CREATE

KEEPING THE GO IN CHICAGO

CRISI 2019 Grant Application for CREATE Project EW3A

PROJECT TITLE
CRISI 2019 Grant Application for CREATE Project EW3A

APPLICANT
Cook County Department of Transportation and Highways

PROJECT TRACK
Track 3 – FD/Construction

WAS A FEDERAL GRANT APPLICATION PREVIOUSLY SUBMITTED FOR THIS PROJECT
Yes

FEDERAL GRANT PROGRAM/PROJECT TITLE
BUILD 2019 Grant Application for CREATE Project EW3A

IS THIS A RURAL PROJECT
No

CITY/STATE
Chicago, IL

URBANIZED AREA
UACE 16264

POPULATION OF URBANIZED AREA
8,677,303

IS THE PROJECT CURRENTLY PROGRAMMED?
Yes – Illinois Department of Transportation Freight and Rail Plans, Illinois Long Range Transportation Plan (LRTP), Chicago Metropolitan Agency for Planning LRTP

October 2019

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1.0 Introduction

The Cook County Department of Transportation and Highways (DOTH) is pleased to submit this application to the Federal Railroad Administration (FRA) for a Consolidated Rail Infrastructure and Safety Improvements (CRISI) grant on behalf of the Chicago Region Environmental and Transportation Efficiency (CREATE) Program for improvements to Pullman Junction Stage A (EW3A).[1] This document presents information in support of the EW3A project as requested by the CRISI Notice of Funding Opportunity (NOFO) on August 14, 2019. EW3A has broad support from the public and private sectors; letters of support from Cook County DOTH, the State of Illinois, CREATE railroad partners, and other organizations are included in Section 12.0.

2.0 Project Summary

CREATE project EW3A is a critical rail project on Chicago's East-West Corridor that will improve rail safety and fluidity and reduce congestion throughout the Chicago Terminal. This project involves the addition of a second main track, rail track geometry improvements, and upgrades to signals, switches, and gates in the vicinity of Pullman Junction[2] (See Figure 5) to remove bottlenecks and replace outdated infrastructure that slow down train movements and limit capacity and throughput.

The EW3A project will create $172.8 million in benefits.[3] In addition to the direct benefits of reduced delays and increased capacity for freight and passenger rail users, the increased fluidity within the Chicago Terminal will lead to greater use of the freight rail system and reduced truck vehicle miles traveled (VMT) on highways across the region and nationally, creating benefits to safety, state of good repair, environmental sustainability, and quality of life.

Construction of EW3A is a crucial component of a set of related CREATE projects on Chicago's East-West corridor (see sidebar). This corridor carries about 100 trains per day and is a critical component of the national freight rail system. 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.

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/projects.htm for details.

[1] The CREATE partners determined that the EW3 project will be constructed in two stages with independent utility: EW3A and EW3B. This application seeks construction funding for EW3A.
[2] A junction is a location in which two or more rail routes converge or diverge.
[3] All benefits and costs presented are in 2017 dollars. When applicable, future costs or benefits are discounted to 2017 dollars.

3.0 Project Funding

The initial cost estimate for the EW3A project by task and sub-task, the grant funding request, and the non-federal funding match are detailed in Table 1. The total estimated construction cost of EW3A is $25,811,342, for which the CRISI grant will contribute 50% of total project construction cost. Cook County DOTH's CRISI 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 for the non-federal funding match are available in Appendix A.

Note that CREATE submitted a grant application for EW3A in July 2019 to the (USDOT) Better Utilizing Investments to Leverage Development (BUILD) Transportation Discretionary Grants Program. The BUILD grant application request for EW3A is pending as of submission of this application. 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%**
CRISI Federal Funding Request	*$12.9 million*	*50%*
Non-Federal Funding Match (Cash)	*$12.9 million*	*50%*
Portion of Non-Federal Funding from the Private Sector	*$6.45 million*	*25%*
Portion of Non-Federal Funding from the Public Sector	*$6.45 million*	*25%*
Pending Federal Funding Request (BUILD 2019)	*$12.9 million*	*50%*

Source: CREATE Program, 2019.

The overall project estimate and budget is listed in detail in CREATE Form 3.1. The CREATE partners have previously expended about $3.1 million for EW3A Phase I and Phase II planning activities.[4] The sources and amounts of all funds for eligible project costs for Phase III Construction are summarized in Table 2. EW3A project tasks are all scheduled to be completed within 20 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 8.0. The share of each funding source for the major construction activities listed in Table 2 will be

[4] Previously expended costs, including those for Phase I and Phase II are not included in the non-federal funding match.

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 and the FRA 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

Construction Task	Phase III Construction	
	Dollar	Percent
Project Management[1]	$4,894,842	19%
Track Construction	$8,151,000	32%
Signal Construction	$12,487,200	48%
Bridge Construction	$278,300	1%
Total Construction Costs	**$25,811,342**	**100%**

Note: Project Management includes costs associated with construction management, railroad flagging, inflation associated with construction costs, and the project's management reserve. These costs are detailed in CREATE Form 3.1. Further detail on each task is provided in the Statement of Work.

