



CREATE

KEEPING THE GO IN CHICAGO

BUILD 2019 Grant Application for CREATE Project EW3A

submitted by

**Cook County Department of
Transportation and Highways**

CREATE partners include:

Association of American Railroads

Chicago Department of Transportation

**Cook County Department of Transportation
and Highways**

Illinois Department of Transportation

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1.0 Project Description

The Cook County Department of Transportation and Highways (DOT) is pleased to submit this application for a Better Utilizing Investments to Leverage Development (BUILD) Transportation grant on behalf of the Chicago Region Environmental and Transportation Efficiency (CREATE) Program for improvements to Pullman Junction Stage A (EW3A).¹ EW3A is a critical project on Chicago's East-West Corridor that will improve rail fluidity and reduce congestion throughout the Chicago Terminal. About 100 trains per day travel through Chicago's East-West Corridor, making it a critical component of the national freight rail system.

Chicago is the Nation's preeminent rail hub: one-fourth of the Nation's freight rail traffic and half of all intermodal trains originate, terminate, or pass through metropolitan Chicago on their journey to market. Improvements to the Chicago Terminal proposed by CREATE projects, including EW3A, benefit national supply chains - grain from Iowa and Nebraska, coal from Wyoming's Powder River Basin, steel used by Chicago industries, and both domestic and imported consumer goods destined for rural and urban areas throughout the Nation.

This document presents the information requested by the BUILD Notice of Funding Opportunity in support of the EW3A project. Construction of EW3A has broad support from both the public and private sectors. Letters of support for EW3A from Cook County DOT, the State of Illinois, CREATE railroad partners, and other agencies and organizations are included in Section 4.2.

1.1 Project History: the CREATE Program

The CREATE Program is an innovative public-private partnership designed to address systemic issues in the areas of freight movement, freight/passenger rail conflict, and highway/rail conflict in the Chicago metropolitan region. Due to traffic demands that exceed the capacity of the Chicago rail system, Chicago-area freight and passenger traffic suffers from congestion, low operating speeds, and delays. Launched in 2003, the CREATE Program represents a shared commitment among businesses and government agencies to solve these long-standing congestion issues in one of the

CREATE Program Context

EW3A is part of the CREATE Program—a set of 70 linked rail infrastructure investments in the Chicago Terminal. These investments are designed to work together to increase fluidity and reduce congestion of freight and passenger rail in the region. To date, 30 of the Program's 70 projects have been completed.

Construction of EW3A will increase rail fluidity on the CREATE's East-West Corridor in conjunction with the following ongoing or finished projects:

- EW4 – complete.
- EW1 – final design.
- B9 – under construction.
- GS11 – funded.
- P3 – funded.
- EW2 – partially funded.
- P2 – partially funded.

See Figure 1 for project locations and http://www.createprogram.org/project_s.htm for details.

¹ The CREATE partners have determined that the EW3 project should be constructed in two stages: EW3A and EW3B. Each stage has independent utility. This application seeks construction funding for the first stage, EW3A.

largest hubs for freight and passenger rail activity in the country.

The CREATE Program includes upgrading existing track structure, double-tracking or triple-tracking certain lines, the construction of rail-highway grade separations and rail-rail flyovers, the installation of new or improved signaling, and various other additions and improvements. CREATE involves 70 projects designed to separate freight and passenger trains at six key junctions; eliminate over two dozen at-grade crossings both within and outside of the four corridors; and increase capacity, speed, and reliability for freight and passenger rail in and around Chicago. As of July 2019, 30 of CREATE's [70 projects](#) have been completed, four are under construction, and 17 are in the design phase. The ability of the CREATE Program to deliver a large number of critical projects in a cost-effective manner has positioned the Program as a model for public-private partnerships for other transportation hubs around the country.

With the 30 projects that have been completed to date, CREATE has already had a significant impact on the performance of Chicago's rail and highway networks. Completion of the Program will provide substantial benefits for the region and the Nation. The remaining projects, which include EW3A, will significantly improve operations and enhance capacity for freight and passenger rail services in the Chicago Terminal, with a broad range of favorable impacts that include global competitiveness in regional and national commerce.

1.2 Project Description: CREATE Project EW3A

[CREATE project EW3A](#) involves rail track and signal upgrades in the vicinity of Pullman Junction² on the CREATE East-West Corridor. Pullman Junction is near 95th Street between approximately Woodland Avenue to the west and Stony Island Avenue to the east in Chicago (Figure 7 provides a map of the project boundaries). EW3A is the first stage of the CREATE project EW3 and has independent utility as a stand-alone project. Figure 1 shows the locations of Pullman Junction, the CREATE East-West Corridor, the overall CREATE Program status, and key railyards that demonstrate the regional and operational contexts of the project.

EW3A Project Overview

CREATE project EW3A includes track and signal work that will result in improved fluidity through the CREATE East-West Corridor and Pullman Junction. This junction is an important location for trains moving through Chicago and interchanging between the Belt Railway Company of Chicago (BRC), Norfolk Southern (NS), South Chicago & Indiana Harbor Railway (SCIH), Chicago Rail Link

Pullman Junction and Nearby Rail Facilities Impacted by EW3A

Pullman Junction is centrally located in the Chicago terminal. About 37 freight trains pass through Pullman Junction each day, representing traffic from all Class I railroads who operate in Chicago, as well as several short line operators. Pullman Junction serves major rail facilities, including:

- **Landers Yard**, Norfolk Southern's 3rd largest intermodal facility. Each year, **444,000 containers** move through this facility.
- **Calumet Yard**, which moved over **200,000 containers** in 2018 and is one of the country's fastest growing intermodal facilities.

² A junction is a location in which two or more rail routes converge or diverge.

Figure 1 EW3A Project Location within Overall CREATE Program



Note: Viaduct projects in the City of Chicago are not displayed.
Revised July 9, 2019

Source: CREATE Program, 2019. Full size graphics are available [here](#).

(CRL), Canadian National (CN) Union Pacific (UP), and Canadian Pacific (CP). CSX and CP also operate trains through this location multiple times per day.

Completion of the EW3A project will facilitate the movement of east-west freight rail traffic and reduce congestion in the Chicago Terminal. Due to the prominence of Chicago as North America's rail hub, these benefits will also enhance the global competitiveness of the United States' freight system. EW3A is one component of the larger CREATE Program efforts along the East-West corridor (Figure 1 shows the East-West corridor and status of each project). Construction of EW3A is an important step in improving the efficiency of the entire corridor and will help realize the full benefits of these other projects.

As rail traffic moves through the Chicago area, efficient interchanging of traffic between carriers is vital. Each day, approximately 37 freight trains travel through Pullman Junction, with many of these trains moving to or from Clearing Yard, one of the largest classification yards in the country and a key hub for carload traffic in the Chicago region. Similar to a hub airport, this yard and others in the region such as Commercial Yard are used to sort and route traffic between rail carriers.

Two of Norfolk Southern's busiest intermodal yards—Landers Yard and Calumet Yard—are also served by Pullman Junction. Intermodal facilities are the vital hubs for national and regional commerce where containers are moved on and off the rail system (see photo on right). Landers Yard is the third busiest intermodal facility on the NS system, with 444,000 'lifts' each year.³ Improved access to all three of these facilities is critical for efficiently moving goods through Chicago to their final destinations.



