Introduction

Illinois’s rail network contains one of the most important rail hubs in the country. Modernization of this hub began in 2003 as a multi-year campaign of 70 projects by the U.S. DOT, the State of Illinois, City of Chicago, Metra, Amtrak, and the nation's freight railroads with the mission to unclog the rail lines into and out of Chicago. The Chicago Region Environmental and Transportation Efficiency (CREATE) program has been successful at reducing travel times through Chicago and Northeastern Illinois. However, Illinois’ railroads are also experiencing a competitive resurgence as both an energy-efficient freight transportation option and a viable city-to-city passenger transportation service. In 2013, Amtrak recorded its highest year of ridership ever with 31.6 million passengers. It is the tenth ridership record in 11 years. In Illinois, Amtrak recorded ridership of 6.4 million passengers in 2013. Ridership in Illinois has increased 85 percent between 2006 and 2011.

The Illinois rail network is the 2nd largest in the country, and Chicago is the single largest rail hub in the nation. The Illinois rail network is shown as Figure 1. Every day 500 freight trains with 37,500 cars and 700 passenger and commuter lines pass through Chicago. Forty-one railroads provide service from Illinois to every part of the nation, and nearly one quarter of the nation’s rail-shipped goods and services move through the city.
Chicago is the Midwest hub for Amtrak and serves as the transfer point for 10 regional and transcontinental routes as shown in Figure 2. In addition, Illinois provides supplemental funding for 28 daily stops between Chicago and St. Louis, Milwaukee, Quincy, and Carbondale. Amtrak services to Rockford and Moline will begin in 2014 and 2015 respectively.

![Figure 2. Midwest Regional Rail Initiative](image)

In partnership with the Bloomington/Normal region, the Peoria region—which is the largest urbanized area in Illinois without a commitment for passenger rail service—recently completed a detailed feasibility study focused on commuter rail within Central Illinois. Ridership projections are encouraging, but additional funding is necessary to complete a detailed corridor analysis.

Chicago’s status as the single largest rail hub in the country has a positive impact on the state’s economy. Rail freight volume is expected to double by 2025, which will cause additional rail congestion and traffic-related delays in the Chicago area unless continued investments are made to reduce these inconveniences and potential impediments to continued economic growth.

Congestion on the state’s rail system costs millions of dollars in shipping delays and substantial noise and air pollution as trains idle for hours waiting for track clearance. With freight traffic expected to double in the next 20 years, these problems will only worsen.
Conditions and Capacity

For over 150 years, rail transportation has been the centerpiece of American industrial production and energy generation. Railways have been instrumental in the development of the Illinois economy, allowing farm produce, mineral ore, and coal to be transported with ease.

When it comes to rail traffic, Chicago is America’s speed bump. Shippers complain that a load of freight can make its way from Los Angeles to Chicago in 48 hours, and then take 24 hours to travel across the city. A recent trainload of sulfur took some 27 hours to pass through Chicago — an average speed of 1.13 miles per hour, or about a quarter the pace of many electric wheelchairs.

Regarding rail capacity, Illinois ranks fourth highest in the number of operating railroads, with a total of 45 operating railroads which are comprised of seven (7) Class I railroads, three (3) regional railroads, twenty-six (26) short line railroads, and nine (9) terminal carriers. The rail network ranks second among all states in total railroad track mileage. Illinois is the home of the City of Chicago, which is the hub of the nation's rail system, boasting the largest intermodal system in the nation and the third largest in the world. This network offers an efficient means of freight distribution and provides direct connections to coasts, as well as Canada and Mexico.

Projected increases in rail freight will require additional rail system capacity and fluidity to provide the levels of service necessary to retain Illinois’ position as the nation's rail hub and provide its businesses and citizens with reliable, efficient, and safe rail service. The additional rail system capacity could focus on Class I Mainline Corridors, Regional and Shortline railroad corridors, and constraints in metropolitan areas. Additional rail system capacity will also benefit the passenger rail system because they operate on the freight systems via trackage rights.

The Chicago Region Environmental And Transportation Efficiency (CREATE) program is a first-of-its-kind partnership between U.S. DOT, the State of Illinois, City of Chicago, METRA, Amtrak, and the nation's freight railroads. A project of national significance, CREATE has invested in several critical improvements to increase the efficiency of the region's passenger and freight rail infrastructure. Also, the State of Illinois is investing in upgrades to the Chicago–St. Louis corridor to reduce travel time, increase service reliability, and enhance safety. The state is also investing in two (2) additional Amtrak start-up services between Chicago and Moline, IL and Chicago and Rockford.

