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Ohio Rail Plan




August, 2025

Prepared for

Ohio Rail Development Commission

Prepared by

WSP

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Appendices (bound separately)

Acronyms and Abbreviations

AASHTO	American Association of State Highway and Transportation Officials
ABS	Automatic block signal system
ACS	Adaptive Capacity Study
ADA	American with Disabilities Act
BEA	Bureau of Economic Analysis
BHJ	Brooke Hancock Jefferson Metropolitan Planning Commission
BOMTS	Belomar Regional Council
BUILD	Better Utilizing Investments to Leverage Development
CID	Corridor Identification and Development
CMAQ	Congestion Mitigation and Air Quality
CN	Canadian National
CPKC	CPKC Railroad
CREATE	Chicago Region Environmental and Transportation Efficiency
CRISI	Consolidated Rail Infrastructure and Safety Improvements
CSXT	CSXT Transportation
CTC	Centralized traffic control
CTD	Cleveland-Toledo-Detroit
CUOH	Columbus & Ohio River Railroad
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
G&W	Genesee & Wyoming, Inc.
GDP	Gross Domestic Product
ICTF	Intermodal Container Transfer Facility
IIJA	Infrastructure Investment and Jobs Act
INFRA	Infrastructure for Rebuilding America
IORY	Indiana & Ohio Railway
KYOVA	Kentucky-Ohio-West Virginia
L&WV	Lorain & West Virginia
LM&M	Lebanon Mason Monroe
LOS	Level of service
LRTP	Long Range Transportation Plans
MOS	Maximum operable speeds
MPO	Metropolitan planning organization

MWRRP	Midwest Regional Rail Plan
NDW	Napoleon, Defiance, and Western
NHFP	National Highway Freight Program
NOACA	Northeast Ohio Areawide Coordinating Agency
NS	Norfolk Southern
NTSB	National Transportation Safety Board
OCPA	Ohio Council of Port Authorities
ODOT	Ohio Department of Transportation
OGCEP	Ohio Grade Crossing Elimination Program
OKI	Ohio-Kentucky-Indiana Regional Council of Governments
ORC	Ohio Revised Code
OTP	On-time performance
PennDOT	Pennsylvania Department of Transportation
PRIIA	Passenger Rail Investment and Improvement Act
PUCO	Public Utilities Commission of Ohio
RAISE	Rebuilding American Infrastructure with Sustainability and Equity
RCCII	Rail Crossing Community Impact Index
RCE	Railroad Crossing Elimination
RRIF	Railroad Rehabilitation and Improvement Financing
RTPO	Regional Transportation Planning Organization
SAP	State Action Plan
SDP	Service Development Plan
STB	Surface Transportation Board
STDA	Strategic Transportation and Development Analysis
TIFIA	Transportation Infrastructure Finance and Innovation Act
TIGER	Transportation Investment Generating Economic Recovery
TMACOG	Toledo Metropolitan Area Council of Governments
USDOT	U.S. Department of Transportation
VMT	Vehicles miles traveled
WLE	Wheeling & Lake Erie

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1. Role of Rail in Ohio

1.1 Purpose and Introduction

The Ohio Rail Plan (Rail Plan) provides an opportunity for Ohio's citizens, rail industry stakeholders, rail users, and government decision-makers to share their concerns with, and plans for, the rail system in the state. The Rail Plan includes both a snapshot of the current conditions of the rail system and shows how rail fits into the state's vision for a multimodal transportation system. It is an update of the previous state rail plan completed in 2019 (2019 Rail Plan). The Rail Plan complies with federal requirements set out the Passenger Rail Investment and Improvement Act (PRIIA) of 2008 and the subsequent Federal Railroad Administration (FRA) State Rail Plan Guidance of 2013.[1]

Following the FRA's 2013 Guidance, the format of the Rail Plan consists of six chapters:

- *Chapter 1: Role of Rail in Ohio Statewide Transportation* is a synopsis of the current and proposed role of rail in the state's multimodal transportation system and how the state is organized to provide political, legal, and financial support to rail development.
- *Chapter 2: Ohio's Existing Rail System* inventories existing conditions of the rail network in the state and identifies trends that will impact the need for rail in Ohio.
- *Chapter 3: Proposed Passenger Rail Improvements and Investments* describes improvements and investments that address passenger needs of Ohio.
- *Chapter 4: Proposed Freight Rail Improvements and Investments* describes improvements and investments that address freight rail needs in Ohio.
- *Chapter 5: Ohio's Rail Service and Investment Program* describes Ohio's approach to evaluating rail projects and initiatives, the impacts that rail improvements can have, and potential priorities for federal funding.
- *Chapter 6: Coordination and Review* explains how stakeholders and the general public were involved in the Rail Plan development, how the Rail Plan development was coordinated with other planning efforts.

[1] FRA (Federal Railroad Administration), 2013, *State Rail Plan Guidance*, U.S. Department of Transportation, https://railroads.dot.gov/sites/fra.dot.gov/files/fra_net/3382/Final_State_Rail_Plan_Guidance_September_2013.pdf.

1.2 Multimodal Transportation Goals

Ohio's goals for its multimodal transportation system are established through Access Ohio, Ohio's long-range transportation plan. Developed from input from the public and subject matter experts, these documents are periodically updated with the latest version, Access Ohio 2045 (AO45), guiding Ohio's transportation policies and investment strategies for the next 20 years. Rail-specific goals will be discussed in Chapter 5 of this Plan, but are generated to align with AO45 goals, which are presented in Figure 1-1.

Figure 1-1. Statewide Multimodal Goals from Access Ohio 2045

1.3 Rail's Role in Ohio's Transportation Network

Rail is used for delivering and originating a broad range of industrial products, raw materials, and finished goods to and from Ohio. While this can be said of any state, there is a more diverse set of commodities shipped by rail to and from Ohio compared to national averages. For example, nationally, 48% of freight tonnage shipped by rail is coal, petroleum products, and grain, whereas these commodities are only 35% of freight tonnage that originates or terminates in Ohio.

In general, rail's modal share increases with the trip distance, rail has an over nine percent market share of freight tonnage overall, but only a one percent market share for shipments less than 50 miles, and an 18% market share for shipments over 1,000 miles.

Table 1-1 illustrates the rail share by commodity of goods shipped to, within or departing Ohio. As the table shows, the relationship between rail's modal share and shipment distance is not consistent across all commodities. For example, rail has a lower overall market share for cereal grain and waste/scrap over 1,000 miles than shipments 500 – 999 miles. Shipper dependency on rail also varies by commodity. Commodities like sand and grain are heavily dependent on rail with 86% of shipments to or from Ohio over 1,000 miles moved by rail for natural sands and 98% of cereal grain shipments to or from Ohio between 500 and 1,000 miles moved by rail.[2]

Table 1-1. Rail Modal Share by Commodity and Shipment Mileage to and From Ohio, 2022

Commodities	Rail Tons (000s)	Rail Modal Share					
		0 – 99 Miles	100 – 249 Miles	250 – 499 Miles	500 – 999 Miles	1,000 + Miles	All Shipment Mileages
Cereal grains	10,622	5%	9%	45%	98%	38%	21%
Natural gas and other petroleum products	9,674	3%	6%	4%	5%	31%	5%
Coal	9,363	0%	85%	32%	2%	24%	21%
Waste/scrap	8,836	2%	22%	24%	66%	46%	21%
Base metals	6,671	1%	3%	33%	32%	24%	16%
Other foodstuffs	3,911	1%	5%	9%	28%	34%	11%
Other ag prods.	3,572	0%	2%	4%	75%	12%	11%
Nonmetal min. prods.	3,519	0%	2%	9%	48%	20%	7%
Plastics/rubber	3,445	0%	7%	7%	15%	48%	17%
Nonmetallic minerals	3,341	0%	5%	14%	62%	43%	9%
Natural sands	3,022	3%	0%	74%	9%	86%	16%
Gravel	2,801	0%	23%	0%	73%	8%	3%
Other	16,541	1%	3%	4%	98%	38%	5%
Total	85,319	1%	7%	13%	23%	18%	9%

Source: Freight Analysis Framework-5.5

[2] Table 1-1 includes not only railcar load service but also the rail portion of freight that moves by multiple modes, relying on rail for a portion of the move. A portion of "multiple modes and mail" modal traffic in the Freight Analysis Framework (FAF) v5-5 data was identified as relying on rail based on more specific modal designations found in the 2017 Commodity Flow Survey (CFS).

Rail's modal share of foreign trade was also analyzed and summarized in Table 1-2. The analysis found that:

- Rail carries a larger share of Ohio's foreign trade tonnage (31%) than domestic tonnage (8%).
- Rail carries 33% of Ohio's export tonnage and 29% of import tonnage.

Some commodities are more dependent on rail than others;

- Trade to Mexico and Canada is primarily carload traffic while overseas foreign trade is primarily containers shipped by truck-rail-ship intermodal service.
- A broad range of import/export commodities move by intermodal rail between Ohio and seaports, including machinery and industrial products such as nonmetallic minerals, plastic and rubber products, and metals.
- Several of the top rail commodities are even more dependent on rail in trade movements with foreign partners. Notably, approximately 60% of cereal grain and petroleum product exports, 91% of sand exports are by rail. Nearly all coal imports, and 61% of gravel imports are by rail.

Table 1-2. Rail Modal Share by Commodity for Foreign Trade to/from Ohio

Commodity	Exports from Ohio			Imports to Ohio		
	Rail		Total Commodity Tons – All Modes (000s)	Rail		Total Commodity Tons – All Modes (000s)
	Tons (000s)	Share of Commodity Tons		Tons (000s)	Share of Commodity Tons	
Coal	2,128	48%	4,430	70	99%	70
Nonmetal min. prods.	114	10%	1,198	1,095	33%	3,367
Nonmetallic minerals	514	22%	2,357	674	48%	1,393
Base metals	176	22%	798	971	43%	2,246
Other ag prods.	899	47%	1,906	29	14%	210
Plastics/rubber	112	13%	889	720	40%	1,782
Petroleum products	583	61%	954	88	8%	1,049
Other foodstuffs	134	32%	421	293	60%	490
Natural sands	377	91%	412	2	23%	10
Waste/scrap	78	12%	634	282	38%	739
Cereal grains	140	59%	238	55	32%	172
Gravel	10	11%	95	141	61%	229
Other	2,080	26%	7,859	3,041	22%	13,556
GRAND TOTAL	7,346	33%	22,189	7,461	29%	25,314

Source: Freight Analysis Framework-5.5

Compared to freight, rail has a significantly lower modal share for passenger rail services. According to the Ohio statewide travel demand model, 125 million long-distance (over 50 miles) auto trips were taken in 2020. That year, 86,129 boarded or disembarked from trains in Ohio, while during the pre-pandemic year of 2019, 132,095 boarded or deboarded trains in Ohio. In 2020, ridership on Amtrak trains to/from Ohio was 0.07% the number of auto trips, while 2019 ridership was 0.11% the number of 2020 auto trips.

1.4 Institutional Governance Structure of Rail Programs in Ohio

In Ohio, public-sector organizations at multiple levels of government interact with the rail industry and support rail development in the state. Below is a list of the primary organizations.

1.4.1 Ohio Rail Development Commission

Statutory authority to conduct rail planning in Ohio is assigned to the Ohio Rail Development Commission (the Rail Commission), an independent agency of the Ohio Department of Transportation (ODOT), per Chapter 4981 of the Ohio Revised Code (ORC). For the purposes of this Rail Plan, the Rail Commission serves as the State Transportation Authority responsible for preparing, maintaining, coordinating, and administering the plan. The Rail Commission also serves as the State Rail Plan Approval Authority[3], with responsibility to review and approve the Plan.

The Rail Commission was formed in 1994 to combine all of Ohio's non-regulatory rail programs into one agency. The Rail Commission is led by a 15-member board of which 11 are voting members, and 4 are nonvoting members from the Ohio General Assembly. The governor appoints seven voting members, and the President of the Ohio Senate and the Speaker of the Ohio House of Representatives appoint one member each. In addition, the Directors of ODOT and the Ohio Department of Development serve as ex officio members. Beginning on October 21, 2025, the Director of ODOT (or designee) will serve as the chair of the Rail Commission.

The Rail Commission promotes safety on the rail network and the improved movement of goods and people by rail. The Rail Commission's mission, defined by Section 4981.03 of the ORC, is to:

- Develop, promote, and support safe, adequate, and efficient rail service throughout the state.
- Maintain adequate programs of investigation, research, promotion, planning, and development for rail service, which programs shall include the consideration of recommendations by public or private planning organizations.
- Provide for the participation of private corporations or organizations and the public in the development, construction, operation, and maintenance of rail service, and as franchisees of rail service.

The Rail Commission accomplishes this mission using both federal and state funds to:

- Assist companies with rail infrastructure.
- Assist railroads with infrastructure rehabilitation and expansion projects.
- Assist communities with infrastructure projects involving rail property.
- Improve safety of grade crossings through infrastructure improvements including warning devices, surfaces, traffic preemption technology and grade separations.

The Rail Commission works with local and state development officials, local highway authorities, ODOT and the Public Utilities Commission of Ohio (PUCO) as appropriate to accomplish its mission.

[3] The State Rail Plan Approval Authority is a term defined in the Federal Rail Administration's State Rail Plan Guidance. "In order to be eligible for capital grants authorized under PRIIA, States must establish or designate a State Rail Transportation Authority to develop State rail plans that set policy involving freight and passenger (intercity and commuter) rail transportation within their boundaries, establish priorities and implementation strategies to enhance rail service in the public interest, and serve as the basis for Federal and State rail investments within the State." FRA, *State Rail Plan Guidance*, 5.

Specific Rail Commission funding programs are discussed in Chapter 2, including several new funding programs established by the fiscal year 2024–2025 state budget.

Most of Ohio rail infrastructure is privately owned and all freight is moved by private rail operators. However, the Rail Commission is permitted to acquire, construct, enlarge, improve, equip, and to sell, lease, exchange, or otherwise dispose of property, structures, equipment, and facilities for rail transportation. At present, the Rail Commission owns several rail lines and leases these lines to railroads to operate freight service.

1.4.2 Public Utilities Commission of Ohio

The PUCO provides regulatory oversight of Ohio's railroad industry through the independent enforcement of state and federal railroad regulations. Along with the Rail Commission, PUCO administers Ohio's rail safety programs. These regulations can be found in Title 49 of the ORC and in 49 CFR parts 179-299.

The PUCO employs 13 railroad inspectors who are certified in one of FRA's five inspection disciplines, as guided by the FRA State Safety Participation Program. These inspectors work closely with federal authorities on enforcement and incident investigations. The inspectors formally investigate citizen railroad complaints, at-grade crossing accidents, derailments and motorist or railroad worker fatalities. The inspectors assist in the review, approval, and monitoring of grade crossing upgrades, track and structure clearance variances, exemptions, and all requested protection device change requests on behalf of the Rail Commission.

PUCO field inspectors audit crossing data annually as part of routine crossing inspections, and PUCO maintains Ohio's highway-rail crossing database. The PUCO maintains comprehensive rail accident records and publishes an annual grade crossing statistics report. Additionally, the PUCO administers the state grade crossing protection program and aids the Rail Commission in allocating federal Railway-Highway Crossing (Section 130) funds.

Recent changes to ORC Title 49 added responsibility for ensuring adherence to state and federal laws regarding installation and maintenance of wayside detector systems. Wayside detectors monitor the health of railcars and ensure that components do not overheat and cause derailments. Changes to ORC Title 49 also gave PUCO responsibility to enforce state laws requiring a minimum of a two-person train crew.

1.4.3 Metropolitan Planning Organizations

Federal legislation requires the designation of a metropolitan planning organization (MPO) for each urbanized area with a population of more than 50,000 people to carry out metropolitan transportation planning functions as a condition of federal aid. Freight rail, passenger rail, and highway/rail crossing issues and improvements are often part of MPO planning efforts.

Ohio has 17 designated MPOs (Figure 1-2 and Table 1-3), six of which include jurisdictions in neighboring states: Ohio-Kentucky-Indiana Regional Council of Governments (OKI), Toledo Metropolitan Area Council of Governments (TMACOG), Kentucky-Ohio-West Virginia (KYOVA) Interstate Planning Commission, Brooke Hancock Jefferson Metropolitan Planning Commission (BHJ), Belomar Regional Council (BOMTS), and Wood-Washington-Wirt Interstate Planning Commission (WWW).

Table 1-3. List of MPOs in Ohio

Metropolitan Area	Common Name/ Acronym	MPO Name
Akron	AMATS	Akron Metropolitan Area Transportation Study
Canton	SCATS	Stark County Area Transportation Study
Cincinnati	OKI	Ohio-Kentucky-Indiana Regional Council of Governments
Cleveland	NOACA	Northeast Ohio Areawide Coordinating Agency
Columbus	MORPC	Mid-Ohio Regional Planning Commission
Dayton	MVRPC	Miami Valley Regional Planning Commission
Huntington WV	KYOVA	Kentucky-Ohio-West Virginia Interstate Planning Commission
Lima	LACRPC	Lima-Allen County Regional Planning Commission
Mansfield	RCRPC	Richland County Regional Planning Commission
Newark	LCATS	Licking County Planning Commission (Licking County Area Transportation Study)
Parkersburg WV	WWW	Wood-Washington-Wirt Interstate Planning Commission
Sandusky	ERPC	Erie Regional Planning Commission
Springfield	CCSTCC	Coordinating Committee and Board of County Commissioners of Clark County
Steubenville-Weirton, WV	BHJ	Brooke Hancock Jefferson Metropolitan Council of Governments
Toledo	TMACOG	Toledo Metropolitan Area Council of Governments
Wheeling WV	Belomar	Belomar Regional Council
Youngstown	Eastgate	Eastgate Regional Council of Governments

Source: ODOT (Ohio Department of Transportation), "MPO & RTPO Websites," *Statewide Planning & Research*, https://www.transportation.ohio.gov/programs/statewide-planning-research/regional-transportation-planning/03-mpo-rtpo-sites-for-tip.

1.4.4 Regional Transportation Planning Organizations

In 2013, ODOT initiated the Regional Transportation Planning Organization (RTPO) program, focused on building expertise to provide transportation planning products and services to non-metropolitan regions of Ohio. The RTPO program currently includes six regional planning agencies, covering 41 Ohio counties. Each RTPO is charged with engaging their member communities in developing a transportation plan and a public engagement process for their region. Planning activities for several RTPOs include rail-related issues.

The six RTPOs are listed below, and shown in Figure 1-2:

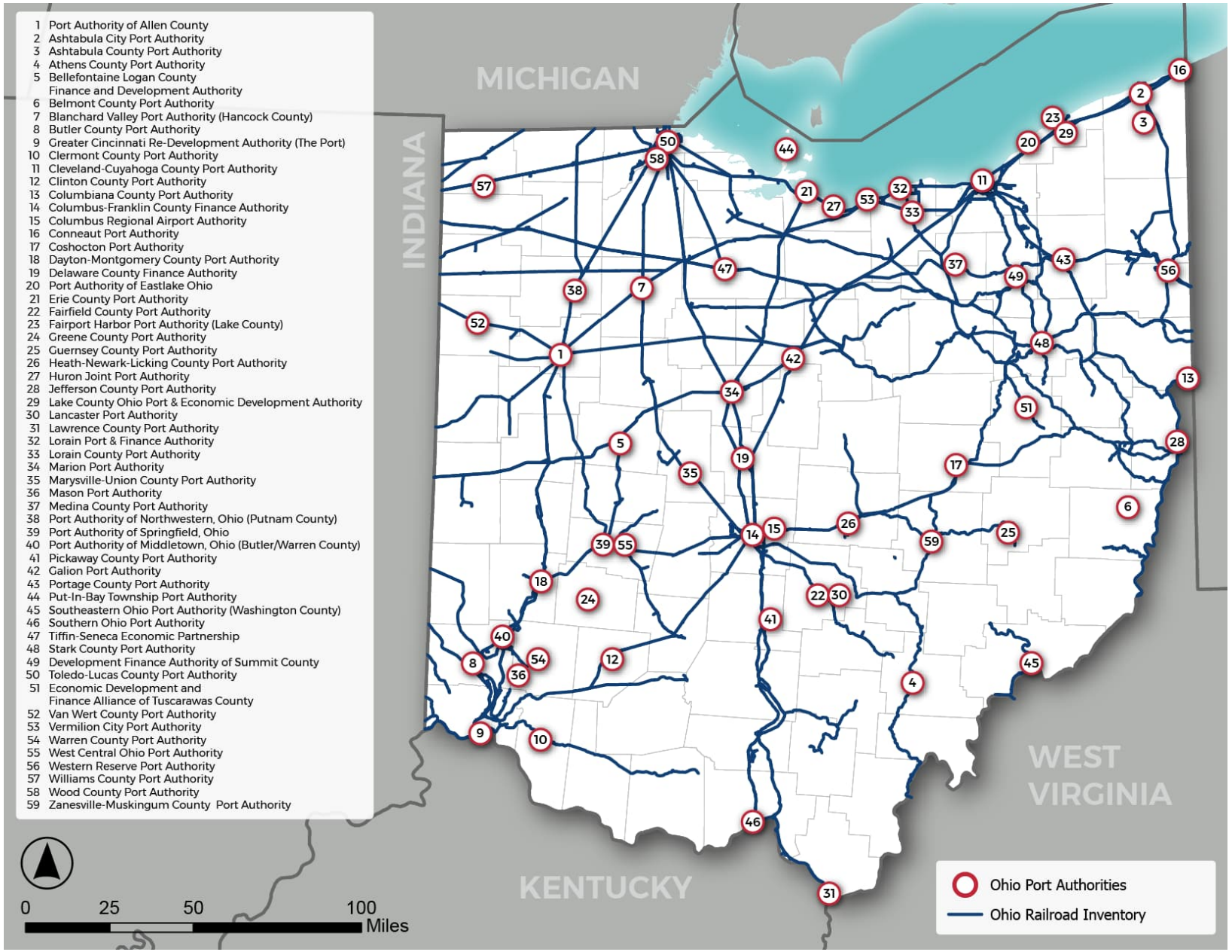
- Buckeye Hills Hocking Valley Regional Development District (Buckeye Hills)
- Central Ohio Rural Planning Organization (CORPO)
- Logan Union Champaign Regional Planning Commission (LUC)
- Maumee Valley Planning Organization (MVPO)
- Ohio Mid-Eastern Governments Association (OMEGA)
- Ohio Valley Regional Development Commission (OVRDC)

Figure 1-2. MPOs and RTPOs in Ohio

1.4.5 Port Authorities

Ohio is home to 60 port authorities. Authorized by ORC Chapter 4582, these are political subdivisions of counties and municipalities, or some combination thereof. Port authorities facilitate economic development activity, capital investment, and job creation and retention in Ohio. Port authorities can construct facilities, issue bonds, make loans, and sell or buy real and personal property. Some port authorities are active in promoting and investing in rail infrastructure in areas under their jurisdictions, including applying for U.S. Department of Transportation discretionary program grants. Figure 1-3 is a map of port authorities in Ohio listed by name. Note that not all of these port authorities deal with railroads. Some, particularly along the Lake Erie coastline, are set up to manage marinas and provide other non-freight services.

Figure 1-3. Port Authorities in Ohio



Source: OCPA (Ohio Council of Port Authorities), "Ohio Port Authority Listing," 2023, https://www.ohioportauthorities.com/port-authority-listing.

1.5 State's Authority

The Rail Commission has authority to issue grants and loans and to enter into public/private partnership financing as stipulated in its enabling legislation (ORC Chapter 4981). The nature of projects funded by the Rail Commission means that most are partnerships, not only between the public and private sectors, but also with local, state, and federal government entities. As an example, for development projects between 2019 and 2024 the Rail Commission:

- Funded $28.7 million through Rail Commission grants
- Loaned $3.7 million
- Secured federal investment of $265.1 million
- Attracted private sector matching and investment of $3.4 billion

1.6 Freight and Passenger Rail Services, Initiatives and Plan

1.6.1 Freight Program

Work on freight rail improvements is ongoing. Between 2019 and 2024, the Rail Commission approved 88 projects. Most were either rehabilitation projects, such as to repair, improve rail lines and bridges, or projects to provide new access to shipper locations, such as spurs and siding. These projects are committed to result in:

- 1,900 new jobs
- 4,200 jobs retained
- 6,600 carloads of freight moving over rail instead of over highway
- While funding for Rail Commission projects over the past five years averaged $2.9 million per year, as of FY 2024, available funds were increased to $6.0 million per year.

1.6.2 Crossing Programs

Between 2019 and 2023, The Rail Commission approved 238 highway-rail grade crossing safety projects or 48 per year worth $54 million or $10.8 million per year. These improvements primarily consisted of new lights and gates at highway- rail grade crossings, crossing upgrades, new surfaces, and incentives to local jurisdictions to close redundant crossings.

During the 2024–2025 biennium, Ohio's legislature added $100 million for the Ohio Grade Crossing Elimination Program (OGCEP). (Funding was reduced by $15 million for the 2026-2027 biennium.) This funding is intended to address disruptions to vehicular and pedestrian traffic and impediments to emergency services caused by slow or stopped trains occupying highway-rail grade crossing for extended periods of time. Between 2019 and 2023, over 10,500 reports of blocked crossings in Ohio were filed with the FRA.[4] The OGCEP helps communities compete for federal grants to eliminate highway-rail grade crossing, either through grade separations, new roadway alignments, or access roads. The OGCEP's state funds are used to meet the match requirements for federal grants and to provide technical assistance to communities to advance projects sufficiently to be competitive for federal grants. To assist in evaluating crossings, the Rail Commission developed a tool, the Rail Crossing Community Impact Index (RCCII), which uses a series of

[4] Ohio Governor's Office, "Governor DeWine Announces $100 Million to Help Eliminate Dangerous Railroad Crossings," Press Release, September 5, 2023, https://governor.ohio.gov/media/news-and-media/governor-dewine-announces-100-million-to-help-eliminate-dangerous-railroad-crossings.

characteristics to assess the "importance" of a crossing to a community and the impact if that crossing were to be blocked.

Another new program was added during the 2024–2025 biennium, the Orphan Rail Crossing Program, which addresses rail crossings where ownership or maintenance responsibility is unknown or is on a line that is no longer connected to the rail network. The program is funded at $1 million. Eligible activities for the program include crossing, restoration, repair, and removal.

1.6.3 Wayside Detection

Following the derailment of a train and subsequent release of chemicals in East Palestine, Ohio in February 2023, the Ohio legislature passed a series of measures in response to the event. One key element was to mandate the implementation of wayside detectors on Ohio's rail network. Wayside detector systems can provide a range of reporting functions to train crews; some systems provide warning if the bearings that allow railcar wheels to roll are overheating. In addition to the regulatory mandate of wayside detectors, the Ohio General Assembly created the Wayside Detector Grant Program to assist Ohio Class II and Class III railroads with implementation of the new wayside detector rules. Class II and III railroads doing business in Ohio are eligible for this $10 million program.

1.6.4 Passenger Rail

Established as part of the Infrastructure Investment and Jobs Act (IIJA), the FRA Corridor Identification and Development (Corridor ID) Program is intended to be the primary means to guide intercity passenger rail development in the United States and to create a pipeline of intercity passenger rail projects ready for implementation. Two corridors sponsored by the Rail Commission were selected by the FRA in fiscal year 2022 to fund initial planning under the program:

- Cleveland-Columbus-Dayton-Cincinnati (3C&D).
- Cleveland-Toledo-Detroit.

The FRA selected two other corridors that include Ohio for preliminary planning activities:

- Chicago, Fort Wayne, Columbus and Pittsburgh, sponsored by the City of Fort Wayne, Indiana.
- Daily Cardinal Service, sponsored by Amtrak. The Cardinal route is between New York, New York and Washington, D.C., and Chicago, Illinois, and it passes through the southwest corner of Ohio between Cincinnati and the Indiana–Ohio border.

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2. Ohio's Existing Rail System

2.1 Description and Inventory

According to the Association of American Railroads, Ohio ranks fourth in the nation for rail mileage behind Texas, Illinois, and Pennsylvania. Ohio's rail network is also very dense, with a high mileage compared to the geographic size of the state. Of Ohio's 88 counties, 86 are served by at least one rail line. Unused rail lines are often abandoned, making Ohio's dense network an indicator of sustained rail activity.

The primary use of the Ohio rail network is to haul freight. Amtrak intercity passenger trains operate over 376 miles of the Ohio rail network on rail lines owned by freight railroads, and far more freight trains operate over these lines than passenger trains.

Rail lines can be divided into main lines and branch lines.

- Main Lines. The federal government defines main lines as those that carry at least five million tons of freight per year.[5] These are the key rail lines that connect Ohio with other states and regions of the country. Thirty-five percent of rail lines in Ohio meet the definition of main lines.
- Branch Lines. Rail lines with less tonnage are generally considered branch lines. The primary purpose of branch lines is to gather freight to/from shipper locations to main lines, so that the long-distance portion of the move can occur over the main lines. Sixty-five percent of miles in Ohio meet the definition of branch line.

2.1.1 Existing Rail System

Most of Ohio's rail network, 4,559 miles or 89%, is owned by private freight railroads. Of the remainder, 270 miles are owned by the State of Ohio, and 218 miles are owned by local governments and port authorities. Another 35 are owned by excursion railroad operators, and 30 are owned by the federal government.[6] Of the active rail lines that are owned by the public sector, all are leased to private freight railroads to provide freight service.

Freight railroads are divided into Class I, Class II, and Class III.

- Class I railroads are defined by the U.S. Surface Transportation Board (STB) as those that earn operating revenues of over $1 billion per year. The threshold is based on $900 million 2019 dollars adjusted annually to account for inflation. Three Class I railroads operate in Ohio, the Canadian National (CN) Railway, CSX Transportation (CSX), and Norfolk Southern Railway (NS). However, CN's presence in Ohio is relatively minor, consisting of only limited mileage into the state to access Toledo from Michigan and Conneaut from Pennsylvania. NS and CSX are the primary Class I railroads to serve Ohio and are the main Class I railroads that provide service throughout the eastern United States. Class I railroads operate[7] 2,806 miles and 55% of the Ohio rail network.

[5] Title 49 Code of Federal Regulations Section 236.1003.
[6] Note that these figures sum to 5,112 miles, which is 77 miles above the total operated mileage indicated in Table 2-1. This results from a discrepancy between what railroads claim they operate, and all mileage claimed as active track.
[7] For the purposes of the Rail Plan, railroads "operate" a rail line if they control the train movements on that line. If one railroad leases a rail line to another to operate, the owner is not considered the operator. Railroads also allow other railroads to operate over their rail lines on a train-by-train basis, called trackage rights, which are not included in operating mileage.

- Class II Railroads or "Regional Railroads" are defined by the STB as those that earn less than $1 billion, but more than $46 million. The lower threshold is based on $40.4 million in 2019 dollars, indexed annually. Two regional railroads operate in Ohio, the Wheeling & Lake Erie Railway (WLE) and the Columbus & Ohio River Railroad (CUOH).
- Class III or "Short Line Railroads" have annual operating revenues below $46 million.[8] These railroads primarily provide last-mile service, bringing railcars between customer locations and interchanges with Class I railroads. A total of 36 short line railroads operate in Ohio. They operate 1,500 miles or 30% of the Ohio rail network.

Table 2-1 provides total mileage of the Ohio rail network by type of railroad, while Figure 2-1 provides as summary of the Ohio rail network by rail carrier.

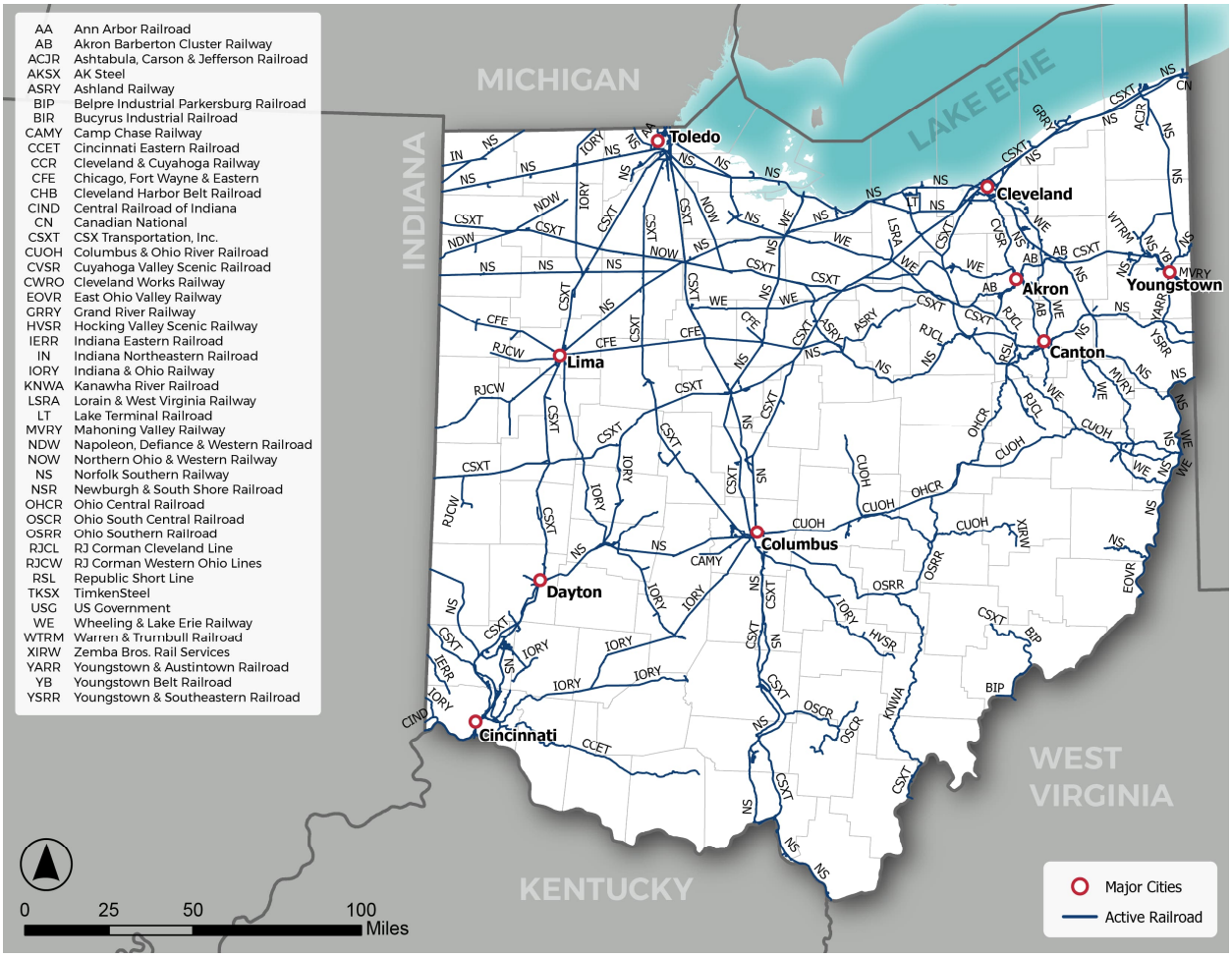
Table 2-1. Rail Mileage in Ohio by Type of Railroad

Type of Railroad	Leased	Owned, Operated	Total Operated	Owned/ Leased to Others
Class I	149	2,657	2,806	583
Class II	229	418	668	11
Class III	624	877	1,500	13
Tourist/Excursions	30	31	61	
Total – All Railroads	1,032	3,983	5,035	607

Sources: Railroad questionnaires, railroad websites, Rail Commission, R-1 Annual Reports

[8] Short line railroads are further subdivided into local and switching/terminal railroads. Switching or terminal railroads specialize in making up and breaking down trains, storing and classifying cars, serving industries within yard limits, and other related purposes. These movements are made at slow speed under special yard rules. Local short line railroads perform these functions too, but they also operate trains outside of yard limits. Switching and terminal railroads are considered Class III regardless of their annual revenue.

Figure 2-1. Ohio Rail Network by Rail Carrier



Source: ODOT Transportation Information Mapping System

Class I Railroads

Canadian National Railway

Canadian National (CN) is one of the major Class I railroads in the nation. However, within Ohio, the railroad has a small footprint owning only four route miles. One of CN's lines is between the Michigan state line and Toledo where the CN Lang Yard is located from there it connects to Norfolk Southern's track. The second CN-owned rail line is the former Bessemer and Lake Erie Railroad in Northeastern Ohio along the Pennsylvania border in the town of Conneaut. This is the location of the CN Conneaut Yard and goes into Pennsylvania where it ultimately terminates in Pittsburgh. The yard at Conneaut is located at Conneaut Harbor which receives inbound iron ore, stone, aggregate, gypsum, and sand products.

CSX Transportation

CSXT Transportation (CSXT or CSX) can date its legacy to The Baltimore and Ohio Railroad Company when it was the nation's first common carrier railroad chartered in 1827. CSXT operates in 26 states, the District of Columbia, and the Canadian provinces of Ontario and Quebec. The company operates in markets east of the Mississippi River. The railroad operates 19,671 miles of single mainline track, 5,652 miles of other mainline track, 9,270 miles of terminal and switching yard tracks, and 896 miles of passing sidings and turnouts for a

total of 35,489 miles of track nationwide. The company supports this rail network with more than 23,000 employees, most of whom provide or support transportation services. In 2022, CSXT employed 3,332 people in Ohio. In 2023 two of the top 10 company terminals by volume (number of railcars or intermodal containers processed) are located in Ohio: Cincinnati (also known as Queensgate) Yard – volume of 644,478- (fourth) and Walbridge – 378,869 - (seventh).

Norfolk Southern Corporation

Norfolk Southern Corporation (NS) operates in 22 states and the District of Columbia. It generally operates east of the Mississippi River, although it also operates in Iowa, Louisiana, and Texas west of the Mississippi River. The railroad operates 19,137 route miles, 4,565 miles of other main track, 8,983 miles of way and yard switching, and 2,359 miles of passing siding and turnouts for a total of 35,044 miles of track. The railroad employs approximately 20,700. In 2022, NS employed 3,769 people in Ohio.

Table 2-2. Summary of Class I Railroad Mileage in Ohio

Railroad	Leased	Owned/ Operated	Total Operated	Owned/ Leased to Others	Trackage Rights
CN	–	4	4	–	–
CSX	139	1,147	1,286	222	461
NS	10	1,506	1,516	361	389
Total	149	2,657	2,806	583	850

Source: Railroad R-1 Annual Reports with the STB

Class II and Class III Railroads (Regional and Short Line Railroads)

Thirty-six short line and regional railroads operate in Ohio. These vary in size from 403 miles to 1 mile. Some primarily function to provide switching services (sorting railcars), while others provide switching plus line haul moves to interchanges with Class I or other short line railroads. Of the rail lines over which short line and regional railroads operate, 1,295 are owned by the carriers themselves, while 853 are owned by other railroads or by public-sector entities. Mileage of short line and regional railroads is summarized in Table 2-3.

Table 2-3. Summary of Class II, III Railroad Mileage in Ohio

Railroad	Leased	Owned, Operated	Total Operated	Owned/ Leased to Others
Class II Railroads				
CUOH/Columbus & Ohio River Railroad	229	35	265	
WE/Wheeling & Lake Erie Railway Company	20	383	403	11
Total - Class II Railroads	249	418	668	11
Class III Railroads				
AA/Ann Arbor Railroad	3	7	10	
AB/Akron Barberton Cluster Railway		43	43	
ACJR/Ashtabula, Carson & Jefferson Railroad	6		6	
ASRY/Ashland Railway		56	56	
BIP/Belpre Industrial Parkersburg Railroad	38		38	
BIR/Bucyrus Industrial Railroad		5	5	
CCRL/Cleveland & Cuyahoga Railway	30		30	
CAMY/Camp Chase Railway		15	15	
CCET/Cincinnati Eastern Railroad	69		69	
CFE/Chicago, Fort Wayne & Eastern	119	4	123	
CHB/Cleveland Port Railway	1		1	
CIND/Central Railroad of Indiana		21	21	
CWRO/Cleveland Works Railway		10	10	
EOVR/East Ohio Valley Railway	18	14	32	
GRRY/Grand River Railway		3	3	
IERR/Indiana Eastern Railroad		14	14	
IN/Indiana Northeastern Railway Company		9	9	
IORY/Indiana & Ohio Railway	157	168	324	
IRW/Independence Rail Works		13	13	
KNWA/Kanawha River Railroad	116		116	
LT/Lake Terminal Railroad		6	6	
MVRY/Mahoning Valley Railway	36	53	89	6
NDW/Napoleon, Defiance & Western Railway		53	53	
NOW/Northern Ohio & Western Railway	29		29	
NSR/Newburgh & South Shore Railway Company		9	9	
OHCR/Ohio Central Railroad		74	74	

Railroad	Leased	Owned, Operated	Total Operated	Owned/ Leased to Others
OSCR/Ohio South Central Railroad		60	60	5
OSRR/Ohio Southern Railroad	2	20	22	
RJCL/RJCW/R.J. Corman Railroad – Cleveland Line/Western Ohio Lines		162	162	
RSL/Republic Short Line		3	3	
SPO/South Point & Ohio Railroad		1	1	
TIR/Toledo Industrial Railroad		1	1	
WTRM/Warren & Trumbull Railroad		4	4	2
YARR/Youngstown & Austintown Railroad		5	5	
YB/Youngstown Belt Railroad		14	14	
YSRR/Youngstown and Southeastern Railroad		30	30	
Total - Class III Railroads	624	877	1,500	13
Total - Class II and Class III Railroads	873	1,295	2,168	24

Sources: Railroad questionnaires, railroad websites

Inactive Rail Corridors

As in other parts of the U.S., the mileage of the Ohio rail network hit its peak in the early 20th century between 1910 and 1920, before automobile usage became more prevalent. The mileage of active rail lines has declined since then. In addition to the active rail network, Ohio has rail lines and rights-of-way that are no longer used for rail service. Figure 2-2 displays all rail lines and rights-of-way in Ohio as recorded by the ODOT geographic information sources. Non-active corridors are categorized as follows:

- Inactive/Out of service rail lines are legally still part of the U.S. rail network and the serving railroad has a "common carrier" obligation to provide service upon reasonable request. In reality, many of these corridors would require extensive investment to be brought back into service.
- Railbanked corridors are used as recreational trails. They are legally recognized by the STB as being part of the U.S. rail network but have "interim use" designation as a recreational trail under the National Trails System Act of 1983. These corridors maintain the same status as they did when used as rail corridors, so that any easements over which the rail lines operate stay in place for the recreational trail. The trail operator must maintain all bridges and structures that had been used for the rail corridor. Legally, a rail operator could request a railbanked corridor be converted back to a rail corridor, but in practice this has rarely occurred.
- Abandoned rail corridors have been through the STB abandonment process and no longer have a designated railroad operator. These corridors are no longer part of the U.S. rail network. Some abandoned corridors may remain intact, but many are no longer viable transportation corridors and are little more than lines on a map where a rail line once was. Generally, abandoned rail corridors owned by the public sector or by a railroad would be easier to restore service than privately owned property not owned by a railroad. Ohio's rail map database identifies 67 abandoned miles that are owned either by a railroad or the public sector.

Figure 2-2. Ohio Rail Lines and Rights-of-Way by Status

Source: ODOT Transportation Information Mapping System

Limitations of Ohio's Rail Network

When Ohio's rail network was originally constructed, railcars were smaller than they are today. In the 1990s the U.S. railroad industry increased the maximum standard gross weight (gross weight includes the weight of cargo carried or "payload" and the weight of the railcar itself or "tare") of a railcar from 263,000 pounds to 286,000 pounds. This increase was intended to provide better efficiency, since many of the costs associated with handling railcars are the same regardless of weight. Furthermore, the new railcars had a better weight to tare ratio. Railcars themselves have become lighter owing to advancements in materials and construction techniques. While 286,000 pounds is 8.7% higher than 263,000 pounds, the new railcars can accommodate 10% to 11% more payload per railcar because of the better weight to tare ratio.

To accommodate 286,000 railcars, rail lines require a combination of heavier rail, better ties, and better-maintained ballast compared to accommodating 263,000 pound railcars. Furthermore, bridges must have an appropriate load rating. Short line operators in many cases had acquired rail lines that were not built to the 286,000 pound standard, and due to limited resources, have had difficulty upgrading and maintaining their

rail lines to that standard. As of 2024, 226 miles in Ohio are unable to accommodate 286,000 pound railcars. This places these rail lines at a disadvantage, since shippers generally pay the same regardless of whether they use 286,000 pound or 263,000 pound railcars, which cannot hold as much cargo. Furthermore, rail lines that cannot accommodate 286,000 pound railcars serve as bottlenecks on rail moves that are typically hundreds of miles, since it would be prohibitively expensive to shift freight from one railcar to another to accommodate the weight-restricted segment. Figure 2-3 displays rail lines in Ohio that can or cannot accommodate 286,000 pound railcars.

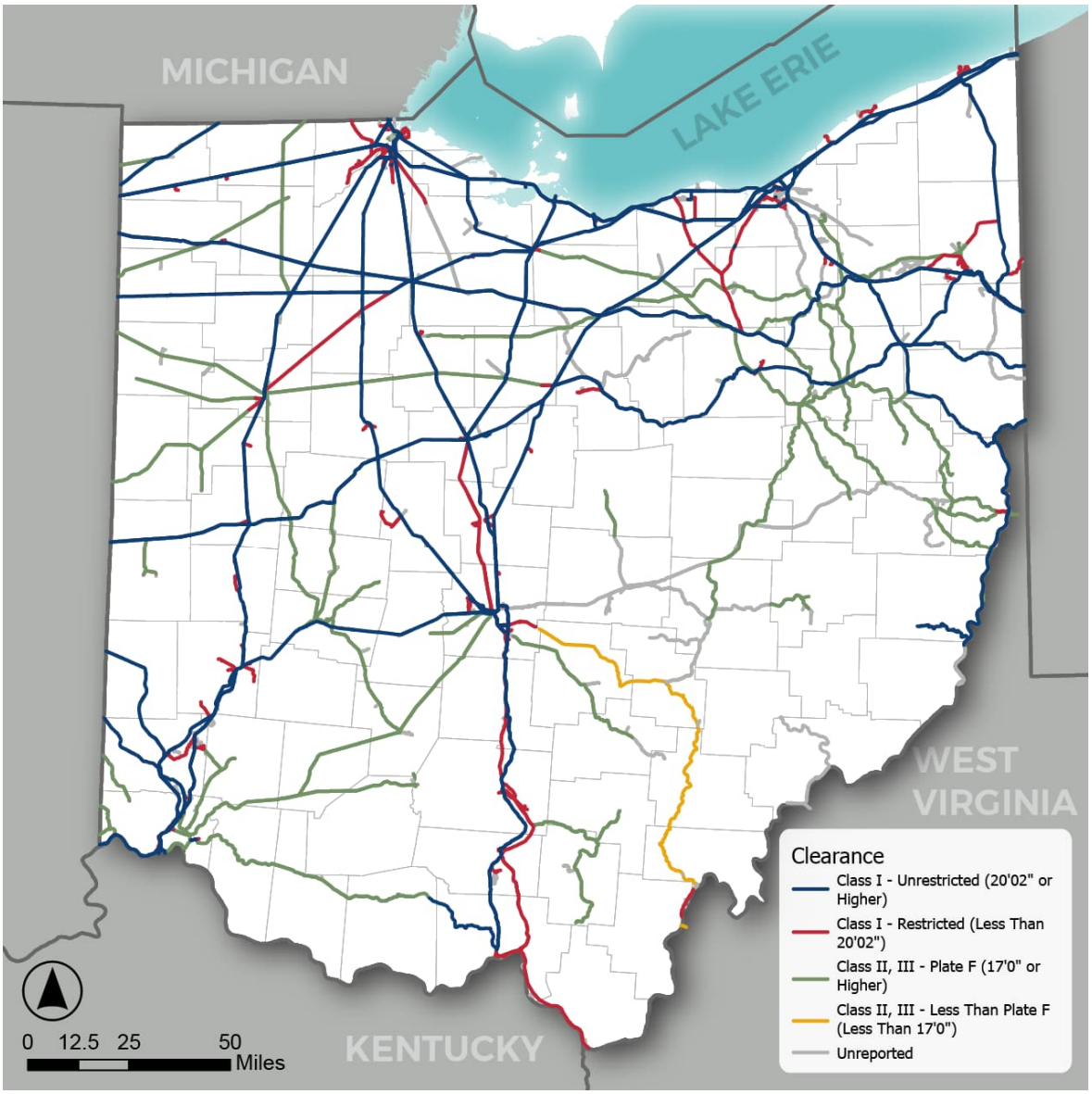
Figure 2-3. Weight Limitations of Rail Lines in Ohio

Sources: Railroad questionnaires, railroad websites

When Ohio's rail network was built, railcars also had lower heights than many of the railcars in service today, so that most railcars were no more than 15 feet 6 inches above rail. Today, high cube boxcars are 17 feet above rail, and double-stack intermodal cars and automotive racks can be as high as 20 feet 2 inches above rail. Because railcars may jostle up and down, they require at least 6 inches of additional clearance for safe travel, so 17 feet 6 inches clearance is required for high cube boxcars. Twenty feet 8 inches of clearance is required for unrestricted double-stack intermodal cars and automotive racks. Figure 2-4 displays height restrictions of Ohio rail lines. Most double-stack intermodal cars and automotive racks travel over Class I rail

lines, so double-stack clearance is mostly relevant to rail lines operated by Class I railroads, though there are some notable exceptions in Ohio where short line and regional railroads (Class II or III) railroads may require this clearance. Still, most Class II or Class III railroads do not require double-stack clearance, but frequently handle high cube boxcars (shown as Plate F in the figure) of 17 feet.

Figure 2-4. Height Restrictions of Rail Lines in Ohio



Sources: Railroad questionnaires, railroad websites

Characteristics of Ohio Rail Lines

Number of Tracks

Because it is expensive to build and maintain additional parallel tracks, most rail lines in Ohio consist of a single track and trains pass each other using passing sidings. Double track rail lines are on busy mainlines where the capacity provided by two tracks is needed. Figure 2-5 displays Ohio's rail network by the number of parallel tracks.

Figure 2-5. Ohio Rail Lines by Number of Parallel Tracks

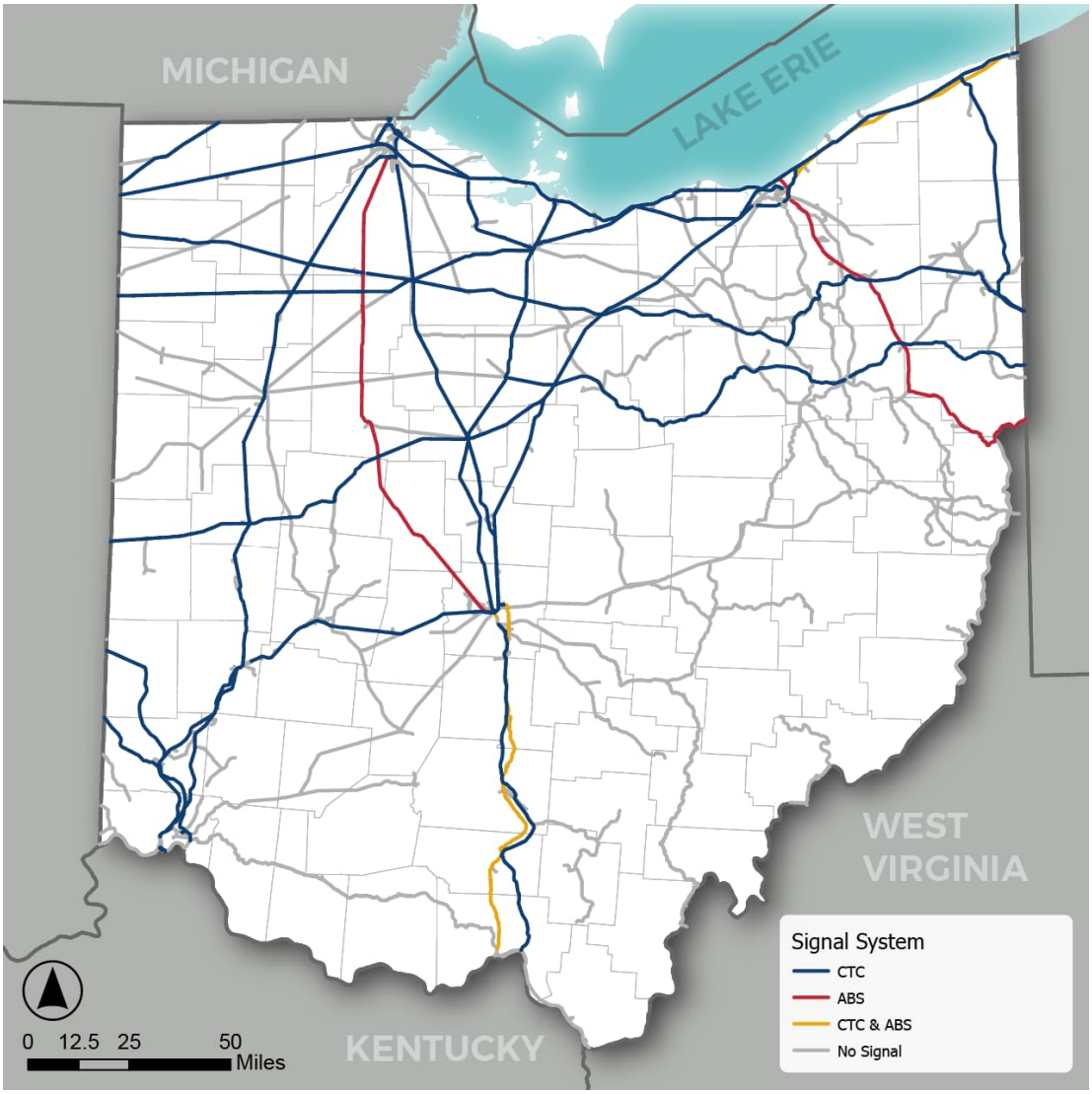
Sources: Railroad track charts and employee timetables

Dispatch Systems

Ohio rail lines also differ by the dispatch systems which control train movements on rail lines. The busiest rail lines are dispatched by centralized traffic control (CTC), under which a dispatcher at a central office can control railroad interlockings and signals to direct traffic flow on a portion of the rail system. Moderately busy rail lines may be dispatched by automatic block signal system (ABS), which features electronic signals that control the movement of trains. In contrast to CTC, rail lines dispatched through ABS do not allow a central dispatcher to control signals or interlockings. Signals automatically change with train movements.

For low density rail lines, electronic signal systems are not necessary, and these lines are dispatched by scheduling, radio communications, or other means. With no signal systems, these rail lines are often referred to as "dark territory."

