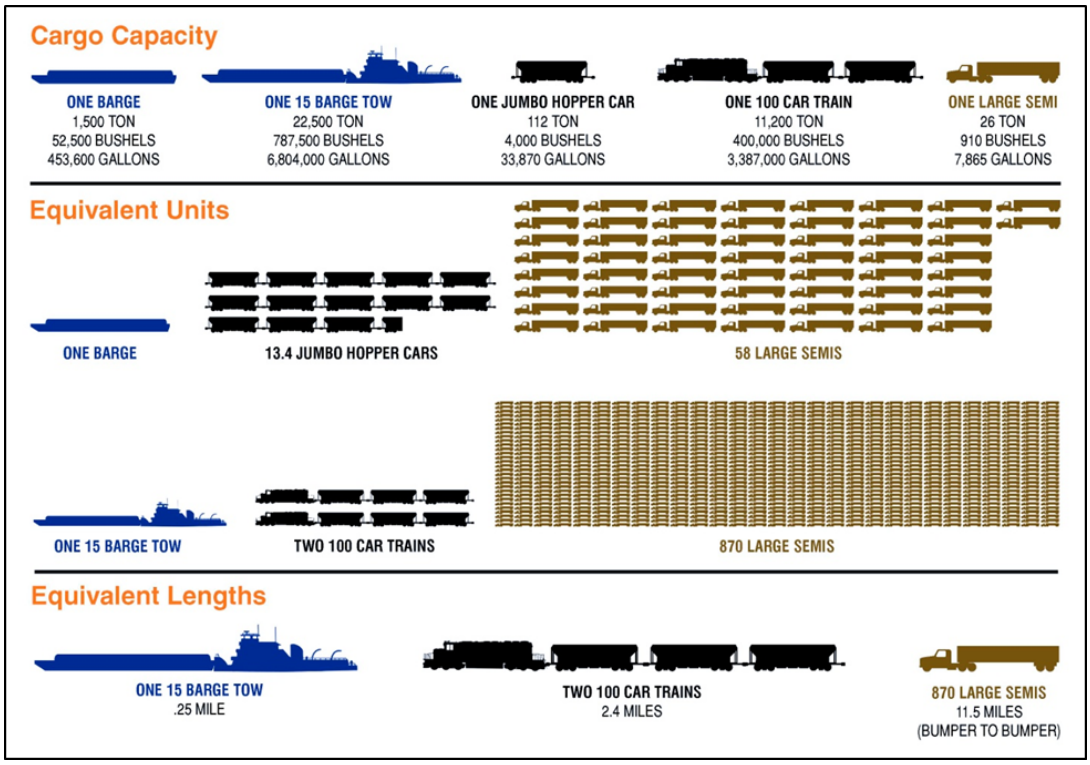
2 KENTUCKY FREIGHT SYSTEM

2.1 MULTIMODAL FREIGHT SYSTEM

An efficient, multimodal freight transportation network is essential to the economic well-being of Kentucky. All modes play a role when moving goods, and the choice between modes is frequently related to the location, type of commodity, price of shipment, and connections to other modes. A comparison of modes, as shown in **Figure 2-1** illustrates the cargo carrying capacity by various modes. While modes may vary in terms of capacity, energy, safety, and environmental impacts, each mode serves an important role in the freight delivery system. They must work together to create a connected and resilient freight network.

Figure 2-1: Comparison of Cargo Carrying Capacity by Mode



Source: Kentucky Transportation Cabinet, Freight Modes Book, September 2015, http://transportation.ky.gov/Planning/Documents/2015%20Modes%20Book.pdf

In 2015, KYTC was responsible for owning and maintaining nearly 28,000 miles of the Kentucky roadway system, which connects to railroads, ports, airports, and pipelines in the commonwealth. This connectivity plays an integral part in the supply chain; therefore, it is essential that KYTC invest in ongoing maintenance, operational improvements, and capacity adding projects to move freight efficiently and safely. Although KYTC does not have jurisdiction over other modes, the Cabinet acts as a partner and participant with public and private stakeholders to coordinate investment decisions.

Kentucky's multimodal freight system enables the commonwealth to capitalize on its geographically strategic location. Kentucky is located within 600 miles of over 60 percent of the nation's population, personal income, and manufacturing. Its central location facilitates the distribution of freight to over 30 states.

Highway – The commonwealth is served by 10 interstates and 10 state parkways, including more than 500 miles of the federally designated Primary Highway Freight System.

Rail – Major freight rail networks—including five Class I railroads, one Class II railroad, and 13 Class III railroads—operate across Kentucky.

Water – Kentucky is bordered on three sides by navigable rivers. The Ohio River forms the 660-mile northern border and is the longest of the three border rivers. The Mississippi River forms the western border, and the eastern side of the commonwealth is bordered by the Big Sandy River and Tug Fork. There are over 1,980 miles of U.S. Army Corps of Engineers (USACE) designated navigable waterways in Kentucky.[3]

Air – Kentucky has five commercial airports, including two major shipping hubs that are home to UPS Worldport (Louisville) and DHL Express (Covington). In 2014, the Louisville International Airport was ranked third in the U.S. for annual air freight tonnage shipments.[4] Additionally, Kentucky has 26 other general aviation airports with runway lengths greater than 5,000 feet, making them capable of handling larger cargo planes. This versatile transportation network, further highlighted in the following sections, makes Kentucky a practical location for moving freight locally, regionally, and to all points of the globe.

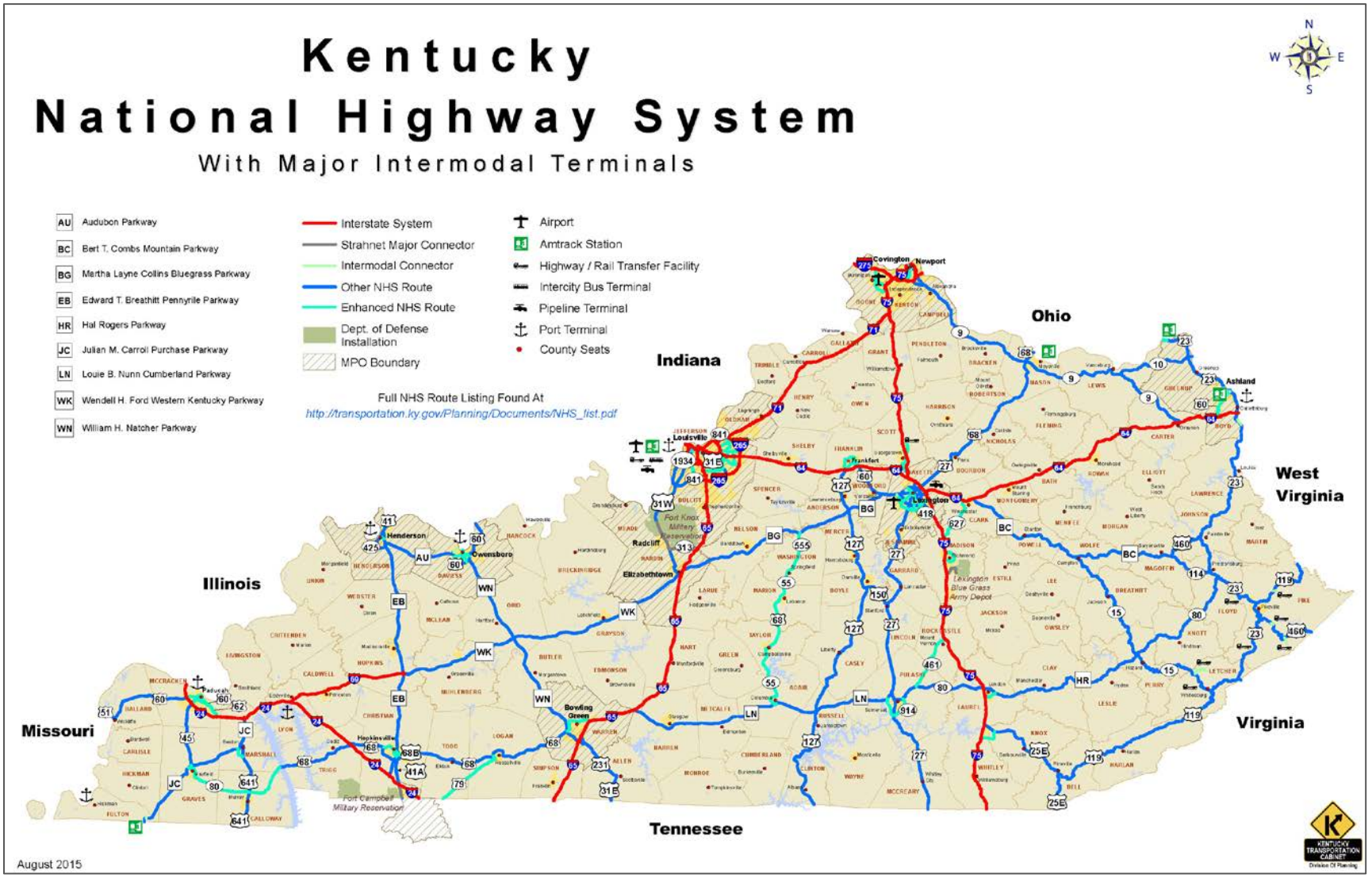
Pipeline – Kentucky's pipeline network is approximately 37,000 total miles. This network plays a critical role in moving oil, natural gas, and other commodities throughout the commonwealth.

