Section 2

PURPOSE AND NEED FOR ACTION

2.0 Purpose and Need for Action

This chapter describes the purpose and need for improved high speed passenger rail on the Chicago to St. Louis HSR Corridor. In addition, this chapter describes the proposals and provides information on its history, previous and current rail studies along the corridor, and existing and future corridor conditions. Finally, this chapter identifies major authorizing laws and regulations; discusses the relationship of the proposal to statutes, regulations, policies, programs, and plans; and lists federal permits, licenses, and other requirements for program implementation. An overview map of the proposed program is shown on Exhibit 2.0-1.

2.1 Background

2.1.1 History

For more than two decades, IDOT has pursued improvements to passenger rail service between Chicago and St. Louis. The Chicago to St. Louis HSR Corridor is part of the Midwest Regional Rail Initiative program's intent to develop and implement a 21st-century regional passenger rail system.

2.1.1.1 *Previous Studies*

High-speed rail in the Chicago to St. Louis corridor was first studied in 1979, when a system consisting of a 150 mph, electrified, double tracked network on a new alignment was evaluated. At the end of the study, it was concluded that the potential cost of new alignment high-speed rail service was unaffordable, and that efforts should be concentrated on improving existing passenger train service along existing alignments.

In 1992, the Secretary of the U.S. Department of Transportation designated the Chicago to St. Louis line part of the "Chicago Hub Network" high-speed rail corridor. That same year, IDOT, in cooperation with Amtrak, initiated a feasibility study of high-speed rail passenger service in order to develop a blueprint for implementation of high-speed rail service in the Chicago to St. Louis corridor. During the feasibility study, different alternatives were evaluated using both diesel- and electric-powered trains at different ranges of speed. At the completion of the study in May 1994, it was concluded that 110 to 125 mph diesel-powered service operating primarily on existing rail lines would be viable from both a ridership and financial perspective. The findings were documented in the *Chicago - St. Louis High-Speed Rail Financial and Implementation Plan* (IDOT, May 1994) and validated in the commercial feasibility study released by FRA, *High-Speed Ground Transportation for America* (FRA, August 1996).

In January 2003, IDOT, FRA, and FHWA completed an EIS for the Chicago to St. Louis HSR Corridor. The Selected Alternative from the EIS included the provision of three daily round trips along the existing Chicago to St. Louis Amtrak route, with 110-mile per hour high-speed rail service south of Dwight, Illinois. Proposed improvement included