Source: CREATE Program, 2019.

4.0 Applicant Eligibility

The lead applicant and project sponsor for this CRISI grant is the Cook County Department of Transportation and Highways (DOTH). DOTH is a department of the Cook County government, a political subdivision of the State of Illinois. Cook County was established as a county in 1831 by an Act of the Illinois State Legislature (then the Illinois General Assembly). IDOT and CREATE railroad partners are providing funding for this project and will be involved in delivery of the project, which will be governed by established CREATE procedures.

Cook County DOTH is a partner agency in 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 largest hubs for freight and passenger rail activity in the country.

The CREATE Program is comprised of 70 projects that entail 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. At six key junctions, freight and passenger train operations will be separated; and improvements at over two dozen at-grade crossings both within and outside of the four corridors will mitigate neighborhood impacts. All of these investments will not only increase capacity, speed, and reliability for freight and passenger rail in and around Chicago, but also reduce the burden of rail operations on the neighborhoods most directly affected. As of October 2019, 30 of CREATE's 70 projects have been completed, 4 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.

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 (BRC), the Chicago and Illinois Departments of Transportation (CDOT and IDOT, respectively), Cook County DOTH, Canadian Pacific (CP), Canadian Northern (CN), CSX, Indiana Harbor Belt Railroad Co., Metra, Norfolk Southern Railway (NS) and Union Pacific Railroad (UP).

5.0 Project Eligibility

CREATE project EW3A is eligible for a CRISI grant under Project Eligibility Category 3.a.iii): a Capital Project necessary to address congestion challenges affecting rail service.

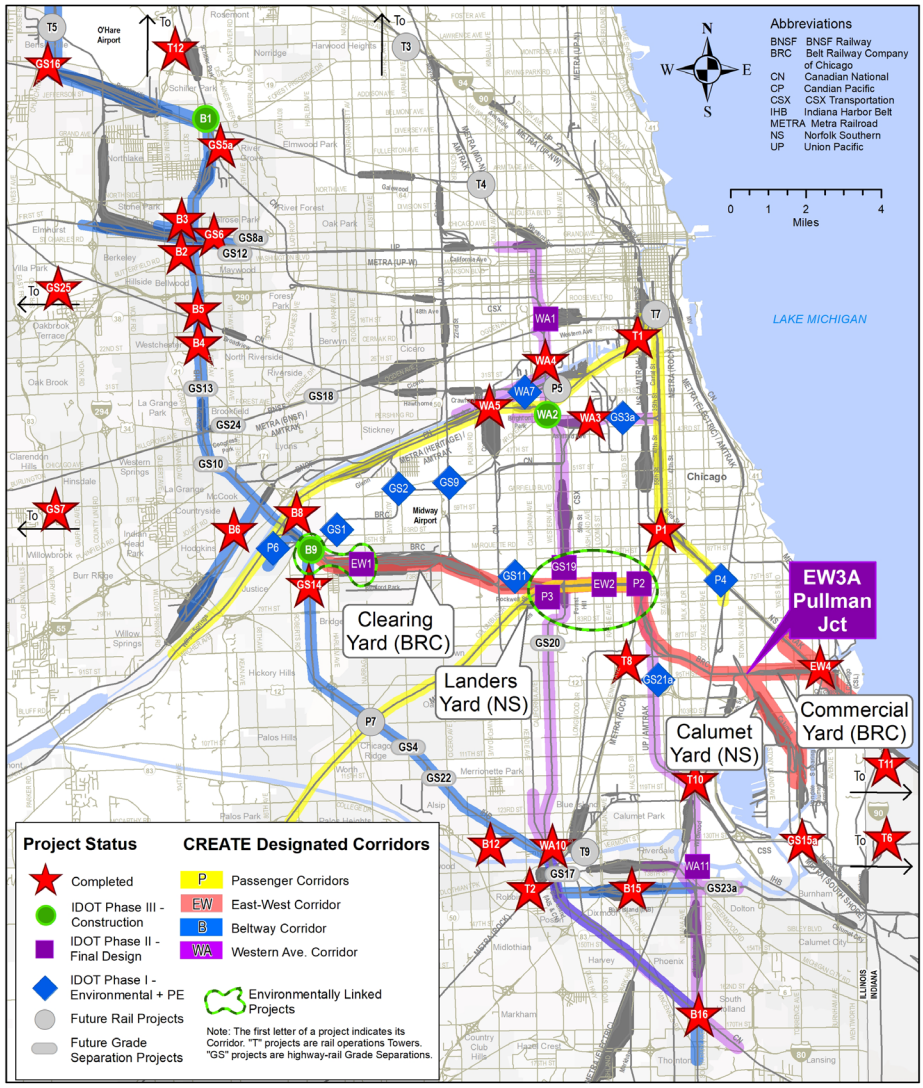
CREATE project EW3A includes track and signal work that will address congestion and increase rail fluidity and capacity through the CREATE East-West Corridor and Pullman Junction. Each day, approximately 37 freight trains travel through Pullman Junction, with many of these trains moving to or from Clearing Yard, one of the largest classification yards in the United States and a key hub for carload traffic in the Chicago region. The redesign of track geometry and the installation of modern signals, switches, and crossing gates focus on reducing chokepoints and slow zones within the Corridor and the Junction. Additionally, the installation of a second main track with a higher design speed is intended to improve travel speeds through the Junction. The result of these project components is reduced congestion and improved rail fluidity and capacity.