Intermodal operations in Landers Yard

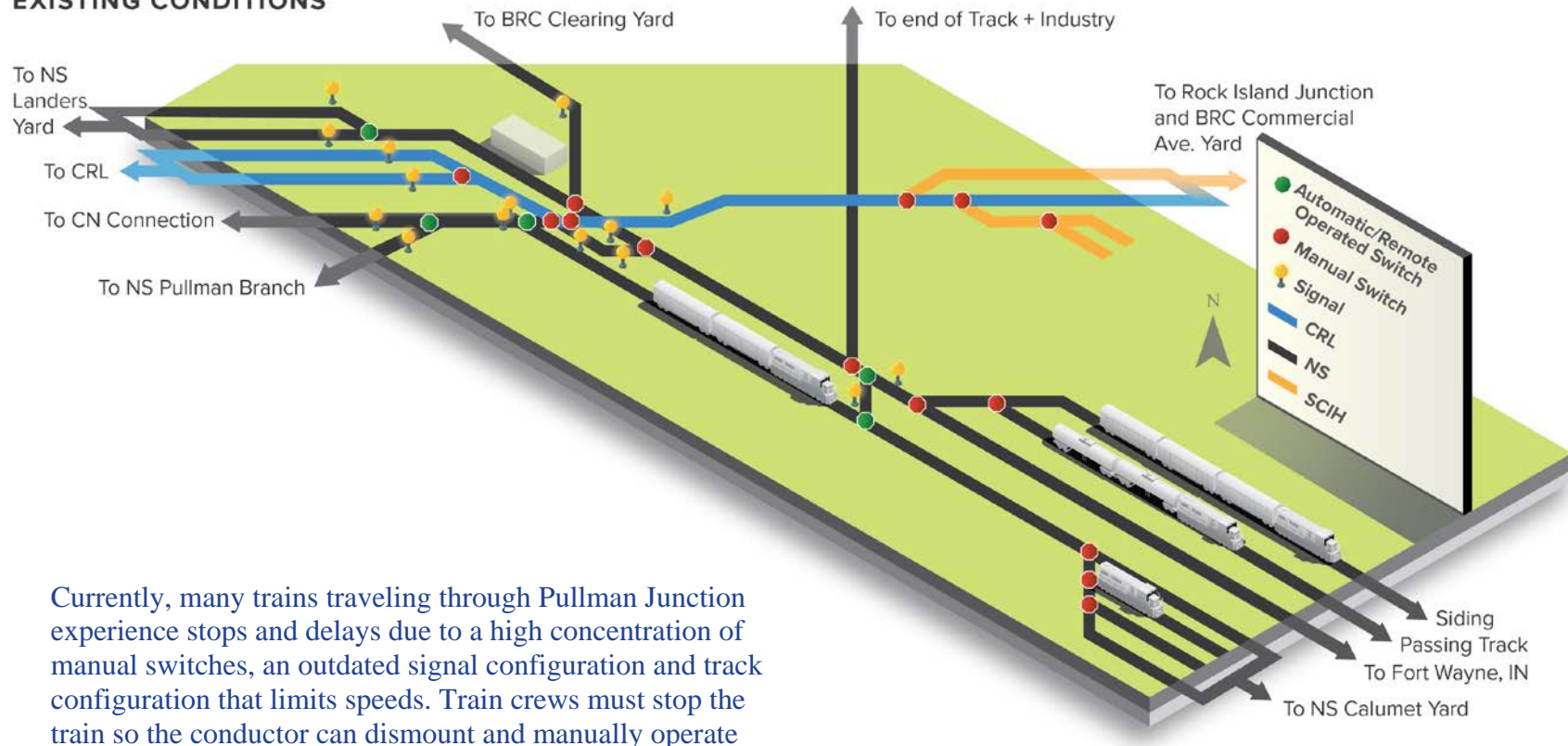
Source: Norfolk Southern, 2019.

Figure 2 demonstrates how the project will improve the fluidity of Pullman Junction. Currently, trains traveling through Pullman Junction often experience multiple stops and delays due to a high concentration of manual switches, an outdated signal configuration, and track geometry that limits speeds. With the EW3A project, manual switches will be replaced with dispatcher-controlled power switches, allowing dispatchers to align switches for each train's route prior to the train entering the junction, permitting trains to proceed without stopping to manually operate switches. The improvements will also allow coordination of signals, which will allow the train to move through the junction without stopping for signal clearance. Along with speed increases resulting from improved geometry, these improvements will greatly reduce the stopping of trains, increase overall speeds, improve fuel efficiency, and reduce idling. A detailed summary of the scope of work is provided in the [Phase I study report](#).

³ A "lift" describes moving an intermodal container or trailer to and/or from a rail car, and is a standard measure of intermodal facility throughput.

Figure 2 EW3A Existing and Proposed Alignment and Switch/ Signal Upgrades

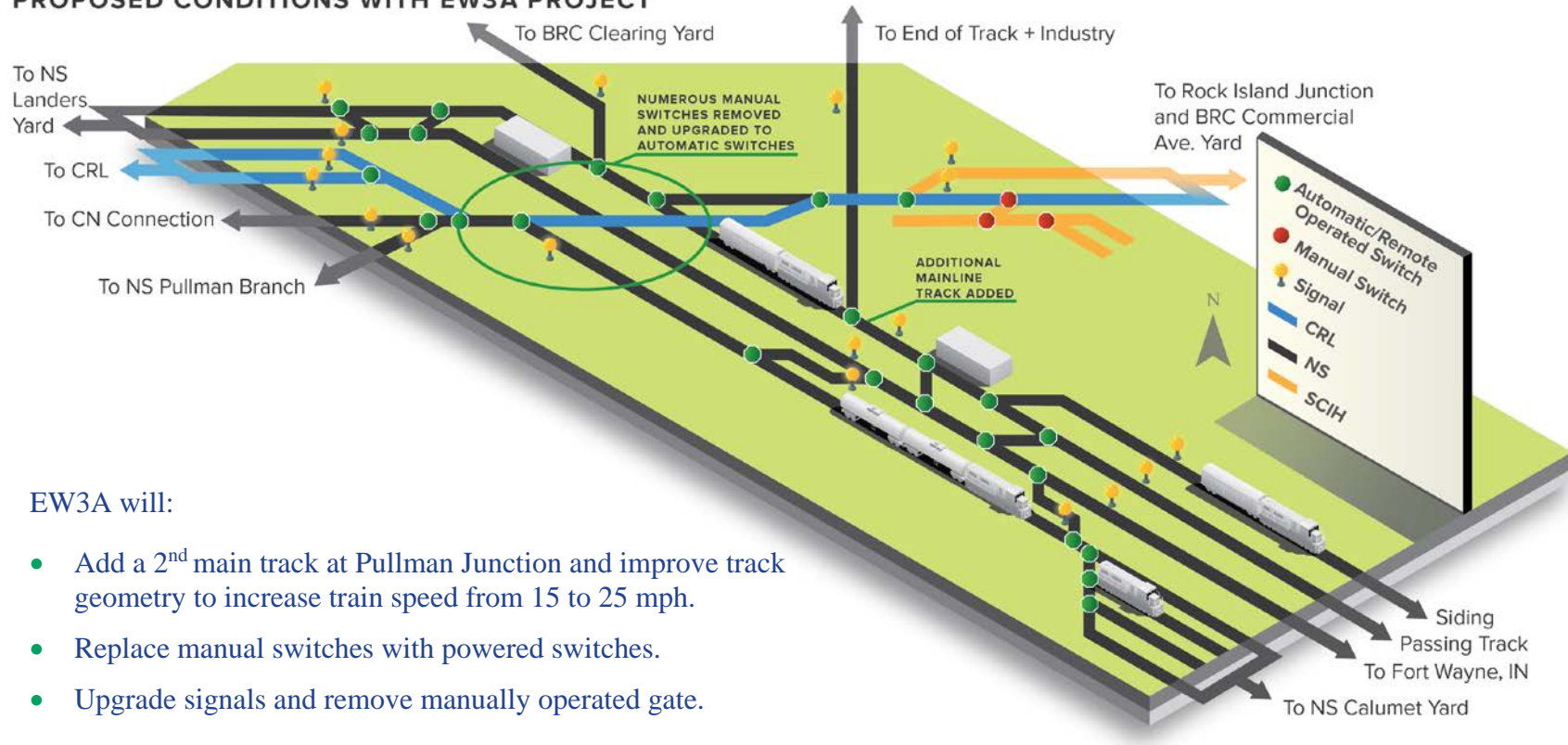
EXISTING CONDITIONS



Currently, many trains traveling through Pullman Junction experience stops and delays due to a high concentration of manual switches, an outdated signal configuration and track configuration that limits speeds. Train crews must stop the train so the conductor can dismount and manually operate switches and/or a gate. The EW3A project will address these safety and congestion issues.