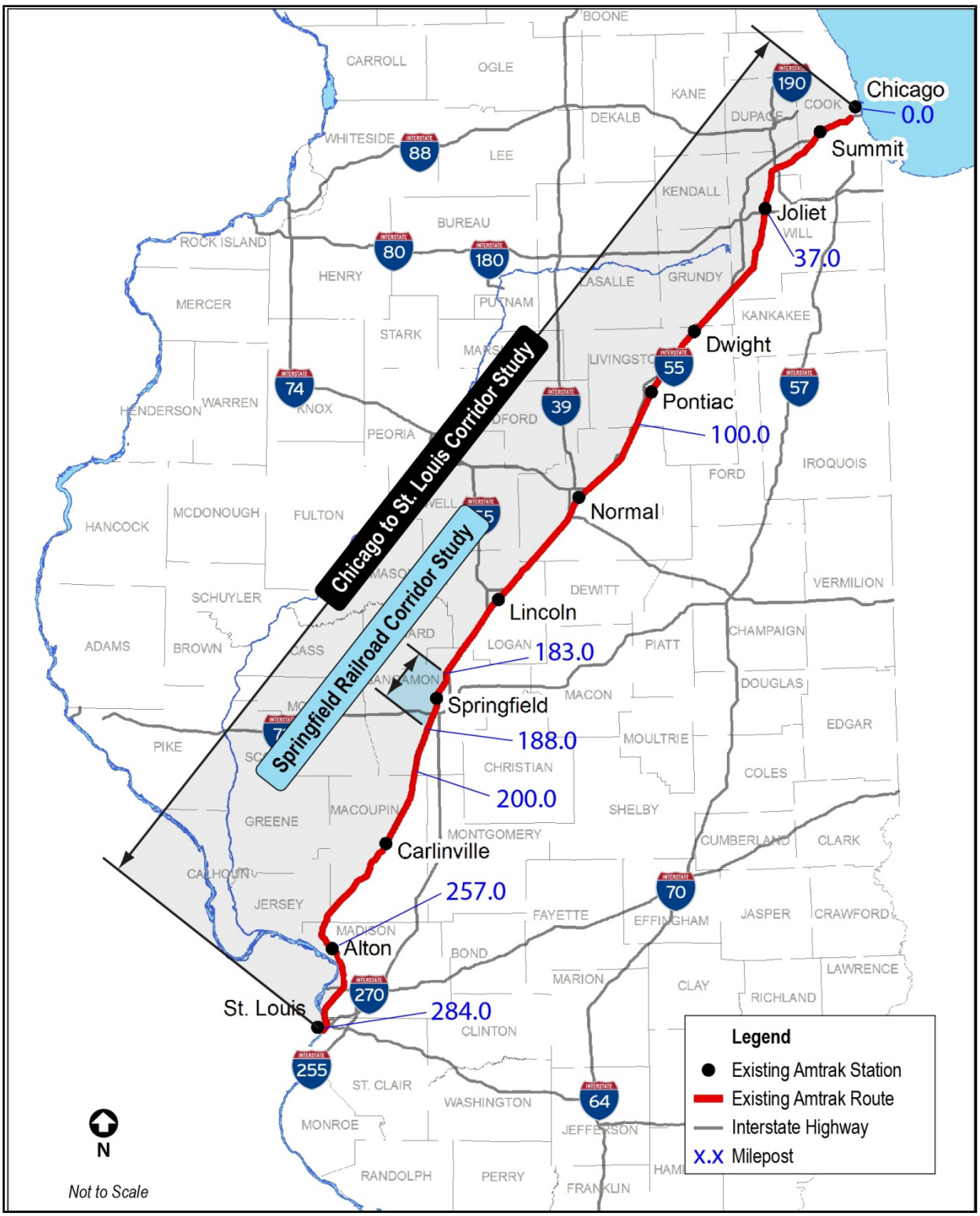

Exhibit 2.0-1. Program Location

selected between Chicago and Dwight. FHWA and FRA issued a Record of Decision in January 2004, allowing improvements in the Dwight to St. Louis portion of the corridor to be advanced. Section 2.1.3 discusses the projects that have advanced based on the 2004 ROD.

2.1.2 Midwest, Statewide, and Regional Planning Context

2.1.2.1 *Midwest Regional Rail Initiative*

This study is part of an overall vision for improved intercity and future high-speed passenger rail service throughout the Midwest. Illinois, along with other Midwest states, is working with FRA on the Midwest Regional Rail Initiative (MWRRI) to implement the 3,000-mile Midwest Regional Rail System.

In 1996, the states of Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Nebraska, Ohio, and Wisconsin, in partnership with FRA and Amtrak, began to evaluate the potential role of high-speed rail in the Midwest. The resulting Midwest Regional Rail Initiative and its steering committee – composed of the state representatives and Amtrak – began researching the viability of an enhanced Midwest rail system. Out of these studies, a vision emerged for developing an integrated Chicago Hub regional rail system.

In the following decade, states increased the frequency of passenger rail service to and from Chicago. As a result, ridership increased 57 percent between Milwaukee and Chicago between 2004 and 2008, and 208 percent between Chicago and St. Louis during the same time period.

On April 16, 2009, President Obama announced his "Vision for High Speed Rail." This vision included the development of high-speed train lines in at least 10 regions across the country, with initial work on these corridors funded through a competitive grant process under the American Recovery and Reinvestment Act (ARRA) of 2009.

In July 2009, a group of Midwest governors and Chicago Mayor Richard M. Daley announced an agreement between eight states and the City of Chicago to work cooperatively to achieve funding from ARRA to develop the Midwest network. Eight Midwest states signed a Memorandum of Understanding (MOU) in support of high-speed rail, including Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. Mayor Daley also signed the MOU on behalf of the City of Chicago. Participant states agree upon, support, and understand the importance of a nationwide network including a Chicago Hub that would connect trains traveling up to 110 miles per hour serving cities across the region, along with connections to adjoining regional corridors.