6.0 Detailed Project Description

6.1 Project Description: CREATE Project EW3A

CREATE project EW3A involves rail track and signal upgrades in the vicinity of Pullman Junction on the CREATE East-West Corridor. Pullman Junction is near 95th Street between approximately Woodlawn Avenue to the west and Stony Island Avenue to the east in Chicago (Figure 5 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 1shows 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.

Figure 1 EW3A Project Location within Overall CREATE Program



Note: Viaduct projects in the City of Chicago are not displayed.
Revised August 22, 2019

Source: CREATE Program, 2019. Full size graphics are available here.

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.

Phase III Construction of EW3A project has not previously received federal financial assistance; however Phase II planning was partially funded through federal sources.

6.2 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.

EW3A will add a second mainline track, allowing for multiple trains to operate simultaneously. The project will also improve the track geometry, increasing the speed limit to 25 mph. Together, the track improvements will greatly reduce the stopping of trains, increase overall speeds, improve fuel efficiency, and reduce idling.

Manually-Operated Switches Generate Travel Time Delays

Six of the switches on the Pullman Junction mainline and several yard switches are manually operated (see Figure 2), 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 existing relay-based signal system with modern signals that are compatible with PTC.

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.

Figure 3 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 2 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 3 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.

6.3 Project Users and Beneficiaries

Direct Users

The direct users of the CREATE project EW3A are freight railroads. The project 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 BRC, NS, South Chicago & Indiana Harbor Railway (SCIH), Chicago Rail Link (CRL), CN, UP, and CP. CSX and CP also operate trains through this location multiple times per day. 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, as well as serve local customers. 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.

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**, NS'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.

Local Beneficiaries

EW3A is located in the City of Chicago in Cook County, IL, a region known as the South Cook Freight Cluster.[5] 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.[6]

State and regional agencies are working together to collectively invest in multimodal transportation and freight related projects in South Cook. EW3A is one of many projects being undertaken to improve multimodal freight infrastructure with the intention of increasing economic opportunities and potential for future development in the region. Within the past two years, Division Street near Blue Island Yard and Butler Drive in the Illinois International Port District have collectively been awarded over $18 million through the Cook County's *Invest in Cook* program, Illinois Department of Transportation's (IDOT) *Economic Development Program*, IDOT's *Competitive Freight Program*, and the City of Chicago's TIF Program. In 2019, the Chicago Metropolitan Agency for Planning (CMAP) awarded $5.8 million in *Surface*

[5] https://www.cmap.illinois.gov/2050/maps/freight.
[6] https://www.cmap.illinois.gov/2050/maps/clusters.

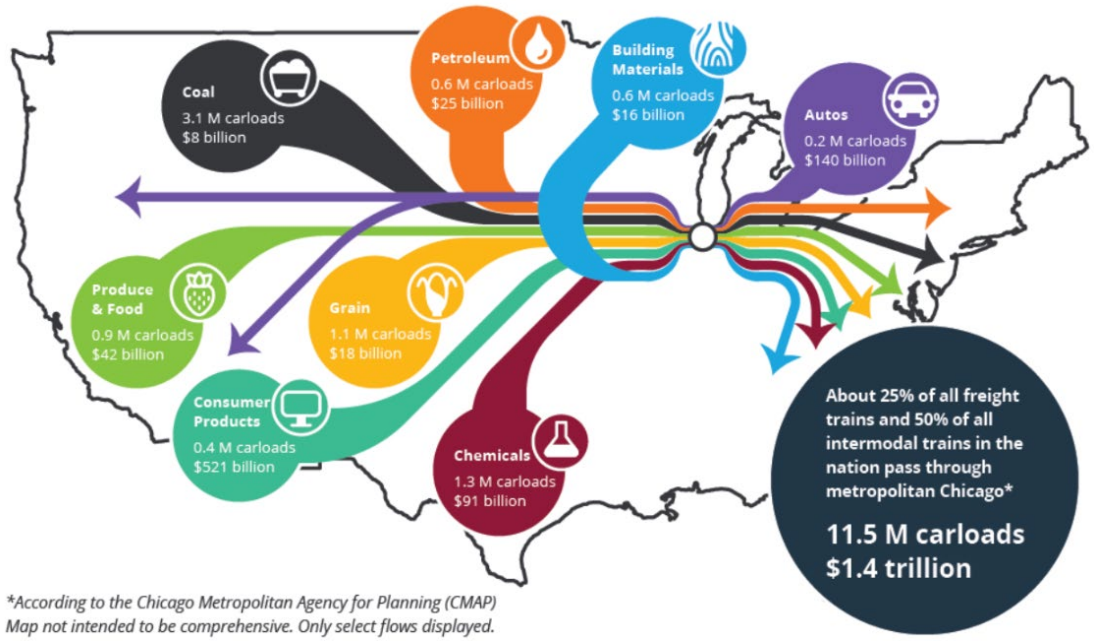
Transportation Program funds collectively to the CREATE Program grade separation project GS23a located in Dolton, IL and to a grade separation project in Burnham, IL.

