



# Rail Freight Modal Profile



**WEST VIRGINIA STATE  
FREIGHT PLAN**



**November 2023**

*Tech Memo*

# West Virginia State Freight Plan

## *Rail Freight Modal Profile*

*prepared by*

**Cambridge Systematics, Inc.**

*with*

**Mott MacDonald**

*date*

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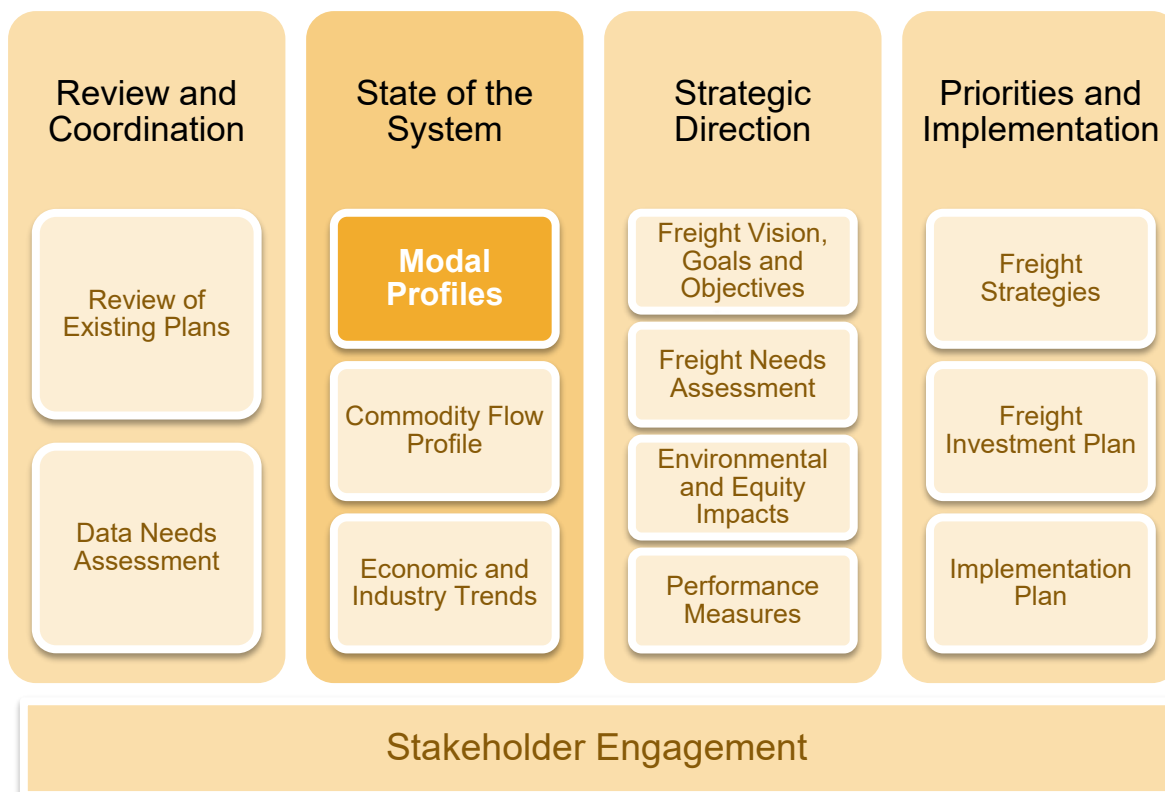
# 1.0 RAIL FREIGHT MODAL PROFILE INTRODUCTION

## 1.1 Overview of the Plan

In 2022, the West Virginia Department of Transportation (WVDOT) began its update of the West Virginia State Freight Plan. This Plan will fulfill federal requirements for state freight planning, identify opportunities for West Virginia to invest in its freight system, and position WVDOT to take full advantage of federal formula and discretionary funding programs for freight transportation investments. Additionally, the Plan will detail freight activity, needs, and priorities, and support WVDOT in meeting the agency's overall goals as well as those of this Plan.

The purpose of this *Rail Freight Modal Profile* is to identify West Virginia's existing rail freight assets and their use, and assess their performance and condition. Documenting existing challenges helps identify strategies and solutions to aid the state going forward. It is one of many complementary technical activities that will be developed as part of this planning process. The overall process is shown in Figure 1.1, and will be developed in conjunction with a robust stakeholder engagement effort that will support the data driven aspects of this Plan.

**Figure 1-1 West Virginia State Freight Plan Technical Activities**



## 1.2 West Virginia Freight Transportation Vision and Goals

The Vision of the West Virginia State Freight Plan is as follows:

**THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION'S MISSION IS TO RESPONSIBLY PROVIDE A SAFE, EFFICIENT AND RELIABLE TRANSPORTATION SYSTEM THAT SUPPORTS ECONOMIC OPPORTUNITY AND QUALITY OF LIFE.**

WVDOT will achieve this vision through the following goals:

- **System Condition, Efficiency, and Fiscal Sustainability:** Maintain multimodal and intermodal freight transportation infrastructure in a state of good repair and manage lifecycle costs; efficiently deliver projects, programs and services supporting goods movement; and work to maintain existing funding mechanisms while exploring new alternative and sustainable funding mechanisms.
- **Safety and Security for All Users:** Reduce transportation fatalities and serious injuries involving freight vehicles, improve the safety and security of drivers, cargo, and intermodal facilities, and improve the resilience of the freight system particularly to severe weather events and other disruptions.
- **Economic Vitality:** Strengthen the ability of communities and industries to access national and international trade markets, retain and grow existing WV statewide and regional economic focus sectors, and support regional economic development that will diversity WV's economy.
- **Multimodal Mobility, Reliability, and Accessibility:** Facilitate freight mobility and connections for on-demand and reliable goods delivery across all West Virginia communities, including critical services such as health care and emergency management.
- **Livable and Healthy Communities:** Create freight transportation systems that operate efficiently and cleanly, protect the natural environment and maintain access for residents and visitors to experience WV's natural and cultural destinations.

## 1.3 Rail Profile Overview and Organization

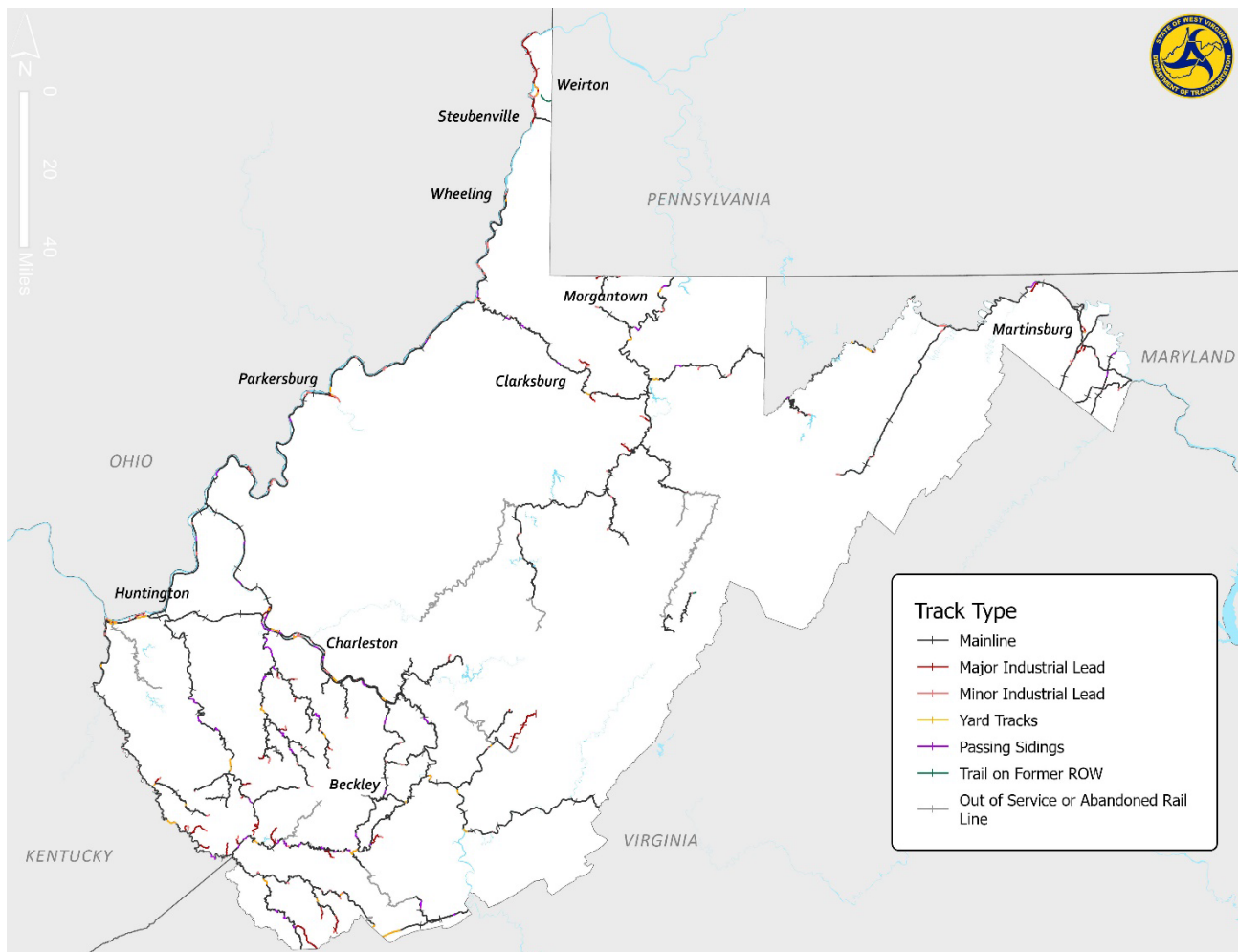
This rail profile provides an overall picture of the state of West Virginia's freight rail system in 2023. There are five sections covering topics spanning freight rail infrastructure to relevant industry trends and safety. The following sections detail key features and metrics related to these topics. Specifically, a comprehensive freight rail inventory is provided in Section 2. Information regarding freight rail trends is provided in Section 3, including a discussion about existing and future freight rail demand. Section 4 includes an assessment of the existing conditions and performance of West Virginia's freight rail lines, including a review of the industries that rely on freight rail in the state, and potential areas for improvement. Finally, Section 5 of this profile describes safety metrics, including the number and type of incidents, as well as available interventions to improve safety.

## 2.0 RAIL FREIGHT NETWORK INVENTORY

### 2.1 Overview of Freight Railroads in West Virginia

Rail is central to West Virginia's history and culture and serves as a link between West Virginia's industries and the nation's population centers. West Virginia's rail network consists of privately owned and operated railroads as well as contractor-operated, and state-owned and operated railroads. This section presents an inventory of the rail system in West Virginia as it relates to freight, including connections to major freight generators and freight-specific components of the railway system. Figure 2-1 below depicts West Virginia's network of rail lines ranging from branch lines that serve West Virginia businesses to main lines that link the state with the national rail network.

