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CDOT CHICAGO DEPARTMENT OF TRANSPORTATION

Chicago Department of HOUSING and ECONOMIC DEVELOPMENT

Environmental Assessment

Ashland Bus Rapid Transit

November 2013

Prepared for: The Federal Transit Administration

U.S. Department of Transportation
Federal Transit Administration

Prepared by CDM Smith

Ashland Avenue
Bus Rapid Transit Project

Environmental Assessment

DRAFT

November 14, 2013

Ashland Avenue Bus Rapid Transit Project
City of Chicago, IL
Cook County, IL

Environmental Assessment

Submitted pursuant to the 42 U.S.C. 4332 (2)(c) by the
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and the
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EXECUTIVE SUMMARY

The Chicago Transit Authority (CTA), in cooperation with the Chicago Department of Transportation (CDOT), and as a grantee of the Federal Transit Administration (FTA), is proposing to implement an approximately 16.1-mile long Bus Rapid Transit (BRT) service along Ashland Avenue in the City of Chicago to improve transit speeds and reliability and enhance the pedestrian environment. The project corridor extends north-south along Ashland Avenue from Irving Park Road in the north to 95th Street in the south. Physical improvements proposed include dedicating two general use travel lanes (one in each direction) as center running bus-only lanes, implementation of transit signal priority (TSP), and construction of median BRT stations with enhanced pedestrian amenities approximately every half mile and at CTA 'L' stations. This Environmental Assessment (EA) documents the effects of implementing these improvements along the entire 16.1-mile project corridor.

Phase 1 of the project would implement center running, dedicated bus-only lanes and median stations first along 5.4 miles of Ashland Avenue between Cortland Street in the north and 31st Street in the south, generally within the central portion of the full 16.1-mile project. Outside of the Phase 1 limits, the BRT service would operate in mixed flow traffic and make stops curbside at the BRT station locations, using existing curbside local bus stops for the remainder of the 16.1-mile corridor. The second phase of the project would be implemented commensurate with funding availability. An implementation plan for the two project phases is discussed within this report (see **Section 2.3**).

This EA has been developed to meet the requirements of the National Environmental Policy Act of 1969 (NEPA) and concentrates on a detailed assessment of social, economic, and environmental impacts. It also recommends mitigation measures for any identified adverse impacts. In coordination with the public involvement process, the EA helps to define the effects of implementing the Ashland Avenue BRT Project on the physical, human, and natural environments along the corridor and surrounding station locations.

The selection of this center running, travel lane removal alternative as the Preferred Alternative (the Build Alternative in this EA) was based on a year-long Alternatives Analysis (AA) effort that assessed more than 16 options for BRT on Ashland Avenue. After a multi-level screening analysis and input at six public open houses, center running BRT with the removal of one travel lane in each direction was identified as the Preferred Alternative. Construction of the project is planned in phases to focus capital resources and provide a sustainable, viable, and long-term transit solution in the corridor.

Purpose and Need

The purpose of the Ashland Avenue BRT Project is to expand connectivity to the region's existing transit system by providing a new and upgraded high quality, high capacity, and cost effective premium transit service, i.e., a service which provides faster, more reliable, and comfortable passenger experience in comparison to the current local bus service. The proposed project would address the transportation needs of expansive population and employment growth outside of the Chicago Central Business District (CBD) or "Loop" and support local and regional land use, transportation and economic development initiatives. Specifically, the project would improve accessibility, mobility, transit travel times and reliability, and passenger facilities in this heavily transit-reliant corridor.

The need for this project is based on the following issues:

- Regional growth patterns outside of Chicago's "Loop''
- Congestion and a lack of competitive travel options
- Large number of transit-dependent customers
- Lack of non-downtown north-south fast transit alternatives
- Slow bus speeds, frequent stops, and unreliable bus travel times
- Street design issues no longer meet corridor needs or land use policy objectives

Environmental Resources, Impacts and Mitigation

The anticipated environmental impacts of the Ashland Avenue BRT Project are summarized in the **Table ES-1**. This EA provides greater details on each of these areas. The No-Build Alternative, which does not include any improvements other than routine maintenance of the existing bus service, was eliminated early on in the AA phase for not meeting the purpose and need for this project. Nevertheless, the No-Build Alternative is considered in the EA as a baseline against which the Preferred Alternative (Build Alternative) is compared. Throughout the EA, for each resource evaluated, both the potential impacts of the Preferred Alternative and the No-Build Alternative are discussed. **Table ES-1** summarizes the potential impacts of the Ashland Avenue BRT Project.

Table ES-1: Summary of Impacts

Factor	No-Build Alternative	Build Alternative
Vehicular Traffic - Diversion Routes	No Impact	Moderate Impact. Increased volumes on parallel routes and minimal travel speed reductions (between 1 and 3 percent on average daily).
Vehicular Traffic - Ashland Avenue	No Impact	Moderate Impact. Decreased volumes on Ashland Avenue. Limited left turns. Thirteen out of 89 signalized intersections along the corridor would operate at unacceptable Level of Service (LOS) without mitigation measures. Six of these 13 signalized intersections on the corridor are already performing at LOS E or F in existing conditions. Seven of these 13 signalized intersections currently operate at LOS D or better. Mitigation measures involving improvements either inside or outside of existing curb-to-curb width have been identified for all 13

Factor	No-Build Alternative	Build Alternative
Vehicular Traffic - Ashland Avenue		intersections which would bring all of these intersections up to acceptable LOS. CTA and CDOT would continue, as project partners, to work through final design on mitigation options for these failing intersections.
Parking	No Impact	Minor Impact. Approximately 11 to 12 percent reduction in parking capacity. This is offset by lack of demand in some areas along the corridor and available, comparable parking on side streets. Comparable parking would continue to be available at cross streets near BRT stations to serve residents and businesses. Outside of station areas, on-street parking would be retained and no loading zones would be impacted. Any additional changes to parking would be identified and coordinated through the public involvement process and with CDOT and the City of Chicago as part of stakeholder outreach efforts in final design.
Transit Operational Analysis	No Impact	Positive Impact. Up to 83 percent increase in bus speeds compared to local bus. Improvement of bus on-time reliability by 50 percent compared to local bus. Ridership is projected to increase by approximately 29 percent.
Bicycle & Pedestrian	No Impact	Positive Impact. Implementation of the Build Alternative is expected to benefit pedestrians and bicyclists by providing a new transit option that would encourage walk and bike trips, and improve the pedestrian environment. In addition, the design of the project would provide pedestrian-friendly features such as curb extensions that would slow down traffic and make crossing the street safer and easier. This would help in creating a system that benefits all users of the transportation system. Finally, much of the corridor would connect with current or planned DIVVY bike share stations.
Displacements/ Relocations	No Impact	No Impact

Factor	No-Build Alternative	Build Alternative
Land Use & Economic Development	No Impact	Consistent with existing land use and minor positive impact to economic development.
Neighborhoods & Communities	No Impact	Minor Positive Impact. BRT facilities would complement area neighborhoods. Physical layout would improve pedestrian access and transit service along and throughout the corridor which would enhance community cohesion. Improvements at intersections would also help reduce the dividing effect between neighborhoods along Ashland Avenue. Designs would be sensitive to emergency service access needs in the corridor.
Environmental Justice	No Impact	No Impact
Historical & Archaeological Resources	No Impact	No Impact
Parklands & Recreational Resources	No Impact	No Impact
Visual Quality	No Impact	No Impact
Noise & Vibration	No Impact	Minor Impact. A maximum operational BRT scenario was used to measure potential impacts of this project. Based on the anticipated frequency and speed of the proposed BRT service, the project is not expected to result in any severe noise impacts. Also, noise levels are not expected to increase greatly due to the removal of one general use travel lane in each direction. Vibration impacts associated with rubber-tired vehicles are not expected.
Air Quality	No Impact	Minor Positive Impact. The net effect of the project would reduce net emissions for all pollutants.
Water Resources	No Impact	No Impact
Biological Resources	No Impact	No Impact
Geology & Soils	No Impact	No Impact

Factor	No-Build Alternative	Build Alternative
Hazardous Materials	No Impact	No Impact
Energy	No Impact	Minor Impact. The new stations would consume additional energy; as part of conceptual planning, potential offsets of energy use at stations such as solar panels and the use of LED lighting are being considered. Reduced Vehicle Miles Traveled (VMT) would reduce energy consumption citywide.
Safety & Security	No Impact	No Impact
Temporary Construction	No Impact	Minor impact. Best management practices and the appropriate erosion and sediment control measures would be employed during construction to offset potential temporary noise, vibration, light, and dust emissions.
Indirect & Cumulative	No Impact	No Impact

Opportunity for Public Comment

A 30-day public comment period has been established to receive comments on this document. Copies of the EA are available at CTA's website (www.transitchicago.com/ashlandbrt), at CTA headquarters, and at the following library locations along the corridor:

- Lincoln Belmont, 1659 W. Melrose Street, Chicago, IL 60657
- West Town, 1625 W. Chicago Avenue, Chicago, IL 60622
- Lozano (Pilsen), 1805 S. Loomis Street, Chicago, IL 60608
- West Englewood, 1745 W. 63rd Street, Chicago, IL 60636
- Harold Washington Library Center, 400 S. State Street, Chicago, IL 60605

Two public hearings are scheduled to solicit comments from the community about the EA. Meeting locations as well as dates and times for these meetings can be found on CTA's website (www.transitchicago.com/ashlandbrt).

Comments received during the public hearings will be submitted to the FTA and entered into public record. In addition, written comments may be submitted at any time during the public comment period. These written comments may be submitted either electronically to AshlandBRT@transitchicago.com or by U.S. mail to:

Chicago Transit Authority
Attn: Joe Iacobucci
567 W. Lake Street
Chicago, IL 60661

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1. PURPOSE AND NEED

This chapter describes the purpose of this Environmental Assessment (EA) for the Ashland Avenue Bus Rapid Transit (BRT) Project, the background and context under which this project has evolved, and defines the purpose and need for the project.

1.1 Introduction

The Chicago Transit Authority (CTA), in cooperation with the Chicago Department of Transportation (CDOT), and as a grantee of the Federal Transit Administration (FTA), is proposing to implement an approximately 16.1-mile long BRT service along Ashland Avenue in the City of Chicago, Illinois to improve transit speed and reliability and enhance the pedestrian environment. The project corridor, located 1.5 miles west of Chicago's Central Business District (CBD) or "Loop", extends north-south along Ashland Avenue from Irving Park Road in the north to 95th Street in the south.

Physical improvements proposed for this project would include dedicating two general travel lanes (one in each direction) as center running bus-only lanes, implementation of transit signal priority (TSP), and construction of median BRT stations with enhanced pedestrian amenities approximately every half mile and at CTA 'L' stations. Most parking and existing landscaped medians would be maintained, and new landscaped medians between stations would be provided where none currently exist. Left-hand turns would be restricted at most locations along the corridor to improve transit speed, general traffic flow, and transit service reliability.

The Ashland Avenue BRT Project would be constructed in two phases. Phase 1 of the project would implement center running, dedicated bus-only lanes and median BRT stations first along 5.4 miles of Ashland Avenue between Cortland Street in the north and 31st Street in the south, generally within the central portion of the 16.1-mile project (Phase 1). Outside of the Phase 1 limits, the BRT service would initially operate in mixed flow traffic and make stops at the BRT station locations, using existing curbside local bus stops for the remainder of the 16.1-mile corridor until the subsequent phase is implemented. Corridor design in the subsequent phase would be similar to that in Phase 1. The next phase (Phase 2) of the project would be implemented commensurate with funding availability. An implementation plan for the two proposed project phases is discussed within this report (see **Section 2.3**). This EA documents the effects of implementing the full project (Phases 1 and 2) along the entire 16.1-mile project corridor.