2.2 HIGHWAYS

In 2014, Kentucky's highway system was comprised of over 79,000 centerline miles of public roads. KYTC maintains 35 percent of this system, nearly 28,000 miles. The commonwealth has 3,691 miles of federal/state truck network routes, with an average of 14 percent trucks on this network. Kentucky also has over 14,000 bridges, of which approximately 9,000 are state-maintained. According to the Freight Analysis Framework Version 3 (FAF[3]), more than 558,482,900 tons of freight were moved by truck on Kentucky's highways in 2011. **Figure 2-2** illustrates the National Highway System (NHS) in Kentucky.

[3] *Kentucky Transportation Cabinet, 2014 Long-Range Statewide Transportation Plan, 2014.*
[4] *Kentucky Cabinet for Economic Development, Kentucky Economic Development Guide, 2014.*

Figure 2-2: National Highway System



Source: 2015 Kentucky Freight Modes Book, Kentucky Transportation Cabinet

2.2.1 Highway Freight Network

In October 2013, 593 miles of Kentucky's roadways were designated to the Primary Freight Network (PFN) by the USDOT. As shown in **Figure 2-2**, Kentucky's east-west and north-south corridors are critical to the movement of freight at the national level. The factors that contributed to the designation of the PFN include the following (23 U.S.C. Sec. 167 National Freight Policy):

- The origins and destinations of freight movement in the U.S.
- The total freight tonnage and value of freight moved by highways
- The percentage of annual average daily truck traffic (AADTT) in the annual average daily traffic on principal arterials
- The annual average daily truck traffic on principal arterials
- Access to land and maritime ports of entry
- Access to energy exploration, development, installation, or production areas
- Access to population centers
- Network connectivity

KYTC developed a performance-based project selection process for the Kentucky Highway Plan. One of the key components for identifying criteria for the selection process was developing a state highway freight network that represents Kentucky's critical freight corridors. By creating this network, KYTC is able to identify and address freight system mobility issues that exist both presently and in the future. The Cabinet chose a 4-tier structure for the Kentucky Highway Freight Network. The following criteria were used to develop this network:

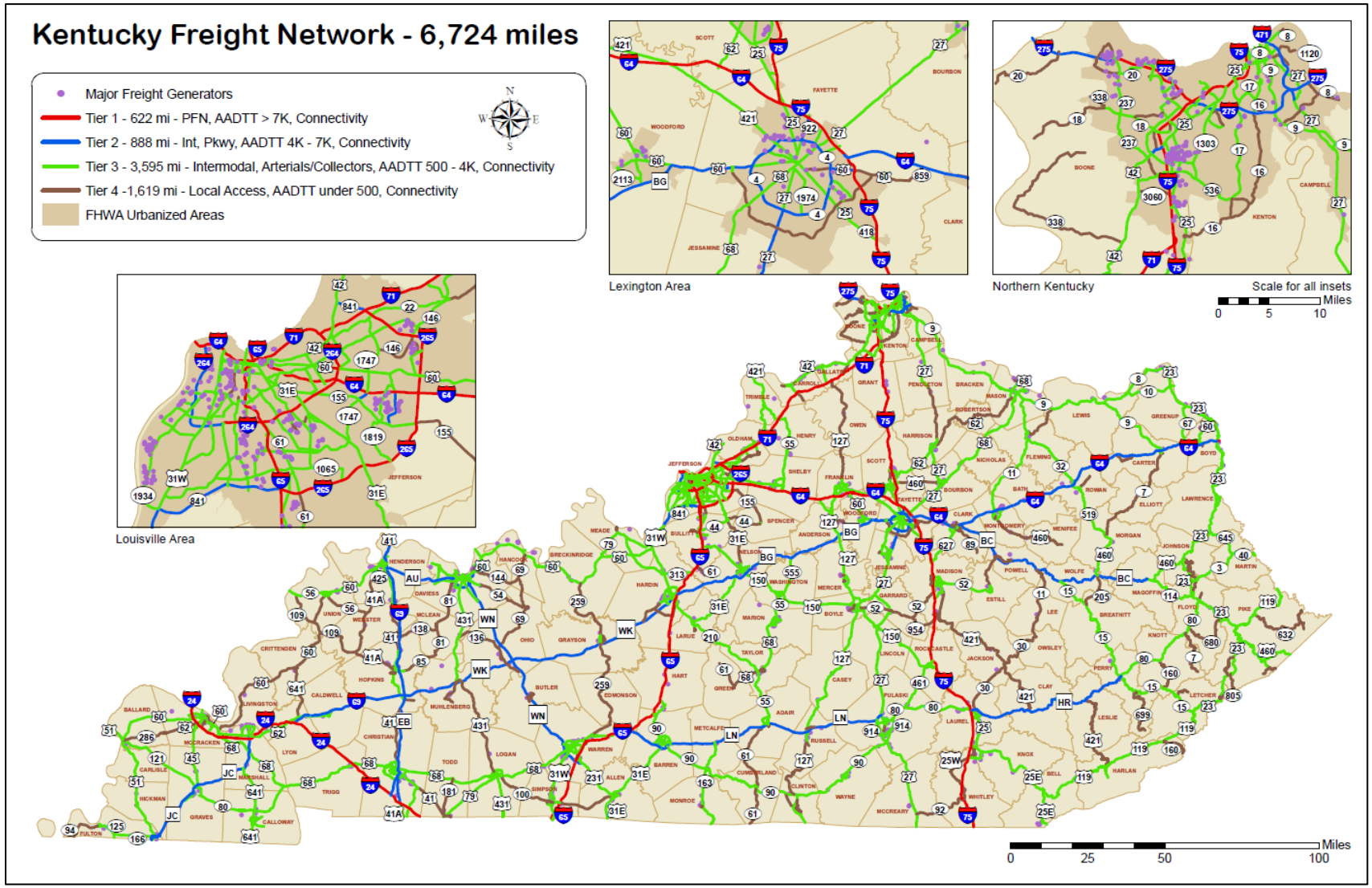
- Tier 1 – National Regional Significance
  - USDOT designated PFN
  - Any segment of road (regardless of functional class) that has 7,000 ≥ AADTT
  - Manual revisions to ensure freight network connectivity to reduce gaps
- Tier 2 – Statewide Significance
  - All remaining segments of interstate or parkway not on the PFN
  - Any segment of road (regardless of functional class) with AADTT of 4,000 to 7,000
  - Manual revisions to ensure freight network connectivity
- Tier 3 – Statewide Regional Significance
  - Intermodal connectors recognized by/filed with the FHWA
  - Arterials and collectors with AADTT of 500 to 4,000
  - Manual revisions to ensure local freight corridor connectivity
- Tier 4 – Local Access Significance
  - Access to major freight generators
  - Local access for freight (first mile, last mile)
  - Manual revisions to ensure network connectivity
  - No more than 50 miles between network access

The process began with a purely data-driven identification of the tiers. Each tier includes manual revisions necessary to ensure connectivity and limit to 50 miles between local Kentucky Highway Freight Network access points.

After the Kentucky Highway Freight Network was determined, KYTC shared the methodology and maps of the network with attendees of the Kentuckians for Better Transportation 2015 Annual Conference, all 12 highway district offices, and each of the commonwealth's MPO and ADD offices for review and comment. The network, made up of 6,724 centerline miles, is shown in **Figure 2-3** with a breakdown of mileage for each tier.

The Kentucky Highway Freight Network is updated on January 1st of each year to reflect changes to the road network.