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 with connections to Pullman Junction. The Calumet Collaborative[7], the Illinois International Port District, Chicagoland Chamber of Commerce and Illinois Chamber of Commerce all support the EW3A project.

National and Regional Beneficiaries

Chicago is North America's preeminent rail hub: one-fourth of the Nation's freight rail traffic and half of all intermodal trains originate, terminate, or pass through the Chicago region on their journey to market. Approximately 37,500 rail cars are enroute to or traveling through Chicago at any given time, with about 5,000 cars and 22,000 containers handled in the region daily.[8] Improvements to the Chicago Terminal proposed by CREATE projects, including EW3A, benefit national supply chains who rely on Chicago's rail system: grain from Iowa and Nebraska, coal from Wyoming, steel used by Chicago industries, and both domestic and imported consumer goods destined for rural and urban areas throughout the Nation (see Figure 4).

Figure 4 Economic Footprint of the CREATE Program
Select Volumes and Commodities Moving through the Chicago Rail Terminal



Source: CREATE Program, 2017.

[7] The Calumet Collaborative is a non-profit agency focusing cultivating public-private partnerships and other opportunities to develop economic, cultural, and environmental resources.
[8] CMAP, Chicago Intermodal Facility Lift Counts and Regional TEU Estimates, 2017

Volumes moving through the Chicago Terminal are expected to nearly double by 2045[9]; the efficient movement of these goods is essential to national commerce, and is particularly essential for domestic suppliers to compete globally by meeting demand in a timely and reliable manner for these products in the US and around the world.

CREATE project EW3A is an important component of this 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 for goods that travel through Chicago and are destined for markets throughout North America. Commerce moving through the Pullman Junction include diverse products from across the United States such as grain, coal, steel, building materials, fuels, and manufactured products.