The Ashland Avenue BRT Project would provide a new, reliable, transit service along CTA's most utilized bus corridor (which carries over 31,000 riders per weekday) and would provide enhanced regional connectivity to and from a number of existing transit bus and rail services that intersect Ashland Avenue. The project would provide a new premium transit service, i.e., a service which provides faster, more reliable and comfortable passenger experience in comparison to the current local bus service. Implementation of BRT service along the Ashland Avenue corridor is planned as part of a citywide BRT initiative consistent with the goals and objectives outlined in the Chicago Metropolitan Agency for Planning's (CMAP's) 2040 regional long range transportation plan (*GO TO 2040*). The initiative has evolved through a series of studies, and has most recently been featured in the Mayor's Chicago 2011 Transition Plan and the Metropolitan Planning Council 2011 report, *Integrating Livability Principles into Transit Planning: An Assessment of Bus Rapid Transit Opportunities in Chicago*.

The National Environmental Policy Act of 1969 (NEPA) mandates the consideration of environmental impacts prior to approval of any federally funded project that may have significant impacts on the environment or where impacts have not yet been determined. The NEPA process provides a transportation planning decision making framework to consider the purpose and need for a proposed action and identify potential design solutions, project costs, and relative benefits of the proposed action. This Ashland Avenue BRT Project EA has been prepared in accordance with NEPA and other applicable regulations under the "NEPA Umbrella", including Section 106 of the National Historic Preservation Act (NHPA), Section 4(f) of the United States Department of Transportation Act of 1966, joint guidance and regulations from FTA and the Federal Highway Administration (FHWA), and other agency regulations and guidelines.

This Ashland Avenue BRT Project EA concentrates on a detailed assessment of social, economic, and environmental impacts and recommends mitigation measures for any identified adverse impacts. The EA explores, in coordination with the public involvement process, the effects of implementing the Ashland Avenue BRT Project on the physical, human, and natural environments along the corridor and surrounding station locations. Following consideration of the EA, along with comments received through public outreach and agency coordination, the FTA will issue a finding on the proposed project based on the significance of impacts identified during the process. The finding will guide future planning and implementation of the project. If the FTA concludes on the basis of this EA and public input that the project qualifies for a Finding of No Significant Impact (FONSI), then the project would become eligible to advance into later phases of project development and construction.

1.2 Project Background

With over 10 million transit boardings in 2012 (over 31,000 daily transit trips), the Ashland Avenue corridor just west of Chicago's downtown Loop contains medium to high density neighborhoods and major employment centers that have created transportation challenges and opportunities.

The most recent Chicago Metropolitan Agency for Planning (CMAP) data was utilized to obtain major demographic characteristics of the corridor. There are currently over 90,000 households and over 232,000 people that live within one half mile of the Ashland Avenue corridor, which translates to approximately nine percent of the population of Chicago. While Chicago itself is characterized by dense, urban development, the number of people per acre living within one half mile of Ashland Avenue (21.2 people per acre) is greater than the city as a whole (17.1 people per acre).[1] In addition to these demographic factors, Ashland Avenue is also one of the few continuous north-south four-lane roadways that extends throughout the majority of the city and therefore serves as a major arterial for automobile and truck traffic. As a result, commuting patterns are a major source of travel demand in the corridor and travel speeds are slow for both vehicular traffic and local bus service.

Approximately one in four households along this corridor does not have an automobile. Passengers traveling via the current local bus service are subject to slow travel speeds (approximately 8.7 miles per hour during peak periods) and frequent stops (148 stops northbound and 148 stops southbound). By 2040, it is anticipated that there will be almost

[1] 2009 Chicago Metropolitan Agency for Planning (CMAP), Travel Demand Model TAZ Data for 2010.

287,000 people living within a half mile of the Ashland Avenue corridor, further exacerbating these travel demands.[2]

In addition to residential density, there are over 133,000 jobs in the corridor which influence commuting patterns and travel demands. Major employment hubs, regional entertainment venues, educational institutions, community facilities, industrial corridors, and a variety of retail establishments are located along Ashland Avenue. Most notably, the Illinois Medical District (IMD) is located in the central portion of the project corridor. This district serves as an economic cluster of health care jobs in the region. Covering 560 acres and employing over 20,000 workers, the IMD is the nation's largest urban medical district and includes the largest college of medicine. The IMD is also the State of Illinois' largest biotechnology/medical complex and is an economic engine in the state, generating $3.3 billion in economic activity.[3] Other notable activity generators and job attractors along the corridor include various industrial corridors, the United Center Arena, home to the Chicago Blackhawks and Chicago Bulls, as well as Malcolm X College and 99 grammar and high schools.

Contributing to these major job attractors are a number of economic development initiatives underway in the City of Chicago that have shaped development over time, and which further support the need for multimodal transportation solutions in the corridor. The Ashland Avenue corridor intersects with 20 of the city's 160 Tax Increment Financing (TIF) districts. TIF is a special funding tool used by the City of Chicago to promote public and private investment across the city.[4] Within a TIF district, the amount of property tax the area generates is set at a base amount. As property values increase, all property tax growth above that amount can be used to fund redevelopment projects within the district. The majority of these TIF districts are focused on mixed use residential and commercial development and encompass most retail oriented streets intersecting Ashland Avenue. In addition to these mixed-use focused TIF districts, there are also five industrial corridor TIF districts that are concentrated near the three major freight rail lines and three interstate highways that pass through the corridor. The Ashland Avenue corridor also intersects three previously designated Empowerment Zones and two of the city's three Enterprise Communities, where targeted promotion of economic development and job creation have been implemented to revitalize once blighted areas. The Empowerment Zones/Enterprise Communities program is a federal, state, and local government partnership for stimulating comprehensive renewal, particularly economic growth and social development, in distressed urban neighborhoods across the nation.[5] Combined, these areas provide a number of tax and business incentives in the corridor that support the current and planned land use and transportation environments.

At the same time, from a regional perspective, CTA rail ridership has increased to its highest levels in over 50 years, and demand for access to high-speed and high-reliability transit is a key driver for this ridership growth. While the city's radial rail lines serve the region well, better options to move people quickly and reliably north and south between and connecting to these rail lines within the corridor do not currently exist.

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[2] 2010 Decennial Census (Summary File 1), 2010 American Community Survey (five-year summary), and CMAP 2009 Travel Demand Model TAZ data for 2010 and 2040.
[3] Illinois Medical District Commission. *Facts and Figures*, http://www.imdc.org/about/facts-figures, September 2012.
[4] City of Chicago, Tax Increment Financing Program, http://www.cityofchicago.org/city/en/depts/dcd/supp_info/tax_increment_financingprogram.html.
[5] U.S. Department of Housing and Urban Development, Community Renewal Initiative, http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/economicdevelopment/programs/rc

With all of these factors in mind, a number of studies have been conducted over the last decade to identify potential solutions for addressing travel demands along Ashland Avenue that would support residential and commercial growth in the corridor, provide enhanced mobility options, and support regional livability and economic development goals. Collectively, the prior studies pointed toward the merit of additional transit investment in the form of BRT along Ashland Avenue. This project is envisioned to support a larger, regional BRT initiative already underway in the city to provide cost-effective, premium transit service that can complement and enhance the existing regional transit system to accommodate the needs of residents, businesses, and tourists alike.

In July 2010, the CTA applied to the FTA for an Alternatives Analysis (AA) grant to plan for BRT investments in the Western and Ashland Corridors, and was awarded funding in the amount of $1.6 million in December 2010. In partnership with CDOT, the Chicago Department of Housing and Economic Development (DHED), and FTA, CTA conducted a year-long planning effort to assess a variety of options for BRT on both corridors. After analysis and input at six public open houses, center running BRT with the removal of one travel lane in each direction was identified as the Preferred Alternative design. The Ashland Avenue corridor was selected for further environmental evaluation and conceptual development in this EA. Construction of the project is planned in phases to focus capital resources and provide sustainable, viable, and long-term transit solutions in the corridor.

1.3 Needs to be Addressed

The following list includes the issues, constraints, and opportunities associated with the existing Ashland Avenue corridor that are proposed to be addressed by this project:

1. *Regional Growth Patterns Outside of Chicago's Loop:* Development in recent decades has resulted in major regional activity generators located along the corridor and outside of the CBD, such as the IMD employment hub, United Center Arena, Malcolm X College, and 99 grammar/high schools.

2. *Congestion and a Lack of Competitive Travel Options:* With over 232,000 residents and over 133,000 jobs, commuting patterns are a source of significant travel demand in the corridor. Transit options are limited in the corridor (Bus Route #9) and travel times are slow for both existing vehicular traffic and bus service.

3. *Large Number of Transit-Dependent Customers:* Approximately one in four households within a half mile walking distance of the corridor do not have access to an automobile and rely solely upon public transportation to meet their transportation needs.

4. *Lack of Non-Downtown, North-South, Fast Transit Alternatives:* While demand for access to rail service is up to its highest levels in 50 years as of 2012 (with over 231 million rides in 2012)[6], no fast, efficient north-south transit services are offered in the corridor to provide fast, efficient commuter access to these regional rail services. Despite the large ridership in the corridor, comparative commute times indicate that public transit does not currently provide a competitive travel option compared with the automobile.

[6] City of Chicago, Press Release: *CTA Ridership Reaches Highest Levels in 22 Years*. http://www.cityofchicago.org/city/en/depts/mayor/press_room/press_releases/2013/january_2013/cta_ridership_reacheshighestlevelin22years.html

5. *Slow Bus Speeds, Frequent Stops, and Unreliable Bus Travel Times:* Existing local bus service along Ashland Avenue has the highest ridership demand in the CTA bus network but currently operates at slow speeds (averaging 8.7 miles per hour during peak periods), with unreliable bus travel times due to frequent stops and buses that share travel lanes with vehicular traffic.

6. *Street Design No Longer Meets Corridor Needs or Land Use Policy Objectives:* Development of a design that considers all users of the transportation system whether automobiles, buses, bicyclists or pedestrians (known as a "complete street" design) is needed to support land use and economic development goals and objectives and to provide transportation solutions in the corridor which effectively consider all modes and all users. Cost effective investments in premium transit service to maximize use of the existing corridor right-of-way and support infill and redevelopment efforts are necessary to meet existing demands and future growth.

1.4 Project Purpose

The purpose of the Ashland Avenue BRT Project is to expand connectivity to the region's existing transit system by providing a new and upgraded high quality, high capacity and cost effective premium transit service, i.e., a service which provides a faster, more reliable, and comfortable passenger experience. The proposed project would address the transportation needs of expansive population and employment growth outside of the Chicago CBD or "Loop" and support local and regional land use, transportation and economic development initiatives. Specifically, the project would improve accessibility, mobility, transit travel times and reliability, and passenger facilities in this heavily transit-reliant corridor.

This project purpose and need was developed through the AA process in coordination with public and agency outreach efforts to guide the development of alternatives. Throughout this year-long public engagement process, the purpose and need continued to evolve, incorporating and addressing comments and feedback from agencies and the public, and was used as an evaluation measure in identifying the proposed action for further environmental evaluation in this EA. Detailed information on the development of the purpose and need for the project may be found in **Appendix A-1**. The purpose of the project is based on the following five key purpose statements aimed at addressing the needs for the project:

1. Strengthen north-south connections to CTA and Metra's transit network outside of the CBD to improve regional, neighborhood, and job connectivity.