2.1.2.2 *Statewide Planning Context*

High-speed rail improvements, including in the Chicago to St. Louis HSR Corridor, are consistent with the Illinois State Transportation Plan (ISTP). The ISTP specifically recognizes the Midwest Regional Rail Initiative, and high-speed rail improvements are also consistent with the following policies in the ISTP:

- Provide a transportation system that offers a high degree of mobility, accessibility, reliability, and options.
- Reduce congestion, optimize service and operation efficiency, develop intermodal connections, and utilize transportation technology advances.
- Improve transportation safety.

2.1.2.3 *Regional Planning Context*

High-speed rail improvements are also consistent with regional plans, including the Chicago Metropolitan Agency for Planning (CMAP) Comprehensive Regional Plan (*Go To 2040*) (CMAP, October 2010) and the East-West Gateway Council of Government's Long Range Plan (*Regional Transportation Plan 2040*) (EWGCOG, 2011).

CMAP's *Go To 2040* "supports new high-speed rail and encourages the federal government to pursue this." The plan specifically includes two actions under Pursuing High-Priority Transit Projects that are related to high-speed rail:

- Increase federal investment in high-speed rail.
- Link high-speed rail with regional transit and land use planning.

CMAP's *Go To 2040* includes in its list of capital projects the West Loop Transportation Center in the City of Chicago. This transportation hub would bring together Amtrak services (both high-speed and conventional), Metra commuter rail, Chicago Transit Authority (CTA) rapid transit, and bus service. Finally, East-West Gateway's *Regional Transportation Plan 2040* for the St. Louis region also recognizes high-speed rail improvements. One of the plan's strategies to enhance intermodal connections is to "support the national High-Speed Intercity Passenger Rail program, in particular the Chicago to St. Louis route, and ensure the adequacy of transit and other modal connections at stations."

2.1.3 Existing and Future Conditions

The Chicago to St. Louis corridor currently handles five passenger round trips per day, at conventional speeds of up to 79 mph. The 2004 plan to operate high speed passenger service will be in service by 2014. Under the 2004 Plan, three of the five passenger round trips per day will operate at 110 mph between Joliet and Alton. From 2007 to 2010, rail passenger ridership between Chicago and St. Louis has increased 34 percent, with average daily ridership in 2010 of approximately 1,760 passengers per day.

The corridor is 284 miles long, the majority of which has a single track. As shown in Table 2.1-1 and Exhibit 2.1-1, the number of tracks varies by the ownership arrangements on each line section.

Table 2.1-1: Chicago to St. Louis HSR Corridor – Existing Track Configuration

Section	Owner	Miles of Single Track	Miles of Double Track
Chicago to Joliet	Canadian National (CN)	0	37
Joliet to Godfrey	Union Pacific Railroad (UP)	182	33
Godfrey to East St. Louis	UP/ Kansas City Southern (KCS)	10	19
East St. Louis to St. Louis	Terminal Railroad Association (TRRA)	0	3
Total		**192**	**92**

Source: www.idothsr.org

The UP, Norfolk Southern (NS), and CN lines through Springfield are all single track except in the vicinity of their respective yards.

In 2010, the FRA awarded $1.1 billion to IDOT for the Chicago to St. Louis corridor to improve the corridor between Dwight and St. Louis. These improvements include upgraded track built and maintained to 110 miles per hour standards, sidings and crossovers, grade crossing surfaces, signals and warning systems, stations, and new high-speed passenger trains.

In September 2010, construction began upgrading approximately 90 miles of existing track to prepare the route for operations at up to 110 miles per hour. The track upgrades began in Godfrey and will proceed north to just south of Lincoln. This track renewal project was completed over two construction seasons: 2010 and 2011. The 2010 construction, completed in early December, included upgrading 76.5 miles of existing track from Elkhart to Brighton, excluding the Springfield area. Improvements included the installation of new rail, concrete ties, and stone ballast that support the new rail and ties; larger switches that allow trains to run through them at a higher speed; realignment of curves to support future higher speeds; and refurbishment of 73 highway-rail grade crossings with new concrete road surfaces and improved adjacent roadway approaches.