Metra is the commuter rail provider serving the Chicago metropolitan area. According to data by the American Public Transportation Association (APTA), Metra has the second highest average weekday ridership of any commuter rail system within the United States behind the Long Island Rail Road. Chicago’s Union Station is the fourth busiest Amtrak station behind New York Penn Station, Washington Union Station, and Philadelphia 30th Street Station.

The conditions of the railroads in the state are safe and reliable and continue to provide around the clock service for business, products and commuters on a daily basis. However, in several areas there are needs for improved conditions. Rail conditions can be improved by reducing bottlenecks, upgrading components for operations and separating conflicting modes of transportation. The most notable is in the City of Chicago, where current conditions cause significant delay to users across the board.
Operations and Maintenance

Freight railroads in Illinois are generally responsible for the operation and maintenance of track and signal systems for freight and passenger services (Amtrak and METRA) through trackage agreements. Private railroads perform regular maintenance and invest in capital improvements to keep the rail infrastructure in serviceable condition. Their capital investments include ballast, track, bridge, signal, and drainage improvements. Overall, Class I railroads invest approximately 14 percent of their annual spending on maintaining infrastructure and equipment. Unlike other modes of transportation, railroads own the property and infrastructure over which they operate. This private network requires continuous investment to maintain to desirable operating standards and regulations.

Seven (7) Class I railroads operate within Illinois and are responsible for approximately 80 percent of the track in the state and account for approximately 7,044 total route miles. These seven railroads consist of the larger carriers and includes the BNSF Railway, CN Railway, CP Railway System, CSX Transportation, Kansas City Southern, NS Corporation, and UP Railroad. The remaining track in Illinois is owned and operated by Metra, Amtrak, regional railroads, short-lines, and small switching, terminal railroads.

Public Safety

The most significant public safety concern is highway/railroad at-grade crossings. There are nearly 7,800 public at-grade crossings in Illinois with nearly 790 at-grade crossings in Cook County, the highest populated county in the State.

The Illinois Commerce Commission (ICC) and the Illinois Department of Transportation (IDOT) invest in the installation of improved safety warning devices for trains, pedestrians and vehicles at locations throughout Illinois. IDOT also undertakes studies to determine if certain at-grade crossings may be eliminated entirely. The Grade Crossing Protection Fund helps pay for following type of projects:

- Warning device upgrades
- New and improved grade separations
- Vertical clearance improvements for grade separations
- Pedestrian grade separations
- Signal interconnects
- Crossing surface renewals

The ICC is also involved in the national Operation Lifesaver safety program. Operation Lifesaver relies on a combined approach of public education, enforcement, and engineering to decrease the number and severity of pedestrian and vehicle accidents at railroad crossings.

In Illinois the efforts to improve railroad grade crossing safety is working. Over the last ten years there has been a 35 percent decrease in the number of collisions at public at-grade railroad crossings. A consistent and increasing funding stream can help to assure that this positive safety trend continues.
Freight Rail

Illinois ranks at or near the top according to nearly all available metrics by the Association of American Railroads (AAR) regarding the size and extent of its rail industry. In 2010, the Illinois rail system was ranked as follows:

- First in carloads carried with nearly 11 million
- First in carloads terminated with 3.7 million, and second in carloads originated with 3.4 million
- Second in tons originated with 109.5 million and second in tons terminated with 157.8 million
- Second in miles of railroad track with 7,044 miles
- Third in tons carried with 481.6 million tons

These rankings demonstrate that Illinois carries a majority of the freight carloads and also generates and receives a significant amount of freight. These metrics result in many of the necessary capital improvement projects necessary in Illinois to improve deteriorating conditions and control delay. Most railroads in the state are privately owned, Class I railroads are able to finance capital improvements on their own systems. These capital improvements are for maintaining the condition of its track and right-of-way, as well as railroad bridges and tunnels. However, many Regional and Shortline railroad operators only maintain their segments to the most efficient level of operation, and high fixed costs and the addition of new regulations can force operators to discontinue service.

As noted above, Illinois ranks third among all states in terms of ton’s carried with 481.6 million tons. A majority of these freight movements will be related to interstate inbound and outbound, intrastate and through freight traffic types. Interstate traffic is defined as traffic between states and intrastate traffic is within the state. This prediction anticipates slow growth in the coming decade, with a majority of the growth occurring thereafter.

