

# RAIL

GRADE: D+



## Introduction

Indiana's rail system provides freight service via 5 Class I (line-haul freight railroads with operating revenues exceeding \$345 million, nationally), 3 regional, 20 local linehaul, and 13 switching and terminal railroads. Passengers are served by Amtrak's intercity trains and connecting bus service and by Northern Indiana Transportation District (NICTD) commuter rail.

Ranking fourth in the nation in terms of the number of railroads and ninth among states in total rail mileage, Indiana is the "cross-rails" of America. In 2007, more than 306 million tons of freight rolled over Indiana's rails—the ninth highest in the country. In 2008, nearly 125,000 intercity rail passengers were served by Amtrak, with stations in 11 cities, including Indianapolis, Lafayette, South Bend, and Waterloo. NICTD provided commuter service from South Bend to Chicago and points inbetween, and had 4.3 million passenger trips in 2007.

## Capacity

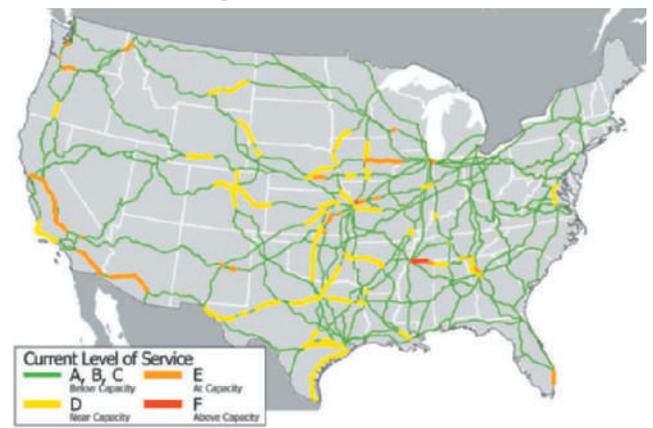
The *2007 National Rail Freight Infrastructure Capacity and Investment Study* estimated current (2007) and future (2035) levels of service (LOS) for the nation's freight rail system, utilizing a methodology similar to highway LOS.<sup>5</sup> LOS is a way to define the various levels of congestion transportation, ranging from LOS A to LOS F, indicating free-flowing to capacity or grid-lock conditions, respectively. As shown in Figure 1, most of the state's major rail corridors are operating with excess capacity, with only small segments in northwest Indiana operating at capacity (LOS E). The Indiana Rail Plan report determined that, without investment in capacity expansion, large portions of the primary rail corridors would deteriorate to LOS F by 2035 (Figure 2).<sup>1</sup>

The passenger rail system is primarily composed of Amtrak (Figure 3) and NICTD running between South Bend and Chicago near the northern boundary of the state (Figure 4). While Amtrak routes have significant residual capacity on most routes, NICTD trains are running consistently at or near capacity, which has been partially addressed with the scheduling of additional trains and the purchase of 14 double-decker passenger cars. NICTD is currently exploring the possibility of extending service in Lake and Porter counties through the West Lake Corridor New Start Studies—a planning, engineering, and environmental project designed to identify public transportation needs and transit solutions for Northwest Indiana.

## Condition

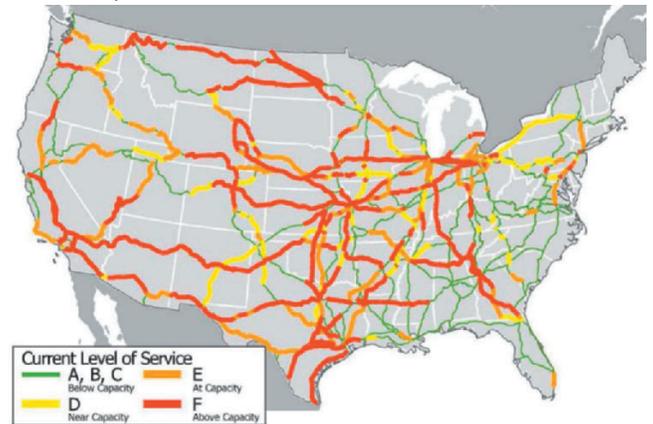
Freight railroads in Indiana are privately owned by the Class I railroads, which have recently been increasing investments in their infrastructure and spending as rail becomes more recognized as a viable solution to transportation energy and environmental issues. Rail is cost effective and is the safest method of transporting a broad spectrum

FIGURE 1: 2007 Freight Level of Service



SOURCE: National Rail Freight Infrastructure Capacity and Investment Study. Association of American Railroads, 2007.