**Figure 2-1 West Virginia Railway System**



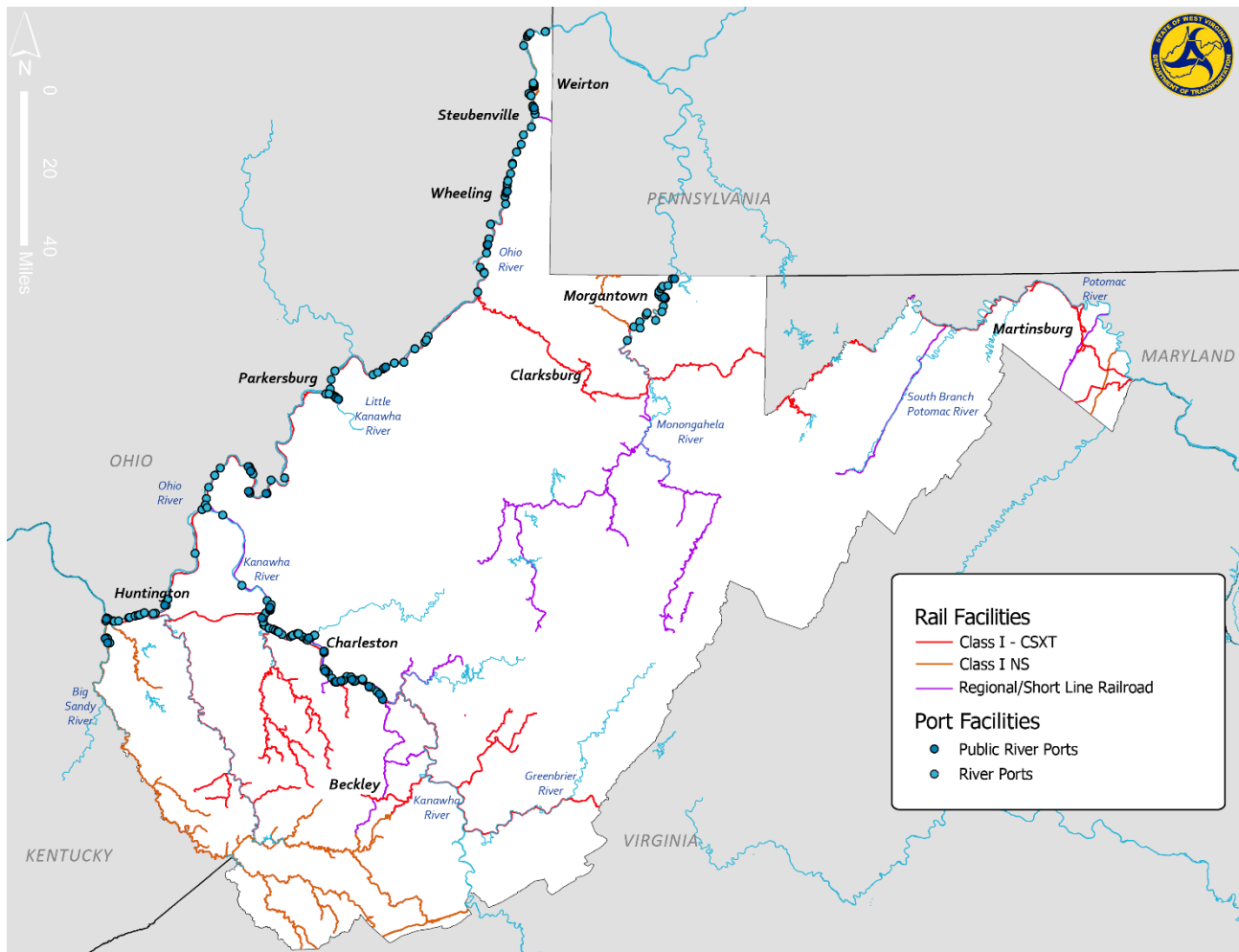
West Virginia is home to 11 freight railroads covering a total of 2,123 route miles<sup>1</sup>. These railroads carry goods traveling through West Virginia from neighboring states and freight with origins and destinations within

<sup>1</sup> <https://www.aar.org/wp-content/uploads/2021/02/AAR-West-Virginia-State-Fact-Sheet.pdf>

the state. Most freight movements originating in West Virginia entail the transport of coal out of the state, with the Association of American Railroads (AAR) estimating that 46 million tons and 393,500 carloads of coal originated in West Virginia in 2021. Other commodities transported in the state by rail comprised a much smaller fraction of the total tonnage and include chemicals, petroleum products, nonmetallic minerals, and other bulk commodities.

West Virginia's freight rail network connects industries, largely coal extraction, originating from within West Virginia to major regional centers in adjacent states. These areas include the port cities of Norfolk, VA and Baltimore, MD as well as inland locations such as Columbus and Cincinnati, OH, along with urban areas on the shores of Lake Erie. Within West Virginia, the freight rail network also serves the urbanized areas of Charleston, Huntington and Parkersburg, as well as the eastern city of Martinsburg in Berkeley County. Major port connections within the state include the Huntington Tri-State Port located in Cabell County, and the Mid-Ohio Valley Port in Wood County (see Figure 2-2 below). While coal continues to be a major export from West Virginia, as some areas within the state transition from an economy based on natural resources to a tourism-based economy, the rail network has been used in support of the growing tourism industry.

**Figure 2-2 West Virginia Railway System Port Connections**



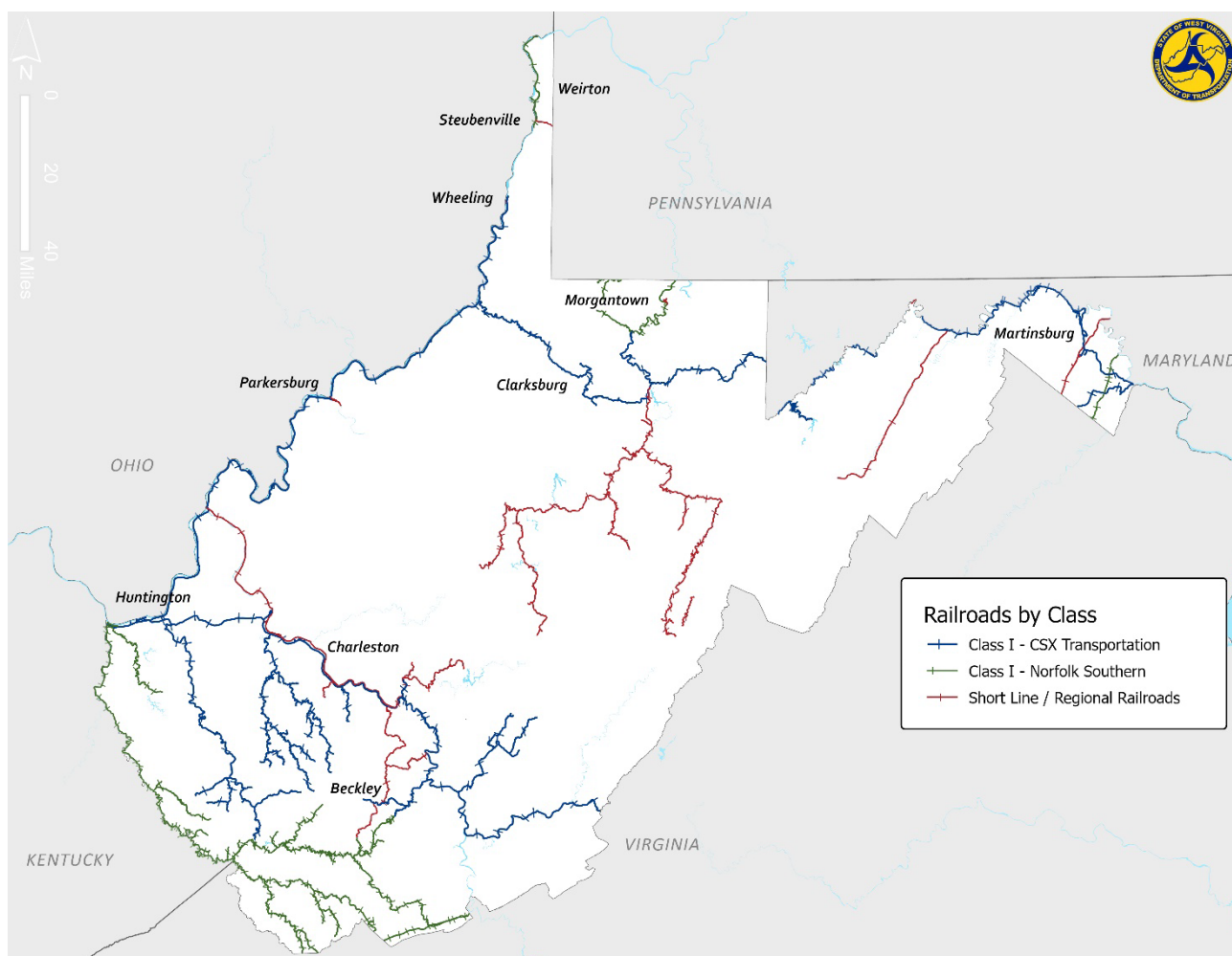
## 2.2 West Virginia Railroad Network by Classification

Railroads are commonly categorized in three ways: by revenue, by traffic volume, and by network size. For freight railroads, the most common classification is by revenue, with classifications defined by the Federal Surface Transportation Board (STB). Under this classification system and using 2021 threshold criteria, freight railroads are categorized as follows:<sup>2</sup>

|                               |                                                                                                                                                                       |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Class I</b>                | Railroads generating more than \$943.9 million in revenue,                                                                                                            |
| <b>Class II (Regional)</b>    | Railroads generating between \$42.4 million and the Class I threshold, or railroads that operate at least 350 track miles with revenues of at least \$20 million, and |
| <b>Class III (Short Line)</b> | Railroads that are neither Class I or Class II.                                                                                                                       |

Figure 2-3 below depicts the railroads in West Virginia by class.

**Figure 2-3 West Virginia Railroads by Classification**



In 2021, two Class I Railroads, CSX Transportation (CSXT) and Norfolk Southern Corp. (NS), operated a total of 1,614 route miles (1,871 including trackage rights) within West Virginia. These Class I railroads

<sup>2</sup> <https://www.stb.gov/reports-data/economic-data/>

operate the vast majority of freight rail trackage in the state, accounting for 78.5% of all route miles. Currently, West Virginia has one regional railroad, Wheeling & Lake Erie Railway, which operates in three route miles via trackage rights. Eight short line railroads operate the remaining freight rail miles. Short line railroads provide connectivity to Class I railroads, creating connections across the state and to the national rail system. Table 2.1 details the freight railroads by class and their miles operated in West Virginia, including trackage rights.<sup>3</sup>

Class I railroads are instrumental in the movement of goods across long distances, often across state lines. Class I railroads typically service larger industries, including many of West Virginia's coal mines. However, short line railroads are key for many mid-size or smaller industries by providing the “first mile” and “last mile” service to and from a Class I connection.

**Table 2-1 West Virginia Track Miles Operated by Railroad STB Class in 2021**

| Freight Railroad                             | Miles Operated (including trackage rights) |
|----------------------------------------------|--------------------------------------------|
| <b>Class I Railroads</b>                     |                                            |
| CSX Transportation                           | 1,253                                      |
| Norfolk Southern Corp.                       | 618                                        |
| <b>Class I Railroads Total Track Miles</b>   | <b>1,871</b>                               |
| <b>Regional Railroads</b>                    |                                            |
| Wheeling & Lake Erie Railway                 | 3                                          |
| <b>Regional Railroad Total Track Miles</b>   | <b>3</b>                                   |
| <b>Short Line Railroads</b>                  |                                            |
| Appalachian & Ohio Railroad                  | 158                                        |
| Beech Mountain Railroad                      | 8                                          |
| Durbin & Greenbrier Valley Railroad          | 90                                         |
| Kanawha River Railroad                       | 204                                        |
| Little Kanawha River Rail                    | 3                                          |
| R.J. Corman Railroad – West Virginia Line    | 16                                         |
| South Branch Valley Railroad                 | 52                                         |
| Winchester & Western Railroad                | 28                                         |
| <b>Short Line Railroad Total Track Miles</b> | <b>509</b>                                 |
| <b>TOTAL MILES OPERATED</b>                  | <b>2,383</b>                               |

Source: <https://www.aar.org/wp-content/uploads/2021/02/AAR-West-Virginia-State-Fact-Sheet.pdf>