In April 2011, the second round of construction began to upgrade approximately 96 miles of existing track from Dwight to Elkhart, with similar track and grade crossing improvements as those completed in the Elkhart to Brighton section. Construction was completed in 2011.

Rail improvements are also planned for other sections of the corridor, including sidings, signal enhancements, improved grade crossings, and new or restored station facilities with technology enhancements. These are expected to be completed to support improved high-speed passenger rail service in the corridor by 2014.

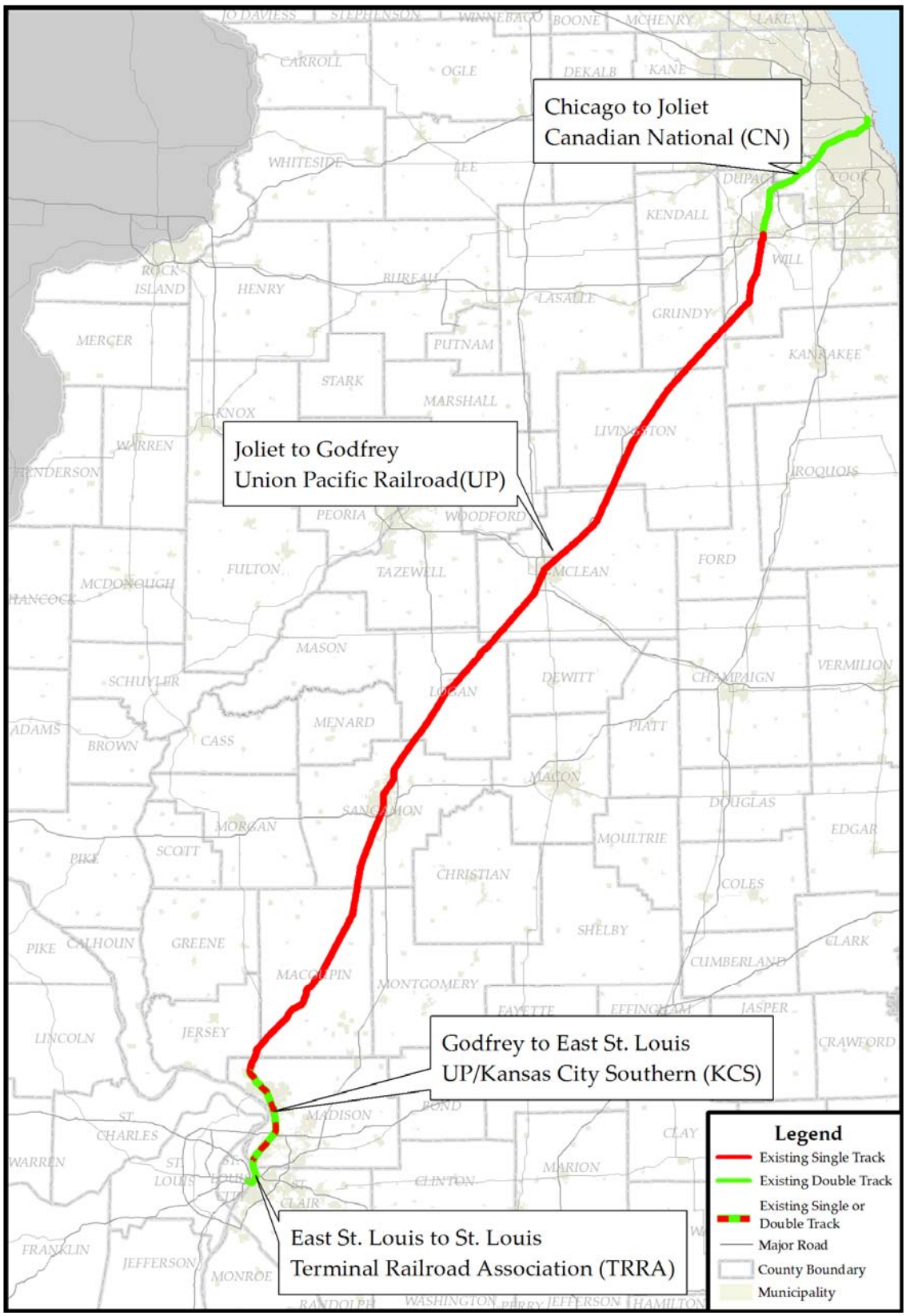

Exhibit 2.1-1. Existing Track Configuration

As part of the 2004 ROD improvements, six new trainsets capable of operating at up to 110 mph will be purchased for use on the Chicago to St. Louis HSR Corridor. Each trainset is expected to consist of five cars, including new coach and business class seating, as well as food service. Two new high-horsepower diesel locomotives will likely be used on each trainset. The equipment purchased for the new high-speed service will undergo extensive performance testing and simulated operations on the corridor prior to their entry into passenger service by 2014.

The UP is also developing a new intermodal facility near Joliet, Illinois. This facility will increase freight traffic on their line south of Joliet. The number of daily freight trains will increase from about five to about 22.

2.2 Purpose

The purpose of the proposed Chicago to St. Louis HSR Corridor Program is to enhance the passenger transportation network in the Chicago to St. Louis HSR Corridor by improving high speed passenger rail service, resulting in a more balanced use of different corridor travel options by diverting trips made by automobile and air to rail.

The existing transportation network consists of highway (automobile and bus), air, and passenger rail travel. Currently, nearly all trips made annually within the Chicago to St. Louis HSR Corridor are accomplished through automobile and air travel, with only one percent by passenger rail. Enhancements to passenger rail service would include reduced travel times, improved service reliability, increased frequency of trips, and increased capacity. Increased use of passenger rail would result in an overall improvement in traveler safety in the corridor, as well as a reduction in air pollutant emissions and energy consumption.

2.3 Need

Currently, 99 percent of the 51 million trips made annually within the Chicago to St. Louis corridor are accomplished through automobile and air travel, with only one percent by passenger rail. This modal imbalance contributes to high congestion, reduced overall traveler safety, increased air pollutant emissions and energy consumption, travel delays, and increased travel unreliability.