Figure 2-6. Ohio Rail Lines by Dispatch System



Sources: Railroad track charts and employee timetables

STRACNET

The rail network is important to the U.S. military, particularly given the difficulty of moving military hardware over the roadway network. The U.S. Department of Defense has identified a network of rail lines that are necessary for defense deployment and peacetime needs (STRACNET). Several STRACNET lines move through Ohio. Also, within Ohio are STRACNET connector lines, which serve specific military installations such as the following:

- Joint System Manufacturing Center in Lima
- Lines in Ohio that serve Army National Guard bases in Meadville, Pennsylvania, and Eleanor, West Virginia
- Camp James A. Garfield Joint Military Training Center in Ravenna
- U.S. Navy Nuclear Propulsion Program facility in Barberton

Figure 2-7 displays STRACNET lines in Ohio. STRACNET has implications for rail lines due horizontal clearance required for moving military hardware. STRACNET lines must maintain an offset of 7 feet 1 inch to 7 feet 3 inches from the centerline of a track. Passenger trains often require that platforms be closer to the centerline of the track to avoid a gap between train and level boarding platform. Therefore, train stations with high level boarding on STRACNET lines must include a method to adjust the platform in case a military train were to pass through, such as platforms that are removable, "gauntlet" tracks that can direct a train with miliary hardware away from the platforms, or a passing track away from the platform. Currently, no passenger rail stations in Ohio are impacted by the issue, but it could become an issue in the future.

Figure 2-7. STRACNET in Ohio

Source: U.S. Department of Defense

2.1.2 Multimodal Freight Facilities

There are many facilities in Ohio that connect rail with other freight modes, such as highway or water. These allow shippers to benefit from the unique strengths of each transportation mode within one freight movement. For example, truck/rail movements benefit from the flexibility of trucking and the favorable economics of rail for shipping large volumes of goods long distances. Rail is typically used for the long-distance portion of the move, while trucking is used to bring shipments directly to/from customer premises. Rail/water connections allow shippers to benefit from the economies provided by both rail and water transportation for shipping bulk commodities.

Intermodal

One specific type of multimodal option for rail is intermodal. Within the railroad industry, the term "intermodal" refers to the movement of containers or trailers on flatcars. With 11 facilities, Ohio has the fourth highest number of intermodal terminals behind Texas, Illinois, and California. Figure 2-8 displays Ohio's intermodal network. Intermodal markets in Ohio are dynamic and changing with some services ending and others starting. For example, IORY had previously worked with CPKC to offer intermodal service at a newly established terminal in Jeffersonville. This intermodal traffic did not develop as anticipated. Since that time, a Honda-LG joint venture has started construction of an electric vehicle battery plant adjacent to this terminal. IORY is developing plans to offer intermodal service under a new arrangement. Intermodal terminals are further described in Appendix A.

Figure 2-8. Intermodal Terminals in Ohio

Source: Rail Commission

Table 2-4. Intermodal Terminals in Ohio

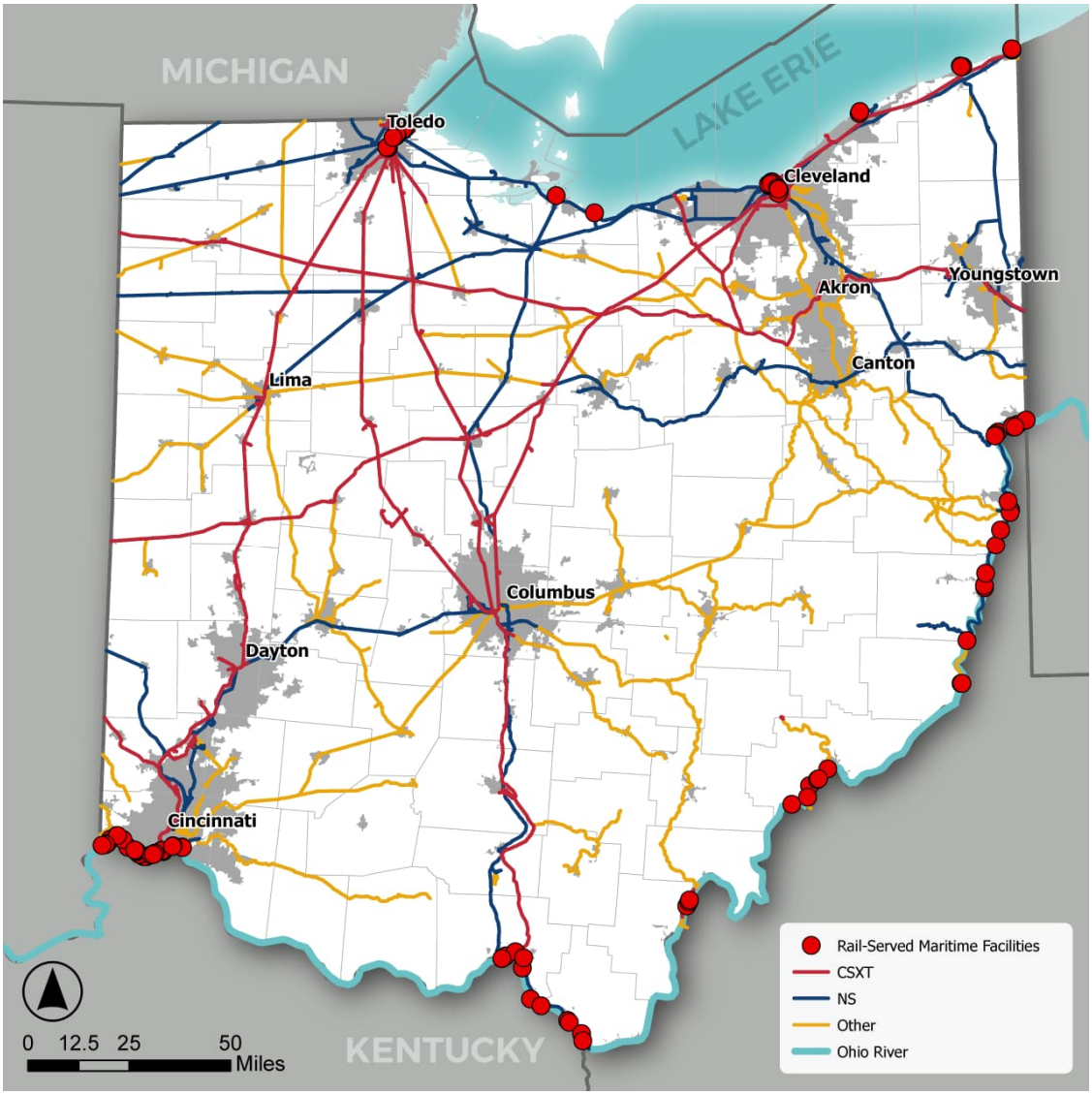
Number	Terminal
1	NW Ohio Intermodal Terminal
2	Collinwood
3	Buckeye Yard
4	Queensgate
5	Marysville
6	Rickenbacker
7	Maple Heights
8	Gest Street
9	Sharonville Intermodal Terminal
10	Toledo Airline Junction Intermodal Terminal
11	Central Ohio Intermodal Center

Source: Rail Carrier Websites

Rail-Served Port Facilities

Ohio also has numerous rail-served port facilities on Lake Erie and the Ohio River. In some cases, these facilities specialize in transferring freight between rail and water, but in other cases, the port serves as a multimodal hub that facilitates both rail/truck and water/truck transfers. Figure 2-9 displays rail-served port facilities in Ohio, and these are detailed in Appendix A.

Figure 2-9. Rail-Served Port Facilities in Ohio

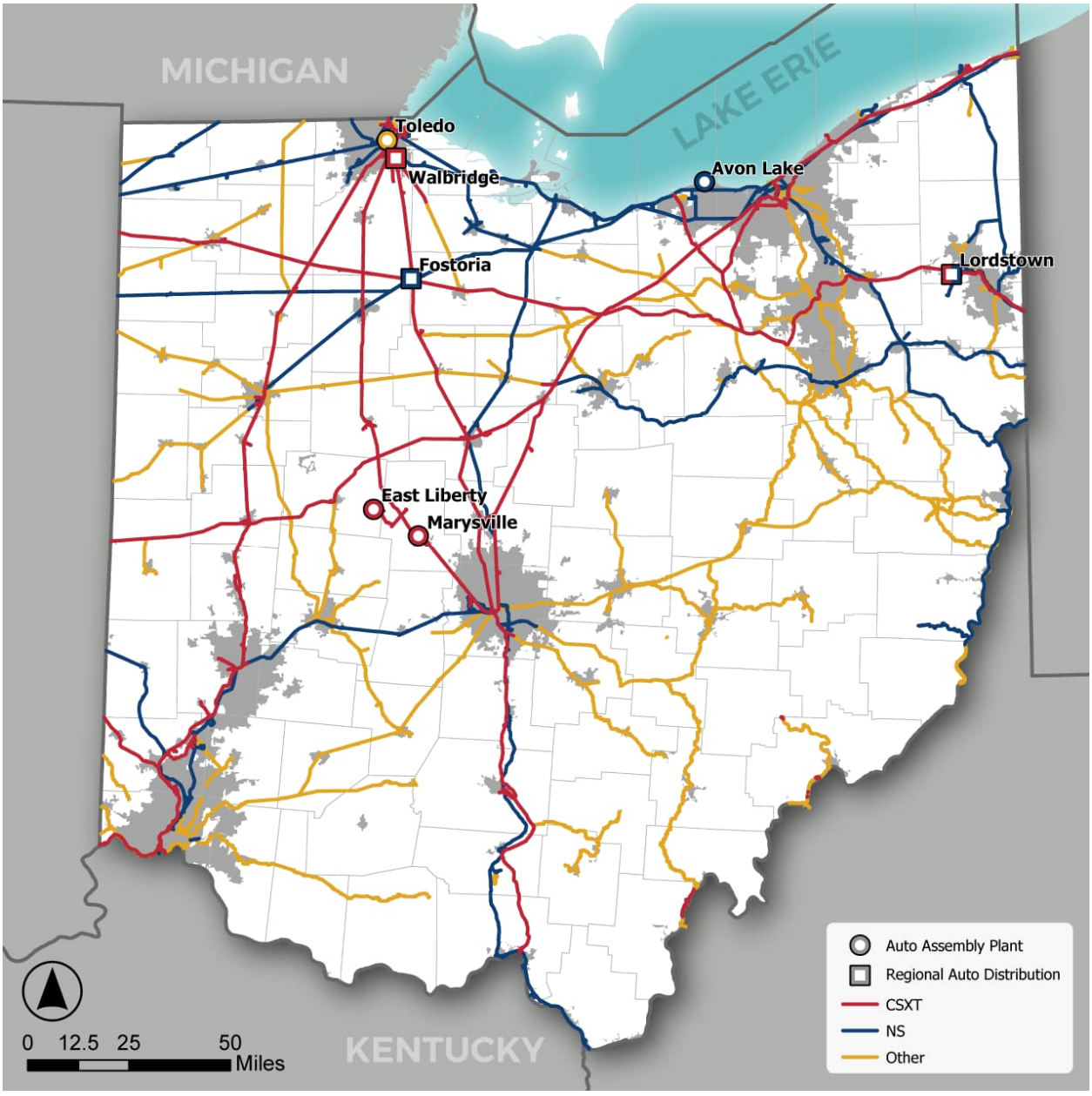


Source: Ohio Maritime Plan

Automotive Facilities

The automotive industry is an important user of rail in Ohio. Rail is used for shipping finished vehicles outbound from assembly plants and inbound for regional distribution. Manufacturers of automotive components may also use rail to bring in raw materials and ship their products to assembly plants. Figure 2-10 displays automotive assembly and distribution facilities operating in Ohio.

Figure 2-10. Rail-Served Automotive Facilities in Ohio



Source: Association of American Railroads, RailInc

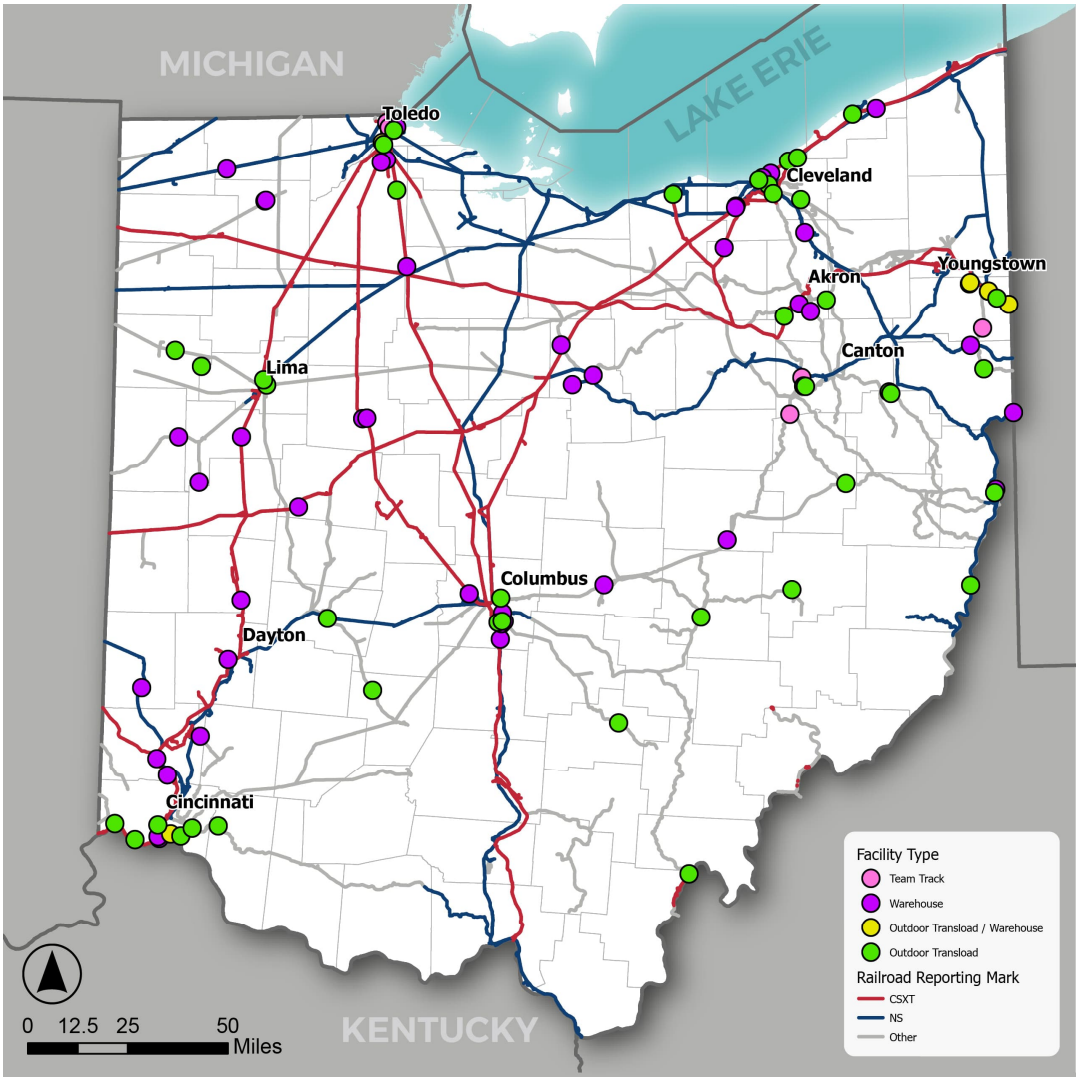
Transload

Transload refers to a broad range of facilities where cargo is moved between truck and rail. For the purposes of this Rail Plan, transload facilities have been categorized as follows:

- Warehouse. These are rail-served warehouses where freight can be transferred between truck and rail through a warehouse.
- Outdoor transload. At these facilities, bulk or dimensional[9] freight is transferred between truck and rail, not within a warehouse or covered location.
- Team track. Team tracks are locations where multiple shippers can load/unload railcars to/from truck. They are considered self-serve facilities, since no one facility operator controls the facility.

A map of transload facilities in Ohio is displayed in Figure 2-11. These facilities are further described in Appendix A.

Figure 2-11. Transload Facilities in Ohio



Source: Survey of Railroads, Railroad Websites

[9] Bulk freight is cargo that is shipped unpackaged in large quantities. Bulk can be dry or liquid and is shipped in tanker cars, hopper cars, and gondolas. Dimensional cargos include items like steel and lumber. These generally move on flatcars.

2.1.3 Passenger Rail System

Passenger rail service in Ohio is provided by the National Railroad Passenger Corporation, otherwise known as Amtrak. Amtrak is a quasi-public corporation that provides intercity passenger rail operations within the United States providing service to 46 of the 48 contiguous U.S. states, over 30 routes.

Amtrak does not own any of the 376 miles of rail lines over which it operates in Ohio. Seven Amtrak stations are located in Ohio and six are in neighboring states within 30 miles of Ohio as shown in Figure 2-12.

Three Amtrak routes serve Ohio. The Capitol Limited/Floridian and Lake Shore Limited operate in the northern part of Ohio, while the Cardinal route largely follows the Ohio River along the southern border of Ohio. Routes are as follows:

- Cardinal Route: New York, New York – Washington, D.C. – Charlottesville, Virginia – Cincinnati, Ohio – Indianapolis, Indiana – Chicago, Illinois
- Capitol Limited/Floridian: Tampa/Miami, Florida – Savannah, Georgia – Washington, D.C. – Pittsburgh, Pennsylvania – Cleveland, Ohio – Chicago, Illinois
- Lake Shore Limited: New York, New York/Boston, Massachusetts – Albany, New York – Chicago, Illinois

Table 2-5 details of the routes serving Ohio. The Lake Shore Limited and Capitol Limited/Floridian use the same rail line between the Ohio/Indiana border and Cleveland where they diverge with the Lake Shore Limited providing service to/from New York, Boston and the Capitol Limited route providing service to/from Washington, D.C. The Floridian is a temporary new service that combines the Capital Limited and Silver Star routes to provide service between Chicago and Tampa/Miami via Washington D.C. The Cardinal operates in Ohio between the Indiana/Ohio border and Cincinnati, then passes along the Kentucky and West Virginia sides of the Ohio River between Cincinnati and Huntington.

Figure 2-12. Amtrak Routes and Stations within 30 Miles of Ohio

Source: US Department of Transportation, Bureau of Transportation Statistics, National Transportation Atlas Database

The Capitol Limited, the Floridian and the Lake Shore Limited are daily with one train in each direction. The Cardinal service operates on Wednesdays, Fridays, and Sundays, one train in each direction. Trains are generally timed to facilitate midday connections with other long-distance Amtrak trains in Chicago. Given Ohio's distance from Chicago, schedules are such that trains pass through Ohio at night or in the early morning so that trains arrive in Chicago in the morning or leave Chicago in the afternoon. Transit times as trains pass through Ohio and adjacent areas of neighboring states are 20 to 50% longer than equivalent drive times in automobiles.

The three routes that serve Ohio are considered "long-distance" routes, since they are over 750 miles in length. The Passenger Rail Investment and Improvement Act of 2008 (PRIIA) assigned states the responsibility of managing and providing any necessary subsidies for "regional routes" of less than 750 miles. Subsidies for long-distance routes of over 750 miles are the responsibility of Amtrak.

Table 2-5. Amtrak Routes Serving Ohio

	First Stop Serving OH	Last Stop Serving OH	First Stop Arrival	Last Stop Arrival	Transit Time	Equivalent Drive Time
WB Cardinal	Huntington, WV	Connersville IN	9:44 p.m.	3:36 a.m.	5:52	3:48
EB Cardinal	Connersville IN	Huntington, WV	1:31 a.m.	7:19 a.m.	5:48	3:48
WB Lake Shore Ltd	Erie PA	Waterloo IN	2:10 a.m.	7:51 a.m.	5:41	4:34
EB Lake Shore Ltd	Waterloo, IN	Erie, PA	1:15 a.m.	7:18 a.m.	6:03	4:34
WB Capitol Ltd/ Floridian	Alliance OH	Waterloo IN	1:39 a.m.	6:36 a.m.	4:57	3:52
EB Capitol Ltd/ Floridian	Waterloo IN	Alliance OH	10:23 p.m.	3:05 a.m.	4:42	3:52

Source: Amtrak, Amtrak Routes & Destinations

Amtrak stations in Ohio are listed in Table 2-6. Their features differ significantly, with some stations, particularly in rural areas consisting of simple platforms with shelters while others are staffed full-service station buildings, such as the Cincinnati Union Terminal (Figure 2-13), which is a historic landmark. Station buildings and parking lots are either owned by Amtrak or the local municipalities, while the platforms and tracks are owned by the freight railroads whose rail lines pass through the stations. Some municipalities like Toledo combine rail, intercity bus, and local transit services in the same location, making train stations multimodal hubs rather than just train stations.

Figure 2-13. Cincinnati Union Terminal

Source: Ɱ, Union Terminal, CC BY-SA 4.0, https://commons.wikimedia.org/w/index.php?curid=79204404

Table 2-6. Amtrak Stations in Ohio

Features	Bryan	Toledo	Sandusky	Elyria	Cleveland (CLE)	Alliance	Cincinnati
Owner	Amtrak (facility); City of Bryan and Amtrak (parking lot); Norfolk Southern Railway (platform and tracks)	Toledo-Lucas County Transit Authority	City of Sandusky (facility and parking lot); Norfolk Southern Railway (platform and tracks)	Amtrak (facility); Norfolk Southern Railway (parking lot, platform and tracks)	City of Cleveland (facility and parking lot); Norfolk Southern Railway (platform and tracks)	Pennsylvania Lines, LLC (facility and parking lot); Norfolk Southern Railway (platform and tracks)	City of Cincinnati (facility and parking lot); CSXT (platform and tracks)
Address	Paige and Lynn Street Bryan, OH 43506	415 Emerald Avenue Martin Luther King, Jr. Plaza Toledo, OH 43604	1200 North Depot Street at Shelby Street Sandusky, OH 44870	410 East River Street Elyria, OH 44035	200 Cleveland Memorial Shoreway Cleveland, OH 44114	820 East Main Street Alliance, OH 44601	1301 Western Avenue Cincinnati, OH 45203
Served by	Lake Shore Limited	Lake Shore Limited Capitol Limited/ Floridian	Lake Shore Limited Capitol Limited/ Floridian	Lake Shore Limited Capitol Limited/Floridian	Lake Shore Limited & Capitol Limited/ Floridian	Capitol Limited/Floridian	Cardinal
Service Frequency	Lake Shore Limited: twice per day	Lake Shore Ltd: twice per day Capitol Ltd/ Floridian: twice per day	Lake Shore Ltd: twice per day Capitol Ltd/ Floridian: twice per day	Lake Shore Ltd: twice per day Capitol Ltd/Floridian: twice per day	Lake Shore Ltd: twice per day Capitol Ltd/ Floridian: twice per day	Capitol Limited/ Floridian: Twice per day	Cardinal: twice per day, three days per week
Station Location	Rural (small town)	Urban	Urban	Urban	Urban	Urban	Urban
Shelter	Utilitarian one-story concrete and glass enclosure	Martin Luther King Jr. Plaza, a multi-story building built in 1950	Station building	Utilitarian open glass and steel shelter	Station Building	Enclosed waiting area	Large historic station building
Americans with Disabilities Act	Station wheelchair accessible, not all station facilities accessible	Fully wheelchair accessible	Station wheelchair accessible, not all station facilities accessible	Station wheelchair accessible, not all station facilities accessible	Station wheelchair accessible, not all station facilities accessible	Station wheelchair accessible, not all station facilities accessible	Fully wheelchair accessible (via wheelchair lift)

Features	Bryan	Toledo	Sandusky	Elyria	Cleveland (CLE)	Alliance	Cincinnati
Depot Hours	Open during train stops: Daily, 1:30-2:30 a.m. Daily, 6:30-8:00 a.m.	Ticketing/baggage open: Midnight-1:30 p.m., and 10:30 p.m.-Midnight Station building open to the public additional hours	N/A	Not applicable (station is unstaffed; shelter has no doors)	Fridays, Midnight-2:30 a.m.; All other days, Midnight-7:00 a.m.	N/A	Waiting area hours: Monday, Midnight-6:30 a.m. Tuesday, 11:00 p.m.-Midnight All other days: Midnight-6:30 a.m. and 11:00 p.m.-Midnight The station building is open to the public additional hours
Baggage service	Unstaffed; no baggage service	Checked baggage service	Unstaffed; no baggage service	Unstaffed; no baggage service	Checked baggage service	No baggage service	Checked baggage service
Restrooms	No restrooms	Accessible restrooms	Accessible restrooms	No restrooms	Accessible restrooms	No restrooms	Accessible restrooms
Ticketing	No ticketing	Ticketing	No ticketing	No ticketing	Ticketing	No ticketing	Ticketing
Shared Uses	No shared use	Intercity bus, restaurant, transit buses, offices	Local transit buses stop on premises; transit offices in the building	No shared use	No shared use	No shared use	Museum & restaurants
Parking	Dedicated short- and long-term parking is available at the station	Dedicated short- and long-term parking is available at the station	Dedicated short- and long-term parking is available at the station	Dedicated short- and long-term parking is available at the station	No short-term parking. Long-term parking available	Dedicated short- and long-term parking is available at the station	Dedicated short- and long-term parking is available at the station

Sources: Amtrak, Great American Stations website,
* Note that while local transit may reach some stations, in most cases transit service is not available during the times that Amtrak trains are in the stations

2.1.4 Passenger Rail Performance

The total number of people who got on or off a station in Ohio in 2023 was 134,450. Table 2-7 provides a tabulation of the total ridership between 2019 and 2023 for stations that serve Ohio. The station with the highest ridership in 2023 was Toledo with just over 53,000 passengers who alighted or boarded trains; the station with the smallest ridership was Alliance with 2,697 boardings and alightings. Figure 2-14 is a map of ridership by station for 2023.

The COVID-19 pandemic and the associated measures to halt the spread of the virus dramatically impacted total Amtrak ridership. By the height of the pandemic in 2021 ridership declined by 62% from the pre-pandemic level in 2019. As of 2023, ridership has bounced back and overall is two percent higher than in 2019.

Table 2-7. Amtrak Passengers Alighting or Boarding Trains in Ohio by Year by Station

Station	State	On/Offs				
		2019	2020	2021	2022	2023
Bryan	OH	5,109	3,252	2,808	4,262	4,353
Toledo	OH	50,192	31,735	28,045	54,212	53,189
Sandusky	OH	8,821	5,360	5,164	8,400	8,313
Elyria	OH	5,828	5,098	4,578	6,697	8,811
Cleveland	OH	49,195	32,704	32,263	48,887	48,784
Alliance	OH	4,309	2,529	2,040	3,132	2,697
Cincinnati	OH	8,641	5,451	7,164	8,374	8,303
Total		132,095	86,129	82,062	133,964	134,450

Source: Railroad Passengers Association

Figure 2-14 graphically displays 2023 ridership by station in Ohio. As shown, the two stations with the highest ridership are Cleveland and Toledo. Both the Lake Shore Limited and the Capitol Limited/Floridian serve these two stations. The size of the markets served increases ridership, the Cleveland metropolitan area having a population of 2.2 million, while Toledo metropolitan area has a population of 0.6 million. Stations along the Cardinal route generally have lower ridership. Cincinnati has the highest ridership of stations either in or within 30 miles of Ohio on the Cardinal route. Despite having a relatively large population of 1.8 million, Cincinnati's Amtrak ridership was 8,303 in 2023, perhaps reflecting infrequent service at inconvenient times as well as service performance.

Figure 2-14. 2023 Ridership at Amtrak Stations in or near Ohio

Source: Amtrak, Railroad Passengers Association

The top 10 city pairs by ridership in 2023 are listed in Table 2-8. All origins are in Ohio and located along either the Capitol Limited/Floridian or Lake Shore Limited routes. This is attributable to these routes having daily service. The Cardinal route which serves Cincinnati only has three trains a week. Additionally, all the destination cities for the pairs are either Chicago, New York, or Washington DC. Chicago is the overwhelmingly favored destination, appearing in 6 of the top 10 destinations.

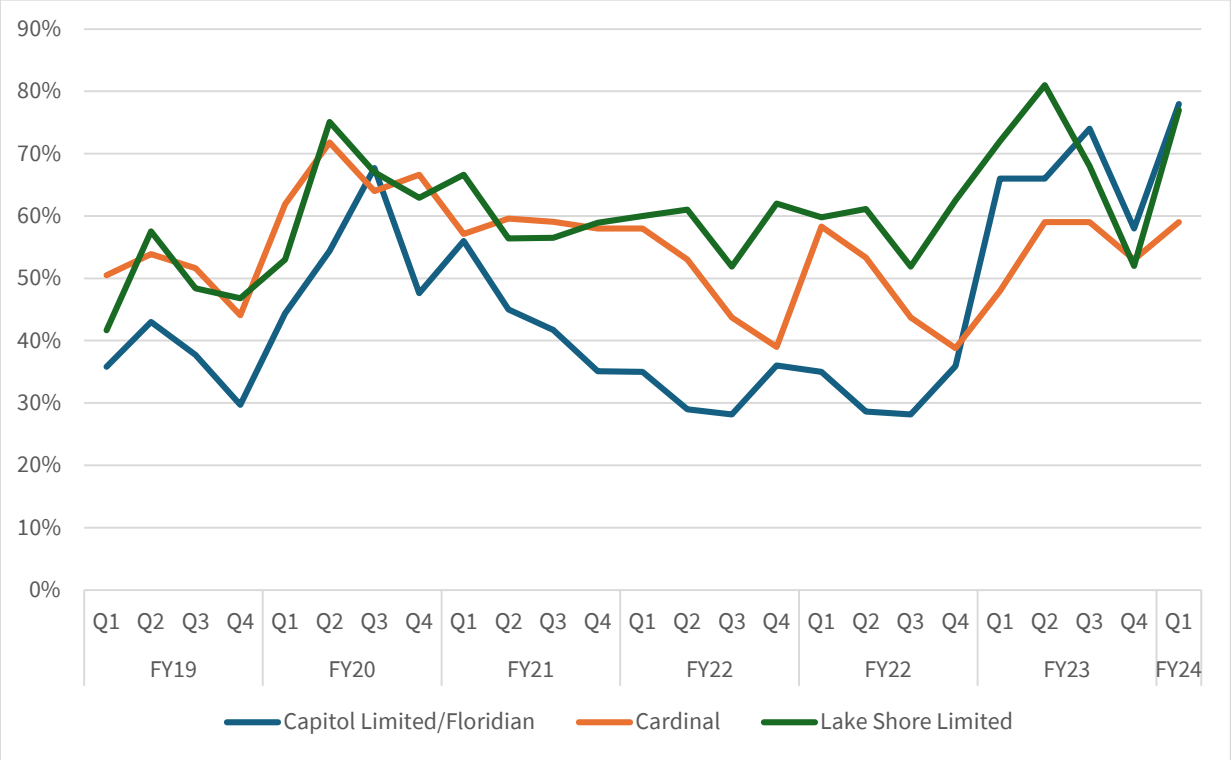
Table 2-8. Top Amtrak City Pairs by 2023 Ridership with an Endpoint in Ohio

Top City Pairs by Ridership		
Rank	End Point in Ohio	End Point outside Ohio
1	Cleveland	Chicago, IL
2	Toledo	Chicago, IL
3	Toledo	Washington, DC
4	Cleveland	New York, NY
5	Sandusky	Chicago, IL
6	Cincinnati	Chicago, IL
7	Cleveland	Washington, DC
8	Toledo	New York, NY
9	Elyria	Chicago, IL
10	Bryan	Chicago, IL

Source: Railroad Passengers Association

On-time performance (OTP) is critical to successfully attracting and retaining rail passengers. Amtrak defines Customer OTP as the percentage of all customers on an intercity passenger rail train who arrive at their destination no later than 15 minutes after their scheduled arrival time, reported by train and by route. The measure helps Amtrak identify lower performing routes and examine solutions that can be found in Amtrak operation or the host railroad operations. Amtrak and FRA have established an OTP standard of 80% of passengers arriving on time for the routes that operate through Ohio. These standards were generally not met with the Capitol Limited having the worst performance during most quarters and the Lake Shore Limited having the best performance. Generally, OTP was high during the pandemic. It then fell in the years that followed but has improved in 2023 and 2024. Figure 2-15 provides the Customer OTP for all three routes serving Ohio.

Figure 2-15. Customer On-Time Performance for Amtrak Routes through Ohio

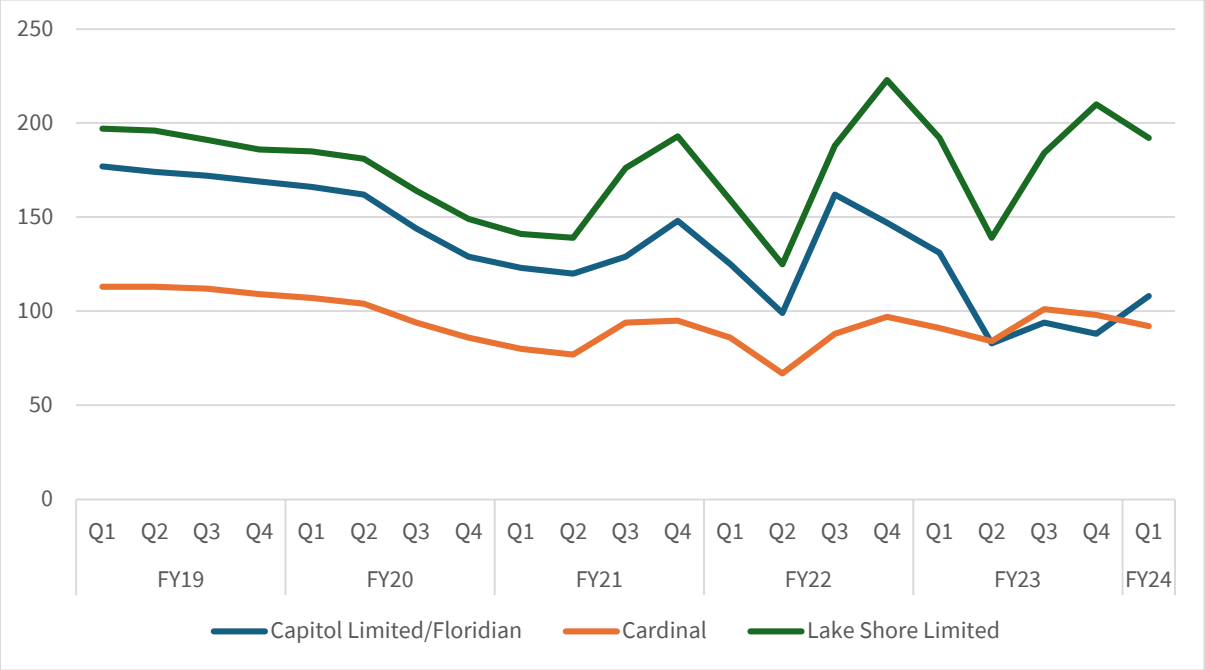


Source: Amtrak Performance Reports

* FY21 Q3 and Q4 data were unavailable. The trend was continued for these years.

Another metric, average ridership per train mile, is calculated by dividing passenger miles by train miles (Figure 2-16). It measures the average number of passengers per train over a route. The route with the highest average ridership is Lake Shore Limited, followed by the Capitol Limited/Floridian and then the Cardinal. All three declined starting in 2019, although the Lake Shore Limited has significantly recovered. These routes tend to follow a seasonal pattern with more passengers in the summer and fall and fewer in the spring and winter.

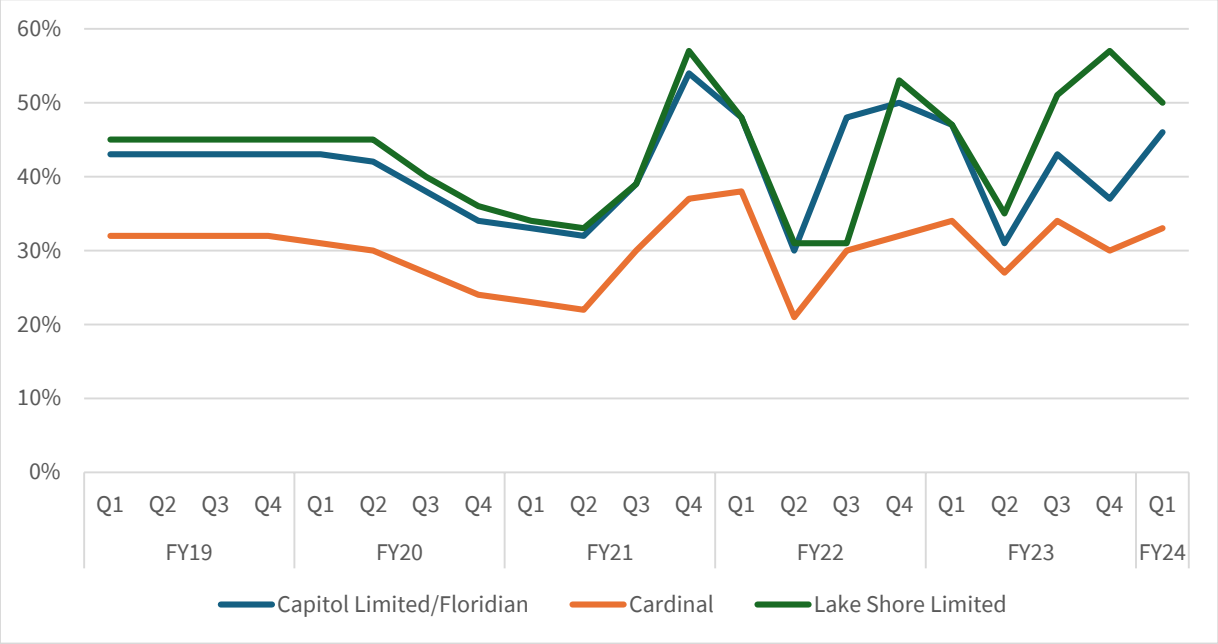
Figure 2-16. Average Ridership per Train Mile for Amtrak Routes through Ohio



Source: Amtrak Performance Reports

None of the Amtrak routes that serve Ohio recovers the amount it costs to operate the route, and rarely do they recover half the costs. Figure 2-17 shows the cost recovery rate for each Amtrak route through Ohio. The cost recovery rate is Amtrak's adjusted operating revenue divided by Amtrak's adjusted costs. Cost recovery trends mirror ridership, since the costs of operating trains is fixed while passenger revenue fluctuates with the number of passengers.

Figure 2-17. Cost Recovery for Ohio Routes



Source: Amtrak Performance Reports

Tourist Railroads and Excursion Services

Ohio is home to many tourist railroads, excursion services as well as other railroad-related tourist attractions. Other rail-related tourist attractions include museums and historical societies that display the local history and significance of the rail industry. For example, the Dennison Railroad Depot in Dennison (Figure 2-18) is a National Historic Landmark and highlights the community's role in the deployment of servicemen and women via train during World War II.

Figure 2-18. Dennison Railroad Depot

Source: Dennison Depot

Tourist railroads differ from other passenger rail services in that passengers do not use the services for transportation. In most cases, the train rides end where they began. Rather, passengers ride these trains for the enjoyment and entertainment of a train ride. These rail operators can play an important role in the preservation of under-utilized rail corridors, since they provide a revenue stream to maintain rail lines in addition to or instead of freight rail revenues. Frequently, they employ volunteers, which further increases the resources that tourist/excursion operators can provide for operating their rail lines. These rail services also boost local economies by attracting tourists with their spending, not only on the tourist trains, but also on the local economy more generally. Several of these tourist railroads and excursion services are listed below.

Cuyahoga Valley Scenic Railroad

The Cuyahoga Valley Scenic Railroad (Figure 2-19) operates a 25-mile line from Independence to Akron in northeastern Ohio. Owned by Cuyahoga National Park, the line is served by a fleet of trains owned and operated by the Cuyahoga Valley Scenic Railroad. The railroad offers year-round excursions, averaging 200,000 trips annually.

Figure 2-19. Cuyahoga Valley Scenic Railroad

Source: Cards84664, CC BY-SA 4.0 <https://creativecommons.org/licenses/by-sa/4.0>, via Wikimedia Commons

Hocking Valley Scenic Railway

The Hocking Valley Scenic Railway operates between Nelsonville and East Logan in southeast Ohio. It owns the 14-mile section between Nelsonville and Haydenville and uses 8 miles of the Indiana & Ohio Railway, owned by Genesee & Wyoming, Inc., for Eastbound trips to Logan.

Lebanon Mason Monroe Railroad

The Lebanon Mason Monroe Railroad (LM&M) operates a 16-mile route between Lebanon, Mason, and Monroe in southwest Ohio. A 4.4-mile segment south from Lebanon Station to Hageman Junction is owned by the City of Lebanon, while the Indiana & Ohio Railway owns the remainder of the track over which LM&M operates. Most excursions are on the 4.4 mile segment between Lebanon and Hageman Junction.

Lorain & West Virginia Railway (L&WV)

Operating in Northern Ohio, the Lorain & West Virginia Railway is a non-profit which operates excursions over 4.5 miles from Wellington to Pittsfield. The excursion operator is staffed by volunteers. The L&WV owns additional right-of-way between Wellington and Elyria.

Orrville Railroad Heritage Society

The Orrville Railroad Heritage Society is in Wayne County, southwest of Akron and owns a one-mile portion of the former Pennsylvania Railroad's Cleveland, Akron & Columbus main line.

Toledo, Lake Erie, and Western Railway and Museum

The Toledo, Lake Erie, and Western Ohio Railway is a non-profit volunteer-run organization that owns approximately 10 miles along former Norfolk and Western Railroad between Waterville and Grand Rapids, Ohio.

2.1.5 Public Funding and Financing of Rail

Because the rail network is primarily owned and operated by private companies, most of the investment in rail infrastructure is private as well. For Class I railroads, public funding is much more limited whereas the smaller Class II and III railroads have more limited resources and rely more heavily on public funding and financing for capital improvements.

Public funding in rail infrastructure can be broadly classified into three categories: highway-railroad grade crossing improvements; direct investment in rail infrastructure such as tracks, yards and bridges; and infrastructure investment for passenger rail. Each category has its own set of criteria to justify public investment. For example, highway-rail grade crossing improvements are selected that enhance safety of the traveling public and improve the mobility of the community. Direct investments in a rail line might be necessary to serve additional industries or ensure shippers have transportation options or improve a region's overall logistics supply chain. Other investments might be necessary to improve passenger rail OTP.

Federal and state funding and financing programs are described below. Some are exclusively for rail; others are potentially available for rail if the proposed project provides benefits that align with identified grant program goals. Of the programs described below, note that some provide funding – grants given with no expectation of repayment – and other programs provide financing, where full repayment is anticipated.

Local Funding/Financing for Freight Rail

Local governments have supported rail transportation by purchasing rail lines that are threatened with abandonment. Several Ohio municipalities and counties currently own rail lines. The City of Cincinnati only recently sold the Cincinnati Southern Railway, which it built in the 1880s and connects Cincinnati with Chattanooga, TN, to its operator, Norfolk Southern.[10] Other public authorities, such as the Toledo-Lucas County Port Authority, own multimodal transfer facilities.

Local governments frequently provide development incentives to attract jobs and investment, and such funds have been used to make rail improvements or construct new rail sidings to connect to existing rail services. Local governments and transportation authorities are also an important source of matching funds for state and federal grants.

State Funding/Financing of Rail Projects

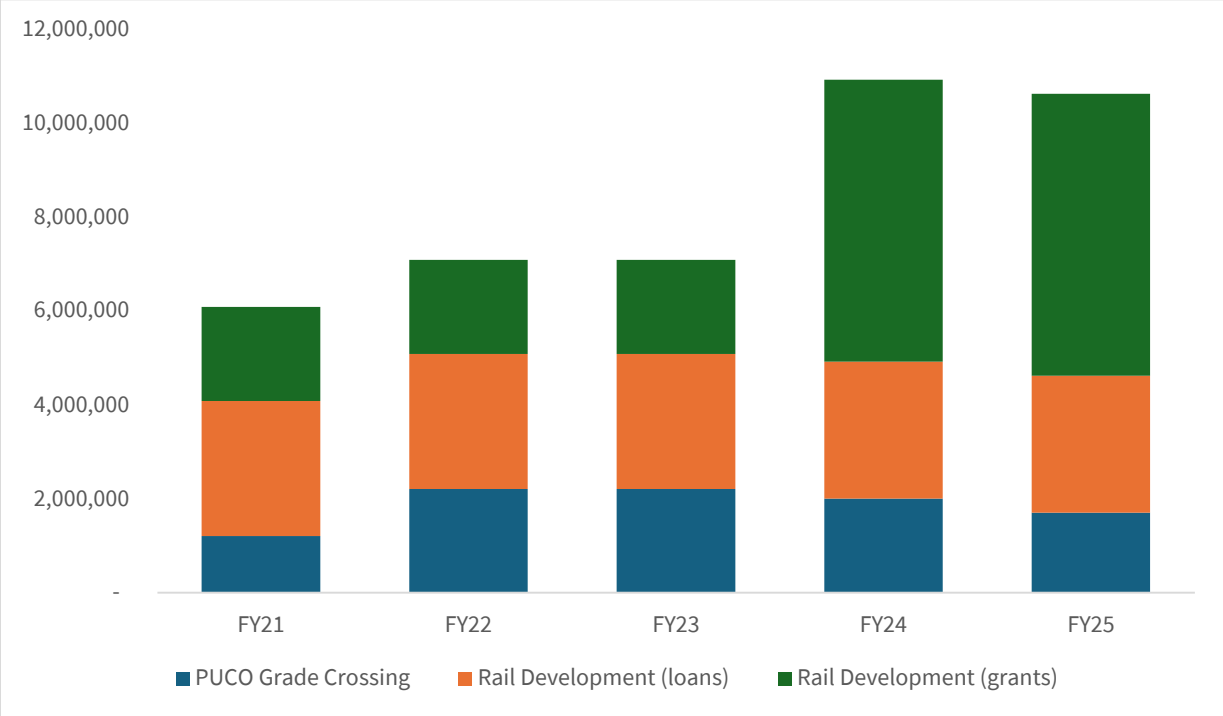
The Rail Commission receives state funding to promote economic development through effective rail service and to improve grade crossing safety. The Rail Commission does not have a dedicated funding source (such as ODOT's share of Ohio's motor fuel tax), and the Rail Commission's funding varies based on resources provided through the state's biennial budget process. Recently state funding has increased substantially. Ohio will benefit from increased federal safety programs with this new matching funding readily available.

Figure 2-20 shows the variability in FY2021-2025 of the Rail Commission's state funding levels, excluding one-time appropriations from the Ohio legislature.[11] Only the state-funded portion of the rail safety program is shown in the chart. Traditionally, most of Ohio's rail safety funding is from federal highway safety funds, described later.

[10] Jared Brey, "Say Goodbye to the Last City-Owned Interstate Railroad," *Governing*, November 20, 2023, https://www.governing.com/infrastructure/say-goodbye-to-the-last-city-owned-interstate-railroad.
[11] Source: 2021-2024 GreenBooks, LBO Analysis of Enacted Budget.

Three new funding programs were established by the FY2024–2025 state budget for grade crossing elimination projects, the implementation of wayside detector systems, and maintenance of grade crossings where ownership is unclear. These new programs have greatly increased Ohio's rail spending from $7 million per year to $133 million in the 2024–2025 biennial budget. Without these one-time programs, FY2024–2025 funding is slightly under $11 million per Figure 2-20. The state funding programs are described individually below.

Figure 2-20. Rail Commission and PUCO State Funding Levels FY2021-FY2025



Source: Rail Commission

PUCO Grade Crossing

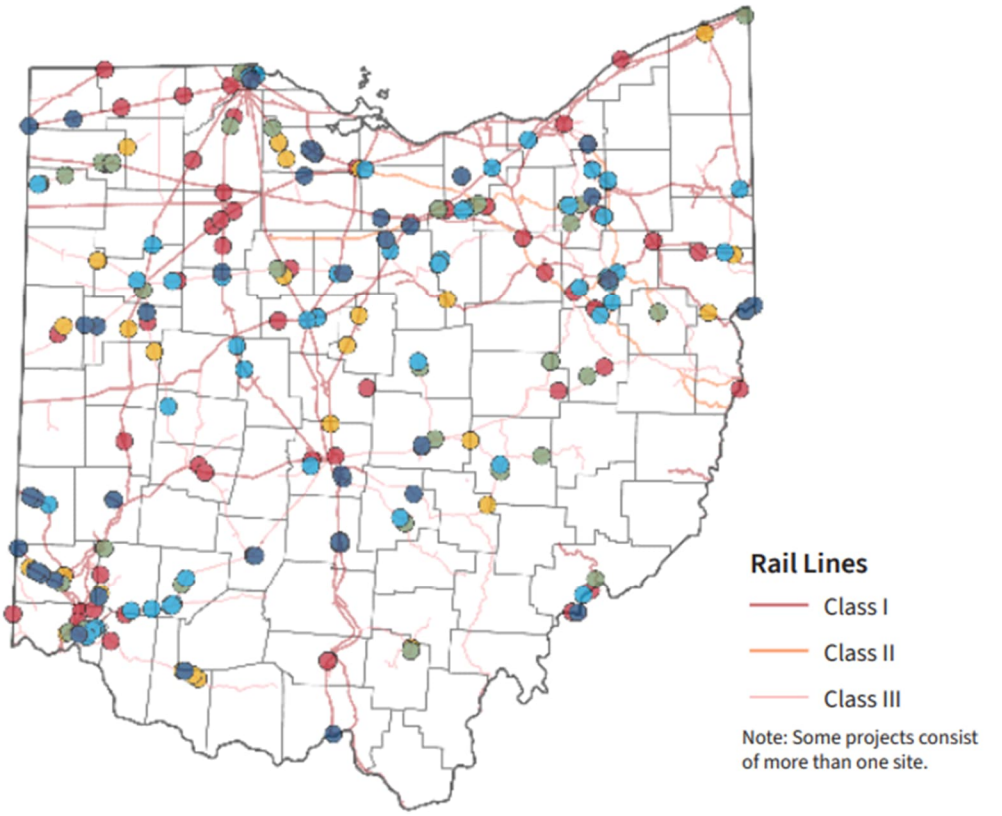
The Public Utilities Commission of Ohio (PUCO) funds rail grade crossing improvements, often in collaboration with the Rail Commission. PUCO receives $1.2 million per year in cash from the Highway Operating Fund, as set in statute.[12] PUCO uses this funding for installation of lights and gates and other safety upgrades at grade crossings not prioritized for federal Section 130 funding, discussed later in this chapter.

Ohio Rail Development Grant and Loan Program

These funds award grants and loans to railroads, businesses, and communities to support the rehabilitation of rail lines, the construction of rail interchanges or connections, the installation of infrastructure to serve new or expanding businesses, as well as the acquisition of rail assets. The average grant provided by the Rail Commission between 2019 and 2023 was $234,746. During this time frame, a total of $2,360,000 in loans was granted. These 88 rail development projects, supported by $20.7 million in Commission funds, were associated with $212.7.3 million in other public investment, and $3.4 billion in private investment.

[12] Terry Steele, Senior Budget Analyst, "LBO Analysis of Enacted Transportation Budget – Part I," *LBO Greenbook*, Ohio Department of Transportation, August 2023.

Figure 2-21. Rail Commission Development Projects Approved FY2019-FY2023



Year	Projects	ORDC Grant	ORDC Loan	Private Investment	Public Investment	Total Investment	Jobs New	Jobs Retained	Carloads New
2019	25	$ 3,883,407	$ 900,000	$ 1,084,696,361	$ 13,184,000	$ 1,102,663,768	461	743	275
2020	17	$ 4,272,461	$ 700,000	$ 120,687,545	$ 16,553,759	$ 142,213,765	267	686	1,500
2021	16	$ 3,980,604	$ 1,070,000	$ 692,718,877	$ 676,400	$ 698,465,880	221	365	90
2022	16	$ 3,669,748	$ 0	$ 877,334,591	$ 8,233,768	$ 889,238,107	553	1,635	3,720
2023	14	$ 4,851,422	$ 500,000	$ 577,011,720	$ 174,044,730	$ 756,407,872	223	716	500
Total	**88**	**$ 20,657,642**	**$ 3,170,000**	**$ 3,352,449,094**	**$ 212,692,657**	**$ 3,588,989,392**	**1,725**	**4,145**	**6,085**

Source: Rail Commission

Ohio Grade Crossing Elimination Program

This program, established in the fiscal year 2024–2025 budget, provides funding to eliminate at-grade crossings and compete for grade crossing elimination project funding from the FRA's Railroad Crossing Elimination (RCE) Program. This funding is being used to perform planning and engineering studies for locations and as a nonfederal match for discretionary federal infrastructure grants.

RCE, described in the Federal Discretionary Funding section, provides funding for grade crossing separation and other safety projects that result in closing at-grade public railroad-highway crossings. Grade crossing elimination projects, and particularly grade separation projects, can be complex and expensive. To compete effectively for federal RCE grants, communities need to carefully define a project, prepare a federal application, and commit matching funds. Many communities lack the necessary resources to pursue these grants.

The Grade Crossing Elimination Program helps Ohio communities to obtain federal funding by ensuring that matching funds are readily available to support applications, and by providing technical resources to sufficiently develop projects to submit a competitive RCE grant application.

Wayside Detector Grant Fund

Wayside detectors are safety devices installed along rail tracks that monitor the conditions of passing trains. They use various technologies to identify potential issues with bearings, wheels, and axles. These devices help rail carriers maintain their rolling stock ensuring their state of good repair and reducing the chance of equipment failure and potential accidents. These devices help improve the safety of the overall system.

House Bill 33 authorized the creation of a $10 million Wayside Detector Grant Fund in FY24 to ensure that Ohio's updated wayside detector safety regulations are being met. This program, combined with other measures being implemented by the State of Ohio, is intended to reduce the likelihood of accidents originating from mechanical issues with railcar, such as the one that occurred in East Palestine in February 2023.

Awards under this program can be used for purchase, installation, and improvement of wayside detector systems, as well as for training. Grants require a 40% match for Class II railroads, and a 15% match for Class III railroads. Class I railroads are not eligible.

Orphan Rail Crossing Program

Another new program authorized by House Bill 33, the Orphan Rail Crossing Program, provides $1 million in FY24 for repairs and improvements to crossings that are no longer used, abandoned by a railroad, or are currently active, but have no clear ownership or responsible party for maintenance. Orphan rail crossings can be hazardous due to lack of maintenance of crossing surfaces, signage, pavement markings, and other warning devices. Specifically, the program can be used for:

- A rail crossing that no longer has a connection to the rail network
- A rail crossing serving a closed and vacated facility
- A rail crossing that is used but lacks clear documentation of ownership and responsibility for the crossing's condition

Eligible projects include any activities necessary to improve the condition of the infrastructure within the right-of-way of either the railroad or roadway. For selected projects, the funding recipient must accept long-term maintenance responsibility for the asset after project completion. In the case of crossing removals, the roadway will be restored to the specifications of the local highway authority.