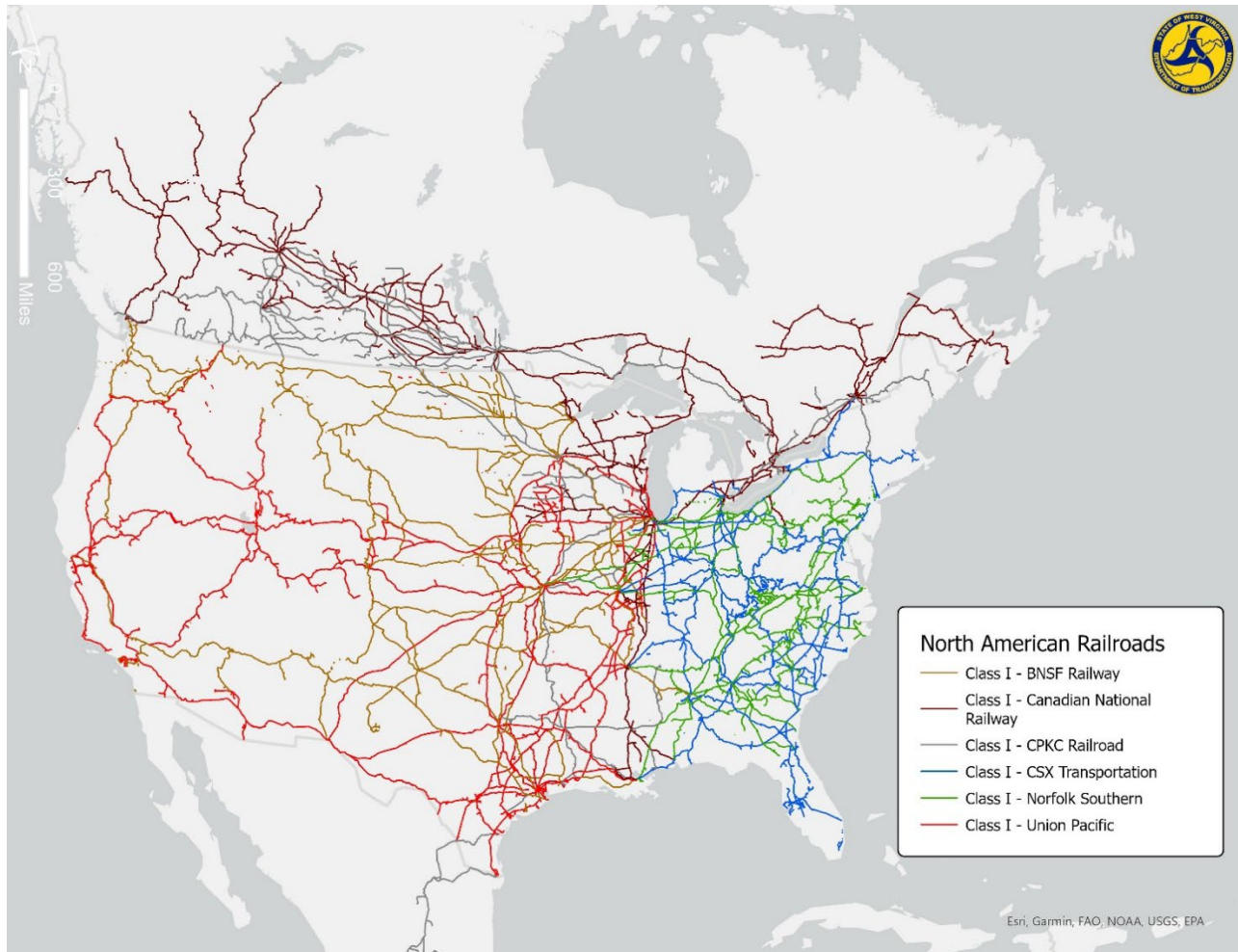
## 2.3 National Rail Network

West Virginia's rail network is an integral component of the North American rail network that provides access to freight transportation across 49 of 50 U.S. states, as well as Canada and Mexico. CSXT and NS interchange at select points throughout the central U.S. with the continent's other Class I railroads, Canadian

<sup>3</sup> <https://www.aar.org/wp-content/uploads/2021/02/AAR-West-Virginia-State-Fact-Sheet.pdf>

National Railway (CN), Canadian Pacific Kansas City Southern (CPKC), Union Pacific Railroad (UP), and BNSF Railway<sup>4</sup> Figure 2-4 below depicts the national rail network in terms of the Class I railroads.

**Figure 2-4 North American Class I Railroad Network**



## 2.4 Rail Facilities Inventory

Rail facilities include all track and civil works that exist within the railway right-of-way. This includes all components of railway tracks, bridges, tunnels, signal systems, freight stations including yards and shops, and transload and intermodal facilities, and can be either publicly or privately owned. Understanding the quantities, locations, owners, and conditions of rail facilities is key to ensuring safe rail transport of a variety of commodities. A complete and accurate rail inventory informs planning efforts for use of railways as well as investments to improve railway safety and efficiency.

<sup>4</sup> <https://stb.maps.arcgis.com/apps/mapviewer/>

### 2.4.1 Class I Freight Railroads

Class I railroads CSXT and NS operate more than three quarters of West Virginia's freight rail network. These railroads are responsible for the long-haul transportation of heavy commodities, including coal. Because these railroads operate interstate and connect to Class II and III railroads, they also connect West Virginia to commodities originating in smaller industries serviced by these smaller railroads. Class I railroads operate along mainlines, or the primary rail lines, as well as secondary lines.

#### CSX Transportation

CSXT is a Class I railroad with an approximately 21,000-mile freight rail network spanning 23 states east of the Mississippi River. Within West Virginia, CSXT operates mainline routes concentrated largely in the state's southern region around the capital, Charleston, with some lines also in northern reaches of the state along or near the Ohio and Pennsylvania borders. The main routes operated by CSXT run through 31 counties, connecting the Baltimore, Blue Ridge, Central, Eastern, Pittsburgh, Southern East, and Southern West divisions and 24 subdivisions along 1,125 mainline route miles. CSXT's major transport routes connect eastward towards Pittsburgh, PA and the Baltimore, MD and Washington, D.C. area, westward towards Cincinnati, OH and northward to the Lake Erie metropolitan areas such as Cleveland, OH.

CSXT operates eight rail yards handling carload traffic within West Virginia. Rail yards are facilities where trains are staged to serve local and distant markets. CSXT also operates a locomotive heavy repair shop in the City of Huntington, where locomotive repairs, routine inspections, and preventative maintenance are performed. In addition to CSXT's facilities, CSXT serves transload facilities owned by partner transload businesses TRANSFLO in Fairmont, Transload Solutions in Bentwood, and Twin Eagle Sand Logistics in Bridgeport, West Virginia. These facilities support transloading activities of bulk goods such as chemicals, plastics and frac sand. The capacity of these terminals ranges from 42 to 200 cars at any one time.<sup>5</sup>

#### Norfolk Southern

Norfolk Southern (NS) is a Class I railroad with an over 21,000-mile network of freight lines across 22 states located mostly east of the Mississippi. In West Virginia, NS's freight rail lines are concentrated in the southwest region in the vicinity of the state borders with Kentucky and Virginia, with some rail lines also operating along the northern borders with Ohio and Pennsylvania. The mainline routes operated by NS cover 430 route miles spanning 11 counties. The divisions included within NS's primary routes are Blue Ridge, Keystone, Pittsburgh, and Pocahontas. The major NS routes connect West Virginia to key cities in other states including Cincinnati and Columbus, Ohio to the west, and Pittsburgh and Philadelphia, PA to the east.

In addition to main routes, NS operates an additional 275 miles of line that connect to 16 interchanges and yards, including the Heartland Intermodal Gateway in Prichard. NS operates five rail yards within the southwestern municipalities of Kenova, Williamson, Iaeger, Mullens, and Bluefield, in West Virginia. These yards largely support staging for inbound and outbound coal trains. Local freight switching also occurs at these yards.<sup>6</sup>

<sup>5</sup> West Virginia State Rail Plan, 2020

<sup>6</sup> West Virginia State Rail Plan, 2020

## 2.4.2 Class II Regional Railroads

### Wheeling & Lake Erie Railway

Wheeling & Lake Erie Railway Company (WLE) is a Class II railroad owned by the Wheeling Corporation. Operating primarily in Ohio, WLE is the only regional railroad currently serving West Virginia, with three track miles in the northwestern reaches of the state. WLE interchanges with CSXT in Bentwood. WLE's trackage in West Virginia is comprised of an unsignaled single-track railroad with no sidings. This route can handle 286,000-pound gross weight rail cars, and there are no clearance restrictions.<sup>7</sup>

## 2.4.3 Class III Short Line Railroads

### Appalachian and Ohio Railroad

A subsidiary of P & L Transportation, Inc., coal hauler Appalachian & Ohio Railroad (AO) operates a total of 158 route miles between the towns of Grafton and Cowen, West Virginia. On the north end of the network in Grafton, AO interchanges with CSXT. Moving southward along the line, AO also connects to two other short line railroads including Beech Mountain Railroad and R.J. Corman Railroad's West Virginia Line.<sup>8</sup> The AO network serves 14 stations and can accommodate 286,000-pound cars.

### Beech Mountain Railroad

The Beech Mountain Railroad is an independent network that operates eight miles of track within West Virginia. At its single junction located in Alexander, WV, Beech Mountain Railroad connects to AO. The eight-mile stretch runs between the Star Bridge Coal Preparation Plant and the AO interchange along the Left Fork of the Buckhannon River and is comprised of a single-track rail line with no sidings. The route supports 286,000-pound rail cars.<sup>9</sup>

### Durbin & Greenbrier Valley Railroad

Durbin & Greenbrier Valley Railroad (DGVR) is independently owned and operates a total of 40 route miles within West Virginia along the West Virginia Central Railroad (WVCR) line, which also carries passenger excursion trains. The DGVR railroad interchanges with AO at Tygart Junction. The tracks within this network are capable of handling 315,000-pound rail cars.

### Kanawha River Railroad

Kanawha River Railroad (KNWA), a subsidiary of transportation service company Watco, operates 204 miles of freight rail lines in West Virginia. KNWA primarily transports coal, chemicals, cement, aggregates, and metals, with a track capacity of 268,000-pounds per car. Within the state, KNWA has two interchange locations – one in Elmore, WV with NS, and one in Point Pleasant, WV with CSXT. The KNWA rail network

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<sup>7</sup> West Virginia State Rail Plan, 2020

<sup>8</sup> AAR.org

<sup>9</sup> [Short Line Directory - Profile - CSX.com](#)

connects north to Ohio through NS lines.<sup>10</sup> KNWA operates a rail yard in Belle, WV, where local freight switching and staging of coal trains occurs. Watco operates a transload port facility in Nitro, West Virginia where commodities are transferred between rail and truck.

### Little Kanawha River Rail

Little Kanawha River Rail (LKRR) is a three-mile short line railroad independently owned and located in Parkersburg, West Virginia. LKRR serves a business park that houses a variety of industries including photovoltaic silicon, plastics, chemicals, computer, concrete, energy, and environmental industries.<sup>11</sup> The LKRR interchanges to CSXT at Ohio River Junction where a three-track rail yard exists. The LKRR can handle 286,000-pound rail cars.<sup>12</sup>

### R.J. Corman Railroad – West Virginia Line

R.J. Corman Railroad Company, a privately owned railroad services and short line operating company headquartered in Nicholasville, Kentucky, with field locations in 22 states, owns and operates their West Virginia Line (RJCV), consisting of 16 miles of freight rail lines between Pax and the CSXT interchange at Thurmond. The tracks within this line can handle 286,000-pound rail cars. This line transports commodities including coal, ammonia, and ammonium nitrate. There are vertical clearance and oversize load restrictions on this line.<sup>13</sup>

### South Branch Valley Railroad

The South Branch Valley Railroad (SBVR) is owned and operated by the West Virginia State Rail Authority over 52 route miles within the state. The SBVR network begins at the CSXT interchange at Green Spring and extends southward to the end of the rail line in Petersburg. Tracks within the SBVR network can handle 286,000-pound railcars and there are no clearance restrictions. The network includes small switching facilities and a shop facility off the main line in Moorefield. The main building at this shop and the wash bay are used by SBVR to maintain a fleet of nine locomotives. A triangular junction is located near this shop.

