

Challenges

CURRENT CONDITIONS AND PERFORMANCE

The demand for freight services has greatly expanded due to shifts in the economy and rapid growth in international trade. On the positive side, Indiana has a trade surplus and is a basic producer of commodities. However, Indiana faces a major challenge in that demand is increasing faster than capacity, impacting all modes. Consequently, trucking is picking up most of the unmet demand for freight rail, creating greater burdens on the highway networks. Trucking firms are facing challenges in meeting the growing demand because of driver workforce shortages. Higher levels of truck traffic have implications on traffic congestion and on the durability of highways and bridges. Shifting more freight to other travel modes will have a positive impact on traffic congestion and required highway maintenance.

Highway System Performance

Travel demand modeling using the Indiana Statewide Travel Demand Model (which includes a sophisticated freight/commodity flow model) was conducted to identify freight bottlenecks and to generate highway freight performance measures. Modeled freight volumes from 2010 and 2035 are shown in Figure 18 and Figure 19 respectively. Network assumptions for the future include committed projects such as all of Major Moves, Ohio River Bridges, etc., so that benefits of those projects will be embedded in the baseline forecasts.

Highway freight performance is summarized for a base year 2010 (Figure 18) and 2035 (Figure 19).¹⁷ As expected,

¹⁷ Note: 2010 and 2035 reflect the data available for the current INDOT statewide travel demand model. The model is currently being updated, and more recent data are not available at time of publication.

Highlights

11,838 miles of INDOT-Owned Roads

- 89.1% in Excellent, Good, Satisfactory, or Fair condition
- 10.9% in Poor condition

5,717 INDOT Road Bridges

- INDOT bridges: 5,717
- 3.8% structurally deficient
- 9.2% functionally obsolete

major truck volumes occur in the Indianapolis metro area, as well as corridors between Indiana population centers and neighboring states. Each of the Interstates serve as key freight corridors for freight originating, terminating, and passing through the State. By 2035, freight traffic is also expected to increase substantially on state routes and U.S. Highways with growth along key freight corridors in the State.