Figure 2-3: Kentucky Highway Freight Network



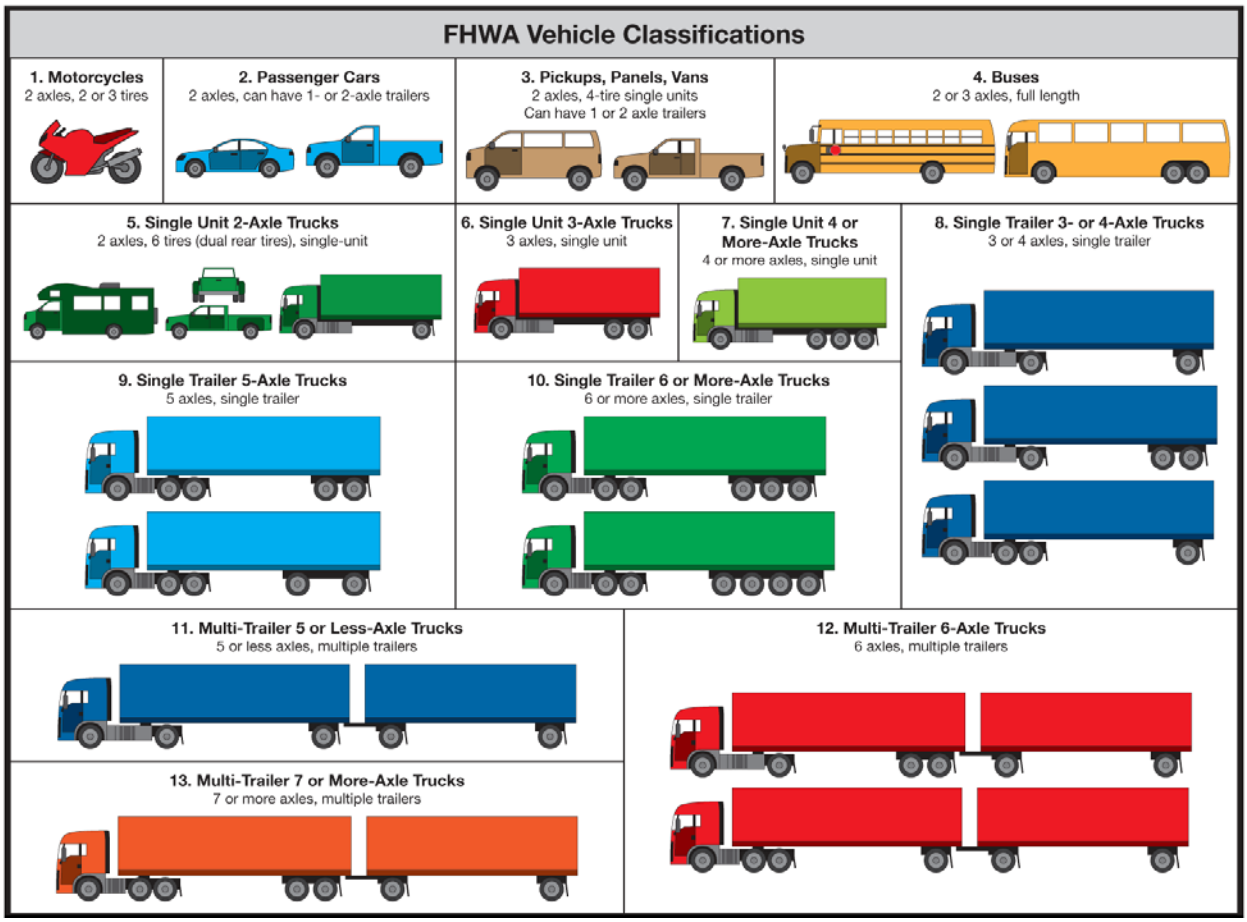
Source: Kentucky Transportation Cabinet, November 2015

2.2.2 Trucks (Commercial Vehicles)

In the purview of the KFP, trucks are regarded as commercial vehicles. Trucking is the predominant mode of freight transportation in Kentucky—trucks serve most markets, from long-distance interstate commerce to the "last mile" of intermodal goods.

The FHWA classification system recognizes nine types of trucks, as shown in **Figure 2-4**. FHWA classes 5 through 7 are medium-duty trucks, while classes 8 through 13 are heavy-duty trucks. Tractor-trailer vehicles combine a tractor with a semitrailer, trailer, or both and have four or more axles (also known as "semis" or "18-wheelers"). Medium-duty trucks typically transport freight through the region, while heavy-duty trucks are for long-hauls across a state or to national destinations.

Figure 2-4: FHWA Vehicle Classification



Source: TxDOT Traffic Recorder Instruction Manual, 2012

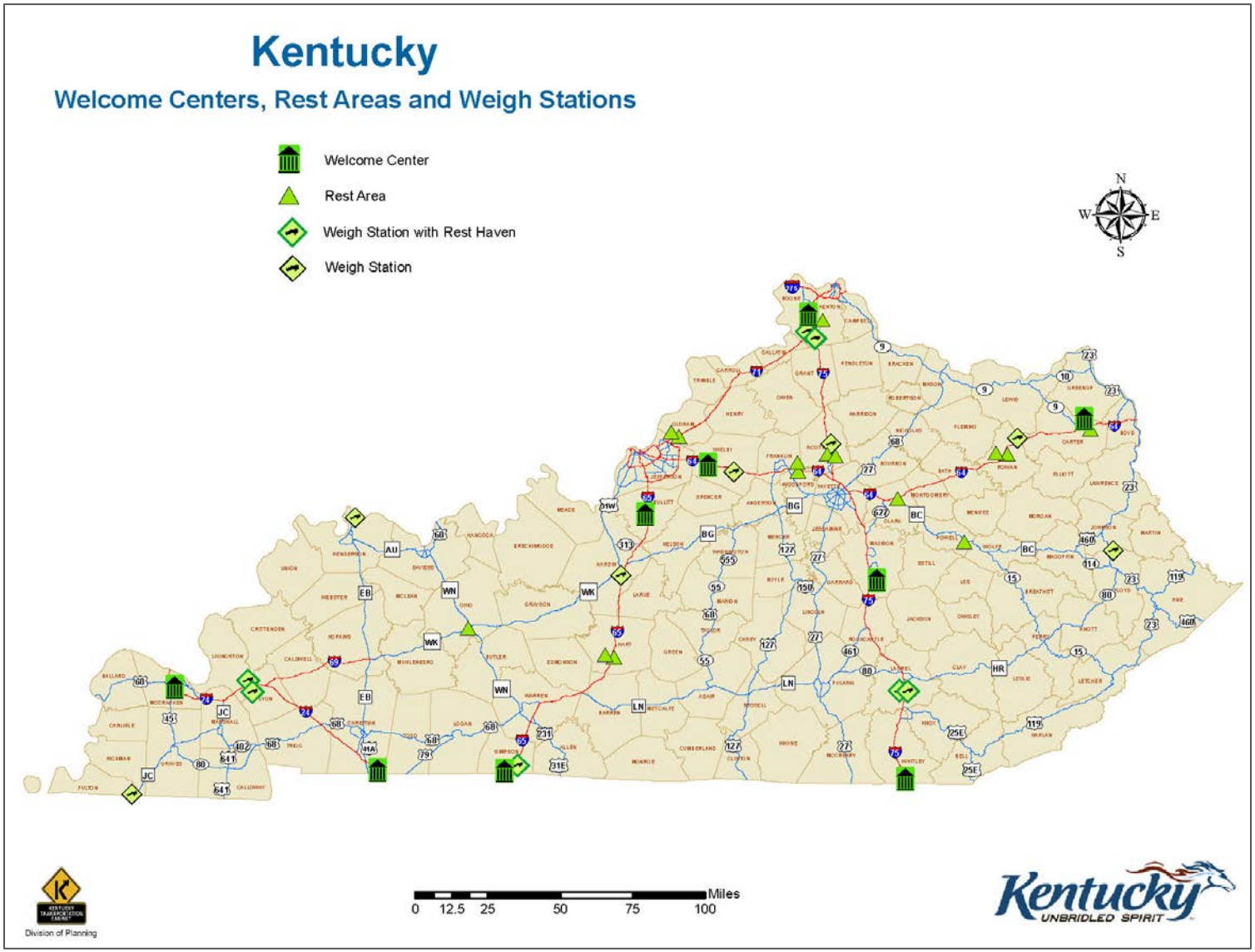
Freight movements by truck in Kentucky rely heavily on the Interstate Highway System. Because trucks perform the initial pickup and delivery for most goods and commodities moved by air, rail, and water, the connector routes between the freight transportation modes are a critical link to facilitate the smooth movement of freight. Often these connectors or "last mile" segments are under local jurisdiction.

As shown in **Figure 2-3** on page 2-6, I-64 and I-24 provide much of the east-west movement for trucks, while I-69, I-75, I-65, and I-71 facilitate north-south truck freight movements. Along these six main interstate highways are 14 static weigh station facilities (see **Figure 2-5**) with six located in pairs at three locations on either side of the highway median. Seven of the weigh stations also have rest havens, which are parking spaces for trucks. These state-controlled sites are needed to ensure compliance with federal and state regulations and laws. Recent technology—including weigh-in-motion (WIM) devices, the Pre-Pass system, enhanced sign lighting, and advanced traveler information—have enhanced the safety and efficiency of freight travel in Kentucky.