2. Improve reliability, travel speed, and ease of use.

3. Meet city/regional livability and mobility goals.

4. Support transportation, land use, and economic development goals in the city and region.

5. Effectively address both physical and financial constraints for infrastructure improvements while accommodating existing development and anticipated growth.

Implementation of the Ashland Avenue BRT Project is proposed to introduce a new cross-town, north-south center running transit way approximately 1.5 miles west of Chicago's CBD or "Loop" along 16.1 miles of Ashland Avenue, from Irving Park Road in the north to 95th Street in the south (see **Figure 1-1**).

Figure 1-1: Study Area Overview Map

Figure 1-1 is a map of the City of Chicago showing the Ashland Avenue corridor extents from Irving Park Road to 95th Street and the 35 proposed BRT station locations.

BRT articulated buses, which would provide enhanced passenger capacity, are proposed to operate approximately every five to 15 minutes along the existing right-of-way in center running, dedicated bus-only lanes for the majority of the alignment. One general purpose travel lane in each direction would be repaved and striped as dedicated bus-only lanes to accommodate the BRT service. Median BRT stations with enhanced pedestrian amenities are proposed at 35 intersections along the corridor, one roughly every half mile and at all CTA "L" stations. New landscaped medians would be constructed between stations where medians do not currently exist.

Transit signal priority (TSP) improvements at all signalized intersections are also proposed in combination with the BRT service to allow more efficient traffic movements and queue jumps to provide buses priority at select intersections. These TSP and BRT service improvements are being proposed to increase bus travel speeds, which are projected to increase up to 83 percent, and enhance reliability on CTA's highest ridership bus route.

The following proposed improvements would be implemented within the existing roadway right-of-way:

- Construction of median BRT stations with shelters and pedestrian boarding areas,
- Upgrade of traffic signal systems to include TSP,
- Implementation of queue jumps and turn restrictions at certain intersections,
- Removal of one general purpose travel lane in each direction to accommodate a designated bus-only lane in each direction, and
- Streetscape improvements including medians, landscaping, and Americans with Disabilities Act of 1990 (ADA) accessibility upgrades.

These improvements in the corridor are proposed to serve residents and commuters alike by providing more efficient access to major activity generators within the project area, such as the IMD (one of the largest concentrations of jobs in the region) and improving regional transit access to a number of CTA "L" stations, Metra commuter rail stations, and bus routes intersecting or adjacent to the corridor.

Conceptual engineering details on the proposed alignment and configuration of stations, as well as considerations for proposed physical and operational improvement options can be found in **Chapter 2** of this EA.

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2. ALTERNATIVES CONSIDERED

This chapter presents the alternatives considered in this Environmental Assessment (EA) for the Ashland Avenue Bus Rapid Transit (BRT) Project: a No-Build (No Action) Alternative and the Build Alternative. A summary of the year-long Alternatives Analysis (AA) process that preceded this study and led to the identification of the Build Alternative and comparative No-Build Alternative is also provided.

2.1 Alternatives Development Process

The Chicago Transit Authority (CTA), in partnership with the Chicago Department of Transportation (CDOT), Chicago Department of Housing and Economic Development (DHED), and the Federal Transit Administration (FTA), recently completed a year-long AA to assess options for BRT on both the Ashland Avenue and parallel Western Avenue corridors. At the beginning stages of this process, extensive public and stakeholder outreach and detailed planning and traffic engineering analysis of existing conditions identified issues and opportunities along the corridors. This also helped to develop specific purpose and need statements and quantitative goals and objectives to guide subsequent alternatives analysis and decision-making. A two-level detailed screening process was used to evaluate the Alternatives and to identify the Preferred Alternative, which is the Build Alternative under evaluation in this EA. Detailed documentation on the Screen 1 and Screen 2 reports can be found in **Appendices A-2** and **A-3,** respectively.

For the purposes of the Screen 1 Evaluation, a No-Build Alternative, Transportation Systems Management (TSM) Alternative involving minimal improvements to existing services, and 16 Build Alternative concepts were developed. The TSM Alternative considered implementing TSP and reinstituting previous express bus service along the corridors (previously known as the #X9 Ashland Express and the #X49 Western Express routes). The BRT Build Alternatives considered a variety of lane configuration designs to accommodate BRT, including: curbside bus-only lanes, center bus-only lanes, reversible center lane strategies, barrier separated bus-only lanes, as well as two-way adjacent bus-only lanes. All alternatives assumed the ability to implement the BRT project within existing right-of-way. Measures of effectiveness based on the project purpose, goals, and objectives were established as part of this evaluation, and an engineering fatal flaws analysis was conducted for these 16 Build Alternatives. Specific measures of effectiveness and evaluation criteria for the Screen 1 Evaluation were based on the purpose and need and allowed for a comparison of alternatives with regard to transit network performance, rider experience, urban design and economic vitality, road design and traffic capacity, and relative costs of construction.

Based on this Screen 1 Evaluation, six BRT Build Alternative configurations were recommended for further evaluation in the Screen 2 Analysis. Full details on the Screen 1 analysis and findings may be found in **Appendix A-2**. These six potential Build Alternatives were presented to the public in June 2012 and to stakeholders in a design charette held in July 2012. Based on input from the public and stakeholders during this design charette, the six Build Alternatives were further narrowed down to four Build Alternatives for the Screen 2 Evaluation. The two alternatives dropped from further consideration involved narrowing sidewalks; comments from the public indicated that there was a desire to retain existing sidewalk width.

The four alternatives carried forward for Screen 2 Evaluation included design variations with two options for operating BRT on center running lanes and two options for operating BRT along curbside lanes:

- Center Running BRT – *Travel Lane Removal*
- Center Running BRT – *Parking and Median Removal*
- Curbside Running BRT – *Travel Lane Removal*
- Curbside Running BRT – *Parking and Median Removal*

The No-Build and TSM Alternatives were also retained for further analysis and comparison in the Screen 2 Evaluation. The four potential Build Alternatives advancing to the Screen 2 Evaluation were defined more thoroughly to include station locations, station design considerations, and necessary infrastructure and operational improvements such as queue jumps/bypass lanes and TSP improvements. Conceptual station locations for Ashland Avenue were identified by analyzing corridor demographics and land use, local bus stop and operational data, proximity to other regional public transportation transfer locations, and with a focus on best practices for BRT station locations to be located at least a half mile apart. The four Build Alternatives identified above and the TSM Alternative in the Screen 2 Evaluation provided an understanding of the unique components and requirements for each potential Alternative compared to the No-Build Alternative. A detailed technical memorandum describing the Screen 2 Evaluation is contained in **Appendix A-3**.

The eight evaluation factors for the Screen 2 Evaluation included a mix of qualitative and quantitative measures intended to evaluate the performance of each alternative with respect to the project goals and objectives. Specific evaluation factors included: demographics, economic development, ridership, transit operations, complete streets, traffic and parking, and relative operational and capital costs. Evaluation also included consideration of environmental resources, including:

- Wetlands
- Historic districts and buildings
- Archaeological resources
- Parkland and recreational areas
- Open space
- Visual impacts
- Hazardous materials
- Air quality
- Noise and vibration
- Environmental justice

For this environmental evaluation, wetlands, historic resources, parklands and recreational areas, as well as open space resources within 500 feet of each corridor were identified and then the potential for impacts to these resources was assessed. For the other environmental resources considered, a qualitative review of the potential for impacts was conducted.

Each alternative's performance was compared and assigned an evaluation rating for each evaluation factor, which allowed for a technical recommendation on a Preferred Alternative. Technical results of this Screen 2 Evaluation were subsequently presented to the public in October 2012 to further assess public support for the alternatives, and were subsequently refined through additional analysis of conceptual engineering criteria.

Based upon the cumulative results of the Screen 2 Evaluation and the evaluation of public support from comments received at public open houses, stakeholder outreach and input, and community meetings, the Center Running BRT, Travel Lane Removal Alternative received the highest ranking for both the Western and Ashland Avenue BRT corridors, and was identified as the Preferred Alternative design to move through subsequent environmental and conceptual engineering analysis. These detailed results are provided in **Appendix A-3**.

While both the Ashland and Western corridors using center running BRT with travel lane removal rated similarly in the evaluation as the Preferred Alternative, Ashland was prioritized to move forward through the project development process first. CTA chose to prioritize the Ashland Avenue corridor because it contains the highest ridership route in the CTA bus system, has the slower existing bus speeds of the two corridors, and contains a higher concentration of connections to the existing transit system and major activity generators. As such, this corridor was determined to better meet the purpose and need defined through the AA process.

Based on the evaluation of the TSM and BRT Build Alternatives in the AA, it was determined appropriate to remove the TSM Alternative from further consideration in subsequent phases of environmental and design development. Based on the findings of the AA, the TSM Alternative was determined to result in conditions similar to No-Build conditions and therefore would not meet the purpose and need for this project. While reinstituting express bus service along Ashland Avenue would require less initial capital costs, it would result in minimal improvements to bus travel speeds and transit reliability in the corridor compared with BRT Alternatives. It also would not adequately address regional growth pressures and enhanced demands to provide options that could offer viable mode shift potential and an alternative to congestion in the corridor. In addition, the TSM Alternative was determined to result in conditions similar to No-Build conditions in terms of land use and economic development benefits.

While the TSM Alternative was removed from further consideration as described above, the No-Build Alternative has been retained for the purposes of the environmental evaluation contained in this EA. The No-Build Alternative provides a baseline against which to evaluate the effects of the Build Alternative on social, economic, transportation, and environmental factors.

2.2 No-Build Alternative

The No-Build Alternative would retain the existing street configuration, which typically consists of two travel lanes in each direction, painted or small medians, and on-street parking. Within the Illinois Medical District (IMD), the existing street configuration is different, with narrower sidewalks, three lanes of travel in each direction, and no on-street parking. The No-Build Alternative assumes no major transit system improvements or investments within the Ashland Avenue corridor. Pictures of existing conditions along the corridor and a typical roadway section are provided in **Figure 2-1**.

The No-Build Alternative would maintain existing transit service currently in operation and include only routine maintenance of existing transit and roadway systems. CTA Bus Route #9 currently provides primary north-south service along the Ashland Avenue corridor as indicated in **Table 2-1**. Primary operations on Route #9 are from Irving Park Road to 95th Street.

Figure 2-1: No-Build Alternative

Figure 2-1 has two images:
Image 1 is a photograph of typical No-Build Alternative conditions along Ashland Avenue.
Image 2 shows a cross-section of typical No-Build Alternative (existing) conditions along Ashland Avenue.

Under the No-Build Alternative, transit service along the corridor would continue to operate every five to 10 minutes during weekdays and every 10 to 12 minutes on weekends. Buses would continue to operate in mixed traffic, stopping at the 148 northbound and 148 southbound bus stops along the Ashland Avenue corridor without additional TSP. No improvements to bus stops, stations, or pedestrian space and amenities would be provided. Bus travel speeds along the majority of the corridor, which currently average 8.7 miles per hour in peak periods, would be subject to the same delay patterns found today. Given these factors and the inadequacy of the No-Build Alternative to address persistent growth and mobility needs outside of downtown, the No-Build Alternative was determined not to meet the purpose and need for the project and therefore was not identified as the Preferred Alternative.