Figure 2 (continued)

PROPOSED CONDITIONS WITH EW3A PROJECT



EW3A will:

- Add a 2nd main track at Pullman Junction and improve track geometry to increase train speed from 15 to 25 mph.
- Replace manual switches with powered switches.
- Upgrade signals and remove manually operated gate.

Together, these improvements will increase safety and improve mobility through Pullman Junction.

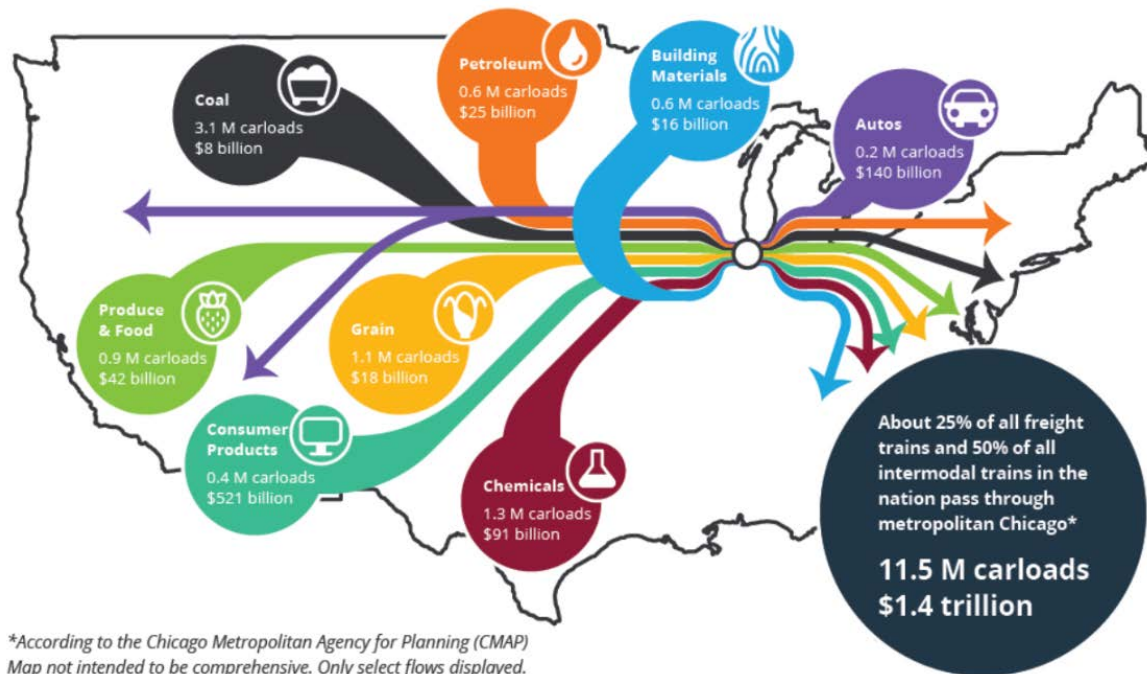
Note: Full size graphics are available [here](#).

Source: CREATE Program, 2019.

CREATE Program and EW3A: A Project of National Significance

The Chicago Terminal is a critical hub for national freight and passenger rail traffic. Six of the seven Class I freight railroads converge in Chicago, and one-fourth of the Nation's freight rail traffic and half of all intermodal trains originate, terminate, or pass through metropolitan Chicago on their journey to market. Approximately 37,500 rail cars are en route to or through Chicago at any given time, with about 5,000 cars and 22,000 containers handled in the Chicago region daily.⁴ These containers and railcars comprise a wide variety of goods (see Figure 3) destined for national markets. These volumes are expected to nearly double by 2045.⁵ As the Nation's premier rail hub, congestion in the Chicago Terminal negatively affects national supply chain and passenger rail movements.

Figure 3 Economic Footprint of the CREATE Program
Select Volumes and Commodities Moving through the Chicago Rail Terminal



Source: CREATE Program, 2017.

The CREATE Program's corridors handle rail freight valued at more than \$1.4 trillion annually, and without the Program's planned improvements, national and regional economic activity will be disrupted adversely, similar to the effects recently felt across North America when winter storms in 2011 and 2014 affected the Chicago Terminal. Implementation of the overall CREATE Program will result in national economic benefits estimated at approximately \$31.5 billion over a 30-year period related to reduced travel times for rail passengers and freight, reduced motorist and cargo

⁴ CMAP, Chicago Intermodal Facility Lift Counts and Regional TEU Estimates, 2017

⁵ Federal Highway Administration Freight Analysis Framework 4.0

delays, improved rail and highway safety, air quality improvements, and construction related-benefits.⁶

CREATE project EW3A is an important component of this national context. While EW3A is located wholly within the Chicago, IL urbanized area (UACE 16264), its impacts are national in scope, as it addresses a major chokepoint and improves supply chain fluidity, thereby reducing costs and improving reliability. Commerce moving through Pullman Junction includes goods such as grain, coal, steel, building materials, fuels, and manufactured products that are essential to the economic health of both rural and urban areas in the US. The efficient movement of these goods through the Chicago Terminal is essential for domestic suppliers to compete globally by meeting demand for these products in the US and around the world in a timely and reliable manner.

EW3A is aligned with ongoing planning and construction activities elsewhere in the terminal, such as the 75th Street Corridor Improvement Project (CIP), which received \$132 million from the 2018 INFRA program. An average of nearly 100 trains travel the Chicago East-West Corridor daily, moving through both locations. Furthermore, delays at these locations spread throughout the Chicago Terminal. By undertaking the EW3A project and the 75th St. CIP simultaneously, benefits from both projects will be maximized.

EW3A Project: Local Significance

Overall, the project is in an area where critical regional transportation infrastructure is located. EW3A is one of several projects that will improve freight mobility and bring some investment into an important, but economically disadvantaged, area.

EW3A is located in the City of Chicago in Cook County, IL, a region known as the South Cook Freight Cluster.⁷ Freight development tends to occur near existing freight locations, so the presence of a freight cluster near the project demonstrates both the existing importance of the location for freight and the potential for further development. Part of the area is also classified as a goods producing trade cluster, an area with potential for local economic development.⁸

Cook County has supported such economic development near the project location with two freight-related *Invest in Cook* grants in 2017-2018. These grants were awarded to improve [Division Street](#) near Blue Island Yard and [Butler Drive](#) near the Illinois International Port District. The investment by Cook County is evidence of an ongoing regional and State commitment to improve the quality and efficiency of multimodal freight operations in the South Cook region. Cook County's Invest in Cook grants led to follow-on grant awards of \$2M each for Butler Drive and Division Street by Illinois Department of Transportation's (IDOT) Economic Development Program, \$10.9M for Butler Drive from the Illinois Competitive Freight Program, and \$3.48M in TIF grants from the City of Chicago. There are also ongoing efforts to bring new or expand existing industries and jobs to the nearby region, including ongoing investment at the Illinois International Port District, located at Lake Calumet, which has a number of rail-served industries.⁹ The Calumet Collaborative, a non-profit agency focusing cultivating public-private partnerships and other

⁶ www.createprogram.org.

⁷ <https://www.cmap.illinois.gov/2050/maps/freight>.

⁸ <https://www.cmap.illinois.gov/2050/maps/clusters>.