In addition to these corridor-wide needs, the large number of grade crossings in Springfield results in issues specific to that portion of the study corridor, including safety, vehicle, and pedestrian delays. These needs are detailed in Volume II, Springfield Rail Improvements Project Tier 2 Environmental Evaluation.

To document the corridor-wide needs associated with modal imbalance in the Chicago to St. Louis corridor, the four primary modes of transportation within the corridor (i.e., rail, automobile, bus, and air) were compared based on the number of annual person trips, travel times, frequency of trips/routes, areas of service, available

infrastructure/facilities, conditions that can affect service reliability and performance, and safety.

2.3.1 Travel Time, Frequency, and Reliability

2.3.1.1 *Rail*

Currently, rail travel comprises only 1.3 percent of the annual person trips from the four primary modes of transportation between the two cities (Steer Davies Gleave, 2011). This imbalance compared to highway and air is reflective of inadequacies in rail service, which, if addressed, could offer a mode of transportation that provides travel and environmental benefits that not only are competitive with highway and air but could result in a net benefit for travel between Chicago and St. Louis. There is a need for modernization of the infrastructure and increased capacity to address the current restrictions of infrequent service, long travel times, and poor reliability. Addressing these needs would allow for improved rail service that could be more competitive with highway and air travel along the corridor.

From 2007 to 2010, rail passenger ridership between Chicago and St. Louis increased 34 percent (Steer Davies Gleave, 2011). However, the constraints of the existing rail infrastructure limit the ability to serve this growing ridership with increased service or improved travel time and reliability. Amtrak, the current passenger rail service provider, operates exclusively on track owned by private freight carriers in the Chicago to St. Louis corridor. The single track between Joliet and St. Louis greatly reduces operational flexibility along the line, often relegating Amtrak trains to wait on passing sidings while freight trains pass. This affects the reliability of Amtrak service along the corridor, delaying rail passengers and hindering on-time performance. Between 2007 and 2010, on-time performance for rail passenger service between Chicago and St. Louis ranged from 38 percent to 75 percent, compared to Amtrak's annual system-wide on-time performance rates of 69 percent to 80 percent over the same period (Amtrak, 2010).