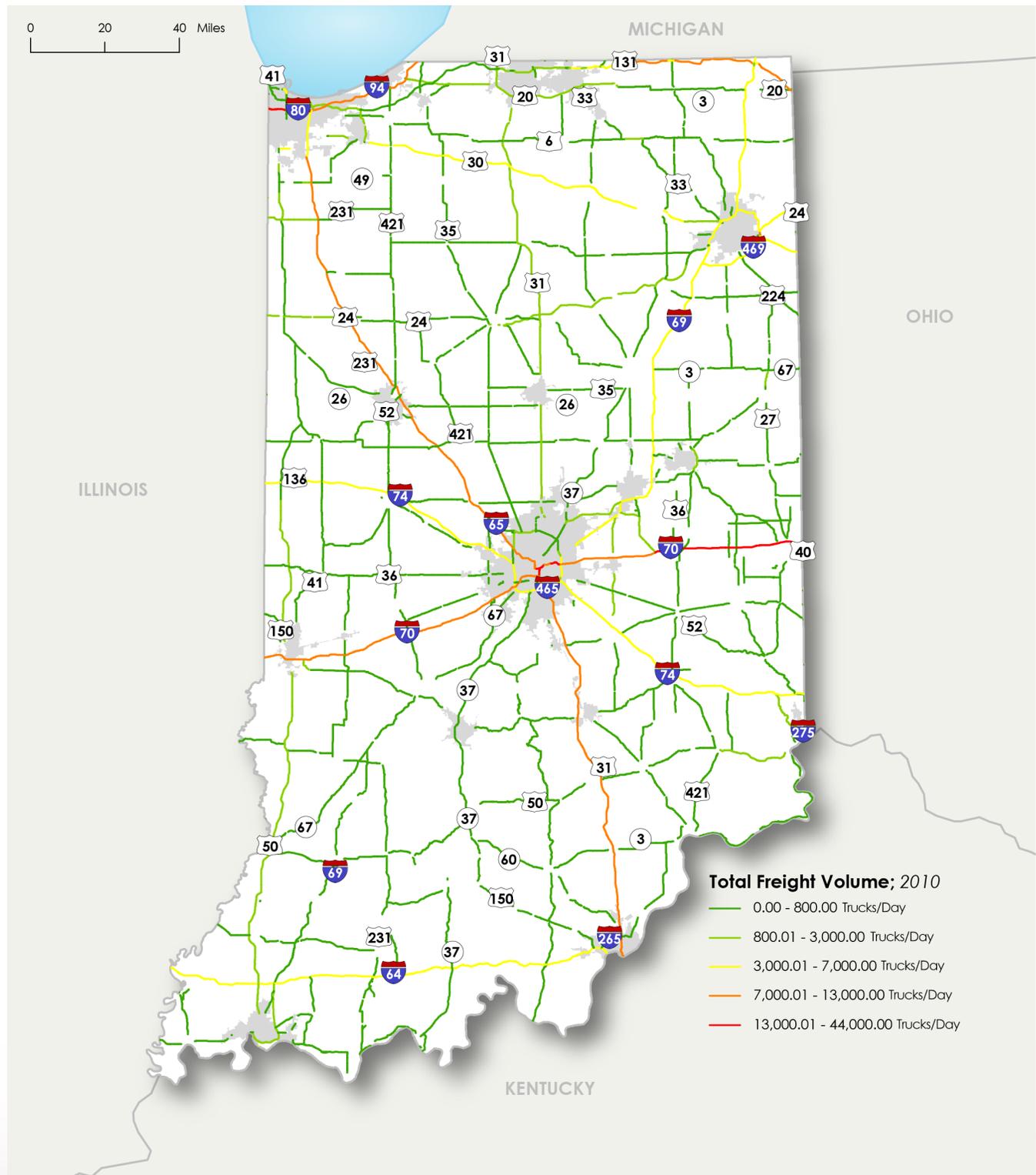


Figure 18. Daily Truck Traffic, 2010



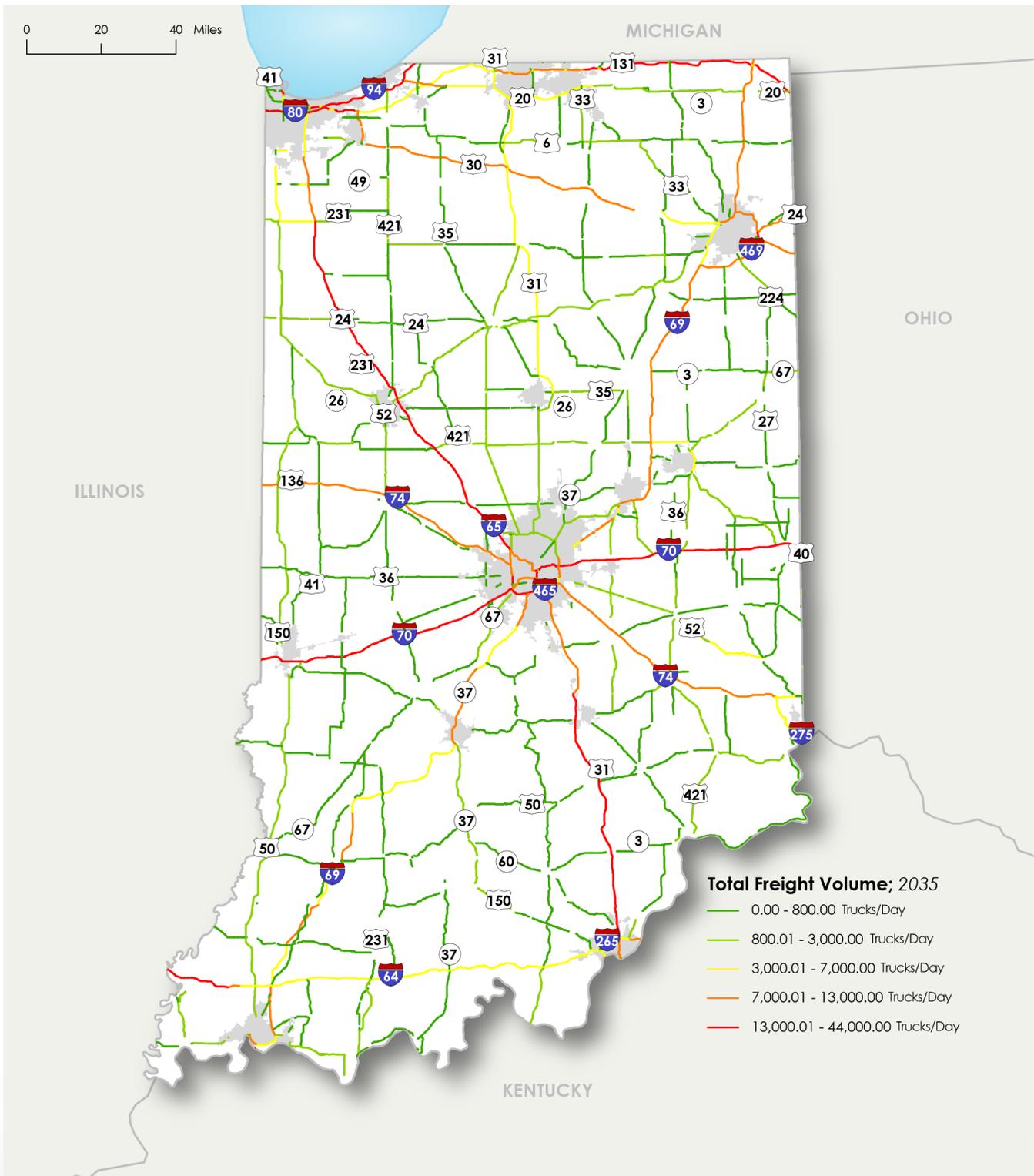


Figure 19. Projected Daily Truck Traffic, 2035



INDIANA HIGHWAY CONDITIONS AND ISSUES

Pavement and bridge conditions are a key indicator of the state of repair on the highway network. INDOT maintains a state of good repair on its roadways with excellent pavement condition on 88 percent of its roadways, 4 percent in satisfactory condition, and 8 percent in poor condition. Figure 20 shows the pavement conditions throughout the State. While most roadways are in fair or better condition, clusters of poor roadway conditions exist near ports and urbanized areas, as well as along some rural corridors.

The roadway bridges owned and maintained by INDOT are generally better prepared for freight demands compared to statewide bridge conditions. A structurally deficient bridge has elements that need to be monitored or repaired. This designation does not mean that the bridge is likely to collapse or is unsafe; however, identifying minor issues is important to monitor the health of Indiana's infrastructure. Four percent of INDOT's bridges are structurally deficient, compared to 8 percent of all bridges in the State. A functionally obsolete bridge is one that does not meet current design standards. For example, the bridge may have narrower lanes, lower clearance, or outdated flood management. Nine percent of INDOT's bridges are functionally obsolete, compared to 12 percent across the State.

INDOT is in the process of upgrading its oversize-overweight permitting system and will be examining the relationship between NHFN and NHS routes along with high-volume truck routes, including overweight truck routes, with bridge load rating restrictions. The current system does not track route information in a way that supports detailed load and route analysis. The new system will include a bridge loading review process, for example:

- All vehicles over 80,000lbs GVW will be evaluated for bridge impact, providing better infrastructure protection.
- Vehicles over 80,000lbs that meet axle weight limits will be analyzed using a custom automated tool that incorporates Indiana Bridge Rating Database (BRADIN) data to identify bridges where additional safety measures such as slow-downs are needed, and where an alternative route is needed.
- Vehicles with GVW 200,000lbs or greater will continue to be analyzed by an engineer.



