastructure

Owensboro Riverport was founded in 1966, beginning operations in 1975 as both an operating and landlord port. Originally it was established as an agriculturally based riverport but has been expanding opportunities for aluminum as a primary depot. The Riverport serves several industries and it is listed as an aluminum delivery point on the London Mercantile Exchange, which is attractive for shippers and users of aluminum to use. The Riverport is also a Homeland Security Port given the types and volume of chemicals handled through the port.

According to the Owensboro Riverport leadership, the Ohio River is about 10% utilized and the loss of coal has made utilization worse. Such a low utilization of the river system allows for other opportunities at riverports and terminals.

Owensboro Riverport leaders view this study as much needed and see it as a resource to develop and formalize the organizational structure of Kentucky's public port system. It is an opportunity to strengthen KYTC and CED advocacy for Kentucky's riverports and should identify the strengths and gaps among and between Kentucky's riverports.

Moving forward key initiatives or concerns of the Owensboro Riverport include:

- Hiring an experienced marketing coordinator to meet customers and develop business leads
- Managing expectations with the local governing council,
- Improving Highway 331, widening to three lanes and removing "S" curves. The city won a federal grant in 2018 to improve the route, discussed further below.

Port Market Hinterland

The market hinterland area for the Owensboro Riverport includes 21 counties on both sides of the Ohio River capturing the potential economic geography served by the port as shown in **Figure 36**.

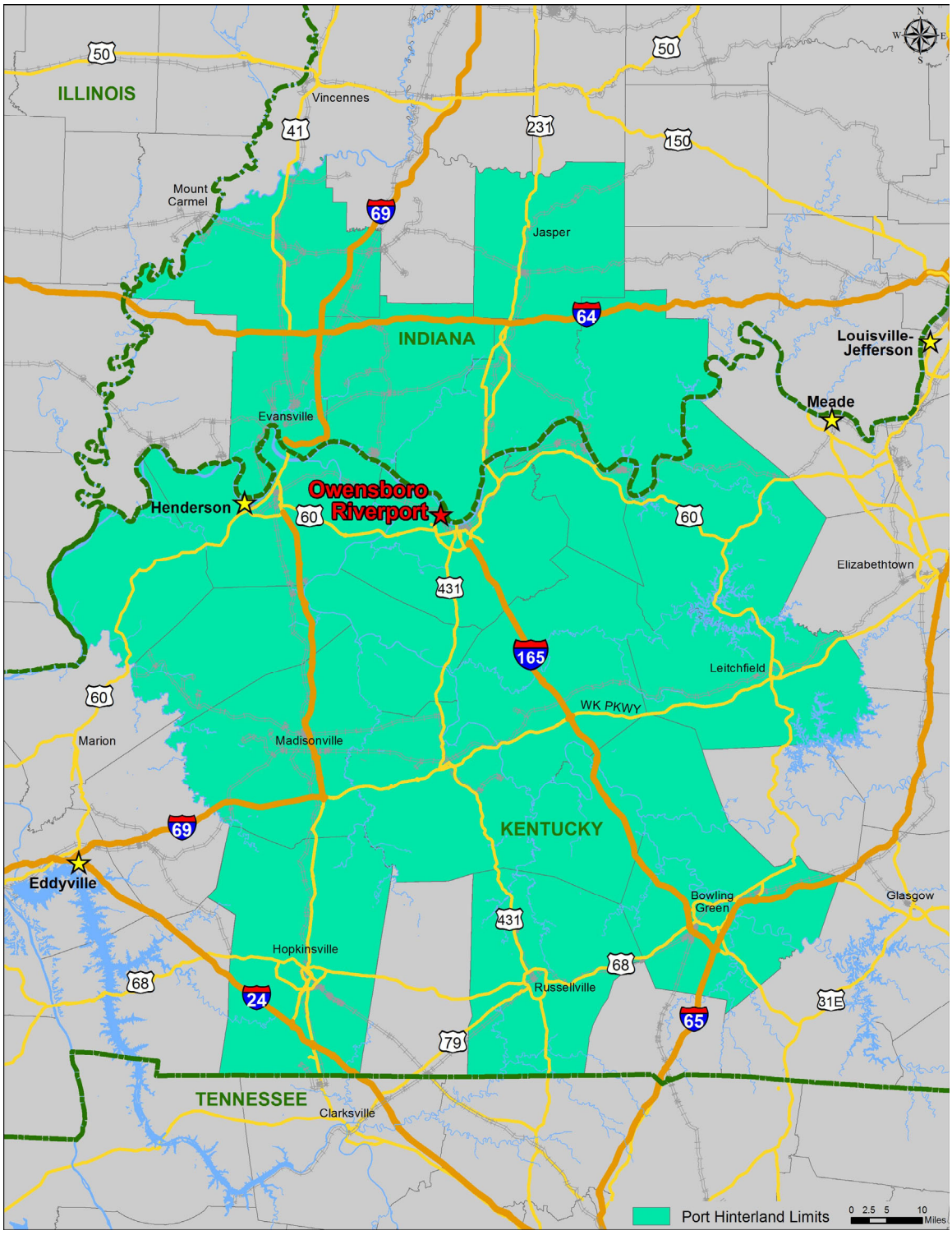

Figure 36: Owensboro Riverport Market Hinterland

Commodity Flows

As shown in **Table 10**, 1.3 billion tons of freight moved through the hinterlands during 2018, totaling $1.6 trillion by value. Top commodities including agriculture, construction material, coal, petroleum, and consumer goods were broken down between highway, rail, and waterway modes.

Table 10: Owensboro Riverport 2018 Market Hinterland Total Market Tons and Values by Mode

	Tons (000s)	Value (millions USD)
Truck	426,232	633,861
Water	34,967	5,321
Rail	861,577	946,772
Total	1,322,777	1,585,953

Highway/Truck Mode

Close to 426 million tons of freight were carried by truck in 2018 in the Owensboro Riverport market area. Through freight traffic has the highest share of truck traffic in the area (84.1%), while outbound and inbound were split at about 8.4% and 7.5%, respectively. There was $688 billion of freight moved in the Owensboro Riverport market area in 2018 (**Table 10**). Through freight traffic was about 90% of all cargo in 2018, in value terms. The through truck freight is generally of higher unit value (per ton) because this freight traffic is generally longer-haul freight and transport costs are a lower share of overall prices of these goods. Furthermore, outbound truck traffic value is higher than inbound truck traffic value even though it is nearly evenly split in terms of weight.

The Owensboro Riverport market area trucking volumes include a variety of commodities with construction materials, agriculture, consumer goods, coal, and petroleum products the leading road freight categories in the market area.