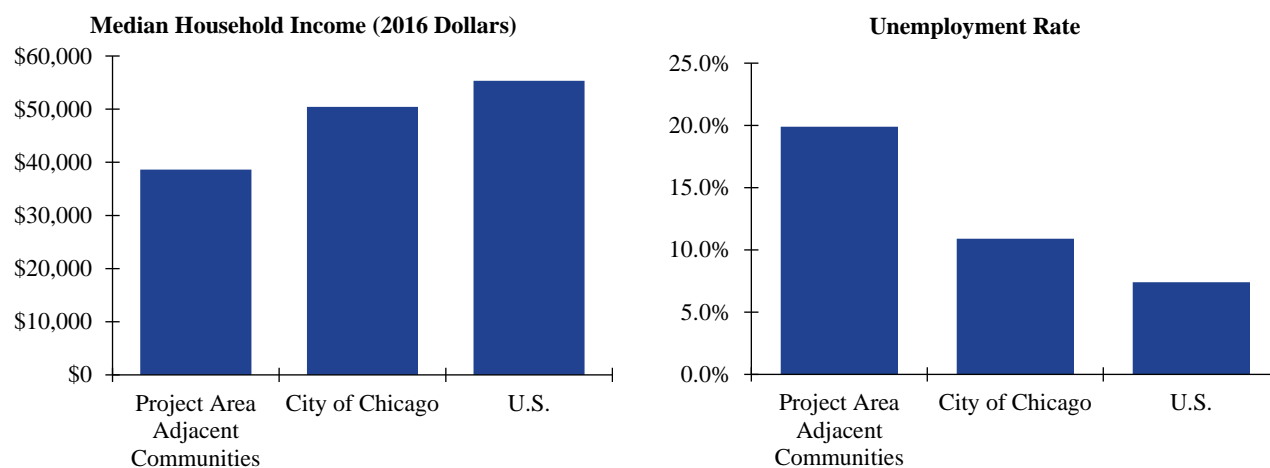
⁹ <http://iipd.com/>.

opportunities to develop the economic, cultural, and environmental resources of the region, as well as the Illinois International Port District, Chicagoland Chamber of Commerce and Illinois Chamber of Commerce all support this critical project (see Table 5).

An additional benefit of the project is that the increased fluidity will help support Class I and short line railroads operating through Pullman Junction. Short lines, such as Chicago Rail Link and the South Chicago & Indiana Harbor Railway, serve a central role in providing carload rail service to local businesses. Cook County has supported several efforts to help businesses succeed in the South Cook region, and EW3A is another project that will improve multimodal freight efficiencies in the area, including short line railroad service.

Demographically, the project is located in a mostly minority and low-income area at the corner of four Chicago communities: Burnside, Calumet Heights, Pullman, and South Deering (Figure 4). Both Burnside and the north end of South Deering community areas were recognized by the Chicago Metropolitan Agency for Planning (CMAP), the federally-designated Metropolitan Planning Organization (MPO), as Economically Disconnected Areas (EDAs). These are defined as Census tracts with a concentration of low incomes that have a greater than regional average concentration of minority or limited English proficiency populations.¹⁰ The data compiled by CMAP in the Community Area Snapshots demonstrate that the 2016 median household income for each of the community areas is significantly less than the Chicago or national median. Unemployment rates in 2016 were also 1.5 to 2 times greater than the City of Chicago median and on average 2.5 times greater than the national average. The area is economically distressed and located in a concentration of industrial businesses.

Figure 4 Project Area Demographics
Unemployment Rate and Median Household Income, 2016



Source: CMAP in the Community Area Snapshots. United States Census Bureau. American Community Survey 2017 Five-year Estimates.

¹⁰ <https://www.cmap.illinois.gov/2050/maps/eda>.

1.3 Transportation Challenges

Track Configuration Limits Throughput Capacity

Pullman Junction is a rail intersection between the NS Chicago District and Chicago Rail Link. It includes connections to CN, South Chicago & Indiana Harbor Railway, the NS Pullman Branch, the NS Verson Lead Track, and the Belt Railway of Chicago, which is used by all Class I carriers in Chicago. Currently, trains can only operate one at a time through Pullman Junction, and trains often incur significant delays while waiting for cross traffic to clear. The extent of these delays creates congestion that propagates throughout the Chicago Terminal. Additionally, track curvature currently limits speeds on the NS Main Track to 15 mph, but improved geometry will increase speeds to 25 mph.

Manually-Operated Switches Generate Travel Time Delays

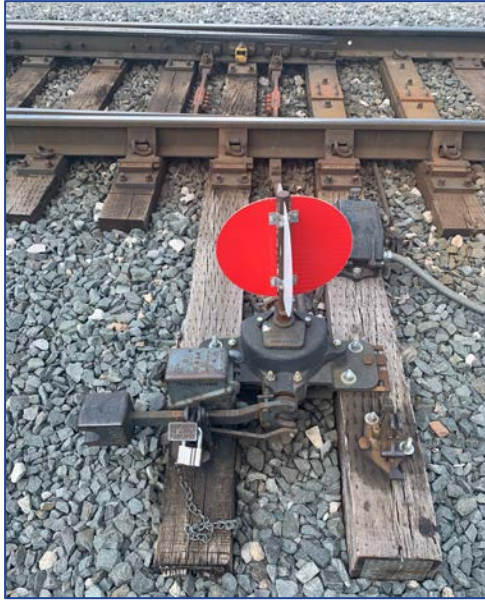
Six of the switches at Pullman Junction are manually operated (see Figure 5), requiring trains to stop multiple times while traveling on connecting routes. When moving from one route to another a time-consuming procedure must occur:

- Train crews must stop the train.
- The conductor must dismount the locomotive to move manual switches into place.
- The engineer must operate the train through the junction.
- The conductor must then restore switches to their original position and walk or ride to the locomotive before the train may continue movement.

With train lengths routinely exceeding 10,000 feet, this causes significant delay to trains operating through the junction. A major component of the project will be significant upgrades to the signal system and switches, which will increase visibility, offer more advance signal information to the locomotive engineer, and replace the current positive train control (PTC) retrofit installation with modern signals that are compatible with PTC without retrofit.

Figure 6 shows the existing gate at the crossing of the CRL/SCIH Main Track and the NS Verson Lead Track. The gate is lowered to signify permission for NS trains to cross the CRL/SCIH track. The project will remove this gate and the crossing will be governed by modern railroad signals.

Figure 5 **Manually Operated Rail Switch and Powered Rail Switch**
Left and Right Respectively



Manually operated rail switch at Pullman Junction (will be replaced)

Source: Norfolk Southern, 2019.



Powered rail switch with switch heater at Pullman Junction (will replace manually operated switches)

Source: Norfolk Southern, 2019.

Figure 6 **Railroad Crossing Gate at Pullman Junction**



Existing gate at the crossing of the CRL/SCIH Main Track and the NS Verson Lead Track. Each time a train travels through the crossing on the north-south tracks, the conductor must dismount to manually raise and then lower the gate arm located on the east-west tracks. EW3A will replace this gate with modern railroad signals which will indicate safe crossing to all trains.