### Winchester & Western Railroad

The Winchester and Western Railroad (WW) is owned by rail real estate company OmniTrax and operates 28 miles of track within West Virginia. WW interchanges with CSXT in Martinsburg, West Virginia. The interchange consists of a triangular junction and a spur track capable of staging up to 36 rail cars. The route is cleared for 286,000-pound railcars and there is no signal system. The primary commodities transported by this network through West Virginia originate from a quarry located in Gore, Virginia. Commodities includes sand, cement, lime, asphalt, paper, auto parts, and coal.<sup>15</sup>

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<sup>10</sup> <https://www.watco.com/service/rail/knwa/>

<sup>11</sup> <http://www.lkrrail.com/index.html>

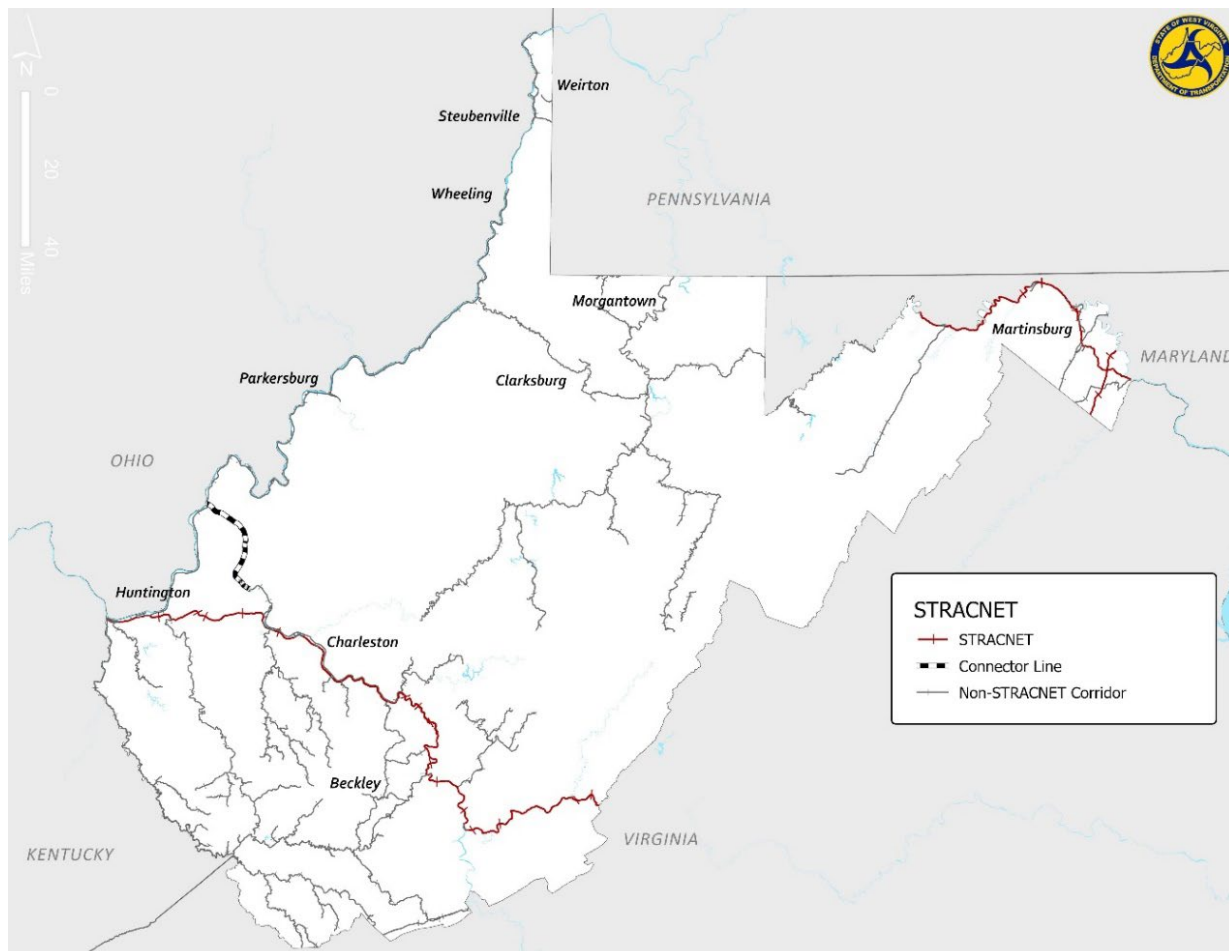
<sup>12</sup> <https://www.csx.com/index.cfm/customers/short-line-and-partner-railroads/short-line-map-and-directory/short-line-directory-profile/?i=LKRR>

<sup>13</sup> West Virginia State Rail Plan, 2020

### 2.4.4 STRACNET Rail Lines

Strategic Rail Corridor Network (STRACNET) is an interconnected and continuous network of over 36,000 route miles serving over 120 defense installations as designated by the Commissioner of the Railroads for the National Defense Program. In general, the rail lines that are designated to be part of STRACNET carry at least 10 million gross tons (MGT) per year. The purpose for selecting heavily trafficked lines for the designation is to ensure that investments needed to maintain and improve the tracks for military security are financially viable and supported by civil (i.e., commercial) use of the lines.<sup>14</sup> Parts of the rail network that run through West Virginia are designated components of the STRACNET as seen in Figure 2-5. Approximately 326 miles of mainline track running through West Virginia are part of STRACNET, with an additional 30 miles designated as connector lines. CSXT, NS, and WW own all of the tracks designated as STRACNET in the state. STRACNET utilizes several divisions and subdivisions of these railroads, running along the Piney Creek and Sewell Valley branches of CSXT and the Winchester Section branch of the WW rail lines. The STRACNET lines have anywhere from one to three main tracks, with Amtrak operations on some.

**Figure 2-5 STRACNET Corridors**



<sup>14</sup> [https://www.sddc.army.mil/sites/TEA/Functions/SpecialAssistant/RND%20Publications/STRACNET%202018\\_Reduced.pdf](https://www.sddc.army.mil/sites/TEA/Functions/SpecialAssistant/RND%20Publications/STRACNET%202018_Reduced.pdf)

### 2.4.5 Summary Inventory of Rail Yards and Facilities

According to the North American Rail Network (NARN) developed by the United States Department of Transportation (USDOT), there are 40 interchanges between railroads in West Virginia. Several of these interchanges function as rail yards. Some of these rail yards are dedicated to a specific industry, while others serve multiple industries and/or network operational needs. The yards are detailed in Table 2-2 below.

**Table 2-2 West Virginia Rail Yards by County**

| County           | Rail Yards           | Railroad |
|------------------|----------------------|----------|
| Brooke / Hancock | Coil                 | NS       |
| Cabell           | Huntington           | CSXT     |
| Hancock          | Weirton Steel        | NS       |
| Harrison         | Clarksburg           | CSXT     |
| Kanawha          | Dickinson            | KNWA     |
| Logan            | Peach Creek          | CSXT     |
| Marion           | Fairmont             | CSXT     |
| Marshall         | Bentwood             | CSXT     |
| McDowell         | Auville (laeger)     | NS       |
| Mingo            | Gilbert              | NS       |
|                  | Williamson           | NS       |
| Monongalia       | Maidsville           | NS       |
| Mercer           | Bluefield            | NS       |
| Wayne            | Ceredo Terminal      | CSXT     |
|                  | Heartland Intermodal | NS       |
|                  | Kenova               | NS       |
| Wood             | Parkersburg          | CSXT     |
| Wyoming          | Elmore               | NS       |

Source: <https://geodata.bts.gov/datasets/north-american-rail-network-lines/explore>

## 2.5 Intermodal

The Heartland Intermodal Gateway, formerly the Prichard Intermodal Facility, is West Virginia's sole intermodal terminal. The facility was constructed by the West Virginia Public Port Authority through an agreement with NS, whose main line connecting the Norfolk, VA port to Columbus, OH, runs adjacent to the site. The facility began operations in 2015 complete with siding tracks, a container transfer area, as well as transloading facilities and office spaces. In 2019, a lack of traffic forced closure of the facility.<sup>15</sup>

<sup>15</sup> <https://www.ttnews.com/articles/once-touted-economic-boon-wva-intermodal-facility-faces-auction-block>

To better involve local stakeholders who are most interested in seeing the facility succeed, West Virginia transferred ownership of the facility to Wayne County in July 2022<sup>16</sup>. Also in 2022, the State created a Division of Multimodal Transportation Facilities, which assumed the former Public Port Authority's responsibilities for this and other rail facilities. Currently Wayne County Commission has received a U.S Economic Development Administration (EDA) grant to develop a strategy for how this facility may be used to support current supply chain needs.

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<sup>16</sup> <https://governor.wv.gov/News/press-releases/2022/Pages/Governor-Justice-and-WVDOT-transfer-Heartland-Intermodal-Gateway-facility-to-Wayne-County-Commission.aspx>

## 3.0 RAIL FREIGHT TRANSPORTATION DEMAND

West Virginia's freight rail network supports the movement of a variety of commodities through and across state boundaries. The current rail network was constructed largely to support the transportation of coal from West Virginia to port cities in neighboring states. As such, many of the freight rail lines and in particular the short lines, support specific users in the coal industry.

On the basis of a forecast included with the FHWA's Freight Analysis Framework (FAF) version 5, freight volumes moving through West Virginia are projected to shift in coming decades, with a decrease in outbound shipments and increase in inbound shipments. The following sections describe the industry trends that influence the transport of freight rail in and around West Virginia.

### 3.1 Current Commodity Flow Analysis

Freight transport is most commonly measured in terms of originated tonnage, dollar value, and ton-miles. According to FAF estimates,<sup>17</sup> commodity flows out of the state (i.e., outbound) comprised the largest proportion of traffic as compared to inbound or intrastate traffic in terms of tonnage and value in 2019. Table 3-1 below depicts the tonnage and value as estimated in the FAF.

**Table 3-1 West Virginia Freight Rail Commodity Flows (2019)**

| Metric                           | Intrastate | Outbound | Inbound |
|----------------------------------|------------|----------|---------|
| <b>Tons</b> (Thousands)          | 12,047     | 33,824   | 6,800   |
| <b>Value</b> (Millions 2019 USD) | \$1,076    | \$2,952  | \$1,632 |

Source: FHWA Freight Analysis Framework 5.1

Reflecting the stature of West Virginia's largest industry, mining, coal is the primary commodity transported by rail in the state. However, other commodities such as natural gas and other fossil products, gravel, natural sands, basic chemicals, base metals, and plastics and rubber, are shipped using West Virginia's freight rail network and this proportion of non-coal commodities is expected to grow as domestic coal use declines. The following tables summarize the top five directional commodities transported by West Virginia's rail network.

**Table 3-2 Top Outbound Rail Commodities (2019)**

| Commodity                             | Tons<br>(Thousands) | % of Total<br>Outbound Tons | Value<br>(\$ Millions) | % of Total<br>Outbound Value |
|---------------------------------------|---------------------|-----------------------------|------------------------|------------------------------|
| Coal                                  | 32,256.10           | 95%                         | \$2,169.90             | 74%                          |
| Natural gas and other fossil products | 800.70              | 2%                          | \$222.20               | 8%                           |
| Gravel                                | 624.10              | 2%                          | \$9.10                 | 0.3%                         |
| Plastics/rubber                       | 295.30              | 1%                          | \$347.90               | 12%                          |
| Waste/scrap                           | 86.10               | 0.3%                        | \$23.50                | 1%                           |

Source: FHWA Freight Analysis Framework 5.1

<sup>17</sup> <https://faf.ornl.gov/faf5/SummaryTable.aspx>. Forecast basis is from Q2 2021.