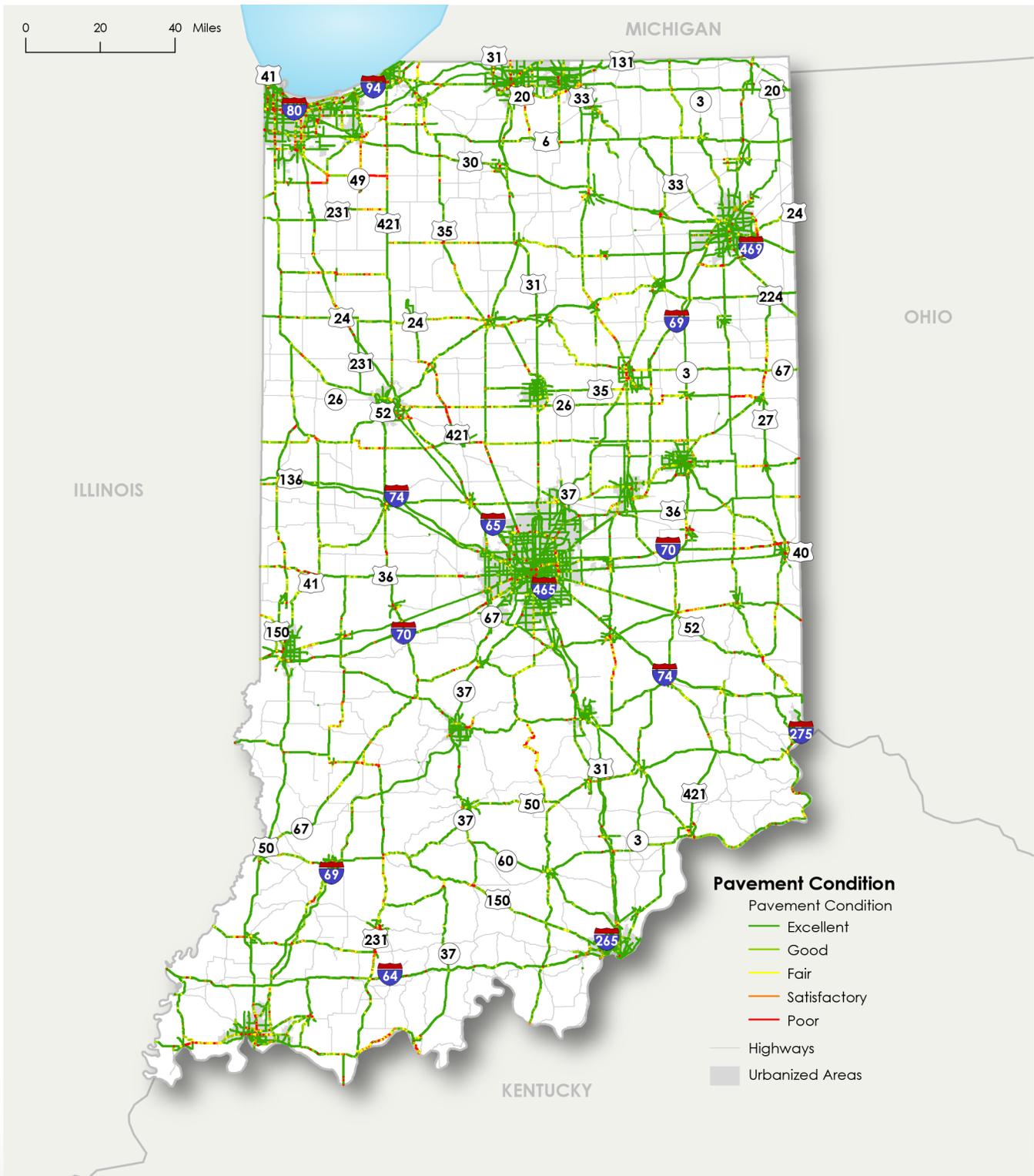


Figure 20. Indiana Pavement Conditions

Source: Federal Highway Administration, Highway Performance Management System, 2015.



Highway Bottlenecks

Generally, freight bottlenecks are a larger issue for Indiana than pavement and bridge condition. Highway freight bottlenecks are locations with constraints that cause a significant impact on freight mobility and reliability, such as recurring congestion, design limitations, or operating restrictions. Bottlenecks commonly occur at locations where the number of lanes is reduced, at interchanges, at on or off ramps, or on narrow segments. Delays specific to trucks may occur due to tight curves, steep grades, size or weight restrictions, or hazardous materials restrictions. Bottlenecks were identified in an iterative process, using both stakeholder input and data analysis. Speed deficit data analysis, comparing traffic speeds during morning and evening peaks against the free-flow speed, were used to validate bottleneck locations. Methodology and results of the speed deficit data analysis are in Appendix G. The resulting bottlenecks include interstates, U.S. highways, and state roads, as shown in Table 7.