JobsOhio

JobsOhio programs offer an array of business tax incentives, corporate tax credits, and economic development programs for companies creating new jobs and investment in Ohio. Rail components of projects receiving JobsOhio assistance can be eligible for funding, such as a railroad siding for a new or expanded industrial development.

Federal Funding Sources

The 2021 IIJA, also known as the Bipartisan Infrastructure Law, includes $66 billion in new funding for rail in federal fiscal years 2022-2026. This is a significant increase over previous funding levels.

There are two basic types of federal funding: discretionary and non-discretionary. Discretionary grant funding is requested for individual projects through an application process. Non-discretionary programs provide annual funding directly to states for specific purposes.

Currently, federal funding for freight rail infrastructure projects is provided primarily through competitive discretionary grant programs. Some discretionary grant programs are rail-specific and are administered by the FRA, while others are multimodal and managed by the U.S. Department of Transportation (USDOT) or its sub-agencies, typically the Federal Highway Administration (FHWA).

Eligible entities must file project applications for federal discretionary grant programs which are reviewed and awarded by USDOT. Grant programs are usually "oversubscribed," and a majority of applicants receive no funding.

In addition to meeting program goals, it is often required that applicants commit non-federal funds to match the requested federal grant. Programs typically require a minimum 20% match of non-federal funding, which can be provided by state or local governments, or the private sector.

Federal Non-Discretionary Funding Sources

Section 130

The Rail Commission administers Ohio's share of the federal Railway-Highway Crossing Program, authorized by United States Code Title 23, Section 130. Commonly referred to as "Section 130," the goal of this program is to reduce the crash risk at public rail/highway grade crossings. Ohio has historically supplemented Section 130 funds with other federal highway safety funding. On average, the Rail Commission is allocated approximately $15 million in federal funding annually for grade crossing safety efforts. During 2019-2023, Section 130 funds have supported improvements or closures at 238 crossings, with an average project cost of $227,000. This program is detailed further in section 2.1.6, Programs and Initiatives to Improve Safety.

Congestion Mitigation and Air Quality (CMAQ)

The FHWA's CMAQ program provides a flexible funding source to state and local governments for transportation projects and programs to help meet the requirements of the Clean Air Act. Funding is available to reduce congestion and improve air quality for areas that do not meet the National Ambient Air Quality Standards for ozone, carbon monoxide or particulate matter ("nonattainment areas"), and for former nonattainment areas that are now in compliance ("maintenance areas"). Currently, 42 Ohio counties are nonattainment or maintenance areas, and are eligible to receive CMAQ funding for projects that reduce vehicular emissions. [13]

In FY2023, Ohio received $104.3 million in CMAQ funding. A range of rail-related projects have been selected for CMAQ funding in the past, including intermodal facilities, diesel engine retrofits, idle-reduction projects in rail yards, and rail track rehabilitation. Since 2020, a single Ohio rail project has been funded through CMAQ, namely the construction of a rail siding to support switching operations at the Cincinnati Bulk Terminals (an intermodal port serving barge, rail and truck)[14].

[13] EPA (U.S. Environmental Protection Agency), Table of Counties and Pollutants, Ohio Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants, https://www3.epa.gov/airquality/greenbook/anayo_oh.html.
[14] Source: FHWA, CMAQ Public Access System, https://fhwaapps.fhwa.dot.gov/cmaq_pub/Search/Criteria.

Diesel Mitigation Trust Fund/Volkswagen Mitigation Grants

In 2016, Volkswagen AG paid a $1.45 billion penalty to resolve allegations that Volkswagen violated the Clean Air Act ("CAA") by the sale of approximately 590,000 model year 2009 to 2016 diesel motor vehicles equipped with "defeat devices," computer software designed to cheat on federal emissions tests. Ohio was allocated $75 million to establish a diesel mitigation trust fund as part of the settlement. Grants from the fund can be used to replace diesel locomotives with electric or alternative fueled locomotives.

National Highway Freight Program

The FHWA's National Highway Freight Program (NHFP) is intended to improve the efficient movement of freight on the National Highway Freight Network and support related goals including the safety, security, efficiency, and resiliency of freight transportation in rural and urban areas. ODOT has traditionally utilized this funding to support large projects on the highway freight system. States may expend a portion of the funding for freight intermodal or freight rail projects; ODOT allocates $1 million of this funding to the Rail Commission each year. This funding is used for eligible projects submitted to the Rail Commission's grant and loan program.

Federal Discretionary Grant Funding Sources

Consolidated Rail Infrastructure and Safety Improvements

FRA's Consolidated Rail Infrastructure and Safety Improvements (CRISI) grant program funds projects that improve the safety, efficiency, or reliability of freight rail and intercity passenger rail systems. Funding has increased recently, with $2.5 billion available for the 2023–24 grant round. CRISI grants can be used for capital projects (construction), workforce development, safety improvements, training, and studies. Eligible recipients are Class II and III railroads, public agencies, universities, and rail labor organizations. The average CRISI award in 2023 was $20 million. Typical projects include rehabilitation of track and bridges, upgrades to track (to improve safety or to handle heavier railcars), grade separations, and replacement of older locomotives with less-polluting models. The Rail Commission has sponsored numerous successful CRISI grants in recent years as follows:

- 2024: $1.6 million for a planning study to develop railroad congestion mitigation strategies in and around Cincinnati with matching funds from two Class I railroads.
- 2024: $6.4 million for track rehabilitation on trackage operated by the Northern Ohio & Western Railway and owned by the Sandusky County-Seneca County-City of Tiffin Port Authority, with matching funds from the Rail Commission and Port Authority.
- 2024: $3.2 million for track rehabilitation on R.J. Corman's Cleveland Line, with matching funds from the Rail Commission and railroad.
- 2024: $12.9 million for track infrastructure improvements and capacity enhancements on the Columbus & Ohio River Rail Road, with matching funds from the Rail Commission and railroad.
- 2024: $12.2 million for track infrastructure improvements on the Napoleon, Defiance, and Western Railway (NDW), with matching funds from the Rail Commission and railroad.
- 2022: $16.3 million for track rehabilitation and improvements to the Kanawha River Railroad, with matching funds from the railroad.
- 2022: $10.8 million for improvements and rehabilitation for the NDW, with matching contributions from the Rail Commission and NDW.
- 2021: $6.9 million for the WLE Spencer Connection Project to increase efficiency at Spencer Yard, with matching funds provided by the Rail Commission and WLE.

Since the inception of the CRISI program, the Rail Commission has won fourteen project awards, totaling $86.7 million in federal funds. These projects, which included $17.4 million in Rail Commission matching funds, are investing a total of $161.8 million in Ohio.

Four Ohio CRISI awards in 2021, 2022, and 2024 were sponsored by other organizations: a $0.6 million training grant to the SMART-TD union; a $1.1 million grant for highway-rail grade crossing safety improvements in Cincinnati, submitted by the local MPO; a $6.9 million grant to the Belpre Industrial Parkersburg Railroad to repair two bridges, and a $0.8 million grant for grade crossing improvements in Akron.

Railroad Crossing Elimination Program

The Railroad Crossing Elimination (RCE) Program is funded at $500 million annually for federal fiscal years 2022 through 2026, and supports grade separations, closing of crossings, track relocations, and other safety improvements. Funds can be used for planning, environmental studies and design, as well as construction.

This program requires a minimum of 20% non-federal matching funds. Ohio's Grade Crossing Elimination Program, described earlier, was developed specifically to help communities develop projects and submit applications that meet the match requirements for this federal program.

Ohio submitted two winning applications in the first year of the RCE program. One grant supported planning and project development for two adjacent skewed crossings on CSX's Terminal Subdivision in Fairfield. The other grant, for $7.2 million, will support construction of a grade separation project eliminating three grade crossings in Fostoria. Matching funds were provided by the Rail Commission, CSX, and Norfolk Southern.

Ohio has submitted four successful applications to the FFY23-24 RCE application round. They include projects to construct grade separations in North Ridgeville, Circleville, Hudson, and Delaware County's Orange Township.

Infrastructure for Rebuilding America

The Infrastructure for Rebuilding America (INFRA) program supports rail freight and highway projects of national or regional significance to improve multimodal safety, efficiency, and reliability. Currently funded at $480 million per year, most of the funding is awarded to highway projects and to projects exceeding $100 million in total cost. In Ohio, a $5.7 million grant was received for the Evans Avenue railroad grade separation in Akron in FY 2017; a $16.3 million grant was awarded the following year to improve 30 miles of rail line along the Ohio River in Jefferson and Belmont Counties (this project did not move forward and the grant was never disbursed).

National Infrastructure Project Assistance Program

Another new IIJA program, National Infrastructure Project Assistance Program (MEGA), is funded at $1 billion annually and is focused on large, complex projects over $100 million. Half of all awards are dedicated to projects over $500 million in total cost. Highway, freight rail, transit and passenger rail projects are eligible.

There have been 20 awards made under this program for FY2022–2024, including freight rail and commuter/passenger rail projects.

Better Utilizing Investments to Leverage Development

USDOT's Better Utilizing Investments to Leverage Development (BUILD) program, formerly known as Rebuilding American Infrastructure with Sustainability and Equity (RAISE) and Transportation Investment Generating Economic Recovery (TIGER) is an important source of federal funding for rail projects. BUILD is a highly competitive grant program that provides funding for passenger and freight transportation projects

that support economic competitiveness, state of good repair, quality of life, sustainability, and safety. A wide variety of project types are eligible, including road, rail, transit, bike/pedestrian, multimodal, intermodal, and port projects. Half of the grants are to be for projects in rural areas.

The popular BUILD program is funded at $1.5 billion annually for FY2022-26. In past years, approximately 20% of awards were for rail projects, which ranged in size and scope from under $10 million for rural short line rehabilitation projects to a $100 million project addressing freight rail congestion in the Chicago area. In Ohio, five rail-related projects have been funded since the program's inception in 2009:

- 2009: $98.0 million to create double-stack capacity along CSXT's MD-WV-PA-OH National Gateway rail corridor
- 2012: $16.1 million for the Pickaway East-West Connector Road improving the connection between the Rickenbacker intermodal facility and US23, including two rail grade separations
- 2018: $20.0 million for the Appalachian Natural Gas Liquids Hub Rail Transloading Facility, including construction of a rail yard, a rail spur, and a pipeline-to-rail transloading facility
- 2021: $7.1 million to replace a 100-year-old Norfolk Southern bridge over the Blanchard River; project needed for flood mitigation

Economic Development Administration Grants

U.S. Economic Development Administration administers a number of grant and loan assistance programs to support local organizations with economic development efforts, focusing on economically distressed communities. The Economic Development Administration's Public Works program is a discretionary grant program that can be used to fund improvements to publicly owned rail properties that are expected to contribute to local or regional economic development.

Federal Financing Programs

Federal credit assistance can be provided as loan guarantees or in the form of direct loans with favorable terms, including low-interest rates, long payback periods, and payment schedules that begin after construction is completed. These financing alternatives can help to bridge the gap between a project's up-front cost, and project-related revenue, which typically does not materialize until construction is completed years later. As a revolving loan fund, the impact on public budgets is minimized. USDOT offers several debt and credit assistance tools that may support passenger and freight rail projects, of which the following are the most relevant.

Transportation Infrastructure Finance and Innovation Act (TIFIA)

TIFIA provides credit assistance in the form of direct loans, loan guarantees, and standby lines of credit to transportation projects of national or regional significance. Eligible projects relevant to rail include intermodal connectors, passenger rail vehicles and facilities, and surface transportation elements of port projects.

TIFIA leverages federal dollars by facilitating private participation in transportation projects and encouraging innovative financing mechanisms that help advance projects more quickly. TIFIA assistance is limited to 33% of total project costs and requires a dedicated repayment source to secure the debt financing.

Railroad Rehabilitation and Improvement Financing (RRIF)

The FRA's RRIF program provides direct loans and loan guarantees to finance development of railroad infrastructure. The program is capitalized up to $35 billion, with $7 billion reserved for projects benefiting non-Class I railroads. In the past, potential borrowers have identified the long approval period and costs of application as reasons for the program's underutilization. Despite attempts to improve the program,

including an expedited approval process for smaller projects known as RRIF Express, this program remains undersubscribed.

Currently RRIF's administration costs are not covered by appropriations, so new applicants are charged an investigation fee for their application to be reviewed. If approved, a credit risk premium must be paid before funds are disbursed.[15] The program remains active, with available funding appropriated in earlier transportation legislation.

Economic Development Administration Programs

As noted above, the U.S. Economic Development Administration administers a number of loan assistance programs to support economic development efforts, and these can be utilized for projects that include railroad improvements.

Federal Passenger Rail Funding

Amtrak services in Ohio are funded in part by passenger ticket revenues but rely on federal funding to support operating costs as well as capital needs. Generally, passenger fares for Amtrak trips do not cover the operating costs required to provide the service as shown in Figure 2-17. Per PRIIA, regional routes under 750 miles are funded by individual or groups of states. Currently 17 states provide funding for these services.[16]

Corridor Identification and Development Program

This program, commonly referred to as Corridor ID, was established in the IIJA and is administered by the FRA. The Corridor ID program is a comprehensive intercity passenger rail planning and development program intended to guide intercity passenger rail development and create a pipeline of projects ready for implementation. Four corridor applications impacting Ohio were accepted into the program in the first round of awards. The corridors and their sponsors include:

- Ohio Rail Development Commission: Cleveland-Columbus-Dayton-Cincinnati (3C&D)
- Ohio Rail Development Commission: Cleveland-Toledo-Detroit Corridor (CTD)

The studies will evaluate new passenger service in these corridors using existing freight rail lines. These studies will prioritize car-competitive service that does not negatively impact freight rail traffic.

- Amtrak: Daily Cardinal Service – Amtrak was awarded funding to study increasing service from three days per week to daily on the existing Amtrak Cardinal service between New York City, New York, and Chicago, Illinois, via Philadelphia, Pennsylvania, Baltimore, Maryland, Washington D.C., Cincinnati, Ohio, and Indianapolis, Indiana.
- City of Fort Wayne, Indiana: Chicago, Fort Wayne, Columbus, and Pittsburgh – The City of Fort Wayne, Indiana, was awarded funding to establish passenger rail service between these cities.

Federal Passenger Rail Funding Programs

In addition to Corridor ID, other federal programs to support passenger rail are described below.

[15] Build America Bureau, "Applying to RRIF," U.S. Department of Transportation, last update: February 19, 2025, https://www.transportation.gov/buildamerica/financing/rrif/applying-rrif.

[16] Office of Inspector General, Governance: Amtrak Has Begun to Address State Partners' Concerns About Shared Costs But Has More Work to Do to Improve Relationships, OIG-A-2022-005, January 31, 2022, https://amtrakoig.gov/sites/default/files/reports/OIG-A-2022-005%20State%20Supported%20Routes.pdf, Table 2.

Federal-State Partnership for Intercity Passenger Rail

This new IIJA program is a $3 billion/year discretionary grant program to fund intercity passenger rail projects in states outside the Northeast Corridor (the Boston, Massachusetts–New York, New York–Washington, D.C. Amtrak route). Funds are available for repair and rehabilitation, performance improvements, or new services, and can also cover the required planning and environmental studies. Projects are most competitive for this program if they can be implemented quickly.

Railroad Restoration and Enhancement Grants

This discretionary grant fund is a new IIJA program to support operations of new or restored passenger rail services. It is funded at $50 million per year for FY2022 through FY2026. For the first year, Railroad Restoration and Enhancement Grants can be used to support up to 90% of operating costs, stepping down to a maximum of 30% for the sixth year of service. The program goals include restoring discontinued services and starting new services that enhance the connectivity and geographic coverage of the national passenger rail network.

Other Programs

Some of the federal funding programs described in the above sections on freight rail funding and financing can also be used for passenger rail improvements:

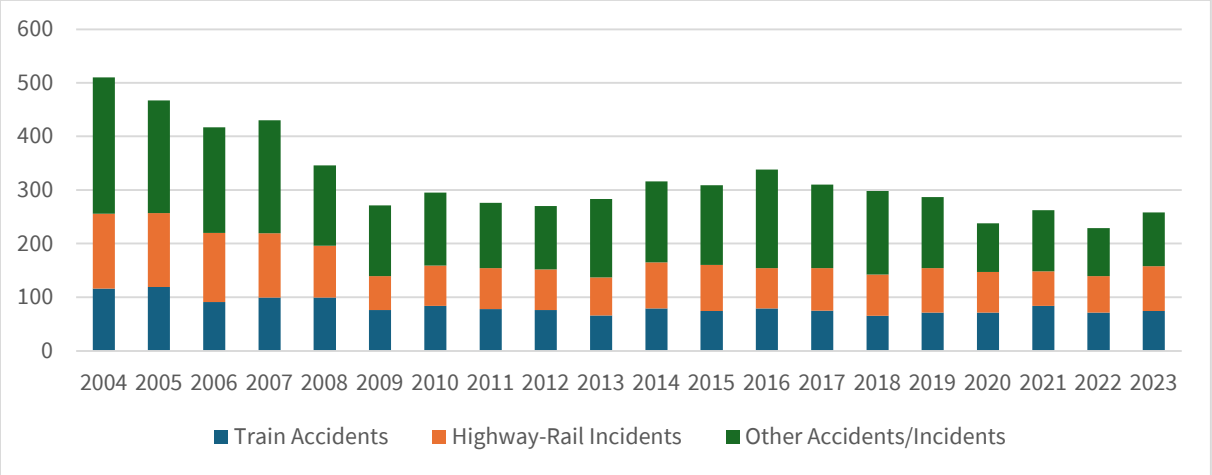
- CRISI (grant)
- RAISE (grant)
- TIFIA (financing)
- RRIF (financing)
- US Economic Development Agency programs (grants and financing)

2.1.6 Programs and Initiatives to Improve Safety

Safety Trends

As illustrated in Figure 2-22, total FRA reportable accidents and incidents in Ohio have decreased over the last 20 years at an annual average rate of -3.3%.

Figure 2-22. Rail-Related Accidents/Incidents in Ohio FY2021-FY2025

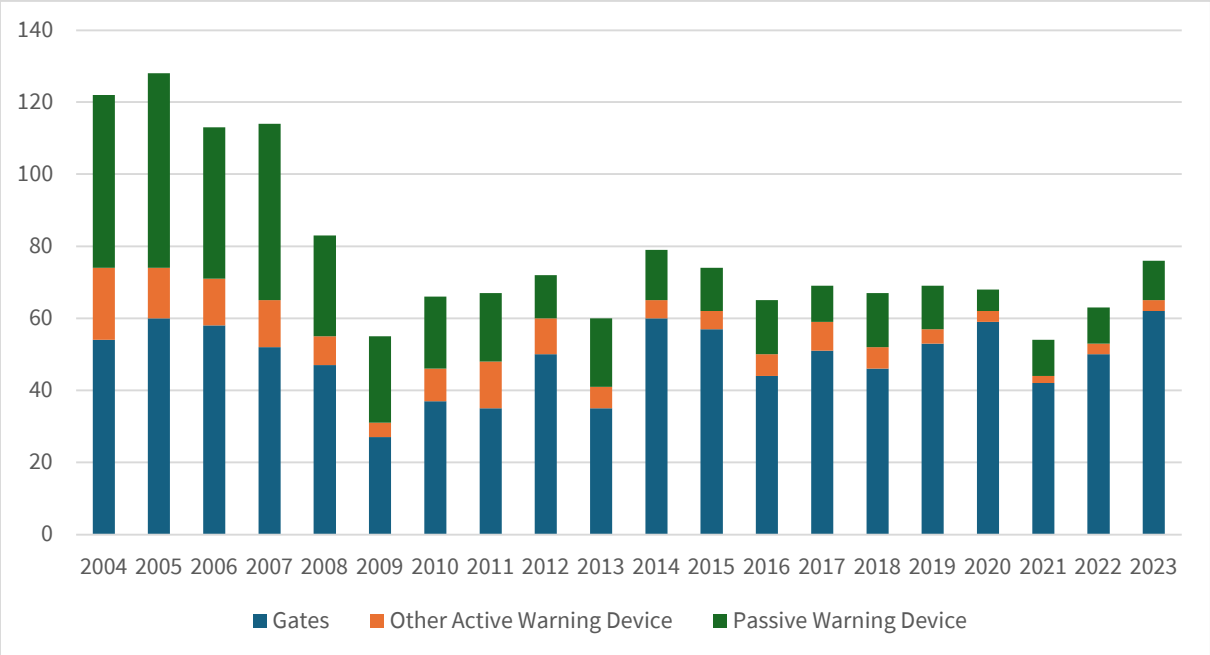


Source: FRA Safety Data

- Train accidents are collisions, derailments of trains or other equipment that cause damage to railroad equipment, track, or structures. Railroads have reduced incidents from levels in 2004-2008, when train accidents were above or near 100 per year. Progress since 2009 has essentially stalled, with 76 train accidents occurring in 2009 while 74 occurred in 2023. Moreover, annual train accidents in Ohio have fluctuated between 65 and 84 since 2009 and have never fallen below 60. In February 2023 there was a significant derailment East Palestine, Ohio that resulted in a fire and explosion. This high-profile incident resulted in additional state laws regarding the installation and placement of wayside detectors as well as the introduction of multiple rail safety bills at the federal level.
- Highway/rail incidents are collisions where trains hit or are struck by cars, bicycles, or pedestrians at highway-rail grade crossings. Crashes have declined since 2004–2008, but consistent downward progress since 2009 has stalled as the total number of incidents has ranged between 61 (2010) and 97 (2009) and reached 84 in 2023.

As in many other states, while the overall trend of crashes at highway-rail grade crossings has been downward, a higher percentage of crashes occur at gated crossings than was previously the case. Many of the most dangerous unprotected crossings have been upgraded with gates and lights, so that a higher percentage of crashes now occur at gated crossings than at unprotected crossings as shown in Figure 2-23. Between 2019 and 2023, 375 incidents were recorded in Ohio at grade crossings; 281, or 75% had gates and flashing lights. Forty-three, or 11% occurred at locations protected with crossbucks only.

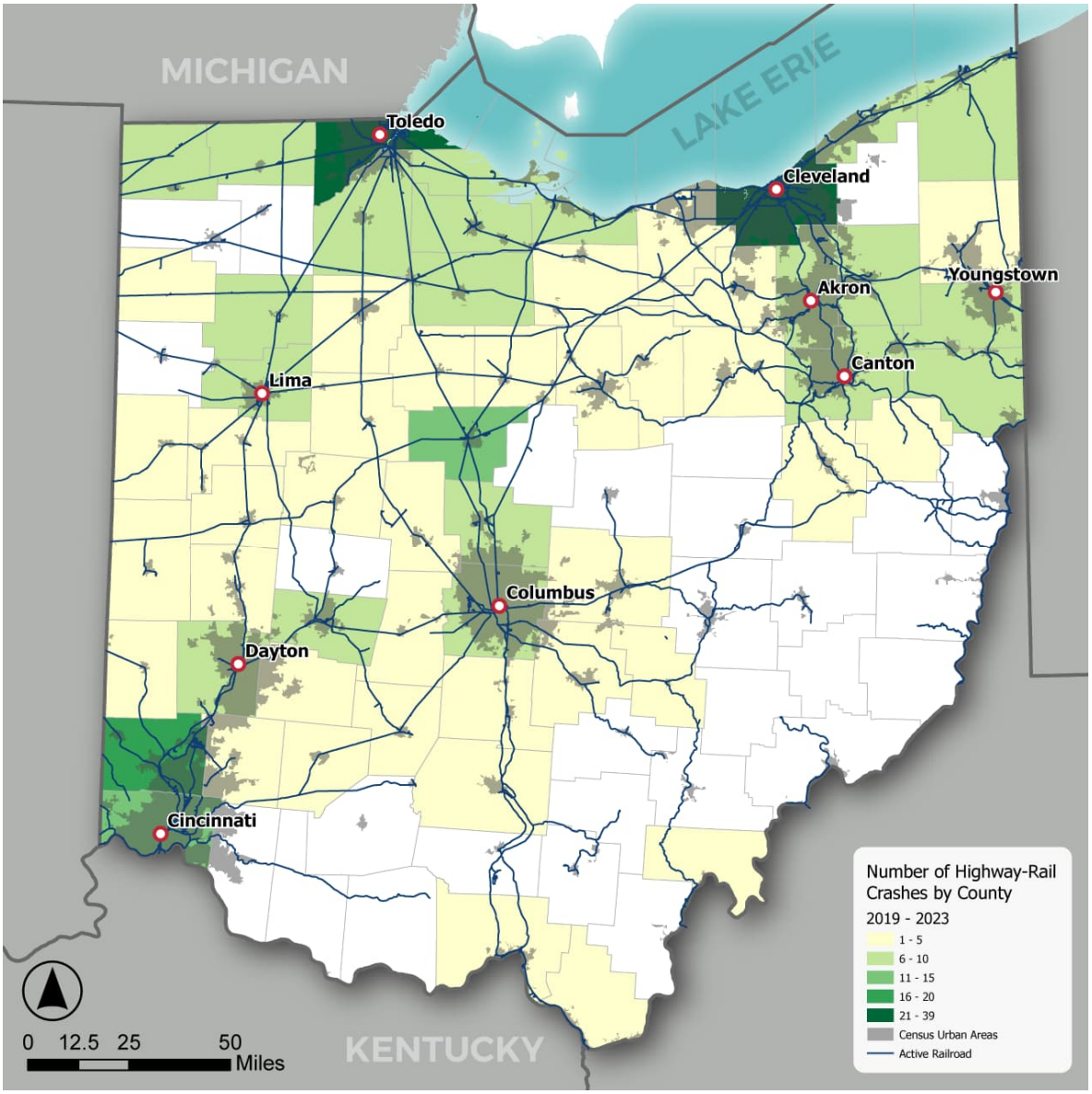
Figure 2-23. Number of Crashes by Warning Device in Ohio



Source: FRA Safety Data

As shown in Figure 2-24, Lucas, Cuyahoga, and Butler Counties were the top three locations for highway-rail incidents in Ohio between 2019 and 2023, with 39, 21 and 18 incidents between 2021 and 2023 respectively. Sixty of Ohio's 88 counties registered at least one incident during this time.

Figure 2-24. Crashes at Highway-Rail Grade Crossings between 2019 and 2023



Source: FRA Safety Data

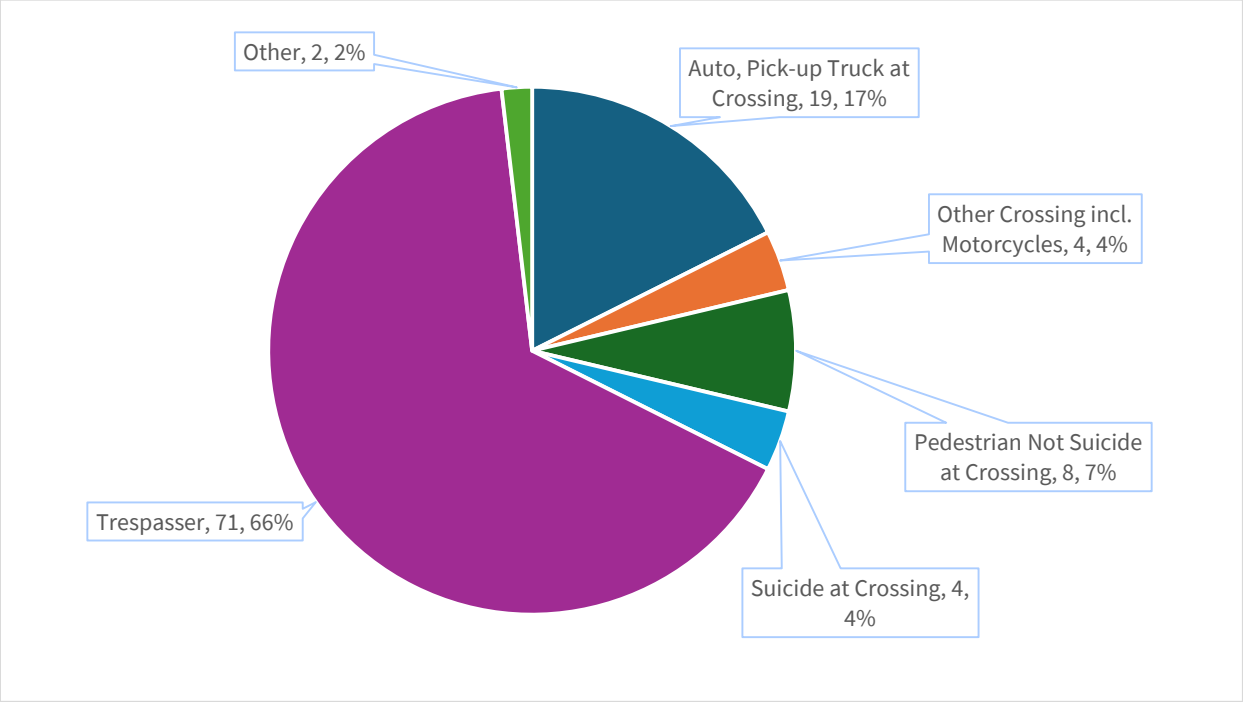
- Other accidents/incidents do not fit into the first two categories. Railroad employees are required to report any work-related injuries or sickness, which are categorized as "other accidents/incidents." Situations where trespassers, railroad employees or contractors are struck by trains also fall into the "other" category. Ohio is seeing a consistent downward trend on this metric, peaking in 2004 at 254 incidents, but falling to 100 in 2023.

Rail-Related Fatalities

Between 2019 and 2023, 66% of the 108 rail-related fatalities were individuals illegally trespassing on railroad rights-of-way that were struck by trains, while another 32% were struck by trains at crossings (Figure 2-25). Of the fatalities at crossings, 66% were driving motor vehicles, while 34% were pedestrians. Of

the pedestrian fatalities at crossings, one-third were recorded as suicides. Overall, motorists were 21% of fatalities, while non-motorists were 79%.

Figure 2-25. Rail-Related Fatalities in Ohio – 2019 - 2023



Source: FRA Safety Data

Ohio Grade Crossing Inventory

FRA identifies 8,483 vehicular crossings at grade in Ohio. Of these, 2,662, or 34% are private crossings, and 5,601, or 66% are public crossings. Since the 2019 Rail Plan submission, the number of public crossings has decreased by 2.3%, or 136 crossings from the 5,737 public highway-rail grade crossings tabulated in 2019. Public crossings accounted for 88% of all highway-rail incidents between 2019 and 2023.

As of March 2024, 60% of all public grade crossings in Ohio had gates and flashing lights., while another 561 or 10% had active warning devices but not gates, and 1,670 or 30% had no more than passive warning devices such as crossbucks or stop signs (see Table 2-9).

Table 2-9. Protection of Public Highway-Rail Grade Crossings

Protection Type	Number of Crossings	Percent of Crossings
Gates and Lights	3,370	60%
Lights, no Gates	561	10%
Passive Warning Devices	1,670	30%
Total	5,601	100%

Source: FRA Crossing Inventory

Initiatives to Improve Safety

The following describes the Rail Commission's Railroad Grade Crossing Safety Program, the Grade Crossing Elimination Program, and the Wayside Detector Grant Program.

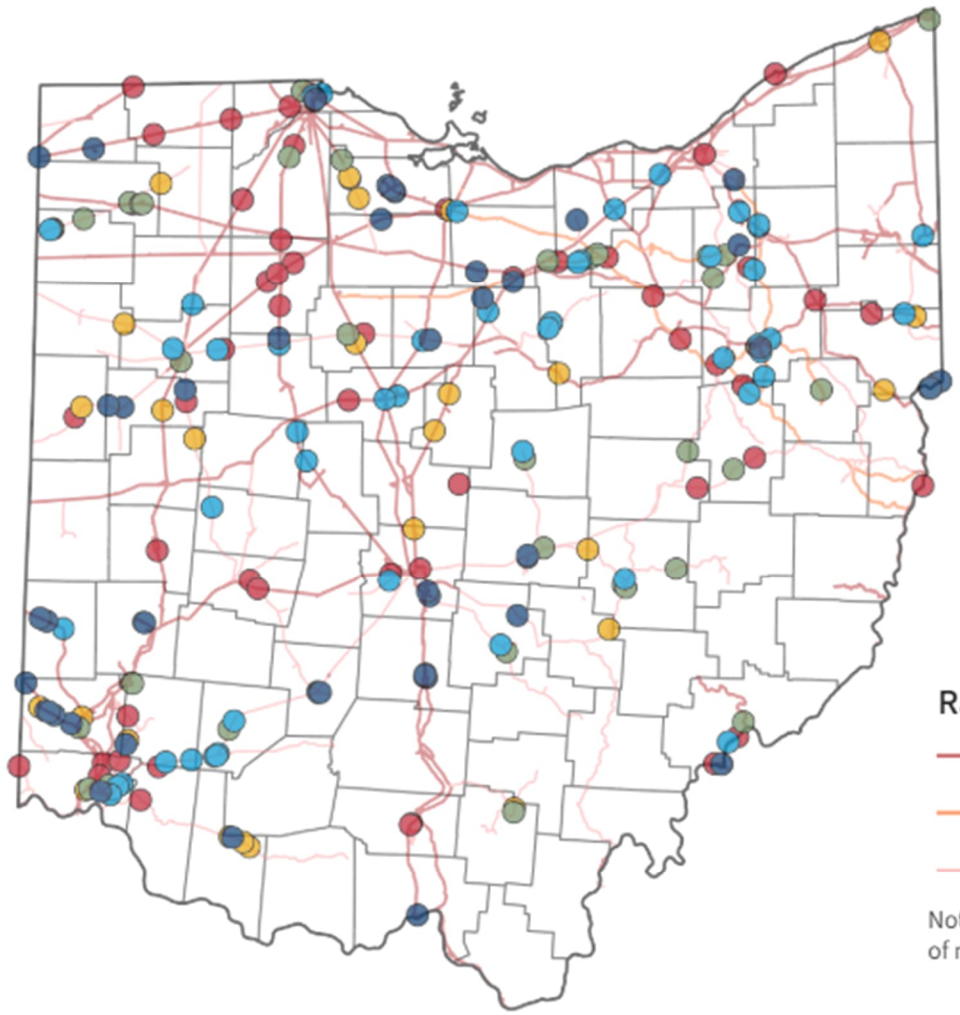
The Rail Commission's Railroad Grade Crossing Safety Program has four primary methods of project identification:

- Formula-based upgrades are based on a calculation of the most hazardous crossings that is generated periodically, usually twice per year, by the PUCO.
- Corridor-based upgrades provide a framework systematically considering, identifying, and prioritizing projects that have public safety benefits at multiple grade crossings along a railroad corridor.
- Constituent-identified projects consider referrals from sources including county grade crossing task forces, county engineers, local government, Ohio Department of Transportation districts, railroads, advocacy groups, members of the public and makes selections based on hazard rankings, extenuating conditions, and funding availability.
- Preemption projects upgrade warning devices and traffic signals to establish appropriate traffic signal preemption when a train approaches a crossing that has a traffic signal in proximity. These upgrades improve safety by reducing the potential for a vehicle driver to be trapped on the tracks by queuing traffic when a train is approaching the crossing.

The latest Rail-Highway 2023 Annual Report covering Section 130 in Ohio itemized 59 projects that met the three years of service criteria for post-project evaluation. The majority or 59% of projects showed a reduction of crashes already in the three years after project completion compared to 41% that did not show a crash reduction. However, over a longer time period all would be expected to result in improvement. Overall, crash rates have declined. For example, the rolling, 5-year average fatality count decreased from seven in 2014-2018 to six in 2018-2022. Likewise serious injuries had a 5-year rolling average of 13.2 for 2014-2018, which has since decreased to 9.6 for the 5-year rolling average from 2018-2022.[17] Figure 2-26 displays safety projects completed between 2019 and 2023.

[17] Ohio Railway-Highway 2023 Annual Report, to the U.S. Federal Highway Administration.

Figure 2-26. Rail Commission Safety Projects 2019 - 2023



Year	Projects	Encumbrances During project's first year
2019	56	$ 9,942,701
2020	29	$ 6,995,740
2021	43	$ 7,587,816
2022	54	$ 13,025,775
2023	56	$ 16,476,015
Total	**238**	**$ 54,028,047**

Source: Rail Commission

In 2022, Ohio completed an update to the federally-required Highway-Rail Grade Crossing State Action Plan (SAP). The plan builds upon previous plans and captures: (1) current programs and practices, (2) data sources, methods and analysis of crossing incidents, and (3) short-, medium- and long-term actions that Ohio is taking to reduce grade crossing incidents. The SAP identified four key areas for emphasis: (1) Crossings in Densely Populated Areas; (2) Vehicles Stopped on Crossings; (3) Automobile Incidents, which are higher in Ohio than the national average; and (4) Circumvention of Warning Devices.

The 2022 SAP summarizes results and sets forth seven Actionable Objectives going forward:

- Update States Railroad Crossing Inventory Database: Add new functionality for staff, data consistency with other sources, i.e state agencies and FRA as well as public-facing interface.
- High Hazard Program: Continuation of this program, initiated in 2015 to identify crossings most likely to experience accidents / incidents but which have not yet had recent reviews or upgrades.
- Corridor Program Changes: Ohio has found more success with approaching communities individually along smaller corridors versus longer corridors crossing multiple communities. This pivot will be applied for the foreseeable future and is expected to accelerate stakeholder relationships and alignment on grade crossing closures and improvements.
- Preemption Program: This program refers to the interconnection between highway signals and railroad crossing signals, whereby a signal of an oncoming train will preempt any traffic signal to prevent traffic from getting stuck at a grade crossing. Currently a requirement for any controlled (signaled) highway intersection within 200 feet of a grade crossing, Ohio has identified 200 rail-highway crossings that have or should have interconnection with highway traffic signals.
- LED Program Upgrade: Ohio has made the decision to replace all incandescent crossing lights with LED lights. The PUCO is collaborating with affected railroads to survey the highway-rail crossings remaining with incandescent lights to plan for replacement.
- Non-Motorized Transportation Policy Guidance: Ohio has developed guidance for future grade crossing projects that comply with the American with Disabilities Act (ADA) and include needs of non-motorized users such as pedestrians and bicycles.
- Best Practices for Community Growth near Highway-Rail Crossings: Where population growth is occurring near highway-rail crossings, risk of train / highway incidents may increase. There is a need for building awareness among groups in transportation planning in these communities.

Ohio Crossing Elimination Program

In 2023 the Ohio legislature approved $100 million for the Ohio Grade Crossing Elimination Program. (The program funding was reduced by $15 million in 2025.) The program will support the work of local communities for projects to eliminate dangerous and frequently blocked crossings. This program was discussed more fully in section/page 43.

Wayside Detectors

The February 2023 derailment in East Palestine raised awareness of risks to communities from rail incidents, especially involving hazardous material shipments. The Ohio legislature responded by requiring that railroads implement wayside detectors that can provide a range of reporting functions to train crews that can help avoid derailments. As discussed in section/page 44, the Rail Commission's $10 million Wayside Detector Grant Program was created to help Class II and Class III railroads implement the new wayside detector rules.

2.1.7 Rail's Economic and Environmental Impacts

Economic Impact of Rail Employment and Spending

One aspect of rail's impacts on Ohio's economy is as an employer and direct contributor to the economy. According to the Association of American Railroads, Ohio is the seventh highest rail employment in the nation.[18] Rail's impacts can be evaluated by the following measures:

- Employment represents the number of full and part-time jobs.
- Earnings include wage and salary disbursements to employees, supplements to wages and salaries, and owners' income.
- Business Output includes the quantity of goods and services provided as a result of employment.

According to the Association of American Railroads, freight rail operators in Ohio employed 5,036 people in 2021, with average annual wages/benefits per employee amounting to $128,510.[19] Additionally, 21,000 railroad retirement beneficiaries live in Ohio, to whom railroad retirement benefits worth $537 million are distributed.

Similarly, passenger rail provides economic impacts and benefits to Ohio, albeit on a smaller scale in comparison to freight rail due to the lower number of passenger trains serving Ohio. Amtrak employed 56 residents of Ohio with the total wages residents amounting to $6,358,948, or equivalently $113,553 per employee.[20] In fiscal year 2022, over $31.05 million worth of goods and services were purchased to support Ohio's passenger rail industry.

The direct employment and output of the rail industry creates a ripple effect due to spending on supplier industries, also known as indirect effects. Similarly, the consequent spending of employee and suppliers' wages and earnings from the rail industry on household goods and services, known as induced effects, further stimulates the flow of money through the economy. The direct employment of 5,092 people in Ohio's rail industry supports an additional employment of 14,534 jobs in the state through indirect and induced effects. The provision of wages of over $653 million to employees of the rail industry results in additional earnings of approximately $588 million in other industries through indirect and induced impacts, also known as the multiplier effect. Total earnings in the industry valuate to over $1.2 billion. The total direct, indirect, and induced effects associated with the rail transportation industry are summarized in Table 2-10 below. Indirect and induced effects are calculated using the Bureau of Economic Analysis (BEA) Regional Input-Output Modeling System (RIMS II) multipliers.

[18] Association of American Railroads, State Rankings, 2021, https://www.aar.org/wp-content/uploads/2023/03/AAR-State-Rankings-2021.pdf.
[19] Association of American Railroads, State Freight Rail Data, 2021, https://www.aar.org/wp-content/uploads/2021/02/AAR-Ohio-State-Fact-Sheet.pdf.
[20] Amtrak, Amtrak Fact Sheet Fiscal Year 2022: State of Ohio, June 2023, https://www.amtrak.com/content/dam/projects/dotcom/english/public/documents/corporate/statefactsheets/OHIO22.pdf.

Table 2-10. Economic Impact Analysis of Ohio Rail Industry, 2022

Economic Indicator	Direct	Indirect	Induced	Total
Freight Rail				
Employment	5,036	5,925	8,449	19,410
Earnings ($M)	$647.2	$249.4	$334.3	$1,230.9
Business Output ($M)	$2,473.5	$1,306.5	$576.3	$4,356.3
Passenger Rail (Amtrak)				
Employment	56	66	94	216
Earnings ($M)	$6.4	$2.5	$1.3	$10.1
Business Output ($M)	$27.5	$14.5	$6.4	$48.4
Total Rail impacts				
Employment	5,092	5,991	8,543	19,626
Earnings ($M)	$653.5	$251.9	$335.6	$1,241.0
Business Output ($M)	$2,501.0	$1,321.0	$582.7	$4,404.8

Source: WSP Analysis of the Economic Impact of Rail Employment using BEA's RIMS II.

Economic Impact of Rail Transportation Users

Rail's economic importance to Ohio is not just due to the employment and spending of railroads and railroad employees within the state, but also because many Ohio industries, including metals, minerals, mining, manufacturing, wholesale trade, and retail trade, depend on rail to serve their customers.

An analysis has been completed that focuses on the economic impacts of freight movements that originate in Ohio (outbound and intrastate). The focus on outbound goods and not inbound is intended to avoid double counting economic impacts. For example, goods shipped into Ohio might be used to manufacture other products that are then shipped out of state. The economic benefit of these final products is already captured under outbound freight, and including the initial inbound shipment would inflate the overall impact.

Using the commodity flow data from the STB Waybill (detailed in Section 2.2.2) and per ton values inflated from S&P Global 2016 estimates that were escalated to 2022 values, the total dollar value of originating freight rail movement in Ohio is estimated. By aligning these commodities with BEA RIMS II industry definitions, the analysis further estimated the jobs, earnings, and business output supported by this rail activity. The absence of freight rail would diminish these economic impacts due to increased transportation costs on alternative modes or potentially eliminate them altogether through supply chain relocation.

Table 2-11 summarizes the freight rail information used in estimating the economic impacts of rail transportation users. Ohio's freight rail system, with an estimated $75.7 billion in originating tonnage, supports approximately 613,004 jobs across various reliant industries (Source: WSP Analysis of STB. Waybill Sample, S&P

Table 2-12). These jobs generate $35.1 billion in labor income and $164.4 billion in business output. Translation of rail freight volumes into economic impacts demonstrates the vital role rail provides in Ohio's economy.

Table 2-11. Freight Shipments Included in Economic Impact Analysis, 2022

Commodity	Originating Millions of Tonnage 2022	Value Per Ton 2022	Originating Value (2022 $)
Nonmetallic Minerals	8.0	$14.7	$110
Farm Products	4.6	$471.2	$2,031
Petroleum or Coal Products	6.4	$324.3	$1,945
Metallic Ores	5.9	$414.0	$2,288
Primary Metal Products	5.7	$1,968.4	$10,513
Others [21]	23.5	n/a	$56,332
Total	54.1	n/a	$75,711.0

Source: WSP Analysis of STB. Waybill Sample, S&P

Table 2-12. Total Economic Impacts of Rail Transportation Users, 2022

Commodity	Employment	Earnings ($M)	Business Output ($M)
Nonmetallic Minerals	957	$54.9	$236.2
Farm Products	42,411	$1,717.6	$7,417.0
Petroleum or Coal Products	7,940	$602.2	$3,070.4
Metallic Ores	16,038	$945.6	$4,334.3
Primary Metal Products	81,212	$4,918.6	$23,450.3
Others	464,447	$26,850.8	$125,845.6
Total	613,004	$35,089.7	$164,353.8

Source: WSP Analysis of the Economic Impact of Rail Employment using BEA's RIMS II.

2.2 Trends and Forecasts

2.2.1 Demographic and Economic Trends

Economic and demographic factors, such as rising gross state product, personal income, population, and employment rates, along with changes in industry composition, will drive the expansion of freight and passenger rail services in Ohio. A robust rail network in the state has the potential to enhance the competitiveness of vital industries and bolster Ohio's appeal to businesses and residents alike, thereby stimulating future economic and population expansion. This section will analyze historical and projected economic and demographic trends to offer insights into the future development of Ohio's rail transportation system.

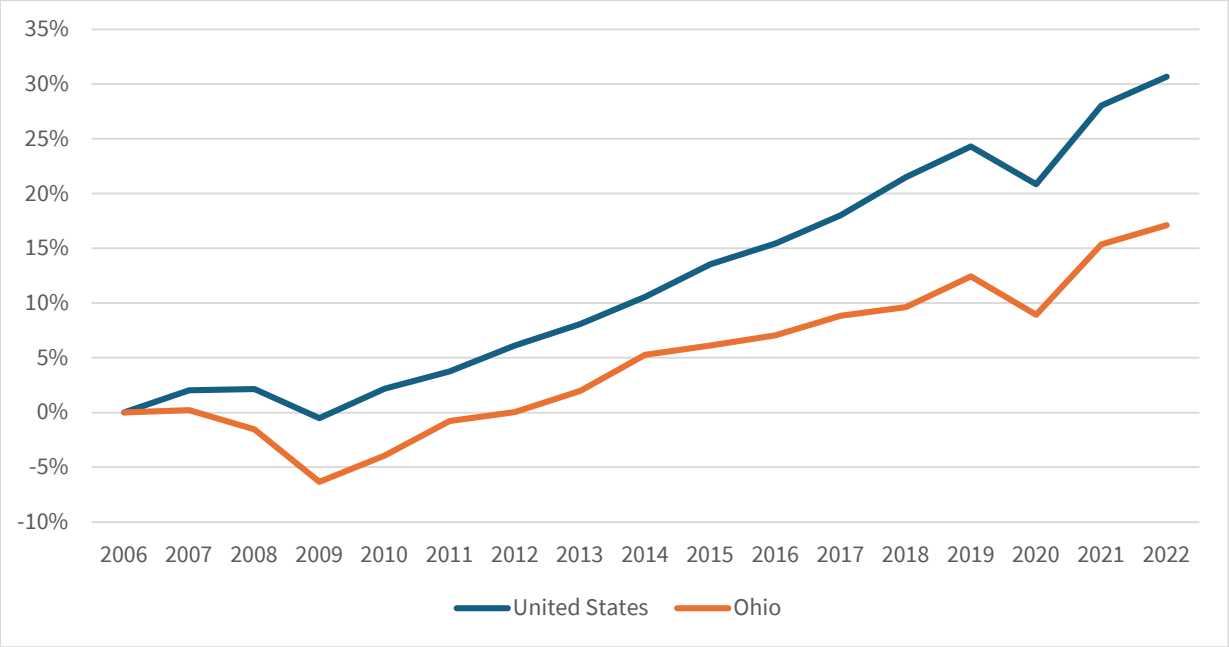
[21] The value of "other commodities has been grouped together for the summary.

Gross Domestic Product

From 2006 to 2022, Ohio's Gross Domestic Product (GDP), reflecting the state's economic activity, rose from $545 billion (2012$) to $639 billion (2012$), marking a 17.1% increase.[22] Meanwhile, the U.S. economy grew by 30.7% during the same time period.

Ohio's sector distribution of GDP closely mirrors that of the U.S., (Figure 2-28). The primary sector driving Ohio's GDP is finance, insurance, and real estate, accounting for 22.3% of the state's economic output.[23] Manufacturing constitutes 15.7% of Ohio's GDP compared to 11% nationally, ranking as the second largest sector. Manufacturing in Ohio tends to be focused on chemical, food/beverage, and fabricated metal products. Additionally, motor vehicles, body, trailers, and parts manufacturing are prominent sectors in the state. Some of these industries depend heavily on rail. Professional and business services and government currently hold the second and third positions, contributing 12.6% and 12.5%, respectively, to Ohio's GDP.

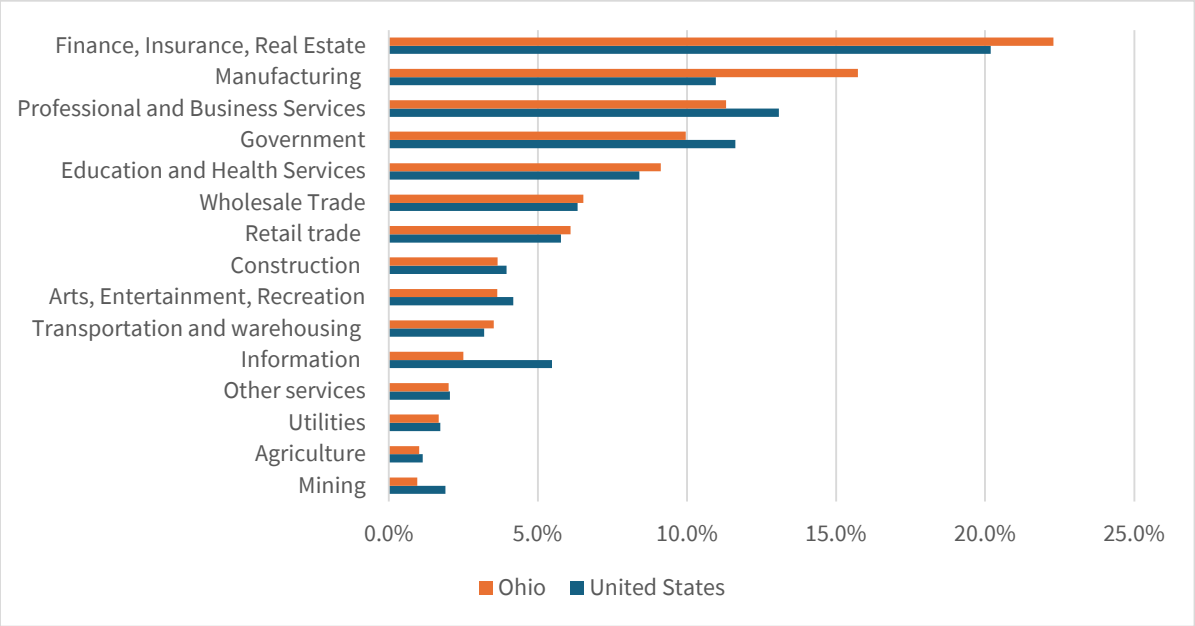
Figure 2-27. Ohio vs. U.S. Real GDP Percent Growth (2006–2022)



Source: U.S. Bureau of Economic Analysis, Gross Domestic Product by State, (Chained 2012$),

[22] U.S. Bureau of Economic Analysis.
[23] U.S. Bureau of Economic Analysis.

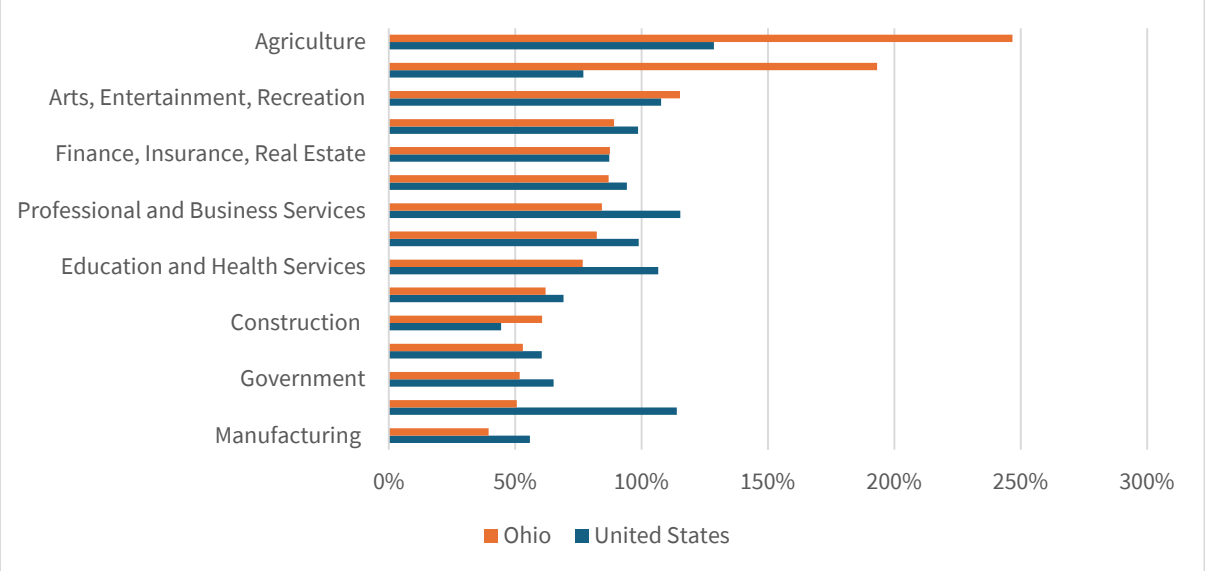
Figure 2-28. Ohio vs. U.S. Sectors by Share of Real GDP (2022)



Source: U.S. Bureau of Economic Analysis, Gross Domestic Product by State, (Chained 2012$),

From 2006 to 2022, agriculture emerged as Ohio's most rapidly expanding sector in terms of GDP, experiencing a 246.7% growth compared to the national rate of 128.6% (Figure 2-29). The mining sector had the second largest GDP growth of 193%. Mining includes oil and gas extraction, which is the largest contributor to the sector growth and largely made up of shale gas production.[24,25] The remaining sectors either had small or similar growth to the national sectors. Figure 2-29 displays real GDP growth by sector between 2006 and 2022 for Ohio and the United States.