The single track configuration constrains both frequency and travel speeds, limiting the ability to add additional daily trips to the corridor at conventional speeds, as well as the capacity to implement high-speed passenger service. Currently, Amtrak runs five passenger trains per day in each direction between Chicago and St. Louis, with an average travel time of five hours and 30 minutes. The single track between Joliet and St. Louis cannot accommodate increased passenger train frequencies, particularly given the projected increases in freight traffic anticipated with the recent opening of the Joliet Intermodal Terminal. According to UP, the new intermodal terminal initially will double the number of freight trains on the Chicago to St. Louis corridor from six to 12, and this number is projected to increase to 22 by 2017. This additional freight traffic is likely to exacerbate issues with passenger rail performance on the corridor, as well as the capacity to implement high-speed passenger service.

In addition, the poor condition of existing track, switches, and signals limits train speeds, which in turn affects travel times. Installation of new rail, concrete ties, high-speed switches, and other infrastructure upgrades has begun under the Record of Decision (ROD) issued by FHWA and FRA in 2004 for the Dwight to St. Louis portion of

the corridor, but only in certain sections of the corridor (see Section 2.1.3 for details). These improvements will help address the need for higher operating speeds and better reliability, as well as improve safety for both rail passengers and residents of the communities along the corridor.

With the proper infrastructure in place to support it, rail is inherently more reliable than other land and air-based travel modes. While automobile, bus, and air travel are all susceptible to weather-related delays and other occurrences beyond the control of transportation operators, fixed-route modes like intercity passenger rail are able to perform better in a variety of conditions. Because it runs on a fixed schedule, passenger rail is also less vulnerable to congestion than highway-based modes, including delays caused by accidents. As shown in Table 2.3-1, the highway accident rate is more than twice that of rail, where the highly regulated operational environment means there are fewer variables and less chance of collisions between vehicles.

Table 2.3-1. U.S. Transportation Accident Rates for Land-Based Modes (2006)

Mode	Accidents	Passenger Miles (millions)	Accidents per 100 Million Passenger Miles
Rail (including rail-highway grade crossing incidents)	5,937	5,410	100.7
Total Highway Crashes (including those involving buses)	5,973,000	2,830,163	211.0

Source: U.S. Department of Transportation Bureau of Transportation Statistics, Research and Innovative Technology Administration (RITA)

2.3.1.2 *Automobile*

Automobile travel comprises 97.5 percent of the annual person trips from the four primary modes of transportation between the two cities. By 2030, automobile travel is expected to comprise 96.6 percent of the total trips (Steer Davies Gleave, 2011). The most direct route for automobile travel between Chicago and St. Louis is I-55. There are no other nearby highways/interstates that are parallel to I-55 that could function as an alternative route along the corridor. The travel time between the two cities is about five hours based on a distance of approximately 300 miles, with I-55 comprising 294 miles (99 percent) of this distance. For comparison, as noted previously in the rail section, the average travel time via rail between Chicago and St. Louis is five hours and 30 minutes. Most of I-55 consists of four lanes between I-80 and I-255. From downtown Chicago to I-80 and from I-255 south to the Mississippi River Bridge, I-55 consists of six lanes. There is also a six lane section north of Springfield, between I-155 and Sherman. The I-55 bridge over the Mississippi River currently supports eight lanes. According to IDOT's Fiscal Year 2012-2017 Proposed Highway Improvement Program, there are no major capacity improvements currently planned for I-55 between Chicago and St. Louis. It is important to note that the estimated travel time of five hours is based on a nonstop trip and does not include any rest stops, which would add the overall travel time. In

addition, this mode of transportation can often result in unexpected delays because of traffic congestion (especially in the Chicago and St. Louis metropolitan areas), weather, accidents, and roadway construction, all of which have the potential to substantially increase travel time beyond the estimated five hours.