Table 3-3 Top Inbound Rail Commodities (2019)

| Commodity       | Tons<br>(Thousands) | % of Total<br>Inbound Tons | Value<br>(\$ Millions) | % of Total<br>Inbound Value |
|-----------------|---------------------|----------------------------|------------------------|-----------------------------|
| Coal            | 3,684.90            | 54%                        | \$168.80               | 10%                         |
| Natural sands   | 745.40              | 11%                        | \$17.80                | 1%                          |
| Basic chemicals | 653.00              | 10%                        | \$563.10               | 35%                         |
| Gravel          | 535.00              | 8%                         | \$18.90                | 1%                          |
| Base metals     | 354.70              | 5%                         | \$260.30               | 16%                         |

Source: FHWA Freight Analysis Framework 5.1

Table 3-4 Top Intrastate Rail Commodities (2019)

| Commodity                             | Tons<br>(Thousands) | % of Total<br>Intrastate Tons | Value<br>(\$ Millions) | % of Total<br>Intrastate Value |
|---------------------------------------|---------------------|-------------------------------|------------------------|--------------------------------|
| Coal                                  | 10,837.60           | 90%                           | \$681.20               | 63%                            |
| Gravel                                | 656.80              | 5%                            | \$10.20                | 1%                             |
| Plastics/rubber                       | 366.60              | 3%                            | \$350.90               | 33%                            |
| Natural gas and other fossil products | 143.70              | 1%                            | \$5.10                 | 0.5%                           |
| Base metals                           | 26.90               | 0.2%                          | \$23.10                | 2%                             |

Source: FHWA Freight Analysis Framework 5.1

## 3.2 Future Freight Rail Demand

Many changes to freight logistics have occurred globally since the onset of recent major events, including the COVID-19 pandemic, and the Ukraine conflict that began in February 2022. These events as well as industry and market trends have had a material effect on the national freight system, including West Virginia's freight rail network, and are expected to shape the demand and capacity of the network moving forward.

### 3.2.1 West Virginia Freight Rail Trends

#### Energy

Freight-intensive industries continue to be a primary component of West Virginia's economy, largely driven by the state's involvement in the energy sector. In 2020, West Virginia ranked fourth in the nation for energy production, accounting for 5% of all energy production nationwide. In 2021, West Virginia was the nation's second largest producer of coal, and the largest producer of bituminous coal. Most of this coal is shipped out of state by rail, and West Virginia is a net supplier to states in the region, meaning more coal is shipped out than is consumed in-state.<sup>18</sup> As the United States continues to decrease its reliance on coal for the production of electricity, the utilization of West Virginia's rail network is expected to decrease. While these decreases may be offset by increases in the transport of other commodities, the impact on the state's southern coal production area will differ from that on the northern region of West Virginia. Although coal produced in the northern region has a higher sulfur content and is generally considered to be less desirable

<sup>18</sup> <https://www.eia.gov/state/?sid=WV#tabs-3>

from an emissions standpoint,<sup>19</sup> historically it has experienced a more stable market than coal produced in the south, where production has steadily declined since the 2008 peak.<sup>20</sup>

While the downward trend in the use of coal for domestic electricity production will continue to negatively influence West Virginia's freight rail volumes, increases in natural gas production from the Marcellus, Rogersville, and Utica shale formations offer some offsetting growth opportunities for freight rail. West Virginia is the fourth largest producer of natural gas in the United States,<sup>13</sup> and shipments of supplies related to gas production have increased rail demand in recent years. Class I railroads in West Virginia have been the primary beneficiaries of this shift, with an increase in unit fracturing (frac)-sand trains as well as carloads of inputs required for gas extraction.<sup>14</sup>

## Manufacturing

Manufacturing comprises another economically important sector that relies on carload and intermodal freight rail to transport raw materials and manufactured products. West Virginia's third largest sector (in terms of GDP) after health care and mining, the state has demonstrated strength in automotive, chemicals, metals, aerospace, and food products manufacturing.<sup>21</sup> The automotive industry flourishes in West Virginia due to the existence of a multimodal transportation network, access to essential raw materials, and proximity to key markets. With the transfer of ownership and potential future use of West Virginia's Heartland intermodal facility, opportunity exists to strengthen the utilization of rail service by the automotive industry. The chemicals and polymer industry has also been growing in West Virginia due to accessibility of raw materials derived from oil and natural gas extraction and proximity to regional markets.<sup>22</sup>

### 3.2.2 Future Rail Demand – 2050 Forecasts

For the next 30 years, freight rail demand in West Virginia is expected to shift. Based on the FAF forecasts for the year 2050, rail freight moving in, out and within the state is projected to decline by 44%, although the value is projected to increase 40%. Rail freight tonnage originating and terminating within West Virginia (intrastate) is expected to decrease by 73%. On the other hand, the value of inbound rail freight is projected to grow 106%, more than doubling from 2019 to 2050. Table 3-5 below details the freight rail flows for 2019 and their 2050 projections for West Virginia.

**Table 3-5 West Virginia Projected Freight Rail Commodity Flows – 2019 & 2050**

| Metric                           | 2019       |          |         | 2050       |          |         |
|----------------------------------|------------|----------|---------|------------|----------|---------|
|                                  | Intrastate | Outbound | Inbound | Intrastate | Outbound | Inbound |
| <b>Tons (Thousands)</b>          | 12,047     | 33,824   | 6,800   | 3,304      | 19,274   | 6,659   |
| <b>Value (Millions 2019 USD)</b> | \$1,076    | \$2,952  | \$1,632 | \$1,046    | \$3,486  | \$3,367 |

Source: Freight Analysis Framework v5 (2019-2050).

<sup>19</sup> <https://www.eia.gov/state/analysis.php?sid=WV>

<sup>20</sup> 2020 West Virginia Rail Plan

<sup>21</sup> <https://commerce.wv.gov/wv-forward/discoveries/>

<sup>22</sup> 2020 West Virginia Rail Plan

## 4.0 RAIL NETWORK CONDITION AND PERFORMANCE

Historically West Virginia has been highly dependent on mining, forestry, agriculture, and heavy industry. The rail network was built to support the state's timber industry before coal became the main driver of freight rail traffic. Since 2008, due to a combination of shifting economics for various energy sources and national policy there has been a downward trajectory in the use of coal in the U.S., particularly for electricity production<sup>23</sup>. With this decline, West Virginia's freight rail network will necessarily have to evolve towards handling a broader and more diverse range of commodities besides coal.

Figures 4-1 and 4-2 show the freight rail tonnage and carloads originating, terminating, and moving through West Virginia from 2001 to 2018. Overall, rail traffic associated with industry located in West Virginia has been declining since 2001, while through traffic has remained stable. The net effect is that through traffic accounted for better than 50% of overall rail traffic by 2018. This reflects West Virginia's strategic location between the Atlantic Ocean and the Industrial Midwest.

**Figure 4-1 Historical Freight Rail Tonnage**

Source: STB Confidential Waybill Sample, 2001-2020. 2017 data is incomplete.

<sup>23</sup> <https://www.eia.gov/outlooks/steo/report/coal.php#:~:text=Natural%20gas%20fuels%2038%25%20of,2022%20and%2019%25%20in%202023>

**Figure 4-2 Historical Freight Rail Carloads**

*Source: STB Confidential Waybill Sample, 2001-2020. Data for 2017 is incomplete.*

## 4.1 West Virginia Freight Rail System Capacity & Condition

The capacity and condition of West Virginia freight rail network is critical to the economic health of the state. This section briefly examines select measures that signify a system's short- and longer-term vitality. These measures are as follows: weight capacity, vertical clearances, track conditions, bridges, and network capacity.

### Weight Capacity

Throughout the almost 200-year history of railroading in the United States, improvements in technology have allowed railroads to handle railcars of ever increasing capacity and gross vehicle weights. Rail lines are rated by allowable weight capacity, with the current standard of 286,000 pound gross weight railcars adopted by the Class I railroads in 1995. Railcars designed for the previous standard of 263,000 (263k) pounds have now largely been supplanted by higher-capacity rolling stock and, in some markets and for some commodities, cars with a maximum gross weight of 315,000 pounds are permitted. Rail cars that can accommodate these higher weights offer more cost-effective transportation of dense bulk products, such as coal, benefiting the shippers and receivers and ultimately, the consumers of products made with the shipped materials. West Virginia rail customers that cannot send or receive these heavier cars may face increased shipping costs as well as delays in transit.

Due to the preponderance of coal as the primary commodity that is handled across West Virginia's rail network, most of the state's rail lines can accommodate 286,000 pound railcars. Nevertheless, to ensure the ongoing economic vitality of West Virginia's rail network, the state should set a goal of ensuring that all rail lines meet the 286,000-pound minimum standard.

## Vertical Clearances

Vertical clearance is a major issue affecting the efficiency of moving rail freight across the country, particularly intermodal. By carrying two intermodal containers stacked one on top of the other on a single rail car (i.e., “double-stacking”), railroads can greatly improve the economics of handling intermodal freight through reduced capital costs with rolling stock, main lines and terminals, along with substantial increases in operating efficiency. However, some rail lines are limited in their ability to host double-stack cars by overhead structures and civil works (particularly tunnels) along their rights of way. Addressing these limitations along routes where doublestack intermodal service is desired often requires significant investments.

Presently, several main routes have been cleared for double stack service in West Virginia, most notably CSX’ main line linking Baltimore MD with Pittsburgh PA through Martinsburg, and NS’ route connecting the tidewater region of Virginia and Ohio through Bluefield and Kenova. Beyond the lines that presently handle intermodal traffic, the need for additional double stack cleared routes has not been examined.

## Track Conditions

The Federal Railroad Administration (FRA) has established minimum track safety standards requirements and maintenance levels for railroad operators, which dictate the minimum conditions that are allowable for train operations at given operating speeds. Track classes and maximum permissible speeds are shown in Table 4-1.

**Table 4-1 FRA Track Class and Allowable Maximum Operating Speeds**

| Track Class    | Maximum Allowable Operating Speed (mph) |                  |
|----------------|-----------------------------------------|------------------|
|                | Freight Trains                          | Passenger Trains |
| Excepted Track | 10                                      | Not Allowed      |
| Class 1        | 10                                      | 15               |
| Class 2        | 25                                      | 30               |
| Class 3        | 40                                      | 60               |
| Class 4        | 60                                      | 80               |
| Class 5        | 80                                      | 90               |

Source: U.S. Track Class regulations, 49 CFR § 213.

Rail lines of higher FRA track classification are typically in better condition than rail lines with lower FRA track classification. Track that is rated “Excepted” is considered to be in poor state of repair, while track rated Class 1 is at the bottom of FRA standards. While FRA standards set minimum requirements for operations at given speeds, as a practical matter, railroads must maintain their tracks above the FRA standards to routinely operate at those speeds.