Also, along Kentucky's highways are 15 public rest areas with truck parking. Current hours of service (HOS) federal regulations require a truck driver to take 10 consecutive hours off duty after driving a maximum of 11 hours. Therefore, drivers need to find parking facilities that will accommodate long-term rest during a multi-day trip. Since most rest areas along the Interstate Highway System do not accommodate a full 10 hours of undisturbed rest, and drivers may not want to lose time deviating from their route, some truckers illegally park along the side of roads, on rest-area ramps, and in weigh station rest havens that restrict parking to less than 10 hours.[5]

[5] *Federal Highway Administration, Commercial Motor Vehicle Parking Shortage Report, May 2012.*

Figure 2-5: Welcome Centers, Rest Areas, and Weigh Stations



Source: Kentucky Transportation Cabinet, 2015

2.2.3 TIGER Grant for Truck Parking

In 2015, Kentucky and seven other states were awarded a $25 million Federal Transportation Investment Generating Economic Recovery (TIGER) grant by the USDOT for the Regional Truck Parking Information and Management System (TPIMS). The 8-state project will help truckers find up-to-date information on available parking. The TPIMS involves providing existing technology to distribute truck parking capacity and current occupancy information to commercial drivers via smartphone apps, dynamic road signage, websites, and parking facilities. The project will also decrease the number of truckers parking unsafely along shoulders and ramps of interstate highways and help reduce overcrowding at rest areas. The Kansas Department of Transportation is the lead in this multi-state project, working with the seven other states: Indiana, Iowa, Kentucky, Michigan, Minnesota, Ohio, and Wisconsin. Feedback from industry stakeholders will be critical when deploying the TPIMS.

2.3 Inland Waterway Network

Kentucky lies in the heart of the nation at the hub of the nation's inland waterways, as shown in **Figure 2-6**. With the Ohio River, Mississippi River, Big Sandy River, and Tug Fork bordering the commonwealth, this location offers unique advantages for efficient year-round freight transport of bulk materials, agricultural products, chemicals, minerals, metals, wood, manufactured goods, and containerized freight. Kentucky's well-developed terminals and riverports—supported by enterprise zones, warehouse facilities, ports of entry, and foreign trade zones—link with an intermodal transportation system that forms a network with the world. Containing over 1,980 miles of USACE navigable inland waterways **(Table 2-2)**, Kentucky is the linchpin between the Great Lakes, Canada, and Mexico, as well as the deep-draft ports of New Orleans, La. and Mobile, Ala. for shipments overseas.[6]

The Ohio River accounts for over 30 percent of these miles on Kentucky's navigable waterways. Five of the waterways have one or more locks and dams. The USACE owns and/or operates the locks and dams on the Ohio River, Green River, Cumberland River, and Tennessee River. The locks and dams on the Kentucky River are owned and operated by the Kentucky River Authority. The majority of the locks and dams are over 50 years old, and the seven built in the 1930s and 1940s are in need of major rehabilitation or replacement. The Locks and Dams 52 and 53 Replacement Project, known as the Olmsted Locks and Dam, is currently underway to replace two locks and dams on the Ohio River by 2020. These were put into operation in 1928 and 1929, respectively.

The Licking River, which connects to the Ohio River, is a navigable waterway that supports the Ports of Cincinnati and Northern Kentucky. The most northern 7 miles of the Licking River can accommodate moving heavy cargo and barge storage. This segment has no locks or dams and can support commercial development.

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

Figure 2-6: Inland River System

Source: Kentucky Riverport Improvement Project, 2008

2.3.1 Riverports

Kentucky has 12 public riverports, eight of which are operating ports, and four of which are developing ports. According to the 2008 Kentucky Riverport Improvement Project, each public riverport has unique characteristics, needs, and visions. The ports largely do not compete with one another and each has the ability to stimulate economic development in the surrounding region. Some of the most common commodities handled by the public riverports in Kentucky are coal, fertilizer, grain, sand, aluminum, and steel.[7]

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

In addition, there are over 100 private riverport terminals in Kentucky. According to the Kentucky Riverport Improvement Project, the commonwealth's private terminals that handle specific commodities such as coal or grain or exclusively serve only one company's barging needs ship over 100 million tons each year, as compared to about 4 million tons handled by the public ports. Coal and non-metallic minerals (sand and gravel, etc.) make up as much as 80 percent of the shipments by the private terminals.[8]

Kentucky's riverports play an important role in facilitating access to the commonwealth's freight transportation system. For example, rail is a vital part of riverport operations for transferring large bulk commodities from one mode to another. The 2014 USACE Port Facility Spreadsheet lists 83 rail-accessed riverport terminals in Kentucky.[9]

Table 2-1 and **Figure 2-7** provide status and locations of Kentucky's public riverports. For a more detailed account of the commonwealth's public riverports, see the Kentucky Riverport Improvement Project at http://transportation.ky.gov/Riverports/Pages/Riverport-Studies.aspx.

Table 2-1: Kentucky Public Riverports

No.	Riverport Name	KYTC District	Riverport Status
1	Hickman-Fulton County Riverport	1	Active
2	Wickliffe-Ballard County Riverport	1	Developing
3	Paducah-McCracken County Riverport	1	Active
4	Marshall County-Calvert City Riverport	1	Developing
5	Eddyville Riverport and Industrial Development	1	Active
6	Henderson County Riverport	2	Active
7	Owensboro Riverport	2	Active
8	Meade County Riverport	4	Active
9	Louisville-Jefferson County Riverport	5	Active
10	Northern Kentucky Riverport[10]	6	Developing
11	Maysville-Mason County Riverport	9	Developing
12	Greenup-Boyd County Riverport	9	Active

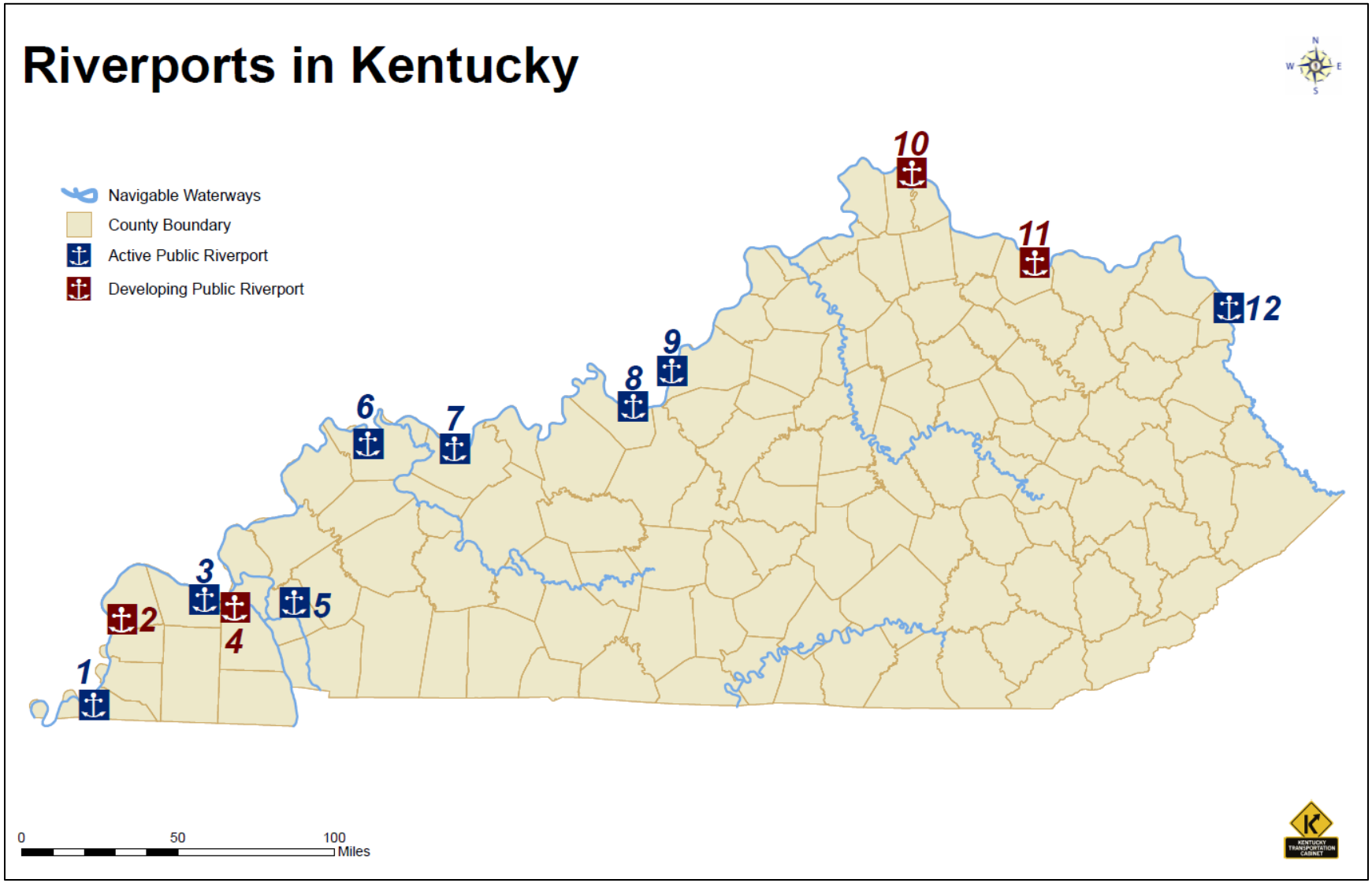
Source: Kentucky Transportation Cabinet, 2015

[8] *Kentucky Transportation Cabinet. Kentucky Riverport Improvement Project. January 22, 2008.*

[9] *Kentucky Transportation Cabinet. 2015 Kentucky Statewide Rail Plan.*

[10] *In a 2012 joint request to the USACE, the Port of Greater Cincinnati Development Authority and the Northern Kentucky Riverport Authority proposed combining the two ports under a single, expanded port boundary. USACE granted the request, thereby redesignating the then 26-mile Port of Greater Cincinnati boundary to a 226.5-mile boundary that includes the Northern Kentucky Riverport, 7 miles of the Licking River, and stretches from Louisville to Huntington. Though the Licking River is used for moving cargo and storing barges, there are no active land-side facilities or properties held by the Northern Kentucky Riverport. Thus, the status remains "developing."*

Figure 2-7: Kentucky Public Riverports



Source: Kentucky Transportation Cabinet, 2015

2.3.2 Inland Waterway Governance

The riverports and inland waterway network in Kentucky are overseen in varying capacities by the USACE, U.S. Coast Guard (USCG), Maritime Administration (MARAD), various port authorities, Kentucky River Authority, and WTAB. A brief description of each entity's role is described below.