Table 2-1: No-Build Alternative Transit Operational Service Characteristics

Route	Hours	Headways
#9/N9	Weekday	5-10 Minutes
	Weekend	10-12 Minutes
	Midnight - 3 a.m.	30 Minutes

2.3 Build Alternative

The Build Alternative, shown on **Figure 2-2**, is the Preferred Alternative and consists of a 16.1-mile long BRT corridor along Ashland Avenue from Irving Park Road in the north to 95th Street in the south. Construction of the Build Alternative would occur within right-of-way and augment existing local bus service already in place along the corridor. The Build Alternative would include one center running bus-only lane in each direction, one automobile travel lane in each direction, on-street parking on both sides of the road, and a median. In order to accommodate the BRT design, one general travel lane in each direction would be removed and a small reduction to on-street parking would occur primarily at new station locations to accommodate stations and dedicated right-turn lanes. Existing parking and loading zones would be retained on each side of the street along the rest of the corridor.

Left turn lanes at intersections and left turn pockets would also be removed in most locations to accommodate the dedicated bus-only lanes. Left turns would be retained at existing interstate highway crossing locations to continue to accommodate industrial corridors in the area with regional east-west access. Existing medians would be retained and new landscaped medians would also be provided where there are none existing. Sidewalk widths would be retained and curb extensions would be provided at station intersections to enhance pedestrian access and space at the BRT stations.

Center platform, branded stations are proposed at 35 distinct intersection locations along the corridor, one approximately every half mile and at CTA rail stations. TSP improvements would be implemented at all signalized intersections along the corridor for bus priority to increase bus speeds along the corridor. A typical station would include a platform with shelters, passenger seating, closed circuit television prompters, displays with real-time bus arrival information, lighting, security cameras, and trash receptacles. It is assumed that for station layout purposes ticket vending, fare validation machines (with the potential for pre-paid boarding), smart card readers, and security call-back systems would also be included at the stations. Note that specific ticketing procedures and station amenities would be selected during final design. Americans with Disabilities Act of 1990 (ADA)-compliant ramps would also be provided at stations along with level boarding onto BRT vehicles.

Headways for the proposed BRT service would be between five and 15 minutes and would meet the FTA definition of BRT. Local bus service would continue to operate along the corridor, with BRT service added to increase mobility and enhance transit options.

To allow for flexible implementation and provide options for various funding opportunities, the capital improvements for the project are proposed to be built in two phases. The first phase of this BRT project would be implemented along 5.4 miles of the corridor, from Cortland Street to 31st Street. Outside of the Phase 1 limits, the BRT service would stop at the BRT station locations using existing curbside bus stops for the remainder of the 16.1-mile corridor until the next phase is built. Conceptual plans for the Build Alternative, indicating the layout for Phase 1 limits and the next phase are included in **Appendix G**.

Corridor design in the next phase (Phase 2) would be similar to that in Phase 1 and include center running, dedicated BRT lanes and center median stations. Below are details on the proposed project phasing plan.

Figure 2-2: Build Alternative (Preferred Alternative)

Figure 2-2 has three images:
Image 1 is a photo-simulation of proposed typical Build Alternative (Preferred Alternative) conditions along Ashland Avenue in between stations.
Image 2 is a photo-simulation of proposed typical Build Alternative (Preferred Alternative) conditions along Ashland Avenue at a station.
Image 3 shows a cross-section of proposed typical Build Alternative (Preferred Alternative) conditions along Ashland Avenue.

Estimated Project Implementation Schedule

To allow for flexible implementation and provide options for various funding opportunities, the Ashland Avenue BRT Project is proposed to be implemented in phases, as shown on **Figure 2-3**. Phase 1, from Cortland Street to 31st Street, was identified to move forward first based on the following:

- Provides multiple transit network connections, including access to five CTA "L" stations, one Metra commuter rail station, and 16 bus routes
- Serves the IMD, a major regional employment hub providing over 20,000 jobs
- Serves other key activity generators, including industrial corridors, Malcolm X College and the United Center
- The existing bus service currently operates at some of the lowest bus speeds in the city
- Contains some of the highest ridership within the Ashland Avenue corridor

Phase 2, from 31st Street to 95th Street in the south and from Cortland Street to Irving Park Road in the north (a total of 10.7 miles) would be implemented next, and would complete the 16.1-mile center running BRT service. **Tables 2-2** and **2-3** provide an estimated project implementation schedule and key milestone dates identified and anticipated as this project moves forward (contingent upon funding availability):

Table 2-2: Phase 1 Implementation Schedule
(Cortland Street to 31st Street)

Timeframe	Milestone
February 2012	Project Initiation
February 2013 – February 2014	NEPA*/Concept Design
March 2014 - August 2015	Final Design
February 2016 - December 2016	Construction of Phase 1
January 2017	Begin Revenue Service in dedicated lanes within Phase 1 limits and as express service outside of these limits

* National Environmental Policy Act of 1969

Table 2-3: Phase 2 Implementation Schedule
(31st Street to 95th Street and Cortland Street to Irving Park Road)

Timeframe	Milestone
October 2016 - October 2017	Final Design
February 2018 - December 2018	Construction of Phase 2
January 2019	Operations Begin with BRT service in dedicated lanes along the entire 16.1-mile corridor.

Future construction phase schedules are planned based on reasonable expectations and commensurate with funding availability. It should be noted that these dates are based on anticipated project activities, and are subject to modification based upon FTA review schedules, state and federal requirements and approvals for the project, and other factors that could occur through final design and construction of this project.

Figure 2-3: Ashland Avenue BRT Project Phasing Limits

This graphic depicts the proposed Ashland BRT corridor, listing all proposed BRT stops from north to south, on Ashland Avenue: Irving Park, Addison, Roscoe, Belmont, Diversey, Fullerton, Cortland, North, Division, Chicago, Grand, Lake, Madison, Jackson, Harrison, Polk, Roosevelt, 18th, Blue Island, 31st, 35th, Pershing, 43rd, 47th, 51st, Garfield, 59th, 63rd, 69th, 74th, 79th, 83rd, 87th, 91st, 95th. The image also highlights the "Phase 1" corridor, which includes all stops between the Cortland Street stop and the 31st Street stop.

Project Costs and Funding

Construction costs were developed during the AA screening process and represent preliminary project costs of the Build Alternative. These estimates would be further refined through conceptual engineering. Anticipated capital costs for roadway improvements are on the order of approximately $161 million for the entire 16.1-mile corridor.

Improvements for the 5.4-mile Phase 1 plan from Cortland Street to 31st Street are estimated at $61 million for roadway construction. Vehicle costs are estimated at $50 million. Design costs are estimated at approximately 10 percent of roadway construction costs. Funding for these capital improvements would be sought for this project under FTA's Small Starts Program and supplemented by various local resources.

Through each phase of implementation, detailed operating costs would be developed. Compared to local bus operational costs, CTA estimates that BRT service along Ashland Avenue would be 36 percent more cost efficient. Details on comparative costs may be found in the Screen 2 Technical Memorandum in **Appendix A-3**.

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3. TRANSPORTATION CONDITIONS AND ANALYSIS

This chapter provides detailed data on the potential transportation impacts of the 16.1-mile Build Alternative on the local and regional transportation system, including road traffic patterns, traffic volumes, parking, and transit facilities and services. Descriptions of existing conditions are included in each section for the purpose of examining the No-Build Alternative. Assumptions for determining impacts from the Build Alternative are provided for each area of the transportation analysis. The detailed supporting technical memoranda for each section are included in **Appendix B** through **Appendix D**, and are referenced as appropriate.

This chapter will walk the reader through several steps to show:

- **Traffic Analysis –** The first section will discuss the impacts to vehicles travelling in the corridor. This is measured utilizing both regional and local traffic models based on traffic counts from 2013.
- **Parking Impact Analysis –** This section will identify the overall impacts to parking and loading zones in the corridor.
- **Transit Operational Analysis –** The last section will discuss the impacts to transit operations in the corridor as a result of implementing the improved Bus Rapid Transit (BRT) service.

3.1 Traffic Analysis

The Ashland Avenue BRT Project would cause changes in roadway traffic volumes, local access, and circulation patterns. This section further defines:

- Traffic related improvements proposed as part of this project,
- The methodology employed to assess potential traffic impacts, and
- Results of this analysis, and proposed recommendations.

Mitigation efforts to offset potential impacts are described in **Section 3.2**.

The Chicago Transit Authority (CTA) and the Chicago Department of Transportation (CDOT) have coordinated with the Federal Transit Administration (FTA), the Illinois Department of Transportation (IDOT), and Cook County Department of Transportation and Highways (CCDOTH) throughout the planning process on the traffic analysis. Additional traffic analysis is also part of this ongoing agency coordination process. As more traffic refinements are made through conceptual engineering and into final design and construction, CTA and CDOT would continue to work with agency partners and the public on more detailed design solutions to specific local traffic diversion along the corridor, including the provision of left turns at certain locations to provide additional residential and business access.

3.1.1 Defining the Proposed Action

The Build Alternative proposes to implement BRT within the existing right-of-way and with minimal changes to the location of sidewalk curbs. Right-of-way is generally defined as the width between building faces and is useful for defining multimodal uses of the corridor such as sidewalk space for pedestrian use. Curb-to-curb widths refer to the area between the curbs that is utilized for moving vehicles (cars, trucks, buses, and bicycles) as well as for accommodating parking and loading zones. Right-of-way and curb-to-curb extents are shown on **Figure 3-1**.

Figure 3-1: Right-of-Way and Street Width Extents

Figure 3-1 shows a typical cross-section of Ashland Avenue that compares the Street Width to Right-of-Way width.

One of the reasons BRT is a viable option for the Ashland Avenue corridor is that the existing right-of-way and curb-to–curb widths can support an integrated, multimodal and connected network within the existing corridor. As shown in **Table 3-1**, existing right-of-way along the corridor varies between 100 and 110 feet, with curb-to-curb widths of 70 to 80 feet. Within the right-of-way, the space is dedicated to multiple transportation uses, as shown in **Figure 3-2**. These include:

- Sidewalks: Sidewalks exist along the length of Ashland Avenue. In some locations, planted grass strips between the sidewalk and curb provide a buffer between pedestrians and vehicular traffic.
- General Purpose Travel Lanes: Two northbound and two southbound travel lanes utilized by buses, automobiles, trucks, and bicycles.
  - Between Madison Street and Roosevelt Road, near the Illinois Medical District (IMD), curb-to-curb widths are wider (80 feet) and three existing lanes of traffic in each direction are provided without on-street parking.
- Intersections: Intersections are generally separated by raised or striped medians with right and left turning lanes at intersections.
- Medians: Northbound and southbound travel lanes are generally separated by raised or striped medians.
- Parking Lanes: Parking (metered and unmetered) is generally provided on both sides of the street.

Table 3-1: Existing Ashland Avenue Right-of-Way and Curb-to-Curb Widths

Start Point	End Point	Distance (Mile)	Curb-to-Curb Width (Feet)	Right-of-Way Width (Feet)	# of Lanes	
					South-bound	North-bound
Irving Park Rd.	Lake St.	4.83	70	100	2	2
Lake St.	Madison St.	0.27	80	100	2	2
Madison St.	Roosevelt Rd.	1.01	80	100	3	3
Roosevelt Rd.	15th St.	0.37	80	100	2	2
15th St.	Cermak Rd.	0.63	70	100	2	2
Cermak Rd.	Archer Ave.	1.01	75	110	2	2
Archer Ave.	95th St.	8.05	70	100	2	2

Figure 3-2: Typical Existing Ashland Avenue Roadway Configuration

Figure 3-2 is a cross-section of typical No-Build Alternative (existing) conditions along Ashland Avenue.