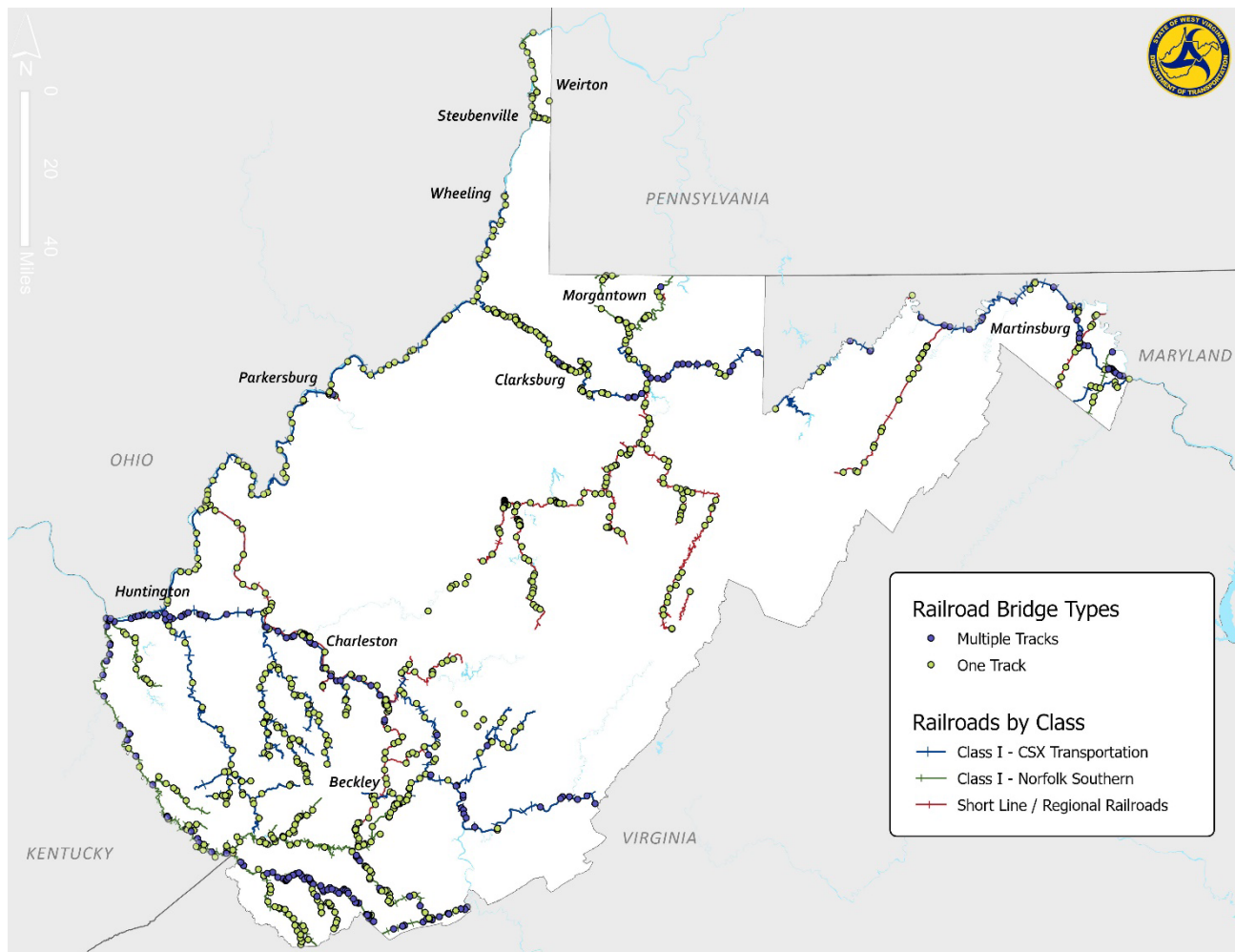
If a line is not maintained sufficiently for trains to operate at the specified track class, then operating restrictions (“slow orders”) must be placed on the tracks. If deficiencies cannot be rectified over a period of time, then permanent slow orders must be imposed on the affected sections, or the track class downgraded to a lower level that is consistent with actual conditions. Thus, the combination of track class and mileage with slow orders imposed are a strong indicator for the physical condition of the rail system.

The vast majority of West Virginia's rail system is maintained at FRA Track Class 3 and 2. The only mileage maintained at Track Class 4 hosts Amtrak's *Capitol Limited* and *Cardinal* long-distance train services.

## Bridges

Railroad bridges are built, designed, and maintained by private sector railroad companies. These bridges are critical to the efficiency and productivity of the rail network. Common bottlenecks include weight and clearance restrictions, as well as slow orders arising from structural deficiencies. Figure 4-3 outlines bridge infrastructure in the state. Bridges impact the performance of freight rail throughout the state.

**Figure 4-3 West Virginia Freight Rail Bridges**



Source: 2020 West Virginia Rail Plan

## Network Capacity

Another measure of rail system performance is the ability of the infrastructure to handle current and projected traffic volumes while meeting service expectations and maintaining efficient operations. At present, West Virginia's rail network has more than adequate physical capacity on its main lines, terminals and yards, primarily as a result of declining traffic volumes in recent years. Additionally, capacity is also

impacted by operating practices and the availability of appropriate labor and rolling stock assets. Typically, these can be adjusted much more rapidly in response to shifts in demand than physical infrastructure, although recent prolonged labor shortages have materially impacted capacity nationally as well as select routes in West Virginia.

## 4.2 Freight Rail Projects Identified for Improvements

West Virginia's 2020 State Rail Plan identified rail projects using the following six goals to help identify projects.

- **Goal 1** - Improving Rail Safety with an emphasis on highway-rail crossings
- **Goal 2** - Establishing a continuing state funding source for railroad revitalization and preservation
- **Goal 3** - Leveraging rail infrastructure as an environmentally favorable alternative to support business development and movement of goods.
- **Goal 4** - Improving and strengthening intercity passenger rail service
- **Goal 5** - Utilizing rail services as part of sustainable tourism for economic development
- **Goal 6** - Preserving and supporting commuter rail service connections to metropolitan areas.

The following freight projects (see Table 4-2) were identified based on these goals.

**Table 4-2 Identified Freight Rail Projects**

| Term      | Project                                                                                                                                                                                     | Owner                           | Railroad                            | Action             |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-------------------------------------|--------------------|
| Immediate | <u>Shop and servicing upgrades</u> – which would improve the safety and efficiency and provide a return of investment by improving an existing facility.                                    | WV State Rail Authority (WVSRA) | South Branch Valley Railroad (SBVR) | Construct and fund |
| Immediate | <u>Rehabilitation of Bridge Decks</u> – which would improve the safety and efficiency of the network and increase a return of investment by extending the service life of existing bridges. | WVSRA                           | South Branch Valley Railroad (SBVR) | Construct and fund |
| Immediate | <u>Bridge 6.5 Bridge Decks</u> – which would improve the safety and efficiency of the network and increase a return of investment by extending the service life of existing bridges.        | WVSRA                           | South Branch Valley Railroad (SBVR) | Construct and fund |
| Immediate | Support the development of new freight rail business opportunities which would support economic development.                                                                                | WVDOT                           | All                                 | Study, Fund        |
| Near      | <u>Locomotive Updates</u> – which would improve the safety and efficiency of the network by extending the service life of existing locomotives and reduce greenhouse gas emissions.         | WVSRA                           | South Branch Valley Railroad (SBVR) | Construct and fund |

| Term | Project                                                                                                                                                                                                                                                                                                        | Owner                                  | Railroad                            | Action              |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|-------------------------------------|---------------------|
| Near | Development of Phase I and II of Hampshire County Industrial Park and Potomac Eagle expansion of depot, shop, restaurant, and hotel. This project would increase rail-related tourism and related economic development through business expansion and help increase rider satisfaction.                        | WVSRA, Hampshire County, Potomac Eagle | South Branch Valley Railroad (SBVR) | PE, Construct, Fund |
| Near | Rural Opportunities to Use Transportation for Economic Success (ROUTES): Follow new USDOT program and identify ways for WV to participate and apply for Federal discretionary grants. This project would improve return on investment by leveraging state funds as a match toward federal grant/loan programs. | WVDOT                                  | All                                 | Policy              |
| Near | Secure dedicated funding to build new rail spurs and to assist with maintenance of existing spurs/rail sidings for economic development. This would support economic development.                                                                                                                              | WVDOTT                                 | All                                 | Fund                |
| Near | Conduct statewide truck route/railroad crossing improvement study. This would improve safety at identified crossings and improve efficiency of travel along affected roadways and improve air quality.                                                                                                         | WVDOT, WVDOH                           | All                                 | Study, Fund         |
| Near | Evaluate need and feasibility for a transload facility in Upper Kanawha Valley. This would support economic development.                                                                                                                                                                                       | WVDOT                                  | Multiple                            | Study, Fund         |
| Long | Reroute of freight line between Harper's Ferry and Reedson; eliminate at-grade crossings and the Bakerton Rd Underpass. This would improve safety by eliminating highway-rail conflicts, improve capacity and on-time performance of both passenger and freight rail on the CSXT line in the Eastern Panhandle | CSXT                                   | CSXT                                | PE, Fund            |
| Long | Increase rail capacity along the Ohio River. This would improve on-time performance of freight and passenger trains, alleviate congestion, improve safety and increase economic development opportunities.                                                                                                     | CSXT                                   | CSXT                                | Study, Fund         |
| Long | Improve rail access within the Morgantown Industrial Park: Identify parcels for development and potential rail extensions; work through state and local economic development authorities. This would enhance economic development.                                                                             | Local, Private                         | NS                                  | Study, Fund         |
| Long | Upgrade Mittal Weirton Yard. This would support economic development.                                                                                                                                                                                                                                          | Private                                | NS                                  | Study, Fund         |

| Term | Project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Owner       | Railroad                   | Action              |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------------|---------------------|
| Long | Improve railroad condition: work with shortlines and assist in applying for Federal grants bringing the state shortline rail system into a state of good repair. This would improve safety and efficiency on shortline railroads; support economic competitiveness through a state of good repair program.                                                                                                                                                                                   | WVDOT/WVSRA | Shortlines                 | Study, Fund         |
| Long | Redevelop rail line that runs through Clay County to Charleston. This would reactivate rail lines to improve economic development opportunities.                                                                                                                                                                                                                                                                                                                                             | TBD         |                            | Study, Fund         |
| Long | Rehabilitation of state-owned line into serviceable track for additional economic impact. Specifically, the line to Beverly from Elkins and the final phase of the West Virginia Central from Spruce to Elk Springs. This would increase return on investment by maximizing usage of existing state-owned rail lines, increase economic development through marketable rail services; increase rail-related and outdoor tourism and related economic development through business expansion. | WVSRA       | WV Central Railroad (WVCR) | PE, Construct, Fund |

Source: 2020 State Rail Plan

## 5.0 SAFETY

Rail safety is of critical importance to West Virginia given some of the highest volume commodities transported by rail are minerals, hazardous materials, and chemicals<sup>24</sup>. Currently West Virginia's Public Service Commission (PSC), which was established in 1975, operates one of the largest state rail inspection programs in the country. West Virginia's PSC conducts track and equipment inspections, operating practices, signal and train control inspections, and hazardous materials inspections. These state officials coordinate with the FRA to ensure the safety of the state rail network.

Nationally rail safety metrics have improved over the last decades. The accident rate for all railroads has declined 44% since 2000, and the hazardous materials accident rate is down 78% since 2000. Railroads continue to maintain a strong safety record through technological investments, equipment maintenance, and a strong safety commitment from their employees<sup>25</sup>.

FRA Rail safety priorities include<sup>26</sup>

- **Goal 1:** Reducing the number and rates of accidents, incidents, injuries, and fatalities involving railroads, including train collisions, derailments, and human factors.
- **Goal 2:** Improving the consistency and effectiveness of enforcement and compliance programs.
- **Goal 3:** Improving the identification of high-risk highway-rail at-grade crossings and strengthening enforcement and other methods to increase at-grade crossing safety.
- **Goal 4:** Improving research efforts to enhance and promote railroad safety and performance.
- **Goal 5:** Preventing railroad trespasser accidents, incidents, injuries, and fatalities.
- **Goal 6:** Improving the safety of railroad bridges, tunnels, and related infrastructure to prevent accidents, incidents, injuries, and fatalities caused by catastrophic failures and other bridge and tunnel failures.

Railroads are responsible for reporting to FRA on a monthly basis any incidents involving:

- Highway-rail at-grade crossings;
- Rail equipment; and,
- Casualties or injuries<sup>27</sup>

Railroads are also responsible for immediate notification to FRA for incidents meeting certain criteria, through the National Response Center. The following sections provide an overview of annual safety metrics for West Virginia which include incidents involving rail equipment, at-grade highway rail crossings, trespassing, and hazardous material (hazmat) releases. The section concludes with a brief discussion on Positive Train Control (PTC).