FIGURE 2: 2035 Freight Rail Level of Service with no Expansion



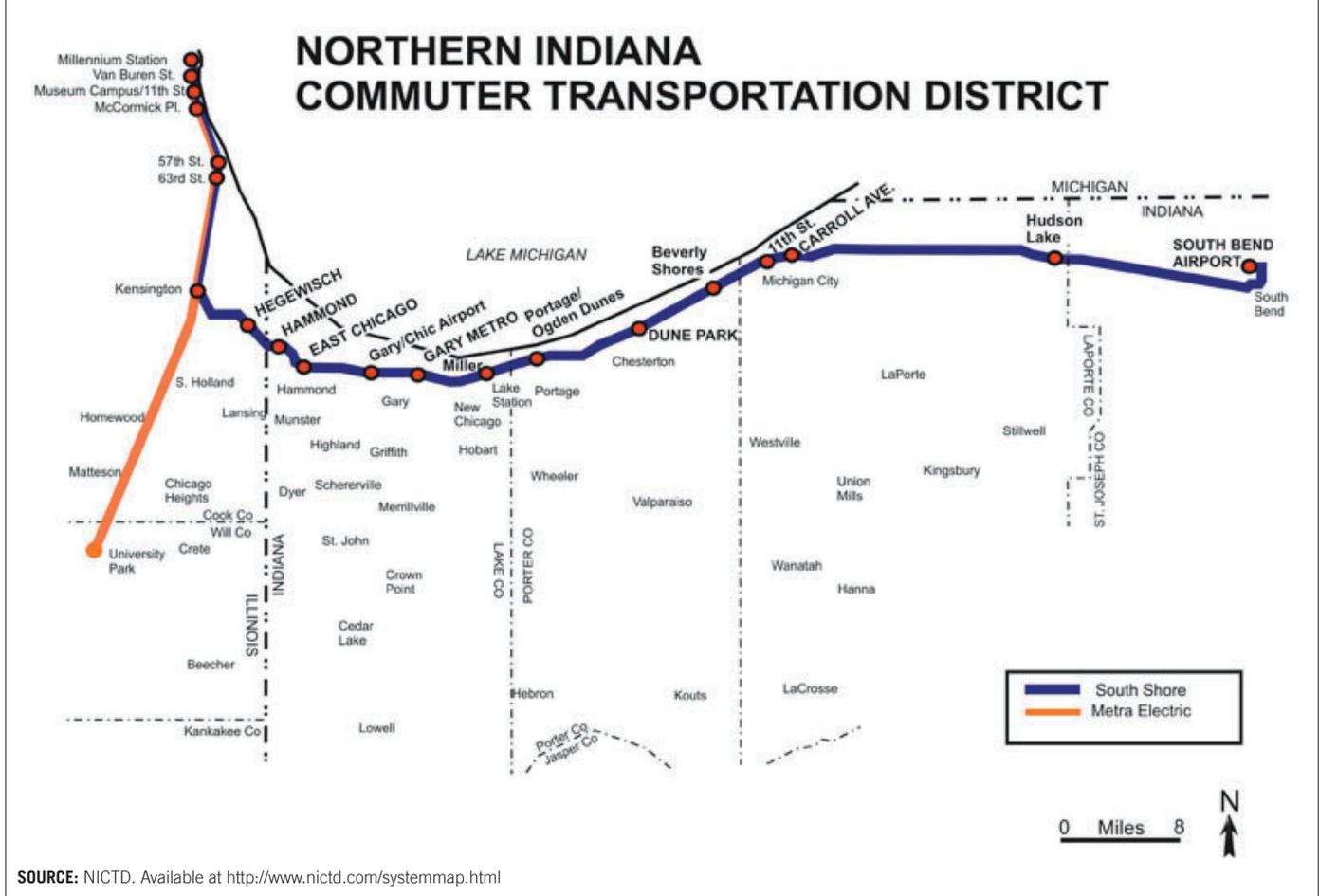
SOURCE: National Rail Freight Infrastructure Capacity and Investment Study. Association of American Railroads, 2007.