The proposed Build Alternative, shown in **Figure 3-3**, would be implemented within the existing right-of-way.

Figure 3-3: Typical Proposed Ashland Avenue Roadway Configuration

Figure 3-3 is a cross-section of proposed typical Build Alternative (Preferred Alternative) conditions along Ashland Avenue.

Within the right-of-way, the proposed Build Alternative includes:

- Sidewalks: Sidewalks would still exist along the length of Ashland Avenue. Additional pedestrian space, in the form of curb extensions, would be provided at signalized intersections.

  New curb ramps with truncated domes (a standard surface texture used to provide the visually impaired with detectable information about the boundary between the sidewalk and street), countdown pedestrian heads and audible pedestrian crossing devices to meet ADA accessibility requirements would be provided at all proposed station locations.

  These improvements, combined with installation of enhanced pedestrian amenities at each half mile station are proposed to improve pedestrian access and pedestrian travel throughout the corridor.

- BRT Lanes: One center running bus-only lane in each direction. One existing general purpose travel lane would be removed in each direction to accommodate the BRT lanes.

- General Purpose Travel Lanes: One general purpose travel lane would be maintained in each direction; two general purpose lanes would be maintained in each direction between Madison Street and Roosevelt Road.

  Left turn lanes and left turn pockets at intersections along the corridor are proposed to be removed and replaced by raised medians. As a result, left-turn movements from Ashland Avenue would be prohibited except at the following interstate highway access points in order to maintain regional traffic patterns:

  - Kennedy Expressway (I-90) via Armitage Avenue,
  - Eisenhower Expressway (I-290) via Van Buren Street and Congress Parkway, and
  - Stevenson Expressway (I-55) via 31st Street and Robinson Street.

  At un-signalized intersections and alley ways, only right-turn movements onto and from Ashland Avenue would be allowed due to the presence of raised medians. Because a number of raised medians are already located along the corridor, existing access to properties and driveways along the corridor from opposite sides of the road are already restricted and are not anticipated to change greatly as a result of the proposed project.

- Transit Signal Priority (TSP): Upgrades would be installed at all signalized intersections along the corridor to manage traffic movements and provide efficient and reliable BRT movements.

- Medians: Northbound and southbound travel lanes would be separated by raised medians. The raised medians would extend the length of Ashland Avenue except at signalized intersections, key one-way streets, and at critical commercial drives that would be signalized.

- Parking: Parking would be predominantly retained on both sides of the street (see additional details on parking impacts in **Section 3.3**)

3.1.2 Traffic Impact Methodology

For the purposes of understanding the traffic impacts of the Build Alternative, a detailed methodology has been developed to analyze impacts to roadway volumes, distribution and local circulation patterns. This process takes into account impacts from both a regional and localized perspective. It assumes full traffic implications of the Build Alternative including removal of one travel lane in each direction and left turns along the corridor (except at interstate access points). This methodology for the analysis provides a way to evaluate the greatest potential traffic impacts that could result from the Build Alternative. As more traffic refinements are made, CTA and CDOT would continue to work with agency partners and the public on more detailed design solutions to specific local traffic diversion along the corridor, including the provision of left turns at certain locations to provide sufficient residential and business access.

1. Regional Impacts Analysis: A regional traffic analysis of the Build Alternative was undertaken as a first step in this process. It quantifies changes in regional travel patterns resulting from removing a traffic lane in each direction and removal of left turns.

   Regional travel models are the standard analytical tool used for the analysis of travel patterns in urban areas. Chicago Metropolitan Agency for Planning (CMAP), the Chicago region's metropolitan planning organization (MPO), has developed and maintains a travel demand model for transportation planning within the Chicago metropolitan area, which was utilized for this regional analysis. The results of this analysis provide insight into the impact of the Build Alternative on the city-wide transportation network, including traffic impacts and benefits to transit ridership.

   In addition, the CMAP travel demand model was used to complete a more focused analysis of traffic diversion to roadways parallel and adjacent to the Ashland Avenue corridor.

2. Local Impacts Analysis: While regional travel demand analysis provides a basis for understanding the overall regional impacts and larger project area traffic impacts from traffic diverting to different roadways, these models are not designed to analyze specific, isolated corridor impacts such as intersection level capacity analysis. Data inputs from this regional model, however, do provide useful information for this more detailed analysis.

   A traffic analysis of intersection operating conditions along the corridor was also conducted using No-Build Alternative traffic data and modeled traffic volumes representing the Build Alternative design and operational conditions. This analysis identifies volume and capacity changes along the corridor itself as a result of the Build Alternative and provides a more detailed basis for special design considerations within the corridor and recommendations for local on- and off-corridor improvements.

The following sub-sections provide more detailed information on these methods and results. Details on mitigation are provided in **Section 3.2** to address the resulting impact analysis findings.

3.1.3 Regional Traffic Diversion Impacts Analysis

City-Wide Diversion Evaluation

With the removal of a travel lane in each direction, some vehicles currently using Ashland Avenue would divert or re-route to use other parallel roadways for their trips. For the regional transportation diversion analysis, the regional CMAP travel demand model was utilized. The CMAP travel demand model contains representation of the highway system (freeways, major arterials, and collectors) as well as the transit system (Metra commuter rail, CTA bus and rail service, and PACE bus service).

Two key metrics analyzed by the CMAP model are Vehicle Miles Traveled (VMT) and Vehicle Hours Traveled (VHT). These are measures of the amount of driving that is taking place, cumulatively, in a given area or along a given corridor. VMT measures the number of miles driven; VHT measures the total time spent driving. The CMAP travel demand model also analyzed mode shifts – that is, a measure of the shift of trips from using one mode of transportation (e.g. personal vehicles) to another mode (e.g. transit) – anticipated from the Build Alternative. Further details on the CMAP model, input factors and further details on this regional diversion analysis can be found in **Appendix B-1** (*Regional Traffic Diversion Analysis Technical Memorandum*).

VMT = The number of miles driven.

VHT = The total time spent driving.

Mode Shift = Shift of trips from using one mode of transportation (e.g. personal vehicles) to another mode (e.g. transit) along a corridor.

Initial CMAP modeling of the Build Alternative indicates that the proposed Ashland Avenue BRT service would result in very minor changes to daily city-wide traffic conditions. Compared to the existing conditions, people across the City of Chicago would be driving slightly shorter distances (VMT projected to decrease 0.08 percent), and for a slightly shorter amount of time (VHT projected to decrease 0.01 percent). The projected decreases in VMT and VHT indicate that the project would slightly decrease traffic volumes and/or shorten trips that would be diverted off of Ashland Avenue.

Study Area Diversion Evaluation

Given these minor city-wide changes, a smaller study area, surrounding the proposed Ashland Avenue BRT corridor was selected for more detailed traffic and transit analysis. The roadway network study area identified for more detailed diversion analysis was bounded by Irving Park Road, to the north, and 95th Street, to the south. It included the major north-south roadways one mile to the east and two miles to the west of Ashland Avenue: (1) Kedzie Avenue, (2) California Avenue, (3) Western Avenue, (4) Damen Avenue, (5) Ashland Avenue, (6) Racine/Southport Avenue and (7) Halsted Street. See **Figure 3-4** for the limits of the diversion analysis study area.

These parallel roadways represent the most likely alternative roadways for diversion of traffic due to implementation of the Build Alternative. They were selected based on the CMAP travel demand model results and standard traffic engineering assumptions about travel behavior utilizing shortest paths between origins and destinations.

Figure 3-4: Diversion Analysis Study Area

Figure 3-4 is a map of the City of Chicago showing the Ashland Avenue corridor extents, proposed station locations, and Diversion Analysis study area, which is bounded by Irving Park Road to the north, 95th Street to the south, Halsted Street to the east and Kedzie Avenue to the west.

In addition, the transit network including all existing north-south CTA bus routes operating on north-south roadways within the study area were defined as inputs for the transit impacts side of the analysis.

Using the CMAP travel demand model and these inputs, an initial analysis was performed to determine impacts of implementing the Build Alternative on the roadways within the study area defined above. The analysis determined the congestion impacts on alternate routes as a result of the removal of two travel lanes on Ashland Avenue (reduction in roadway capacity). It also identified potential impacts outside of the corridor on other roadways due to re-routing of traffic off of Ashland Avenue. Details on the analysis procedure are provided in **Appendix B-1**. The following metrics were compared between existing conditions and the Build Alternative to determine the projected percent shift in traffic from Ashland Avenue to parallel arterials:

- VMT - summation of all VMT on roadway facility segments
- Congested VMT - summation of all VMT on roadway facility segments where the volume on the roadway exceeds the capacity of the roadway (v/c >1)
- Percent Congested VMT - congested VMT compared to total VMT
- VHT - summation of all VHT on roadway facility segments
- Congested VHT - summation of all VHT on roadway facility segments where the volume on the roadway exceeds the capacity of the roadway (v/c >1)
- Percent Congested VHT - congested VHT compared to total VHT
- Travel Speed - average congested travel speed (miles per hour [mph]) on roadway facility segments (both directions)

VMT = The number of miles driven.

VHT = The total time spent driving.

Volume/Capacity (v/c) = Volume on the roadway compared to the capacity of the roadway.

The existing conditions assumptions were based on the regional modeling inputs used for the 2010 analysis year in the air quality conformity analysis completed by CMAP in spring 2012. The roadway network represented the existing segment geometrics and capacity, left- and right-turn restrictions, and traffic signal timings. The transit network represented the existing bus route stop locations, frequency (number of buses per hour), service span (hours of operation), and bus speeds. The Build Alternative assumptions were based on the following design and operating assumptions and utilized maximum operational characteristics since full transit operational plans were not available at the time of the analysis:

- **Left-Turn Restrictions** – left-turns were restricted at all the intersections along Ashland Avenue between Irving Park Road to the north, and 95th Street to the south to determine the effects of maximum implementation of the BRT from a regional traffic standpoint.

- **Travel Lane Removal** – one travel lane in each direction was removed along Ashland Avenue between Irving Park Road, to the north, and 95th Street, to the south.

- **BRT Service Characteristics** – BRT service characteristics assumed a 24 hour service span, 5 minute headways, 15.9 miles per hour average running speed, and proposed stop locations at the 35 proposed intersections along the corridor. Local bus service is assumed to remain in place.

These assumptions provide the most rigorous implementation of project design and operational features of BRT in order to ascertain traffic diversion impacts. More detailed results of travel volumes for existing (No-Build) and the Build Alternative by route and in aggregating north-south and east-west movements are provided in **Appendix B-1**. A comparison of the change in traffic volumes resulting from the Build Alternative is also provided in **Appendix B-1**. **Tables 3-2** and **3-3** summarize the results of that analysis.

Compared to existing conditions, the Build Alternative conditions decreased the total miles driven on Ashland Avenue (VMT projected to decrease by 35 percent) and increased the number of those miles driven during congested conditions (congested VMT projected to increase by seven percent). Similarly, the total hours driven decreased (VHT projected to decrease by 34 percent) and the total time drivers spend in congested conditions increased (congested VHT projected to increase by seven percent), resulting in a net ten percent decrease in average daily travel speed along Ashland Avenue.

Compared to existing conditions, the Build Alternative conditions decreased VMT by one percent and increased congested VMT by five percent within the study area. VHT would not change as a result of the Build Alternative and congested VHT would increase by six percent.