Figure 2-29. Ohio vs. U.S. Real GDP Growth by Sector (2006–2022)



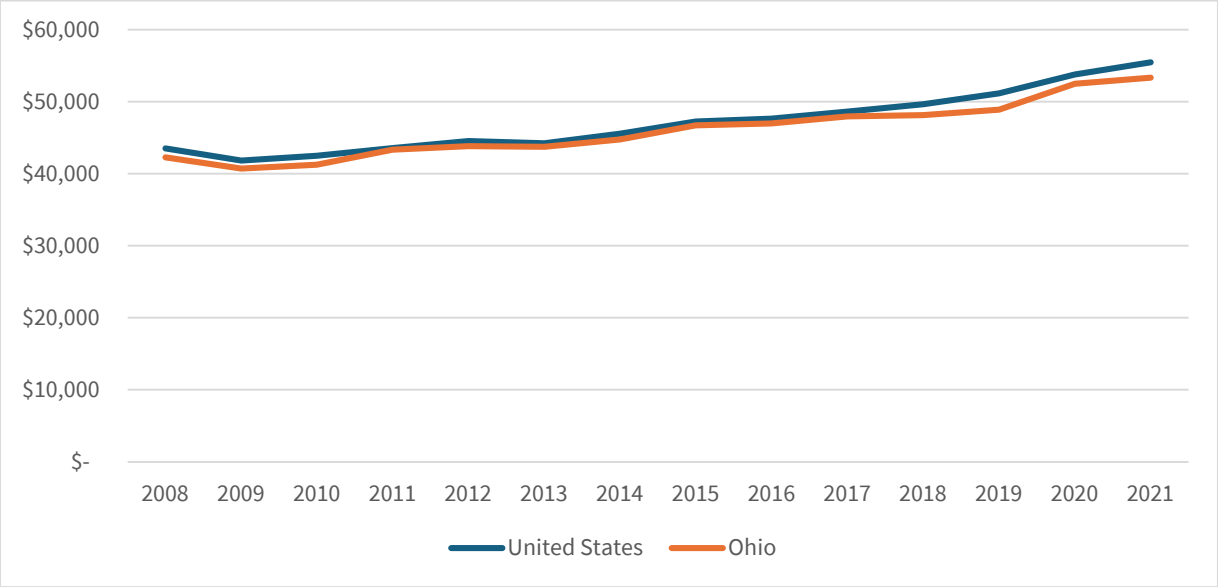
Source: U.S. Bureau of Economic Analysis, Gross Domestic Product by State, (Chained 2012$),

[24] U.S. Bureau of Economic Analysis, Gross Domestic Product by State.
[25] U.S. Energy Information Administration, Ohio State Energy Profile.

Income

In 2021, Ohio's per capita real personal income stood at $53,367 (2012$), slightly less than U.S. income of $55,477 (2012$). Over the past decade, Ohio's personal income has grown at an annual rate of 2.1%, slightly below the nationwide average of 2.5%. Figure 2-30 displays per capita personal income in Ohio and nationally between 2008 and 2021.

Figure 2-30. Ohio vs. U.S. Per Capita Real Personal Income

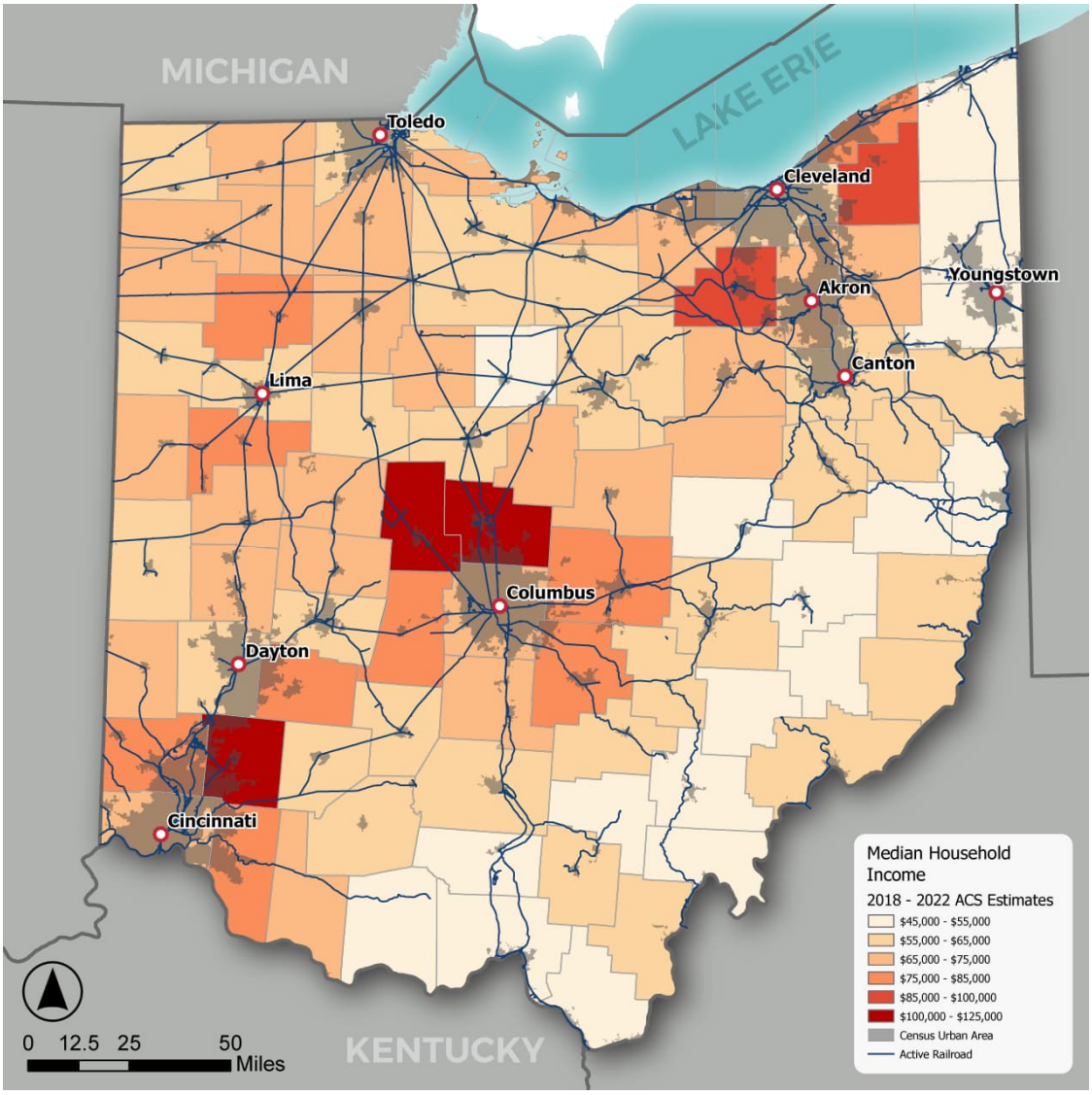


Source: U.S. Bureau of Economic Analysis, Real Personal Income for States and Metropolitan Areas (Chained 2012$).

Delaware and Union Counties, two suburban counties north of Columbus, have the highest median household incomes in the state, estimated at $123,995 and $104,496 (2022$), respectively (Figure 2-31). Delaware County is 85.1% higher than the state median household income of $66,990.[26] Other counties with high median household incomes include Warren County ($103,128) northeast of Cincinnati and Geauga County ($97,162) east of Cleveland.

[26] U.S. Census Bureau.

Figure 2-31. Median Household Income by County



Source: U.S. Census Bureau

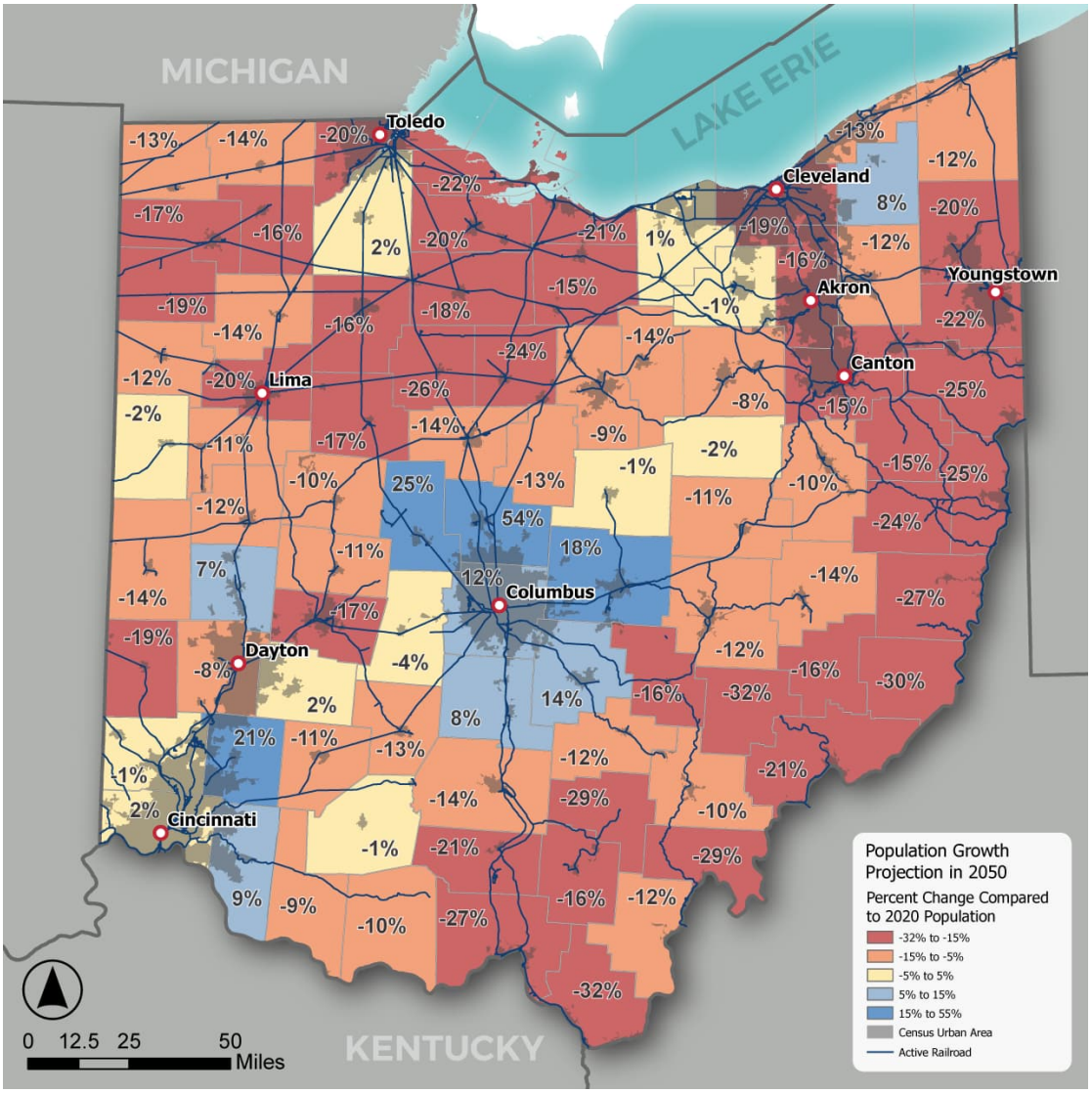
Population

Ohio has experienced modest population growth in recent years, with some counties increasing in population and others facing population decline. Between 2010 and 2019, Ohio's population grew 2.1%. According to the Ohio Department of Development, Ohio's population was 11.8 million in 2020, maintaining its position as the nation's seventh most populous state.

The most recent Ohio Department of Development population projection forecasts that the state population will decline over the next few decades from 11.8 to 11.4 million by 2040 and 11.1 million by 2050.[27] However, certain regions within Ohio are projected to undergo significant population growth.

For example, the counties around Columbus, led by Delaware County, are forecasted to see strong population expansion with a projected growth of 53.6% between 2020 and 2050. Similarly, Franklin County, Ohio's most populous county and home to Columbus, is forecast to grow in population by 12.4% (Figure 2-32).

Figure 2-32. Project Population Growth by County (2020–2050)



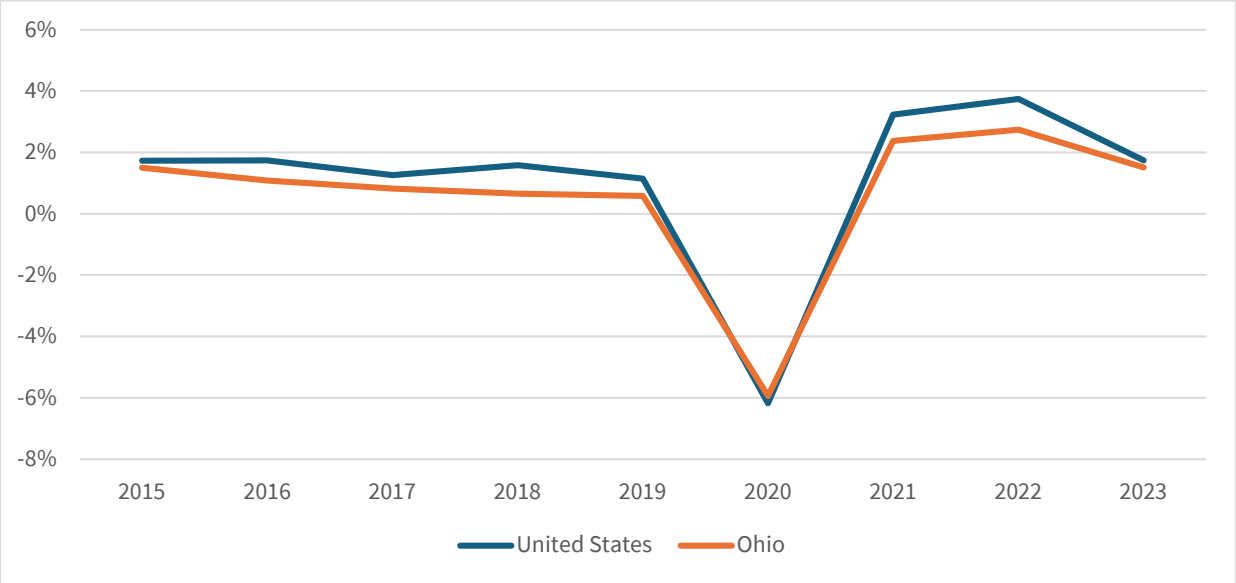
Source: Ohio Department of Development

[27] Ohio Department of Development.

Employment

According to the U.S. Bureau of Labor Statistics, employment in Ohio stands at 5.6 million as of February 2024, just above its pre-COVID-19 peak and almost 6.8% higher than the COVID-19 low.[28] Figure 2-33 displays year-over-year total employment growth for Ohio and the United States from 2015 to 2023. Employment decline in Ohio and the United States were similar during the pandemic recession, and employment in Ohio initially grew at a slower pace but was consistent with the national average in 2023.

Figure 2-33. Ohio vs. U.S. Year-over-Year Employment Growth



Source: U.S. Bureau of Labor Statistics

The industry sectors in Ohio with the largest share of employment include trade, transportation, and utilities, accounting for 19.5% of employment; followed by education and health services at 16.3%; and professional and business services at 13.8%.[29]

Certain industries have a substantially stronger presence in Ohio compared to the national average. For example, the manufacturing sector's share of total employment in Ohio accounts is 49% higher than in the nation overall. Supported by a strong rail network, Manufacturing, as well as the Trade, Transportation and Utilities sectors have higher concentration in Ohio than nationwide. Mining and Information sectors, on the other hand, are underrepresented in Ohio compared to the United States. Table 2-13 shows each major sector's location quotient. Location quotient is calculated as each industry's share of Ohio employment divided by its share of national employment. Values above 1 indicate that an industry is more concentrated in Ohio relative to the nation, while values below 1.0 mean that Ohio's share of employment in that sector is less than the national average.

[28] U.S. Bureau of Labor Statistics.
[29] U.S. Bureau of Labor Statistics, Employment and Wages Data Viewer.

Table 2-13. Ohio vs. U.S. Sector Location Quotient (2022)

Sector	Location Quotient
Manufacturing	1.49
Education and Health Services	1.05
Trade, Transportation, and Utilities	1.03
Financial Activities	0.98
Leisure and Hospitality	0.96
Other Services	0.96
Professional and Business Services	0.92
Government	0.92
Construction	0.84
Information	0.63
Mining and Logging	0.41

Source: Bureau of Labor Statistics, Employment and Wages Data Viewer

According to projections from the Ohio Department of Job and Family Services, Ohio is anticipated to add approximately 250,000 jobs between 2020 and 2030, reflecting a 4.6% increase.[30] Roughly one-third of these new jobs are expected to emerge in the healthcare and social assistance sector, with employment projected to increase by 10.7% during this period. Mining, transportation, and warehousing, as well as arts, entertainment, and recreation employment are expected to grow faster than overall Ohio employment growth.

Several sectors are forecast to experience declines in employment between 2020 and 2030. Retail trade employment is expected to decrease by 18,000 jobs (-3.5%), while employment in government, manufacturing, and utilities are also projected to decrease during this period.

Strategic Transportation and Development Analysis

ODOT's Strategic Transportation and Development Analysis (STDA), a study developed in collaboration with the Ohio Department of Development and Governor's Office of Workforce Transportation, is a comprehensive assessment of Ohio's transportation system in the context of demographic, economic, workforce, and development trends.

The STDA evaluated many of the same factors discussed in the preceding sections. Additionally, the STDA developed alternative scenarios that could potentially lead to medium and high population growth instead of the decline depicted in Figure 2-32. For example, Ohio's relatively low cost of living, a major economic revitalization, or geopolitical stability could lead to increased migration to the state and result in net population growth. If this were to occur, the counties where population growth is already forecasted could experience even greater growth, while some of the counties forecasted to have stagnant growth or population loss forecasted may experience moderate levels of growth.

Analysis

Within Ohio are unusually high concentrations of industries that depend on rail. The share of employment and economic output associated with manufacturing is higher in Ohio than in other states. Prominent manufacturing sectors within Ohio are heavy users of rail, such as steel, chemicals, automotive and food manufacturing. One of Ohio's economic sectors with the fastest recent economic growth, agriculture, is also a major user of rail. Areas of higher income and higher forecast population increases tend to cluster around the Columbus metropolitan area and certain counties outside of Cincinnati, Dayton, and Cleveland. While rail

[30] Ohio Department of Jobs and Family Services

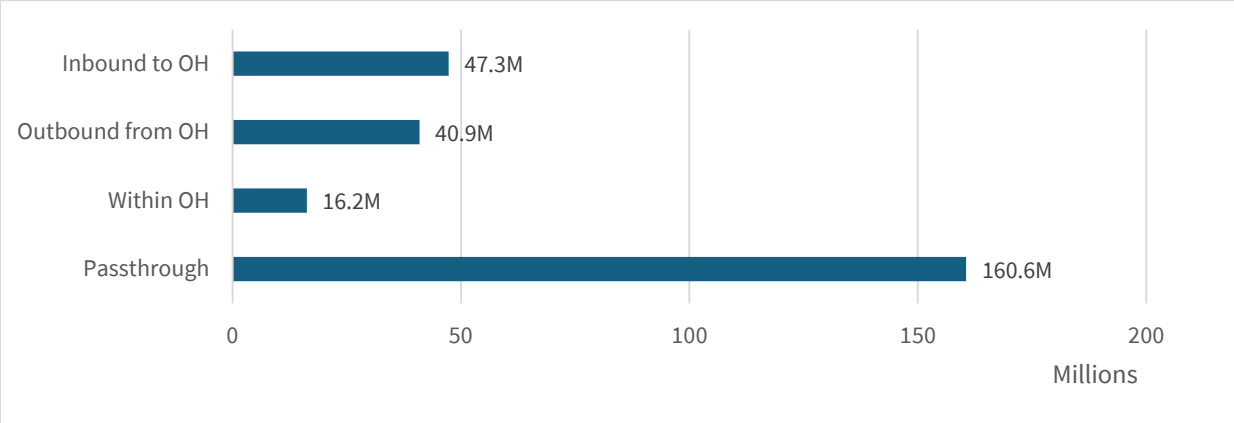
demand would tend to be in areas of higher growth, rail is also a key infrastructure for bringing growth to areas that have had slow or negative growth because of the sectors it serves, particularly associated with opportunities in the energy and chemical sectors as well as agriculture.

2.2.2 Freight Demand and Trends

Ohio is one of the nation's busiest rail states and according to the Association of American Railroads is ranked sixth among U.S. states in freight tonnage shipped by rail to, from, within the state, and seventh for the number of railcars shipped to or from the state. However, Ohio is not just important to the U.S. rail network as an origin or destination. In addition to the traffic that moves to, from, within Ohio, is the "Passthrough" traffic that crosses Ohio between other states, which is 60% of the tonnage and 68% of the carloads/intermodal containers handled by Ohio's rail network.

As shown in Figure 2-34, slightly more freight rail traffic travels to Ohio from other states than is shipped from Ohio to other states. A small but substantial volume of freight moves within Ohio.

Figure 2-34. Direction of 2022 Ohio Freight Rail Flows (Millions of Tons)



Source: STB Waybill Sample, WSP Analysis

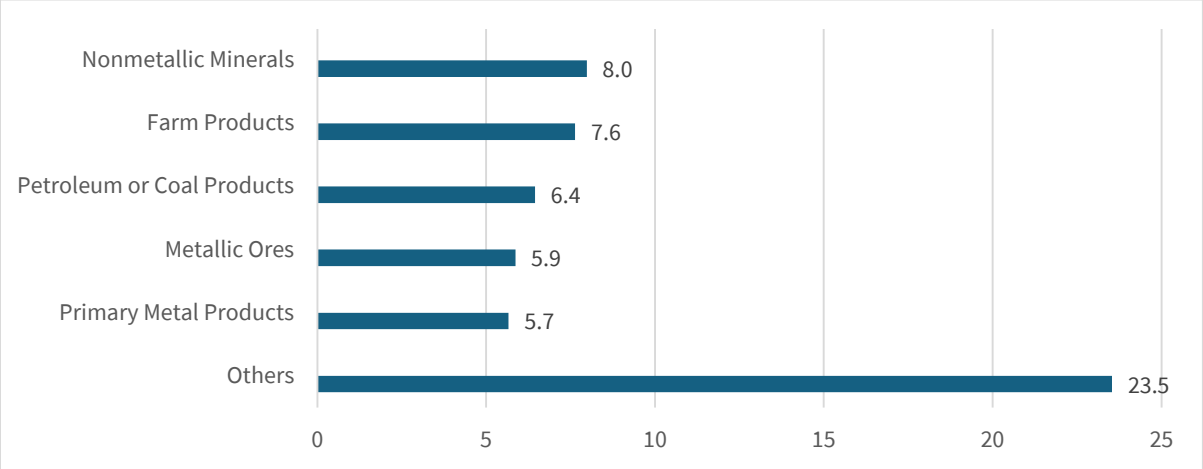
Commodity Flows

Ohio shippers and receivers rely on rail for a broader range of commodities and within a larger set of industries compared to other areas of the U.S. For example, the top five commodity categories in Ohio only account for 31% of originating tons and 36% of terminating tons. Nationwide, the top five commodities shipped comprise 70% of originating tonnage and 69% of terminating tonnage (the difference relates to shipments to Canada and Mexico) across the U.S.

Nonmetallic minerals (primarily stone and riprap) comprises the largest component of originating moves from Ohio, accounting for about 8 million tons (14% of originating tonnage). Most of these flows stay within Ohio, with the rest moving to locations in Pennsylvania and Indiana. Farm products, at 13% of tonnage (7.6 million tons), is the second-highest source of rail flows originating in Ohio. Most of this category consists of corn movements out of the state (primarily to North Carolina, South Carolina, Georgia, and Pennsylvania), and flows of cottonseeds to Virginia, Georgia, Alabama and North Carolina. Petroleum or coal products is the next major source of flows, accounting for 11% of originating tonnage (6.4 million tons). These products are moved to locations across the nation (including intrastate flows within Ohio). They consist of a range of products, ranging from propane to coke from coal to fuel oils. Moves of metallic ores (primarily iron concentrates) constitute 10% of originating tonnage (5.9 million tons) and are evenly split between intrastate moves and outbound moves to Pennsylvania. Metal product movements of iron and steel sheets and pipes (to

Michigan, Indiana, Kentucky, Texas and Pennsylvania round out the top 5 largest commodity categories by originating tonnage at 5.7 million tons. Commodities in the "Others" category include chemicals, scrap materials, food products, containerized intermodal traffic, petroleum products, etc.

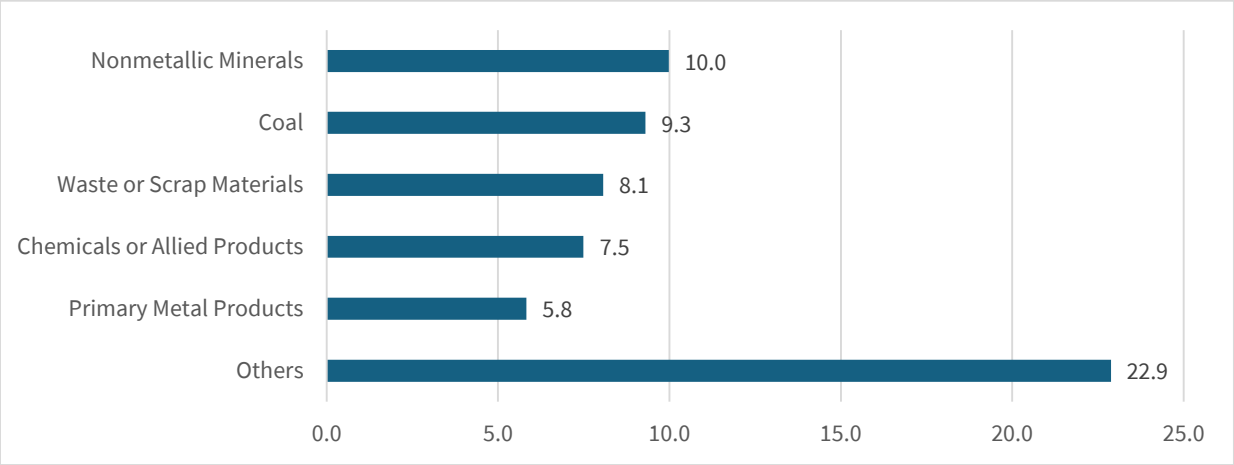
Figure 2-35. Originating Ohio 2022 Freight Rail Flows by Commodity (Millions of Tons)



Source: STB Waybill Sample, WSP Analysis

Nonmetallic minerals (specifically stone and riprap) comprise the largest component of terminating moves into Ohio, accounting for about 16% of total tonnage (almost 10 million tons). Most of these terminating moves are intrastate flows, which is why this category also tops the originating commodity categories. Inbound moves of bituminous coal from West Virginia, Virginia, Pennsylvania and Kentucky, as well as intrastate moves within Ohio account for 15% of total terminating tonnage (9.3 million tons). Miscellaneous waste (from northeastern states such as New Jersey, Massachusetts, Connecticut and New York) as well as iron and steel scrap (from Ontario and Quebec and a variety of U.S. states) comprise the third largest category of terminating moves, accounting for 13% of tonnage (8.1 million tons). A variety of chemical products such as plastic materials, potassium and sodium compounds and other industrial chemicals from various states together comprise 12% of terminating tonnage (7.5 million tons). Inbound moves of iron and steel products from Michigan, Indiana, Pennsylvania, Alabama and intrastate moves within Ohio round out the top 5 categories, accounting for nine percent of total terminating tonnage (5.8 million tons). Products in the "Others" category include containerized intermodal shipments, petroleum products, food products, metallic ores, stone and glass products, transportation equipment such as auto parts and finished vehicles, pulp & paper products, etc.

Figure 2-36. Terminating Ohio 2022 Freight Rail Tons by Commodity (Millions of Tons)



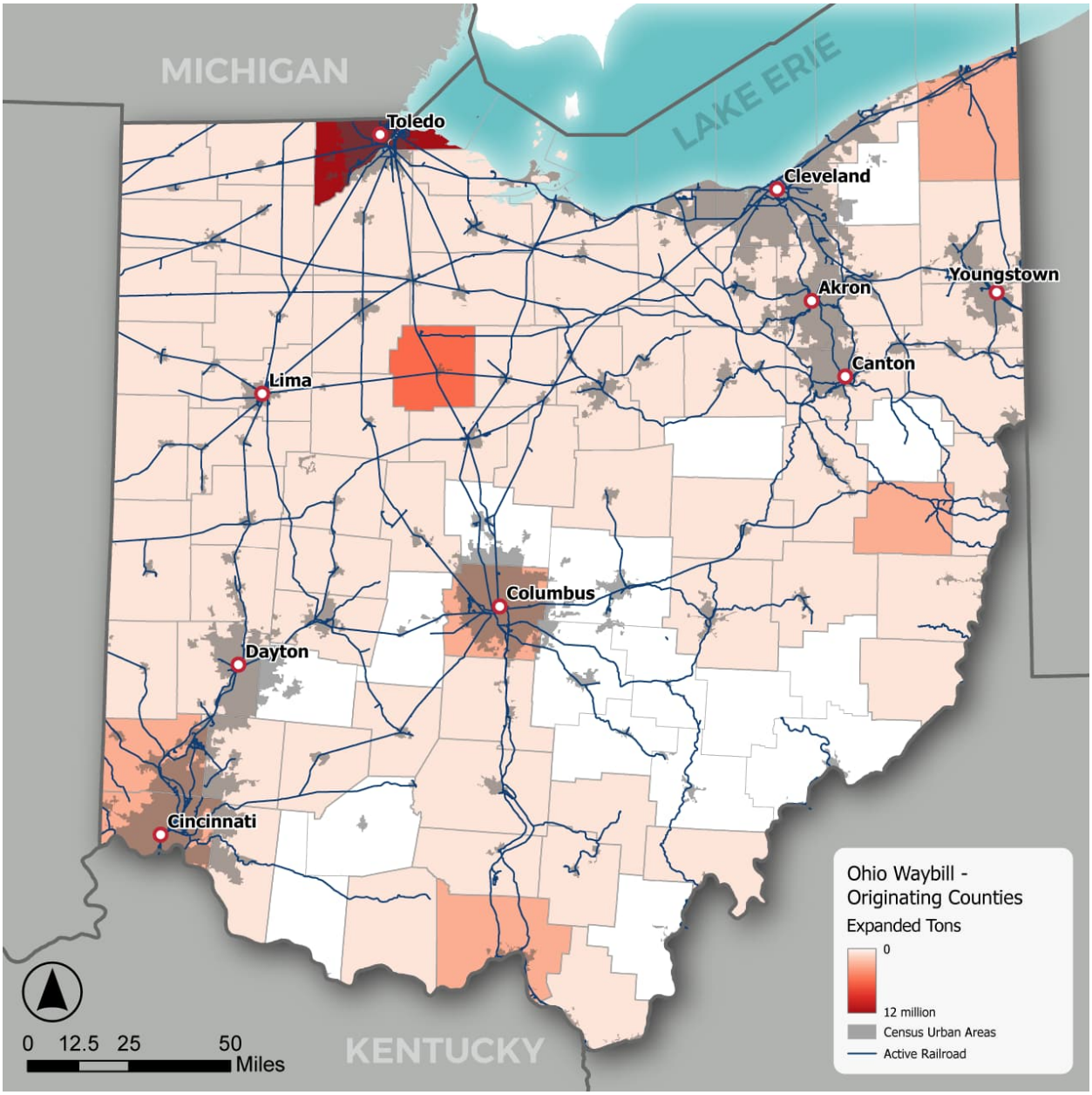
Source: STB Waybill Sample, WSP Analysis

Geography of Ohio Freight Rail Flows

Flows to and from Ohio Counties

Figure 2-37 displays the tonnage flows originating from Ohio counties by rail, while Table 2-14 details the types of commodities and destinations from the top Ohio originating counties.

Figure 2-37. 2022 Tonnage Shipped by Rail from Ohio Counties



Source: STB Waybill Sample, WSP Analysis

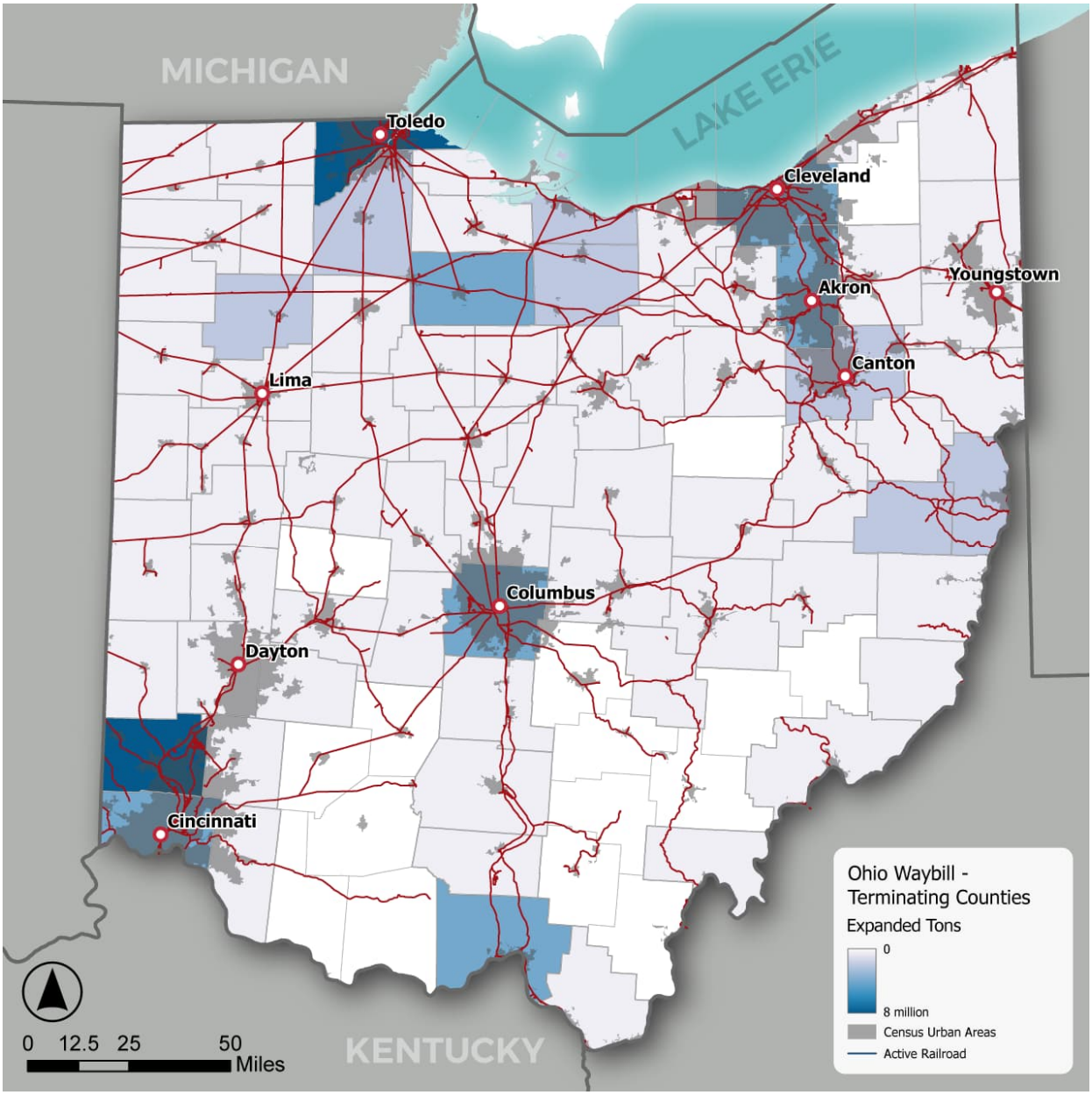
Table 2-14. Top Ohio Rail Originating Counties, the Top Commodities from those Counties, where these Commodities Are Destined

County	Top Commodities and Destinations
Lucas	▪ Intrastate metallic ores ▪ Waste and scrap to Indiana and Pennsylvania from Toledo port facilities ▪ Refined petroleum products to New Jersey and Ontario ▪ Crude petroleum products to Ontario and South Carolina
Wyandot	▪ Intrastate stone and riprap ▪ Corn to North Carolina ▪ Stone and riprap to Pennsylvania and Michigan ▪ Intrastate miscellaneous ground nonmetallic minerals
Ashtabula	▪ Iron ore to Pennsylvania ▪ Stone and riprap to Pennsylvania
Scioto	▪ Intrastate bituminous coal ▪ Intrastate coke ▪ Outbound coal, coke to West Virginia, Indiana, and Michigan
Butler	▪ Iron and steel products to Michigan, Indiana, California, Alabama ▪ Intrastate iron and steel ▪ Intrastate metal scrap

Source: STB Waybill Sample, WSP Analysis

Figure 2-38 tonnage terminating in Ohio counties by rail, while Table 2-15 provides detail of the commodities that are terminating in those counties, where these commodities originated.

Figure 2-38. 2022 Tonnage Shipped by Rail to Ohio Counties



Source: STB Waybill Sample, WSP Analysis

Table 2-15. Top Ohio Rail Terminating Counties, the Top Commodities to those Counties, where these Commodities Originated

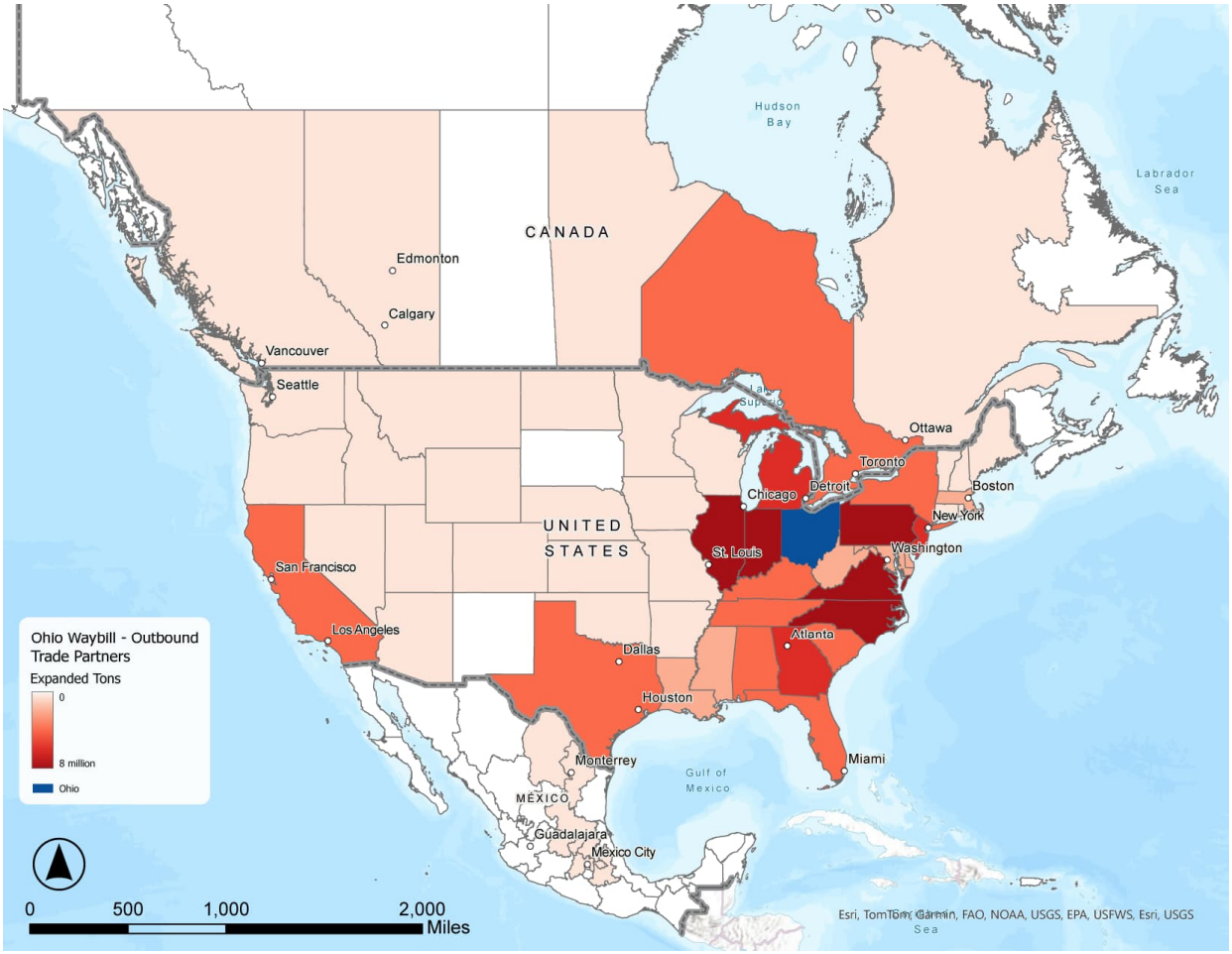
County	Top Commodities and Origins
Butler	▪ Intrastate iron ore from port facilities ▪ Iron and steel products from Michigan, Indiana ▪ Bituminous coal from West Virginia
Lucas	▪ Plastics, chemicals from Ontario, Quebec, Illinois, and Indiana ▪ Coal from West Virginia, Kentucky, and Virginia ▪ Metal scrap, miscellaneous waste from Ontario, Quebec, New Jersey ▪ Petroleum and coal products from Ontario and intrastate ▪ Lumber and wood products from Quebec
Cuyahoga	▪ Containerized intermodal from Illinois, New Jersey, Virginia ▪ Intrastate stone and rip rap ▪ Petroleum oils, derivatives from Virginia, intrastate ▪ Plastics from Illinois
Scioto	▪ Intrastate coal ▪ Coal from West Virginia, Virginia, Pennsylvania, Kentucky
Franklin	▪ Containerized intermodal from Illinois, New Jersey, Virginia ▪ Plastics and chemicals from Illinois and North Carolina ▪ Corn products from Illinois and Indiana ▪ Cement from Maryland and Michigan ▪ Intrastate stone and rip rap ▪ Steel from Indiana

Source: STB Waybill Sample, WSP Analysis

Ohio's Freight Rail Trading Partners

Ohio ships goods by rail to a wide number of states. Pennsylvania, Indiana, Illinois, North Carolina and Virginia are the largest recipients of rail flows from Ohio, constituting about 60% of outbound flows. Pennsylvania receives iron ores and petroleum products from Ohio, while Indiana receives iron, steel and metal scraps. Movements to North Carolina consist primarily of corn, soybean, and cottonseeds, while movements to Virginia include cottonseeds and intermodal shipments. Illinois receives a wide variety of shipments from Ohio, with no specific commodity patterns evident. This is likely a function of Illinois and the Chicago rail hub serving as a rail gateway for shipments bound for other destinations across the country.

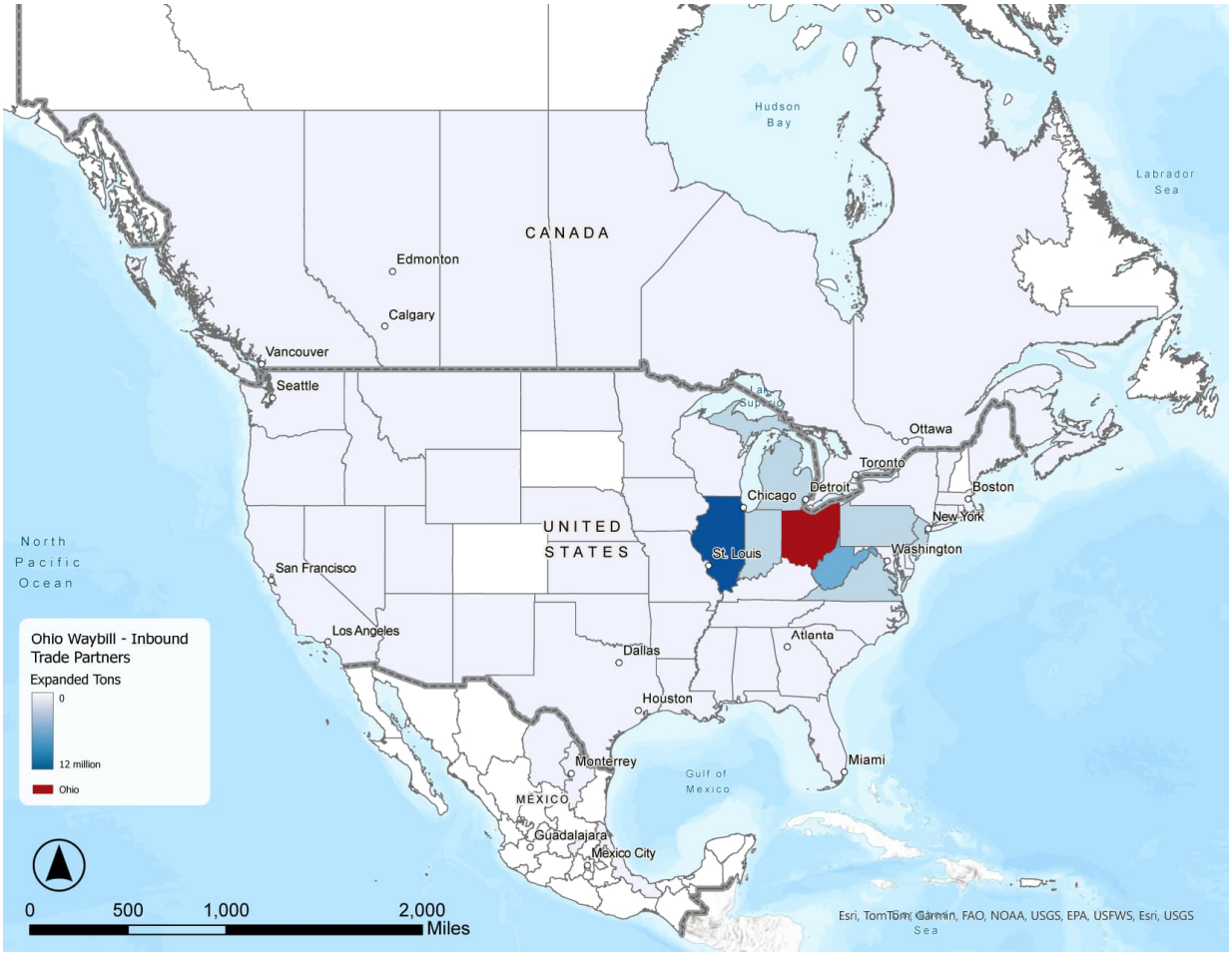
Figure 2-39. 2022 Tonnage Shipped by Rail to Trading Partners from Ohio



Source: STB Waybill Sample, WSP Analysis

Ohio receives inbound flows from a variety of states and Canadian provinces. Illinois, West Virginia, New Jersey, Michigan, Indiana, Ontario, Quebec, Virginia, Pennsylvania and Kentucky all send significant tonnages to Ohio. Trade with Illinois consists of plastics, nonmetallic minerals, corn and mixed freight shipments, while trade with West Virginia, Pennsylvania, Virginia and Kentucky is composed of energy-focused movements such as bituminous coal and petroleum and coal products. Michigan and Indiana send iron and steel products and scraps to Ohio. Canadian provinces such as Ontario and Quebec send industrial chemicals, iron and steel scrap as well as lumber and wood products, while movements from New Jersey are mostly composed of miscellaneous waste and intermodal shipments. In addition to bituminous coal, Virginia also sends intermodal traffic to Ohio.

Figure 2-40. 2022 Tonnage Shipped by Rail to Ohio from Trading Partners

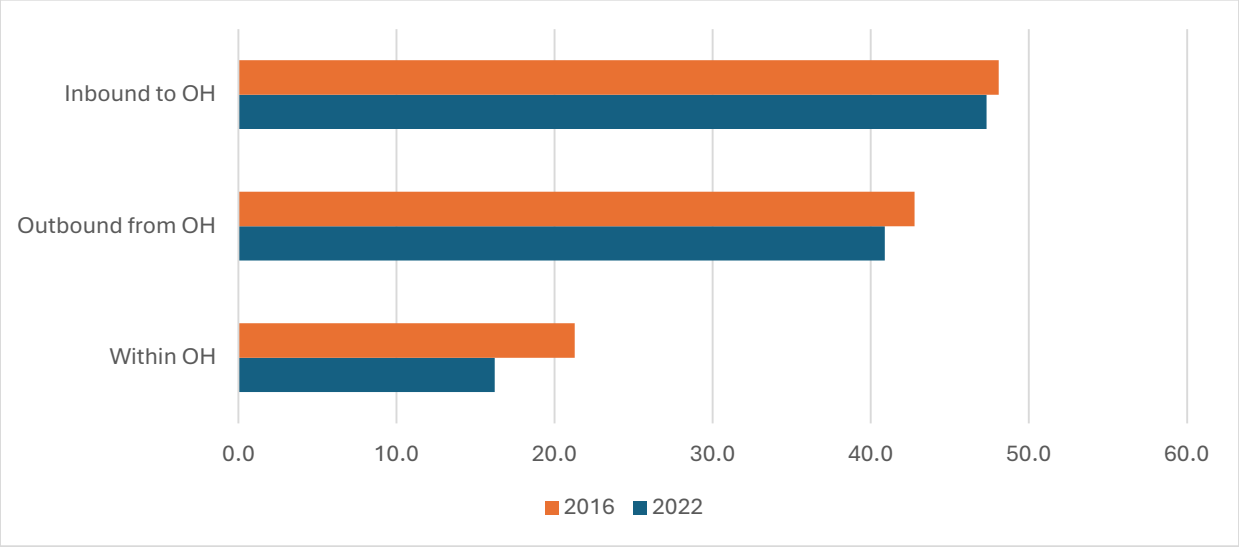


Source: STB Waybill Sample, WSP Analysis

Trends Since the 2019 Rail Plan

The 2019 Rail Plan relied on the 2016 STB Carload Waybill Sample for the freight flow analysis. Similar to the current Rail Plan the waybill data was not available until several years after the year covered. Between 2016 and 2022, freight tonnage to, from, or within Ohio declined by about seven percent. The largest losses were in intrastate movements, which declined by over 5 million tons or 8% as shown in Figure 2-41.

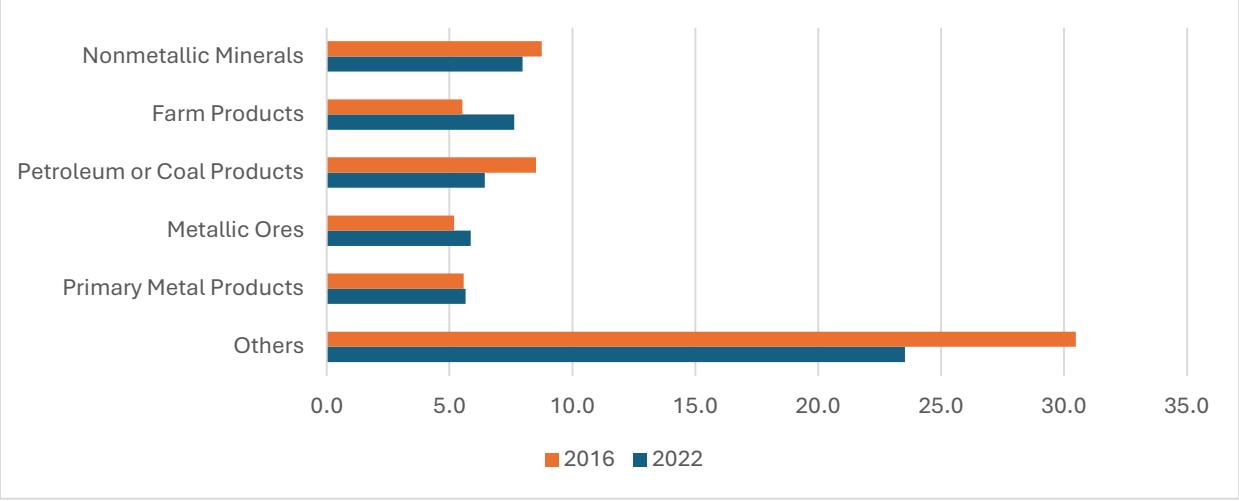
Figure 2-41. Comparison of Ohio Freight Rail Flows in 2016 and 2022 (Millions of Tons)



Source: 2019 State of Ohio Rail Plan, STB Waybill Sample, WSP Analysis

Products that were outside of the top five originating commodities were the largest source of decline in originating traffic between 2016 and 2022. Farm Products were a bright spot, increasing in originating volume between 2016 and 2022 as shown in Figure 2-42.

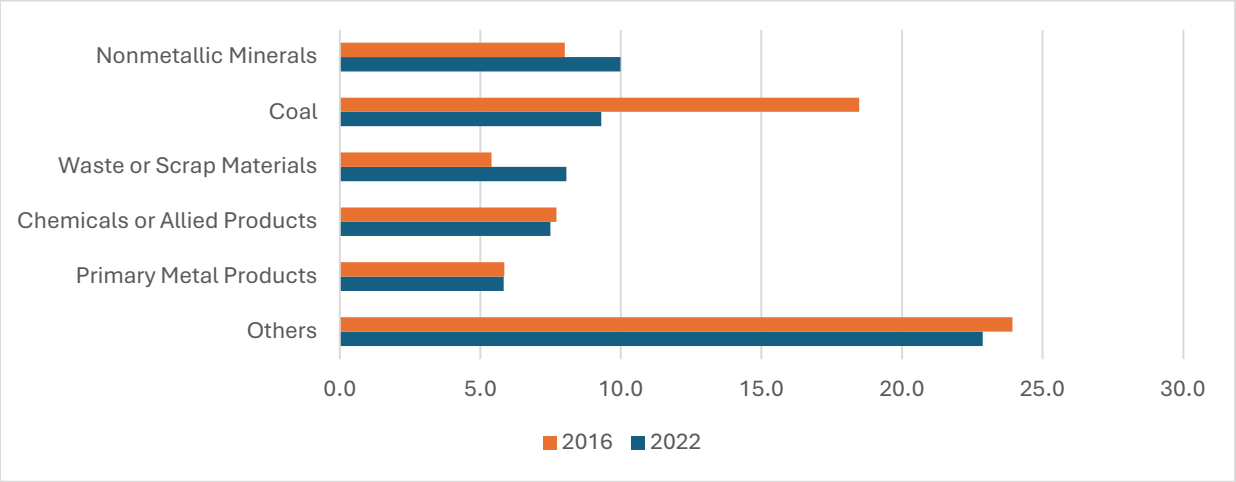
Figure 2-42. Comparison of Originating Ohio Freight Rail Flows by Commodity in 2016 and 2022 (Millions of Tons)



Source: 2019 State of Ohio Rail Plan, STB Waybill Sample, WSP Analysis

Coal is the largest source of decline in terminating rail tonnage between 2016 and 2022 as shown in Figure 2-43. Nonmetallic minerals and waste/scrap increased between 2016 and 2022.