Passenger Rail

Passenger rail service providers carry over 87 million passengers per year within Illinois. In Illinois, Amtrak operates eight (8) long-distance routes and four (4) corridor services. Additionally, Illinois supports operation of three (3) in-state routes and jointly supports the Chicago-Milwaukee Hiawatha service with the State of Wisconsin. Along with Amtrak, Illinois is home to METRA, which has the second highest average weekday ridership of any commuter rail system within the United States. The METRA system is comprised of eleven (11) separate lines radiating out from Chicago's Loop, and serves more than one-hundred (100) communities at two hundred forty-one (241) rail stations.

Investment and Funding

Both freight rail companies and passenger rail, through government agencies, have been investing heavily in their tracks, bridges, and tunnels as well as adding new capacity for freight and passengers. It is estimated that the Class I railroads have made nearly $3 Billion in investments over the last 4 years in Illinois. Since 2010, the State of Illinois has invested over $800M in freight and passenger rail improvements. This is in addition to the $1.5B investment by the Federal Government in passenger rail improvements and $0.5B investment in the CREATE project.
Future Needs

By most measures, Illinois is the busiest railroad state in the nation. This dominance is expected to continue. It is forecasted that over the next 30 years, rail freight shipments from Illinois going out-of-state are expected to grow by 30 percent, freight shipments just passing through Illinois are predicted to grow by 25 percent over the same period, inbound (into Illinois) rail freight shipments are expected to grow by 4 percent and intrastate freight traffic is expected to grow by over 9 percent.

Substantial investments to the railroad infrastructure in Illinois will need to be made to accommodate the growth in freight rail traffic. Illinois divides its list of future rail investments into lists of short-term, happening in the next 5 years, and long-term capital projects, occurring in the next 6 to 20 years. The combined total of the short-term projects is $3 Billion, not counting grade crossing projects (which improve highway traffic). The combined total of the longer term projects is $17.5 Billion, not including the costs for the remaining CREATE projects.

If the current level of funding is projected into the future and compared to the listed short-term and long term projects, it is clear that there are insufficient funds available. A prominent example is the previously mentioned CREATE program. Nineteen more grade separation structures are planned for the CREATE program, however, the funding does not exist to construct those projects. Of the original $3.2 Billion required for the program only $1.2 Billion has materialized. Funding to complete the full CREATE program does not yet exist.

Conclusion

The State of Illinois has made significant investments in rail infrastructure to complement investments by the Federal Government and freight railroads. The rail infrastructure improvements from the combined investments have resulted in the ASCE grade increasing from a D in 2010 to a C in 2014.

Recommendations

In an effort to sustain the gains made since 2010, the American Society of Civil Engineers (ASCE) Illinois Sections makes the following recommendations:

- **Integrate rail into a State multimodal transportation policy** that recognizes and takes advantage of efficiencies in the movement of people and goods
- **Improve passenger rail in dense urban corridor markets** and as an alternative to air and automobile travel for intercity markets
- **Increase and expand passenger rail commuter services** in urban areas and intercity passenger services linking major cities
- **Support a regulatory and financial environment** that encourages continued private investment in the state freight railroad system.
- **Capitalize on Strong Public Support to Develop Policies that Focus on Bringing the System into a State of Good Repair**: After several years in which passenger traffic was hurt by recession, a sense of momentum has been restored to the transit system. Public support for investment is strong, which suggests that the public would support policies to ensure that the transit system remains in a state of good repair once the system is returned to this state.
- **Evaluate and Build Stakeholder Awareness of the Backlog of Capital Projects**: The condition of the transit system has deteriorated due to chronic underfunding and a recent downturn in capital investment. Findings released this past September suggest that capital needs are roughly 20 percent greater than just two years ago. As another crisis in transit funding looms, agencies can do
more to educate policymakers about the risks of underinvestment and explore how funding would be channeled to deal with the deterioration of the system. The recent devastation of transit along the East Coast, attributable to Hurricane Sandy, demonstrates the need to have contingency planning for aging systems that are costly to repair.

- **Develop a Predictable Funding Stream for Capital Investment over a Multi-Year Period**: The evidence suggests the level of support needed to avoid further deterioration of the system and replace obsolete assets is significant.

**Sources**