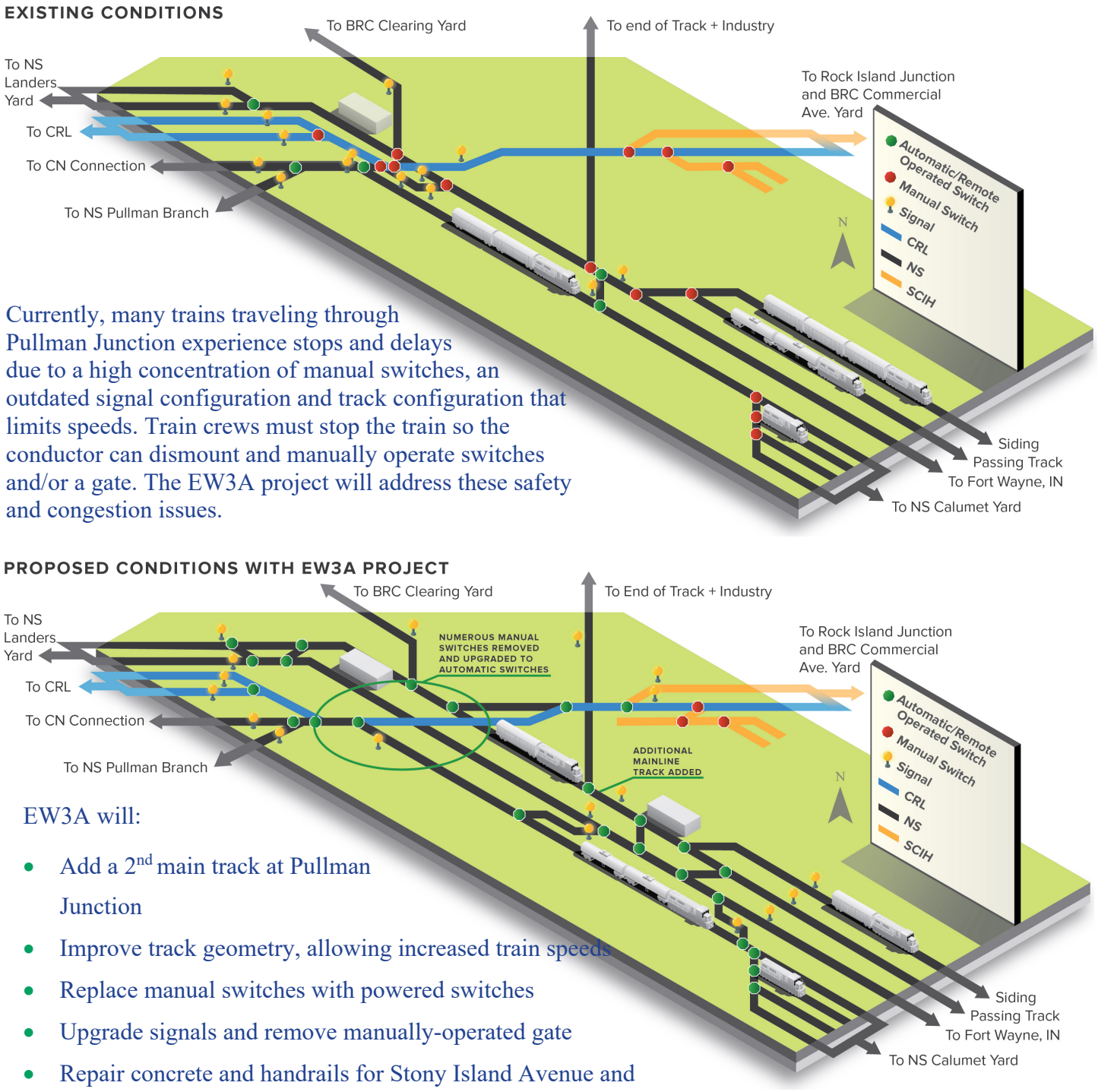
EW3A is aligned with ongoing planning and construction activities elsewhere in the terminal, such as the 75th Street Corridor Improvement Project (CIP), which received $132 million from the 2018 Infrastructure for Rebuilding America (INFRA) program. An average of nearly 100 trains travel the Chicago 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.

6.4 Project Components and Elements

Figure 5 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. Additional concrete and handrail repairs for the Stony Island Avenue and Woodlawn Avenue bridges will improve safety for users and abutters. A detailed summary of the work is provided in the Statement of Work.

[9] Federal Highway Administration Freight Analysis Framework 4.0

Figure 4 EW3A Existing and Proposed Alignment and Switch/ Signal Upgrades



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.

EW3A will:

- Add a 2nd main track at Pullman Junction
- Improve track geometry, allowing increased train speeds
- Replace manual switches with powered switches
- Upgrade signals and remove manually-operated gate
- Repair concrete and handrails for Stony Island Avenue and Woodlawn Avenue bridges

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

Source: CREATE Program, 2019. Note: Full size graphics are available here.

6.5 Proposed Project Performance Measures

To assess progress in achieving strategic goals and objectives for the CRISI program, CREATE has identified the following performance measures for the EW3A project:

Table 3 Proposed Project Performance Measures

Rail Measures	Units Measured	Temporal	Primary Strategic Goal	Secondary Strategic Goal	Description
Train Counts	Trains	Quarterly	Economic Competitiveness	State of Good Repair	The total number of trains operated between mile post BIH 2.7 [Canal] to BIH 23.8 [87th St.]
Average train speed	Miles per hour	Quarterly	State of Good Repair	Safety	The average speed of all trains operating between mile post BIH 2.7 [Canal] to BIH 23.8 [87th St.]
Travel Time	Time/Trip	Annual	Economic Competitiveness	Quality of Life	Point to point travel times between mile post BIH 2.7 [Canal] to BIH 23.8 [87th St.]

Source: CREATE Program, 2019.

6.6 Grade Crossing Information

N/A. CREATE project EW3A does not include grade crossing components.

6.7 Heavily Traveled Rail Corridor Information

N/A. CREATE project EW3A will improve congestion for all rail systems, including passenger rail service, in the Chicago Terminal by reducing congestion and improving throughput capacity.

6.8 PTC information

N/A. CREATE project EW3A will not deploy PTC systems. However, the signal work will improve interoperability with the existing PTC systems that have been installed throughout the Chicago Terminal by replacing current signals with modernized signals that are compatible with PTC.