Waterway Mode

In 2018, there were 34 million tons valued at $5.3 billion moved by inland waterway to and from the Owensboro Riverport market area as shown in **Table 10**. Of those, approximately 29% are inbound moves and 71% are outbound inland waterway flows.

The Owensboro Riverport market area inland waterway volumes include a variety of commodities with coal, construction materials, agriculture, fertilizers, and petroleum products among the key barge commodities in the market area.

Rail Mode

Rail freight is often bulk goods moving long distances and across land routes that lack sufficient access to inland waterway infrastructure to move by barge, typically shipped at lower unit cost than by truck. Many of

the raw materials required to produce energy, supply food, and construct buildings and infrastructure depend on rail transportation. The Owensboro Riverport is served by the Class I CSX railroad.

In 2018, 862 million tons valued at $947 billion moved by rail to and from the Owensboro Riverport market area (**Table 10**). Of those, approximately eight percent were inbound moves, 25% were outbound and 67% were through rail flows.

The Owensboro Riverport market area rail volumes include a variety of commodities with coal, grain and other agricultural commodities, consumer goods, iron and steel products, construction materials, and petroleum products as the key drivers of railway freight in the market area. Coal alone accounted for 30% of 2018 rail tonnage in the market area.

Divertible Freight

Estimated tonnage of potentially divertible freight for inland waterway transport in the market area is largely in the primary iron or steel products category. The other highest-ranked potentially divertible commodities include stone, grain, plastics, and chemicals, as shown in **Figure *37***.

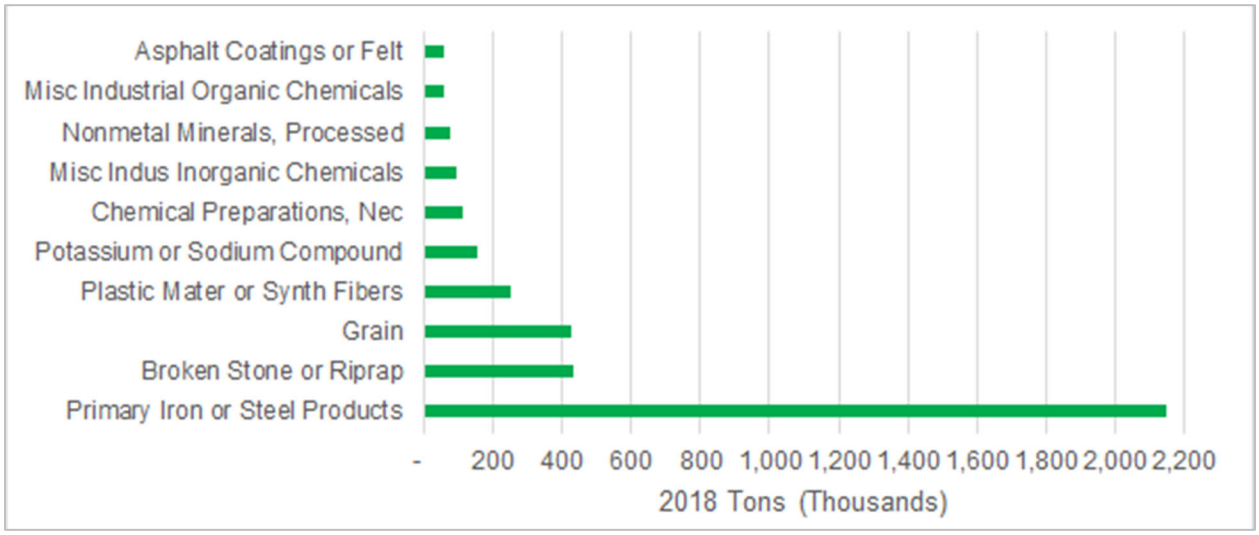

Figure 37: Owensboro Riverport Divertible Freight

Freight Accessibility Considerations

The nearest interstate serving the port is I-165, a north-south interstate spur connecting to I-65 near Bowling Green (70 miles southeast).

Figure 38 illustrates potential obstacles to highway freight mobility near the port. KY 331 (Industrial Drive) to US 60 provides interstate access at I-165 Exit 70. US 60 forms a controlled access four-lane connection around the city. KY 331 is a narrow, two-lane highway with substandard curves, better suited for residential

access. The city received a federal BUILD grant in 2018 to upgrade the KY 331 connection to accommodate freight traffic. Recent crash data highlights elevated crash trends, particularly along sections of US 60 and at curves/intersections along KY 331 entering the industrial area.

The nearest cross-river bridges are KY 2262/SR 161 in downtown Owensboro or US 231 ten miles upstream near Rockport, IN. Per KYTC daily traffic counts, the KY 2262 (Glover Cary) bridge is used by 848 trucks (2016), while 3,230 trucks (2018) use the US 231 bridge[4]. An extension of I-69 through nearby Henderson (25 miles to the west) will provide increased interstate connectivity via the controlled access Audubon Parkway.

CSX provides rail connectivity to the site with a 5,700-foot rail loop that can handle 84 railcars on-site.