Figure 2-43. Comparison of Terminating Ohio Freight Rail Flows by Commodity in 2016 and 2022 (Millions of Tons)

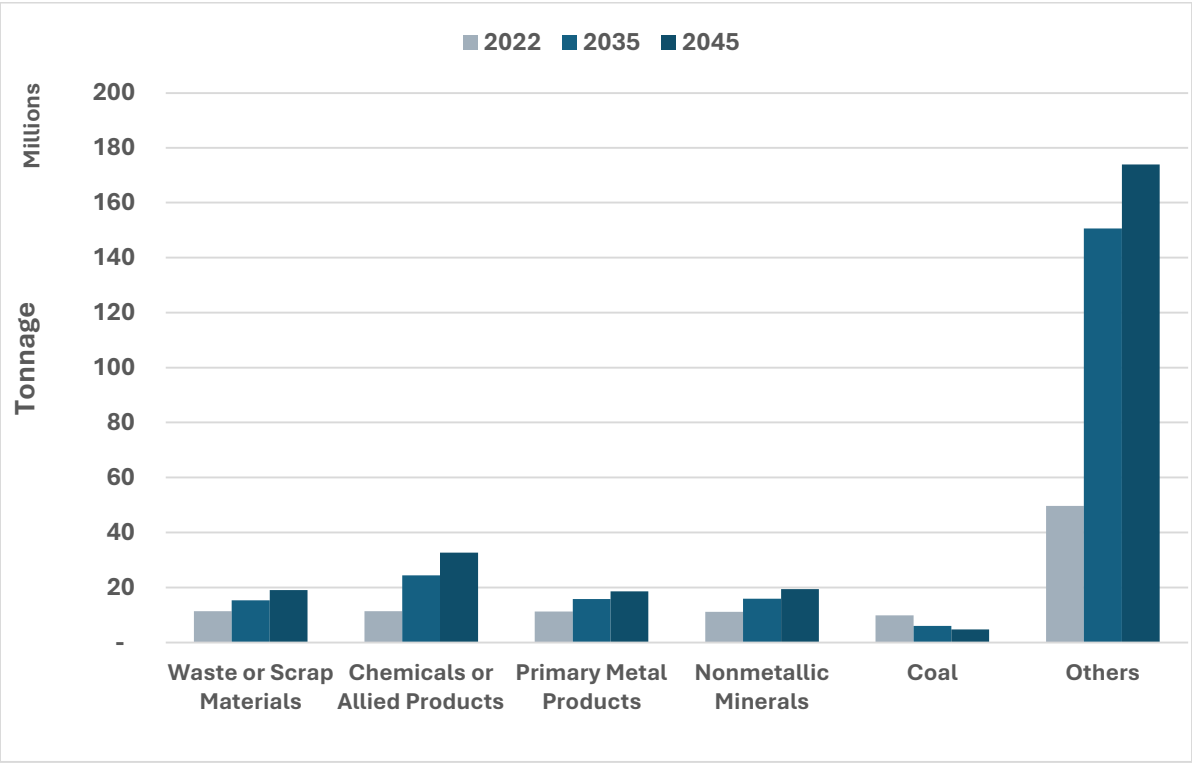


Source: 2019 State of Ohio Rail Plan, STB Waybill Sample, WSP Analysis

Freight Rail Forecasts by Commodity

Using estimated growth rates from the Freight Analysis Framework for Ohio-based movements, 2022 STB Waybill volumes for individual commodities were projected to 2045. All top commodity movements (with the exception of coal) are expected to increase in tonnage with the fastest growth in chemical traffic and various commodity categories outside the top five. These forecasts do not consider potential shifts in modal share.

Figure 2-44. Freight Forecasts by Commodity to, from, within Ohio

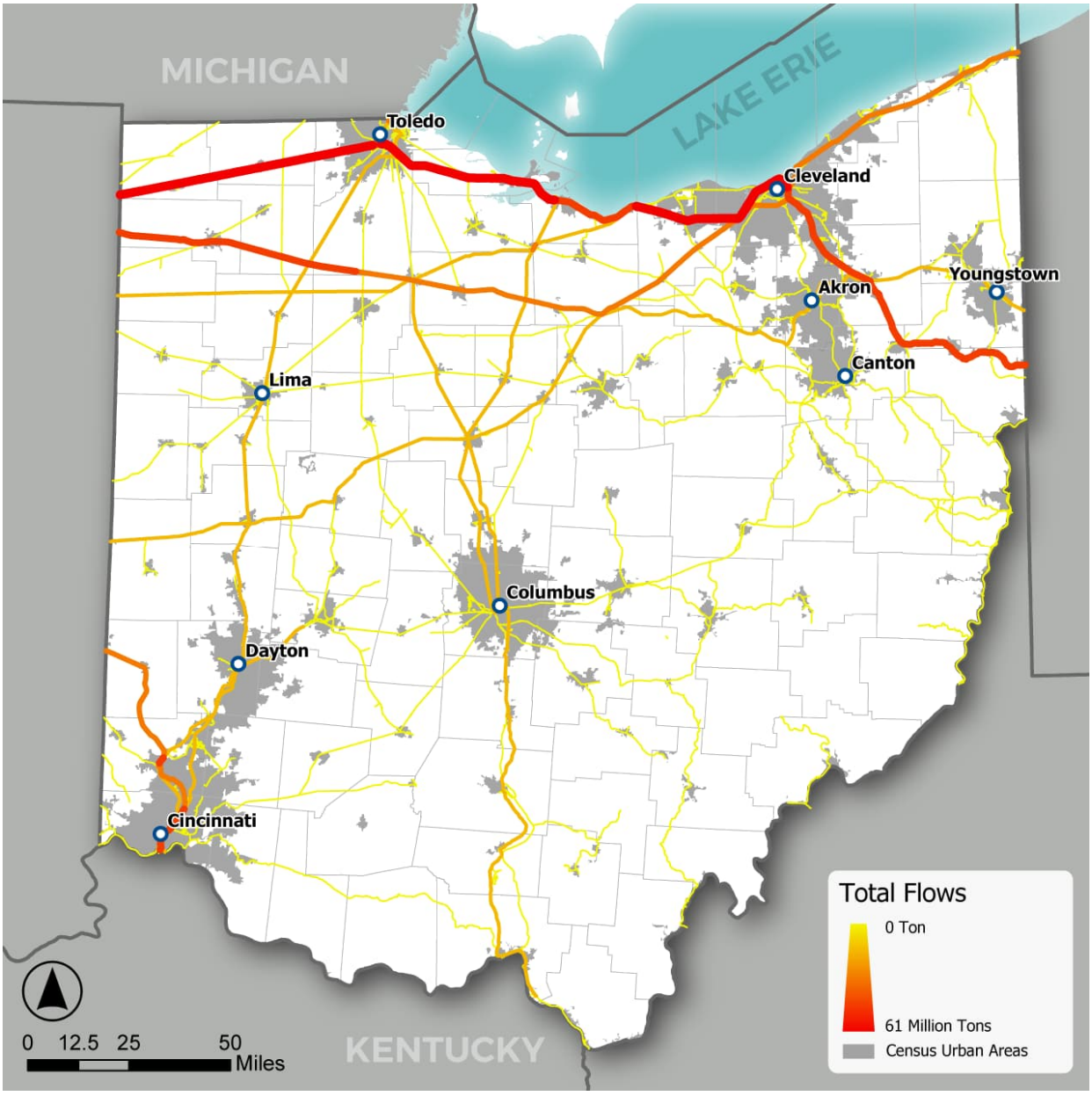


Source: FAF5, STB Waybill Sample, WSP Analysis

Ohio Freight Flows by Rail Line

The level of freight traffic carried by rail lines in Ohio varies significantly with some rail lines carrying over 50 million tons per year, while others carry very little freight at all. As mentioned previously, 60% of the tonnage carried on Ohio's rail network is passing through Ohio between other states. As shown in Figure 2-45, the busiest corridors are the east–west corridors in the northern part of the state, which connect the Chicago gateway and other Midwestern points to the Northeast. Another major corridor carries freight between Chicago/Midwest to the Southeast and cuts through the southwestern corner of Ohio, crossing into Kentucky south of Cincinnati.

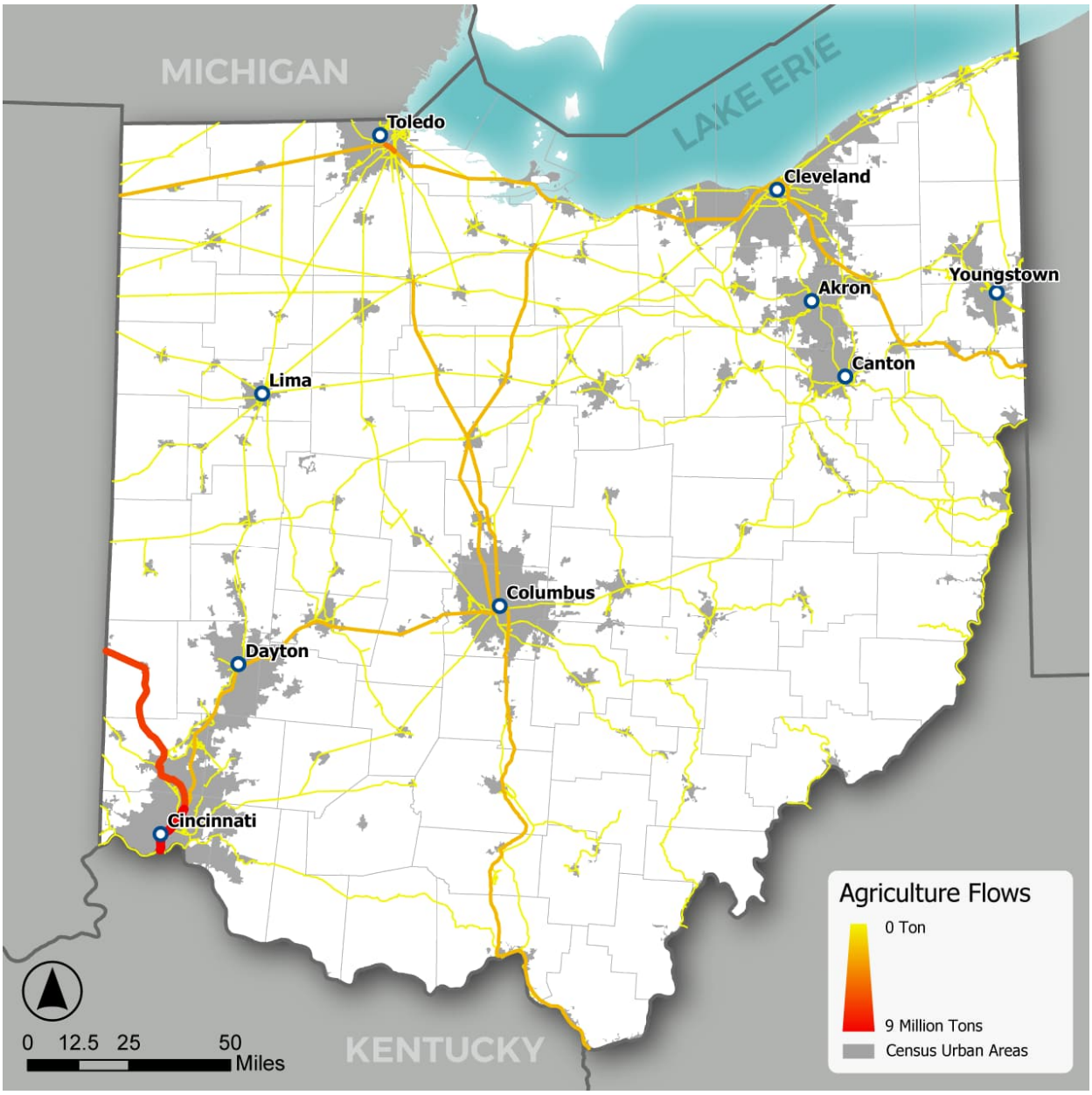
Figure 2-45. Total Tonnage on Ohio Rail Lines (2022)



Source: STB Waybill Sample, S&P

The density of traffic on Ohio's rail lines by commodity depends in part on traffic moving through Ohio and in part on traffic originating/terminating in Ohio. For agricultural products, shown in Figure 2-46, the largest flows are through Cincinnati. This is because the highest volumes consist of grain and soybeans moving from agricultural producers in the Midwest to the Southeast. This includes Ohio-based producers.

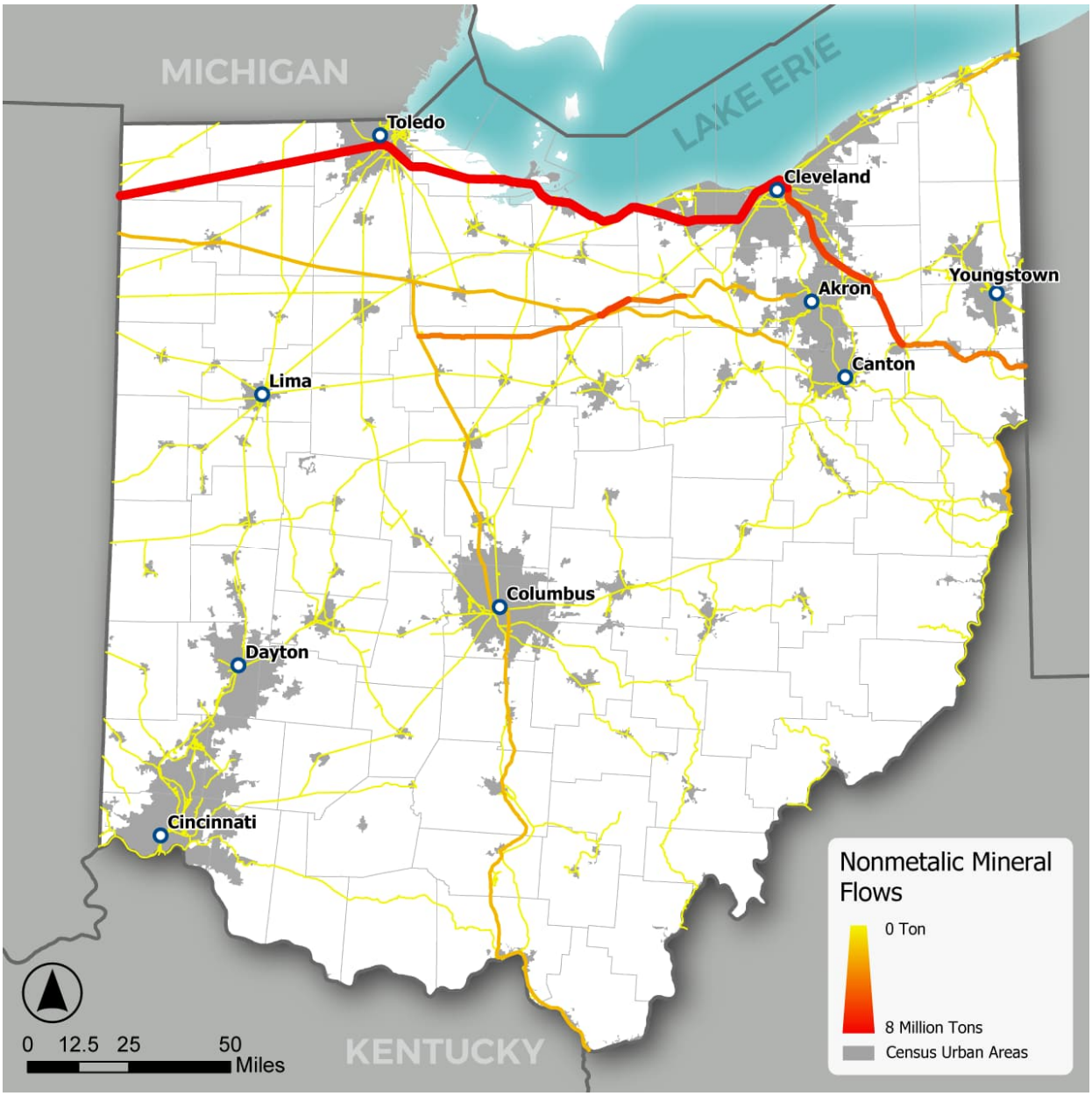
Figure 2-46. Agricultural Product Tonnage on Ohio Rail Lines (2022)



Source: STB Waybill Sample, S&P

For nonmetallic minerals, a little less than half of the flows are moving through Ohio between other states, but intrastate moves are also a significant component of rail traffic, and local flows are apparent in Figure 2-47.

Figure 2-47. Nonmetallic Mineral Product Tonnage on Ohio Rail Lines (2022)



Source: STB Waybill Sample, S&P

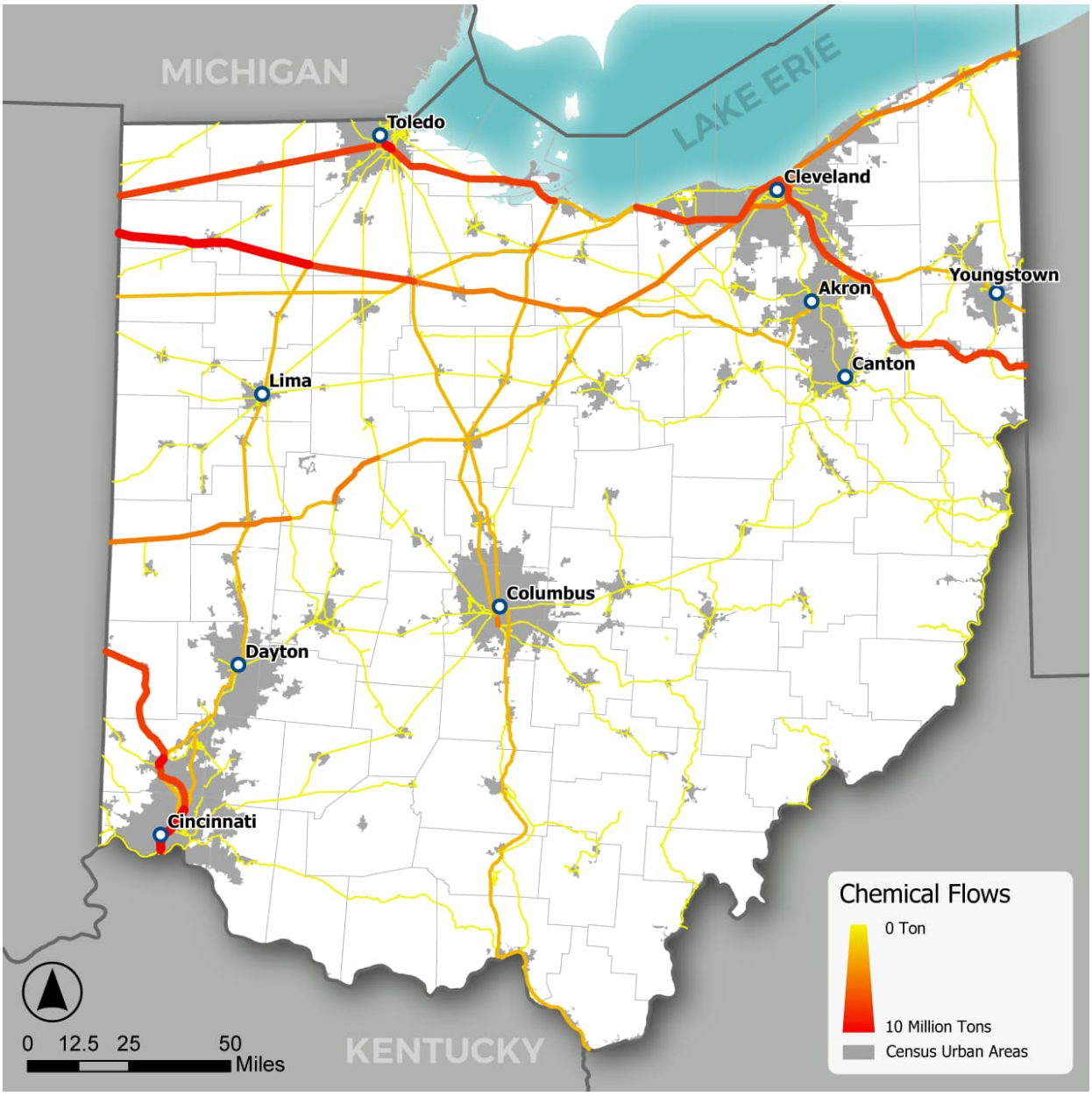
Food products primarily (73%) move through Ohio between other states and so mostly move on the mainlines that cross Ohio as shown in Figure 2-48.

Figure 2-48. Food Product Tonnage on Ohio Rail Lines (2022)

Source: STB Waybill Sample, S&P

Similar to food products, most chemical products (73%) are moving through Ohio between other states and are primarily transported over the rail main lines that cross Ohio.

Figure 2-49. Chemical Product Tonnage on Ohio Rail Lines (2022)



Source: STB Waybill Sample, S&P

Primary metal product flows in Ohio are dominated by north/south flows that originate in southwestern Ohio, either from other states crossing into Cincinnati or from the Cleveland Cliffs Middletown Works, moving toward Toledo. Many of these flows are continuing beyond Toledo to support the Michigan auto industry. In contrast to some other commodities, a higher portion of primary metal product moves to or from Ohio (collectively 53%) rather than through Ohio between other states (47%).

Figure 2-50. Primary Metal Product Tonnage on Ohio Rail Lines (2022)

Source: STB Waybill Sample, S&P

2.2.3 Passenger Travel Demand and Growth

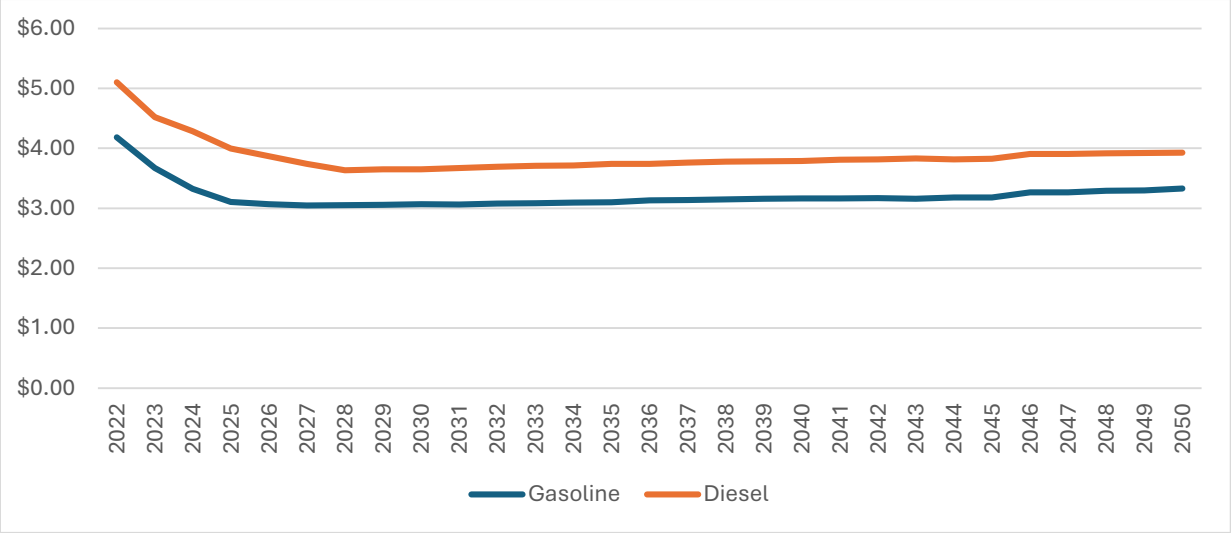
Ohio's travel demand model predicts that the volume of highway traffic to, from, within Ohio will grow slowly between 2020 and 2050 with vehicles miles traveled (VMT) increasing a single percentage point over that time period, and the number of vehicle trips growing by seven percent. The USDOT FHWA estimates that

overall U.S. VMT will increase at a somewhat faster rate, at about 16% between 2020 and 2050.[31] If long-distance travel moving through Ohio grows at a commensurate pace to the national rate, travel through Ohio should grow faster than travel within, or to/from Ohio. This is consistent with forecasted increases in congestion as shown in Figure 2-41, where volume-to-capacity ratios are expected to grow on the Interstate highway segments used for long-distance travel between urban areas, such as on I-70, I-77, and I-71.

2.2.4 Fuel Cost Trends

Fuel prices could influence the demand for freight and passenger rail. Rail is less fuel intensive compared to highway transportation. Both passenger and freight rail modes consume less fuel per passenger-mile or per freight ton-mile compared to highway transportation alternatives. All else equal, an increase in fuel prices would tend to increase demand for railroad transportation because higher fuel prices would tend to increase the cost of highway transportation faster than rail transportation. A reduction in fuel prices could have the opposite impact. According to the U.S. Energy Information Administration 2023 Annual Energy Outlook,[32] the price of diesel fuel in real 2022 dollars used for transportation is expected to drop from $5.11/gallon in 2022 to less than $4.00/gallon in 2026 and then not rise above $4.00/gallon through 2050. Similarly, gasoline is expected to decline from $4.18/gallon to $3.07 per gallon in 2026 and stay lower through 2050.

Figure 2-51. Real Diesel and Gasoline Prices ($2022)



Source: U.S. Energy Information Administration

A complicating factor to drawing conclusions from fuel cost trends is that the energy intensity of both modes is changing, and both modes are exploring alternate fuel options. Railroads are using various methods to improve their fuel efficiency. Fuel management systems provide engineers with real-time recommendations on how to operate trains for maximum efficiency based on topography, track curvature, weight, length, and wind. These can improve fuel efficiency by up to 14%.[33]

[31] 2024 FHWA Forecasts of Vehicle Miles Traveled (VMT), https://www.fhwa.dot.gov/policyinformation/tables/vmt/vmt_forecast_sum.cfm, estimates increase of 0.5% per year between 2019 and 2050. Compounded between 2020 and 2050, this corresponds to a 16% growth.
[32] U.S. Energy Information Administration, 2023 Annual Energy Outlook, Table 12. Petroleum and Other Liquids Prices, Reference Case, https://www.eia.gov/outlooks/aeo/.
[33] Association of American Railroads

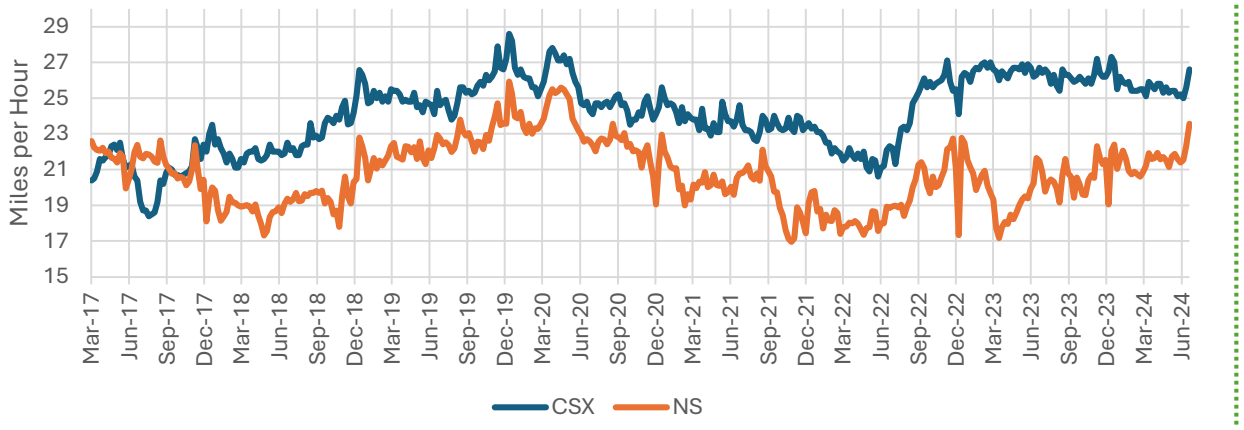
The railroads that serve Ohio have been experimenting with alternative fuel technologies. Amtrak, NS, and CSX have been investigating using biofuel blends and biodiesel. Amtrak used biodiesel to power Surfliner trains in California in 2023. In 2023 CSX tested 20% soybean oil-based fuels to serve a phosphate customer in Florida. This test is intended to investigate the impacts for potential longer-term use of higher biodiesel fuel blends in locomotives. CSX, in conjunction with CPKC, has developed a hydrogen locomotive, which the companies will be testing. In 2022 the Newburgh & South Shore Railroad LLC (NSR) of Cleveland purchased an all-battery electric locomotive (manufactured by an Ohio-based company) that was 75% funded by the Ohio Environmental Protection Agency. In addition to alternate power locomotives, railroads have been converting yard equipment to alternate power sources. As an example, NS converted 23 diesel cranes at intermodal terminals to diesel-hybrid or all electric in 2023. As railroads increase capacity by adding rail mounted gantry cranes at intermodal facilities, these are electric rather than diesel. As an example, the CSX Northwest Ohio Terminal relies on electric cranes.

2.2.5 Rail Congestion Trends

The United States Surface Transportation Board requires Class I rail carriers to provide weekly reports containing data on rail service performance. One of these data points is Average Train Speed. National data for CSX and NS is shown in Figure 2-52. NS consistently has slower speeds than CSX, although the overall pattern of each is similar. Speeds rose from 2017 to March 2020 (around the start of the COVID-19 pandemic) before falling through mid-2022, rising into 2023, and stabilizing into 2024. Other relevant statistics provided through the Surface Transportation Board include the following:

- Cars Online – this indicates the number of active freight railcars. CSX and NS both have fairly consistent cars online from 2017 through July 2024. CSX has approximately 8,000 cars online at any given time, and NS has approximately 10,000 cars online at any given time.
- Average Terminal Dwell Time at Cincinnati Terminal – this indicates dwell time at origin for loaded unit trains as time from "release to pull" from the customer facility, except for coal unit trains. Since early 2018, the average dwell time has generally fluctuated between 18 and 25 hours, with several jumps to 30+ hours for a month at a time.

Figure 2-52. Average Train Speed by Week and Carrier

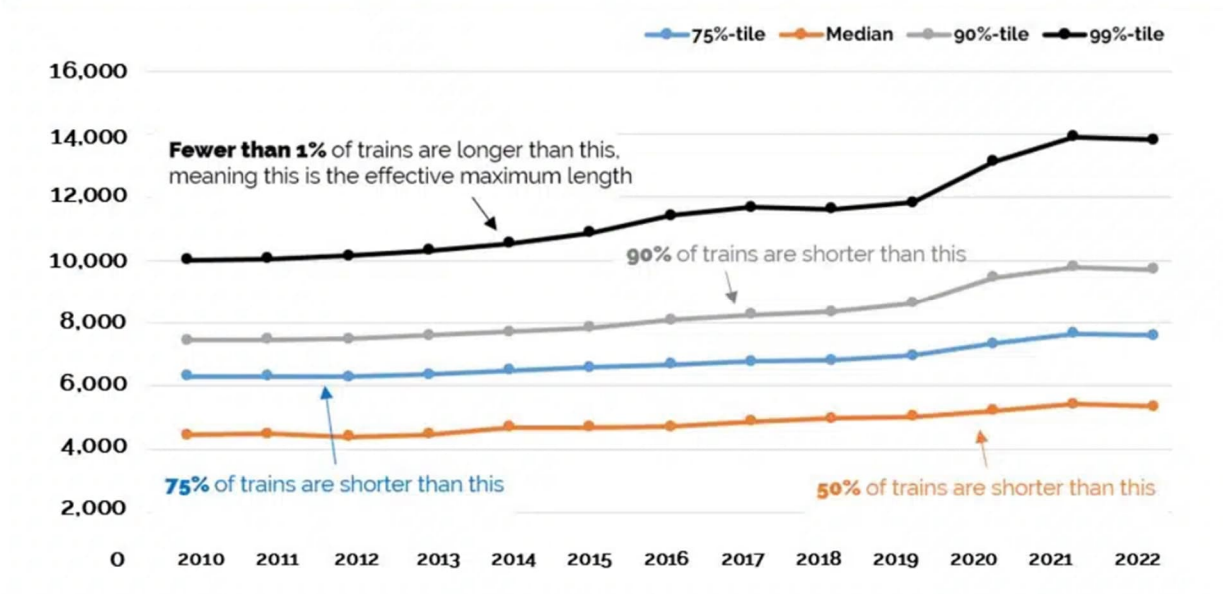


Source: Surface Transportation Board Weekly Reports, 2017-2024

One factor which may impact congestion is the trend toward longer train lengths on Class I railroads. As shown in Figure 2-53, in 2010, almost no trains were longer than 10,000 feet. As of 2022, about 10% of trains were that long. Railroads can now operate locomotives simultaneously with synchronized locomotives in the front, middle, or back of a train consist (distributed power), rather than all locomotives at the front of a

consist. With distributed power, railroads are no longer limited to the earlier upper limit of train length, around 100 railcars, and can now operate railcars as long as 150 railcars and more depending on the topography of the route, composition of the train, and type of car.

Figure 2-53. Percentiles of Train Length



Source: Association of American Railroads

On the one hand, when Class I railroads shift to longer trains, they use fewer trains to haul the same freight, which would tend to reduce congestion. On the other hand, about 70% of U.S. rail mainlines are single track, where trains must rely on passing sidings to pass one another.[34] Sidings were in many cases built for smaller trains, and long trains often cannot fit into passing sidings or spurs, so other trains must wait for them to clear rail lines. Academic research has estimated an optimal number of sidings that should be modified to accommodate longer trains for railroads to achieve a desired service level.[35] However, while the relationship between delay and required investment may suggest one set of conclusions for railroads, the trend toward long trains also has implications for the general public because it can be difficult to park long trains without blocking highway-rail crossings, an issue that will be discussed in more depth in Chapter 4.

U.S. Congress mandated a study of long trains (defined as over 7,500 feet) in 2021. The report was published in 2024.[36] The resulting study included the following findings and recommendations:

- Safety issues with long trains primarily relate to long manifest trains. Because manifest trains comprise a variety of car types with differing weights and characteristics (in contrast to unit trains which are made of the same type of railcar), long manifest trains are subject to varying in train forces the increase the risk of derailment and the train separation. The study recommended that railroads address practices for operating long trains in their safety planning and documentation and that FRA develop set of recommended protocols and practices for operating long trains.

[34] C. Tyler Dick, Ivan Atanossov, F. Bradford Kippen IIII, and Darkhan Mussanov, Institute of Mechanical Engineers, Rail and Rapid Transit, "Relative train length and the infrastructure required to mitigate delays from operating complications of normal and over-length freight trains on single-track railway lines in North America," 2019.
[35] Ibid.
[36] National Academies of Sciences, Long Freight Trains: Ensuring Safe Operations, Mitigating Adverse Impacts, 2024, https://nap.nationalacademies.org/catalog/27807/long-freight-trains-ensuring-safe-operations-mitigating-adverse-impacts..

- The study recommended that the FRA should collect data on blocked crossings, and railroads should be required to provide data to support this. The FRA should be empowered to negotiate with railroads on the most problematic blocked crossings. Congress should enable FRA to impose penalties on railroads for problematic blocked crossings.
- Amtrak provided evidence that its trains are delayed by long trains freight trains that cannot fit into available sidings and allow Amtrak trains to pass per federal statute. Host freight railroads should be subject to penalties if they operate long trains that delay Amtrak trains.

2.2.6 Highway and Airport Congestion Trends

Roadway Congestion

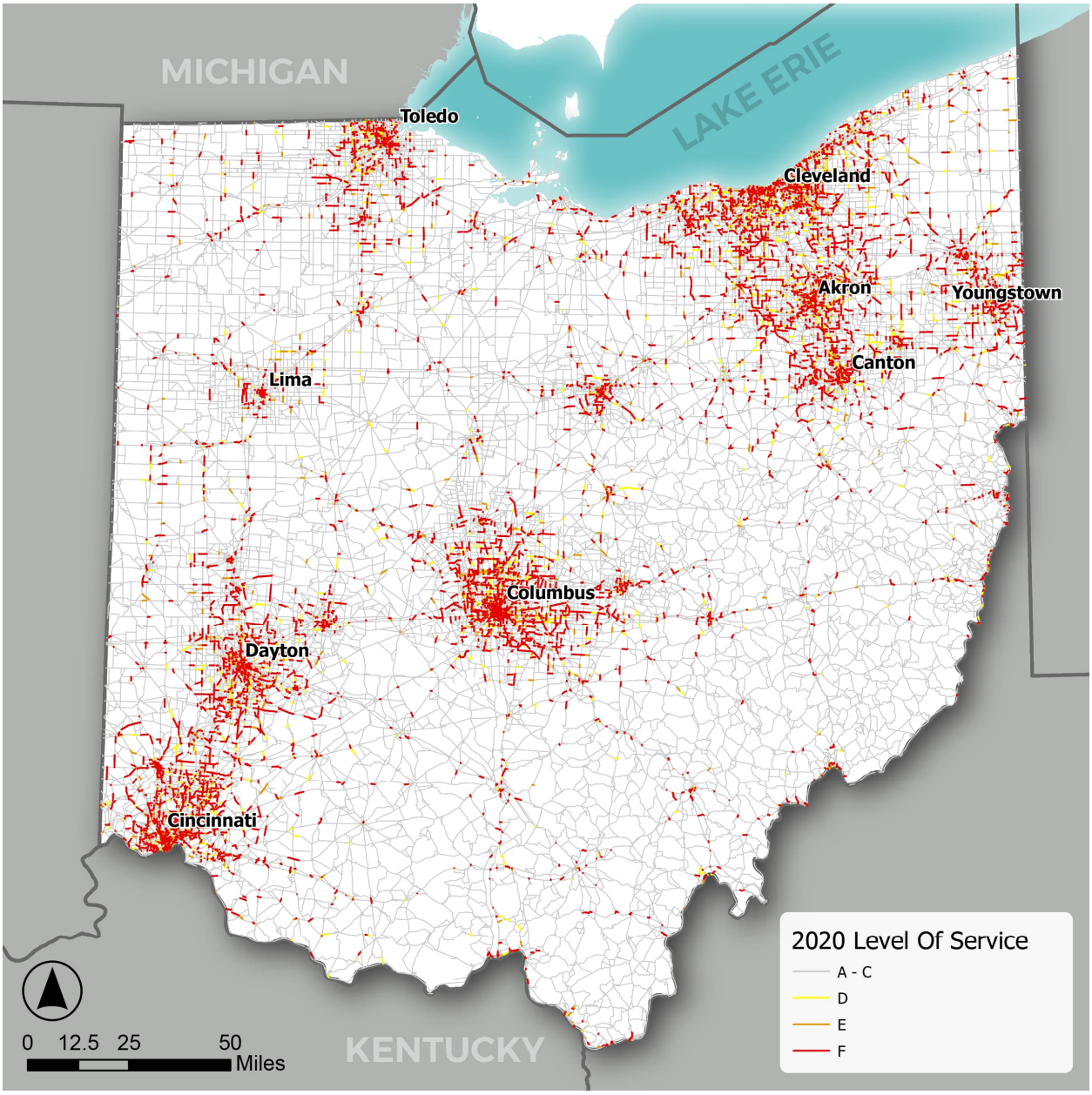
Rail services have the potential to relieve roadway congestion because freight and passenger services can divert trips that would otherwise have been on roadways to the rail network, thus reducing the number of vehicles that are on roadways. Congestion impacts are particularly significant if they reduce vehicles from roadways in urban areas and during peak travel times.

Highway planners rate roadways based on the volume of traffic that uses the roadways during peak hours compared to roadway capacity. These in turn are used to estimate the level of service (LOS) of roadways. Measurements are as follows:

- LOS A – C, volume-to-capacity ratio is 0.80 or below, where the roadway provides an acceptable level of comfort to drivers
- LOS D, volume-to-capacity ratio of between 0.80 and 0.90, where the roadway causes some driver frustration with moderate delay
- LOS E, volume-to-capacity ratio of between 0.90 and 1.00, where roadway congestion causes high levels of driver frustration with high levels of delay
- LOS F, volume-to-capacity ratio of over 1.00, where levels of congestion are at their highest with the highest level of frustration

Figure 2-54 displays data from Ohio's statewide travel demand model for 2020, which is the model's base analysis period. Areas in red, orange, and yellow have congestion. As shown, numerous roadways in Ohio's metropolitan areas have significant congestion during peak travel periods. Slightly over a quarter of lane miles included in Ohio's travel demand model have peak period LOS of F. Because most of Ohio's traffic occurs on its busiest roadways, 89% of vehicle miles traveled (VMT) are on roadways that experience LOS of F during peak periods. The unreliable travel conditions increase shipping costs and degrade the competitiveness of Ohio shippers.

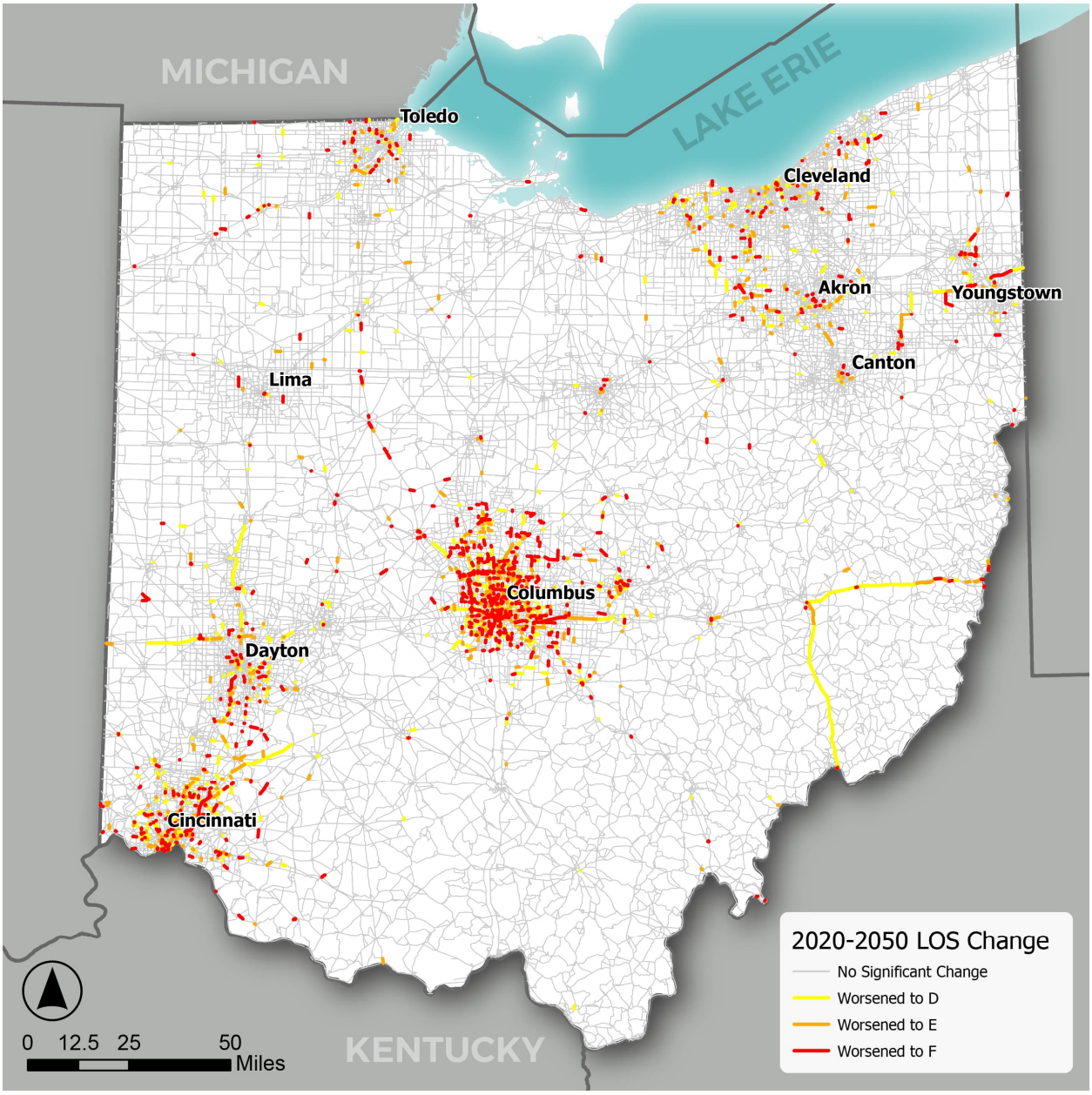
Figure 2-54. Level of Service of Ohio Roadways, 2020



Source: Ohio Statewide Travel Demand Model

Figure 2-55 displays the forecast change in LOS to 2050 LOS of Ohio roadways assuming that projects programmed as of 2024 are completed, but no other. As shown, the LOS is forecast to degrade without additional capacity.

Figure 2-55. Level of Service Change of Ohio Roadways, 2050

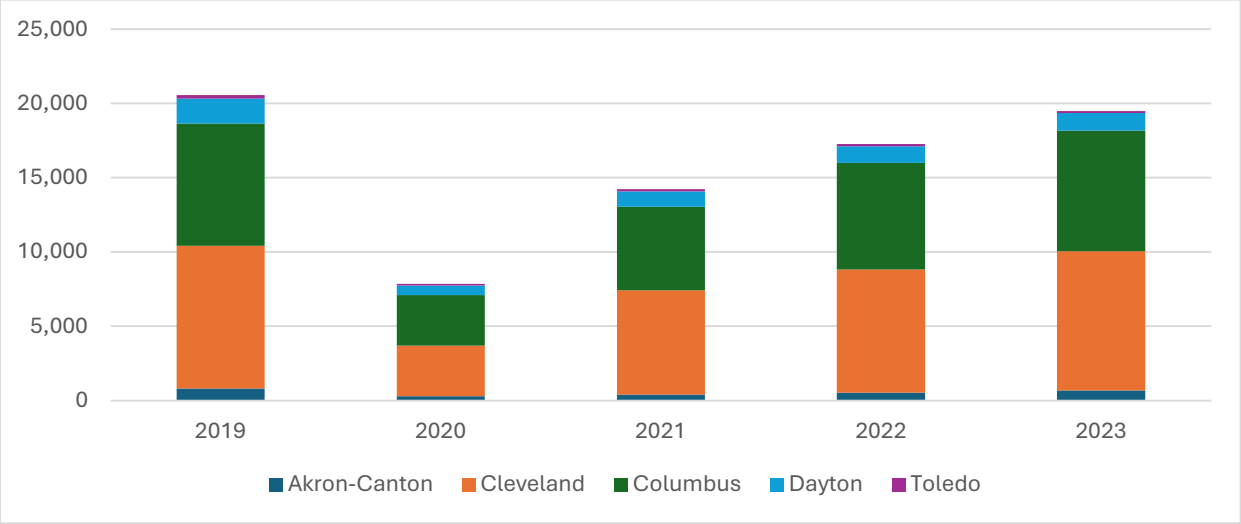


Source: Ohio Statewide Travel Demand Model

Airport Congestion

For certain corridors, intercity passenger rail service could theoretically be competitive with air travel. However, this is highly dependent on the relative frequency, reliability, and cost of these services. Looking at Ohio's airports, many of the largest recovered since the COVID-19 pandemic and as of 2023 were handling as many passengers as before the pandemic. By close of 2024, traffic at these airports may have exceeded pre-pandemic levels.

Figure 2-56. Arriving and Departing Passengers at Ohio Airports (000's)



Source: Federal Aviation Administration

Currently, the most heavily traveled air travel markets to and from Ohio are:

- Florida
- Illinois
- Georgia
- Texas
- North Carolina
- Colorado
- Virginia

It is difficult to determine what portion of these are final origins/destinations and what portion are connections, given that most of the volume to/from the top states are to/from hub airports where passengers may be connecting to additional flights.[37] Rail will tend to compete best with air travel in the "too far to drive, too short to fly" range, of around 150 – 400 miles. To the extent that the top origins/destinations represent final origins/destinations, Illinois (Chicago) would likely represent the air market with which intercity rail could compete best to/from Ohio, followed by Virginia (Northern Virginia).

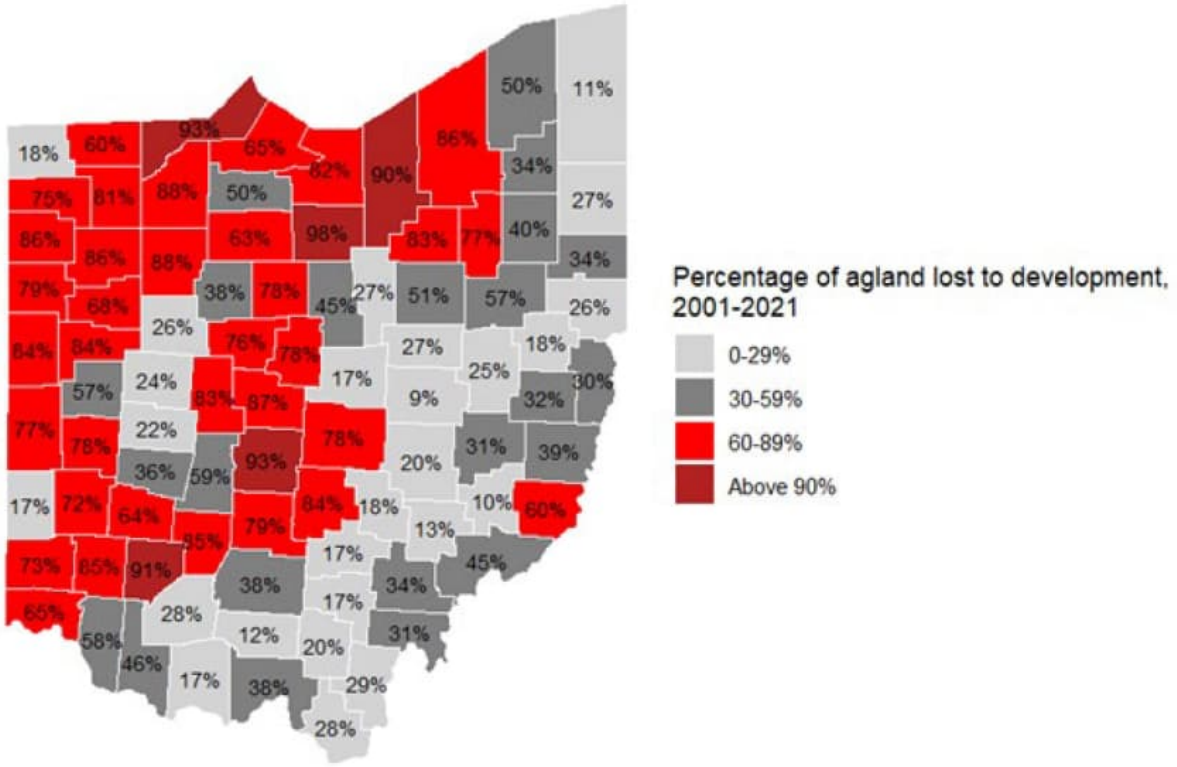
For some markets, rail and air travel are of a different magnitude. For example, Cleveland-Hopkins International Airport handled 9.4 million passengers in 2023. By contrast, the Cleveland Amtrak station handled about 49,000 passengers or 0.5% of the airport passengers. In other markets, rail and aviation are more comparable. In 2023 the Eugene F. Kranz Toledo Express Airport handled 125,000 passengers while the Toledo Amtrak station handled 53,189 passengers. But in this case, rail and aviation service complement each other. The airport's traffic is exclusively between Toledo and Florida or Arizona, while rail service is along the Lake Shore Limited or the Capitol Limited/Floridian routes, with service between Toledo and Chicago being the largest origin/destination pair.

[37] Florida is an exception, where the origin/destination airports are not hubs, and appear to be ultimate origins/destinations.

2.2.7 Land Use Trends

Land use and development patterns in Ohio impact passenger and freight rail. A continuing land use pattern in Ohio has been the growth of suburbs. In Ohio, farms are being converted to developed uses. Between 2002 and 2022, Ohio lost more than 75,000 farms, totaling nearly one million acres.[38] More than half of this agricultural land loss has been attributed to development. More urbanized counties have experienced the largest decrease in the number of farms, including Cuyahoga County (home of Cleveland), Franklin County (home of Columbus), Lake County (east of Cleveland), and Williams County (west of Toledo). The more urbanized counties also experienced the highest percentage decrease in farmland, with Cuyahoga County losing 62%, Franklin County 40%, and Hamilton County (home of Cincinnati) 36%. In these urbanized counties, the vast majority (>90%) of farm acreage lost is due to development (see Figure 2-57), including pressures from residential and industrial growth.

Figure 2-57. Percent of Agricultural Land that Was Lost to Development



Source: Ohio Farm Numbers, and Agricultural Land Lost to Development, 2024

[38] Ani L. Katchova, Xiaoyi Fang, and Rae Ju of Ohio State University, "Ohio Farm Numbers, Land in Farms, and Agricultural Land Lost to Development," March 6, 2024, https://aede.osu.edu/sites/aede/files/publication_files/AgLandLosttoDevelopment2024.pdf.

The trend toward growth in suburban counties is displayed in Figure 2-32. The only Ohio counties outside of the Columbus metropolitan area that are forecast to increase in population are suburban counties outside of other metropolitan areas, including Geauga County just outside of Cleveland, Miami County outside of Dayton, and Warren and Clermont Counties outside of Cincinnati. The shift away from urban centers, rural areas to suburbs has several implications for rail:

- As development occurs in previously undeveloped areas, potential arises for conflicts between rail and newly developed suburban areas. Highway-rail grade crossings that had been infrequently used by motorists now create the potential for heightened safety concerns and conflict with the increased vehicular traffic and rail operations in the area. Residential developments in previously undeveloped areas may need to cope with rail-related noise.
- Intercity passenger rail becomes more challenging with a more dispersed population and greater need to provide "last-mile" solutions for passengers to reach their final destinations.
- In growing suburban areas, rail-served industrial development opportunities may now be limited by zoning or incompatible adjacent development such as residential and commercial uses.
- In rural areas, rail-served industrial developments face a challenge to balance the relatively affordable developable land, as compared to urban and suburban areas, with a decline in in available workforce and nearby consumer markets.

In contrast to some other areas of Ohio, the Columbus metropolitan area is forecast to grow. The 2024–2050 Columbus Area Metropolitan Transportation Plan[39] shows an anticipated increase of 700,000 residents to the region between 2020 and 2050, requiring a 32% increase in housing stock and a 30% increase in jobs. Recent population growth has occurred in Frankin and Delaware counties. Further industrial and warehouse development is expected along the region's major roadways. This growth creates new rail opportunities, but also the potential for conflicts between rail and incompatible land uses that will need to be mitigated.

[39] Mid-Ohio Regional Planning Commission (MORPC), 2024 – 2050 Metropolitan Transportation Plan, May 2024, https://www.morpc.org/2024-2050-metropolitan-transportation-plan/#/.

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3. Ohio Passenger Rail Issues, Opportunities, Improvements, and Investments

3.1 Intercity Passenger Rail Project Development in Ohio

Intercity passenger rail services in the United States typically fall under two categories: long distance or state supported. The distinction is important because it determines who can initiate a project, how the project develops, and who is responsible for its costs. As discussed in Chapter 2, the PRIIA established a distinction between federally funded long-distance routes and regional corridors under 750 miles, which require implementation and funding from the states sponsoring the service.