Table 7. Key Highway Bottlenecks

ROAD	DISTRICT	COUNTIES	FROM	TO
I-465	Greenfield	Marion	71st St	86th St
I-465	Greenfield	Marion	Arlington Ave	Meridian St
I-465	Greenfield	Marion	Mann Road	I-70
I-465 (including I-865 modification)	Greenfield	Marion	86th St	US 31
I-64 EB	Seymour	Clark	SR 64	Ohio River
I-65	Crawfordsville	Boone, Clinton, Tippecanoe	SR 32	SR 38
I-65	Greenfield	Marion	I-65/70 N junction	Fall Creek
I-65	Greenfield	Marion	Fall Creek	38th Street
I-65	Seymour	Bartholomew, Shelby, Johnson	SR 58	SR 44
I-65 (including I-465 modification)	Greenfield	Marion	Thompson Road	Raymond St
I-65/70 S junction	Greenfield	Marion	Raymond St	Vermont St
I-69	Greenfield	Marion	I-465	
I-70	Greenfield	Hancock	Mount Comfort Rd	SR 9
I-70	Greenfield	Marion	I-65/70 N junction	I-465 east leg
I-70	Greenfield	Marion	Belmont Ave	Madison Ave
I-80/94	LaPorte	Lake	IL state line	I-65
SR 39	Crawfordsville	Hendricks	I-70	I-70
SR 49	LaPorte	Porter	I-80/90	I-94
SR 62/Lloyd Exp	Vincennes	Vanderburgh	Fulton Avenue	Posey Co line
SR 66/Lloyd Exp	Vincennes	Vanderburgh	U.S. 41	I-69
U.S. 20	Fort Wayne	Elkhart	SR 15	SR 13
U.S. 20	LaPorte	LaPorte	SR 2 west junction	I-94
U.S. 30	LaPorte and Fort Wayne	Porter, LaPorte, Starke, Marshall, Kosciusko, Whitley, Allen	SR 49	I-69
U.S. 30	LaPorte	Lake	IL State Line	U.S. 41
U.S. 30	LaPorte	LaPorte	SR 2 west junction	SR 49
U.S. 31	Seymour	Johnson	Main St	Israel Lane
U.S. 40	Crawfordsville	Hendricks	Ronald Reagan Pkwy	
U.S. 40	Crawfordsville	Vigo	U.S. 40/SR 46	
U.S. 41	LaPorte	Lake	I-80/94	I-90
U.S. 41	Vincennes	Vanderburgh	Ohio River Bridge	
U.S. 50	Seymour	Dearborn	SR 56	I-275

Oversize/Overweight Network

Size and weight restrictions exist to manage safety risk and infrastructure deterioration on the highway network. Realistically, some cargo cannot reasonably be divided into smaller loads, such as wind turbine blades or steel coils. Oversize or overweight freight may be specifically permitted or prohibited on certain corridors, limiting potential