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<sup>24</sup> West Virginia 2020 Rail Plan

<sup>25</sup> [Freight Rail Safety Record | Association of American Railroads \(aar.org\)](https://www.aar.org/freight-rail-safety-record)

<sup>26</sup> [Microsoft Word - 10-015107 Attachment 1 - Railroad Safety Strategy.doc \(dot.gov\)](#)

<sup>27</sup> [Accident Data, Reporting, and Investigations | FRA \(dot.gov\)](#)

## 5.1 Incidents Involving Rail Equipment

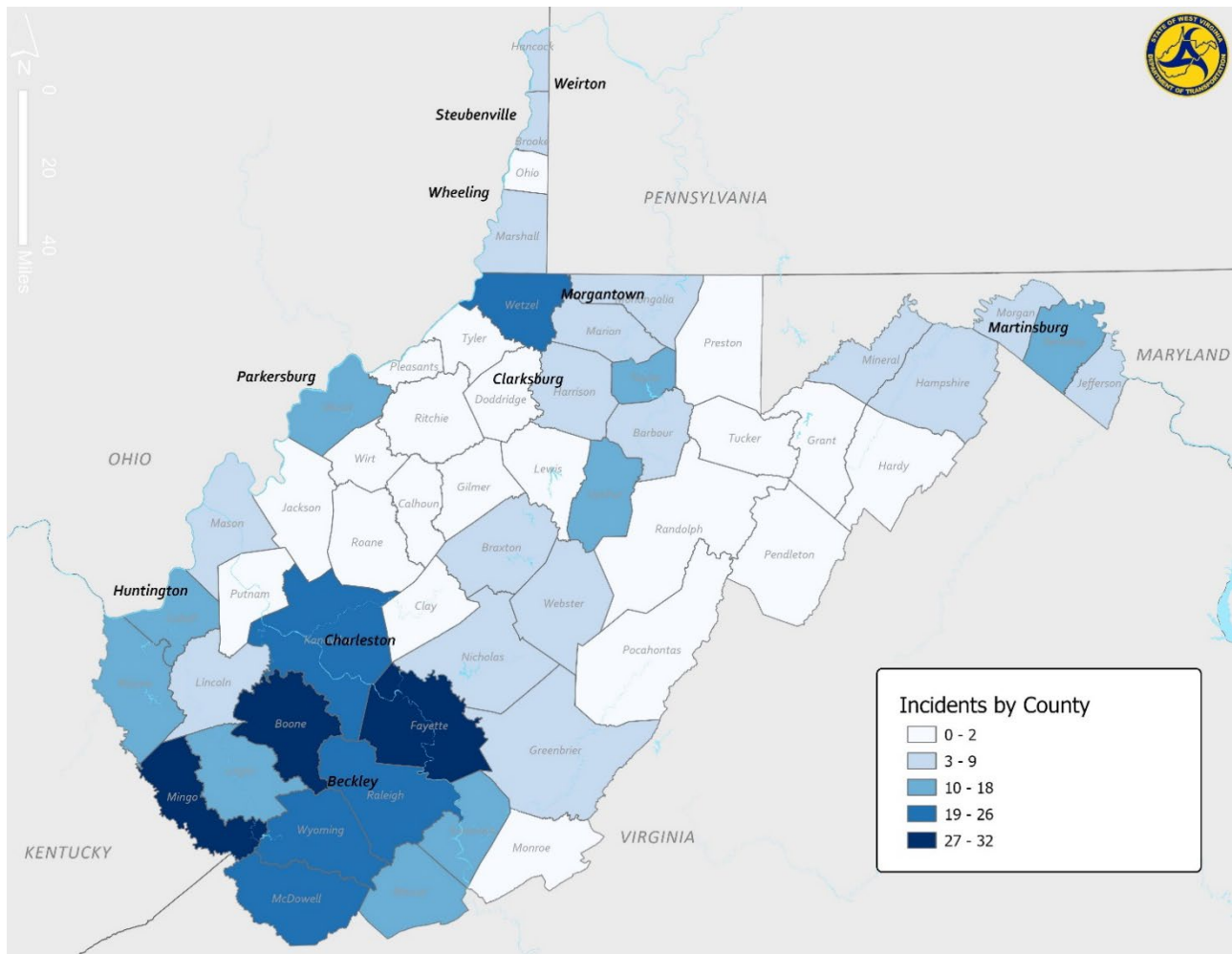
Incidents involving rail equipment are defined as any incidents involving locomotives and other rail-bound rolling stock, track, or other infrastructure within the rail system, with property damage exceeding a specified threshold. Figure 5-1 illustrates the annual number of rail incidents for the entire state of West Virginia.

Incidents within the state of West Virginia are shown by county in Figure 5-2.

**Figure 5-1 Annual Rail Incidents in WV**

Source: FRA

Figure 5-2 Incidents by County



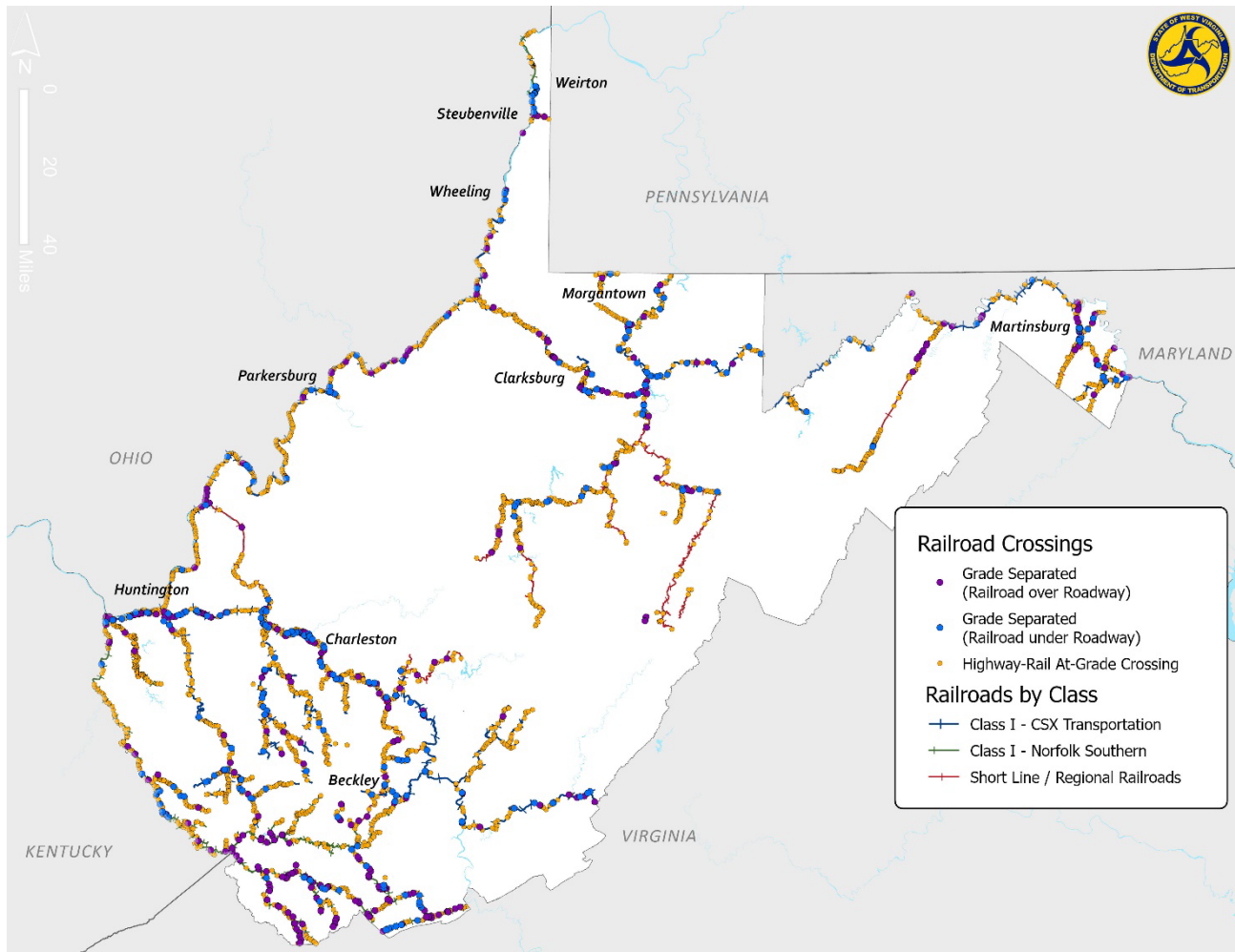
Source: FRA

## 5.2 At-Grade Highway-Rail Crossings

West Virginia's freight rail network follows and intersects with many roadways through at-grade as well as grade-separated rail/highway crossings throughout the state. Figure 5-3 depicts these crossings categorized by those that are at-grade, those in which the railroad passes under the roadway, and those in which the railroad passes over the roadway. In total, West Virginia has 3,753 at-grade-crossings, and slightly more than half involve public roadways (1,882). The majority (3,114) of these crossings are at-grade, while a smaller percentage are crossings where the railroad passes over or under the roadway. Most of the crossings involve roads, however, a handful exist for pedestrian pathways (48) and at stations (3).<sup>28</sup>

<sup>28</sup> <https://data.transportation.gov/Railroads/Crossing-Inventory-Data-Current>

Figure 5-3 West Virginia At-Grade Crossings



Source: 2020 State Rail Plan

Trains have priority at at-grade crossings, principally due to the physical operating characteristics of rail rolling stock, which entail long stopping distances. Therefore, crossings include a range of safety systems. At minimum, they must be equipped with passive warning devices, such as railroad crossing signage and pavement markings. Crossings with higher volumes of highway traffic are also equipped with active warning devices, ranging from flashing lights to various types of gate configurations.<sup>29</sup> Rail crossing location, maintenance, and safety is evaluated by states, with potential crossing improvements typically determined by a division of a state's DOT. The primary source of funding for crossing improvements is FHWA Section 130, which provides grants to states on a formula basis for crossing safety improvements such as installation or upgrading of active warning devices and at-grade crossing surfaces.<sup>36</sup>