2.3.1.3 *Bus*

Bus travel comprises approximately 0.2 percent of the annual person trips from the four primary modes of transportation between the two cities. In 2030, bus travel is still expected to comprise 0.2 percent of the total trips (Steer Davies Gleave, 2011). Currently, Greyhound and Megabus are the only companies that provide bus service between Chicago and St. Louis. Greyhound runs 10 buses per day in each direction between the two cities, with travel times ranging from five hours and 10 minutes to eight hours and 40 minutes depending on the number of stops or layovers. All of these routes have one or more stops/layovers at Bloomington, Champaign, Decatur, and/or Springfield, IL. Megabus runs three buses per day in each direction between the two cities, with travel times ranging from five hours and 30 minutes to six hours. Similar to automobile travel, bus travel is also vulnerable to unexpected delays associated with traffic congestion, weather, accidents, and roadway construction that can increase travel time.

2.3.1.4 *Air*

Air travel comprises 1.1 percent of the annual person trips from the four primary modes of transportation between the two cities. By 2030, air travel is expected to comprise 1.5 percent of the total trips (Steer, Davies, Gleave, 2011). The following airports are located along the study corridor:

- Chicago O'Hare International Airport
- Chicago Midway International Airport
- Central Illinois Regional Airport (Bloomington-Normal, IL)
- Abraham Lincoln Capital Airport (Springfield, IL)
- Lambert-St. Louis International Airport

There are currently about eight airlines that provide approximately 54 direct flights per day in each direction between Chicago O'Hare and St. Louis airports, with travel times ranging from one hour to one hour and 15 minutes. Southwest Airlines is the only airline that provides direct flights between Chicago Midway and St. Louis airports, offering about ten flights per day on weekdays with a travel time of approximately one hour to one hour and five minutes. Fewer flights are provided on the weekends.

The Central Illinois Regional Airport does not have any flights to St. Louis but runs approximately three direct flights per day to Chicago O'Hare, with travel times ranging from 45 to 50 minutes. The Abraham Lincoln Capital Airport also does not have any flights to St. Louis but runs approximately 10 direct flights per day to Chicago O'Hare, with travel times ranging from 50 to 60 minutes.

The flight data presented above demonstrate that unlike the rail, automobile, and bus modes, air transportation lacks the ability to serve most intermediate origins and destinations.

Although air travel provides the shortest travel times when compared to all the other modes of transportation, as much as one to two hours should be added to the overall travel time to account for passage through airport security. Both Chicago airports are also far outside downtown, with travelers subject to automobile congestion and delays on the way to and from the airport, increasing overall trip time. In addition, air travel is also vulnerable to bad weather, which results in unexpected delays and cancelled flights. Based on information available from the Bureau of Transportation Statistics, approximately 15 to 20 percent of the flights in the corridor arrive late.

The City of Chicago has begun the O'Hare Modernization Program (OMP). This program is transforming O'Hare International Airport's airfield from a system of intersecting runways into a modern parallel runway configuration to reduce flight delays and increase capacity well into the future. No other major improvements are currently planned at the other airports in the Chicago to St. Louis corridor.

2.3.2 Safety

Based on information provided in the *National Transportation Statistics 2011* report, the fatality rate for each mode (rail, automobile, bus, and air) was calculated based on the number of fatalities per 100 million passenger miles for 2006, which was the most recent data available for all modes. As shown in Table 2.3-2**,** the highway fatality rate is more than 22 times higher than the rail fatality rate. The highway fatality rate represents the highest rate among all four modes of transportation. Highway travel comprises the vast majority of trips within the corridor (i.e., 97.5 percent), as well as the capacity to serve travel demand in the corridor, yet it has the highest fatality rate, indicating that travelers are choosing a less safe mode of transportation, either because of the service provided or because there is limited or no other choice. Air travel has the lowest fatality rate.