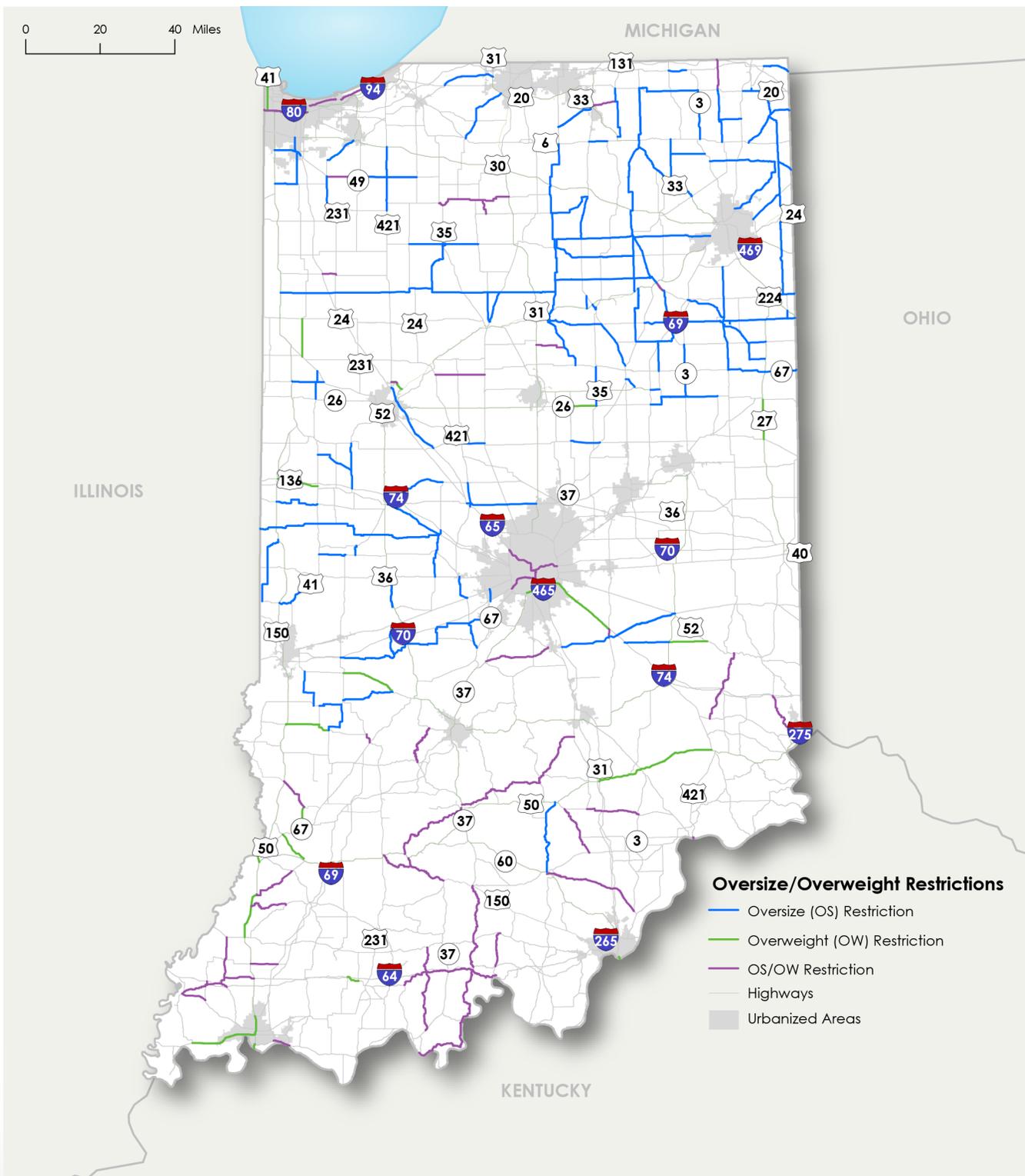


Figure 21. Permanent Oversize/Overweight Restrictions



delivery locations. Roadways with permanent restrictions are shown in Figure 21. Currently, these restrictions do not cause freight detours on the NHS, NHFN, or high-volume truck corridors. In addition, none of the permanent restrictions are caused by pavement conditions, while there are a limited number that are due to bridge load ratings. Restrictions are placed by the districts, who submit, score, and rank mobility projects. OSOW restrictions are one input to the decision-making process.

INDOT and local partners have identified an opportunity to build and designate a heavy haul corridor connecting River Ridge Commerce Center in Jeffersonville with the Port of Indiana in Jeffersonville. The \$22 million project will provide a direct link between the two locations and will allow oversized loads to access River Ridge. The heavy haul corridor will open the potential for further economic development, such as auto, steel, or appliance manufacturers moving into River Ridge, all of which would benefit from direct river access. The project is a collaborative effort funded by:

- INDOT.
- City of Jeffersonville.
- Clark County.
- River Ridge Development Authority.
- Port of Indiana-Jeffersonville.
- United States Department of Transportation TIGER Grant.

INDIANA RAILROAD ISSUES

Similar to other states in the U.S., the two primary freight railroad issues are: state of good repair and rail network access. In addition, safety is an overarching goal for railroads and public agencies alike. Indiana currently has 5,693 public railroad-at grade highway crossings (5th highest in the U.S.) and an active railroad grade crossing fund program, however, there were 119 public crossing incidents in 2014 and 106 in 2016. While the incidents have decreased, Indiana ranks third in the U.S. for public crossing incidents in 2016, behind Texas and California.

State of Good Repair

According to the 2017 Indiana State Rail Plan Update, a number of miles of track and bridges in the State cannot accommodate 286,000 pound railcars, the current standard maximum car weight. The plan states that, "Three hundred and forty-five miles of the Indiana rail network cannot accommodate these heavy railcars, which limits the efficiency and competitiveness of these rail lines. Either shippers on these lines must use smaller railcars or they must short-load their railcars. At least 120 bridges in Indiana cannot accommodate 286,000 pound railcars." Figure 22 displays 286,000 rail car capacity on Indiana's rail network.¹⁸

¹⁸ <http://www.in.gov/indot/2394.htm>.