The Build Alternative would result in a traffic shift from Ashland Avenue to other roadways in the surrounding roadway network. However, the results of the analysis indicate that the robust Chicago grid network is sufficient to absorb the traffic shifts across multiple parallel roadways, resulting in minor VMT increases (two percent to 12 percent) along any one facility within the study area. The grid network provides many different traffic routing options for drivers between origins and destinations within the city.

Table 3-2: Percent Change between Existing Conditions and Build Conditions by Routes

	Kedzie Ave.	California Ave.	Western Ave.	Damen Ave.	Ashland Ave.	Racine Ave./ Southport Ave. (and adjacent routes)	Halsted St.
VMT	3%	2%	6%	2%	-35%	12%	4%
Congested VMT	4%	8%	29%	4%	7%	25%	4%
VHT	3%	2%	7%	5%	-34%	12%	5%
Congested VHT	5%	6%	30%	8%	7%	24%	6%
Travel Speed	-1%	-1%	-2%	-3%	-10%	-3%	-1%

Source: CMAP, May 2013.

Table 3-3: Percent Change between Existing Conditions and Build Conditions by Corridors

	North–South Corridor	East–West Corridor	North-South & East-West Corridors
VMT	-2%	0%	-1%
Congested VMT	10%	0%	5%
VHT	-1%	0%	0%
Congested VHT	11%	1%	6%

Source: CMAP, May 2013.

Appendix B-1 also includes maps showing the breakdown of traffic diverted from Ashland Avenue to parallel roadways for AM and PM peak hours within the Phase 1 limits.

3.1.4 Local Impacts Analysis: Corridor Intersection Level Capacity Analysis

In order to evaluate the local impacts, a traffic analysis of intersection operating conditions was conducted. The purpose of this analysis was to identify specific locations that present critical impediments to traffic flow and to provide design considerations for the Build Alternative at these locations. This analysis was conducted for (1) Existing Conditions and (2) Build Alternative conditions.

Traffic volumes, roadway design (i.e., lane widths, number of lanes), and traffic signal timing plans were some of the inputs used to analyze Level of Service (LOS) at all signalized intersections along Ashland Avenue. In addition, a field review was conducted to evaluate intersection operations and traffic flows during AM and PM peak (rush hour) travel periods. Detailed information on the traffic analysis methodology, inputs, and outputs are provided in **Appendix B-2**.

The methodology used for the development of this intersection capacity analysis included:

1) 2013 traffic count data supplemented by adjusted historic traffic data from CDOT for 89 signalized intersections

2) Existing AM and PM peak hour traffic conditions were analyzed using SYNCHRO modeling software

3) Traffic volume forecasts for the Build Alternative conditions were developed based on the CMAP regional travel demand model for existing conditions and assuming design considerations of the Build Alternative

4) Build Alternative AM and PM peak hour traffic conditions were analyzed using SYNCHRO modeling software

5) Intersection operating deficiencies resulting from implementation of the project were identified and special design considerations at these locations are provided

The SYNCHRO traffic analysis determined the LOS for the intersections along the corridor. LOS provides a representative letter scale from LOS A to LOS F, with LOS A representing uncongested or free flow conditions and LOS F representing significantly congested conditions, as shown in **Table 3-4**.

Table 3-4: Categorization of Level of Service

Signalized Intersection Level of Service
LOS A = Free flow (intersection control delay: <10 sec/veh)
LOS B = Reasonably free flow (intersection control delay: 10-20 sec/veh)
LOS C = Stable flow (intersection control delay: 20-35 sec/veh)
LOS D = Approaching unstable flow (intersection control delay: 35-55 sec/veh)
LOS E = Unstable flow (intersection control delay: 55-80 sec/veh)
LOS F = Forced or breakdown flow (intersection control delay: > 80 sec/veh)

Source: Transportation Research Board, Highway Capacity Manual 2010, National Research Council, 2010.

As shown in the summary intersection LOS table in **Appendix B-2** and graphically on **Figures 3-5** to **3-8,** the majority of the intersections along Ashland Avenue are currently operating at an acceptable LOS (LOS D or better) in both AM and PM peak hours. However, six intersections of the 89 are currently operating at LOS E or worse in either or both the AM or PM peak hours or in both AM and PM peak hours. These six intersections with existing deficiencies would continue to operate at unacceptable LOS with the Build Alternative and intersection delay (average total delay of vehicles at all intersection approaches) is expected to increase at these locations, as shown in **Table 3-5**. CDOT considers LOS A through D acceptable. CDOT considers LOS E and F unacceptable.

Table 3-5: Ashland Avenue Existing Deficient Intersection LOS and Intersection Delay (in seconds)

Intersection	Existing		Build		Change	
	AM	PM	AM	PM	AM	PM
Belmont Avenue/Lincoln Avenue	F/128.2	F/84.8	F/162.7	F/127.3	+34.5	+42.5
Diversey Parkway	F/131.7	F/115.6	F/225.1	F/225.6	+93.4	+110.0
Clybourn Avenue	E/74.9	E/73.5	E/60.7	D/48.7	-14.2	-24.8
Van Buren Street	F/94.4	B/18.7	E/59.7	C/32.8	-34.7	+14.1
Roosevelt Road	E/59.7	D/50.3	D/46.6	E/61.5	-13.1	+11.2
Cermak Road/Blue Island Avenue	E/68.1	D/51.5	F/145.6	F/115.4	+77.5	+63.9

Seven intersections of the 89 are currently operating at LOS D or better in both the AM and PM peak hours under existing conditions but would operate at unacceptable LOS either in the AM, PM, or both AM and PM peak hours under the Build Alternative. Intersection delay is expected to change, as shown in **Table 3-6**. Mitigation options for these intersections are discussed in the section that follows.

Table 3-6: Ashland Avenue Unacceptable LOS and Delay (in seconds)

Intersection	Existing		Build		Change	
	AM	PM	AM	PM	AM	PM
Irving Park Road	D/46.2	D/38.7	F/64.9	F/91.3	+45.2	+26.2
Addison Street	D/51.0	C/25.4	E/66.0	D/49.4	+15.0	+24.0
Webster Avenue	C/21.3	C/23.2	C/30.5	E/72.5	+9.2	+49.3
Armitage Avenue	D/41.3	D/37.9	D/40.1	E/62.2	-1.2	+24.3
Cortland Street	B/18.4	C/20.4	E/61.5	E/68.0	+43.1	+47.6
North Avenue	D/40.9	D/39.2	D/42.0	E/59.6	+1.1	+20.4
Augusta Boulevard	B/17.8	C/20.6	C/33.6	F/102.9	+15.8	+82.3

Figure 3-5: Existing and Build Conditions AM Peak Hour Level of Service (1 of 2)

Figure 3-5 is a map showing the AM peak hour level of service results for Existing and Build conditions at signalized intersections on Ashland Avenue between Irving Park Road and 36th Place.

Figure 3-6: Existing and Build Conditions AM Peak Hour Level of Service (2 of 2)

Figure 3-6 is a map showing the AM peak hour level of service results for Existing and Build conditions at signalized intersections on Ashland Avenue between 31st Street and 95th Street.

Figure 3-7: Existing and Build Conditions PM Peak Hour Level of Service (1 of 2)

Figure 3-7 is a map showing the PM peak hour level of service results for Existing and Build conditions at signalized intersections on Ashland Avenue between Irving Park Road and 36th Place.

Figure 3-8: Existing and Build Conditions PM Peak Hour Level of Service (2 of 2)

Figure 3-8 is a map showing the PM peak hour level of service results for Existing and Build conditions at signalized intersections on Ashland Avenue between 31st Street and 95th Street.

3.2 Traffic Mitigation

Based on the results of the local and regional impact analysis (**Section 3.1**), potential mitigation measures are identified and discussed in detail in the following section. Implementation of these mitigation measures would result in traffic impacts for this project which would be less than significant. This section includes:

- Overview of Local Impacts and Proposed Mitigation
- Potential Mitigation Measure Options
- Potential Mitigation within Existing Curb-to-Curb Width
- Potential Mitigation outside Existing Curb-to-Curb Width
- Local Traffic Diversion Impacts and Proposed Mitigation

3.2.1 Overview of Local Impacts and Proposed Mitigation

As discussed (in **Section 3.1.4**), 13 of the 89 signalized intersections along the corridor would operate at unacceptable LOS either in the AM, PM or both AM and PM peak hours with implementation of the Build Alternative. This includes the following:

- 6 of 89 intersections with existing deficiencies would continue to operate at unacceptable LOS with the Build Alternative
- 7 of 89 intersections are currently operating at LOS D or better in both the AM and PM peak hours under existing conditions but would operate at unacceptable LOS either in the AM, PM or both AM and PM peak hours with implementation of the Build Alternative.

Potential mitigation measures to reduce or minimize the LOS impacts were evaluated for these intersections along Ashland Avenue. Implementation of these potential mitigation measures would bring all unacceptable intersection LOS under the Build Alternative up to acceptable operating conditions (LOS D or better).

Table 3-7 identifies the results comparing existing conditions and mitigated Build Alternative conditions**.** This shows that mitigation would result in acceptable LOS at these intersections.

3.2.2 Potential Mitigation Measure Options

As described in **Section 2.3**, the Build Alternative is proposed to be implemented within the existing right-of-way. In addition, the project aims to implement the proposed BRT project improvements and any mitigation without adjusting the sidewalk curbs in order to retain existing sidewalk widths and be consistent with CDOT's *Complete Streets Chicago Design Guidelines*[7]. These guidelines established design parameters for all modes of transportation and primarily emphasize walking, bicycling, and public transit.

[7] Chicago Department of Transportation, Complete Streets Chicago Design Guidelines, 2013. http://www.cityofchicago.org/content/dam/city/depts/cdot/Complete%20Streets/CompleteStreetsGuidelines.pdf

Table 3-7: Ashland Avenue Intersection LOS and Delay (in seconds) with Mitigation

Intersection	Existing		Build with Mitigation		Change	
	AM	PM	AM	PM	AM	PM
Belmont Avenue/ Lincoln Avenue	F/128.2	F/84.8	**D/48.0**	**D/54.2**	**-40.0**	**-17.3**
Diversey Parkway	F/131.7	F/115.6	**D/36.5**	**C/29.7**	**-95.2**	**-85.9**
Clybourn Avenue	E/74.9	E/73.5	D/48.7	D/48.1	-26.2	-25.4
Van Buren Street	F/94.4	B/18.7	D/51.1	D/38.5	-43.3	+19.8
Roosevelt Road	E/59.7	D/50.3	D/44.1	D/49.1	-15.6	-1.2
Cermak Road/ Blue Island Avenue	E/68.1	D/51.5	**D/50.1**	**D/41.6**	**-18.0**	**-9.9**
Irving Park Road	D/46.2	D/38.7	**D/53.9**	**D/42.3**	**+7.7**	**+3.6**
Addison Street	D/51.0	C/25.4	D/41.4	C/30.8	-9.6	+5.4
Webster Avenue	C/21.3	C/23.2	C/23.0	D/44.6	+1.7	+21.4
Armitage Avenue	D/41.3	D/37.9	**C/33.7**	**D/43.7**	**-7.6**	**+5.8**
Cortland Street	B/18.4	C/20.4	**C/31.6**	**C/32.6**	**+13.2**	**+12.2**
North Avenue	D/40.9	D/39.2	**C/32.4**	**D/50.2**	**-8.5**	**+11.0**
Augusta Boulevard	B/17.8	C/20.6	C/26.5	D/50.5	+8.7	+29.9

Note: Mitigation measures that require increasing the curb-to-curb width at intersections are shown in **bold.**

For the 13 intersections listed in **Table 3-7**, potential mitigation measures within the existing curb-to-curb width were evaluated to achieve an acceptable LOS. The mitigation measures include modifying existing lane configurations, adding or extending left- and right-turn lanes to create more storage space for turning vehicles, and adjusting the traffic signal timing schemes to provide better traffic progression. It would be possible to implement these mitigation measures within the existing roadway width for six of the 13 intersections.