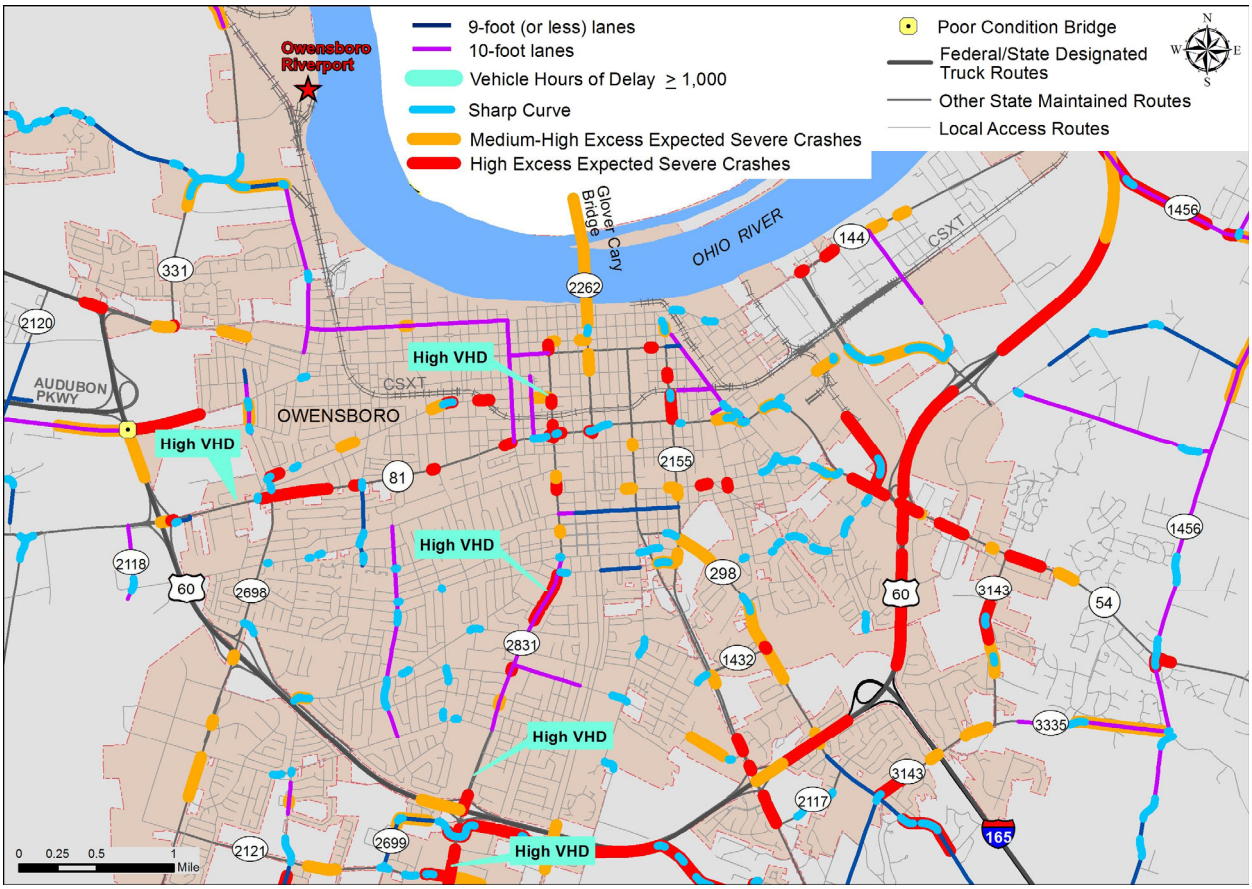

Figure 38: Owensboro Riverport Potential Obstacles to Freight Mobility

[4] Traffic count data via https://maps.kytc.ky.gov/trafficcounts/. Traffic counts noted as 2018 or 2016. These totals do not reflect trucks that only originate or terminate at the port facility. These are statewide movements.

PADUCAH-MCCRACKEN COUNTY RIVERPORT AUTHORITY

State of Port

Chartered by the City of Paducah and McCracken County, the Paducah-McCracken County Riverport Authority is located near the confluence of the Ohio and Tennessee rivers. The Paducah-McCracken County Riverport covers 48 acres with 2,300 feet of river frontage. An additional 240 acres of undeveloped land, with an option for another 1,800 acres are located west of Paducah as a potential "Riverport West" expansion. The riverport is an operator port, and recently hired a new port director.

I-24 provides the nearest interstate connection, with multiple nearby interchanges for access. **Figure 39** illustrates the port location and freight routes in the vicinity.

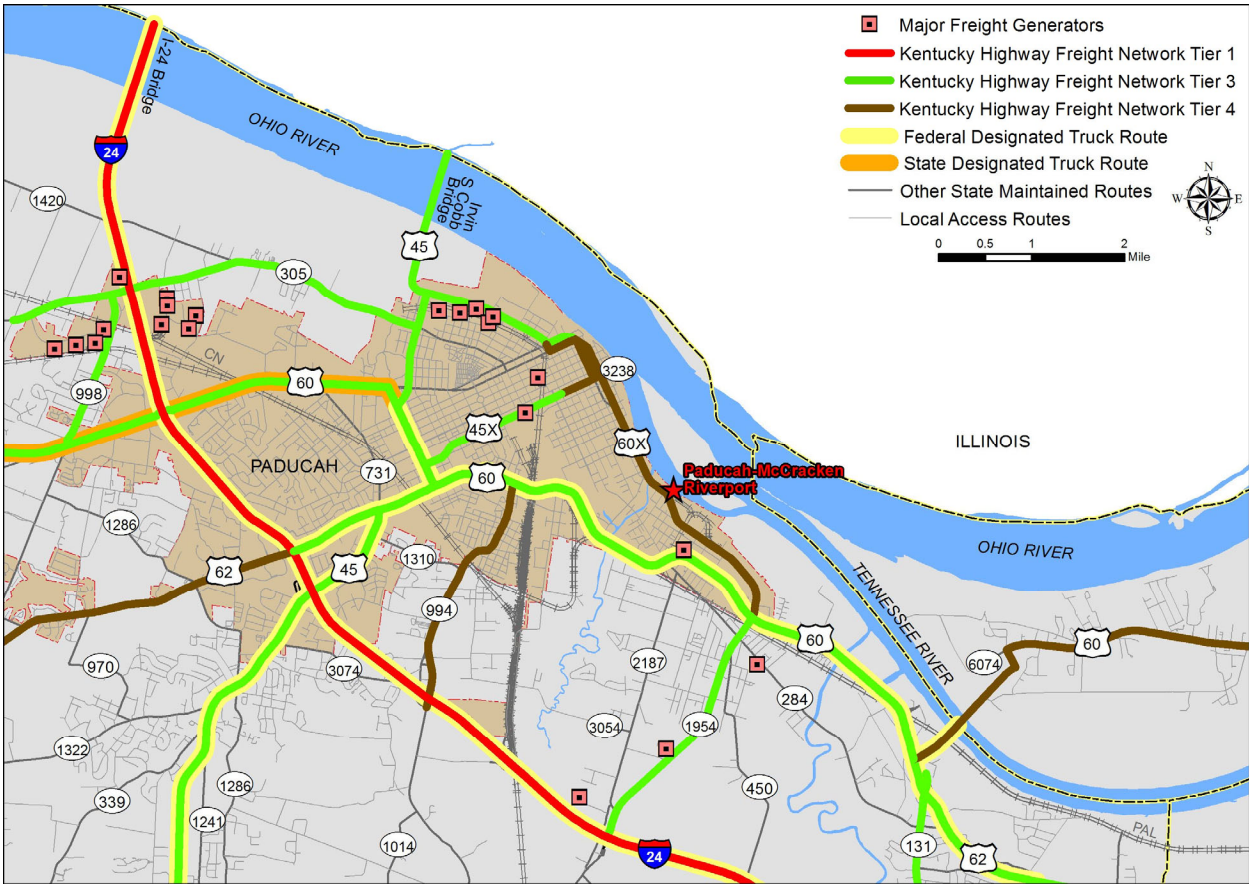

Figure 39: Paducah-McCracken County Riverport Freight Infrastructure

The Paducah-McCracken County Riverport leadership identified several board models, but a structure similar to the Indiana ports' model has merits. Given that each riverport across Kentucky has its own board, a more streamlined approach is something to consider. Riverports can and do struggle for various federal

funding opportunities since many efforts are not geared toward bulk commodities, rather intermodal or container.