FIGURE 3: Amtrak Routes in Indiana



SOURCE: Amtrak Route Atlas, 2008.

FIGURE 4: NICTD Routes



of goods and commodities, including hazardous, raw industrial, and agricultural products and materials.

The table below shows classes of freight railroad with associated mileage, including trackage rights, and the numbers of companies operating in Indiana in 2008:

TYPE OF RAILROAD	MILES OPERATED	NUMBER OF COMPANIES
Class I (Line-Haul Freight) Railroads	3,532	5
Regional Railroads (Class II)	430	3
Local Line-Haul Railroads (Class III)	1,187	20
Local Switching and Terminal Railroads (Class III)	221	13

Passenger railroads generally operate on the freight railroad-owned lines via trackage agreements; this is the case for Amtrak, in Indiana. On the other hand, NICTD's electric-powered trains operate on their own tracks. The Indiana Department of Transportation (INDOT) is working to improve passenger rail by designating a high-speed rail corridor in the northern part of the state. INDOT is also working to increase mode choices by studying light rail and commuter rail transit options in the center of the state.

## Funding

The privately owned Class I railroads are generally able to finance capital improvements on their own systems. Meanwhile, the non-Class I railroads encounter difficulties in making the necessary capital investments to improve, expand, or at times to even maintain their infrastructure since they service shorter hauls and smaller, often rural communities that do not generate enough business to adequately support them.

INDOT's Railroad Section, one of the department's modal divisions, develops initiatives aimed at preserving and developing freight and passenger corridors throughout the state<sup>2</sup>. These initiatives include:

- Industrial Rail Service Fund – assists with rail infrastructure improvements and track rehabilitation for Indiana shortline railroads by investing more than \$12 million since 1999.
- Railroad Grade Crossing Fund – provides resources for railroad crossing safety improvements to local jurisdictions, counties, and Class II and III railroads. The fund is divided into two programs. The Crossing Closure Program and Other Safety Improvements

Program were funded in the amounts of \$300,000 and \$700,000, respectively, in FY2008.

- High-Speed Rail Corridor Designation – allows the application for specific high-speed rail grants through the Federal Railroad Administration to develop these routes

The *National Rail Freight Infrastructure Capacity and Investment Study* “estimates that an investment of \$148 billion (2007 dollars) for infrastructure expansion over the next 28 years is required to keep pace with economic growth and meet the U.S. DOT’s forecast demand.” An investment of \$135 billion by Class I railroads and \$13 billion by all other classes combined, is needed nationally<sup>5</sup>. Using a ratio of Indiana rail (4,446 miles) to total U.S. rail (140,695 miles) these figures translate to investments of \$5.0 billion and \$506 million for Indiana’s Class I and all other classes of railroads (\$4.3 billion and \$416 million 2007 dollars increased by five percent annually), respectively, by 2035.

Passenger railroads are funded by federal loans and grants, the state general funds, and revenue generated from system-related activities. Federal funding is the primary source of capital funds.<sup>13</sup> Improvements to the Amtrak system in Indiana, such as a better connection between Indianapolis and Chicago and a high-speed northern corridor, have been in discussion since at least 2000. Any improvements to the passenger corridor would also benefit the freight railroads and, therefore, be of economic benefit to the state.

## Future Needs

Future needs for the freight and passenger railroads involve a variety of in-state and out-of-state issues and constraints.