2.3.2.1 U.S. Army Corps of Engineers

There are two divisions and four districts of the USACE with operations in Kentucky. The Louisville, Huntington, and Nashville districts, under the Great Lakes & Ohio River Division, and the Memphis District, under the Mississippi Valley Division, own and operate the locks and dams on rivers in Kentucky, and they operate and maintain the commercial inland navigation channels, which includes dredging. Kentucky has over 1,980 miles of USACE designated navigable waterways and the highest total of inland USACE designated navigable waterways for any state in the continental U.S.[11]

The Water Resources Reform and Development Act of 2014 (WRRDA) was signed into law on June 10, 2014. WRRDA is the primary legislation by which Congress authorizes the USACE key civil works missions, including navigation, flood risk management, and environmental restoration. The authorities provided in WRRDA help USACE continue to provide value to the nation in developing and maintaining the nation's waterways and harbors, reducing damages from storm events, and restoring the environment.

2.3.2.2 U.S. Coast Guard

Kentucky is located within the USCG's Eighth Coast Guard District, which covers all or part of 26 states from the Appalachian Mountains and Chattahoochee River in the east, to the Rocky Mountains in the west, and from the U.S.-Mexico border and the Gulf of Mexico to the Canadian border in North Dakota. The Eighth District is responsible for protecting Kentucky's inland navigable waterways to enable safe, secure, and efficient movement of goods.

2.3.2.3 Maritime Administration/Marine Highways

MARAD is the agency within the USDOT focused on waterborne transportation. MARAD's programs promote the use of waterborne transportation and its seamless integration with other segments of the transportation system, as well as the viability of the U.S. merchant marine. MARAD works in many areas involving ships and shipping, shipbuilding, port operations, vessel operations, national security, environment, and safety. The MARAD Inland Waterways Gateway Office in St. Louis is responsible for Kentucky programs.

In 2007, MARAD established the America's Marine Highway Program to reduce landside congestion through the designation of Marine Highway Routes. The Coast Guard and Maritime Transportation Act of 2012 expanded the scope of the program to efforts that generate public benefits by increasing the utilization or efficiency of domestic freight or passenger transportation on Marine Highway Routes between U.S. ports. The three designated Marine Highway Routes that directly serve Kentucky are the following:

- M-55, which includes the Mississippi River corridor along Kentucky's western border

[11] *Kentuckians for Better Transportation. http://www.kbtnet.org/about/waterways. Accessed on February 23, 2016.*

- M-65, which includes the Tennessee River from Paducah to the Tennessee-Tombigbee Waterway
- M-70, which includes the Ohio River corridor forming the commonwealth's northern border, from Ashland to Wickliffe

Designating routes in the Marine Highway System identifies an opportunity to alleviate freight-related congestion on existing parallel land routes, which leads to reduced emissions, energy conservation, increased system resiliency, improved safety, and reduced road maintenance costs.

2.3.2.4 Riverports and Port Authorities

Kentucky Revised Statute (KRS) 65.520 outlines the laws that regulate establishment, powers (further specified in KRS 65.530), and KYTC's oversight of public riverports in Kentucky. According to law, any governmental unit in Kentucky may establish a riverport authority with the KYTC Secretary's approval. Riverport authorities provide oversight on riverport development activities, as well as conduct normal riverport business.

Public riverports are managed by a riverport authority, usually as part of a city or county government, or a joint city-county government partnership. Public riverport authorities are managed by a board of officials, which appoints a riverport director or president. As stated in KRS 65.540, if the authority is established by a city, members of the board are appointed by the mayor of the city. If the authority is established by a county, members of the board are appointed by the county judge/executive with the approval of the fiscal court.

2.3.2.5 Kentucky River Authority

The Kentucky River Authority is an agency that is administratively attached to the Kentucky Finance and Administration Cabinet. Its primary purpose is to operate and maintain the locks and dams on the Kentucky River. These locks and dams were originally built by the USACE.

2.3.2.6 Water Transportation Advisory Board

The WTAB was established by the Kentucky General Assembly in 2010, and it is an advisory board to the executive and legislative branches of government on matters concerning water transportation. This board is composed of seven members who are appointed by the Governor, and they serve terms of 4 years. The WTAB's duties are the following:

1. Advising KYTC, the Cabinet for Economic Development, the Governor's Office, and the General Assembly on matters relating to water transportation
2. Recommending action to enable the Commonwealth to make best use of its waterways and riverports for future economic growth
3. Assisting in defining the duties and functions of positions within state government responsible for water transportation
4. Recommending criteria for setting priorities for funding riverport marketing initiatives under the riverport marketing assistance trust fund established in KRS 154.80-140

5. Evaluating applications submitted by riverports for grants under the riverport marketing assistance trust fund and making recommendations to the granting authority on the disbursement of those funds

6. Recommending criteria for setting priorities for funding riverport improvements under the riverport financial assistance trust fund established in KRS 174.210

7. Evaluating applications submitted by riverports for grants under the riverport financial assistance trust fund and making recommendations to the granting authority on the disbursement of those funds

Table 2-2: Navigable Waterways

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

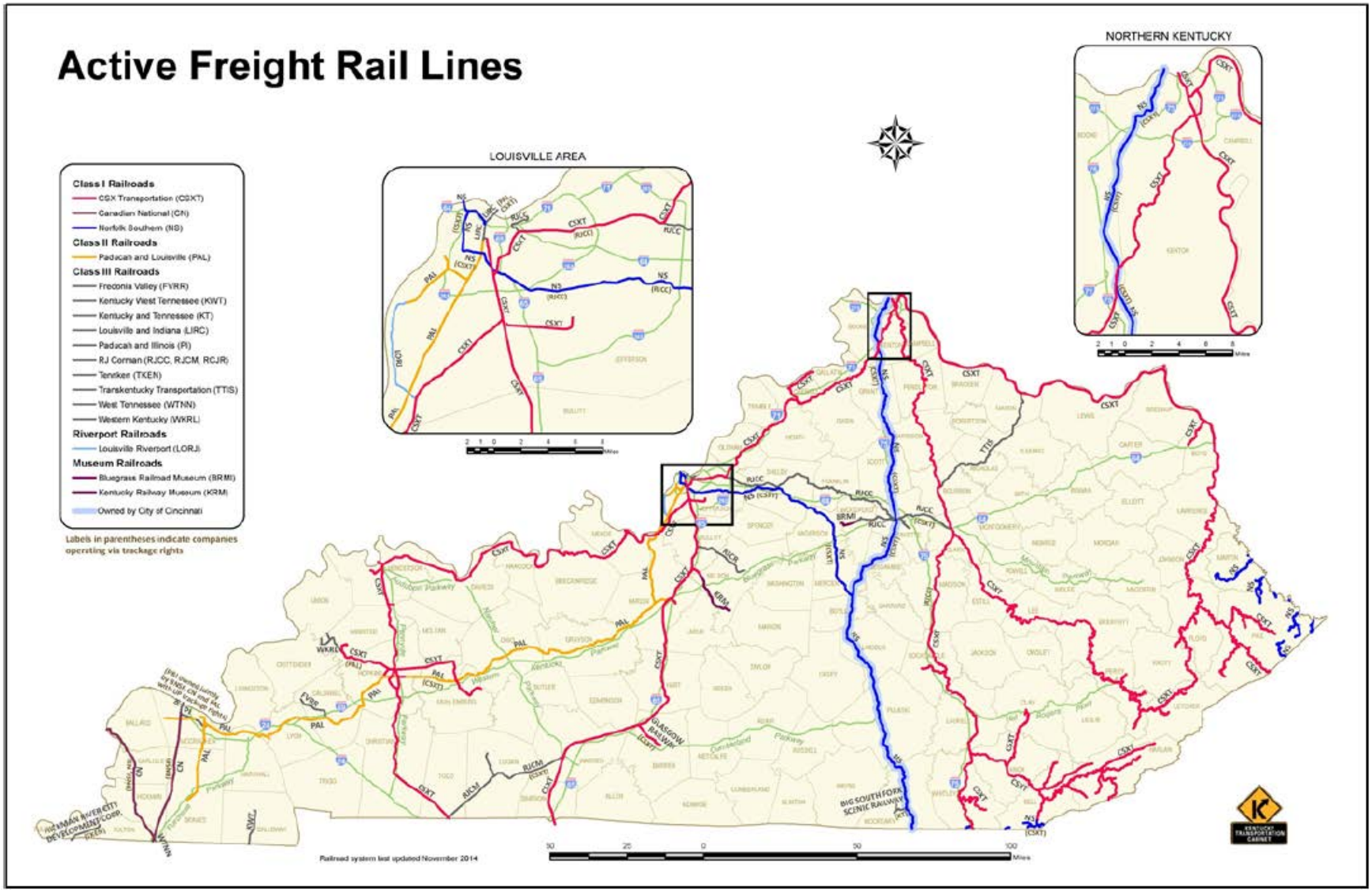
2.4 Rail Network

Kentucky plays an important role in the U.S. rail network. According to the Association of American Railroads (AAR), in 2012 Kentucky ranked seventh among all states for originated tonnage, 12th for originated carloads/units, 11th for total tons carried, and third largest source of coal shipped by rail.