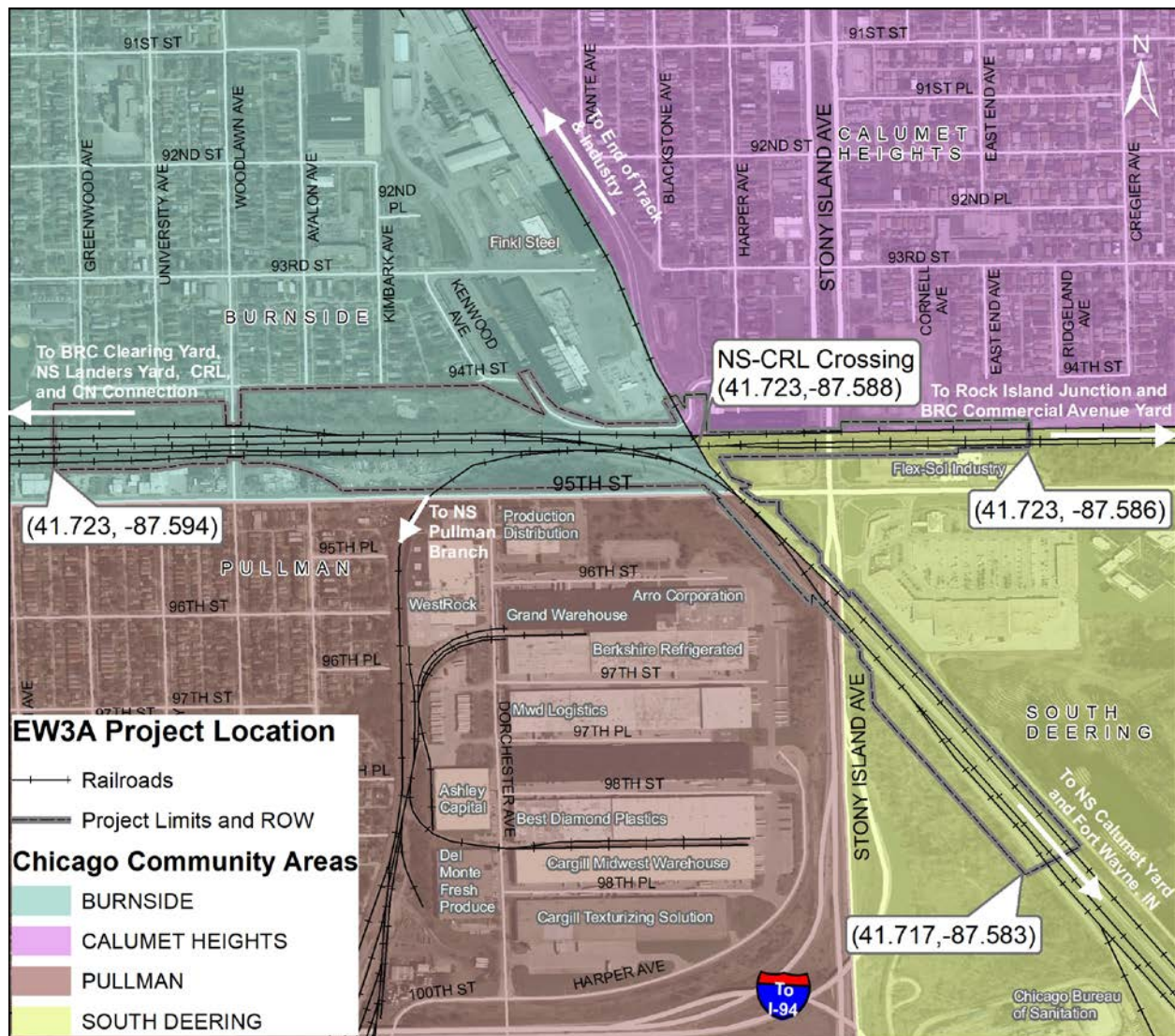
Source: Norfolk Southern, 2019.

2.0 Project Location

EW3A affects rail lines owned by NS, CRL, BRC, and SCIH. It extends along the NS between B-511 to B-513, and along the CRL between STA634+26 and STA664+05. The project boundaries are from the SCIH Flex Sol industry track to the east near milepost 20, to the BRC at Woodlawn Avenue to the west near milepost 19, and from Kenwood Avenue to the north to Stony Island Avenue to the south near the entrance to NS Calumet Yard.

The hub of the project is defined as the intersection of NS Main No. 1 with the CRL#14, located at 41.723 latitude, -87.588 longitude. The project extends west (41.723, -87.594), southeast (41.717, -87.583), and east (41.723, -87.586); it is contained wholly within the Chicago, IL urbanized area (UACE 16264). See Figure 7.

Figure 7 EW3A Project Area Location



Source: Association of American Railroads, CMAP, Cook County GIS Department, FRA.

3.0 Grant Funds, Sources and Uses of all Project Funding

The initial cost estimate for the EW3A project by task and sub-task is detailed in Table 1. The total estimated construction cost of EW3A is \$25,811,342, for which the USDOT BUILD Transportation grant will contribute 50% of total project construction cost. Cook County DOT's BUILD funding request is \$12,905,671 for Phase III construction funds for EW3A. The non-federal funding match, which is provided in equal parts by IDOT and CREATE railroad partners, is \$12,905,671. Funding commitments are in Appendix A. Table 1 summarizes the funding request for this project.

Table 1 EW3A Phase III Federal Funding Request Summary

| Task | Cost | Percentage of Total Phase III Construction Costs |
|---|-----------------------|--|
| Phase III Construction | \$25.8 million | 100% |
| <i>Other Federal Funds Requested</i> | <i>\$0</i> | <i>\$0</i> |
| <i>BUILD Federal Funding Request</i> | <i>\$12.9 million</i> | <i>50%</i> |
| <i>Non-Federal Funding Match (Cash)</i> | <i>\$12.9 million</i> | <i>50%</i> |
| <i>Portion of Non-Federal Funding from the Private Sector</i> | <i>\$6.45 million</i> | <i>25%</i> |
| <i>Portion of Non-Federal Funding from the Public Sector</i> | <i>\$6.45 million</i> | <i>25%</i> |

Source: CREATE Program, 2019.

The overall project estimate and budget is listed in detail in [CREATE Form 3.1](#). The sources and amounts of all funds for eligible project costs for Phase III Construction are summarized in Table 2. Table 2 aligns the Phase III Construction budget with project activities. EW3A project tasks are all scheduled to be complete within 16 months of the start of the construction. The CREATE partners have had significant success in delivering projects below budget and ahead of schedule, as discussed further in Section 4.2. The share of each funding source for the major construction activities listed in Table 2 will be determined during the development of the State Rail Agreement per the established CREATE procedures. As they have done for past grant funding agreements, the CREATE partners will work with the USDOT to ensure that spending of the funding sources are compliant with the terms of the grant.

Table 2 Costs for EW3A Phase III Construction Activities

| Task | Phase III Construction | |
|---------------------------------|------------------------|-------------|
| | Dollar | Percent |
| Track | \$10,066,423 | 39% |
| Signals | \$15,228,692 | 59% |
| Bridges | \$516,227 | 2% |
| Total Construction Costs | \$25,811,342 | 100% |

Source: CREATE Program, 2019.

4.0 Selection Criteria

Due to the importance of the Chicago Terminal to the flow of goods across North America, EW3A provides benefits at a national scale, helping not only businesses and residents in the Chicago region, but the broader Midwest and the Nation. Improving the efficiency of Pullman Junction by modernizing the signals and rail configuration will improve freight fluidity for the 25 percent of all US rail shipments that move to, from, and through Chicago. This increased fluidity also allows for more goods to flow via rail, easing congestion and reducing maintenance costs, and other negative impacts caused by trucks, on regional highways. Additionally, rail fluidity allows for more efficient freight and passenger train travel through the Chicago Terminal and reduces emissions from idling locomotives. Finally, EW3A improves safety on both the rail and highway systems through safer rail operations and reduced truck exposure to passenger vehicles traveling on the highway.

4.1 Project Impact: Primary Selection Criteria

The EW3A project will create \$172.8 million in benefits, by increasing fluidity and reducing congestion on the freight and passenger rail system.¹¹ Increased rail system fluidity provided by EW3A will encourage usage of the freight rail system and help avoid the potential diversion of freight shipments from rail to truck due to congestion on the freight rail system. This will lead to reduced truck vehicle miles traveled (VMT) on the highway and subsequent benefits to safety, state of good repair, environmental sustainability, and quality of life.

This section presents the primary selection criteria as described in Section E.1.i of the Notice of Funding Opportunity (NOFO). Table 3 summarizes the monetized benefits of EW3A according to the five primary selection criteria. Each criteria is further described in the following subsections, and detailed in the [Benefit-Cost Analysis](#).

With a discounted total project cost for EW3A (including funds previously expended for EW3 Phase I: Planning and Phase II: Engineering and ROW activities) of approximately \$19.4 million, **EW3A benefit-cost ratio is 8.9:1**. A summary of the benefit-cost analysis is included in Section 6.0 and details are included in [Benefit-Cost Analysis](#).

¹¹ All benefits and costs presented are in 2017 dollars. When applicable, future costs or benefits are discounted to 2017 dollars.