In-state issues and constraints involve rail corridor preservation and development; grade crossing safety; rail infrastructure improvements; and participation in a variety of planning initiatives, including intermodal and high-speed corridor designation, the Midwest Regional Passenger Rail Initiative (MRPRI) and Indy Connect—Central Indiana’s Transportation Initiative. “The Indiana Department of Transportation has contributed staff time and financial resources toward the MWRRI Study. The study is an ongoing effort to develop an expanded and improved passenger rail system in the Midwest, including three corridors proposed for Indiana: Chicago to Cleveland, Chicago to Detroit, and Chicago through Indianapolis to Cincinnati. This expanded operation would entail high-speed rail service (80-110 mph) with shorter travel times, increased frequency of service, accessibility, and reliability. Other participating states are Illinois, Iowa, Michigan, Minnesota, Missouri, Ohio, Nebraska, and Wisconsin.”<sup>2</sup> The Indy-Connect initiative is a comprehensive, multi-modal, public transportation plan for central Indiana. Ultimately, the

plan is to connect bus, light rail, commuter rail, highway, and bike/pedestrian facilities to provide efficient transportation options for greater Indianapolis and surrounds.

Out-of-state issues involve restrictions and impacts on Indiana’s system by those in surrounding states. According to the *Indiana Rail Plan*, “The capacity and efficiency of the Chicago rail network has significant implications for freight transportation in Indiana. Its continued vitality would signal major growth in shipments radiating to and from that region. Conversely, continued degradation of railroad LOS around Chicago would likely result in a diversion of shipments between Indiana and points west to other modes or other routes.” The Chicago Region Environmental and Transportation Efficiency (CREATE) Program is a partnership among the City of Chicago, the State of Illinois, six Class 1 railroads, Amtrak, and Metra (Chicago’s commuter railroad) to improve the current efficiency and



future capacity of the rail network in and around the City of Chicago. The CREATE program is of national significance, “since nearly one-third of all rail shipments in the United States pass through the project area.” Remedies for the Chicago capacity and efficiency issues include a total of 78 projects, including road-rail grade separations; rail-rail grade separations; and numerous viaduct, grade-crossing, switching, track, and signal improvements worth \$1.5 billion. Additionally, bottlenecks and clearance issues in surrounding states are of importance to freight transportations in Indiana. Ohio released the *Ohio Freight Rail Choke Point Study*, which analyzed out-of-state impacts on their rail system and found three significant choke points on a major north-south rail line that passes through Indiana, providing a crucial link in the Cincinnati-Chicago corridor and requiring approximately \$32 million to remedy.<sup>1</sup>

## Operation and Maintenance

As in much of the nation, freight railroads in Indiana own and maintain the tracks and signal systems not only for their own use but also for use by other freight and passenger railroads through trackage agreements. The

freight railroads have several maintenance facilities and yards throughout the state. Amtrak has a large maintenance facility in Beech Grove, near Indianapolis, which repairs, maintains, and overhauls cars and locomotives used throughout the entire Amtrak system.

As previously mentioned under the Capacity section, most of the major rail corridors, not including the northwest and Muncie locations, are currently operating below capacity. However, as the demand for freight rail service continues to increase and passenger rail attracts more riders, the state-wide system is expected to exceed capacity by 2035 without significant investment in facility improvements and expansion.

For the passenger system, the most significant operations improvement would be the reduction of travel time in order to be more competitive with other modes of transportation throughout the state. An increase in passenger rail will place significant demands on the freight railroads since most passenger railroads travel over existing freight lines. Although both ridership and the use of freight rail is expected to increase, the previous level of service discussions regarding freight railroads did not take into consideration an increase in passenger rail traffic. As such increases occur, passenger railroads will be competing with freight rail for track time, especially in the state's northwest corridors. Station access would also become an issue, potentially causing a need for additional lines and the rerouting and/or separation of the two modes, at least in Indianapolis.