While the port has limited space, it has experimented with handling containers. Container-on-barge (COB) requires multiple pieces of infrastructure in place to start up the process. MARAD granted the Paducah-McCracken County Riverport $480,000 to obtain that equipment necessary to begin COB service[5]. COB will have limited success and challenges to overcome functioning on the inland river system. One key issue is attracting high enough volumes for consistent throughput.

During interviews, the main concerns at the Paducah-McCracken County Riverport include

- Increasing its river frontage to accommodate higher volumes.
- Expanding intermodal opportunities: while rail runs nearby the port, the port does not have rail service.
- Defining their identity and market focus: they have a nearly one-half billion-dollar grant to use for container and intermodal but are looking to options using that grant for other purposes.

Port Market Hinterland

The Paducah-McCracken County Riverport market hinterland is defined by counties that can be reached in a driving time of roughly 90 minutes and includes 32 counties in Kentucky, Illinois, Missouri, and Tennessee centered at the confluence of the Ohio River and the Tennessee River systems as shown in **Figure 40**.

[5] https://www.waterwaysjournal.net/2020/01/10/grants-point-toward-container-on-barge-future/

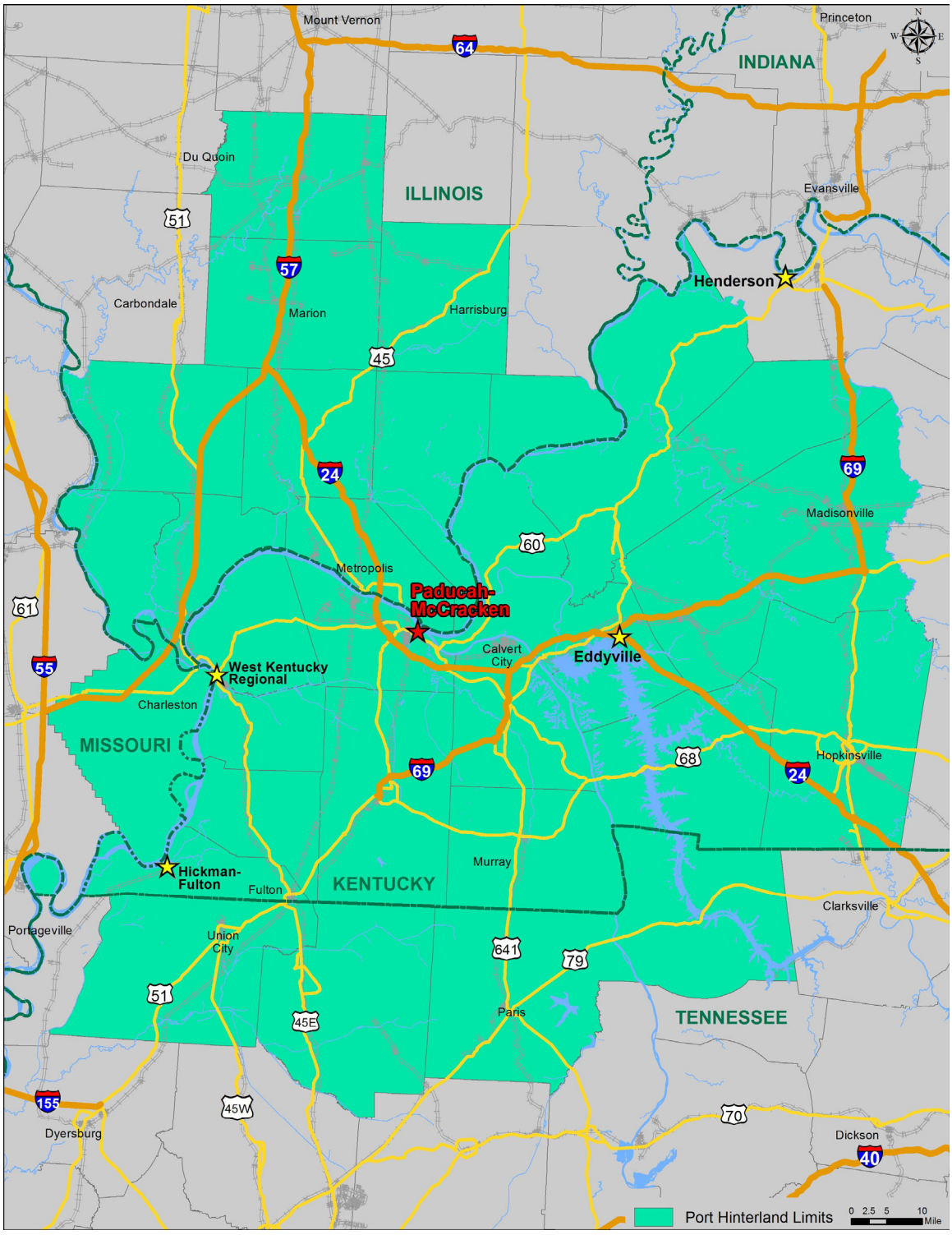

Figure 40: Paducah-McCracken County Riverport Market Hinterland

Commodity Flows

As shown in **Table 11**, nearly 2 billion tons of freight moved through the hinterlands during 2018, totaling $2.7 trillion by value. Top commodities of coal, grain and other agricultural commodities, consumer goods, construction materials, chemicals, and iron and steel products were broken down between highway, rail, and waterway modes.

Table 11: Paducah-McCracken County Riverport 2018 Market Hinterland Total Tons and Values

	Tons (000s)	Value (millions USD)
Truck	723,820	1,193,054
Water	52,699	6,939
Rail	1,197,102	1,490,682
Total	1,973,621	2,690,675

Highway/Truck Mode

A total of 724 million tons of truck freight were carried in 2018 in the Paducah-McCracken County Riverport market area. Through movements (93%) were most of the truck freight in the area, while outbound and inbound were four and three percent, respectively. Additional patterns emerge when viewing truck movements from the perspective of commercial value. The value of trucked goods moved in the Paducah-McCracken County Riverport market area in 2018 is estimated at $1.2 trillion (**Table 11**). Through traffic represents an even higher percentage of the total share when measured by value compared to weight, accounting for about 98% of all cargo in 2018. Through traffic is usually longer-haul, where truck use is more likely where the commodities carried have higher value because transportation costs take up a smaller share of the overall costs of producing and bringing goods to market.