Table 3 Primary Selection Criteria Summary

| Benefit Categories | | Monetized Benefits (Discounted 2017 dollars) | Monetized Benefit Description |
|--------------------|------------------------------|---|---|
| 1 | Safety | \$49.5 million | Reduction in crashes due to avoided freight diversion from rail to truck. |
| 2 | State of Good Repair | \$59.4 million | Reduction in roadway pavement damage due to avoided freight diversion from rail to truck. |
| 3 | Economic Competitiveness | \$2.6 million | Improved freight rail throughput and reduced delay. |
| 4 | Environmental Sustainability | \$61.3 million | Reduction in emissions resulting from a reduction in train idling. Reduction in emissions resulting from avoided freight diversion from rail to truck. |
| 5 | Quality of Life | Benefits to Quality of Life are monetized within categories 3 and 4 | Improved public health and air quality resulting from a reduction in train idling. Improved public health and air quality resulting from avoided freight diversion from rail to truck. |
| Total | | \$172.8 million | |

Safety

Safety benefits stem from an avoided increase in truck VMT due to completion of EW3A. By improving freight rail fluidity, EW3A avoids the diversion of freight traffic from rail to truck. The reduced truck VMT leads to a reduction in truck-related crashes that would have resulted without EW3A. More than 11 fatalities and 387 injuries of highway users are estimated to be avoided over 30 years with the completion of EW3A.

A detailed description of the calculation and methodology for estimating Safety benefits is provided in the [Benefit-Cost Analysis](#).

Although not monetized in this application, safety benefits of EW3A also include increased safety for rail operations. EW3A replaces manually operated equipment with automated signals and switches, removing the potential safety hazard incurred from train crews needing to stop the train and for the conductor to dismount the locomotive to manually operate switches while transiting Pullman Junction. A major component of EW3A will be significant upgrades to the signal system, which will increase visibility, offer more advance signal information to the locomotive engineer, and replace the current positive train control (PTC)-retrofit installation with modern signals that are compatible with PTC without retrofit. A manual gate at the CRL/SCIH Main Track and NS Verson Lead Track crossing will be removed and replaced with an automated signal. These improvements mean that train crews will no longer have to stop the train or dismount to move through the junction, removing a potential safety hazard.

State of Good Repair

State of Good Repair benefits also result from an avoided increase in truck VMT due to completion of EW3A and the associated increases in rail mobility. The avoided diversion of freight traffic to truck is estimated to reduce truck VMT by an estimated 981 million truck-miles over 30 years, therefore eliminating additional wear-and-tear on the roadways from these trucks. This improvement helps preserve the condition of highway pavement throughout the Chicago metropolitan area and beyond.

The CREATE partner railroads are committed to operating and maintaining the federally-funded railroad facilities in a state of good repair throughout the lifecycle of the infrastructure at no cost to the partner public agencies, including USDOT. The CREATE partner railroads have developed each project in the Program, including EW3A, through a rigorous process of design and review to assure that the project is designed to the highest engineering standards and is compliant with all Federal, State and local regulations, as well as delivered and maintained in a manner that is accountable and responsible. Furthermore, the partner railroads have a history of fully funding maintenance on their assets in the Chicago region, including the 30 completed projects in the CREATE Program, many of which have been successfully built with Federal grant funding.

A detailed description of the calculation and methodology for estimating State of Good Repair benefits is provided in [Benefit-Cost Analysis](#).

Economic Competitiveness

EW3A will improve reliability and reduce delays on the Chicago rail system by improving the Pullman Junction bottleneck and increasing rail fluidity throughout the Chicago Terminal. This will result in travel time savings for rail operators, reducing business operating costs, expanding market access, and providing long-term economic benefits for shippers and receivers alike. Increased fluidity on the rail system will be particularly valuable for industries that rely heavily on access to cost-effective rail shipments, such as agriculture, energy, and manufacturing. These industries have strong multiplier effects and represent a key competitive advantage for the United States in the global economy. In addition to the benefits monetized herein, the significance of the project as a source of economic vitality is evidenced by the support of stakeholders such as the Illinois and Chicagoland Chambers of Commerce that have provided letters of support. These can be found in Section 4.2.

A detailed description of the calculation and methodology for estimating Economic Competitiveness benefits is provided in [Benefit-Cost Analysis](#).

Environmental Sustainability

Environmental sustainability benefits derive from the fuel savings and related emissions gains that will result from reduced delays to rail and avoided truck-miles. Over 37 million net gallons of diesel fuel will be saved due to the reduction in truck VMT and increased efficiency and reduced idling for rail traffic in the Chicago terminal. This will also lead to a reduction in almost one million tons of carbon dioxide (CO₂) emitted, as well as reductions in emissions of volatile organic compounds (VOCs), nitrogen oxides (NO_x), and particulate matter (PM). Reducing these emissions provides societal benefits, including improved health due to reduced exposure from emissions.

A detailed description of the calculation and methodology for estimating Environmental Sustainability benefits is provided in [Benefit-Cost Analysis](#).

Quality of Life

Quality of Life benefits include health benefits derived from decreased emissions and noise from idling trains (quantified under environmental sustainability) and increased mobility for highway users (quantified under economic competitiveness).

Additionally, the construction of EW3A will be undertaken in a manner with minimal impact on the local community. As the tracks in the project scope are above grade, most work can be completed without roadway closures. Minor work on bridges over Woodlawn Avenue and Stony Island Avenue will not require complete road closures, ensuring continued mobility and access to critical destinations for local communities.

4.2 Project Impact: Secondary Selection Criteria

The following describes the alignment of the EW3A project with the Secondary Selection Criteria described in Section E.1.ii of the NOFO.

Innovation

Innovative Technologies

EW3A includes signal modernization that will reduce the potential for conflicts on and increase safety of the rail system. The project will replace outdated manually operated switches with power-operated switches and modern signals that will allow trains to move more efficiently throughout the Junction, and remove the need for train crews to stop the train and manually operate switches and/or a gate. Furthermore, EW3A will improve interoperability with the PTC systems that have been installed throughout the Chicago Terminal. To date, PTC installations have been retrofit onto the current signals, which are relay-based. The EW3A project will replace the signal system with modern signals that are compatible with PTC and will not require a retrofit. The modernized signals will improve the integrity and reliability of the PTC system.

Innovative Project Delivery

The EW3A project will use CREATE processes and procedures unique to this type of investment in the areas of engineering, design, and procurement. The CREATE Program has a proven record of successfully and expeditiously managing grant funding, particularly through its obligation of Projects of National and Regional Significance (PNRS) and Transportation Investments Generating Economic Recovery (TIGER) grant funds. For example, USDOT released TIGER I funds on July 22, 2010 and the CREATE team began construction during the week of August 2, 2010. For TIGER IV, funds were obligated October 2, 2012 and construction was initiated June 12, 2013.

Each CREATE project is managed by an individual sponsor, which leads procurement, engineering and construction activities. All projects have followed Federal guidelines through Phase I and II to ensure eligibility for Federal funds. In its role as grant administrator, Cook County DOTD will coordinate closely with affected railroad owners, operators, and funding partners.

The project will require a significant amount of coordination to ensure that rail network capacity and access is not hindered for extended periods of time, and will set an example of balancing the needs of multiple stakeholders and users, as detailed in the [CREATE Program Partnerships and Management Practices Guidelines](#). After CREATE was initiated, many new procedures and policies were developed to govern this complex Program, which involves freight and passenger rail investments. During the initial years of CREATE's operations, significant investment was made in developing innovative policies and procedures that will guide the Program for years to come. This investment assures that the Program is poised to quickly advance projects when funding is available. EW3A is one such project.

CREATE Program Track Record of Successful Project Completion

The CREATE partners are experienced at procurement, project management, and collaboration to ensure successful project delivery. At present time, 30 of CREATE's 70 projects have been completed, four are under construction, and 17 are in the design phase.

Of the completed projects, 90 percent were at or under budget.

Finally, portions of the work will be made available for bid by qualified local and Disadvantaged Business Enterprise (DBE) firms. CREATE has compiled DBE guidance from CREATE partners to help these firms successfully bid on CREATE projects. The Program has a history of awarding successful contracts to these firms. Over 75 various DBE contracts have been awarded for work on design and construction for CREATE projects over the last 10 years. This project will have goals for DBE participation in construction activities as per IDOT's requirements.

Innovative Financing

This application is noteworthy for its high level of private sector cooperation and financial commitment. Private sector railroad funding contributions represent 50% of the non-federal funding match for EW3A construction.