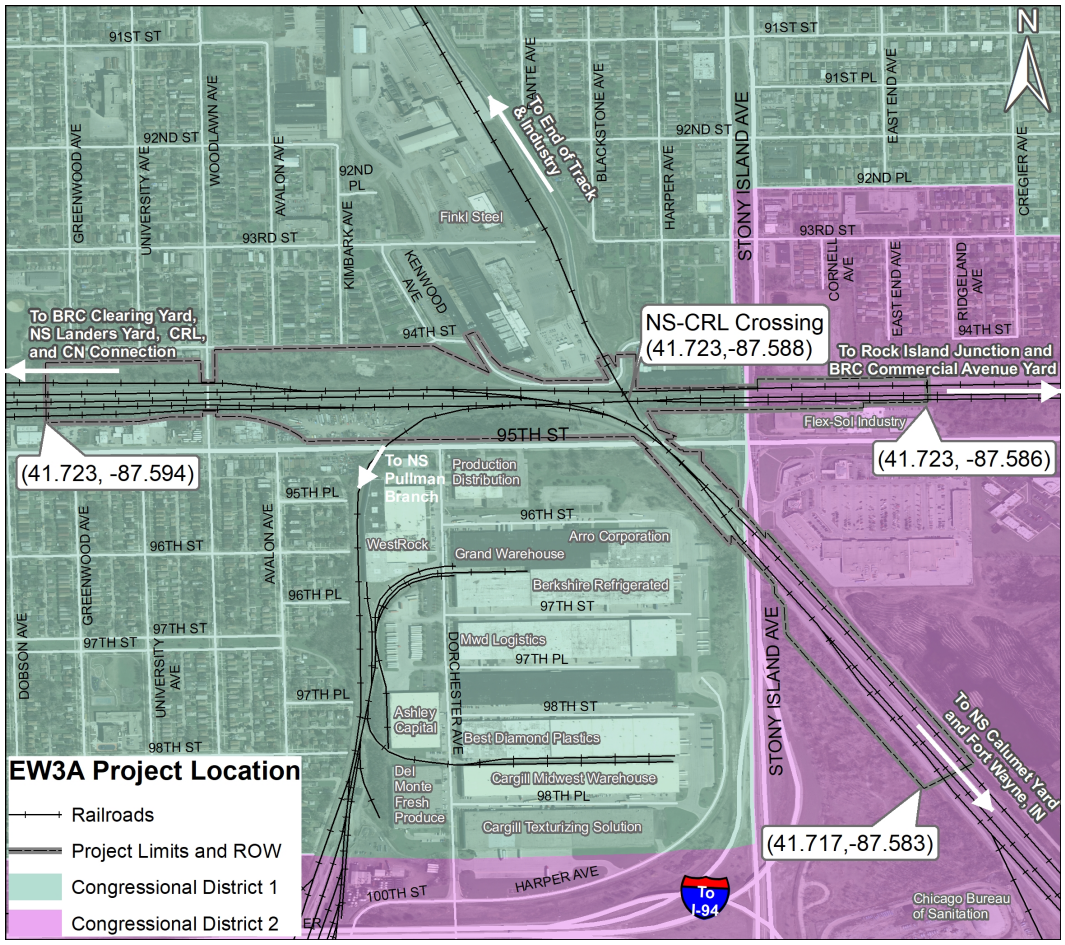
7.0 Project Location

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 5.

Figure 5 EW3A Project Area Location



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

8.0 Evaluation and 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.

8.1 Project Benefits

The EW3A project will create $172.8 million in benefits, by increasing fluidity and reducing congestion on the freight and passenger rail system.[10] 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. This will lead to reduced truck vehicle miles traveled (VMT) on the highway and subsequent benefits to (A) system and service performance; (B) safety, competitiveness, reliability, trip time and resilience; (C) improved integration with other modes; and (D) the ability to meet existing or anticipated demand.

The BCA was prepared according to the specifications outline in the Benefit-Cost Analysis Guidance for Discretionary Grant Programs for 2018 issued by the United States Department of Transportation (USDOT). This section presents the benefits and how they apply to the primary selection criteria as described in Section E(1)(B)(i) of the NOFO. A crosswalk of benefits categories from the USDOT guidance and the CRISI primary selection criteria is summarized in Table 5. Each criterion is further described in the following subsections.

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, the **EW3A benefit-cost ratio is 8.9:1**. Details of the benefit-cost analysis are included in the Benefit-Cost Analysis.

Economic Competitiveness (Primary Selection Criteria A and B)

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 and improvement in operational reliability 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.

State of Good Repair (Primary Selection Criteria A and C)

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.

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

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.

Safety (Primary Selection Criteria B)

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.

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.

Environmental Sustainability (Primary Selection Criteria C and D)

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 (NOx), and particulate matter (PM). Reducing these emissions provides societal benefits, including improved health due to reduced exposure from emissions.

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.