Freight railroads operating within Kentucky through ownership or trackage rights consist of five Class I railroads, one Class II railroad, and 13 Class III railroads (**Figure 2-8**). The Surface Transportation Board (STB) defines a class of railroad based on revenue thresholds adjusted for inflation. For the 2013 year of classification, a Class I railroad is defined as a common carrier having operating revenues of $467 million or more. A Class II railroad, also referred to as a regional railroad, is a common carrier having operating revenues between $37.4 million and $467 million. A common carrier is a person or company that transports goods or passengers on regular routes at set rates. A Class III railroad, also known as a short line railroad, is a carrier with yearly operating revenues under $37.4 million.[12]

[12] *Federal Railroad Administration, Summary of Class II and Class III Railroad Capital Needs and Funding Sources – A Report to Congress, October 2014, Page 2.*

Figure 2-8: Active Freight Rail Lines



Source: 2015 Kentucky Statewide Rail Plan

As seen in **Table 2-2** Kentucky's railroad system includes approximately 3,200 route miles, as of year-end 2014. The five Class I railroads represent approximately 2,300 miles, or about 73 percent of the statewide rail system. These railroads are Burlington Northern Santa Fe (BNSF), Canadian National (CN), CSX Transportation (CSXT), Norfolk Southern (NS), and Union Pacific (UP).

In Kentucky, CSXT is the largest railroad company in terms of mainline route mileage, accounting for 1,685 miles, or 53 percent of the total route miles. The second largest railroad by mileage is NS, operating on 429 route miles, or 13 percent of the statewide rail system. The third largest railroad company by mainline route mileage is the Paducah and Louisville Railway, Inc. (PAL), and this is Kentucky's only Class II (regional) railroad. PAL operates 280 miles of mainline railroad, approximately 9 percent of the statewide rail system.

Table 2-3: Freight Railroad Route Miles Operated in Kentucky (Single Owner)

2013 Mainline Railroad Mileage Reported Owned, Leased or Under Trackage Rights	RR Company Class	Mileage					
		Owned by Self	Owned by Proprietary	Leased	Trackage	Total	% of Total
Burlington Northern Santa Fe	I	13*	0	0	86*	99	3.10%
Canadian National (Illinois Central) (Grand Trunk Corp.)	I	86	12*	0	0	98	3.07%
CSX Transportation	I	1,564	64*	11*	46*	1,685	52.80%
Norfolk Southern	I	154	0	212	63*	429	13.44%
Union Pacific	I	0	0	0	12*	12	0.38%
Paducah & Louisville	II	265	0	0	15*	280	8.77%
Carrollton Railroad	III	15*	0	0	0	15	0.47%
Fredonia Valley Railroad	III	10	0	0	0	10	0.31%
Kentucky and Tennessee Railway	III	0	0	0	8*	8	0.25%
KWT Railway (Ky. West Tn.)	III	12	0	0	0	12	0.38%
Louisville & Indiana Railroad	III	4	0	0	0	4	0.13%
Paducah & Illinois	III	15*	0	0	0	15	0.47%
RJ Corman - Bardstown Line	III	20	0	0	0	20	0.63%
RJ Corman - Central Line	III	114	0	0	0	114	3.57%
RJ Corman - Memphis Line	III	63	0	0	0	63	1.97%
TennKen	III	12	0	0	0	12	0.38%
Transkentucky Transportation	III	50*	0	0	0	50	1.57%
West Tennessee Railroad	III	1	0	0	0	1	0.03%
Western KY Railway	III	16	0	0	0	16	0.50%
Amtrak	Passenger	0	0	0	207*	207	6.49%
Big South Fork Scenic Railroad	Rec.	12	0	0	0	12	0.38%
Bluegrass Railroad Museum	Rec.	6	0	0	0	6	0.19%
Kentucky Railroad Museum	Rec.	23	0	0	0	23	0.72%
Total		**2,455**	**76**	**223**	**437**	**3,191**	**100%**

Source: 2015 Kentucky Statewide Rail Plan

*Notes: *Denotes mileage that may be reported by multiple owners or operators of track.*

Table 2-2 shows only route miles owned, leased, or with trackage rights by railroad companies, as reported to KYTC on the annual reports from all freight railroads. The individual totals may not

accurately represent actual mileage. Multiple railroads own, lease, or have trackage rights on some other sections of track. Some of these railroads operate on trackage rights or through subsidiary railroads.

The Commonwealth of Kentucky does not own or operate any rail assets. When KYTC is considering a location for a new or reconstructed roadway that intersects or lies adjacent to a rail facility, the Cabinet must coordinate its efforts with the railroad company.

Kentucky's rail network is located near intermodal facilities that transfer goods from rail to other freight modes. For example, there are four intermodal facilities in the commonwealth that can transfer containers and/or trailers of cargo from rail to truck. NS operates three facilities, two in Louisville and one in Georgetown, and CSXT opened a facility in Louisville in 2012.[13]

For a more detail information on Kentucky's rail network, see the 2015 Kentucky Statewide Rail Plan at http://transportation.ky.gov/Railroads/Pages/Rail-Plan.aspx.

2.4.1 Rail Governance

The Class 1, II, and III railroads are privately owned. The railroad operations, such as service locations, shipping rates, and schedules, are all controlled by the railroad companies themselves and are regulated by the Federal Railroad Administration (FRA) and STB. Below are brief descriptions for the FRA and STB.

2.4.1.1 Federal Railroad Administration

The FRA is a federal agency within the USDOT that is responsible for ensuring the safety of the U.S. passenger and freight rail operations and infrastructure by promoting safe, efficient, and accessible rail transportation. To carry out this responsibility, FRA promulgates and enforces rail safety regulations, consolidates government support of rail transportation activities, administers financial assistance programs, and conducts research and development in support of improved railroad safety and efficiency and national transportation policy.[14]

2.4.1.2 Surface Transportation Board

The STB is an independent adjudicatory body organizationally housed within the USDOT, and it makes independent rulings regarding certain surface transportation economic regulatory matters. The STB's jurisdiction includes railroad rates and service issues, rail restructuring transactions, labor matters, data collection, abandonments, and operational oversight.[15]

2.5 PIPELINES

Approximately 37,000 miles of pipelines move natural gas, crude oil, refined petroleum products, and highly volatile liquids, flammable liquids, and toxic liquids throughout Kentucky. **Figure 2-9** illustrates the locations of pipelines in Kentucky and **Table 2-3** lists the pipeline mileage by commodity in 2013. Ninety-seven percent of these pipelines transported natural gas, and the miles of natural gas transmission pipelines are among the highest of any state in the Southeast. The remaining pipelines

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[13] *Kentucky Transportation Cabinet, 2015 Kentucky Statewide Rail Plan, 2015.*

[14] *Federal Railroad Administration, https://www.fra.dot.gov/Page/P0002, Accessed on February 11, 2016.*

[15] *Surface Transportation Board, http://www.stb.dot.gov/stb/about/overview.html, Accessed on February 11, 2016.*