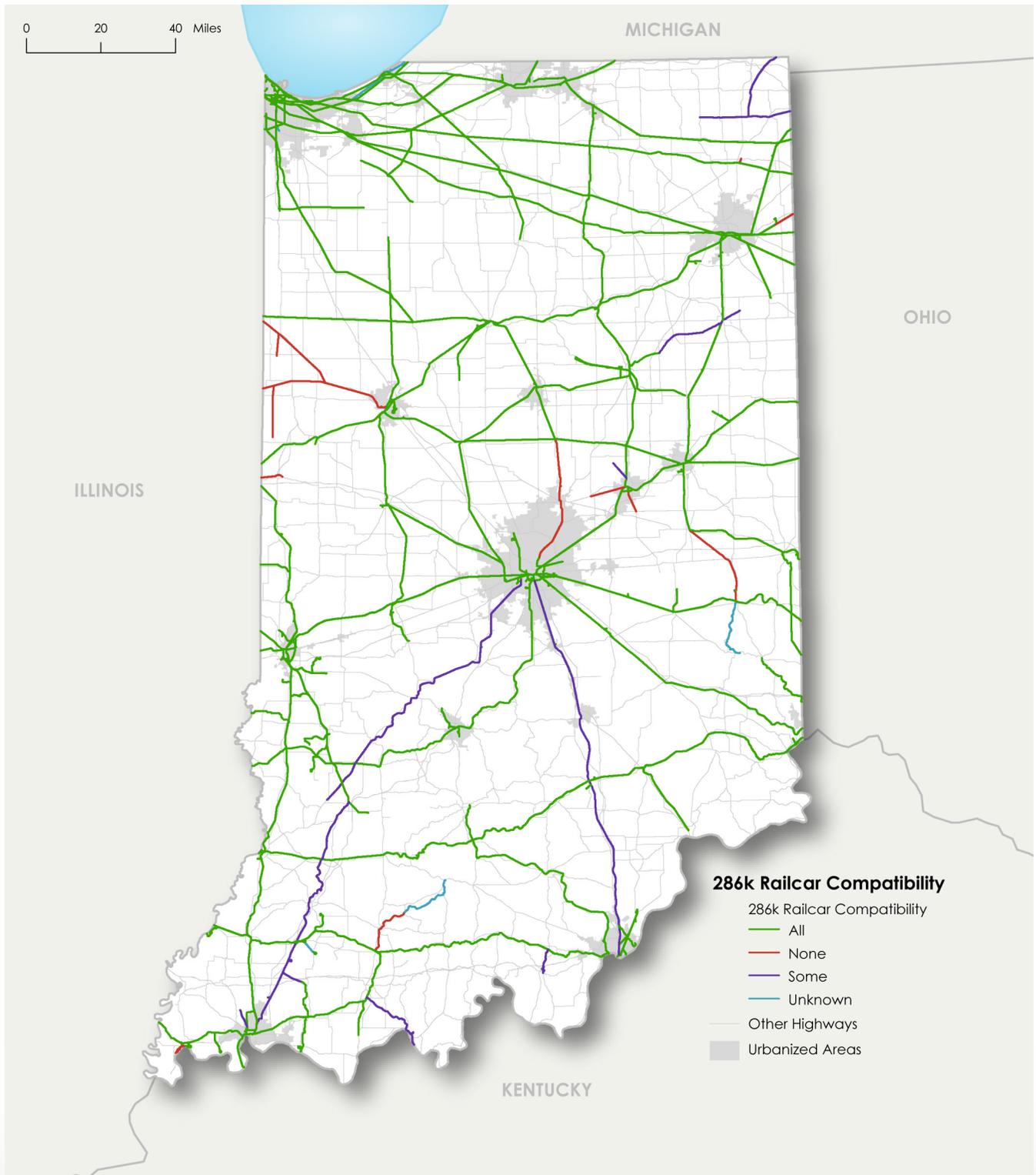


Figure 22. Rail Car Capacity

Source: <http://www.in.gov/indot/2394.htm>.



Rail Network Access

Rail network access refers to the ability of shippers and businesses to access rail services. The state rail plan notes this is typically accomplished through:

- Spur or siding connecting directly to the shipper's location.
- Shared spur or siding, such as into an industrial park.
- Intermodal terminals, which facilitate transfer of containers or trailers between truck and rail.
- Transload facilities (including team tracks) which facilitate transfer of non-containerized freight between truck and rail.
- Rail-served marine ports, which facilitate transfer between rail and maritime or truck modes.

The plan goes on to note that, "INDOT, the Indiana Economic Development Corporation (IEDC), Ports of Indiana (POI) and other organizations are continually seeking to improve rail access. Between 2012 and 2016, the IEDC invested about \$4.3 million in industrial access projects, either for spurs to individual businesses or for access to rail-served industrial parks. During the same period of time \$2.4 million of Industrial Rail Service Fund (IRSF) funds or 18 percent of the total IRSF funds available were similarly applied to industrial access improvement projects."¹⁹

INDIANA WATERWAY ISSUES

Maritime transportation faces many challenges on the Great Lakes and Inland Waterways System, including aging infrastructure, dredging requirements, inefficient multimodal connections, as well as disconnected systemwide planning and oversight.