Intercity passenger rail service in Ohio is currently provided by Amtrak's long-distance routes. For these routes, any operating costs or equipment costs not covered by passenger revenues are funded by the federal government. Any new intercity passenger rail service beyond adding frequency to the existing Amtrak service would likely be implemented as state-supported service.

The federal IIJA provided funding for each step of the passenger rail service development life cycle for both long-distance service and state-supported corridors, from planning and project development to infrastructure investment, to operations.

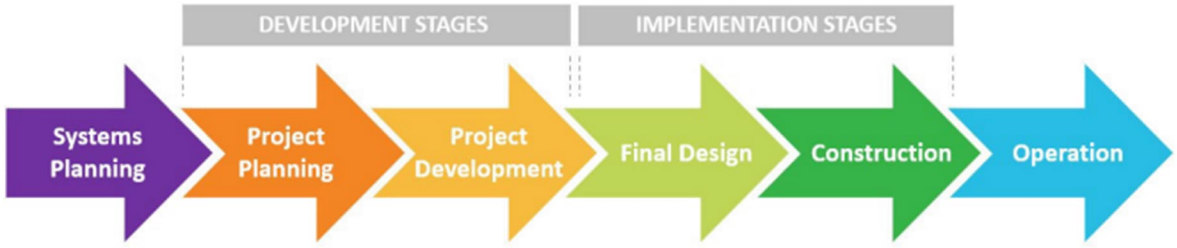
The IIJA was developed to encourage states to initiate state-sponsored passenger rail projects by providing a higher proportional federal funding share for planning and development with federal financial participation declining through the project development life cycle. Additionally, there is a federal program to assist states with operational costs of passenger rail service, which also declines after service initiation. States would eventually be responsible for all operational costs of intercity passenger rail service on corridors under 750 miles.

3.1.1 FRA Project Life Cycle

The FRA has created a framework with which to consider rail projects and initiatives known as the project life cycle.[40] The project life cycle is not limited to passenger rail development – it also applies to other discretionary grant programs administered by FRA discussed in the previous chapter – but is particularly relevant to passenger rail development due to the cost and complexity of planning, construction, and operation. The activities to support passenger rail initiatives depend on where these projects are in the project life cycle.

[40] Here the development of a passenger rail corridor is referred to as a "project," although such an endeavor would consist of a program of many different infrastructure projects. For simplicity, "initiatives," "projects," and "corridor development," are used interchangeably.

Figure 3-1. FRA Project Life Cycle Framework



Source: FRA

- Systems Planning considers new transportation services or improvements to existing services, identifying potential projects to enter the planning phase of the project life cycle. This Rail Plan is an example of a systems planning document.
- Project Planning identifies and compares costs, benefits, and impacts of project options as a means of providing private and government decision-makers with information to reach transportation solutions. The FRA's primary tool for project planning is the Service Development Plan (SDP). The FRA anticipates that the SDP will answer key questions about potential passenger rail initiatives, including: What is the purpose and need of the new or improved service? Which transportation alternative makes the most sense? What improvements are needed, and how much will they cost? How much will it cost to operate the service and what will the benefits be? Who is in charge of which aspects of the program? How will we pay for it, and in what order should improvements be constructed? Implementing passenger rail service requires numerous agreements between the state, local communities, railroads, the FRA, and other stakeholders. The FRA anticipates that through the completion of the SDP, these parties should have agreement on the parameters of the service.
- Project Development is when the Project Sponsor ensures that the project is ready for implementation, including all environmental permitting, preliminary engineering, stakeholder agreements, procurement strategy, budget, schedule, and project management plan.
- Final Design is when the project design is advanced to be ready for construction.
- Construction is when the project is built, installed, and placed into use, and equipment to be used in the service is acquired.
- Operation is when the service becomes operational.

The Corridor Identification and Development (CID) Program is the primary mechanism for developing passenger rail improvements in the United States and provide funding for the Project Planning or Project Development phases of the FRA project life cycle. The program was enacted through the IIJA and is anticipated to create a pipeline of infrastructure projects to be funded through CID's parent program, the FRA's Federal-State Partnership for Intercity Passenger Rail. In Ohio, four passenger rail routes were approved by the FRA for inclusion into the CID program. All those routes are in the early stages of the project planning.

Two initiatives to study new passenger rail service are sponsored by the Rail Commission:

- Cleveland-Columbus-Dayton-Cincinnati (3C+D) Corridor
- Cleveland-Toledo-Detroit Corridor

Two additional initiatives enter or cross Ohio but are sponsored by other organizations:

- Chicago, Fort Wayne, Columbus, and Pittsburgh sponsored by the City of Fort Wayne, Indiana, and would provide new passenger rail service.
- Daily Cardinal Service is sponsored by Amtrak and would increase service frequency of the existing Amtrak Cardinal service between New York, New York – Washington, DC, and Chicago, Illinois, from three days per week to daily.

Each corridor would use existing freight railroad corridors for the services proposed. The corridors covered by these projects are shown in Figure 3-2.

Figure 3-2. Corridor ID Program Routes in Ohio

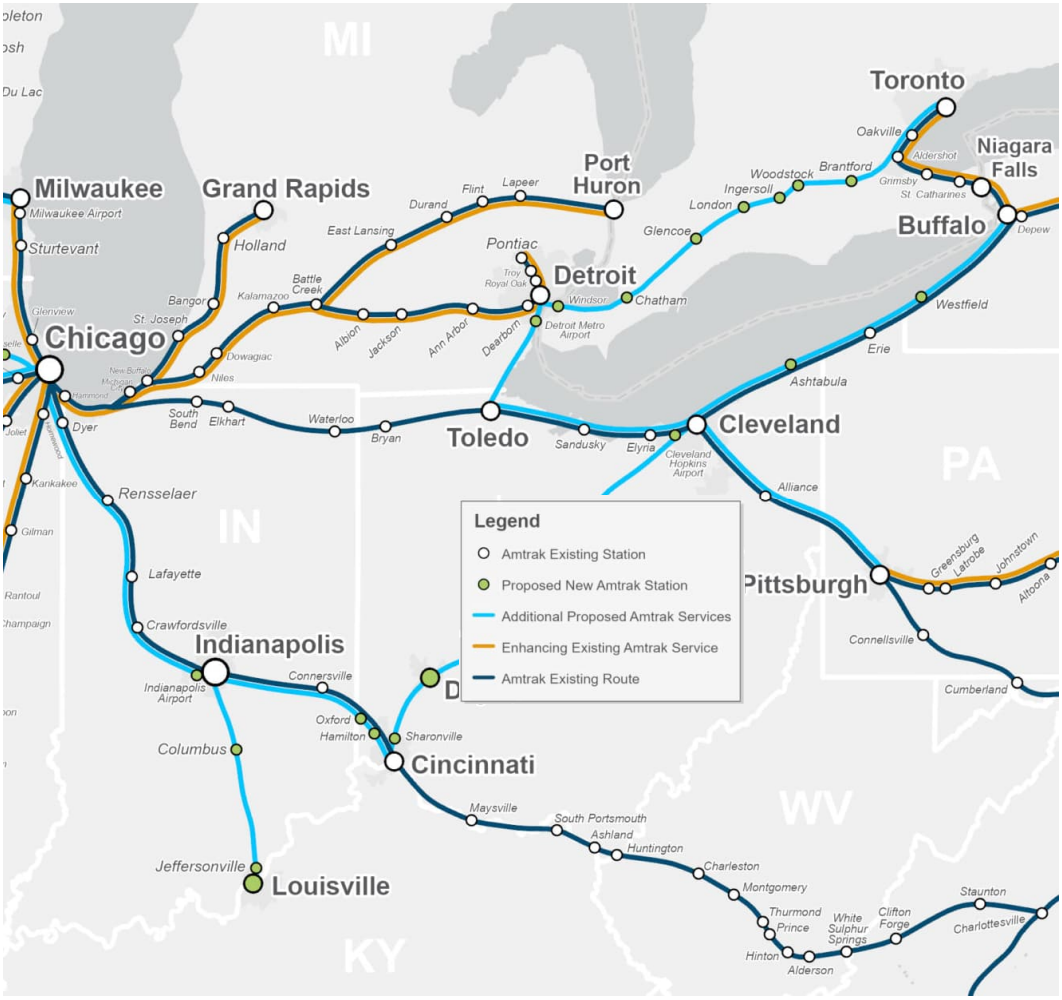
Source: FRA Corridor ID Map

Each project/initiative is discussed in more detail below.

3.1.2 Amtrak Connects US Vision

One recent study that has influenced the selection of projects to present for CID funding is the Amtrak Connects US report, a 15-year vision to add 39 new routes and enhance 25 existing routes, bringing service to 160 new stations.[41] In 2021 Amtrak performed a comprehensive assessment and investigated the likely ridership, investment costs, and operating costs of new routes or potential improvements/extensions of existing routes. A key part of the Amtrak Connects US report is to link major population centers separated by fewer than 500 miles with intercity passenger rail, thus shifting trips from highway and air modes. Both of the routes submitted by the Rail Commission for CID were presented in the Connects US report.

Figure 3-3. Amtrak Connects US Vision Network in Ohio



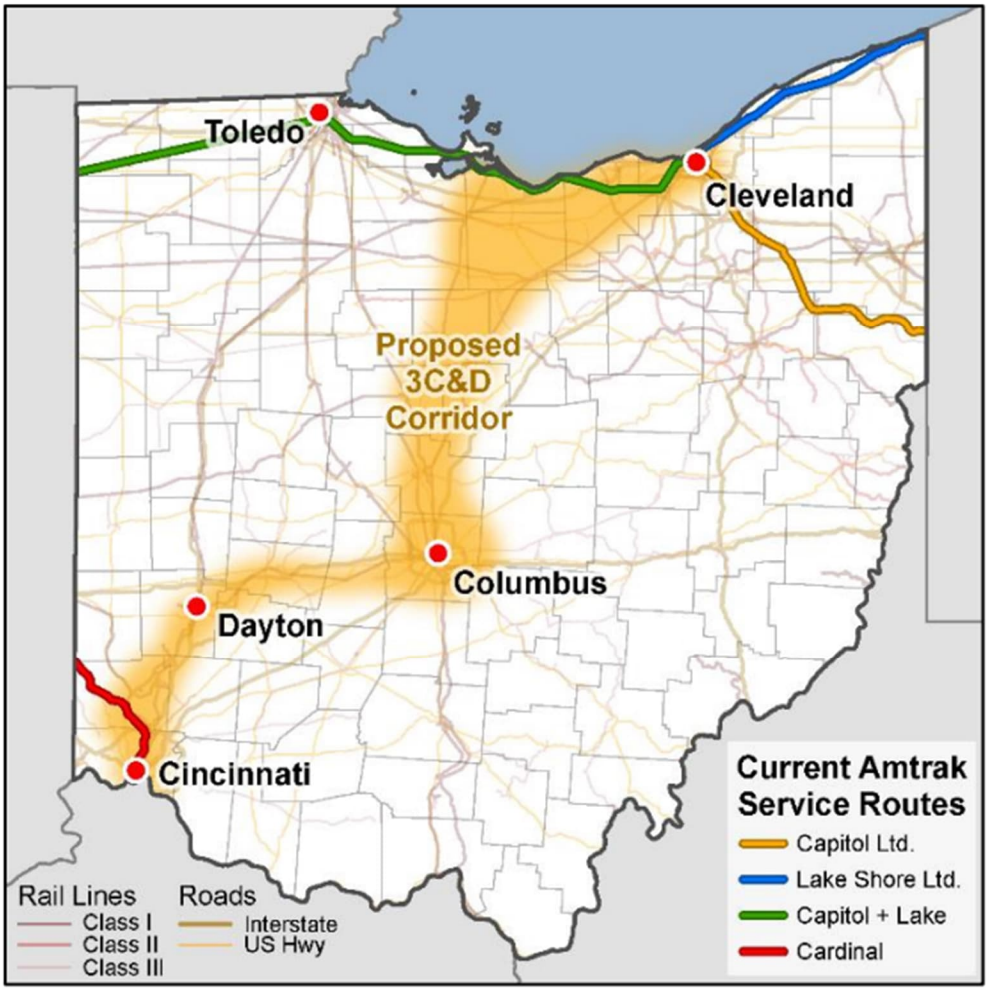
Source: Amtrak

[41] https://assets.amtrakconnectsus.com/uploads/2021/03/Amtrak-Connects-US-Vision-with-Map-Final.pdf

3.2 Cleveland-Columbus-Dayton-Cincinnati Corridor

The Cleveland-Columbus-Dayton-Cincinnati (3C+D Corridor) aims to initiate passenger rail connections between Ohio's three largest cities and four largest combined statistical areas. Spanning approximately 267 miles of existing trackage, the corridor would connect Cleveland, Columbus, Dayton, and Cincinnati. Each of the four metropolitan areas is among the top 100 metropolitan areas in the United States, with Cleveland being 34th, Columbus being 32nd, Cincinnati being 30th, and Dayton being 76th. The combined area served would include a population of seven million residents and has the highest ridership of the corridors analyzed by Amtrak in Ohio. Previous analysis by Amtrak as part of its Connects US vision found the corridor to have among the highest ridership among potential new corridors in the Midwest.[42] More than 57% of Ohio's 11.8 million residents live in the metropolitan areas encompassing these cities.

Figure 3-4. Cleveland-Columbus-Dayton-Cincinnati Corridor



Source: Rail Commission

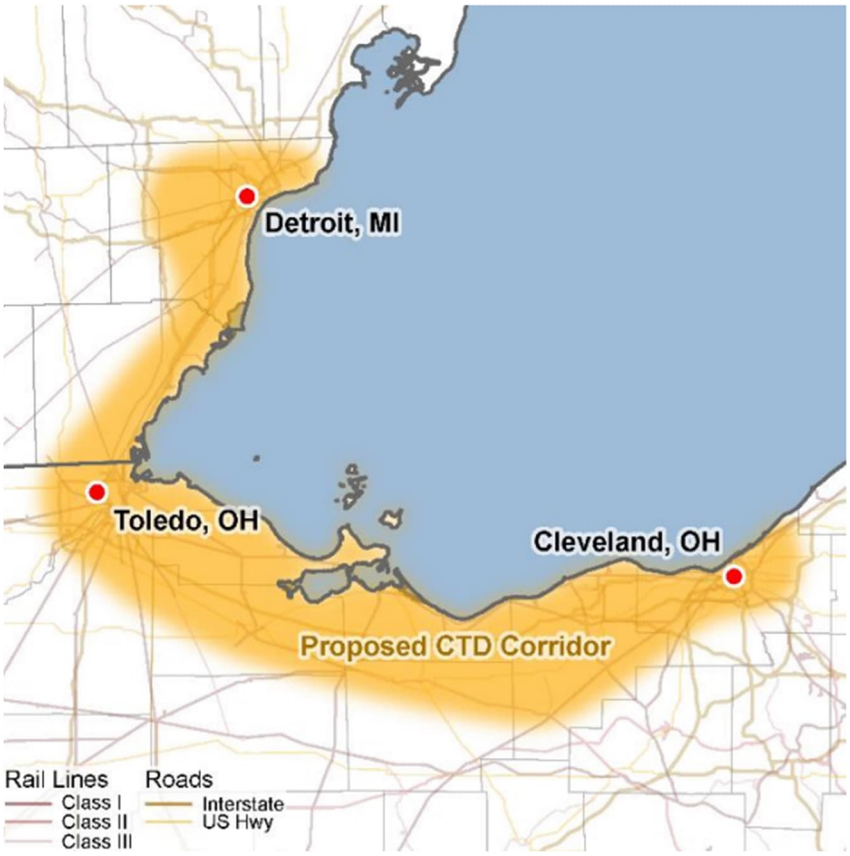
A major outcome of the SDP would be to identify the station locations along the 3C+D Corridor. In addition to the two Amtrak-served passenger stations at each end of the 3C+D Corridor in Cleveland and Cincinnati, the SDP would investigate intermediate stops that could be accommodated while ensuring the state's primary goals: car-competitive travel times and service that does not interfere with freight rail traffic.

[42] https://media.amtrak.com/wp-content/uploads/2021/05/Amtrak-2021-Corridor-Vision-May27_2021.pdfIbid.

3.3 Cleveland-Toledo-Detroit

The Cleveland-Toledo-Detroit (CTD) Corridor aims to restore critical passenger rail connections across three major Midwest metropolitan areas: Cleveland, Toledo, and Detroit. The Rail Commission, with the support of the Michigan Department of Transportation, was the applicant for the CID grant. The CTD Corridor provides connectivity between the nation's 14th largest metropolitan area (Detroit) and its 34th largest (Cleveland), passing through the 95th (Toledo). Nearly one-third (32%) of the combined Ohio and Michigan population lives in the metropolitan areas encompassing Cleveland, Toledo, and Detroit. This corridor would link Michigan's existing state-sponsored rail service, the Wolverine, to Toledo and Cleveland, providing additional connectivity to Michigan's accelerated rail corridor between Detroit/Pontiac and Chicago. It was featured in Amtrak's Connects US Vision from May 2021 along with the 3C+D Corridor.

Figure 3-5. Cleveland-Toledo-Detroit Corridor



Source: Rail Commission

A major outcome of the SDP will be the identification of station locations along the CTD Corridor. It is likely that intermediate locations will include the Amtrak-served stations in Sandusky or Elyria, although these and other intermediate stations will be confirmed as part of the SDP.

3.4 Chicago, Fort Wayne, Columbus, and Pittsburgh (Midwest Connect)

The Chicago, Fort Wayne, Columbus, and Pittsburgh (Midwest Connect) Corridor aims to establish passenger rail service across approximately 500 miles of existing trackage. Sponsored by the City of Fort Wayne, Indiana, and the Mid-Ohio Regional Planning Commission, the project envisions two to four daily round trips.

Figure 3-6. Midwest Connect Corridor

Source: WSP, FRA Map

The corridor, encompassing Metropolitan Statistical Areas and cities where the proposed stations could be located, has a combined population of 14.7 million. The study seeks to connect America's Midwest and Eastern regions through connections in Pittsburgh to central Pennsylvania, Philadelphia, New York City and Washington, D.C.

The corridor has been considered previously for service including a 2018 feasibility study by the Mid-Ohio Regional Planning Commission.

3.5 Daily Cardinal

The Cardinal is a long-distance Amtrak route that operates three days per week between New York and Chicago via Philadelphia, Baltimore, Washington, D.C., West Virginia, Ohio and Indiana. The *Cardinal* serves the South Shore, Kentucky (near Portsmouth, Ohio), and Cincinnati, Ohio, stations overnight, and a new station is in development in Oxford near Miami University. The Cardinal is the only train serving the Cincinnati-Indianapolis-Chicago market, including Purdue University.

Figure 3-7. Cardinal Corridor

Source: WSP/FRA

Amtrak's CID grant will study implementing daily Cardinal service seven days per week instead of the current three days per week. Planned upgrades between Indianapolis and Dyer, Indiana, aim to reduce travel times by increasing train speeds. FRA has requested that the Illinois Department of Transportation include results of the ongoing "South of the Lake" study in the scope for corridors feeding into the Chicago area, which includes the daily Cardinal. South of the Lake is an Amtrak-led effort exploring dedicated passenger track between northwestern Indiana and Chicago. Additional improvements in Indiana, Ohio, and West Virginia will focus on enhancing service quality and efficiency.

3.6 Other Corridors from the Amtrak Connects US Study

Several additional corridors were recommended by the Amtrak Connects US study but are not being advanced through the Corridor ID program or by Amtrak:

- Amtrak Empire Service Extension to Cleveland: Extend one daily New York City – Buffalo round trip from Buffalo to Cleveland. The Empire service is a New York State Department of Transportation state-supported service that features multiple daily round trips between New York City and Buffalo, with some trips extending to Niagara Falls.
- Amtrak Pennsylvanian Train Extension to Cleveland: Extend one New York – Pittsburgh round trip from Pittsburgh to Cleveland to create a new interstate corridor. The Pennsylvanian is sponsored by the Pennsylvania Department of Transportation (PennDOT) and currently operates daily between New York City and Pittsburgh via Philadelphia, Harrisburg and interim markets. PennDOT and NS have embarked upon a project to add an additional frequency to the Pennsylvanian service.
- Chicago-Cincinnati: Proposed service increase along this segment of the Cardinal long-distance route, with up to four daily round trips. The new service would share facilities with Amtrak Cardinal service in this corridor. A separate CID study sponsored by the Kentuckiana Regional Planning and Development Agency is exploring a new service corridor between Indianapolis and Louisville, with anticipated through service to Chicago.

3.7 Midwest Regional Rail Plan

Another recent relevant study is the Midwest Regional Rail Plan (MWRRP). In the mid-2010s, FRA began the process of developing multistate, regional passenger rail plans, per the provisions of the 2008 PRIIA. The purpose for these plans was to achieve the following:

1. Identify and describe "a common, long-term vision for regional passenger rail service and the required infrastructure network based on existing conditions, projections of future travel demand."
2. Define "the optimal role for (passenger) rail service in a multimodal transportation context."[43]

These plans identified passenger rail markets that linked major metropolitan regions over distances that are generally considered too long to comfortably drive but too short to fly (i.e., between 50 and 600 miles).

The MWRRP study began in 2017. The study area encompassed the states of Ohio, Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, and Wisconsin. The study's final report was released in October 2021 by FRA.

The MWRRP planning process included input from a 40+ member Stakeholder Planning Group, which included state departments of transportation and metropolitan planning organizations, railroads, rail operators, and transit agencies.

3.7.1 Regional Passenger Service Types

The MWRRP classified regional passenger rail corridors into three distinct service and infrastructure tiers:

- Core Express: Maximum operable speeds (MOS) over 125 mph, with frequent service (such as hourly) on dedicated passenger tracks.
- Regional: MOS between 90 and 125 mph, with frequent service on dedicated and shared tracks.
- Emerging: MOS up to 90 mph on shared tracks.

[43] FRA website: https://railroads.dot.gov/rail-network-development/planning/systems-planning/regional-rail-planning

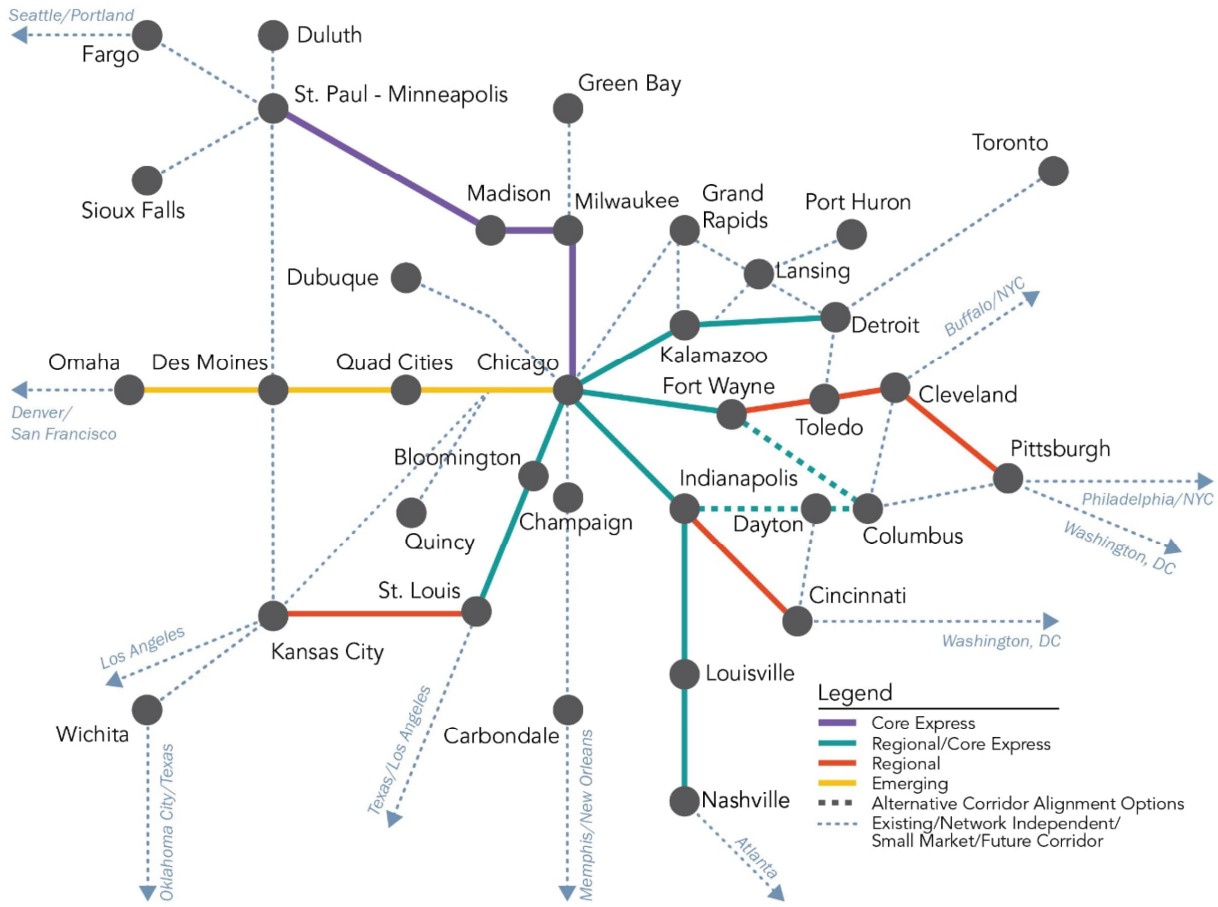
3.7.2 Market Analysis and Network Vision

The MWRRP demand analysis showed that Chicago is the dominant travel demand center in the Midwest for all modes, including the three largest metro regions in Ohio centered on Cleveland, Cincinnati, and Columbus.

The MWRRP 40-year vision examines the potential for developing and optimizing the Midwest intercity passenger rail networks and includes a prioritization of corridors and investment projects.

Figure 3-9 Figure 3-8 shows the proposed network for the Midwest Regional Plan. Consideration of network impacts, rather than individual corridors, increased projected ridership by 41% (from 12 million annual trips to 17 million annual trips) compared to analysis as individual lines.

Figure 3-8. FRA Midwest Regional Rail Plan Network Vision



Source: FRA, Midwest Regional Rail Plan

The recommended network included a set of corridors in Ohio, with each extending from a high-performance link connecting Chicago and Columbus.

3.8 FRA Amtrak Long-Distance Corridor Study

In January 2025 the FRA finalized an Amtrak Daily Long-Distance Service Study (Long-Distance Study) as required by IIJA in 2021. Long-distance routes are statutorily defined as routes longer than 750 miles that Amtrak operates. Amtrak currently operates 15 long-distance trains, with corridors ranging from 760 to 2,500 miles in length. Any costs not covered by passenger revenues are funded by the federal government.

The purpose of the Long-Distance Study is to evaluate the restoration of daily intercity rail passenger service, including Amtrak long-distance routes that:

- Were previously discontinued, with specific attention provided to routes in service as of April 1971 but not continued by Amtrak;
- Occur on a nondaily basis; or
- Are new routes under evaluation.

The proposed network of 15 preferred routes is shown in Figure 3-9.

Figure 3-9. Proposed Network of Preferred Long-Distance Routes

Source: FRA

Two of the 15 preferred routes serve Ohio, as follows:

- Detroit-New Orleans route, with potential station stops in Ohio:
  - Toledo, Ohio
  - Columbus, Ohio (new)
  - Springfield, Ohio (new)
  - Dayton, Ohio (new)
  - Cincinnati, Ohio

This corridor would link Ohio cities with new rail hubs proposed by FRA in regional rail studies, including Louisville and Nashville.

- Dallas / Fort Worth -New York route, with potential station stops in Ohio:
  - Cincinnati, Ohio
  - Dayton, Ohio (new)
  - Springfield, Ohio (new)
  - Columbus, Ohio (new)

Additionally, the report recommends an increase to daily service along the existing Cardinal route between New York and Chicago, which serves Cincinnati. A study for related improvements is included in the CID program.

One additional preferred long-distance route of interest to Ohio stakeholders is the proposed Chicago-Miami route. This route would offer a faster, more efficient route between Chicago and Florida compared to the interim Floridian service through Washington, D.C. For Ohioans, a transfer to this corridor would be available in Louisville.

The Rail Commission has been consulted as a stakeholder in the planning process of the Long-Distance Study, as have other stakeholders within Ohio.

3.9 Other Proposed Passenger Rail Services

Cleveland Service – The Northeast Ohio Areawide Coordinating Agency (NOACA) submitted proposals for increased frequency on existing long-distance Amtrak routes that stop in Cleveland. NOACA submitted these proposals to the CID program; however, they were not selected for inclusion.

Toledo Service – In 2019, the Toledo Metropolitan Area Council of Governments and City of Toledo released a study on travel markets between Toledo, Detroit, and Ann Arbor, including Detroit Metro Wayne County Airport and the potential for passenger rail serving these markets. The City of Toledo performed additional analysis of passenger rail between Toledo and Columbus. One goal of this study was to leverage future Midwest Connect investments between Columbus and Indiana to complete a Columbus-Findlay-Bowling Green-Toledo corridor.

3.10 Stakeholder Engagement for Passenger Rail

In applying for the CID program, the State of Ohio used the Governor's goals of car- competitive travel times and consideration of freight traffic as the primary factors for consideration of further passenger rail service evaluation.

As part of the Rail Plan update, the Rail Commission engaged with passenger rail stakeholders through a virtual workshop and one-on-one meetings. Additionally, the Rail Commission distributed a survey to gather public opinions on rail transportation. These activities sought to understand what rail transportation means to stakeholders and to identify elements the state should consider when evaluating rail projects, including passenger rail initiatives.

A number of communities (such as the City of Dublin and Tuscarawas County) focused on the impact of potential passenger rail station development to their local economies.

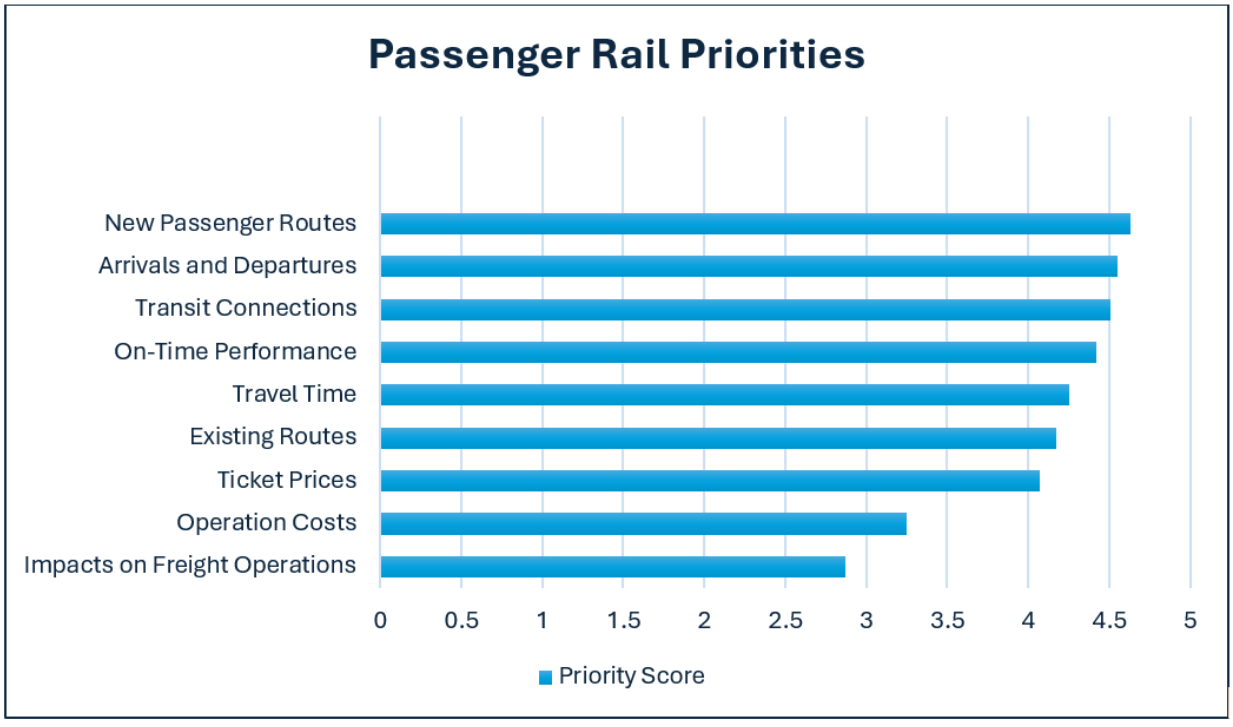
During engagement activities for the Rail Plan, a coalition of stakeholders from the Akron-Canton metropolitan area expressed interest in various improvements to passenger rail across the region. Existing passenger rail service to the region is currently limited to a stop in Alliance in Stark County on the long-

distance Floridian (former Capitol Limited). Regional stakeholders expressed interest in intercity passenger or commuter rail service to Akron-Canton Regional Airport and requested that service to the region be included in the 3C+D CID effort. A report by NOACA points out that the Cleveland-Akron-Canton region has a population of nearly 3.6 million, the largest Combined Statistical Area (CSA) in Ohio and ranking 18th among CSAs in the US.[44]

The public survey distributed as part of the Rail Plan asked respondents to prioritize various aspects of passenger rail service to gauge their relative importance to the public. Respondents prioritized the development of new routes, convenient arrival and departure times, and availability of transit connections at destinations. Respondents expressed strong support for the 3C+D Corridor and showed additional interest in the Midwest Connect and CTD routes. Key in-state connections included Columbus, Cleveland, and Cincinnati, while Chicago, Detroit, and Pittsburgh were the most mentioned out-of-state connections.

While not all suggestions were specific to intercity passenger rail, suggestions included extending the Cuyahoga Valley Scenic Railroad to downtown Cleveland, reviving historical routes such as Cleveland-Akron-Canton, and integrating services with Chicago-East Coast Amtrak corridors. Respondents emphasized the need for station improvements, highlighting Cincinnati's Union Station's lack of bus service during Amtrak Cardinal hours and advocating for new multimodal hubs in Cleveland. Respondents also prioritized improved service frequency with better scheduling and the importance of walkable connections at both urban and rural stations.

Figure 3-10. Passenger Rail Priorities Ranked from Highest to Lowest



Source: Rail Plan Survey

[44] Northeast Ohio Areawide Coordinating Agency Strategic Regional Transit Plan, 2021, https://www.noaca.org/tools-resources/recent-studies/strategic-regional-transit-plan.

3.11 Station Improvements

Of the eight passenger rail stations in Ohio, Amtrak owns two station facilities (Bryan and Elyria), while most of the remaining station facilities are municipally owned. A new multimodal station has also been approved by Amtrak in Oxford, near Miami University. This Chestnut Street Multimodal Station will be served by the Amtrak *Cardinal* route and is anticipated to be operational in 2026.

With the exception of Toledo, all station platforms are owned by the host railroad, with Amtrak having the responsibility to bring the platforms into accessibility compliance with the ADA. Amtrak has developed an ADA Stations Program to bring stations it serves and has ADA responsibility for into compliance with ADA law.

Table 3-1. Status of Amtrak ADA Stations Program in Ohio

Station	Station Improvements
Alliance (ALC)	Amtrak completed ADA upgrades to the station building and parking in FY2011 and improvements to the platform in FY2020.
Bryan (BYN)	Amtrak is in the construction phase for a modern, ADA-compliant, restroom-equipped, replacement station.
Cincinnati (CIN)	Amtrak is currently in the design phase for a new platform with lighting and signage in addition to interior upgrades to the ticket counter and waiting room to ensure ADA compliance. Construction will commence in FY2027.
Cleveland (CLE)	Amtrak is in the design stage for a new platform with lighting and signage at the current location to ensure ADA compliance. Construction will commence in FY2027. Additionally, a public engagement process is underway to reimagine the city's Lake Erie shoreline. A new, expanded Amtrak station could be part of the plan.
Elyria (ELY)	Amtrak has completed the design of a new ADA-compliant passenger boarding platform at the newly renovated Lorain County Transportation Center. Construction will commence in FY2025.
Sandusky (SKY)	Amtrak ADA Stations Program project design underway. Construction will commence in FY2026.

Source: Amtrak FY24-29 Stations ALP Appendices

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4. Freight Rail Issues, Opportunities, Initiatives and Investments

Several themes emerged through discussions with stakeholders, review of other planning documents, and review of data. They identified freight and safety issues as well as opportunities to address them. The themes are:

- Many economic development opportunities in Ohio require the rail industry to respond to market changes
- Communities must consider thoughtful land use policies to take advantage of potential growth in rail-served industries
- Continued efforts to maintain Ohio as a leader in intermodal rail service
- Need to maintain/increase Ohio's rail line capacity
- Previous successes and continued need to bring Ohio's rail network to modern standards
- Need to continue efforts to improve safety through rail infrastructure investment as well as continued improvement of railroad-highway grade crossing
- Address potential negative impacts of rail on surrounding communities, focusing on safety, infrastructure development, and land use
- Opportunities for technology to help forward the goals and objectives of this Rail Plan

For a more in-depth review of stakeholder comments, please reference Chapter 6.

4.1 Economic Development, Changes in Market Demand and Land Use

4.1.1 Rail and Economic Development

Economic development is a key motivation for public-sector involvement in freight rail projects. Rail infrastructure improvements can help to attract new businesses and support existing companies in Ohio, thus assisting with job creation and retention. The Rail Commission approved 101 projects between 2019 and 2024 that are directly creating 1,900 jobs and retaining 4,180 jobs. The Rail Commission estimates that its projects improving short line and regional rail infrastructure are supporting an additional 16,300 jobs.

There are two types of rail infrastructure improvements. The first are rail line and yard investments that increase the safety, fluidity or capacity of the rail network, while the second are improvements establishing new direct connections between industrial sites and the rail network. The Rail Commission works closely with JobsOhio and other economic development agencies to respond to opportunities where rail connections can help to attract or retain businesses in Ohio. For example, of the 14 projects that the Rail Commission supported through its Rail Development fund in 2023, three helped to provide rail access to new industrial facilities while one improved access to an existing facility.

Of the projects recommended by railroads for the Rail Plan, 10 are intended to add or improve industrial rail access for shippers at $47.6 million in cost. As of 2024, one of Ohio's major available development sites is the NS Ohio River Mega-Site near Franklin Furnace. This 875+ acre location has ample utility capacity and is directly served by NS, with water and highway access, as shown in Figure 2-1.

This is just one of a portfolio of rail-served sites available throughout Ohio. These rail-served sites are not only valuable because they provide competitive transportation options to companies, but they also attract companies in industries that historically provide more and better paying employment opportunities. According to JobsOhio, approximately 20% of all inquiries received for industrial sites require rail and an even higher percentage would prefer to have rail as an option.

Figure 4-1. Ohio River Mega-Site

Source: NS

4.1.2 Repurposing Rail-Served Sites

Not all economic development initiatives are oriented toward undeveloped or “greenfield” locations. Railroads consulted for the Rail Plan discussed the importance of redeveloping unused parcels that had previously been occupied. Because of either known or unknown environmental concerns, these “brownfield” locations can pose challenges for redevelopment. When companies assess potential site locations, they seek

to avoid unnecessary development risk, time, and expense. Without proper investigation, site preparation, and remediation, brownfields can add all three challenges. As of early 2025, the Ohio Department of Development has a program to clean up and remediate brownfield sites, perform any needed demolition at the sites and install or upgrade infrastructure necessary to make brownfield sites operational for economic development activity.[45] The Department of Development has a separate fund available specifically for building demolition and site revitalization.[46] Collectively, the brownfield and site demolition programs are funded at $0.5 billion. In some cases, brownfield locations can yield benefits to potential purchasers since they may have required infrastructure already in place, such as sources of power and water, rail, or port access that would not be available at greenfield sites.

Another issue with site redevelopment that railroads identified during outreach for the Rail Plan was the rezoning of industrial areas. When a railroad customer closes, its former site in some cases is rezoned as nonindustrial, so the opportunity to replace the customer is lost.

Rail-served brownfield development is becoming more important as the opportunities for greenfield development with direct rail access decrease over time as available sites are occupied.

In many cases the need to redevelop rail-industrial sites is driven by shifts in rail-served markets. The next section illustrates some of the market changes for rail service in Ohio.

4.1.3 Impacts of Market Shifts

Coal

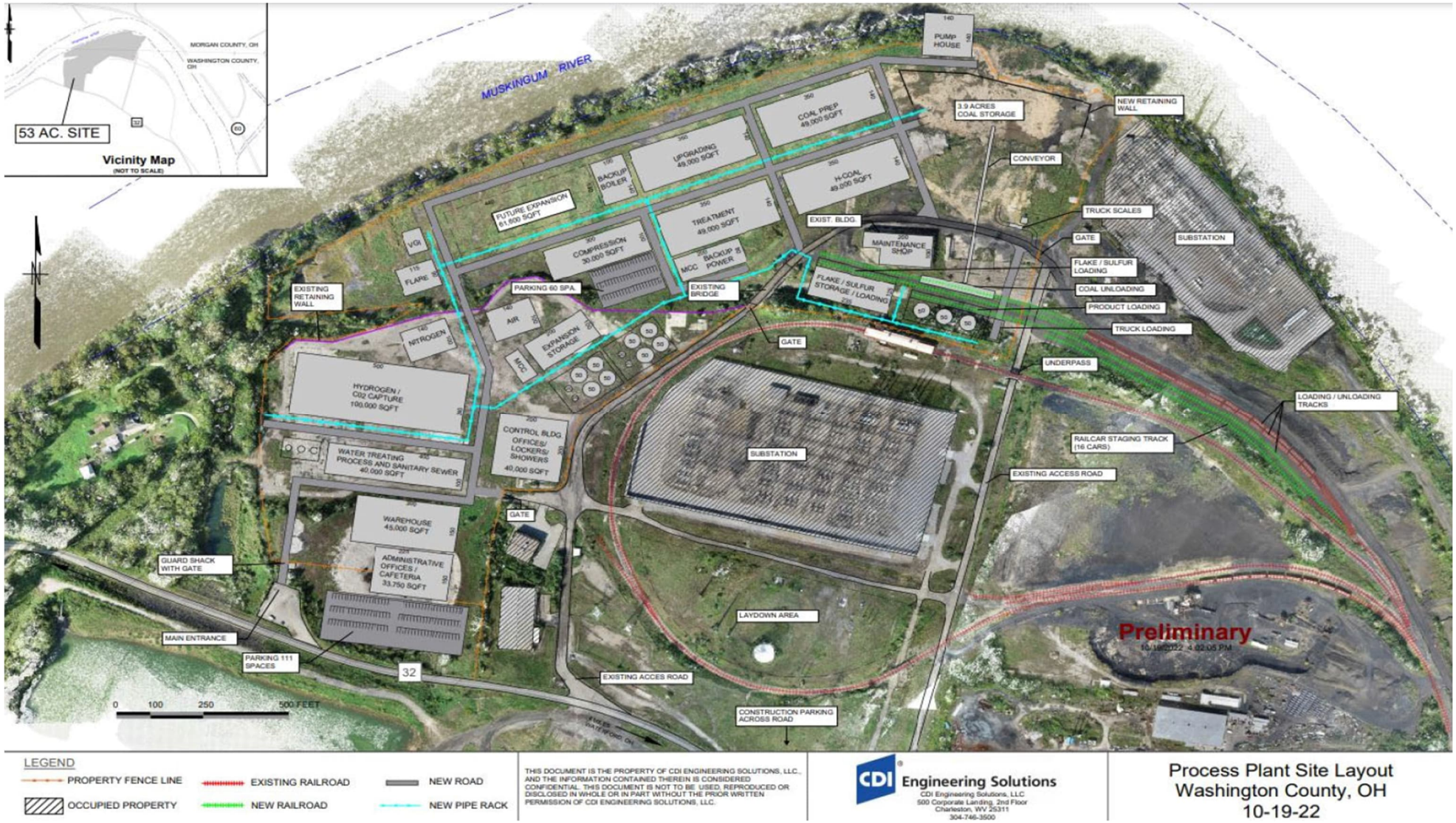
Coal has historically been a primary commodity moved by rail with coal being the main or only commodity moving on specific rail lines. Power production in Ohio, as elsewhere in the U.S., has been shifting away from being fueled by coal. Many rail-served coal-fired power plants that have closed since 2012 or are scheduled to close in Ohio:

- Richard H. Gorsuch Generating Station in Marietta in 2012
- Muskingum River Plant in Waterford in 2015
- Avon Lake Power Plant in Avon Lake in 2021
- W.H. Sammis Power Plant in Stratton in 2023
- Miami Fort Generating Station near North Bend by 2027

Repurposing these rail-served locations presents both challenges and opportunities. For example, the Southeastern Ohio Port Authority has been working to redevelop the sites of the Richard H. Gorsuch and Muskingum River power plants. Transportation access, including rail, is seen as a strength for both of these sites.

[45] State of Ohio, Department of Development, "Brownfield Remediation Program," 2025, https://development.ohio.gov/community/redevelopment/brownfield-remediation-program.
[46] State of Ohio, Department of Development, "Building Demolition and Site Revitalization Program," 2024, https://development.ohio.gov/community/redevelopment/building-demolition-site-revitalization-program.

Figure 4-2. Muskingum River Industrial Site Plan



Source: Southeastern Ohio Port Authority

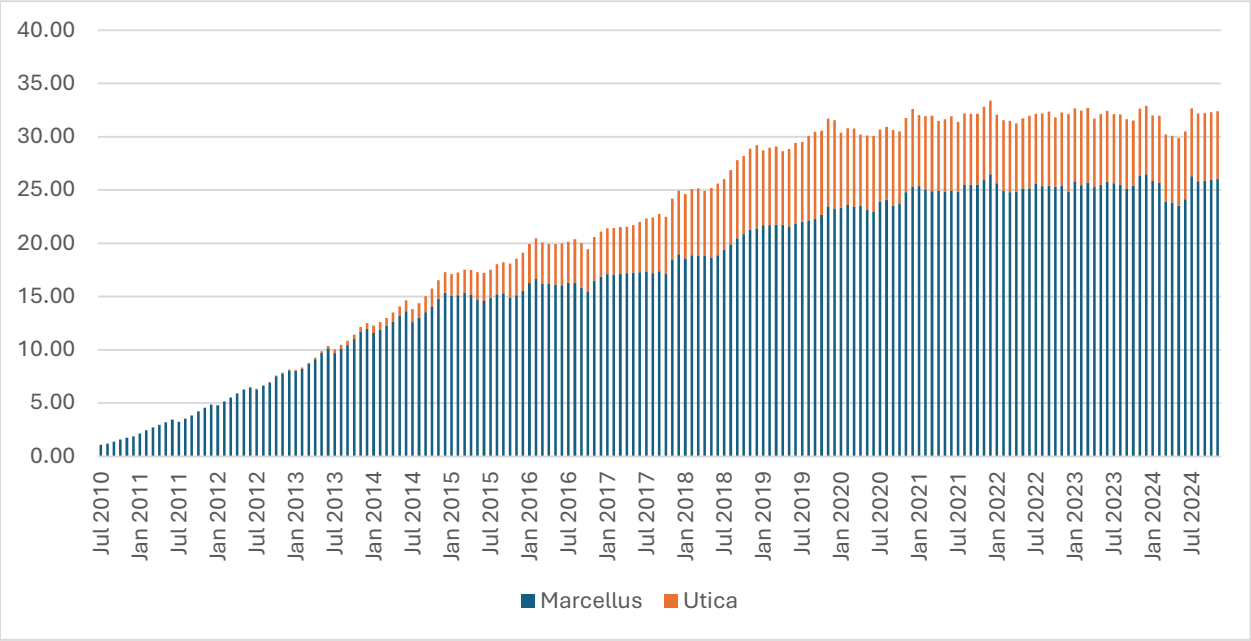
Petrochemical

One of the reasons for the decline of coal-fired power production is the relatively favorable economics of natural gas in Ohio, another industrial shift that impacts rail. Natural gas has in many cases supplanted coal as a cost-effective fuel source for electric generation.

Ohio is ranked seventh in the nation in natural gas reserves.[47] Ohio, Pennsylvania, and West Virginia collectively have the highest natural gas reserves in the nation, and among the highest natural gas reserves in the world.

At the time of the 2019 Rail Plan was being prepared, natural gas production was rising dramatically. Since that time, production in the two natural gas plays that touch Ohio has been relatively flat as shown in Figure 4-3.

Figure 4-3. Production of Shale Plays which Include Ohio, in Billion Cubic Feet per Day



Source: EIA

Rail is infrequently used for carrying dry natural gas (methane) but is often used for carrying natural gas liquids such as propane, butane, and ethane, byproducts of natural gas production. Rail is also used to supply inputs to natural gas drilling, such as sand, pipe, lubricating chemicals, and water.

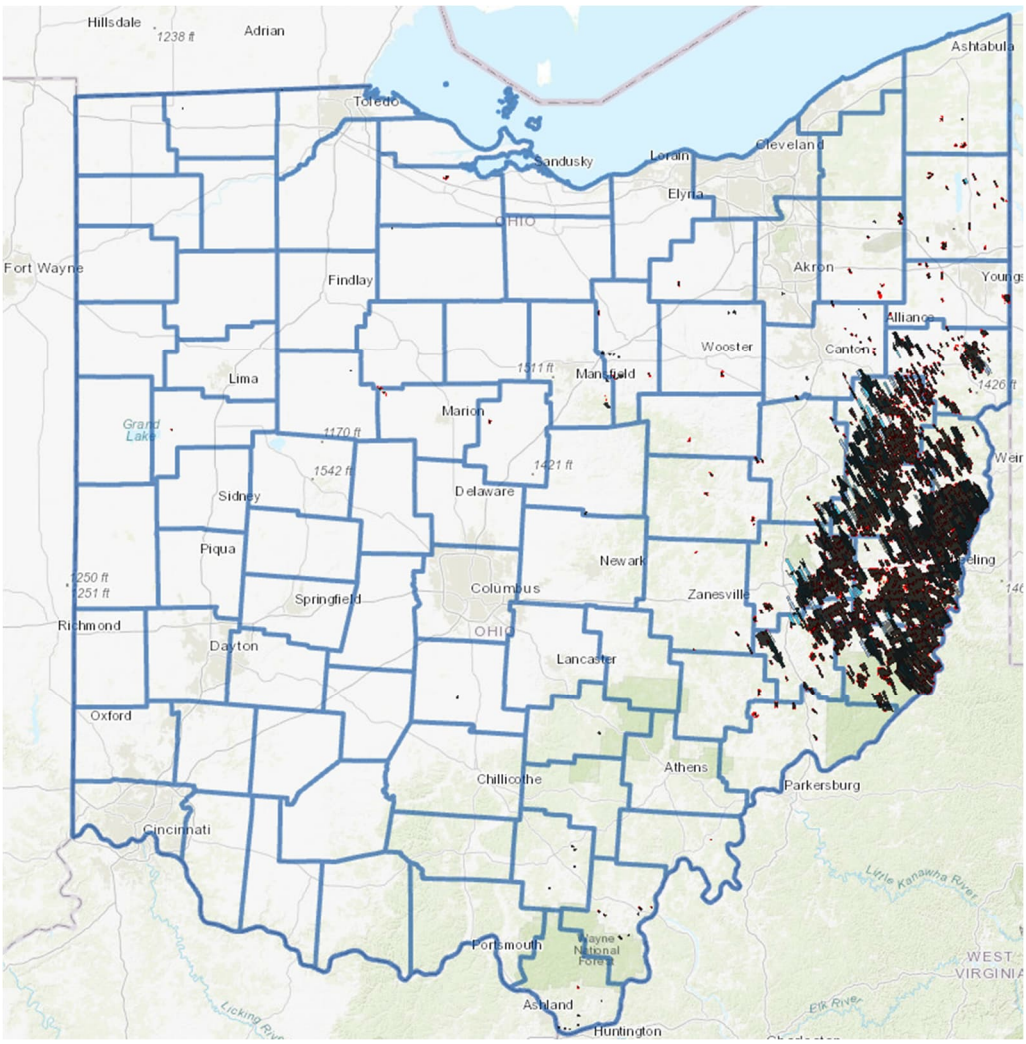
Since Ohio's shale plays have entered production, a question has persisted of how Ohio can best leverage natural gas development to support economic development. The question is particularly relevant since gas extraction is located in counties of relative economic distress. According to estimates retrieved in December 2024, the primary counties where wells are located, shown in Figure 4-4, have average unemployment rates higher than the U.S. average and have an average per capita income that is 70 to 74% of the U.S. average, depending on how measured.[48]

[47] U.S. Energy Information Administration, "U.S. Crude Oil and Natural Gas Proved Reserves, Year-end 2022," April 29, 2024, U.S. Energy Information Administration, https://www.eia.gov/naturalgas/crudeoilreserves/index.php.

[48] U.S. Economic Development Administration, Measuring Distress – County Tool, https://www.statsamerica.org/distress/. Data downloaded for Belmont, Carroll, Columbia, Guernsey, Harrison, Jefferson, Monroe, and Noble Counties on December 27, 2024.

While energy development has benefited the economies of these areas, the Ohio economy may derive additional benefits if more value is added to these energy products in Ohio, rather than being extracted and shipped elsewhere. One area where Ohio could derive additional benefits from energy products is in plastics, and rail has a role to play. Ethane, a natural gas byproduct, can serve as feedstock to create ethylene, which when converted to resin is used to produce plastic products. A new ethane cracker plant in nearby Monaca, Pennsylvania could impact Ohio's plastics industry. Another ethane cracker facility was proposed to be constructed in Monroe County but was indefinitely delayed in 2020.

Figure 4-4. Ohio Oil and Gas Wells



Source: Ohio Department of Natural Resources

In 2023, JobsOhio recently prepared a report that estimated that, due to changes in the relative costs of inputs, plastics manufacturing in Ohio is less costly than importing plastics from China, where many of these products are now sourced. Rail is frequently used for carrying inputs to the plastics production industry, such as plastic pellets. The analysis looked at the cost to produce and deliver a sample set of plastic products to the United States. It found that the labor component of producing these projects was relatively small, so that the savings in labor from producing in China no longer justify the higher transportation costs of shipping from China.