Table 2.3-2: Fatality Rates by Mode (2006)

Mode	Fatalities	Passenger Miles (millions)	Fatalities per 100 Million Passenger Miles
Rail	2	5,410	0.037
Highway	22,762	2,686,347	0.847
Bus	27	143,816	0.019
Air	52	588,455	0.009

Source: U.S. Department of Transportation Bureau of Transportation Statistics, Research and Innovative Technology Administration (RITA)

2.3.3 Conclusion

As discussed in the sections above, the need for the Chicago to St. Louis High-Speed Rail Corridor Program is based on the following:

- Because of inadequate rail capacity and deficiencies in the existing rail infrastructure, there is currently a modal imbalance within the corridor. Rail travel represents only 1.3 percent of the 51 million annual person trips within the Chicago to St. Louis corridor, while automobile travel comprises 97.5 percent of these trips. The other two modes, air and bus, comprise only 1.1 percent and 0.2 percent, respectively. By 2030, it is projected that 62 million annual trips will occur in the Chicago to St. Louis corridor with 96.6 percent consisting of automobiles, 1.5 percent air, 1.7 percent rail, and 0.2 percent bus. As a result, the modal imbalance is projected to remain largely the same in 2030.
- Between 2007 and 2010, on-time performance for rail passenger service between Chicago and St. Louis ranged from 38 percent to 75 percent. For air travel, 15 to 20 percent of flights in the corridor arrive late.
- The single tracking between Joliet and St. Louis cannot accommodate existing and projected freight and passenger train traffic resulting in travel time delays and the inability to increase passenger rail service.
- The new Joliet Intermodal Terminal will double the number of freight trains using the Chicago to St. Louis corridor from six to 12. The number of freight trains is projected to increase to 22 by the year 2017, which could affect the performance and capacity for high-speed passenger rail.
- From 2007 to 2010, rail passenger ridership between Chicago and St. Louis has increased 34 percent.
- Automobile and bus travel between Chicago and St. Louis is limited primarily to I-55. Travel by this one route can often be unreliable due to traffic congestion, weather, roadway construction, and accidents, which can substantially increase travel times.
- Automobile travel, which represents 97.5 percent of the trips within the corridor, is the least safe mode of transportation when compared to air, rail, and bus travel. Therefore, there is a need to provide safer alternative modes of transportation along the corridor.
- Although air travel has the shortest travel times and is the safest mode of transportation, additional travel time must be considered for passage through airport security and travel to and from the airport. In addition, air travel is vulnerable to weather conditions, which can result in major delays and cancelled flights. Also, there is currently no direct air service from the central part of the corridor to St. Louis, and air travel provides little service to intermediate destinations.

2.4 Major Authorizing Laws and Regulations

Several laws are pertinent to the proposed program.

Under 49 U.S.C. 20101 et seq., the FRA has authority over railroad safety. Additionally, under chapter 244, section 24105, and section 26106 of title 49, United States Code, the FRA has authority to administer capital investment grants to support intercity passenger rail service.

Under 42 U.S.C. 4601 et seq., if federal assistance is provided to a project, the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and its implementing regulations at 49 CFR Part 24 would apply.

2.4.1 Permits, Licenses, and other Regulatory Requirements

There would be permit requirements for construction of the Build Alternative associated with the crossing and filling of water resources and wetlands. Section 404 permits would be needed from the U.S. Army Corps of Engineers for wetlands where filling occurs. In addition, a Section 401 water quality certification would have to be obtained from the Illinois Environmental Protection Agency.

Permits from the Illinois Department of Natural Resources, Office of Water Resources, would be required for construction activity in and around streams and floodplains.

It is anticipated that the Build Alternatives for this program would result in the disturbance of one or more acres of total land area. Therefore, it would be subject to the requirement of a National Pollutant Discharge Elimination System (NPDES) permit for stormwater discharges from the construction sites. The NPDES program requires a Notice of Intent, the development of a Stormwater Pollution Prevention Plan (SWPPP), and the submission of a Notice of Termination when final stabilization of the construction site has been achieved. The SWPPP would identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater discharges from the construction site and would describe and ensure the implementation of practices which would be used to reduce the pollutants in discharges associated with construction site activities and assure compliance with the terms of the permit. Permit coverage for the program would be obtained either under the Illinois Environmental Protection Agency General Permit for Stormwater Discharges from Construction Site Activities (NPDES Permit No. ILR10), or under an individual NPDES permit.