While the ports themselves have ample capacity for expansion, access to the ports has been identified as an issue that may hinder future growth. Each port is served by only a single Class I railroad, and the Mount Vernon port in particular is also constrained by inadequate direct highway access.

Accessibility/Connectivity

Highway access to many of Indiana's port facilities were designated as NHS intermodal freight connectors. Terminals and ports along the Ohio River in southwest Indiana are accessible to I-275 via U.S. 50. Segments of U.S. 50 in this area currently range from Level of Service (LOS) A through D, while in the future some segments are expected to operate at LOS F. The ramp connecting I-275 with U.S. 50 and Belleview Avenue is estimated at LOS F currently.

SR 62 connects the Port of Indiana – Mount Vernon with SR 69. These facilities are expected to continue operating at LOS A through 2035.

Several local and private port facilities exist in Evansville, all of them linked by SR 62. SR 62 ranges from LOS A to F currently, with conditions expected to degrade on more segments in the future. Ray Becker Parkway is expected to remain at LOS A through 2035 as is an upgraded Fulton Avenue.

The Perry County Port Authority port facilities in Tell City are considered an intermodal facility of statewide significance. SR 66 and SR 37 range from LOS A to D now and in 2035, though most segments operate at LOS C.

Two Federal harbors, Buffington Harbor and Indiana Harbor, as well as the Port of Indiana – Burns Harbor, are located in the Chicago region, directly adjacent to the city of Chicago, and access roads and highways suffer

¹⁹ <http://www.in.gov/indot/2394.htm>.



from daily urban congestion. Cline Avenue, the main arterial adjacent to the two harbors, operates between LOS A and LOS D, depending on the segment. In 2035 some segments are expected to degrade to LOS B through E.

INDIANA AIR CARGO SYSTEM ISSUES

Indiana has more than 450 private-use airports and 115 public-use airports. Of the public-use airports, 69 are considered of statewide importance and are therefore included in the Indiana ISASP. The Indiana aviation system has been continuously developed over the years using Federal, state and local funds, and it provides statewide access for business, tourism and recreation.

At present, five primary (includes hub and non-hub) airports provide commercial passenger service. These include; Indianapolis International Airport, Fort Wayne-Allen County Airport, South Bend Airport, and Evansville Regional Airport.

Another seven airports serve as reliever airports to those larger commercial airports. The balance of the 69 airports covered by the ISASP is 57 general aviation airports.

Air Cargo Accessibility

Highway access roads to Indianapolis International Airport were designated as NHS intermodal freight connectors of national significance. The old Airport Expressway served as the main access point to the Indianapolis International Airport prior to the opening of the new passenger terminal in late 2008 and is still an active gateway to the FedEx freight operation at the airport. At that time, this roadway was operating at LOS A, and it is expected to continue to operate at an acceptable level of service into the future. The new primary passenger access point to the Indianapolis International Airport is located off of I-70 on the west side of the airport. U.S. 40 also connects Indianapolis International Airport with I-465. Several segments of U.S. 40 between I-465 and the Ronald Reagan Parkway have peak period congestion at LOS F. More segments of U.S. 40 near the airport are expected to become congested by 2035.

Fort Wayne International Airport is another cargo airport of national significance. It can be accessed from I-69 and I-469 via a variety of roads, including Indianapolis Road, Airport Expressway, and Bluffton Road. These roads, as well as the neighboring interstates, are expected to continue to operate at LOS A or B through 2035.

INDOT CUSTOMER FEEDBACK

As part of the planning process, an interactive map was distributed to MPOs throughout the state to gather comments regarding how the system is performing. A full list is included in Appendix B, while highlights are as follows:

- Development of industrial and logistics parks throughout the state is increasing the truck traffic on most interstates (and routes to/from) and several US highways. This is expected to increase, especially along I-65, I-70, US 30 and US 31.
- US 30 and US 31 experience high truck traffic volume and would benefit from treatments for free flow conversion.
- I-65 and I-70 experience frequent congestion statewide.
- I-465, I-65, and I-70 in and around Indianapolis experience significant recurring congestion during peak hours.
- Vertical bridge clearances remain an issue throughout the state, mostly on non-interstates.
- A number of frequently-used state and US highways run through cities and towns, causing traffic safety issues and physical clearance issues.