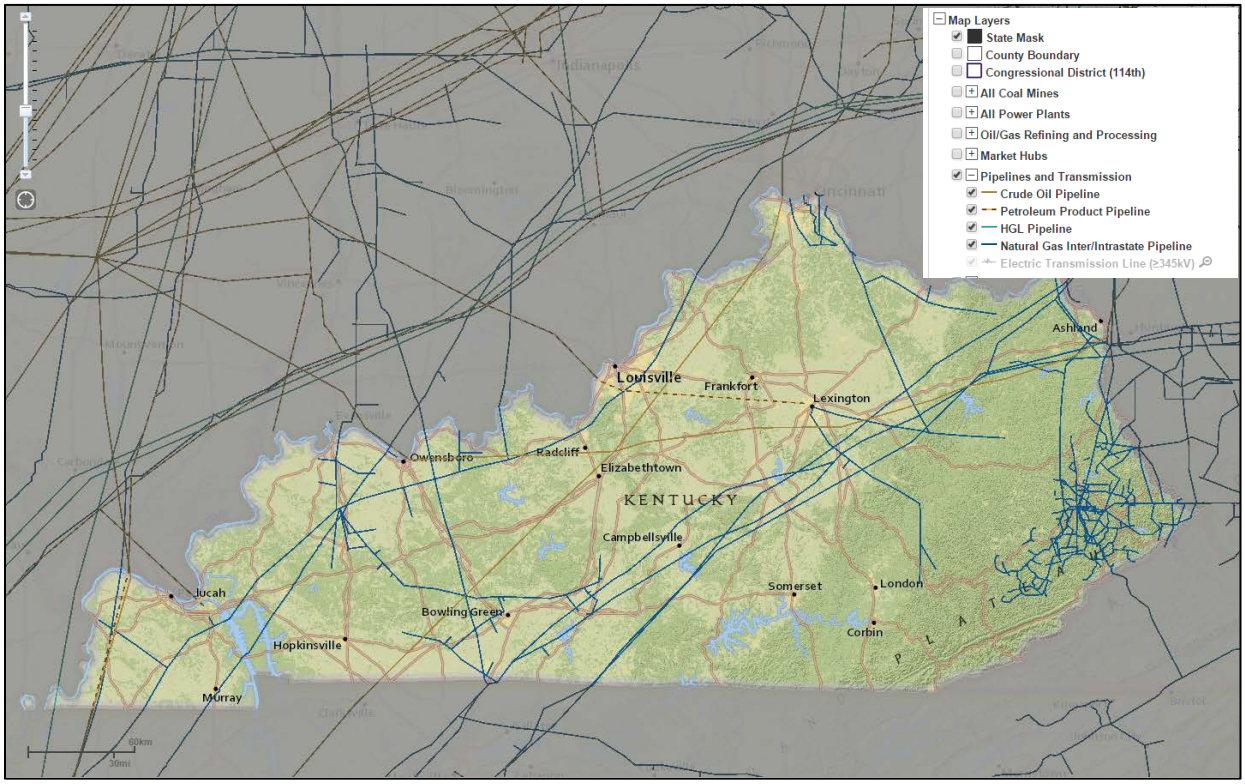
transported hazardous liquids, which are crude oil, refined petroleum products, and highly volatile liquids, flammable liquids, and toxic liquids.

Table 2-4: Kentucky Pipeline Mileage by Commodity, 2013

Commodity	Pipeline Miles
Natural Gas	Transmission: 6,839 miles Gathering: 398 miles Distribution – Mains: 18,176 miles Distribution – Service: 10,679 miles 36,092
Crude Oil	550
Refined Petroleum Products*	92
Highly Volatile Liquids, Flammable Liquids, and Toxic Liquids	274
Total Pipeline Miles	**37,008**

Source: http://www.phmsa.dot.gov/pipeline/library/datastatistics/pipelinemileagefacilities, Accessed on May 28, 2015
*Notes: *Refined petroleum products are obtained by distilling and processing crude oil that are liquid at ambient conditions.*

Figure 2-9: Locations of Pipeline in Kentucky



Source: U.S. Energy Information Administration, State Profile and Energy Estimates, Retrieved November 11, 2015

The pipeline operators—of natural gas transmission, crude oil, refined petroleum products, and highly volatile liquids, flammable liquids, and toxic liquids—in Kentucky for 2013 are shown in **Table 2-4**. Columbia Gas Transmission, LLC; Columbia Gulf, LLC; Tennessee Gas Pipeline Co. (TGP); Texas Eastern Transmission LP (Spectra Energy Corp); and Texas Gas Transmission, LLC accounted for 74 percent of the operators for natural gas pipelines. Marathon Pipe Line, LLC and Mid-Valley Pipeline Co. accounted for nearly 100 percent of the operators for crude oil pipelines. BP Pipeline (North America),

Inc. and Marathon Pipe Line, LLC accounted for 96 percent of the operators for refined petroleum products pipelines. Markwest Ranger Pipeline Company, LLC accounted for 86 percent of the operators for highly volatile liquids, flammable liquids, and toxic liquids pipelines.

Table 2-5: Kentucky Pipeline Mileage for Natural Gas Transmission, Crude Oil, Refined Petroleum Products, and Highly Volatile Liquids, Flammable Liquids, and Toxic Liquids by Operator, 2013

Commodity	Operator Name	Total Miles	% of Total
Natural Gas Transmission	ANR Pipeline Co.	278.1	3.59%
	Apache Gas Transmission	18.0	0.23%
	Atmos Energy Corporation - Atmos Gathering Company, LLC	3.4	0.04%
	Atmos Energy Corporation - Atmos Pipeline And Storage, LLC	40.2	0.52%
	Atmos Energy Corporation - KY/Mid-States (Kentucky)	207.0	2.67%
	Big Sandy Pipeline, LLC	67.2	0.87%
	Breitburn Operating LP	8.0	0.10%
	Century Aluminum	13.0	0.17%
	Chesapeake Appalachia, LLC	1.9	0.02%
	Columbia Gas Of Kentucky, Inc.	57.9	0.75%
	Columbia Gas Transmission, LLC	583.0	7.52%
	Columbia Gulf Transmission, LLC	716.0	9.23%
	Continuum Midstream, LLC	0.6	0.01%
	Delta Natural Gas Co., Inc.	146.0	1.88%
	Duke Energy Kentucky	53.1	0.68%
	East Kentucky Power Corporation	6.7	0.09%
	Elizabethtown Natural Gas	2.2	0.03%
	EQT Midstream	30.2	0.39%
	Indiana Gas Co., Inc.	27.7	0.36%
	Jefferson Gas, LLC	44.0	0.57%
	K O Transmission Co.	51.5	0.66%
	K. Petroleum, Inc.	0.1	0.00%
	Kentucky Utilities Co.	11.0	0.14%
	Louisville Gas & Electric Co.	371.9	4.80%
	Magnum Hunter Production, Inc.	1.0	0.01%
	Midwestern Gas Transmission Co.	94.4	1.22%
	Monument Chemical Kentucky, LLC	58.0	0.75%
	Natural Gas Of Kentucky, Inc.	24.0	0.31%
	Orbit Gas Transmission, Inc.	7.3	0.09%
	Paducah Power System	16.0	0.21%
	Riverside Generating Co., LLC	9.2	0.12%
	Somerset Gas Service	53.8	0.69%
	Tennessee Gas Pipeline Co.	1,613.8	20.81%
	Texas Eastern Transmission LP (Spectra Energy Corp)	692.3	8.93%
	Texas Gas Transmission, LLC	1,423.7	18.36%
	Trunkline Gas Co.	103.2	1.33%
	Vinland Energy Operations	0.1	0.00%
	Westlake PVC Corporation	3.2	0.04%

Commodity	Operator Name	Total Miles	% of Total
Crude Oil	Countrymark Refining And Logistics, LLC	0.5	0.01%
	Marathon Pipe Line, LLC	320.5	4.13%
	Mid - Valley Pipeline Co.	229.0	2.95%
Refined Petroleum Products	BP Oil Pipeline Co.	1.0	0.01%
	BP Pipeline (North America), Inc.	97.0	1.25%
	Enterprise Products Operating, LLC	9.4	0.12%
	Marathon Pipe Line, LLC	166.8	2.15%
HVL Flam Toxic	Duke Energy Kentucky - Liquid	2.9	0.04%
	Enterprise Products Operating, LLC	9.9	0.13%
	Marathon Pipe Line, LLC	0.2	0.00%
	Markwest Ranger Pipeline Company, LLC	78.7	1.01%
	Total Pipeline Mileage	**7,754.6**	**100%**

Source: http://www.phmsa.dot.gov/pipeline/library/datastatistics/pipelinemileagefacilities, Accessed on May 28, 2015

The U.S. Energy Information Administration (EIA) maintains a database that provides information on the size and location of natural gas pipeline projects announced or under construction. In April 2015, one future expansion project, called the Broad Run Expansion Project, was announced in Kentucky, to be operated by TGP.[16] The anticipated in-service date is November 2017.[17]

Kentucky's pipeline network connects to roadways at truck/pipeline terminals where commodities are transferred from pipelines to trucks for further transport on the Kentucky Freight Network. FHWA classifies public roads leading to major intermodal facilities as NHS intermodal connectors, and they account for less than 1 percent of the NHS mileage. In Kentucky, three NHS intermodal connectors provide access to pipeline terminals: Bells Lane Petroleum/Chemical Pipeline in Louisville, Campground Road Petroleum Pipeline in Louisville, and Louisville/Ashland Oil/Chevron Distribution Center in Lexington.[18]

2.5.1 Pipeline Governance

Much like railroads, pipelines are privately owned. They are regulated at the federal level by the Pipeline and Hazardous Materials Safety Administration (PHMSA), while at the state level, Kentucky Public Service Commission (PSC) regulates the pipelines. Below are brief descriptions for the PHMSA and Kentucky PSC.