This level of private sector railroad funding commitment is consistent with the mission and vision of the CREATE Program since its establishment in 2003. In the founding Joint Statement of Understanding for the CREATE Program, the freight railroads that are party to the partnership

“voluntarily [committed] to contribute the Railroad Financial Contribution during Component construction for the benefits they will receive during the life of the Project, and [affirmed that] they will own and maintain the railroad infrastructure Components once completed.”¹²

To date, the CREATE Program has received funding commitments totaling \$1.62 billion:

- Federal funds totaling \$647 million, including an INFRA grant, a CRISI grant, TIGER I and TIGER IV grants, a SAFETEA-LU PNRS grant, an ARRA High Speed Rail grant, a Railroad Relocation grant, and an FRA railroad safety grant through the STEP Program.
- State funds totaling \$441 million, including State bond funds, PNRS/TIGER matching funds, and support for grade separations.
- Local government funds totaling \$153 million, including County and City funds for viaduct improvements, grade separations, and land acquisition.
- Railroad funds totaling \$375 million, including private freight, Metra, and Amtrak funds for railroad infrastructure and grade separations.

It is also noteworthy that from 1998 through 2017, the CREATE private sector railroad partners have invested over \$6.5 billion in ongoing infrastructure maintenance and improvement in the Chicago Terminal outside the CREATE Program.

Partnerships

The CREATE Program is managed through a public-private partnership among Amtrak, the Association of American Railroads (AAR), BNSF Railway Co., Belt Railway Co. of Chicago, the Chicago and Illinois Departments of Transportation, Cook County DOTH, CP, CN, CSX, Indiana Harbor Belt Railroad Co., Metra, Norfolk Southern Railway and Union Pacific Railroad.

Cook County DOTH is the project sponsor and lead applicant for the EW3A project. The Illinois Department of Transportation and Highways and CREATE railroad partners are providing funding for this project and will be involved in delivery of the project. Contacts for each of these agencies follow in Table 4.

¹² CREATE Program Joint Statement of Understandings. June 13 2003.
<<http://www.createprogram.org/JSOU/OriginalJSOUsigned.pdf>>

Table 4 Contact Information for Project Sponsor and Stakeholders

| Agency | | Contact |
|--|--|---|
| Cook County Department of Transportation and Highways | Project Sponsor DUNS number: 080475716 | Jennifer Killen Assistant Superintendent Cook County Department of Transportation and Highways 69 W. Washington St. 24 th Floor Chicago, IL 60602 Jennifer.Killen@cookcountyil.gov (312) 603-1601 |
| Illinois Department of Transportation | CREATE Partner Agency | Samuel Tuck, III Bureau Chief Freight Rail Management Illinois Department of Transportation Office of Intermodal Project Implementation 69 W. Washington St. Suite 2100 Chicago, IL 60602 Samuel.tuck@illinois.gov (312) 793-3940 |
| Association of American Railroads | CREATE Partner Agency | William C. Thompson CREATE Railroad Program Manager Association of American Railroads 1501. S Canal St. Chicago, IL 60607 wthompson@aar.org (312) 542-8320 |

As a public-private partnership representing several entities engaged in the freight transportation sector, Cook County DOTH is pleased to continue the record of cooperation and coordination across multiple entities with its sponsorship of this project. Additionally, Cook County DOTH is pleased to provide documentation of support and funding commitment for EW3A that demonstrates the broad base of support that this project has obtained throughout the Chicago region.

Table 5 presents a list of entities that have committed their support and funding to EW3A as of July 12, 2019. A [complete list of support letters](#), including those received after July 12, 2019, are on the CREATE Program webpage.

Table 5 Letters of Support for EW3A Project

| Project Sponsor |
|---|
| Cook County Department of Transportation and Highways |
| Stakeholders and Supporting Organizations |
| Association of American Railroads |
| Alderman Michelle Harris (8 th Ward) |
| Chicagoland Chamber of Commerce |
| Chicago Department of Transportation |
| Chicago Metropolitan Agency for Planning |
| Illinois Chamber of Commerce |
| Illinois Congressional Delegation |
| Illinois Department of Transportation |
| Illinois International Port District |
| Metropolitan Planning Council |
| Norfolk Southern Railway |

Note: Support letters can be found [here](#).

Public Engagement

Public engagement was part of the [Phase I study](#), conducted by IDOT in 2015.¹³ Discussions with USDOT and descriptions of public engagement are included in this document and summarized in Table 5.

Table 6 Public Engagement Activities for EW3A

| Activity | Stakeholder Groups in Attendance | Date |
|--|---|----------------------------|
| EW3 Project Public Hearing | Aldermen and Aldermanic representatives, State legislators' representatives, Community groups | May 22, 2014 |
| EW3 Public Comment and Response | Community members | April 2014 – June 2014 |
| Aldermanic Coordination Meetings | Aldermen and aldermanic representatives from impacted City of Chicago wards | May 6, 2014 – May 15, 2014 |
| State Representative and State Senator Outreach and Engagement Letter Effort ¹⁴ | State representatives and State senators from impacted Illinois districts | April 2014 – May 2014 |
| Viewpoint solicitation from residents in the EW3 project area impacted by findings of train noise analysis | Property owners and tenants who live in the EW3 project's area of noise impact | May 2014 – June 2014 |

¹³ The Phase I report was completed prior to EW3 being divided into stages (EW3A and EW3B) with independent utility. The Phase I report includes information on EW3, which includes additional components, now known as EW3B, which are not referenced in this application. This application requests funding for construction of EW3A only.

¹⁴ None of the State legislators requested follow-up meetings with IDOT or CREATE representatives on the EW3 project.

5.0 Project Readiness

5.1 Technical Feasibility

The project has completed preliminary engineering. The [Phase I study](#) for EW3 performed by IDOT was completed in July 2015.¹⁵ The design criteria is based on specifications developed by the railroads and agreed to by IDOT. The cost estimate is based on historical railroad unit costs and professional engineer experience. The CREATE Program utilizes a standardized cost estimation procedure that was used here for the development of the construction costs per the [CREATE Form 3.1](#). The estimate includes 10 percent “Confidence of Estimate” contingency factor, five percent for construction management costs, and five percent Project’s Management Reserve. The contingency and Project’s Management Reserve serves to mitigate budget risks.

The project involves the construction of a second main line that will allow trains to access the double-track NS Chicago District southeast of Pullman Junction. The project consists of several components, including track geometry improvements, addition of capacity, replacement of manually operated switches with power switches, and modernization of signal systems.

The following is a summary of the proposed work for EW3A:

- The existing NS Pullman Junction control point will be replaced with new signal hardware.
- A new NS control point (Stony Island) will be constructed just east of Pullman Junction.
- A second Main Track will be constructed through Pullman Junction, connecting the existing Pass Track to NS Main 2.
- Design speed on the new NS main tracks through Pullman Junction. will be 25 mph (Timetable speed is currently 15 mph through the existing curve).
- Six existing manually operated turnouts inside Pullman Junction control point will be eliminated. All turnouts within the new control points will be power-operated.
- A new, direct route from the NS main line to the SCIH will be established.
- Manually operated turnouts at the west end of the Calumet Yard leads will be replaced with remote (yardmaster) controlled power turnouts.
- Minor concrete repairs will be made to existing railroad bridges over Woodlawn Ave. and Stony Island Ave.

CREATE partners will release all Requests for Proposals (RFPs) for design and bids for construction using established Federally-approved processes. Most of the work, including track and signal construction, is force account and performed directly by the railroads per union agreement. Portions of the work will be made available for bid by qualified DBE firms. As

¹⁵ The Phase I report was completed prior to EW3 being divided into stages (EW3A and EW3B) with independent utility. The Phase I report includes information on EW3, which includes additional components, now known as EW3B, which are not referenced in this application. This application requests funding for construction of EW3A only.

described in Section 4.2, CREATE has DBE guidance to help these firms successfully bid on CREATE projects. The project and all respective components will adhere to FRA, IDOT, CDOT, and railroad standards, along with all other Federally-recognized guidelines pertaining to the project, and the CREATE Partnerships and Management Practices.

5.2 Project Schedule

A detailed project schedule can be found [here](#). The estimated timeline for key phases of the project are listed in Table 7.