Paducah-McCracken County Riverport market area trucking volumes include a variety of commodities with agriculture, construction materials, consumer products, petroleum products, and consumer goods as the key drivers of road freight in the market area.

Waterway Mode

In 2018, approximately 53 million tons valued at $7 billion moved by waterway to and from the Paducah-McCracken County Riverport market area (**Table 11**) Of those, approximately 14% were inbound moves and 86% were outbound waterway barge flows.

Paducah-McCracken County Riverport market area waterway volumes include a variety of commodities with coal, petroleum products, construction materials, agricultural commodities, fertilizers, and chemicals as the key categories of barge freight in the market area.

Rail Mode

Rail freight is often bulk goods moving long distances and across land routes that lack sufficient access to inland waterway infrastructure to move by barge, typically shipped at lower unit cost than by truck. Many of the raw materials required to produce energy, supply food, and construct buildings and infrastructure depend on rail transportation.

In 2018, 1.2 billion tons valued at $1.5 trillion moved by rail to, from, and through the Paducah-McCracken County Riverport market area, as shown in **Table 11**. Of those, approximately nine percent were inbound moves, 14% were outbound and 77% were through rail flows.

Paducah-McCracken County Riverport market area rail volumes include a variety of commodities with coal, grain and other agricultural commodities, consumer goods, construction materials, chemicals, and iron and steel products as the key rail commodities in the market area.

Divertible Freight

Estimated tonnage of potentially divertible freight for inland waterway transport in the market area is largely in the miscellaneous coal or petroleum products category. The other highest-ranked potentially divertible commodities include plastics, grain, chemicals, building materials, and stone as shown in **Figure 41**.

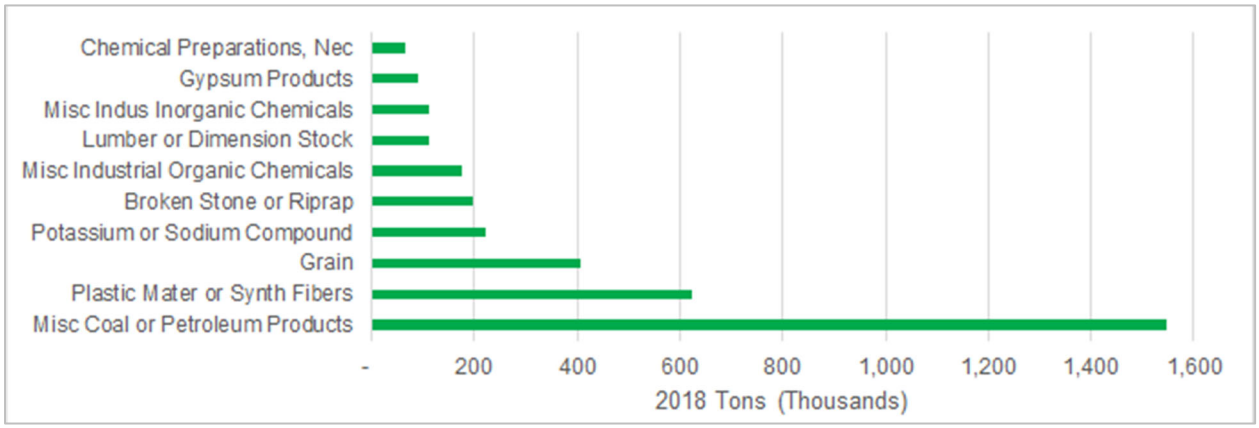

Figure 41: Paducah-McCracken County Riverport Divertible Freight

Freight Accessibility Considerations

Figure 42 illustrates potential obstacles to highway freight mobility near the Paducah-McCracken County Riverport. US 60X and KY 1954 (John Puryear Dr) provide four- to five-lane connections to I-24 (Exit 11), US 60, and US 62. Several bridges provide cross-river mobility in the vicinity: I-24, US 45, and US 60.

Recent crash data highlights elevated crash trends, particularly along sections of US 60 continuing east from the port. While narrow lanes and substandard curves are common on some of the smaller routes in the vicinity, US 60 and recently reconstructed KY 1954 generally satisfy current design standards. I-24 continuing west towards Illinois experiences elevated crash rates and recurring peak period congestion through more commercial areas of Paducah.

Rail service is not directly available at the Paducah-McCracken County Riverport, though service near the riverport is provided by a short line railroad, the PAL Railway (Class II). PAL connects in Paducah with two Class I railroads: BNSF and the CN.