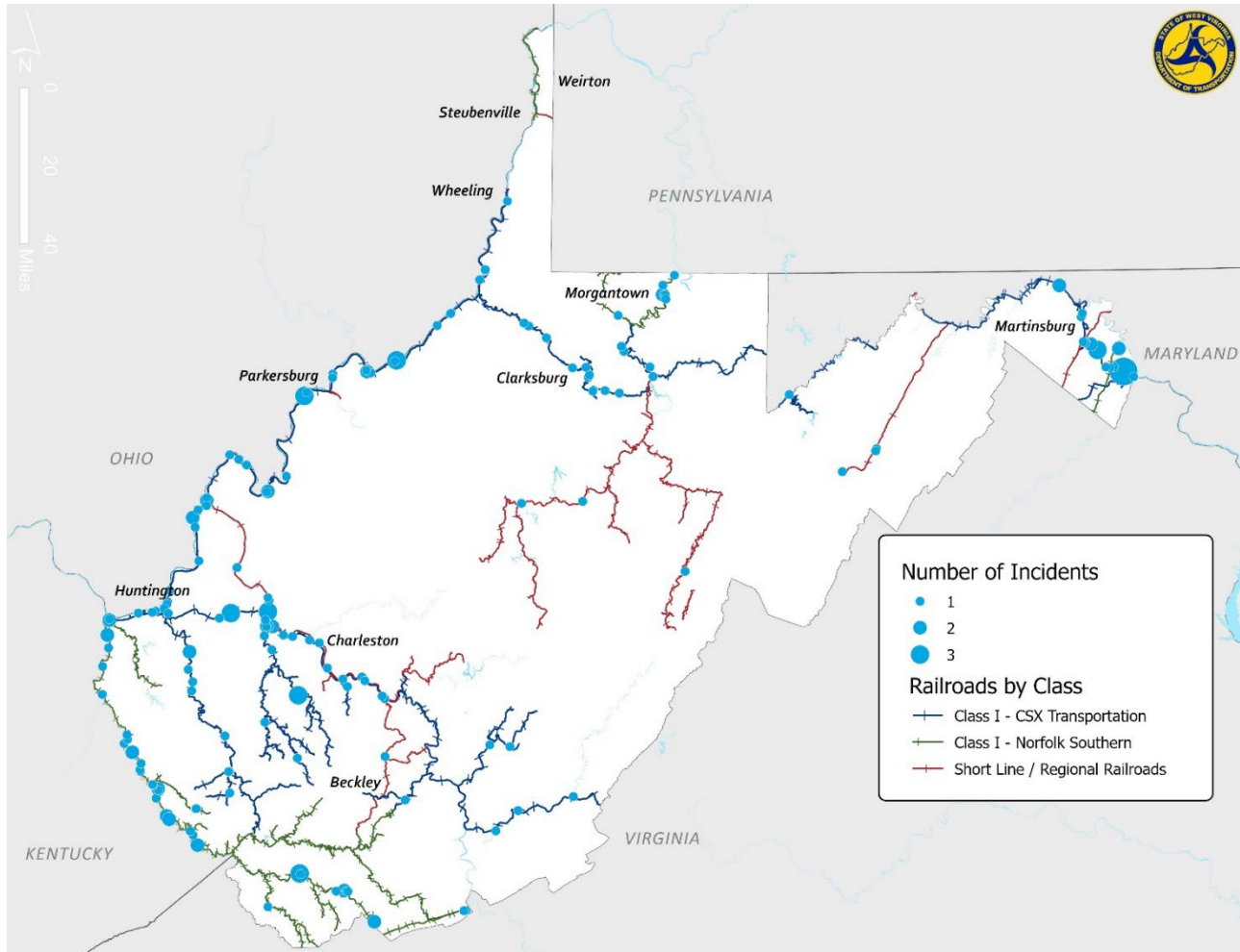
### 5.2.1 Highway-Rail At-Grade Crossing Incidents

About 95% of all rail-related fatalities involve at-grade crossings or railroad track trespassing. Nationwide, at-grade crossing collisions were down 23% in 2022 compared to 2000; however, incident reduction remains a

<sup>29</sup> [AAR-Grade-Crossing-Safety-Fact-Sheet.pdf](#)

high priority for the federal government, state DOTs and railroads. Efforts include warning device upgrades, non-profit coordination for outreach and education, elimination of unneeded crossings, coordination with law enforcement, reporting systems for unsafe crossing conditions, and public-private partnerships for technological tools to help improve motorist awareness.<sup>30</sup> West Virginia at-grade crossing incidents are shown in Figure 5-4.

**Figure 5-4 West Virginia Incidents at Crossings**

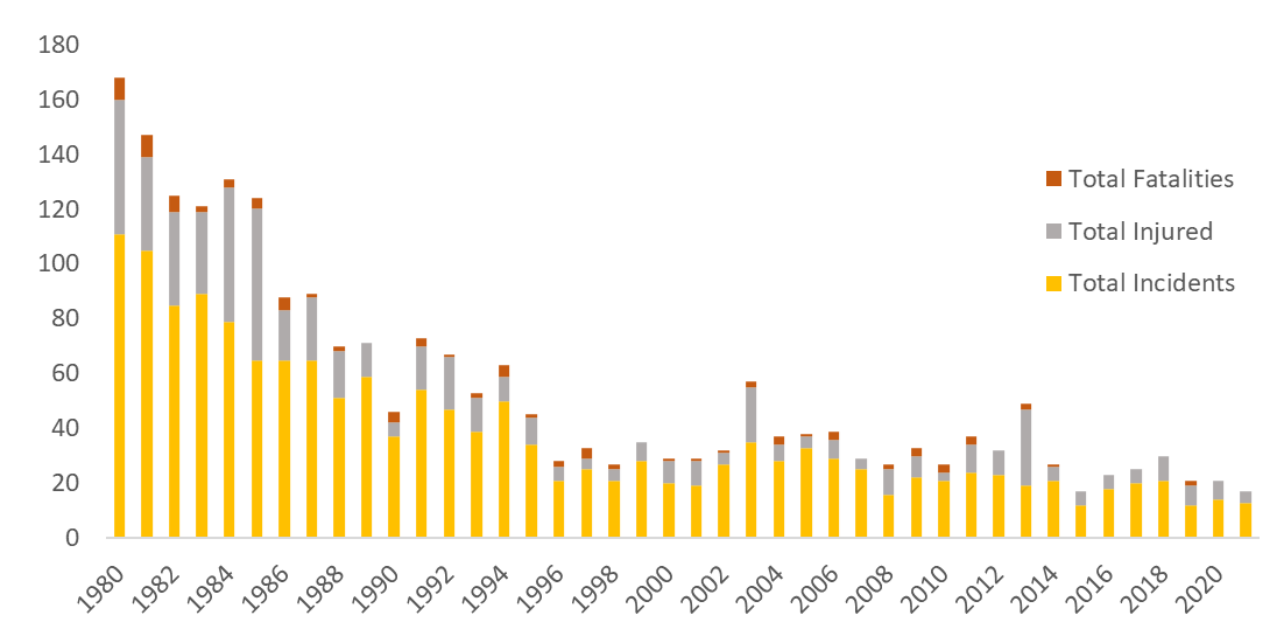


Source: 2020 State Rail Plan

West Virginia has made substantial gains in reducing statewide train-vehicle collisions at railroad-highway at-grade crossings, as shown in Figure 5-5. From a high of 111 collisions resulting in 8 deaths at railroad-highway at-grade crossings, West Virginia achieved a new low of 13 collisions with no fatalities in 2021.

<sup>30</sup> [AAR-Grade-Crossing-Safety-Fact-Sheet.pdf](#)

Figure 5-5 West Virginia Highway-Rail Incident Counts (1980-2021)



Source: Highway-Rail Incident Detail Dashboard (1980-2021) <https://railroads.dot.gov/accident-and-incident-reporting/highwayrail-grade-crossing-incidents/incident-details>

While previous decades have seen a significant decrease in railroad crossing incidents and fatalities in West Virginia and across the country, progress has stagnated<sup>31</sup>. Moreover, the FRA expects the frequency of incidents to grow as rail and road traffic continue to increase. Highway-rail crossing incidents remain one of the leading causes of fatalities in the railroad industry, behind trespassing, accounting for about 30% of railroad-related fatalities. While West Virginia has one of the nation's lowest at-grade crossing incident frequencies, there remain opportunities to continue safety enhancement and process improvements.

### 5.3 Trespassing

Railroad trespassing incidents are monitored by the FRA Railroad Crossing Safety and Trespasser Prevention Division. According to FRA, "94% of all rail-related fatalities and injuries occur either at railroad crossings or due to trespassing"<sup>32</sup>. Within West Virginia, there have been 143 trespassing incidents recorded from 2011 – 2021 with 56 of the 143 incidents resulting in a fatality, Table 5-1 outlines these incidents.

<sup>31</sup> Railroad Crossing Congestion and Its Impacts on Safety and Efficiency, March 2021 <https://www.commerce.senate.gov/services/files/E475D567-4922-4C1C-806A-77BBCF8592FC>

<sup>32</sup> [Highway-Rail At-Grade Crossing Safety and Trespass Prevention | FRA \(dot.gov\)](#)

**Table 5-1 West Virginia Trespasser Incidents 2011-2021**

| Incident Type | 2011      | 2012      | 2013      | 2014      | 2015     | 2016      | 2017      | 2018      | 2019      | 2020      | 2021     |
|---------------|-----------|-----------|-----------|-----------|----------|-----------|-----------|-----------|-----------|-----------|----------|
| Fatality      | 5         | 7         | 10        | 6         | 2        | 3         | 7         | 5         | 4         | 6         | 1        |
| Non-Fatality  | 9         | 8         | 9         | 9         | 6        | 9         | 9         | 9         | 11        | 5         | 3        |
| <b>Total</b>  | <b>14</b> | <b>15</b> | <b>19</b> | <b>15</b> | <b>8</b> | <b>12</b> | <b>16</b> | <b>14</b> | <b>15</b> | <b>11</b> | <b>4</b> |

Source: <https://railroads.dot.gov/accident-and-incident-reporting/casualty-reporting/trespasser-incidents>

## 5.4 Hazmat Releases

The safety of hazardous material (hazmat) movement over the rail system is overseen by the USDOT, U.S. Department of Homeland Security (DHS), and U.S. Pipelines and Hazardous Materials Safety Administration (PHMSA). Safety measures include design standards for all cars carrying hazmat, mobile apps to facilitate safety information for first responders, and a route evaluation software for determining the safest and most secure rail routes<sup>33</sup>. According to the AAR, more than 99.9% of rail hazmat shipments reach their destination with no release of hazardous materials caused by train accident.

Table 5-2 and Table 5-3 show the rail incidents involving hazmat over the last decade in the U.S. and in West Virginia respectively. In general, the frequency and cost of hazmat incidents in West Virginia is consistent with national trends, although the state retains a disproportionate share of such incidents. This is due to the presence of several major chemical plants, as most incidents occur when railcars are either being loaded or unloaded.

**Table 5-2 U.S. Rail Incidents Involving Hazardous Materials**

|                           | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    | 2019    | 2020    | 2021    | 2022    |
|---------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| <b>No. of Incidents</b>   | 667     | 718     | 581     | 545     | 573     | 507     | 422     | 382     | 395     | 363     |
| <b>No. of Fatalities</b>  | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       |
| <b>No. of Injuries</b>    | 15      | 14      | 213     | 17      | 12      | 9       | 11      | 6       | 8       | 8       |
| <b>Damages (millions)</b> | \$37.78 | \$22.66 | \$46.09 | \$27.39 | \$20.61 | \$22.20 | \$17.43 | \$30.38 | \$22.43 | \$44.01 |

Source: USDOT Pipeline and Hazardous Materials Safety Administration 10 Year Incident Reports

<sup>33</sup> [AAR-Hazmat-Fact-Sheet.pdf](#)

**Table 5-3 West Virginia Rail Incidents Involving Hazardous Materials**

|                          | 2014   | 2015    | 2016    | 2017  | 2018   | 2019   | 2020   | 2021   | 2022   |
|--------------------------|--------|---------|---------|-------|--------|--------|--------|--------|--------|
| <b>No. of Incidents</b>  | 58     | 59      | 56      | 46    | 56     | 55     | 48     | 76     | 46     |
| <b>No. of Fatalities</b> | 0      | 0       | 0       | 0     | 0      | 0      | 0      | 0      | 0      |
| <b>No. of Injuries</b>   | 0      | 4       | 1       | 0     | 0      | 4      | 0      | 1      | 0      |
| <b>Damages</b>           | \$732K | \$24.2M | \$1.43M | \$62K | \$517K | \$856K | \$185K | \$165K | \$132K |

Source: USDOT Pipeline and Hazardous Materials Safety Administration Yearly Incident Summary Reports

## 5.5 Positive Train Control

Positive Train Control (PTC) is a rail safety system that monitors the precise location, direction, and speed of trains and automatically stops them before certain types of incidents related to human error may occur. Such potential incidents include train to train collisions, derailments caused by excessive speed, unauthorized train movement in areas where maintenance is being performed, and movement through track switches left in the wrong position<sup>34</sup>.

Per statutory mandate, PTC system adoption and integration was required for nearly 58,000 route miles by December 31, 2020. This final deadline was successfully met by all 41 freight and passenger railroads that were subject to the mandate. In West Virginia, several main lines are equipped with PTC, including the main CSX and NS east-west arterials.

<sup>34</sup> [Freight Railroads & Positive Train Control \(PTC\) - Association of American Railroads \(aar.org\)](https://www.aar.org/freight-railroads/positive-train-control-ptc)