Table 7 Project Schedule for EW3A Project

| Phase | Date |
|---|------------------------|
| Final Design Engineering Complete | Fall, 2019 |
| BUILD funds awarded | Winter, 2019 |
| Construction Begins | Fall, 2020 |
| <i>Construction funds obligation deadline</i> | <i>September, 2021</i> |
| Construction Complete | Winter, 2021 |
| IDOT Final Project Completion Report | Summer, 2022 |

Source: CREATE Program, 2019.

The detailed project schedule identifies all major project milestones. These project milestones include the activities necessary before obligation of funds, such as the processes necessary as a part of the CREATE Program as well as the expected construction start date. At the time of this application, the EW3A project is in final design engineering for the track and signal work. This work is expected to conclude in 2019, and the project will then proceed into the CREATE Project Delivery process. This process includes budget review and approval by the Chicago Planning Group (CPG), which has oversight responsibilities for the CREATE Program, and the CREATE Management Committee. IDOT and the Federal Highway Administration (FHWA) will approve the Project's Plan, Specification, and Estimate (PS&E) and IDOT will approve the construction project plans.

After the IDOT/FHWA State Rail Agreement approval is complete, EW3A will be advertised for bid. After the funds are obligated, project construction will begin. All construction funds will be obligated in advance of the statutory deadline of September 30, 2021 for FY 2019 funds.

The expected Notice to Proceed (NTP) date is August 2020, after which construction will begin and be substantially complete by December 2021 (16 months). This timeline includes 2 months for procurement and 16 months for construction, with overlapping construction and procurement activities for different project components. There are no right-of-way or property acquisitions for this project.

5.3 Required Approvals

The [Phase I study](#) by IDOT was completed in July 2015.¹⁶ The ECAD was prepared and EW3 received a Categorical Exclusion for the project. EW3A, as a stage of EW3, has received the environmental approvals and permits necessary for the project to proceed to construction on the timeline specified in the project schedule. The work in EW3A is almost entirely to be completed on railroad property with minimal disruption to the community. No full roadway closures are anticipated. The bridge work will be coordinated with city officials as necessary as part of ongoing CREATE partner coordination.

Federal Transportation Requirements and State and Local Planning.

The CREATE Program, including Pullman Junction Stage A (EW3A) project is included at the program level as a regional priority as part of the following plans:

- Illinois State Freight Plan (2017).
- IDOT Long Range Transportation Plan (2018).
- Illinois State Rail Plan Update (2017).
- IDOT Transportation Improvement Program (2019).
- CMAP Transportation Improvement Program (2019).
- CMAP Long Range Transportation Plan (2018).
- Cook County 2040 Long Range Transportation Plan (2016).
- Cook County Freight Plan (2018).

Once selected for this grant, the CREATE partners will comply with all standard USDOT reporting requirements as required in 2 CFR 200.301 and 49 U.S.C. 24407(f), including quarterly progress reports, quarterly Federal financial reports, and interim and final performance reports, as well as all applicable auditing, monitoring, and close out requirements. Included in the reporting will be performance measures mutually agreed upon by USDOT and CREATE for the purpose of tracking the impacts of the proposed EW3A project in achieving strategic goals and objectives. The CREATE partners have agreed to and reported to USDOT performance measures for similar projects and have incorporated performance reporting as a part of the CREATE project process.

¹⁶ The Phase I report was completed prior to EW3 being divided into stages (EW3A and EW3B) with independent utility. The Phase I report includes information on EW3, which includes additional components, now known as EW3B, which are not referenced in this application. This application requests funding for construction of EW3A only.

An [example template](#) shows the proposed performance measures for this project: number of trains, average train speed, and average travel time.

5.4 Assessment of Project Risks and Mitigation Strategies

The CREATE partners do not foresee any significant or material risks to successful completion of EW3A. Moreover, the CREATE partners have established project procedures that are used to systematically execute and implement projects.

To mitigate risks, the CREATE partners manage project risks in accordance with the [Estimates and Contingency Plan](#). This document outlines: 1) processes for use of management reserve funds for changes to scope; 2) procedures for the use of contingency funds associated with addressing design errors, requests by other agencies, unidentified utilities, added property costs, unanticipated conditions or commitments, and force majeure; and 3) the process for approving change orders and their payment method. Cost estimates for EW3A include contingencies and management reserve percentages per estimate to mitigate project risks for issues such as weather or other delays. The project includes substantial private sector participation in the financing, construction, and operation of the proposed project. NS will perform most of the construction through force account. As described on page 15, the work that will be performed by contractors will be let and managed through established practices that have been used to successfully deliver previous CREATE Program projects. The railroads are contributing half of the local match to the project and they are committed to operating and maintaining the infrastructure throughout its lifecycle.

EW3A is consistent with planning guidance and documents set forth by USDOT, including those required by law or State rail plans developed under Title 49, United State Code, Chapter 227. A project management plan is in place for managing the implementation of the proposed project, including the management and mitigation of project risks. The CREATE partners follow the CREATE process as outlined in the [Phase III Manual](#) and corresponding [flow chart](#).

6.0 Benefit-Cost Analysis

A summary of the benefit-cost analysis for this project is included in the following table. Additional details are included in the [Benefit-Cost Analysis](#).

Table 8 Benefit-Cost Analysis Summary Matrix

| Current Status/Baseline | Change to Baseline | Type of Benefits/Impacts | Population Affected | Economic Benefits | Summary of Results (Benefit Cost Ratio and Undiscounted Benefits) |
|--|--|--|--|--|---|
| Without improvements, the Chicago rail network will reach saturation in 2029, and thus will be unable to accommodate additional demand for freight rail traffic. A portion of this traffic is assumed to be shifted to truck if no improvements are made. Passenger and freight rail operations experience delays due to insufficient capacity on the Chicago rail network. | EW3A will replace the existing Pullman Junction control point with new hardware and add a new Norfolk Southern (NS) control point at Stony Island, east of Pullman Junction. A second main track will be constructed through Pullman Junction, connecting the existing passing track to NS Main 2. Six manually operated switches through Pullman Junction will be eliminated, and all switches within the control points will be power-operated. Manually operated switches at the Calumet Yard's west end leads will be replaced with remote (yardmaster) controlled switches. A new, direct route from the NS main line to the South Chicago & Indiana Harbor Railway will be established. Additional track and signal upgrades at Pullman Junction will allow greater flexibility and access to four existing main line tracks west of Pullman Junction. | The additional main line track will provide expanded capacity for trains moving through the Chicago Terminal by increasing speeds and reducing delays for trains operating in the vicinity of the Pullman Junction. This will result in decreased delay in the Chicago Terminal and increased capacity to handle trains, thereby reducing future reliance on truck traffic for commodities moving to/from Chicago. | Businesses that ship or receive products or materials via rail, including: <ul style="list-style-type: none"> • Consumer goods • Energy • Chemicals • Minerals • Aggregates • Motor vehicles • Grain and agricultural products • Forest products More than 35 daily freight trains | Increased freight rail fluidity in the greater Chicago region results in the avoidance of 3M truck trips that would otherwise be needed to accommodate demand. This equates to the avoidance of 981M truck VMT over the 30-year benefit period at a maintenance cost of \$0.28 per mile. ¹ Other benefits include: <ul style="list-style-type: none"> • Reduced pavement wear and tear on the region's interstates and highways. • Reduced fuel consumption and emissions with avoided truck travel at 150 ton-miles per gallon compared to rail travel at 478 ton-miles per gallon. • Improved safety with 1.5 fatal crashes and 50.4 injury crashes avoided per 100M truck VMT. | BC ratio at 7% discount rate = 8.9 Total Benefit (undiscounted) = \$786M State of Good Repair – Avoided pavement damage through reduced truck VMT = \$273M Economic competitiveness - Reduced freight train delay = \$10.6M Sustainability – Reduced fuel consumption and CO2 emissions due to increased use of rail vs. truck and increased rail operating efficiency and reduced delay = \$275M Safety – Cost of injuries and deaths avoided by truck VMT avoided = \$227M |

Appendix A Funding Commitments

Funding commitment letters from the local funding agencies can be found [here](#).