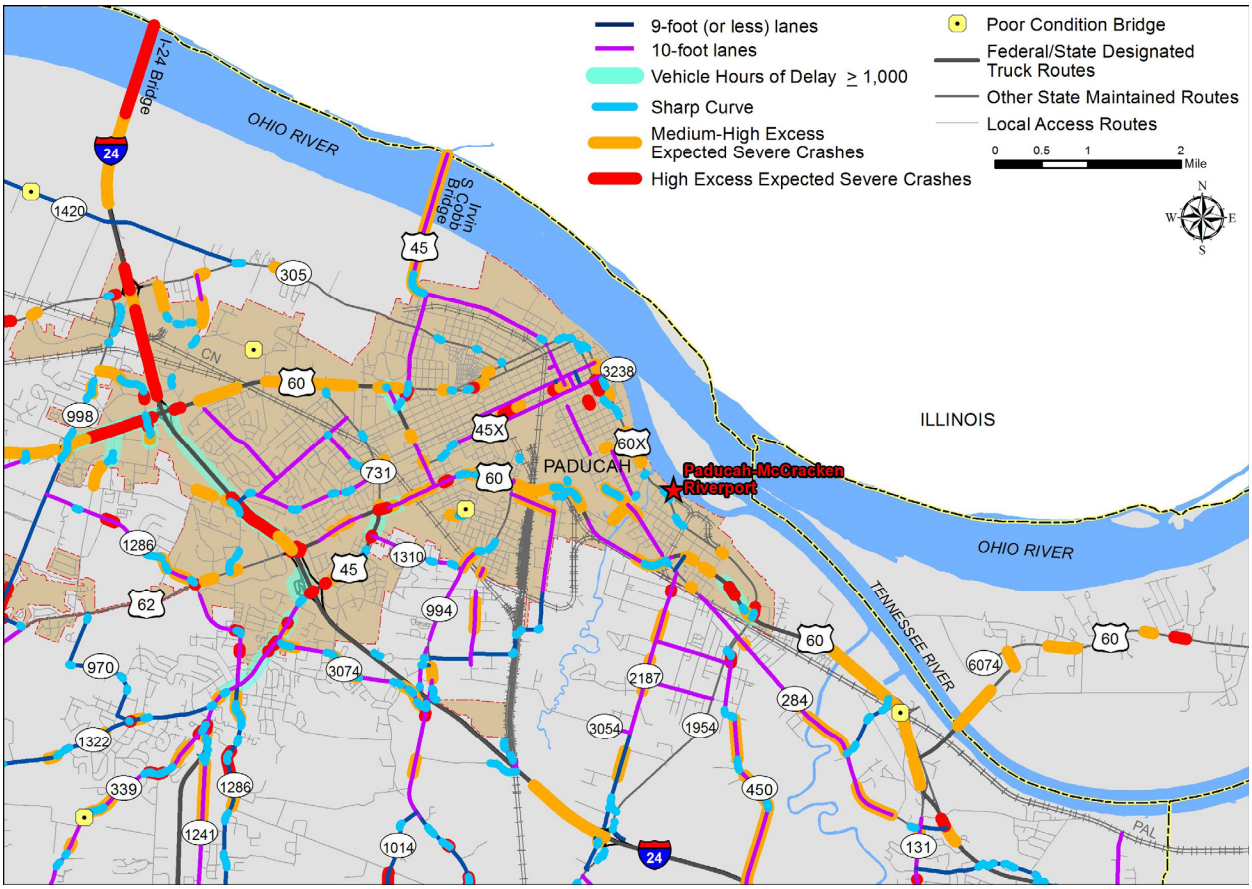

Figure 42: Paducah-McCracken County Riverport Potential Obstacles to Freight Mobility

WEST KENTUCKY REGIONAL RIVERPORT AUTHORITY

State of Port

Chartered jointly by Ballard, Carlisle, Hickman, and Fulton counties, the West Kentucky Regional Riverport Authority is located in Wickliffe. The counties partnered in 2019 to establish a new riverport facility along the Mississippi River near Wickliffe in Ballard County. Three sites are under consideration as of 2020: near the confluence with Mayfield Creek, Beech Creek, or Willow Creek. A US Army Corps of Engineers (USACE) Feasibility Study is underway to identify an option to advance. The preferred location near Phoenix Paper is shown in **Figure 43**, which also illustrates designated freight routes in the vicinity.

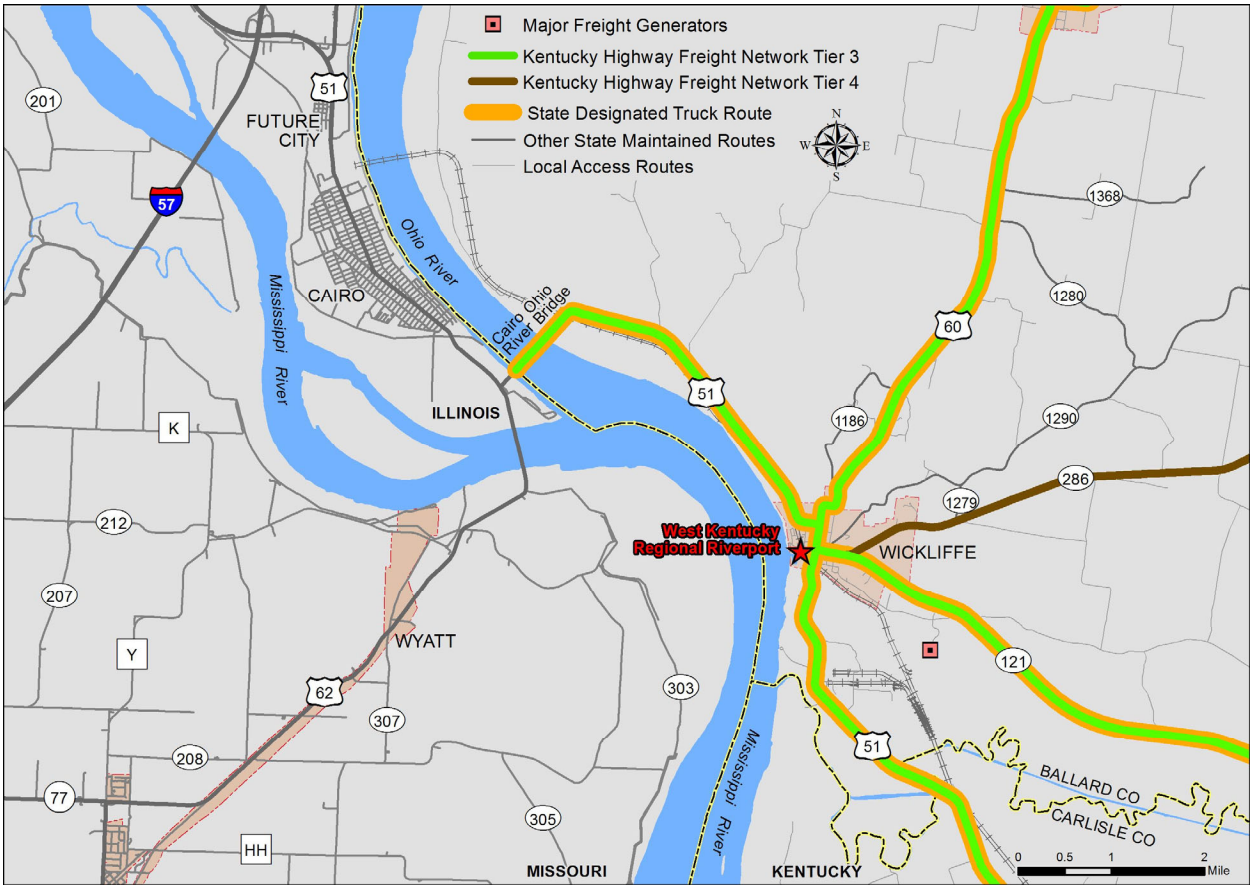

Figure 43: West Kentucky Reginal Riverport Freight Infrastructure

This new riverport would like to see the KYTC take a state authority approach, similar to an Indiana ports' model, and have a basis for the Kentucky CED to deliver on previous efforts.

According to West Kentucky Regional Riverport leadership, the roads in the region are 40% utilized. Local leaders believe the US 51 bridge over the Ohio River needs to be expanded to four lanes to facilitate economic development.

As a riverport they will have to compete with such operations across the Ohio or Mississippi rivers, as the various states are investing heavily in their respective riverports.

Port Market Hinterland

A market hinterland for the West Kentucky Regional Riverport is an area for which cargo can be potentially drawn to and from competitively. Here defined by counties that can be reached in a driving time of roughly 90 minutes, it includes 27 counties in Kentucky, Illinois, and Missouri centered on the Mississippi River south of the confluence with the Ohio River as shown in **Figure 44** (page 63).