At the remaining seven intersections it would not be possible to implement mitigation measures within the existing curb-to-curb width and achieve an acceptable LOS. For these intersections, widening the roadway width to implement mitigation measures was also evaluated. While these physical improvements would result in an acceptable LOS at these intersections, they would require reductions to sidewalk and median widths. These mitigation efforts would be inconsistent with CDOT's *Complete Streets Chicago Design Guidelines* and additional coordination with agencies and stakeholders would be needed prior to implementation of these options.

3.2.3 Potential Mitigation within Existing Curb-to-Curb Width

Potential mitigation measures that could be accommodated within the existing curb-to-curb widths and which would retain existing sidewalk widths were tested first for the intersections with unacceptable LOS. Mitigation measures would only be possible to implement within the existing curb-to-curb widths for six of the 13 intersections. These potential mitigation measures are described in detail below for these six intersections.

- Clybourn Avenue – Potential mitigation measures to bring this intersection up to acceptable LOS during both AM and PM peak hours include removing parking on Clybourn Avenue to accommodate an additional eastbound through lane on Clybourn Avenue.

  This intersection currently operates at an unacceptable LOS E during AM and PM peak hours. With implementation of the Build Alternative, LOS during AM peak hours would continue to operate at unacceptable LOS E and operations during PM peak hours would be slightly improved to acceptable LOS D. With implementation of these mitigation measures, this intersection would operate at LOS D during AM and PM peak hours.

- Van Buren Street – Potential mitigation measures to bring this intersection up to acceptable LOS for both AM and PM peak hours include modifying the existing westbound through lane to a westbound left-turn lane for dual left-turn lanes on Van Buren Street and modifying the inside northbound through lane to a shared through/left-turn lane on Ashland Avenue.

  This intersection currently operates at an unacceptable LOS F during AM peak hours and LOS B during PM peak hours. With implementation of the Build Alternative, this intersection would continue to operate at unacceptable LOS E during AM peak hours and continue to operate at acceptable LOS C during PM peak hours. With implementation of these mitigation measures, this intersection would operate at LOS D during AM and PM peak hours.

- Roosevelt Road – Potential mitigation measures to bring this intersection up to acceptable LOS during both AM and PM peak hours include adding an eastbound through lane on Roosevelt Road and adjusting parking and bike lanes on Roosevelt Road to allow diverging and merging zones for general traffic.

  This intersection currently operates at unacceptable LOS E during AM peak hours and acceptable LOS D during PM peak hours. With implementation of the Build Alternative, this intersection would operate at acceptable LOS D during AM peak hours and unacceptable LOS E during PM peak hours. With implementation of these mitigation measures, this intersection would operate at LOS D during AM and PM peak hours.

- Addison Street – Potential mitigation measures to bring this intersection up to acceptable LOS during both AM and PM peak hours include removing parking on Addison Street to accommodate eastbound and westbound through lanes on Addison Street.

The Addison Street and Ashland Avenue intersection currently operates at acceptable LOS D during AM peak hour and LOS C during PM peak hour. With implementation of the Build Alternative, this intersection would operate at unacceptable LOS E during AM peak hours and acceptable LOS D during PM peak hours. With implementation of these mitigation measures, this intersection would operate at LOS D during AM peak and LOS C during PM peak hours.

- Webster Avenue – Potential mitigation measures to bring this intersection up to acceptable LOS during both AM and PM peak hours include adding northbound and southbound right-turn lanes on Ashland Avenue.

  This intersection currently operates at acceptable LOS C during both AM and PM peak hours. With implementation of the Build Alternative, this intersection would operate at acceptable LOS C during AM peak hours and unacceptable LOS E during PM peak hours. With implementation of these mitigation measures, this intersection would operate at LOS C during AM peak and LOS D during PM peak hours.

- Augusta Boulevard – Potential mitigation measures to bring this intersection up to acceptable LOS during both AM and PM peak hours include adding northbound and southbound right-turn lanes on Ashland Avenue at Augusta Boulevard.

  This intersection currently operates at acceptable LOS B during the AM peak period and LOS C during the PM peak hour. With implementation of the Build Alternative, this intersection would continue to operate at acceptable LOS C during AM peak hours and unacceptable LOS F during PM peak hours. With implementation of these mitigation measures, this intersection would operate at LOS C during AM peak and LOS D during PM peak hours.

Implementation of these mitigation measures within the existing roadway width would bring six of the 13 intersections, which would operate at unacceptable LOS under the Build Alternative, to acceptable LOS standards. **Figures 3-9** through **3-12** show the LOS for Existing and Build Alternative with these mitigation measures included.

Concept plans depicting the potential mitigation for these intersections are included in **Appendix B-3**.

Figure 3-9: Existing and Mitigated (inside curb-to-curb) Build Conditions AM Peak Hour Level of Service (1 of 2)

Figure 3-9 is a map showing the AM peak hour level of service results for Existing and Mitigated (inside curb-to-curb) Build conditions at signalized intersections on Ashland Avenue between Irving Park Road and 36th Place.

Figure 3-10: Existing and Mitigated (inside curb-to-curb) Build Conditions AM Peak Hour Level of Service (2 of 2)

Figure 3-10 is a map showing the AM peak hour level of service results for Existing and Mitigated (inside curb-to-curb) Build conditions at signalized intersections on Ashland Avenue between 31st Street and 95th Street.

Figure 3-11: Existing and Mitigated (inside curb-to-curb) Build Conditions PM Peak Hour Level of Service (1 of 2)

Figure 3-11 is a map showing the PM peak hour level of service results Existing and Mitigated (inside curb-to-curb) Build conditions at signalized intersections on Ashland Avenue between Irving Park Road and 36th Place.

Figure 3-12: Existing and Mitigated (inside curb-to-curb) Build Conditions PM Peak Hour Level of Service (2 of 2)

Figure 3-12 is a map showing the PM peak hour level of service results Existing and Mitigated (inside curb-to-curb) Build conditions at signalized intersections on Ashland Avenue between 31st Street and 95th Street.

3.2.4 Potential Mitigation outside Existing Curb-to-Curb Width

At seven intersections mitigation is not possible within the existing curb-to-curb width. For these locations, potential mitigation measures outside of the existing curb-to-curb width were also tested. While these physical improvements provide the ability to improve LOS at these intersections, they would require reductions to sidewalk and median widths in order to provide an additional through or turn lane. These mitigation efforts would be inconsistent with CDOT's C*omplete Streets Chicago Design Guidelines* and additional coordination would be needed prior to implementation of these measures. These potential mitigation efforts are described in detail below for the seven intersections.

- Belmont Avenue/Lincoln Avenue – Potential mitigation measures outside of the existing curb-to-curb width to bring this intersection up to acceptable LOS during both AM and PM peak hours would include removing parking on Belmont Avenue to accommodate additional eastbound and westbound through lanes on Belmont Avenue, and adding southeast bound and northeast bound through/right-turn lanes on Lincoln Avenue.

  This intersection currently operates at an unacceptable LOS F during AM and PM peak hours. With implementation of the Build Alternative, this intersection would continue to operate at unacceptable LOS F during AM and PM peak hours. With implementation of these mitigation measures, this intersection would operate at LOS D during AM and PM peak hours.

- Diversey Parkway – Potential mitigation measures outside of the existing curb-to-curb width would include removing parking on Diversey Parkway to accommodate adding eastbound and westbound through lanes on Diversey Parkway and adding northbound and southbound through lanes on Ashland Avenue.

  This intersection currently operates at an unacceptable LOS F during AM and PM peak hours. With implementation of the Build Alternative, this intersection would continue to operate at unacceptable LOS F during AM and PM peak hours. With implementation of these mitigation measures, this intersection would operate at LOS D during AM peak and LOS C during PM peak hours.

- Cermak Road/Blue Island Avenue – Potential mitigation outside of the existing curb-to-curb width would include installing an additional northeast bound through lane on Blue Island Avenue and adding northbound and southbound through lanes by converting existing right-turn lanes into shared through/right-turn lanes on Ashland Avenue.

  This intersection currently operates at unacceptable LOS E during AM peak hours and acceptable LOS D during PM peak hours. With implementation of the Build Alternative, this intersection would continue to operate at unacceptable LOS F during AM and PM peak hours. With implementation of these mitigation measures, this intersection would operate at LOS D during AM and PM peak hours.

- Irving Park Road – Potential mitigation outside of the existing curb-to-curb width would include adding a westbound through lane on Irving Park Road and a southbound through lane on Ashland Avenue.

  This intersection currently operates at acceptable LOS D during both AM and PM peak hours. With implementation of the Build Alternative, this intersection would operate at unacceptable LOS F during both AM and PM peak hours. With implementation of these mitigation measures, this intersection would operate at LOS D during AM and PM peak hours.

- Armitage Avenue – Potential mitigation outside of the existing curb-to-curb width would include adding an additional eastbound left-turn lane and widening under the railroad bridge over the west leg on Armitage Avenue.

  This intersection currently operates at acceptable LOS D during both AM and PM peak hours. With implementation of the Build Alternative, this intersection would continue to operate at LOS D during AM peak hours and at unacceptable LOS E during PM peak hours. With implementation of these mitigation measures, this intersection would operate at LOS C during AM peak and LOS D during PM peak hours.

- Cortland Street – Potential mitigation outside of the existing curb-to-curb width would include adding northbound and southbound turn lanes, widening under the railroad bridge over the north leg of Ashland Avenue, and widening under the railroad bridge over the east leg of Cortland Street.

  This intersection currently operates at acceptable LOS during both AM (LOS B) and PM (LOS C) peak hours. With implementation of the Build Alternative, this intersection would operate at LOS E during AM and PM peak hours. With implementation of these mitigation measures, this intersection would operate at LOS C during AM and PM peak hours.

- North Avenue – Potential mitigation outside of the existing curb-to-curb width would include adding eastbound and westbound through lanes (one in each direction) on North Avenue.

  This intersection currently operates at acceptable LOS D during both AM and PM peak hours. With implementation of the Build Alternative, this intersection would continue to operate at LOS D during AM peak hours and LOS E during PM peak hours. With implementation of these mitigation measures, this intersection would operate at LOS C during AM peak and LOS D during PM peak hours.

In summary, under mitigated Build Alternative conditions that could be accommodated within the existing curb-to-curb widths, six of the 13 intersections would operate at LOS D or better in both the AM and PM peak hours, while seven intersections would operate at LOS E or F in either the AM or PM peak hours or both AM and PM peak hours. Under mitigated Build Alternative conditions including increasing the existing curb-to-curb widths, all of the thirteen intersections would operate at LOS D or better in both the AM and PM peak hours.

CTA and CDOT would continue to work through final design on mitigation options for these thirteen intersections. For improvements identified within the existing curb-to-curb widths, CTA and CDOT would continue to coordinate with CCDOTH and IDOT through final design on implementation of these mitigation options. Recognizing that mitigation measures outside of the existing curb-to-curb would be inconsistent with CDOT's *Complete Streets Chicago Design Guidelines*, these mitigation measures would need to be further coordinated with CDOT and through additional public outreach processes before implementation.