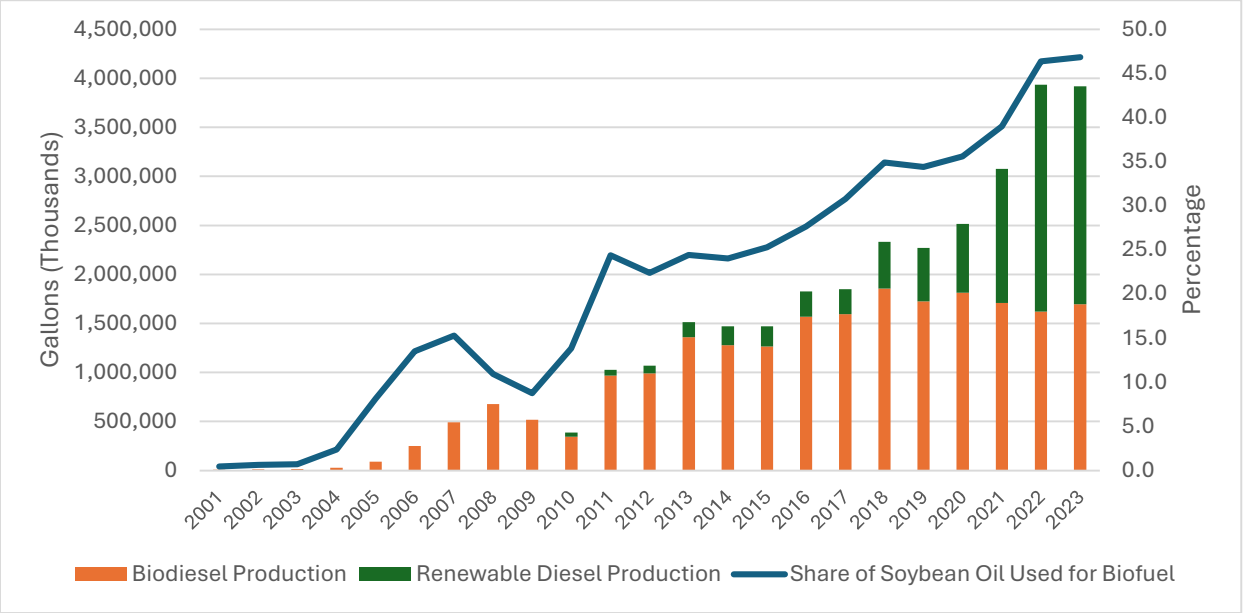
Agriculture and Food Products

In Ohio, the primary agricultural commodities transported by rail are corn, wheat, and soybeans. Rail is used to access both domestic and international markets. Examples include rail shipments of animal feed to the Southeast; shipments for export to the Port of Virginia or Gulf Coast ports and grain shipments to St. Louis, where they are transferred to barge and shipped to Gulf Coast ports. Most agriculture products are shipped by unit train and carload bulk service, but some food grade shipments of soybeans are shipped by intermodal service, either to the Port of Virginia or the West Coast ports. Rail is also used to ship food products, which encompass a wide variety of commodities. The highest volumes are soybean meal, soybean oil, flour, and corn syrup.

While there was a decline in rail shipments of many commodities since the 2019 Rail Plan, the tonnage of agricultural products shipped from Ohio increased by 38% between 2016 and 2022. At the time of the 2019 Rail Plan, recent increases in railroad rates had rendered some rail-served markets untenable. These railroad transportation pricing pressures appear to have since eased, and agriculture shippers consulted in late 2024 purport to be relatively satisfied with rail service and pricing.

Agricultural shippers consulted for the Rail Plan foresaw steadily growing shipping volumes as crop yields continue to increase. One significant change is the growth in Ohio soybean crushing capacity, driven largely by increasing use of soybean oil in biofuels. Louis Dreyfus Co. is building a new crushing plant in Upper Sandusky that has the capacity to crush about 20% of Ohio's soybean harvest. In 2023, Cargill expanded a facility in Sidney. These increases in crushing capacity in part result from the increase in demand for soybean oil for biodiesel and renewable diesel.[49] As shown, the production of biofuel has increased dramatically, and biofuel consumes an increasing share of soybean oil production.

Figure 4-5. Soybean Oil Usage in Biofuels, Biofuel Production



Source: U.S. Department of Agriculture

[49] Biodiesel and renewable diesel rely on many of the same inputs, but unlike biodiesel, renewable diesel does not need to be mixed with traditional diesel.

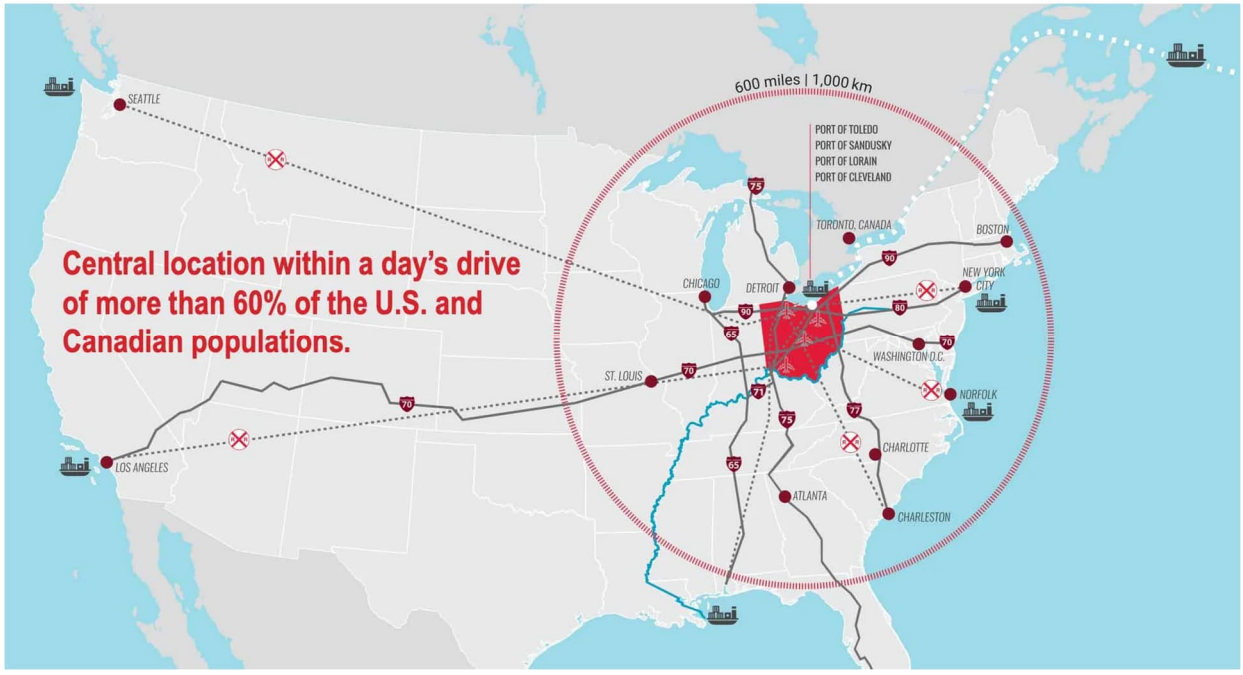
It is uncertain what the impact of the increase in crushing capacity will be on rail in Ohio. On the one hand, Ohio shippers will have options for soybean crushing that are closer, which would tend to increase the modal share of trucking. On the other hand, even short haul shipments to these crushing plants could be viable in unit train service. Furthermore, the outbound movements of soybean oil and soybean meal could move by rail.

Another important trend for agricultural shippers is the shift to longer trains. According to one shipper the standard unit grain train had previously been 85 cars long. Recently, railroads have quoted lower rates for 105 car grain trains. To remain competitive, shippers must build the loading/unloading infrastructure to accommodate these longer trains and to perform the loading/unloading within the time specified by the railroads.

4.2 Continue Efforts to Maintain Ohio as a Leader in Intermodal Rail Service

Ohio has the fourth highest number of intermodal terminals behind Illinois, California, and Texas. This is remarkable, since Ohio lacks many of the characteristics that create the need for intermodal terminals in other states. It is not a state where eastern and western railroads interchange, like Illinois, and does not have coastal seaports or international border crossings like Texas and California. Ohio's success at intermodal service and in logistics/distribution in part relates to Ohio's strategic central location, where it can serve Midwest and Eastern markets. As JobsOhio points out, Ohio is within 600 miles of 60% of the U.S. and Canadian populations. Ohio's manufacturing industries, such as automotive, also drive the need for intermodal terminals.

Figure 4-6. Ohio Logistics and Distribution Access



Source: JobsOhio

Ohio's success is not due to location or industrial base alone. The State, through the Rail Commission, has actively supported intermodal transportation. Ohio was one of a coalition of states, along with the federal government and NS, that helped to improve the clearances of the Heartland Corridor between the Port of Virginia and the Midwest accommodate double-stack intermodal trains between 2005 and 2015, establishing

the Rickenbacker terminal in Columbus as a key intermodal hub. Later, Ohio took part in another multistate cooperative arrangement to clear CSX lines for double-stack container service between the Northeast and Mid-Atlantic as part of the National Gateway corridor project. This initiative established the Northwest Ohio ICTF in North Baltimore as an important intermodal center.

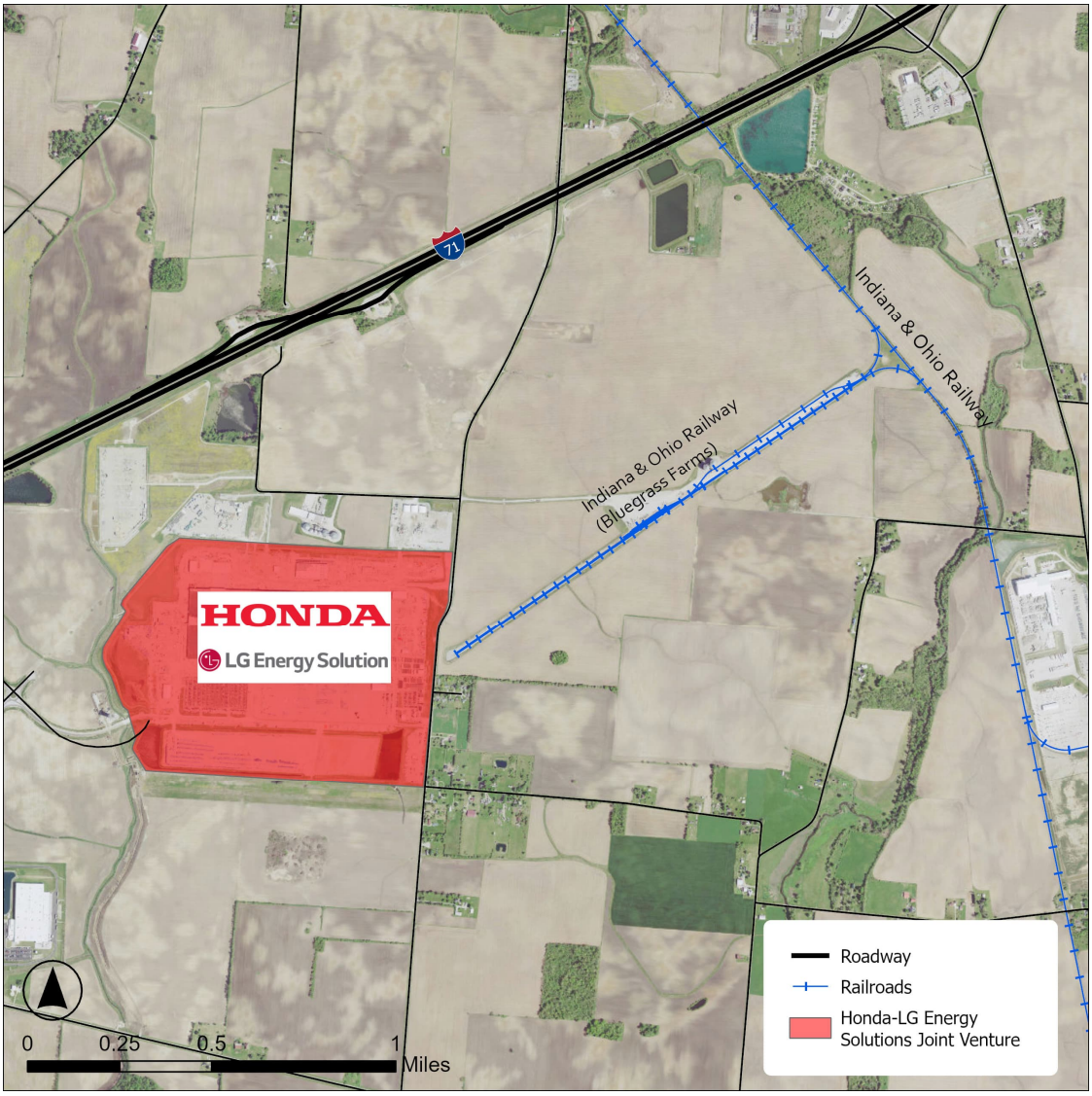
In recent years, the rail industry has lost market share. In 2016, railroads handled 32% of freight ton-miles in the U.S., compared to 29% in 2022.[50] Historically, rail has ceded market share to trucking. When fracking became a cost-effective means to extract oil, rail transportation became an important mode because of immediate lack of pipeline capacity. As pipelines were built, rail has lost market share to pipeline transportation. Rail traditionally dominated the transportation of coal, but this commodity market has declined, and as natural gas has replaced coal to power electricity generation, fuel for electricity generation has shifted to pipeline, which carries natural gas.

Industry observers consider intermodal to be a key area where rail can gain modal share. Rail has a 65% modal share for shipments of 1,500 miles or longer, but opportunities remain in shorter haul markets, where there are larger volumes of freight.[51] When asked about their top traffic prospects for the Rail Plan, both NS and CSX responded with intermodal among the highest opportunities. When asked to recommend potential projects for public and private partnerships, NS recommended $116 million in infrastructure projects to improve capacity and operations at NS intermodal terminals in Ohio.

A current project has presented another opportunity to expand intermodal rail service in Ohio. The construction of a battery plant by a joint venture between Honda Motor Co., Ltd., and LG Energy Solution is adjacent to an existing intermodal facility in Jeffersonville. The Rail Commission has approved a $1 million grant to assist the Indiana and Ohio Railway (IORY) with a $6.8 million project to improve vertical clearances in Springfield which will allow double-stack intermodal service for the Jeffersonville intermodal terminal. The project will lower IORY trackage under a series of roadway and railroad overpasses to provide sufficient clearance to allow double-stack trains to operate. The terminal will not only serve the LGES-Honda plant but will also improve logistics for current operations, which involve soybean producers filling intermodal containers for export.

[50] U.S. Bureau of Transportation Statistics, U.S. Ton-Miles of Freight, https://www.bts.gov/content/us-ton-miles-freight.
[51] Matthew Schabas and Adriene Bailey, “The Path to Long-Term Shareholder Value for Rail is Growth,” prepared for Oliver Wyman, .https://www.oliverwyman.com/our-expertise/insights/2024/apr/shareholder-value-rail-growth.html.

Figure 4-7. Jeffersonville Intermodal Terminal and LGES-Honda Battery Plant



Source: WSP GIS

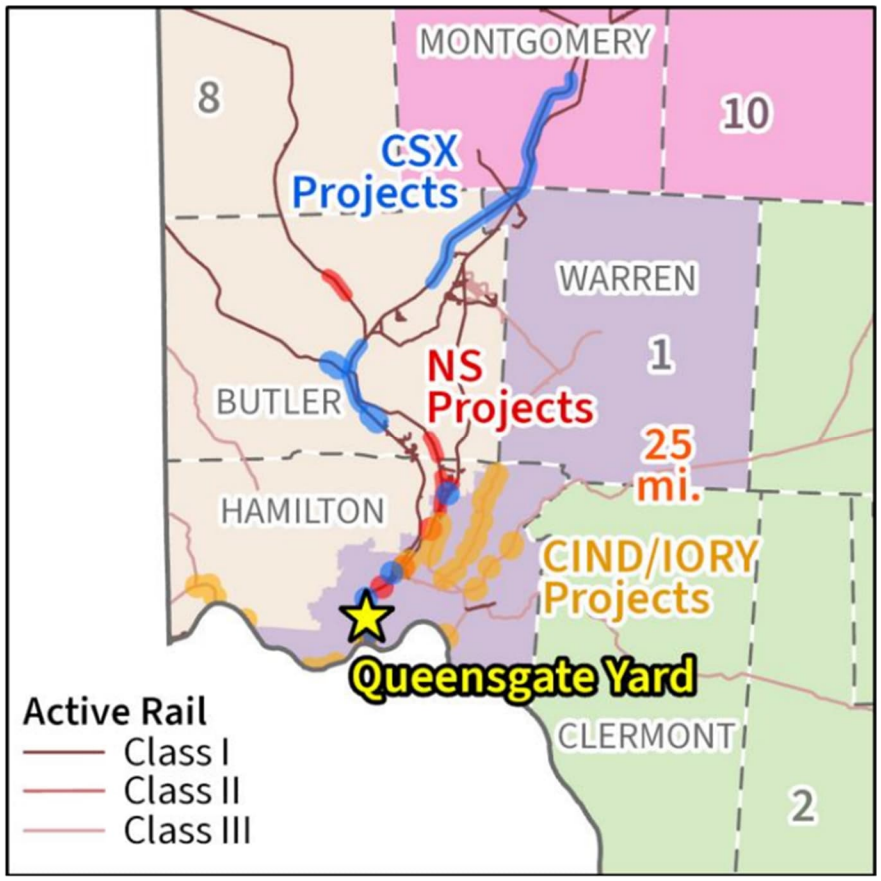
4.3 Maintain/Increase Rail Line Capacity

Railroads add capacity to their rail lines and rail yards as needed. Chapter 2 discussed rail line characteristics that influence capacity such as the number of parallel tracks, the dispatching system, and the size and frequency of passing sidings. One issue that stakeholders have raised is that previous railroad owners historically relinquished capacity when they did not need it. As an example, Genesee & Wyoming, Inc. (G&W) has acquired rail lines in Ohio whose previous owners shrank their railroad networks because the infrastructure was not needed at the time and not expected to be needed in the future. The Columbus & Ohio River Railroad (CUOH) between Columbus and Newark previously had two tracks but now has one. The Newark Yard was larger. As traffic has grown, this lost infrastructure is now needed. A potential need is to identify areas where the capacity of rail lines should be maintained even if the existing capacity is not needed at a given time.

For the most part, railroads can be expected to add capacity as needed, but there are situations where incentives or interdependence between infrastructure can cause capacity issues. For example, one stakeholder group noted capacity issues on a rail line leased by a short line railroad from a Class I railroad. The current lease agreement does not provide any incentives to the parties for additional investment to improve service.

Capacity issues also arise when investments by one railroad impact another railroad. A prime example is in Cincinnati where local economic development efforts and freight rail volume growth over the last few decades have made the Cincinnati-Queensgate area one of the most congested rail corridors in the nation. Given the extremely high volume of trains in this area (a minimum of 65 daily), the need for multiple railroads to coordinate activities, and the limited physical footprint of Queensgate Yard and surrounding lines, maintaining operational fluidity in the Cincinnati area is a challenge. Any disruption to the normal operation of trains in the area can result in a region-wide slowing of rail traffic. Any improvements undertaken by one railroad without coordination with the others may inadvertently negatively impact other railroads operating in the area.

Figure 4-8. Proposed Rail Capacity Projects in Cincinnati



Source: Rail Commission

The Rail Commission is developing a plan, funded by the FRA's CRISI program, with NS, CSX, and G&W to prioritize capital projects to mitigate congestion issues in Cincinnati. The inspiration for the project is the Chicago Region Environmental and Transportation Efficiency Program (CREATE). Similar to the CREATE program, the project is aimed at congestion mitigation, implementing solutions that are not confined to one railroad or one area, but remedies that are multi-railroad, regional solutions.

4.4 Bringing Rail Lines to Modern Standards, State of Good Repair

As in other areas of the country, not all rail lines in Ohio are in a state of good repair, and not all rail lines are built to modern standards. Short line and regional railroads have acquired rail lines that were, in many cases, previously unprofitable and had suffered from deferred maintenance. During the preparation of the Rail Plan and reviewing other planning documents, 36 projects were identified that would bring rail lines to a state of good repair or modernize rail lines to current standards. All but two projects have cost estimates, and those cost estimates total $627.1 million.

Table 4-1. Proposed State of Good Repair Projects

Type of Project	Cost	# Projects
Track Upgrade	$267,400,000	8
Plate F Clearance	$7,500,000	1
Track Rehabilitation	$57,021,500	12
Bridge Repair/Replacement	$280,740,140	11
Crossing Rehabilitation	$2,570,000	2
Reestablish Inactive Line	$914,500	1
Broken Rail Detection	$11,000,000	1
Grand Total	$627,146,140	36

Source: Railroad Surveys, MPO plans

4.4.1 Track Upgrades

Track upgrade projects can improve the safety and increase capacity of the rail lines and improve the reliability of the rail service using the rail lines. Several railroads have proposed improvements that would upgrade rail lines to 25 mile per hour operations. These are generally 10 miles per hour operations now. Faster speeds can result in lower fuel usage and more efficient scheduling of train crews, in addition to other benefits. Other projects would replace rail, including the replacement of jointed rail with continuously welded rail, which is less expensive to maintain.

4.4.2 Plate F Clearance

The Carrollton Branch, operated by the Wheeling & Lake Erie Railway Company (WLE) does not meet modern vertical clearance standards. Ideally, railroads would operate with unrestricted vertical clearance, meaning that they can accommodate the highest railcars in service today, at 20’ 2” above rails. However, rail lines only require the clearance to accommodate double-stack intermodal or trilevel automotive railcars that are 20‘ 2” if a customer requires these railcars. A far more common requirement is to accommodate modern boxcars, which are 17 feet high or “Plate F.” The WLE has proposed a project to increase the height of a tunnel to accommodate these railcars on the Carrolton Branch.

4.4.3 Track Rehabilitation

Twelve track rehabilitation projects have been proposed, and these primarily consist of replacing crossties and resurfacing ballast, although some may include rail replacement.

4.4.4 Bridge Repair/Replacement

Eleven bridge projects have been proposed, which include both bridge repairs and bridge replacement. Three of the proposed bridge projects would result in rail lines being able to accommodate 286,000 pound railcars. As described in Chapter 2, the inability to accommodate 286,000 pound railcars places railroads and shippers on these rail lines at a commercial disadvantage, since shippers pay the same carload rates, whether shipments are carried in 263,000 or 286,000 pound railcars, but 263,000-pound railcars carry 10 to 11% less freight.

4.4.5 Crossing Rehabilitation

Railroads have also proposed various crossing rehabilitation projects. Railroads are responsible for maintaining highway-rail grade crossings, which includes both the warning devices as well as crossing surfaces. A project with public-sector financial support may allow for longer lasting surface materials to be installed and expedite projects where there are safety concerns for the traveling public.

4.4.6 Other Projects

Several other projects would bring rail lines to a state of good repair/maintain rail lines at a state of good repair. The Cincinnati Eastern Railroad proposes to rehabilitate a portion of a rail line that is currently inactive so that it can handle freight rail traffic again. The WLE proposes to install a broken rail mainline detection system, which will ensure safe operation of train movement by monitoring broken rails.

4.4.7 Rehabilitation of the Napoleon, Defiance & Western Railway

An example of a major success bringing Ohio rail lines to a state of good repair since the 2019 Rail Plan has been the partnership established between the Rail Commission and the owners of the Napoleon Defiance & Western Railway (NDW).

Figure 4-9. NDW Tracks before Improvements

Source: Project Website (since removed)

After years of no investment as the Maumee and Western Railroad, by the time the rail line was sold to Pioneer Rail and renamed the NDW, its condition had deteriorated to such an extent that reliable and safe rail service was impossible. The Rail Commission partnered with the NDW to sponsor a series of grant applications under the CRISI program.

- FY2020 grant of $4.1 million to restore 10 miles from marginal FRA Excepted condition to FRA Track Class 1.
- FY2022 grant of $10.8 million, which was matched by an investment of $4.4 million from NDW's parent company, Patriot Rail.[52] The project will make various improvements to bring the rail line to FRA Track Class 1 standards.
- FY2023-FY2024 grant of $12.2 million that was matched by $3.2 million from Patriot Rail and $0.75 million from the Rail Commission. This project is the third and final phase of the NDW rehabilitation.

After completion of the FY2020 project, NDW won *Railway Age* 2023 Short Line of the Year award, and was considered to have gone from "worst to first." The three projects combined made the NDW as a viable transportation option for the businesses in the area.

[52] Pioneer Rail was acquired by Patriot Rail in September 2022.

4.5 Improve Safety and Mitigate Negative Impacts of Rail

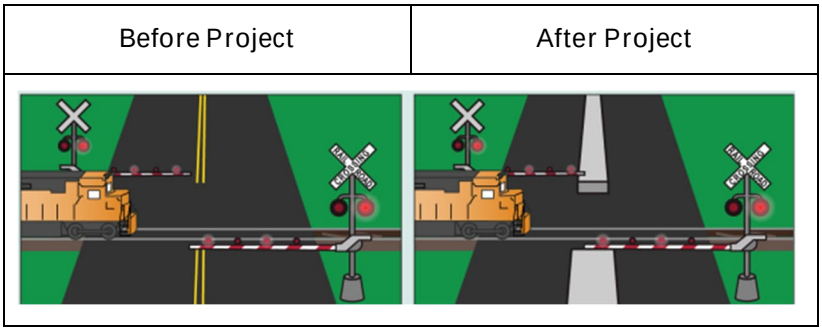
Several areas of railroad impacts to communities were identified during the stakeholder engagement phase of the Rail Plan update. These include:

- Improving safety at highway-rail grade crossings
- Reducing frequency of trespassers struck by trains on rail lines
- Reducing the risks of hazardous material releases from derailments in Ohio communities
- Mitigating the impacts and reducing the frequency of stationary trains that block highway-rail grade crossings
- Adding clearance and capacity to rail overpasses, fixing overpasses that are in a poor state of repair
- Removing highway-rail crossings that are no longer in use, improving the surfaces of crossings that are difficult to pass for roadway users

4.5.1 Improving Safety at Highway-Rail Grade Crossings

As discussed in Chapters 1 and 2, highway-rail grade crossing safety is a major component of Rail Commission and PUCO activities. Activities and investments have shifted with trends in highway-rail grade crossing crashes. As described in Chapter 2, most crashes in Ohio occur at crossings that are equipped with gates and lights which has required the Rail Commission to adopt a multifaceted approach to grade crossing safety. The Rail Commission continues to reduce the number of passive crossings by upgrading them with lights and gates. Additionally, it identifies crossings with high crash prediction ratings that already have lights and gates. Field reviews, often referred to as diagnostic reviews, are held at these locations to determine whether other engineering improvements are feasible. Because crossings already have active warning devices, team members consider innovative solutions such as modifications to the existing warning devices, roadway reconfigurations, channelization and other strategies.

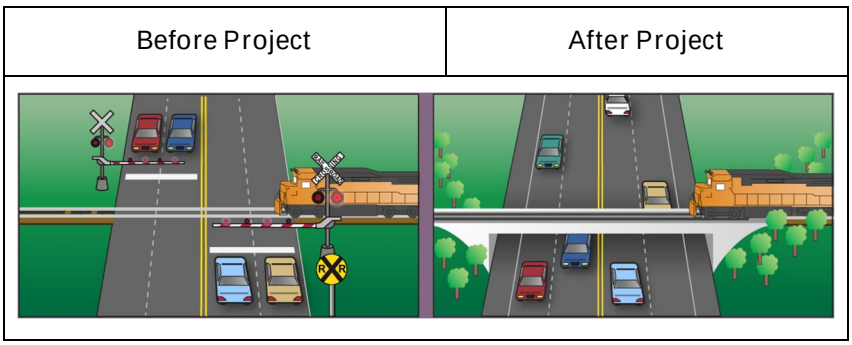
Figure 4-10. Example of Channelization



Source: U.S. General Accounting Office

The safest crossing is one that removes the conflict between trains and vehicles. In 2023, Governor DeWine's Executive Budget included a Grade Crossing Elimination Program (OGCEP). Passed as HB33, $100 million was provided to the Rail Commission to plan, develop and build grade separation projects around the state. This program was reduced by $15 million in HB96 for the FY26-27 biennium. Combined with the FRA's Railroad Crossing Elimination Grant Program (RCE), these programs make grade separation a viable solution for some communities.

Figure 4-11. Example of Grade Separation

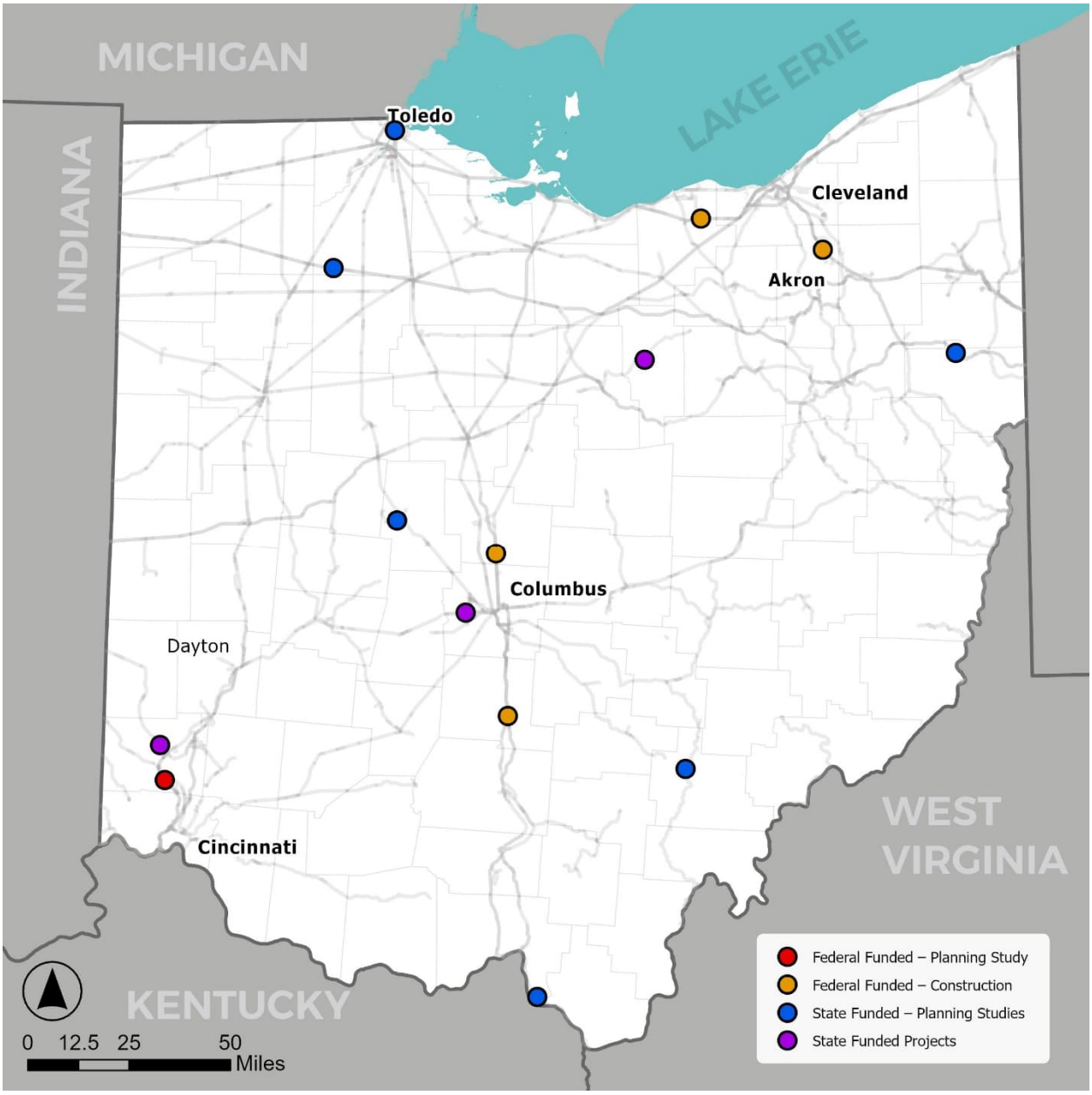


Source: U.S. General Accounting Office

The Rail Commission has received applications from local and regional agencies and ODOT districts for crossing elimination projects. Several types of projects are selected under the program:

- State-Funded Planning Studies – projects where the Rail Commission is funding a planning study with state funds to determine the best path forward to addressing the applicant's safety issues and provide the necessary information for potential federal discretionary grant applications.
- State-Funded Projects – projects of a scale/scope that are not a good fit for the federal RCE program but present an opportunity to eliminate crossings and address the issues in the application. In these cases, the scale/scope of projects was considered more appropriate for state funding rather than pursuing federal funding.
- Federally Funded Projects – four projects have received federal grants for engineering and construction with state OGCEP funding providing a match. Another project received a federal planning grant with the intention that the Rail Commission could sponsor this project for a subsequent federal construction grant.

Figure 4-12. Projects Funded by the Ohio Grade Crossing Elimination Program



Source: Rail Commission

Stakeholders consulted for the Rail Plan and other planning documents have proposed an additional eight grade separation projects, with a total cost of $283 million. One more proposed grade separation project has been identified but does not have associated cost estimates.

4.5.2 Reducing the Frequency of Trespassers Struck by Trains

As described in Chapter 2, two-thirds of rail-related fatalities in Ohio between 2019 and 2023 were trespassers struck by trains. As directed by the U.S. Congress, the FRA is developing a National Strategy to

Prevent Trespassing on Railroad Property.[53] As part of this effort, the FRA has prepared a Trespass & Suicide Prevention Toolkit.[54] The toolkit allows users to find information by incident type (trespass or suicide), location (passenger train station or on the right-of-way), intervention strategy (data, education, enforcement, engineering), or type of measure. Measures aimed at reducing trespassing and suicides on railroad property were grouped into the following categories:

- Risk assessment
- Policy enforcement
- Collaboration, training, and education
- Public communication
- Physical barriers
- Detection and lighting
- Infrastructure modification
- Post-incident management

Railroad trespassing is a difficult issue to address for several reasons. First, because railroads are privately owned, state departments of transportation do not have the same level of control and oversight as they do over roadways where they act as the owner-operator. The private ownership also creates challenges for law enforcement which does not always have the jurisdiction or resources to address railroad trespassing. Finally, most public funding that could address trespassing is provided to states through the FHWA. Project eligibility is limited to the areas around public highway-railroad crossings.

4.5.3 Reducing the Risks of Hazardous Materials Derailments

The derailment on, of an NS train in East Palestine, Ohio on February 3, 2023 increased awareness of the risks of derailments and railroad safety in general. The derailment resulted in a fire that burned for five days and led to a decision to vent and burn off railcar contents because of concerns over a possible explosion of hazardous materials. The U.S. Environmental Protection Agency is still monitoring the cleanup of the site because of the toxic releases related to the derailment.

The incident increased awareness of the risks of derailments and how railroads monitor railcars to ensure that a defect does not cause the railcar to derail. The National Transportation Safety Board (NTSB) has concluded that a failed wheel bearing in one of the train's railcars caused the train to derail.[55] Wheel bearings are components that allow railcar wheels/axles to spin. In the case of the East Palestine accident, friction caused the bearings to become very hot, weakening the axle and surrounding components, and allowing the wheel to skip off the track. Railroads use wayside detector systems to detect a variety of railcar conditions that are potentially hazardous and alert train crews if defects are noted.

[53] Federal Railroad Administration, Report to Congress: National Strategy to Prevent Trespassing on Railroad Property, 2020 Progress Update, 2020, U.S. Department of Transportation, https://railroads.dot.gov/sites/fra.dot.gov/files/2021-03/FRA_Report%20to%20Congress_National%20Strategy%20to%20Prevent%20Trespassing%20Report%201....pdf.
[54] USDOT, Trespass and Suicide Prevention Toolkit, July 2024, https://trespasstoolkit.fra.dot.gov/.
[55] National Transportation Safety Board (NTSB), Meeting of June 25, 2024, Norfolk Southern Railway Derailment and Hazardous Materials Release, East Palestine, Ohio, February 3, 2023, https://www.ntsb.gov/investigations/Documents/East%20Palestine%20Ohio%20Board%20Meeting%20Summary%20with%20Amendments.pdf.

Figure 4-13. Hot Box and Dragging Equipment Detector

Source: CC Sturmovik, https://creativecommons.org/licenses/by-sa/3.0

The East Palestine derailment brought attention to the role of wayside detectors, and in 2023 the Ohio legislature passed legislation that required wayside detectors to be installed every 10-15 miles.[56] As discussed in Chapter 1, the PUCO is responsible for enforcing the wayside detector requirements, and as discussed in Chapter 2, the Ohio Wayside Detector System Expansion Program was established to help defer the cost of compliance with the new wayside detector requirements for Class II and Class III railroads.

The Ohio Senate created a study committee in response to the derailment which heard testimony from 13 individuals who reviewed and deliberated the events that happened during and after the derailment in East Palestine, plus conducted a site visit.[57] The committee recommended that measures be passed in Ohio, including the requirement for two-person train crews, use and installation of more wayside detectors by railroads, and the completion of a study by PUCO on the effectiveness of wayside detectors. The committee also recommended a series of initiatives to enable local emergency personnel to respond to a derailment of hazardous materials.

[56] Ohio Revised Code, Title 49, Chapter 4955, Section 51, https://codes.ohio.gov/ohio-revised-code/section-4955.51.
[57] Ohio Legislative Service Commission, Select Committee on Rail Safety Report, September 13, 2023, https://www.lsc.ohio.gov/assets/organizations/legislative-service-commission/monthly-agency-reports/agency-reports/files/railsafetyreport.pdf.

The federal NTSB similarly found that there is a need to develop standards for wayside detectors. The NTSB also found that action is needed to improve the North American tank car fleet. The post derailment fire likely began with hazardous materials from breached DOT-111 tank cars. The NTSB recommended phasing these tank cars out in favor of tank cars that are better able to survive accidents intact. The NTSB suggested additional training and information resources for local emergency responders, since the emergency response did not conform to the Emergency Guidebook guidance for fires involving tank cars and unknown materials. The report recommended better communication to inform the decision to conduct a controlled burn, which the NTSB considered to be unnecessary.[58]

4.5.4 Reducing the Frequency and Impacts of Trains Blocking Highway-Rail Grade Crossings

Highway-rail grade crossings that are occupied by stationary trains for extended periods of time negatively impact quality of life and present safety hazards. Emergency responders must navigate around blocked crossings, if possible, and there is a risk of pedestrians crawling through trains that are blocking access to their destinations.

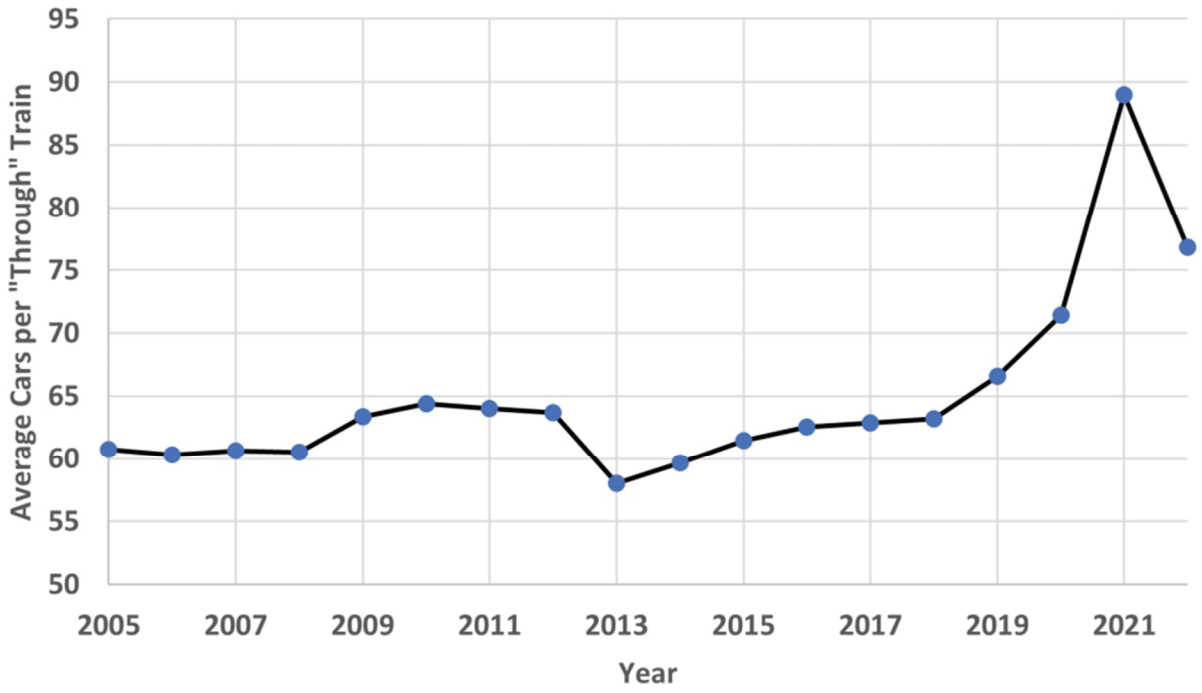
Stakeholders have identified locations in Ohio that are effectively isolated by stationary trains, where one train can block access to an entire community. One example is in St. Clair Township in Butler County at three NS rail grade crossings, Mill Street, Spring Street, and Fear Not Mills Road. Butler County officials report that when a train is stopped, it often blocks all three crossings simultaneously, completing cutting off access for approximately 235 residences and one business.[59]

Since the FRA began collecting blocked crossing data in late 2019, more than 10,500 reports of blocked crossings in Ohio have been filed. Comments from MPOs and other stakeholders for the Rail Plan have identified numerous blocked crossing locations. In a public survey for the Rail Plan, 63 comments involved blocked crossings.

A contributing factor to the instances of blocked crossings is the increase in average train length. A report by the U.S. Government Accountability Office in 2019[60] reported that average train length increased by about 25% between 2008 and 2017. By 2021, 25% of all trains exceeded 1.5 miles.[61] Similarly, a congressionally mandated report that investigated long trains by the National Academies of Science[62] looked at data from railroad R-1 Annual Reports from the STB and found that the average number of railcars per “through” train to be increasing per Figure 4-14 below. The report notes that “through” trains include manifest and intermodal trains, but not unit trains or local trains.

[58] NTSB, Norfolk Southern Railway Derailment and Hazardous Materials Release, Investigation ID RRD23MR005, https://www.ntsb.gov/investigations/Pages/RRD23MR005.aspx.
[59] The Ohio-Kentucky-Indiana Regional Council of Governments (OKI). (2022).
[60] U.S. Government Accountability Office, “Railroad Safety: Freight Trains are Getting Longer, and Additional Information Is Needed to Assess their Impact,” GAO-19-443, https://www.gao.gov/products/gao-19-443.
[61] Association of American Railroads, “Freight Rail & Train Length,” https://www.aar.org/issue/freight-train-length/#:~:text=There%20is%20no%20standard%20definition,though%20trains%20are%20longer%20today.
[62] National Academies of Science, Long Freight Trains: Ensuring Safe Operations, Mitigating Adverse Impacts, 2024, https://nap.nationalacademies.org/catalog/27807/long-freight-trains-ensuring-safe-operations-mitigating-adverse-impacts.

Figure 4-14. Average Railcars per “Through” Train



Source: National Academies of Science

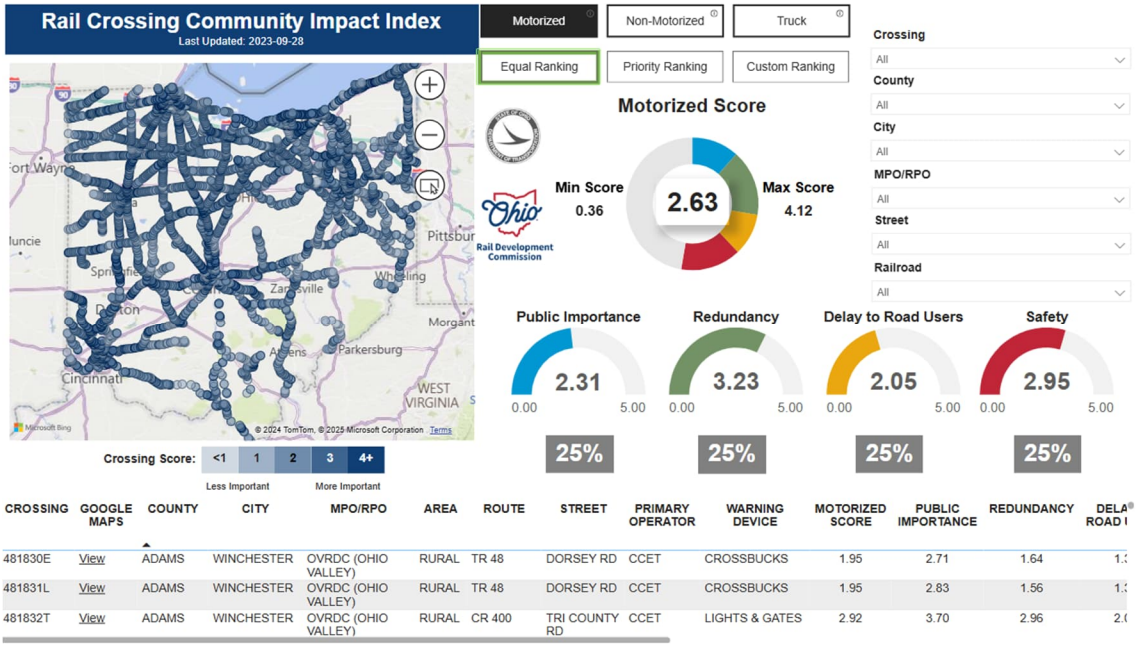
Logically, a train that is longer will be more difficult to park without blocking a crossing or will block more crossings than a shorter train. Unless railroads extend their sidings, there are fewer passing sidings on single line tracks that can accommodate long trains, thus requiring other trains to wait and potentially block crossings. During the preparation of the National Academies of Science report, labor representatives mentioned the difficulty of accommodating long trains in rail yards. With long trains, assembling or disassembling may require train movements beyond the rail yard and into adjoining neighborhoods, where these operations potentially block crossings.

Beyond railroad operations, there are other factors that contribute to blocked crossings. The density of the roadway and rail networks in the state increase the number of conflict points, the location of rail yards in urban areas and the growth of residential development in previously agricultural areas of the state all create issues where occupied crossings have a large impact on the surrounding communities.

Recognizing that not all crossings have the same impact to communities, Rail Commission has attempted to quantify the “importance” of crossings to individual communities. The Adaptive Capacity Study (ACS) was jointly conducted by the Rail Commission and ODOT in 2019-2020. The ACS developed, applied, and validated a methodology to evaluate the relative impact of occupied public railroad-highway grade crossings on road users and communities in Ohio. It does this on the basis of multiple criteria including public importance, delay to road users, crossing redundancy, and safety. The resulting “Adaptive Capacity Score” provides an empirical basis to identify which crossings warrant prioritized consideration for potential investment. The prioritization in turn provides an input to the process of allocating limited public resources to roadway or railroad improvements at locations with the most significant impacts to public users and communities. In a second initiative, the ACS was enhanced, converted to an online tool, and renamed the Rail Crossing

Community Impact Index (RCCII), which scores crossings from 0 (least impact) to 5 (most impact).[63] A screenshot of the website interface is show in Figure 4-15.

Figure 4-15. Rail Crossing Community Impact Index User Interface



Source: Rail Commission

4.5.5 Add Clearance and Capacity to Rail Overpasses

An issue frequently identified by stakeholders and members of the general public alike are railroad overpasses that are either too narrow or have inadequate vertical clearance to allow trucks to pass underneath. Trucks can be as high as 13' 6" without requiring special hauling permits.

Stakeholders have proposed 10 projects to alleviate the constraints caused by rail overpasses, costing a total of $174.6 million. A stakeholder has reported that one rail overpass in Madisonville, near Cincinnati, was struck by trucks 34 times between 2016 and 2020. Public survey respondents identified 14 locations with low overpasses. Low rail overpasses result in reduced economic development potential of areas if they limit truck access. They also impact rail operations, since a collision with a rail bridge often requires the bridge to be inspected before railroad operations can resume. Two rail overpass clearance projects, at a cost of $80 million, have been proposed by railroads.

[63] Ohio Rail Development Commission, Rail Crossing Community Impact Index (RCCII), September 28, 2023, https://storymaps.arcgis.com/stories/3c5e4ef80a004abda94ef76ee54bcfb7.

Figure 4-16. Rail Overpass in Lima Frequently Struck by Trucks

Source: Google Maps

4.5.6 Remove Highway-Rail Grade Crossings that Are No Longer in Use, Improve Surfaces of Existing Crossings

As discussed in Chapter 2, the Rail Commission administered the Orphan Rail Crossing Program which provided $1 million in state fiscal year 2024 for repairs and improvements to crossings (at-grade or grade separated) that are no longer used, were abandoned by a railroad or industry, or are currently active, but have no clear ownership or responsible party for maintenance. For most projects funded under the program, the nature of work is removing the existing track structure through the crossing and reconstructing the roadway. Two projects involved the removal or remediation of a grade separated structure (one an overhead railroad bridge, another stabilizing a railroad tunnel below the roadway).

Figure 4-17. Locations of Projects Funded by the Orphan Rail Crossing Program

Source: Rail Commission

4.5.7 Ensure that Crossings are in a Good State of Repair

Respondents to the public survey had concerns about the state of repair of both grade separated and at-grade rail crossings.

Stakeholders were concerned about the condition of railroad overpasses. Some were concerned that railway overpasses were in such a poor state of repair that debris could fall off these structures and endanger roadway users below. In response to the public survey, 11 respondents commented on poor railroad bridge conditions.

Respondents to the public survey also identified nine locations where grade crossing surfaces are considered to be unacceptable for roadway users. In one location, trucks/buses have become stuck on a "humped" crossing, creating a safety hazard.

4.6 Opportunities for Technology to Help Forward the Goals and Objectives of The Rail Plan

Railroad technological improvements point to areas where railroads can better support Ohio's goals and objectives and gain a modal advantage. When asked during a workshop for the Rail Plan which technologies would have the most impact over the next 10 years, freight rail stakeholders gave top votes to the following:

- Unmanned Autonomous Maintenance Inspection Technologies
- Artificial Intelligence
- Low or Zero Emissions Locomotives

4.6.1 Unmanned and Autonomous Inspection Technologies/Artificial Intelligence

Railroads have been experimenting with autonomous rail vehicles that employ wireless communications to test and monitor real-time geometric track parameters without interrupting normal railroad operations. These vehicles can create a profile of the track being inspected and provide real-time pictures of track geometry to track maintenance employees, enabling them to protect and repair track conditions as required. The data collected also supports predictive maintenance capabilities, and reduces the time required for manual inspections, which increases network capacity and fluidity. The use of autonomous inspection technologies results in earlier detection of track defects and better data capture for improved predictive maintenance, moving from reactive to preventive maintenance and ultimately building a safer rail network.

Figure 4-18. Autonomous Track Inspection Equipment

Source: CSX

NS reports that the railroad is using car-mounted scanning technology and AI to create a "digital twin" of the rail network. NS has also been using AI in its Digital Train Inspection Portals. Each portal is equipped with Machine Vision Inspection technology with numerous cameras set at different angles to snap 1,000 images per railcar while trains pass through at speed. The first portal was in Leetonia, Ohio, but NS intends to add

facilities across its network. Algorithms detect defects and identified issues are flagged and reviewed by experts to provide proactive maintenance and immediate handling of any critical defects.

Figure 4-19. Digital Train Inspection Portal

Source: NS

4.6.2 Alternative Fueled Locomotives

In 2024 CSX converted a diesel locomotive to hydrogen power through a partnership with CPKC at a facility in Huntington, West Virginia. Hydrogen presents a promising alternative to fossil fuels, offering greater efficiency and zero emissions. Unlike traditional diesel engines, hydrogen-powered locomotives emit only water vapor, contributing to cleaner air and environment.

NS, in partnership with Alstom, has launched a project to convert two engines to hybrid technology which promises to deliver 90% few emissions and 30% better pulling capacity than traditional diesel models. Batteries will provide the primary propulsion, while a smaller diesel locomotive will run only when needed to charge the battery.

In 2022 the Newburgh & South Shore Railroad LLC (NSR) of Cleveland purchased an all-battery electric locomotive that was 75% funded by the Ohio Environmental Protection Agency.

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5. Rail Service and Investment Program

This chapter describes Ohio's long-term vision for rail service. It presents projects/actions that have been recommended to achieve that vision and describes their financial and physical impacts.

5.1 Vision, Goals and Objectives

For the purposes of the Rail Plan, the vision, mission, goals, and objectives are those that were adopted in the 2010 Plan and reaffirmed in the 2019 update. The Rail Commission intends to update the agency's vision, goals, and objectives in 2025, but this update will be separate from Rail Plan development. Establishing a separate process was considered appropriate, since the application of vision, mission, goals, and objectives is not limited to the Rail Plan, but rather guides the Rail Commissions evaluation of projects for its funding programs, as well as other activities on an ongoing basis.

The vision, mission, goals and objectives are:

5.1.1 Vision Statement

The Rail Commission's vision is for Ohio to have the best rail system in the world. The Rail Commission will implement programs and policies that foster a globally integrated, safe, reliable rail system, that creates and retains jobs, and maximizes the public benefit to Ohio's communities and industries.

5.1.2 Mission

The Rail Commission's mission (adopted in 1994) is to plan, promote, and implement the improved movement of goods and people faster and safer on a rail transportation network connecting Ohio to the nation and world. The mission is to be accomplished through a coordinated freight and passenger rail system that is an integral part of a seamless intermodal transportation network that contributes to Ohio's quality of life and economic development.

5.1.3 Goals and Objectives

The following goals and objectives support the vision statement and mission. Goals clarify the mission and vision, while objectives provide guidance as to the actions and policies that will support each goal.

Goal: Economic Development

Support a fully integrated, well-managed transportation system that drives business growth, prosperity, job creation and retention.

Objectives

- Preserve and enhance existing rail lines and corridors.
- Provide rail access to retain existing and attract new businesses.
- Provide Ohio's communities and industries with transportation options, connectivity, and opportunities.

Goal: Funding

Secure funding for rail projects supporting a transportation network that provides a public benefit to Ohioans.

Objectives

- Identify the public benefit of all rail projects.
- Identify financial resources for rail projects and programs.

Goal: Safety

Work with railroads, the Public Utilities Commission of Ohio and the Ohio Department of Transportation to maintain a safe rail system.

Objectives

- Increase number of locations with warning devices.
- Increase number of at-grade crossings closed.
- Reduce derailments.

Goal: Environmental Benefits

Support sustainable rail programs and projects that enhance Ohio's environment.

Objectives

- Improve environmental quality, especially in terms of air quality.

Goal: Balanced Transportation Policy

Increase support for rail.

Objectives

- Educate and inform Ohio citizens and decision-makers about the public and private benefits of rail.

Goal: Efficient Railways

In partnership with the private railroads, create a fast, frequent and reliable rail network that connects Ohio to the national transportation system.

Objectives

- Improve on-time performance.
- Preserve, maintain, expand, and modernize Ohio's rail system, including main lines and branch lines.
- Preserve existing track and rail rights-of-way for future use.
- Improve access to global and domestic markets through seamless intermodal connectivity.
- Provide improved transportation choices for Ohio communities and industries.

5.2 Program Coordination

The Rail Commission will review and consider the vision, goals, objectives, and performance measures included in the Transport Ohio State Freight Plan and the Access Ohio 2050 statewide multimodal, long-range transportation plan as it updates its own vision, mission, goals, and objectives.