Commodity Flows

As shown in **Table 12**, 1.2 billion tons of freight moved through the hinterlands during 2018, totaling $1.9 trillion by value. Top commodities, including coal, petroleum products, fertilizers, chemicals, construction materials, and agricultural commodities, were broken down between highway, rail, and waterway modes.

Table 12: West Kentucky Regional Riverport 2018 Market Hinterland Total Tons and Values by Mode

	Tons (000s)	Value (millions USD)
Truck	581,160	958,466
Water	32,847	7,889
Rail	614,012	966,409
Total	1,228,018	1,932,764

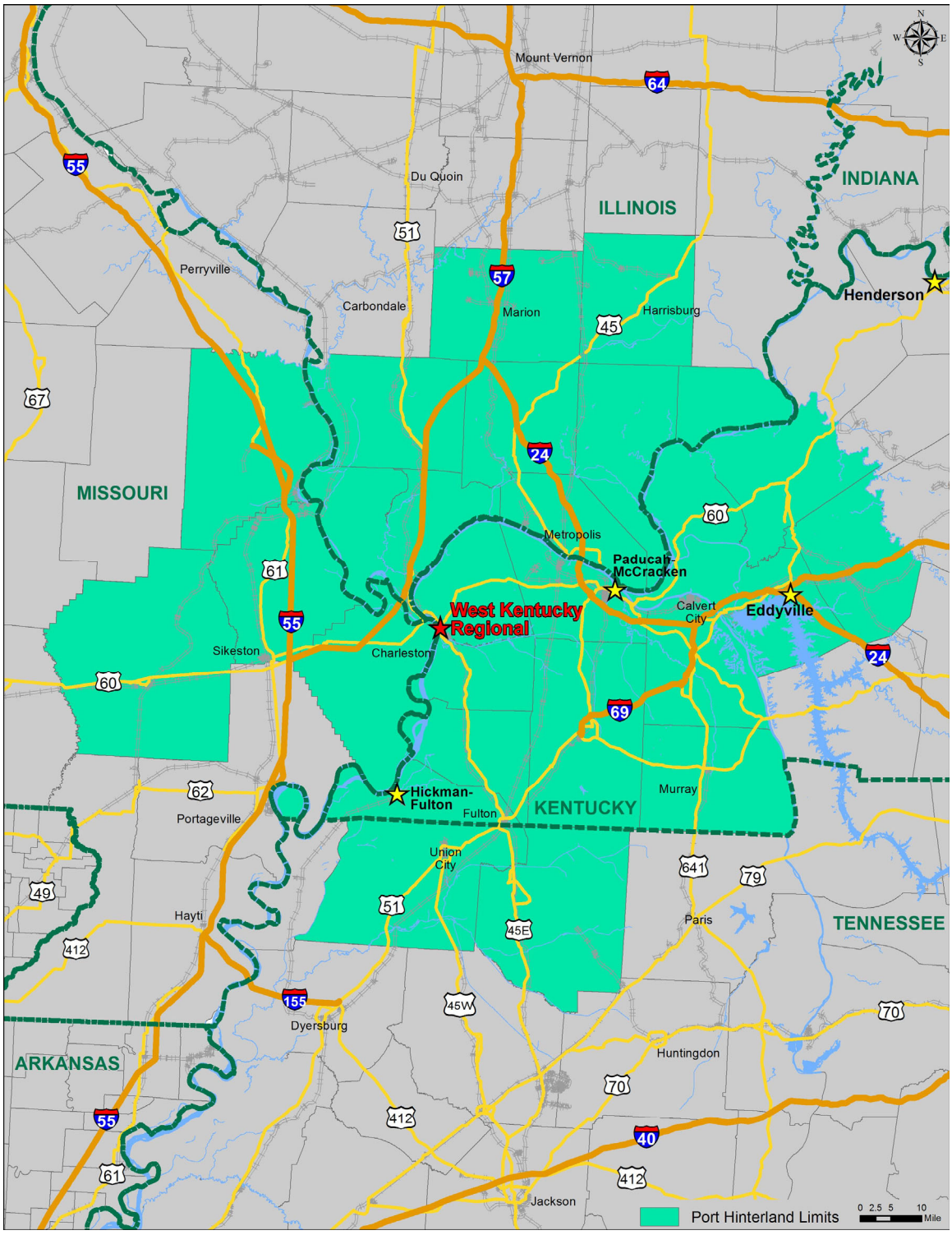

Figure 44: West Kentucky Regional Riverport Market Hinterland

Highway/Truck Mode

Trucking carried the most freight in the West Kentucky Regional Riverport market area in 2018, a total of 581 million tons of freight in the area. Most of this truck freight is passing through the area (93%), while outbound and inbound truck shipments are four and three percent, respectively. Due to the relatively high values and volumes of trucked goods moving through the West Kentucky Regional Riverport market area, $1.2 trillion in total trucked freight is estimated for 2018 (**Table 12**). Through traffic represents an even higher percentage of the total share when measured by value compared to weight, accounting for about 97% of all cargo in 2018, implying cargo moving through the market area is generally of higher value per ton. Through traffic is usually longer-haul, where truck use is more likely where the commodities carried have higher value because transportation costs are taking up a smaller share of overall costs of producing and bringing goods to market.

West Kentucky Regional Port market area trucking volumes include a variety of commodities with agriculture, construction materials, consumer products, coal, petroleum products, and beverages as the key drivers of road freight in the market area.

Waterway Mode

In 2018, approximately 33 million tons valued at $8 billion moved by water to and from the West Kentucky Regional Riverport market area (**Table 12**). Of those, approximately 18% are inbound moves and 82% are outbound water flows.

West Kentucky Regional Riverport market area inland waterway volumes include a variety of commodities with coal, petroleum products, fertilizers, chemicals, construction materials, and agricultural commodities as the key drivers of barge freight in the market area.

Rail Mode

Rail freight is often bulk goods moving long distances and across land routes that lack sufficient access to inland waterway infrastructure to move by barge, typically shipped at lower unit cost than by truck. Many of the raw materials required to produce energy, supply food, and construct buildings and infrastructure depend on rail transportation.

In 2018, 614 million tons valued at $966 billion moved by rail to and from the West Kentucky Regional Riverport market area, as shown in **Table 12**. Of those, approximately four percent were inbound moves, eight percent are outbound, and 88% were through rail flows.

West Kentucky Regional Riverport market area rail volumes include a variety of commodities with grain, oil kernels, nuts, seeds and other agricultural commodities; consumer goods; construction materials; petroleum products; and industrial gases as the key drivers of railway freight in the market area.

Divertible Freight

Estimated tonnage of potentially divertible freight for inland waterway transport in the market is largely in the miscellaneous coal or petroleum products category. The other highest-ranked potentially divertible commodities include plastics, chemicals, grain, and stone as shown in **Figure 45**.