2.5.1.1 Pipeline and Hazardous Materials Safety Administration

The PHMSA is organizationally housed in the USDOT and has regulatory responsibility for hazardous liquid and gas pipeline transport in the U.S. Federal regulations include minimum standards for safety in design, construction, inspection, testing, operation, and maintenance of pipelines. States are certified by

[16] *U.S. Energy Information Administration. http://www.eia.gov/naturalgas/data.cfm#pipelines, Accessed May 28, 2015.*
[17] *http://news.kindermorgan.com/press-release/all/tennessee-gas-pipeline-announces-successful-open-season, Accessed on May 28, 2015.*
[18] *Federal Highway Administration, http://www.fhwa.dot.gov/planning/national_highway_system/intermodal_connectors/kentucky.cfm, Accessed on May 28, 2015.*

PHMSA to inspect and enforce pipeline safety regulations for intrastate pipeline operators. In Kentucky, the Pipeline Safety Branch of the Kentucky PSC performs this inspection and enforcement.[19]

2.5.1.2 Kentucky Public Service Commission

In 1970, the Kentucky General Assembly selected the Kentucky PSC as the state agency to enforce federal and state pipeline safety laws and regulations for intrastate natural gas transmission pipelines. The Kentucky PSC has jurisdiction over 32 intrastate pipeline operators. The cost of Kentucky's state pipeline safety program is federally reimbursed by up to 80 percent.[20]

2.6 Air Cargo

Fifty-eight public use airports are located throughout Kentucky providing commuter, private passenger, and/or cargo services. Kentucky's primary air cargo handling airports are Louisville International Airport and Cincinnati/Northern Kentucky International Airport. According to the Airports Council International – North America (ACI-NA), both airports were ranked in the top 15 in North America and top 50 in the world in terms of total air cargo tonnage in 2013 (**Table 2-5**).[21] The Federal Aviation Administration (FAA) ranked the two airports in the top 10 of cargo services airports in the U.S. in terms of landed weight for 2013 (Louisville International Airport at 3rd and Cincinnati/North Kentucky International Airport at 8th).[22] While the FAA maintains a database for air cargo landings within the U.S., ACI-NA's database accounts for worldwide air cargo activity.

Table 2-6: Kentucky Air Cargo Airports, 2009 and 2013 Cargo Tonnage and Rank

ID	Airport Name	2009 Total Cargo Tonnage*	2013 Total Cargo Tonnage*	2009-2013 CAGR**	North American Rank 2013	Global Rank 2013
SDF	Louisville International Airport	1,949,528	2,216,079	3.26%	3rd	7th
CVG	Cincinnati/Northern Kentucky International Airport	133,125	590,630	45.13%	12th	40th

*Note: *Total Cargo – loaded and unloaded freight and mail in metric tons. **CAGR=Compound Annual Growth Rate. Source: Airports Council International – North America (ACI-NA)*

In 2013, Louisville International Airport and Cincinnati/Northern Kentucky International Airport handled over 2.8 million tons of total air cargo, representing an increase of 7.74 percent annually since 2009. The majority of the total tonnage handled during this time period occurred at Louisville International Airport. However, the Cincinnati/Northern Kentucky International Airport experienced the fastest growth by total tonnage at 45.13 percent annually.

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[19] *Pipeline and Hazardous Materials Safety Administration. http://primis.phmsa.dot.gov/comm/StatePages/Kentucky.htm, Accessed on May 28, 2015.*

[20] *Kentucky Public Service Commission. http://www.psc.state.ky.us/Home/PipelineSafety. Accessed on May 28, 2015.*

[21] *Airports Council International – North America, http://www.aci-na.org/content/airport-traffic-reports, Accessed on June 4, 2015.*

[22] *Federal Aviation Administration, http://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/previous_years/#2013, Accessed on February 16, 2016.*

2.6.1 Louisville International Airport

Louisville International Airport (SDF) is the primary commercial airport serving the Louisville metropolitan area and attracts travelers from central portions of Kentucky and southern Indiana. It is the busiest airport in Kentucky regarding annual air cargo tonnage, and it is home to Worldport, the worldwide hub of United Parcel Service, Inc. (UPS). In 2013, 2.2 million tons of freight and mail were handled through this airport. Air cargo carriers benefit from several of Louisville International Airport's competitive advantages, such as central location in the U.S., direct access to the Interstate Highway System via I-65 and I-264, and three runways.

2.6.1.1 United Parcel Service Worldport

In 2002, UPS opened Worldport at Louisville International Airport as its international air express hub and the home base of its air cargo operations. In April 2010, UPS completed a $1 billion expansion that increased sorting capacity by 37 percent to 416,000 packages per hour. The Worldport is now 5.2 million square feet with 155 miles of conveyor belts to sort packages.

More than 150 companies have cited Worldport as a reason for moving their business facilities and operations to Louisville. The mega-hub is also less than 2 miles from UPS's largest Supply Chain Solutions campus in the world.[23]

2.6.2 Cincinnati/Northern Kentucky International Airport

The Cincinnati/Northern Kentucky International Airport (CVG) is the primary commercial airport serving the Cincinnati metropolitan area. It is the second busiest airport in Kentucky for annual air cargo tonnage and serves as one of DHL's three global hubs. In 2013, 590,630 tons of freight and mail were handled through this airport.

The Cincinnati/Northern Kentucky International Airport is located on approximately 7,000 acres in the City of Hebron. The airport consists of three parallel runways and one crosswind runway, and each runway is served by at least one parallel taxiway. Direct access to the Interstate Highway System via I-75 and I-275 is one of the major benefits of this airport for air cargo carriers.

2.6.2.1 DHL

Since 2009, DHL has invested nearly $300 million in upgrading its operations at the airport to establish a "super hub," one of only three worldwide and the only one in the U.S. DHL's other global "super hubs" are located in Hong Kong and Leipzig, Germany. About 92 percent of the company's volume in the U.S. moves through CVG. Currently ranked as the ninth largest cargo airport in North America, CVG experienced an 11.3 percent increase in cargo tonnage for year-end 2015.[24]

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[23] *Louisville Regional Airport Authority. http://www.flylouisville.com/about-the-airport/, Accessed on July 2, 2015.*

[24] *http://www.northernkentuckyusa.com/newsroom/2015/05/28/dhl-express-plans-108-million-expansion-in-northern-kentucky.aspx, Accessed on July 2, 2015.*

2.6.3 Aviation Governance

Kentucky public airports are governed by regional airport authorities or local boards. A local board is established by any urban-county government, city, county, or city and county acting jointly, or any combination of two or more cities, counties, or both.[25] Airports are regulated by the U.S. Customs and Border Protection (CBP) and the FAA at the federal level, and by the Kentucky Department of Aviation at the state level. Below are brief descriptions for the CBP, FAA, and Kentucky Department of Aviation.

2.6.3.1 U.S. Customs and Border Protection

The CBP is the largest law enforcement agency of the U.S. Department of Homeland Security. The agency's primary mission is to oversee U.S. borders, ports, and other points of entry to protect the public from terrorist threats and illegal trade and traffic. Regarding aviation, CBP has regulatory authority to limit the locations where a private aircraft entering the U.S. from a foreign area may land. Louisville International Airport, Cincinnati/Northern Kentucky International Airport, and Lexington Blue Grass Airport are the airports in Kentucky designated for CBP inspection services.[26]

2.6.3.2 Federal Aviation Administration

The FAA is the operating mode of the USDOT responsible for the safety of civil aviation. The FAA's major roles include:

- Regulating civil aviation to promote safety
- Encouraging and developing civil aeronautics, including new aviation technology
- Developing and operating a system of air traffic control and navigation for both civil and military aircraft
- Researching and developing the National Airspace System and civil aeronautics
- Developing and carrying out programs to control aircraft noise and other environmental effects of civil aviation
- Regulating U.S. commercial space transportation

In the pursuit of safety, the FAA issues rules and sets standards for both aeronautical equipment and people working in the aviation field.[27]

2.6.3.3 Kentucky Department of Aviation

The Kentucky Department of Aviation is one of the KYTC departments that provides support and service to the 62 public airports, 83 private runways, and 54 heliports within Kentucky. This department administers state and federal funding for airport maintenance and capital improvement projects.[28]

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[25] *Kentucky Legislature, http://www.lrc.ky.gov/statutes/statute.aspx?id=44638, Accessed on February 16, 2016.*

[26] *U.S. Customs and Border Protection, http://www.cbp.gov/sites/default/files/documents/20140327%20Airports%20where%20CBP%20Inspection%20Services%20are%20Normally%20Available.doc.pdf, Accessed on February 16, 2016.*

[27] *Federal Aviation Administration, https://www.faa.gov, Accessed on February 16, 2016.*

[28] *http://kentucky.gov/government/Pages/AgencyProfile.aspx?AgencyTitle=Aviation,+Department+of, Access on February 16, 2016.*