5.3 Rail Agencies

The Rail Plan presents several new programs, including:

- The Crossing Elimination Program
- The Wayside Detector Program
- The Orphan Crossing Program

The Wayside Detector Program and the Orphan Crossing Program were one-time appropriations made for the FY2024 and FY2025 biennium. As of mid-2025, projects have been selected for these programs with minimal remaining unallocated budgeted funds. The Crossing Elimination Program is included in the Fiscal Year 2026 – 2027 State Budget but at a reduced funding level of $15 million for Fiscal Year 2026.

The Fiscal Year 2026 – 2027 State Budget also changes the composition of the Rail Commission board representation appointed by the Governor. One member is to represent a Class I freight railroad, while another is to represent a Class II or Class III freight railroad. The stipulation that one member represent passenger rail interests was removed.

5.4 Passenger Element

As discussed in Chapter 3, the evaluation and potential development of passenger rail services is a multistep process that begins with system planning, continues to project planning, project development, design, and then construction. As of the preparation of the Rail Plan, passenger rail initiatives are generally in early project planning stages per the federal CID Program. As such, it is too early to identify individual capital projects, their impacts and potential funding/financing associated with each of these corridor studies. The exceptions are improvements to existing services, including station projects. For example, the OKI Freight Plan recommended a series of improvements associated with the new City of Oxford Amtrak Station. The anticipated cost is $2.45 million and is considered a short-term (within four years) need.

5.5 Freight Element

A total of 103 freight or safety project needs were identified for this Rail Plan, based on feedback from railroads and other stakeholders, and a review of regional planning organization study documents. Cost estimates were provided for 95 of these projects, and total estimated cost of these projects is about $1.6 billion. A complete project list is provided in Appendix B.

Per FRA State Rail Plan Guidance, projects are divided into short term (2026 – 2029) and long term (2030 – 2045) categories in the Rail Plan. In most cases, the determination of timing was based on stakeholder feedback or planning documents. In some cases, a judgment has been made about timing related to the project's level of complexity, and the required coordination to complete the project. Short-term projects are summarized in Table 5-1 while long-term projects are summarized in Table 5-2.

The number of short-term projects was higher than long-term projects (57 compared to 46 long-term projects), but the cost of the long-term projects was significantly higher than the combined cost of the short-term projects ($1.4 billion compared to $0.2 billion short-term projects).

Projects listed in Table 5-1 and Table 5-2 would significantly further Rail Commission goals and objectives. For each project category, associated goal areas that the projects address are identified. It is likely that these designations understate project impacts. By diverting freight from highway to rail, for example, a broad range of rail projects support safety and environmental benefits, since railroad transportation is safer and more fuel efficient than highway transportation. Similarly, by improving the efficiency of the rail network, a range of

projects improve economic development and railroad efficiency. However, to simplify, project categories are associated with goal areas most directly impacted.

Projects are also assigned cost categories. This is relevant to funding/financing considerations. Projects over $2 million could be considered for federal discretionary grants for capital projects. Projects under $2 million are generally less suited for federal discretionary grants because of the longer timeline and complexity of project administration associated with federal funding. These smaller projects may be better candidates for state funding, such as through the Rail Commission's Rail Development or Safety programs. Funding options have been recommended, but these reflect funding options that are available through the IIJA, which may not be available in future federal surface transportation bills. Additional information is required to assess each project's eligibility or suitability for consideration for state or federal programs. Federal funding programs listed in Table 5-1 and Table 5-2 are discussed in more detail in Section 2.1.5.

The Rail Plan also represents a snapshot of rail needs within a specific time period. Because rail needs are continually changing with changing rail markets and customer supply chain needs, the Rail Plan will be amended with new projects as they are accepted by the Rail Commission.

Table 5-1. Short-Term Freight Projects

Project Category	Project Cost Category	Number of Projects	Total Cost of Projects (included Estimates)	Goal Area	Funding Options
Grade Separation	Over $2M	1	$39,470,000	Safety	RCE, BUILD
	No Cost Info	1			
Multimodal	Over $2M	2	$22,000,000	Economic Development, Environmental Benefits, Efficient Railways	CRISI, PIDP, BUILD
Track Rehabilitation	Over $2M	3	$16,227,000	Economic Development, Efficient Railways, Safety	CRISI, BILD
	Under $2M	5	$5,794,500		Ohio Rail Development
	No Cost Info	1			
Bridge	Over $2M	3	$10,900,000	Economic Development, Efficient Railways	CRISI, BUILD
	Under $2M	5	$4,840,140		Ohio Rail Development
Rail Overpass (projects that improve clearance or space for roadway underneath)	Over $2M	1	$16,200,000	Safety	BUILD, Highway Funding
	Under $2M	1	$1,500,000		Highway Funding
	No Cost Info	1			
Crossing	Over $2M	3	$12,150,000	Safety	RCE, CRISI, BUILD
	Under $2M	7	$2,110,000		Ohio Crossing Safety Program

Project Category	Project Cost Category	Number of Projects	Total Cost of Projects (included Estimates)	Goal Area	Funding Options
	No Cost Info	2			
Yard	Over $2M	2	$13,000,000	Efficient Railways	CRISI, BUILD
Track Upgrade	Over $2M	3	$12,700,000	Efficient Railways	CRISI, BUILD
	Under $2M	1	$1,200,000		Ohio Rail Development
Signal/Detector	Over $2M	1	$4,000,000	Efficient Railways	CRISI, BUILD
Tunnel	Over $2M	1	$7,500,000	Economic Development, Efficient Railways	CRISI, BUILD
Rolling Stock (Rolling stock purchases, also maintenance facilities)	Over $2M	1	$6,000,000	Efficient Railways, Environmental Benefits	Uncertain for rolling stock purchases, CRISI or BUILD for facilities
Connections (Crossovers, interlockings or other connections between tracks)	Over $2M	2	$11,000,000	Efficient Railways	CRISI, BUILD
	No Cost Info	1			
Industrial Access	Over $2M	1	$2,300,000	Economic Development	Uncertain
	Under $2M	5	$2,625,000		Ohio Rail Development
	No Cost Info	1			
Additional Track (passing sidings, other mainline parallel track)	Under $2M	2	$1,470,000	Efficient Railways	Ohio Rail Development

Source: Rail Plan Analysis

Table 5-2. Long-Term Freight Projects

Project Category	Project Cost Category	Number of Projects	Total Cost of Projects with Estimates	Goal Areas	Funding Options
Bridge	Over $2M	3	$265,000,000	Economic Development, Efficient Railways	CRISI, BUILD, INFRA
Grade Separation	Over $2M	7	$243,250,000	Safety	RCE, BUILD
Track Upgrade	Over $2M	4	$253,500,000	Efficient Railways	CRISI, BUILD
Multimodal	Over $2M	9	$188,200,000	Economic Development, Environmental Benefits, Efficient Railways	CRISI, PIDP, BUILD
Rail Overpass (projects that improve clearance or space for roadway underneath)	Over $2M	7	$122,750,000	Safety	BUILD, Highway Funding
Connections (Crossovers, interlockings or other connections between tracks)	Over $2M	3	$117,300,000	Efficient Railways	CRISI, BUILD
Rolling Stock (Rolling stock purchases, also maintenance facilities)	Over $2M	5	$90,000,000	Efficient Railways, Environmental Benefits	Uncertain for rolling stock purchases, CRISI or BUILD for facilities
Track Rehabilitation	Over $2M	3	$35,000,000	Economic Development, Efficient Railways	CRISI BUILD
	No Cost Info	1			
Additional Track (passing sidings, other mainline parallel track)	Over $2M	2	$40,500,000	Efficient Railways	CRISI, BUILD
Tunnel	Over $2M	1	$30,000,000	Economic Development, Efficient Railways	CRISI, BUILD
Industrial Access	Over $2M	1	$5,000,000	Economic Development	Uncertain
Signal/Detector	Over $2M	1	$11,000,000	Safety, Efficient Railways	CRISI, BUILD

Source: Rail Plan Analysis

5.6 Studies and Reports

The Rail Commission has embarked on several rail planning studies:

- Cleveland-Columbus-Dayton-Cincinnati (3C&D) Corridor CID grant – As of mid 2025, the Rail Commission is performing Step 1 work developing a scope of work to complete a Service Development Plan to evaluate new state-sponsored passenger service in the corridor.
- Cleveland-Toledo-Detroit Corridor CID grant – As of mid 2025, the Rail Commission is performing Step 1 work developing a scope of work to complete a Service Development Plan to evaluate new state-sponsored passenger service in the corridor.
- Cincinnati Rail Congestion Mitigation Plan CRISI grant – A study to review and develop a prioritized list of rail projects to reduce rail congestion in the area around Queensgate rail yard in Cincinnati.

Additionally, the Rail Commission is involved in state planning efforts including the Ohio Freight Plan, the Ohio Maritime Plan and Access Ohio 2050, the state's long term transportation plan. The Rail Commission is also participating in the "South of the Lake" study conducted by Amtrak and the FRA to identify improvements to the eastern gateway into the Chicago area which is critical for both freight and passenger traffic traveling west of Ohio.

Other studies relevant to Ohio are in development by other organizations.

- Chicago-Fort Wayne-Columbus-Pittsburgh Corridor (Midwest Connect) CID grant – Sponsored by the City of Fort Wayne, IN, this CID corridor would establish passenger rail service in the corridor and is currently in Step 1 of the FRA project development process.
- Daily Cardinal Service CID grant – This Amtrak-sponsored corridor study would increase service on the existing long distance route.

Other passenger rail feasibility studies have been recommended by stakeholders but are not currently under consideration.

- Buffalo–Cleveland
- Akron/Canton service
- Toledo-Columbus

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6. Coordination and Review

The Rail Commission is committed to engaging rail stakeholders and the public in all rail planning activities. Engagement is a key activity in gathering information about the Ohio rail system, identifying needs and opportunities, and establishing rail investment and policy priorities.

6.1 Approach to Public and Agency Participation

6.1.1 Stakeholder Contact List

An early activity in public and stakeholder participation was to identify rail stakeholders within the state, representatives of organizations that have a specific interest in rail including:

- Rail advocacy groups
- Economic development organizations
- Relevant state government entities
- Port authorities with a specific interest in rail
- Railroads
- Regional and municipal owners of railroad infrastructure
- Regional councils and MPOs
- Trade associations of industries that ship by rail
- Companies that ship by rail

6.1.2 Outreach Activities

A range of outreach activities were performed to inform and receive feedback from the stakeholder groups listed above as well as members of the general public about the Rail Plan. Activities varied based on stakeholder relationship and interest in Ohio's rail system They are summarized in Table 2-3.

Table 6-1. Outreach Approaches

Outreach Methods	Description
Rail Stakeholder Outreach	
Railroad Surveys	Surveys were sent to all freight railroads operating in Ohio, including all Class I, Class II, and Class III railroads. The surveys were intended to better understand each railroad's system, freight traffic handled, project needs and general views on rail-related issues and opportunities in Ohio. Each Class I railroad responded, as did 23 Class II or Class III railroads.
Stakeholder Workshops	Three stakeholder workshops were held, one related to freight rail, another to passenger rail, and a third related to community issues, such as highway-rail grade crossings. The freight rail meeting was attended by over 25 participants; the rail in the community workshop, over 20 participants; and the passenger rail workshop, over 25 participants. In each workshop, a presentation was given, followed by a discussion that was facilitated by polling software.
Presentations to Stakeholders	Presentations were given at several stakeholder meetings, including meetings of the Ohio Railroad Association, the West Central Ohio Port Authority, and the Central Ohio Passenger Rail Committee.
Stakeholder Interviews	Interviews/meetings were held with 2 shippers, 2 trade associations, JobsOhio, Amtrak, several regional planning organizations, and a representative of a short line holding company.
Shipper Survey	A set of companies that ship by rail in Ohio were identified. They were sent a link to a customized online survey to better understand their perspectives on the strengths, limits, and needs of freight rail transportation in Ohio.
Outreach to the General Public	
Online Survey	An online survey using software by MetroQuest was made available to the public on the Rail Commission website between October 16, 2024 and January 6, 2025. This survey received responses from 1,364 individuals. The survey invited participants to answer questions through a series of activities: rating rail improvement strategies/goals, ranking concerns about rail in participant communities, and annotating a digital map with suggested rail improvements. While the results of the survey are described in this chapter, a more complete summary is provided in Appendix C.
Rail Commission Website	The Rail Commission website provided a source of information on the Rail Plan, as well as a location where members of the public could ask questions or provide comments.

6.2 Coordination with Neighboring States

Some Rail Commission initiatives are coordinated with neighboring states, such as the passenger rail planning effort for the Detroit-Toledo-Cleveland corridor, which is led by the Rail Commission and conducted in conjunction with the Michigan Department of Transportation. In other instances, initiatives are led by other states, or organizations within other states, and the Rail Commission serves as a stakeholder, such as Midwest Connect corridor between Chicago and Pittsburgh, which is led by the City of Fort Wayne, IN.

The Rail Commission is an active participant in the American Association of State Highway and Transportation Officials (AASHTO) Council on Rail Transportation, with its Executive Director serving as Vice

Chair of the Council. Rail Commission staff also participate in federal agency-sponsored Communities of Interest. Both forums provide opportunities for staff to collaborate with peers in other states who administer similar programs and activities.

Interstate planning in Ohio is also facilitated through multistate MPOs, of which there are five in Ohio. Three of the MPOs span the Ohio River between Ohio and West Virginia, while the KYOVA Interstate Planning Commission covers counties in Ohio, West Virginia, and Kentucky, and the OKI Regional Council includes counties in Ohio, Kentucky, and Indiana.

6.3 Issues Identified

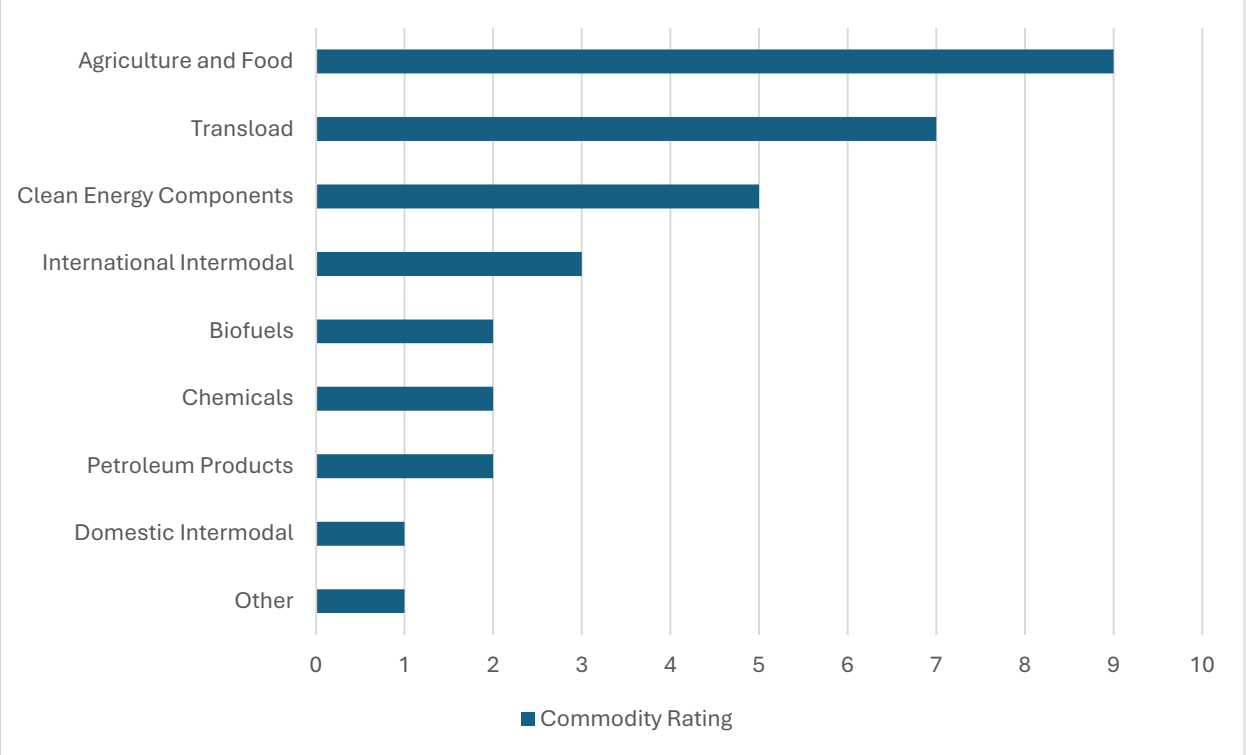
Many of the outreach activities and questions posed to stakeholders were thematic, asking about aspects of Ohio's rail system. These issues were discussed in Chapters 3 and 4. Stakeholder/public feedback on these issues is summarized in the following sections.

6.3.1 Freight Rail Opportunities

Freight Stakeholder Workshop

Railroads and other stakeholders were asked to identify the largest opportunities for freight rail traffic growth in Ohio. During a freight stakeholder workshop, participants ranked food, agriculture, and transloaded products as the top growth commodities as part of an online polling exercise (Figure 6-1).

Figure 6-1. Rating the Highest Growth Commodities at Stakeholder Workshop



Source: Stakeholder Workshop

At the freight stakeholder workshop, reshoring of manufacturing was also mentioned as a potential rail traffic opportunity during open discussion.

Demand for rail transportation of some commodities could decline or remain flat. One stakeholder predicted further declines in coal production. Natural gas liquids and frac sand were considered low growth traffic areas with frac sand shipments even declining as energy production shifts toward the southern area of the Marcellus/Utica shale play.

Railroad Survey

When asked to name the most promising freight opportunities in the railroad survey, railroads mentioned:

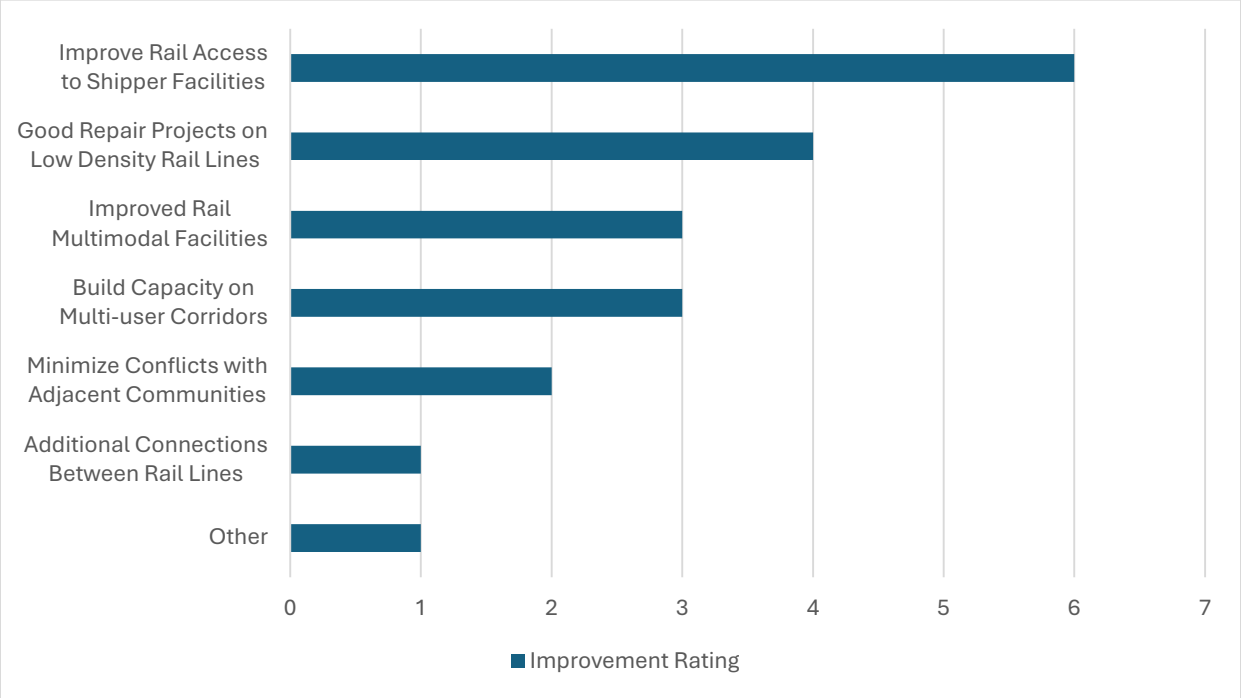
- Plastics production in Ohio and nearby states
- Construction materials
- Intermodal
- Transload
- Plastic recycling

6.3.2 Freight Rail Issues and Needs

Freight Stakeholder Workshop

Asked to rank potential improvements to the Ohio rail network, freight rail stakeholders ranked access to shipper facilities and state of good repair projects on low density rail lines the highest as shown in Figure 6-2

Figure 6-2. Rating Needed Improvements at Stakeholder Workshop



Source: Stakeholder Workshop

Railroad Survey

In their responses to questions about freight issues and needs, railroads identified the following:

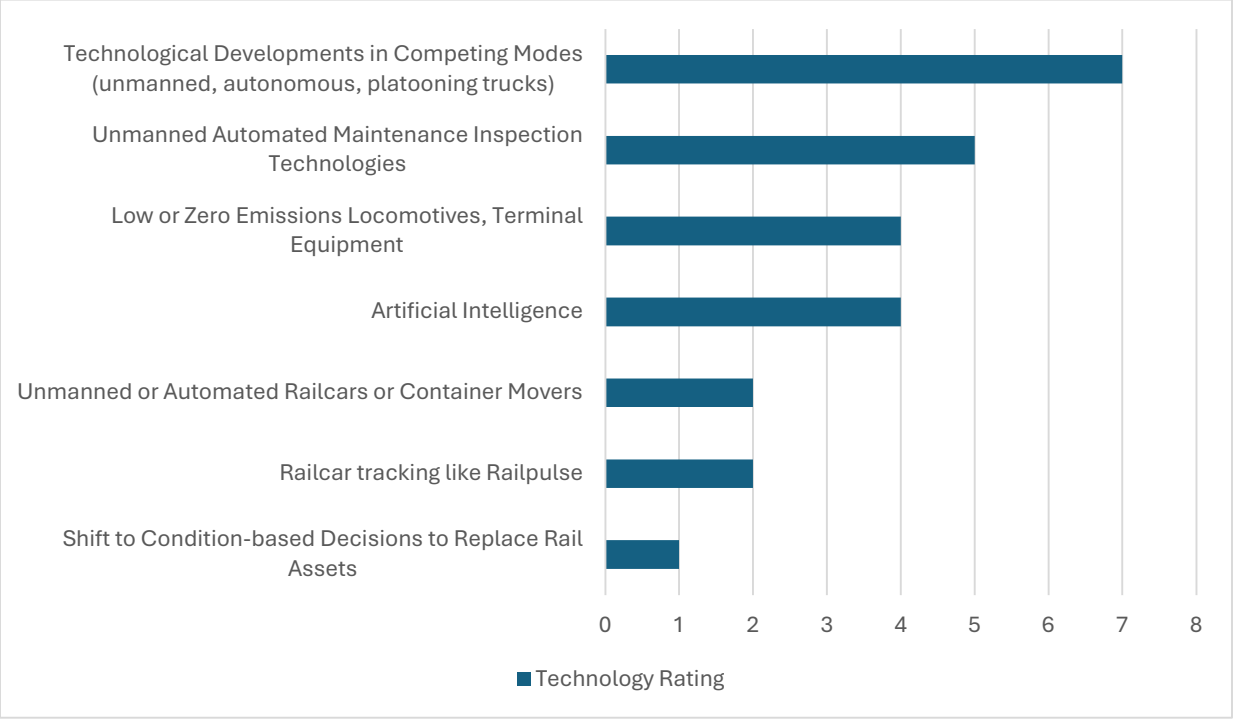
- Locations for new railroad customers – Railroads would like inactive industrial sites on their lines reactivated and brownfields remediated. Respondents were concerned about the availability of industrial sites. Local zoning is a rising barrier to freight rail land uses, and once a property is rezoned away from industrial uses, it is lost for future railroad customers.
- Inflation – Railroads noted increased costs particularly for maintenance of way activities. This harms railroads' ability to compete modally, since trucking companies do not maintain their infrastructure. Railroads are locked into contracts without adequate escalation with customers, but costs are rising faster.
- Pricing – Short line railroads are dependent on Class I partners to provide competitive pricing to prospective shippers.
- Crime – Cargo theft has increased.
- Staffing – Railroads have been having difficulty finding qualified applicants.

6.3.3 Freight Rail Technology

Freight Stakeholder Workshop

Stakeholders were asked which technologies would be the most influential to the rail industry. At the freight stakeholder workshop, participants rated technological improvements by other modes the highest, followed by automated rail infrastructure maintenance inspection technologies as shown in Figure 6-3. Stakeholders felt that rail technology tends to lag behind trucking, particularly in shipment tracking.

Figure 6-3. Rating Technologies with the Greatest Impact at Stakeholder Workshop



Source: Stakeholder Workshop

Railroad Survey

The railroad surveys provided additional perspective on influential technology. Railroads cited artificial intelligence and automated inspection technologies as the most influential. These included automated equipment inspection, such as the NS/CSX digital train inspection portals, as well as automated track inspection equipment. A representative from a short line railroad mentioned that automated track inspection technologies could benefit short lines as well, although limited resources of these railroads often preclude their adoption.

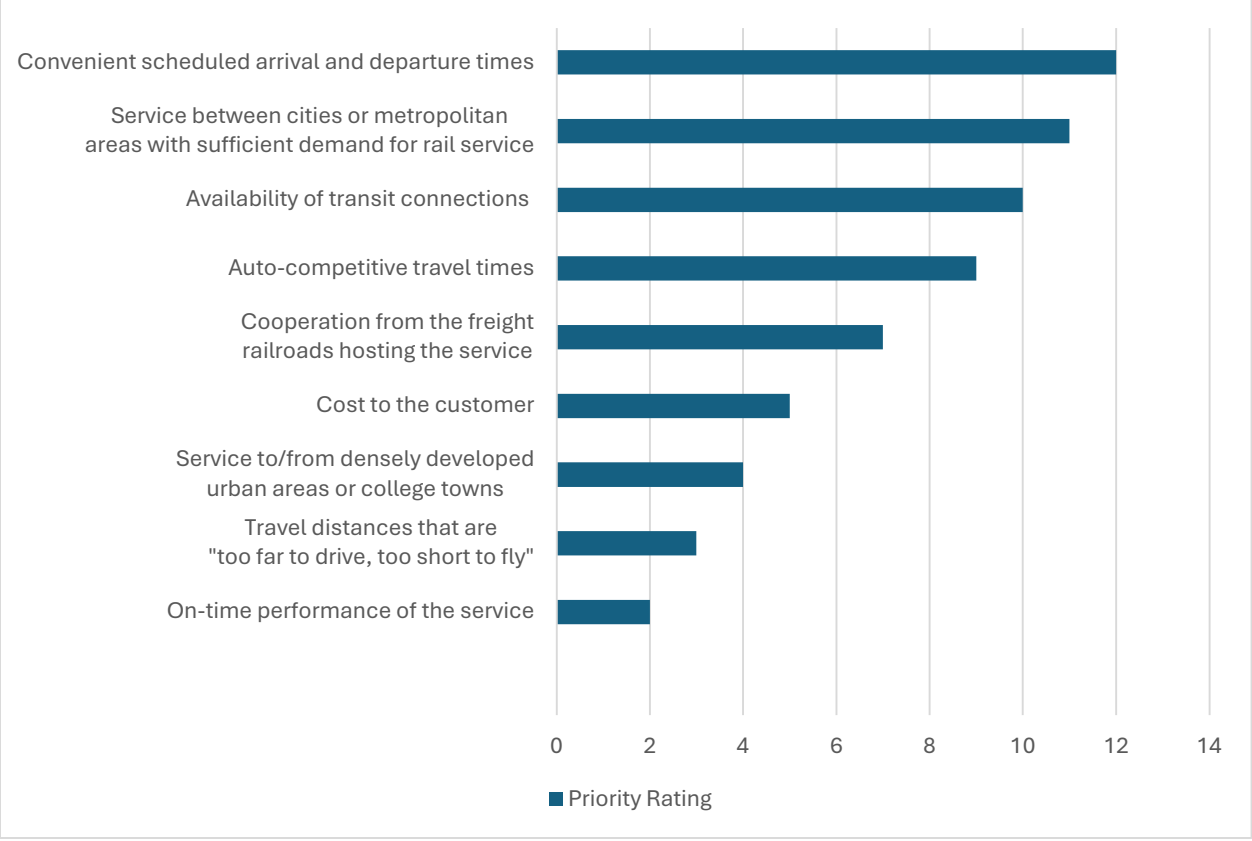
6.3.4 Intercity Passenger Rail Needs and Issues

Convenient schedules and new routes were the most prominent issues identified by stakeholders and the general public for passenger rail.

Passenger Rail Stakeholder Workshop

At the passenger rail stakeholder workshop, respondents identified that schedules and local transportation connections are important considerations for the success of intercity passenger rail services, as well as serving locations that would generate enough demand to make the passenger service feasible. Stakeholders advised that the biggest impediment to establishing passenger rail service is funding at both the national and state levels during an online polling activity.

Figure 6-4. Rating Passenger Rail Success Factors at Stakeholder Workshop



Source: Stakeholder Workshop

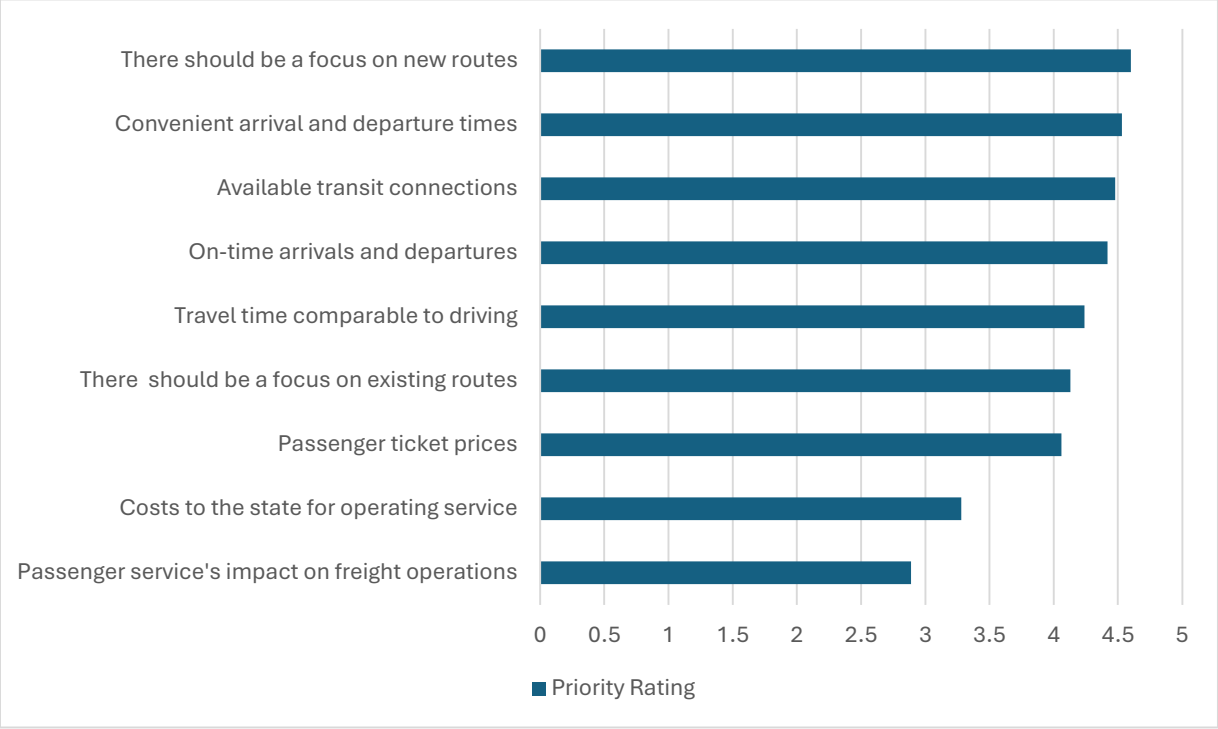
During discussion, additional comments from the passenger rail stakeholder workshop were:

- A comparative cost analysis of passenger rail vs. highway investment for parallel corridors needed to accommodate the passenger demand should be conducted.
- Cleanliness and maintenance standards are important .
- ADA considerations are important.
- Need to consider population density, employment, tourist destinations when planning for passenger rail.
- Need to highlight the benefits of passenger rail that other countries have realized.
- A corridor between Toledo and Columbus would connect well with Detroit.
- Passenger rail links to businesses and airports are needed.
- A new marketing strategy is needed to improve public perception of passenger rail.

Online Survey

In the online public survey, respondents were particularly interested in new passenger rail routes, followed by convenient arrival/departure times and local transit connections as shown in Figure 6-5.

Figure 6-5. Rating the Importance of Characteristics of Passenger Rail Service by Online Survey (5 = Highest, 1 = Lowest)



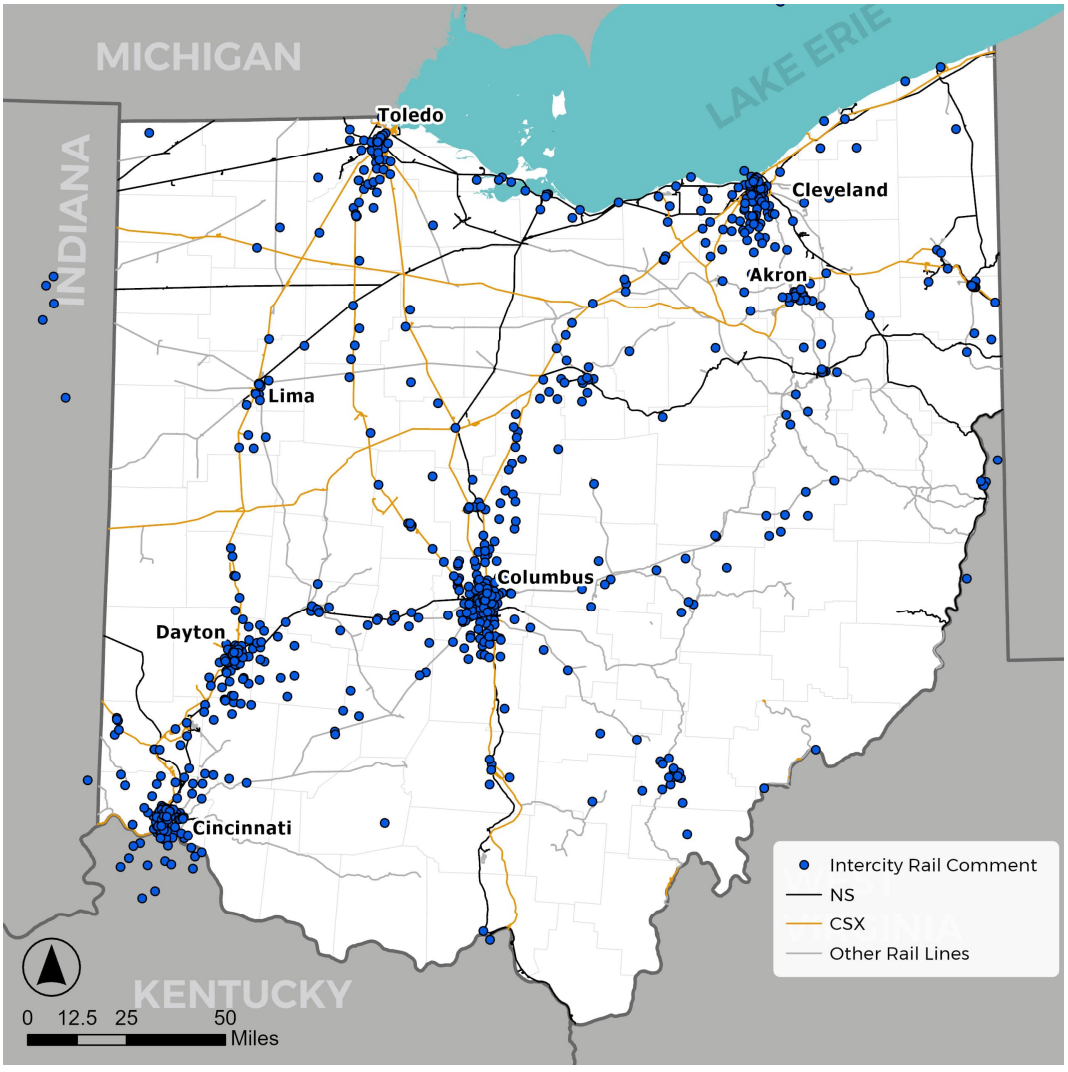
Source: Online Survey

In the online survey, respondents geographically identified issues using a digital map. A total of 3,061 responses were received. Of these, 1,419 included descriptions along with pins noting locations on the map. Of the responses, over three-quarters, or 2,366, located proposed new passenger rail services. Of these, 938 identified intercity new service initiatives. Figure 6-6 shows the location of proposed new intercity passenger rail services. While numerous routes were proposed, several appeared more frequently and are of note:

Connections between cities:

- Cincinnati – Columbus – Cleveland
- Cleveland – Pittsburgh
- Cleveland – Akron - Canton
- Dayton – Cincinnati
- Dayton – Columbus
- Toledo – Cleveland
- Toledo – Cincinnati

Figure 6-6. Intercity Passenger Rail Pins from the Public Survey



Source: Online Survey

Meeting with Amtrak

Amtrak recommended that Ohio consider projects that are "low hanging fruit" such as supporting improvements to existing services or incrementally extending existing services. The Amtrak representative also emphasized planning for equipment for any new services since lead times for ordering equipment can be extensive.

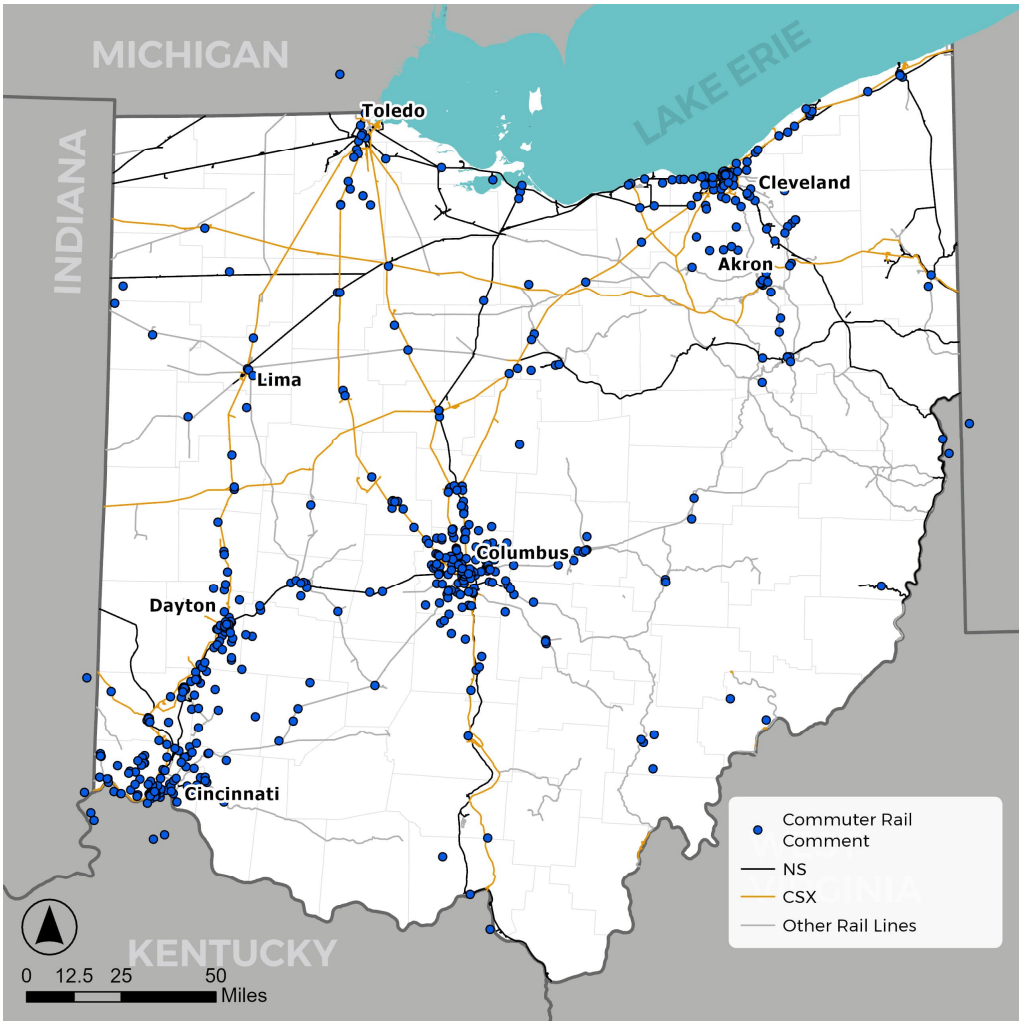
6.3.5 Commuter Rail Needs and Issues

Online Survey

In the online survey, 570 respondents proposed commuter rail services. Figure 6-7 shows locations identified for new commuter rail service. A majority of the locations were in the Cleveland, Columbus, and Cincinnati metropolitan areas:

- Cleveland
- Service along the lakefront
- Service to Lorain, Akron, and Canton
- Columbus
- Service to the airport
- Service between Columbus and the surrounding suburbs
- Service to Delaware, Dublin, and New Albany
- Cincinnati/Dayton
- Service between Cincinnati and Dayton
- Service between Cincinnati and the suburbs

Figure 6-7. Commuter Rail Pins from the Public Survey



Source: Online Survey

6.3.6 Rail in the Community Needs and Issues

Stakeholders and the general public were asked to comment on potential areas of conflict between the rail system and surrounding communities, and ways to minimize these conflicts.

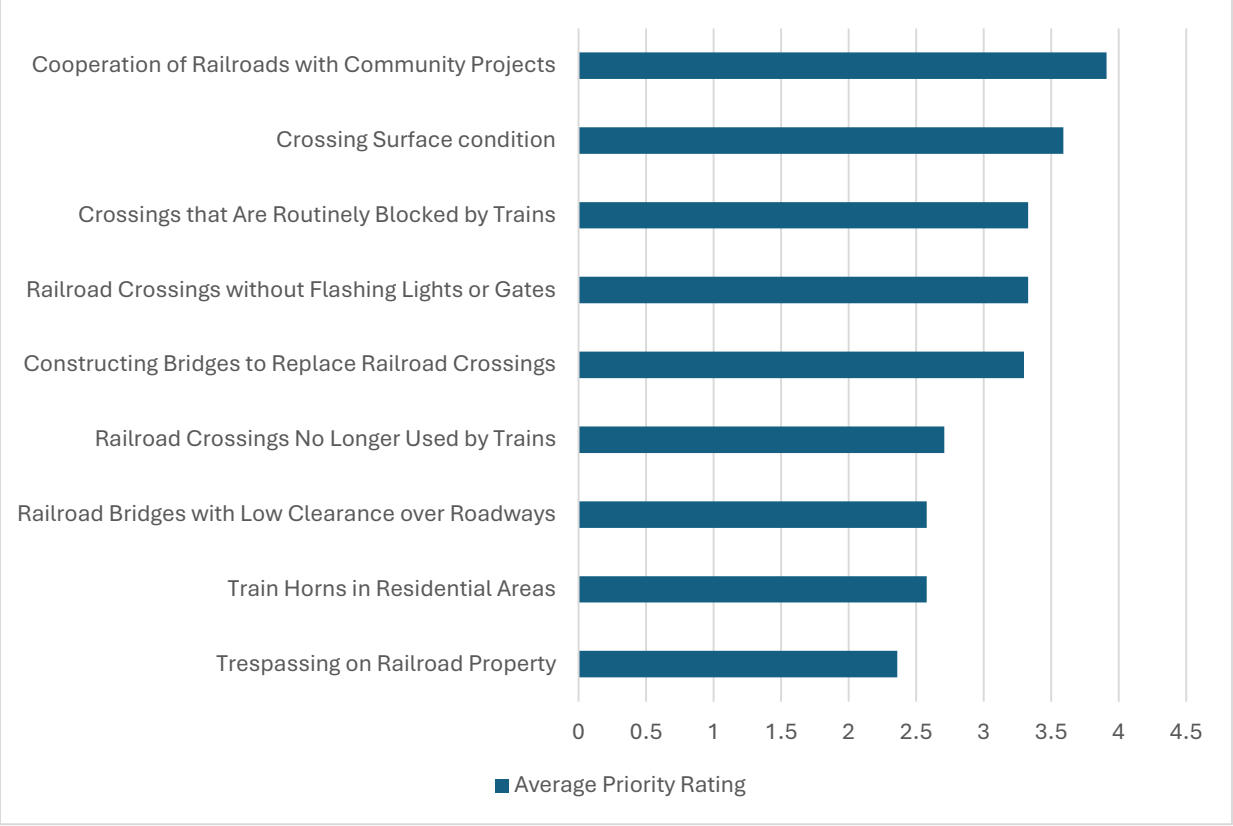
Rail in the Community Workshop

During a stakeholder workshop, participants discussed the issue of low rail overpasses blocking truck access to commercial and industrial areas. Improvements, such as lowering roadways under rail lines are frequently difficult to fund because these projects do not fit into funding categories consistent with funding programs.

Online Survey

Respondents to the public survey were concerned about a lack of railroad cooperation with communities through which railroads operate. Other top issues relate to highway-rail grade crossings, either the quality of crossing surfaces, crossings routinely blocked by trains, or crossings considered to have inadequate protection devices.

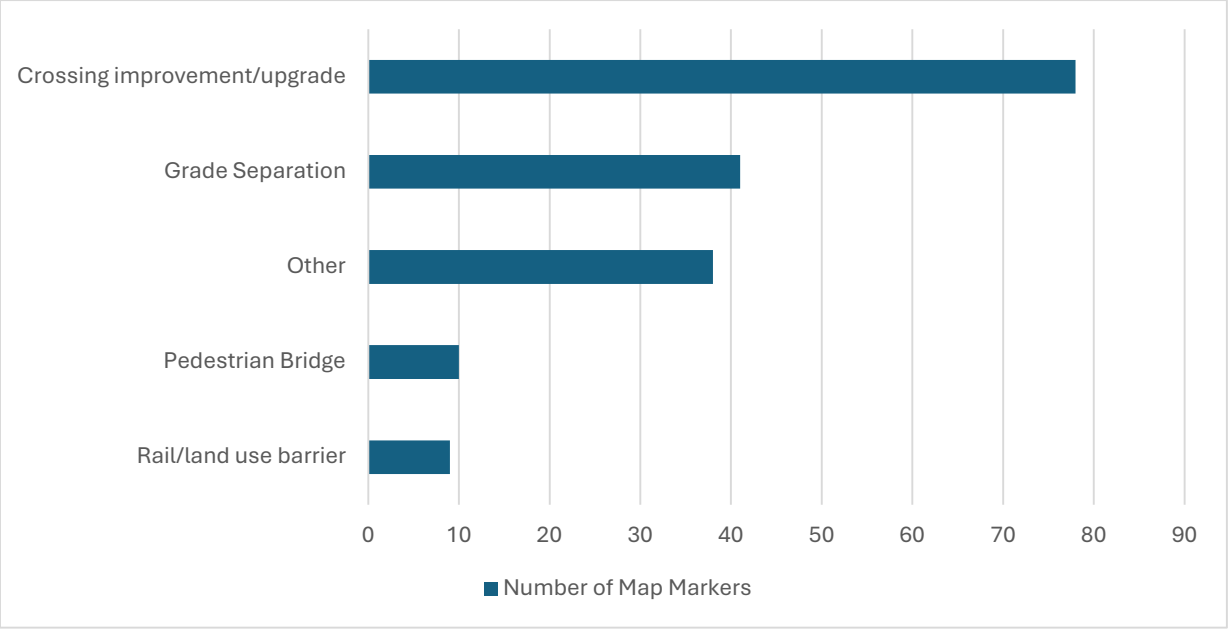
Figure 6-8. Rail Issues of Concern to Communities by Public Survey (5 = Highest, 1 = Lowest)



Source: Stakeholder Workshop

Participants in the online public survey were asked to identify locations on a digital map showing locations of recommended projects that would reduce conflicts between railroads and surrounding communities. A total of 176 projects were recommended, of which 78 were highway/rail grade crossing improvements, 41 were grade separations, ten were pedestrian crossings, and nine were land use or sound barriers, as shown in Figure 6-9. The "Other" improvements are a variety of measures, some of which were less projects than identified issues such as blocked crossings, unpleasant odors from trains hauling trash, unsightly abandoned rail lines, and train noise. Some comments expressed concern over trespassing and the usage of railroad property by unhoused people.

Figure 6-9. Map of Recommended Improvements to Reduce Conflicts between Railroads and Communities



Source: Online Survey

The location of recommendations and comments about rail in the community are displayed in Figure 6-10. As shown, these comments tend to cluster around Ohio's urban areas, such as Columbus and Toledo, and also along specific corridors.

Figure 6-10. Railroad-Community Conflicts Locations from Public Survey

Source: Online Survey

6.3.7 Publicly Identified Infrastructure Issues and Needs

As the owners of the rail network, railroads were invited to identify infrastructure needs in the railroad survey. In an online public survey, members of the general public were invited to opine on railroad infrastructure needs as well. The results of the online public survey cover both railroad bridges and track.

Online Survey - Bridges

A total of 39 locations of bridge issues were identified in the online survey, shown in Figure 6-11. Of the comments received 17% were bridge clearance concerns and are noted as blue circles on the map. The

second-highest number of comments were bridge condition-related with 12. The bridge condition comments were both structural and cosmetic with some highlighting crumbling concrete and others the appearance, for example paint fading on the bridge. The “other” category had 10 comments. The comments varied with notes about the need for a bridge to remove an at-grade crossing, increased capacity or bike lane at the location. One comment was in regard to an abandoned right of way, so that the marker is not on the existing rail network.

Figure 6-11. Rail Bridge Issue Locations from the Public Survey

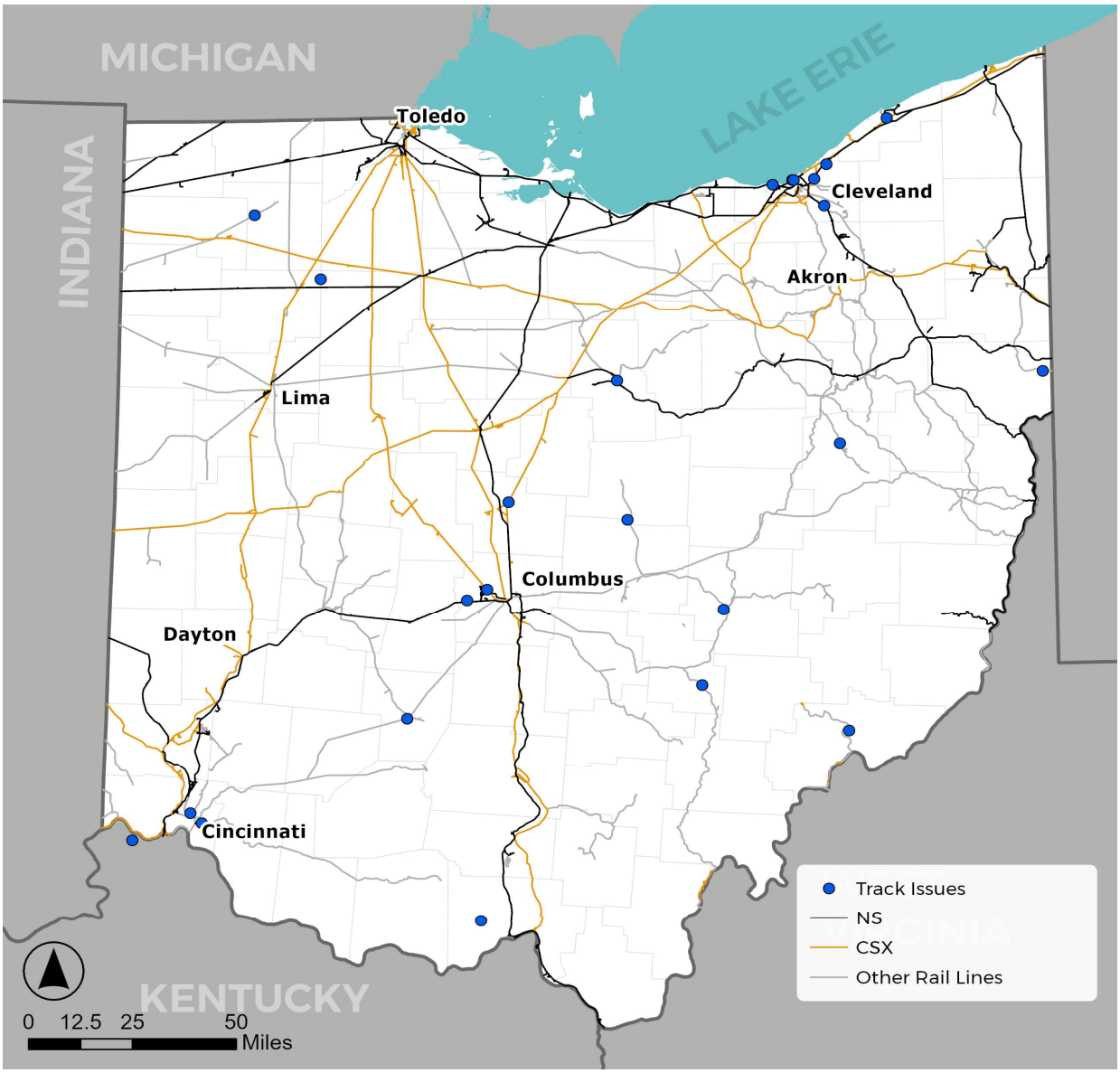
Source: Online Survey

Online Survey - Track

Twenty-five comments received from the public survey were recommended track improvements. As shown in Figure 6-12, the identified locations of track issues were both in urban and rural parts of the state, with many on short line railroads. Comments addressed a variety of subjects such as unmaintained highway/rail

grade crossings, tracks falling in disrepair, the need for new tracks to connect new areas to boost economic growth, and the need for quiet zones.

Figure 6-12. Track Issue Locations Public Survey



Source: Rail Plan Survey

6.4 Review of and Coordination with Other Planning Efforts

The Rail Plan is coordinated with regional planning efforts. All recent Ohio MPO Transportation Improvement Plans, Long Range Transportation Plans (LRTPs), freight plans, and rail feasibility studies were reviewed for relevant identified project needs. The Rail Plan provides input into the State Freight Plan (Transport Ohio) and the statewide multimodal long-range multimodal transportation plan (Access Ohio 2050), particularly given that the timing of the preparation of the Rail Plan and these other plans overlap. As the Rail Commission updates its vision, goals, and objectives, it will consider those of parallel planning efforts, particularly the overall transportation vision, goals, and objectives as articulated in Access Ohio 2050.