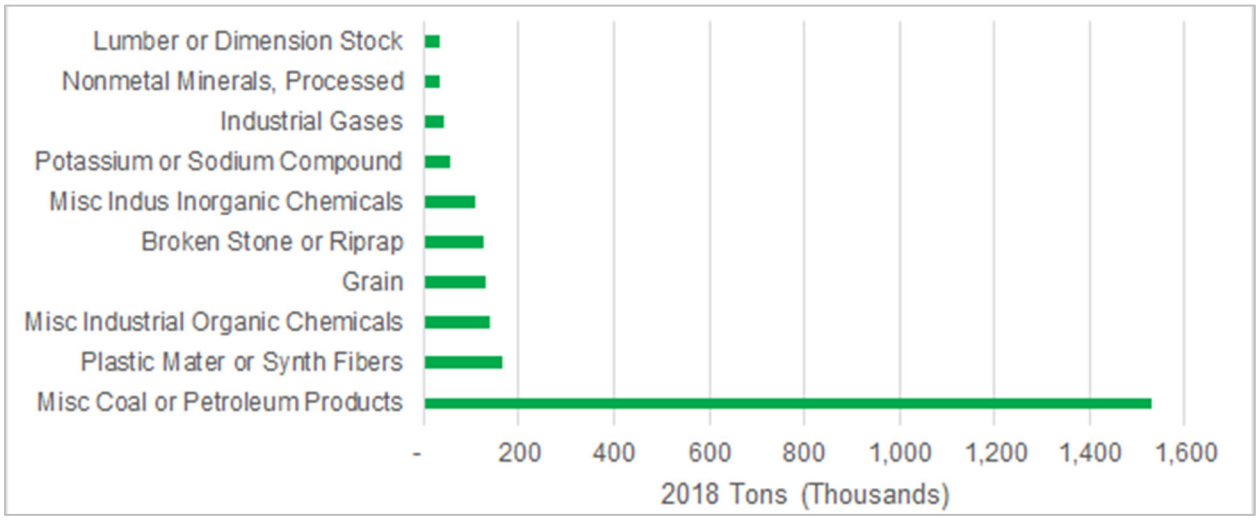

Figure 45: West Kentucky Regional Riverport Authority Divertible Freight

Freight Accessibility Considerations

The nearest interstate access is along I-57 through Missouri and Illinois; the US 51 bridge at Cairo provides the closest cross-river highway connection (5 miles). It should be noted that a project to replace the aging bridge is in the project development process at present, with preliminary design and environmental analyses underway. **Figure 46** illustrates potential obstacles to highway freight mobility near the port. Mostly rural in nature, narrow lanes and windy two-lane highways are common with no congestion. Within Kentucky, US 51 contains several stretches that exhibit elevated crash rates based on recent data.

While the exact port location is not yet determined, CN Railroad (Class I) maintains tracks through Wickliffe along the riverfront.

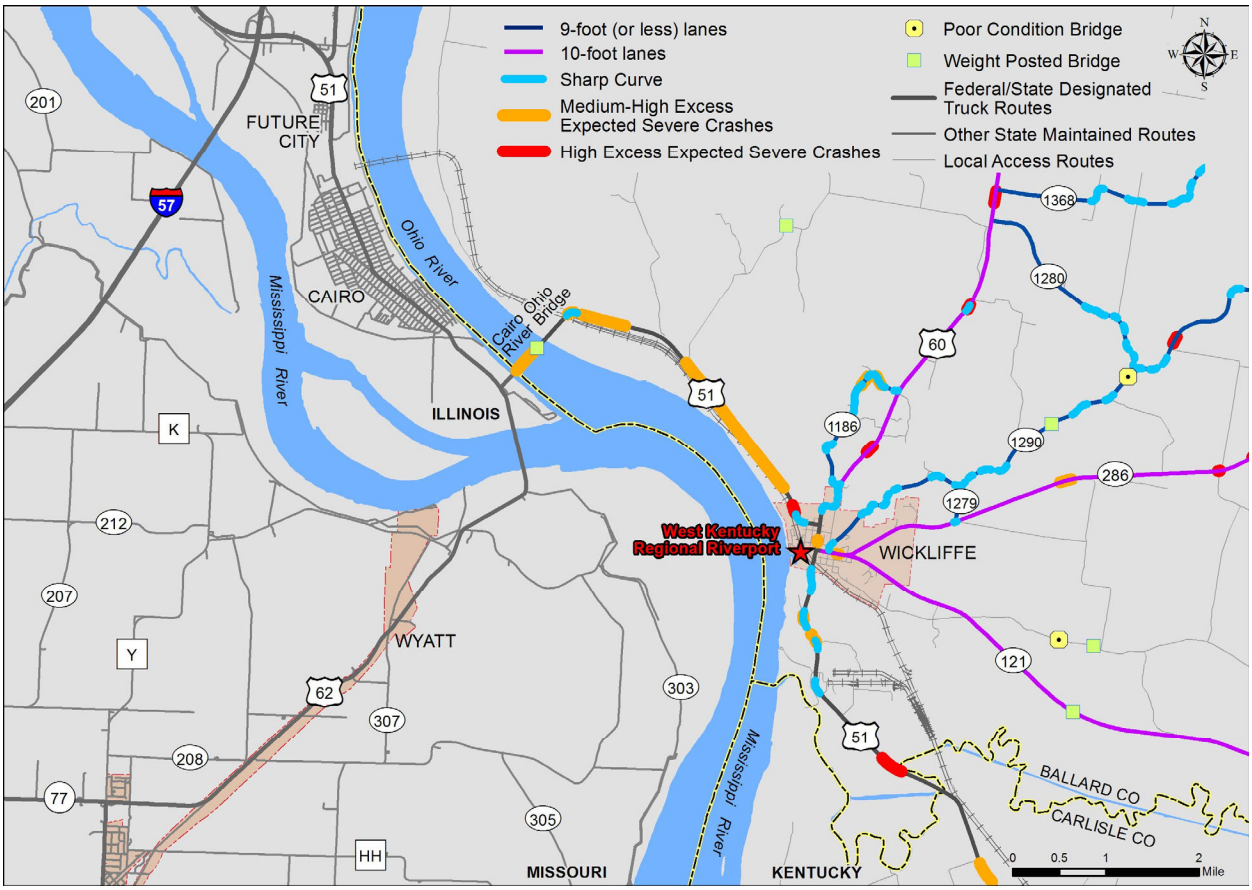

Figure 46: West Kentucky Regional Riverport Potential Obstacles to Freight Mobility (Kentucky)