## Public Safety

The Federal Railroad Administration (FRA) maintains records of all railroad-related accidents and incidents and a separate highway-railroad grade crossing database. The



Indiana data shows a steady decline in all railroad-related incidents, from 439 in 2005 to 368 in 2006—the lowest since 1975 (the first year for which FRA data is available).<sup>1</sup>

Most of the general public's interaction with railroads occurs at grade crossings, and the safety of highway-railroad grade crossings are therefore of substantial concern to the railroads. There were 141 highway-railroad grade crossing accidents in 2008 in Indiana. According to the *State Transportation Statistics 2009*,<sup>14</sup> published by the Bureau of Transportation Statistics of the FHWA, there are 7,955 grade crossings in the state of Indiana, and according to INDOT, more than half of them have active



warning devices, which is higher than the national average. However, on a national level, Indiana is fifth in the number of grade crossings and third in terms of accident rates (total number of accidents divided by the total number of crossings). The Federal Grade-Crossing Program funding enables safety improvements at 30 to 35 Indiana crossings per year.<sup>1</sup> While these improvements in crossing protection and crossing closures, along with an active public relations campaign, are continuously contributing to the reduction of highway-rail crossing accidents, considerably more work and funding are needed.

## Resilience

Rail, similar to air and water transportation, relies on other modes of transportation for its freight and passengers to access it. Interdependencies outside the state's boundaries also affect the rail system within the state as potential bottlenecks, and differing levels of service in adjacent states particularly impact Class I railroads. Therefore, while railroads offer efficiency and reduced energy consumption and are an important component of the state's transportation infrastructure, their dependence on other modes of transportation and energy supplies and their limited redundancy makes them not resilient.

Resilience also includes a security component. Since the events of 9/11, the security of the nation's infrastructure has come under closer scrutiny. Threats that may not have been previously considered are now routinely taken into account. The lack of redundancy in rail lines, due to their inherent nature and cost, impacts the security and thereby limits the railroads' resiliency.

## Conclusions and Recommendations

The rail industry is currently in the limelight as the transportation of goods and people is increasing in popularity due to the direct alleviation of congestion and increased fuel economy it offers. Following are select “Rail Fast Facts” from the American Association of Railroads:<sup>4</sup>

- Each freight rail job supports 4.5 jobs elsewhere in the economy. Each \$1 billion in new rail investment creates 20,000 jobs.



- In 2008, America’s railroads moved one ton of freight 457 miles on one gallon of fuel, making railroads, on average, four times more fuel efficient than trucks.
- One train can carry the load of 280 or more trucks. In 2008, 284.9 million tons of freight originated, terminated, or passed through Indiana by rail, a load which would have required 15.8 million trucks to handle. Moving freight by rail, instead of truck, reduces greenhouse gas emissions by 75 percent.

Given Indiana’s status as ninth in the nation for moving rail freight, combined with the projected increases and already heavily-traveled northern corridors, it is recommended the State increase its involvement in all aspects of planning and expanding the rail system, from becoming a “Freight Technical Lead”—which coordinates freight planning among various DOTs—to conducting effective outreach to stakeholders, linking freight and transportation planning and programming, and advocating for freight planning.<sup>1</sup>

As recommended by AASHTO’s Strategic Highway Safety Plan Operation Lifesaver, a highway-rail crossing safety awareness and education program should be continued, and 80 highway-rail crossings per year should be improved via the Highway-Rail Hazard Elimination program, as opposed to the 30-35 crossings per year currently being addressed by INDOT.<sup>15</sup>

The overall grade assigned to Indiana’s rail infrastructure is a “D+”, reflecting a grade slightly lower than the C- assigned to the nation’s rail system in *ASCE’s 2009 Report Card for America’s Infrastructure*. The condition of Indiana’s rail system closely parallels the national picture, but with lower grade crossing safety and significant residual capacity.

Our highways continue to become more congested with cars and trucks, while at the same time the demand for sustainable infrastructure continues to grow. The appeal of rail transport increases, and so should the political, financial, and public support for it.

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