Table 4 CRISI Primary Selection Criteria Crosswalk

	USDOT Benefit Categories	CRISI Selection Criteria*	Monetized Benefits**	Monetized Benefit Description
1	Economic Competitiveness	*(A) and (B)*	$2.6 million	Improved freight rail throughput and reduced delay.
2	State of Good Repair	*(A) and (C)*	$59.4 million	Reduction in roadway pavement damage due to avoided freight diversion from rail to truck.
3	Safety	*(B)*	$49.5 million	Reduction in crashes due to avoided freight diversion from rail to truck.
4	Environmental Sustainability	*(C) and (D)*	$61.3 million	Reduction in emissions and improved public health and air quality resulting from less train idling and more efficient operations. Reduction in emissions and improved public health and air quality resulting from avoided freight diversion from rail to truck.
	Total		**$172.8 million**	

Source: CREATE Program, 2019. ***Key: (A) – Effects on system and service performance. (B) – Effects of safety, competitiveness, reliability, trip or transit time, and resilience. (C) – Efficiencies from improved integration with other modes. (D) – Ability to meet existing or anticipated demand.** **Discounted 2017 dollars.

8.2 Technical Merit

The CREATE EW3A project meets or exceeds the technical evaluation criteria as defined in the NOFO in each of the following areas:

A) Scope of Work

The proposed tasks and subtasks are appropriate and in accordance with best practices for construction projects of similar size and scope, based on the CREATE Program's experience.

The projects managed under the CREATE Program are developed through a rigorous process of design and review to assure that they are designed to the highest engineering standards, and are also compliance with all federal, state, and local regulations as well as delivered in a manner that is accountable and responsible. As stated below in B), the EW3A project's preliminary design has been approved with the final design nearing completion.

B) Strong Project Readiness

The Phase I study by IDOT was completed in July 2015.[11] 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. Phase II Final Engineering is 75 percent complete.

C) Qualifications and Experience of Key Personnel

Cook County DOTH is the project sponsor and lead applicant for the EW3A project. DOTH, as well as the supporting IDOT and railroad partners each have the technical staff and qualifications to successfully execute this project. Each CREATE project is managed by an individual sponsor, which leads procurement, engineering and construction activities. DOTH will coordinate closely with affected railroad owners, operators, and funding partners to perform all tasks required for the project. The primary personnel responsible for completion of EW3A have a strong and successful track record of similar project completion for the CREATE Program:

- Jennifer Killen, P.E., PTOE, is the Assistant Superintendent of the Cook County Department of Transportation and Highways. She has 20 years experience in the transportation sector, bringing 13 years of private sector as a design engineer and project manager on federally funded project experience to her role at the County. At Cook County, Ms. Killen is responsible for the oversight of all planning, engineering and construction functions for the Department.
- Samuel Tuck III, P.E., is the Bureau Chief of the CREATE Program & Freight Rail at IDOT. Mr. Tuck is responsible for collaborative management of the project funding and agreements. Mr. Tuck is an accomplished engineer and project manager with over 20 years' experience.
- Wiley K. McCain, P.E., System Engineer Public Projects at Norfolk Southern, is responsible for overseeing the EW3A project management. Mr. McCain has over 20 years of railroad experience, including as a planning engineer and design engineer.
- Derek Tichy, P.E., Project Manager at Norfolk Southern, will oversee construction implementation of EW3A. Mr. Tichy will work closely with Cook County as the sponsor agency, and the CREATE partnership. Mr. Tichy has over 10 years of experience as a railroad engineer and project manager.
- William C. Thompson, P.E, Chief Engineer of the AAR in Chicago, will oversee execution of EW3A on behalf of the CREATE Program, working closely with IDOT as the funding agency, and CSX as the contracting/implementing railroad. Mr. Thompson has forty years' experience in heavy haul railroad operations, engineering, design, and research.

D) Private Sector Participation

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

[11] 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.

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. Additionally, 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.

E) Legal, financial and technical capacity.

Cook County DOTH is the project sponsor and lead applicant for the EW3A project and has the legal, financial and technical capacity to successfully complete this project. Funding and delivery of this project is supported IDOT and the CREATE partner railroads. In its role as grant administrator, Cook County DOTH will coordinate closely with affected railroad owners, operators, and funding partners. IDOT, DOTH and the CREATE partner railroads have the necessary legal, financial, and technical capacity to carry out the proposed project.

F) Consistent with Planning Guidance

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.

8.3 Selection Criteria

The CREATE EW3A project meets or exceeds the selection criteria as defined in the NOFO in each of the following areas:

A) Federal Share

The federal share of $12.9 million requested for EW3A is 50% of the construction cost. The non-federal funding match is provided in equal parts by IDOT and CREATE railroad partners.

B) Sources of Non-Federal Share

25% of total construction costs is provided by IDOT and 25% is provided by CREATE private sector railroad partners.

C) Maximizing Net Benefits

The EW3A project will create $172.8 million in benefits, by increasing fluidity and reducing congestion on the freight and passenger rail system. **EW3A benefit-cost ratio is 8.9:1**. A summary of project benefits is included in Section 8.1 and details are included in Benefit-Cost Analysis.

The CREATE EW3A project meets or exceeds the additional departmental objectives as defined in the NOFO in each of the following areas:

A) Supporting Economic Vitality at the National and Regional Level

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.

B) Leveraging Federal Funding

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 PNRS grant, an ARRA High Speed Rail grant, a Railroad Relocation grant, and a 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 in addition to investments in the CREATE Program.

This CRISI funding request for Phase III construction of the EW3A project is $25.8 million, for which the CRISI grant will contribute 50% of total project construction cost. The non-federal funding match, which is provided in equal parts by IDOT and CREATE railroad partners, is $12.9 million, representing the remaining 50 percent of Phase III construction costs.

C) Project Life Cycle Costs and Maintenance Plan

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]

D) Innovative Approaches to Improve Safety and Expedite 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

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

PNRS and 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.

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.

E) Performance Accountability

The CREATE partners commit to the following specific, measurable outcomes as a condition of CRISI funding:

- **Reaching project delivery milestones in a timely manner**: Key milestones for each element of the project are identified in the project schedule. CRISI funding support will allow the project to be delivered efficiently, advancing the overall CREATE Program sequence as planned.
- **Achieving transportation performance outcomes**: The CREATE partners will establish performance baselines before construction and report performance measures quarterly for the EW3A project. The CREATE partners commit to measure appropriate performance measures (to be negotiated with FRA) as a condition of CRISI funding. The CREATE Program has demonstrated a track record of achieving similar performance targets on past projects.
- CREATE has a record of completing similar projects within the proposed budget, with several finishing 5 percent below budget.

9.0 Project Implementation and Management

9.1 Project Oversight and Contracting

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 DOTH will coordinate closely with affected railroad owners, operators, and funding partners.

The project has completed preliminary engineering. The Phase I study for EW3 performed by IDOT was completed in July 2015.[13] 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, 5 percent for construction management costs, and 5 percent Project's Management Reserve. The contingency and Project's Management Reserve serves to mitigate budget risks.

[13] See note on Phase 1 report structure above.

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 PNRS and 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.

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.

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. The project and all respective components will adhere to FRA, partner agencies, and railroad standards, along with all other federally-recognized guidelines pertaining to the project, and the CREATE Partnerships and Management Practices.

Finally, portions of the work will be made available for bid by qualified local and 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. Seventy-five 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.

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.

9.2 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. It is expected that 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.

9.3 Project Schedule

A detailed project schedule can be found here. The estimated timeline for key phases of the project are listed in Table 5.

Table 5 Project Schedule for EW3A Project

Phase	Date
Final Design Engineering Complete	Spring, 2020
CRISI funds awarded	Spring, 2020 (estimated)
Construction Begins	Fall, 2021
Construction Complete	Winter, 2022
IDOT Final Project Completion Report	Spring, 2023

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 FHWA will approve the Project's Plan, Specification, and Estimate (PS&E) and IDOT will approve the construction project plans, per established CREATE procedures.

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.

9.4 Project Progress Reporting

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

10.0 Planning Readiness for Track 3 (FD/Construction Projects)

The Phase I study by IDOT was completed in July 2015.[14] 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. Phase II Final Engineering is 75 percent complete as of October 2019.

Critical events and prior studies determining the need and feasibility of the project include:

- Partners CDOT, IDOT and Railroads develop CREATE concept, August 2003.
- CREATE Final Feasibility Plan, August 2005.
- CREATE Final Feasibility Plan, Amendment 1, November 2009.
- CREATE Final Feasibility Plan, Amendment 1 (Modified), January 2011.
- Cook County DOTH joins CREATE partners, May 2017.

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).

[14] See note on Phase I report structure above.

- 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).

11.0 Environmental Readiness for Track 3 FD / Construction Projects

The Phase I study by IDOT was completed in July 2015.[15] 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.

12.0 Letters of Support for EW3A

Table 6 presents a list of entities that have committed their support and funding to EW3A. Some letters of support were gathered as part of submission to the 2019 BUILD program for the EW3A project. Entities supporting EW3A were contacted to confirm their continuing support for the project for the CRISI program, as detailed in the Support Letter Memo.

A complete list of support letters are on the CREATE Program webpage.

[15] See note on Phase I report structure above.

Table 6 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 (8th Ward)
Alderman Susan Sadlowski Garza (10th Ward)
Calumet Area Industrial Commission
Calumet Collaborative
Chicagoland Chamber of Commerce
Chicago Department of Transportation
Chicago Metropolitan Agency for Planning
Civic Committee of the Commercial Club of Chicago
Illinois Chamber of Commerce
Illinois Congressional Delegation members
Illinois Department of Transportation
Illinois International Port District
Illinois State Representative Marcus C. Evans, Jr. (33rd District)
Metropolitan Planning Council
Norfolk Southern Railway

Appendix A Funding Commitments

Funding commitment letters from the local funding agencies can be found here.

Appendix B Benefit-Cost Analysis

The benefit-cost analysis narrative and calculations can be found here.