3.2.5 Local Traffic Diversion Impacts and Proposed Mitigation

Based on the diversion analysis detailed in **Section 3.1.3**, two levels of diversion mitigation are proposed to address potential impacts of the Build Alternative: (1) potential mitigation related to parallel roadways which represent the most likely alternative roadways for diversion of traffic and (2) potential mitigation measures related to neighborhood level impacts of traffic diversion. Implementation of these proposed mitigation measures would result in diversion impacts which would be less than significant.

While the diversion analysis conducted indicates that no one parallel roadway would absorb the majority of diverted traffic, operational improvements are proposed to minimize impacts of potential increases in traffic demand on major parallel roadways (as identified in **Table 3-2**). The mitigation measures on these parallel roadways would include the following: (a) upgrading traffic signal equipment, (b) coordinating traffic signal timing and traffic progression plans, or (c) providing additional turn lanes. Another option that would be considered involves providing additional transit, bicycle, or pedestrian accommodations along these roadways.

The specific locations for these mitigation measures would be determined in final design. CTA and CDOT are committed to developing block-by-block, location-specific diversion mitigation plans in coordination with IDOT and other stakeholders through final design and construction. Once location-specific parallel roadway mitigation plans are finalized, additional analysis would also review the localized impacts of removing left turn lanes from Ashland Avenue. Improvements would be developed and recommended to target specific neighborhood-level impacts while minimizing changes to the existing transportation network.

CTA and CDOT would continue to work with the local community through final design and implementation to ensure that both diversion impacts on major arterials and on neighborhood streets are mitigated. In the case where diversion occurs outside of the modeled results, mitigation measures would be utilized to address potential neighborhood-level traffic diversion impacts and local traffic calming needs (that may arise subsequent to implementation). These mitigation measures would include: geometric changes, signal installation, access changes, and traffic calming measures – that is, measures added to local roadways that are designed to reduce speeds or traffic levels.

The following represent the most likely traffic calming measures that would be implemented in the study area. These measures are identified in CDOT's *Tools for Safer Streets*[8] and have been proven to lessen the impact of additional vehicular traffic and make intersections, corridors, and neighborhood streets safer for pedestrians. Many of the traffic calming measures described below already exist along roadways within the diversion analysis study area and have been successful at providing neighborhood-specific mitigation measures to traffic impacts. These include:

- Marked crosswalks – Indicate where pedestrians may cross the street and where drivers should expect them to cross.
- In-road state law "Stop for Pedestrians" signs – State and City law require that vehicles must stop for pedestrians who are in a crosswalk and in-road signs remind drivers of this law.
- Pedestrian refuge islands – Protected area that allows pedestrians to cross one direction of traffic at a time.
- Accessible pedestrian signals – Provides auditory and/or vibrotactile information to pedestrians that are blind.
- Pedestrian countdown timers – Provide information on the amount of time remaining to cross the street at signalized intersections.
- Speed feedback signs – Display passing vehicle speeds and have been shown to increase driver compliance with the speed limit.
- Vertical traffic calming – Speed bumps, speed humps, and speed tables are devices that are placed in the middle of the road and require vehicles to slow down to cross over them.
- Bump-outs – Extend the sidewalk into a parking or non-moving lane, which reduce vehicle turning speeds and pedestrian crossing distance.
- Neighborhood traffic circles – Circular islands used to reduce vehicular speeds through the intersection.

[8] City of Chicago Department of Transportation, 2013. Tools for Safer Streets. http://www.cityofchicago.org/content/dam/city/depts/cdot/street/general/ToolsforSaferStreetsGuide.pdf

In addition, CDOT's *Tools for Safer Streets* provides other traffic calming measures which have been implemented in Chicago and may also be considered as part of final design plans. These include:

- Signals and beacons – Traffic signals provide a protected crossing and inform pedestrians when to cross the street. Pedestrian hybrid beacons stop traffic to allow pedestrians to cross. Rectangular rapid flash beacons can be used as a warning device at uncontrolled or midblock crossings.
- Leading pedestrian intervals – Gives pedestrians a head start into an intersection before vehicles.
- Lagging left turns – Allows pedestrians to cross the intersection at the beginning of a traffic signal cycle, reducing the conflicts with left-turning vehicles.
- Road diets – Reduces the amount of space for motor vehicles, either through eliminating lanes or shrinking the width of lanes. The reclaimed space from a road diet is then re-allocated for other uses, such as turn lanes, pedestrian refuge islands, bike lanes, or more sidewalk space.
- Roundabouts – Circular intersections where vehicles travel in a counter-clockwise direction and entering vehicles must slow down and yield to circulating vehicles.
- Chicanes – Create extra turns in a road by installing a series of midblock bump-outs on alternating sides of the streets that require vehicles to slow down to maneuver through them.
- Skinny streets – Convert one-way streets that are wider than 30 feet to two-way streets with narrow travel lanes that reduce vehicle speeds.

As noted, the above lists include potential traffic calming measures identified in CDOT's *Tools for Safer Streets*[8]. CTA and CDOT would continue to coordinate with other agencies and work with the local community before implementing any of these mitigation options.

3.3 Parking Impact Analysis

In order to accommodate center running bus-only lanes within the existing right-of-way, one of the design features for the Ashland Avenue BRT Project would include removal of on-street parking near station locations along the corridor. Detailed design solutions for station intersections, including the provision of left turns at certain locations to provide sufficient residential and business access, would be determined through conceptual engineering and into final design in coordination with agency partners and the public involvement process. The results of this process would define the exact number of parking spaces at each location. As such, the detailed parking impact analysis conducted for this Environmental Assessment (EA) takes into account conceptual engineering to identify the parking impacts that would likely occur from implementation of the Build Alternative.

This section details the existing parking inventory along the corridor and the results of a parking demand analysis that was undertaken as part of the planning for this project. A discussion of the parking impacts and ways to avoid, minimize, or mitigate impacts to nearby residential or business communities is also provided for the purposes of this EA. CTA would continue to work with the public and the City of Chicago through final design and construction to coordinate and address impacts resulting from the removal of on-street parking along portions of the Ashland Avenue corridor.

3.3.1 Changes to Parking Supply

Parking represents the total on-street parking spaces, on both sides of the street, including loading zones, metered parking spaces, and unmetered parking spaces, within the corridor. Parking space impact estimates were developed based on the conceptual roadway alignment and station layout design for the Build Alternative. There are approximately 3,410 parking spaces along the corridor. The majority (approximately 83 percent) of these spaces are located at unpaid or unmetered parking spaces. In many of these locations along the corridor, parking stalls are not marked. The Build Alternative would remove between approximately 11 to 12 percent of total on-street parking along the corridor, retaining between 88 to 89 percent of total parking.

The Institute for Transportation and Development Policy (ITDP) conducted an assessment in June 2012 of existing parking within the project area to identify whether adjacent cross street parking was available to offset any changes to parking within the corridor. The full report of this analysis is included in **Appendix C**. Since the analysis was initially conducted, the total parking supply has been refined through field visits and additional review of aerial photographs. However, the results of the ITDP evaluation provide the necessary information to assess whether comparable parking exists to address parking losses. The results of this analysis indicate the presence of underutilized on-street and off-street parking owned and operated by various parties at cross streets which would provide suitable parking alternatives.

Adequate comparable parking is not available at cross streets at two discrete locations along the project corridor – from Thomas Street to Erie Street, and from 47th Street to 50th Street. No stations are proposed at Thomas Street or Erie Street, and all existing parking would be retained along this section of Ashland Avenue. The 47th Street station is proposed between 47th and 50th Street. In this section, parking would be retained along Ashland Avenue, except in close proximity to the proposed station location at 47th Street. An estimated 23 unmetered parking spaces (total for both sides of the roadway) may be removed for implementation of the Build Alternative; existing on-street parking would continue to be available near this location, and residents and businesses near this proposed station location would benefit from enhanced access to the area through the BRT service.

3.3.2 Parking Demand Analysis

Parking supply only represents one portion needed to understand parking impacts. A parking demand analysis was completed in August 2012 to build on the parking inventory data gathered and to identify maximum and average parking use in different sections of the corridor. To conduct this analysis, field teams were deployed over an eight-day period in July 2012 to survey average and maximum parking. For representative coverage, field surveys were conducted for Monday through Thursday as well as on Saturday and Sunday of the same week.

Surveyors recorded the presence of parked vehicles on each block throughout the corridor and measured six temporal data sets:

- Early AM peak (6 AM – 7 AM)
- AM peak (7 AM – 9 AM)
- Midday (9 AM – 4 PM)
- PM peak (4 PM – 6 PM)
- Evening (6 PM – 9 PM)
- Weekend (All Saturday and Sunday)

Summary results of this analysis are shown in **Table 3-8**, which includes percent use based on the current parking space estimate of 3,410. Previously, a 2012 study by ITDP estimated the number of available parking spaces as 3,676. As described in **Section 3.3.1**, subsequent to the ITDP report, the parking space estimate was refined to 3,410. Additional details on analysis findings by ward are included in **Appendix C**.

Based on the parking demand analysis, the average observed parking use was highest for the midday and Saturday service periods. Maximum use was higher than average use, although roughly one-third of the total parking capacity was observed as unused along the corridor. Given these factors, the minimal total parking anticipated to be converted for implementation of the Build Alternative were not deemed to be of significant impact to residents or businesses. Residents and businesses would benefit from increased access through premium BRT service along the corridor with enhanced pedestrian access to these areas.

Table 3-8: Ashland Avenue Average Parking Demand

Average Parking		% Use
Early AM Peak*	6 AM – 7 AM	22%
AM Peak	7 AM – 9 AM	27%
Midday	9 AM – 4 PM	40%
PM Peak	4 PM – 6 PM	35%
Evening	6 PM – 9 PM	34%
Saturday		41%
Sunday		36%

Maximum Use of Parking	% Use
Weekday	73%
Saturday	55%
Sunday	54%

*Counts were not completed for the entire corridor.

3.3.2 Summary of Parking Impacts

Initial estimates for the Build Alternative assume retaining approximately 89 percent of parking along the corridor. Implementation of the intersection mitigation measures detailed in **Section 3.2.2** would require the removal of additional parking spaces. The result of these mitigation measures would result in approximately 88 percent of the parking retained along the corridor. Given the analysis of parking supply and demand and the availability of comparable parking along adjacent streets throughout the majority of the corridor, no specific parking mitigation is proposed at this time. Minimal impacts are anticipated to occur to paid parking or loading zone parking, and through much of the Ashland Avenue corridor, parking stalls are not clearly marked or currently fully utilized. In addition, parking demand analysis conducted indicates that roughly one-third of the total parking capacity was observed as unused along the corridor. CTA and CDOT would continue to work with the public through final design and construction as localized concerns are determined and addressed.

Comparable parking would continue to be available at cross streets near BRT stations to serve residents and businesses. Outside of station areas, on-street parking would be retained and no loading zones would be impacted. Any additional changes to parking would be based on local decision-making regarding preferred access and local traffic concerns. These decisions would be identified and coordinated through the public involvement process and with the City of Chicago (DHED) as part of stakeholder outreach efforts in final design.

3.4 Transit Operational Analysis

The proposed Ashland Avenue BRT Project would bring a new, premium mode of transit service to CTA's highest bus ridership route along Ashland Avenue from Irving Park Road in the north to 95th Street in the south (16.1 miles). The first phase (Phase 1) of design and construction would be located between Cortland Street in the north and 31st Street in the south (5.4 miles). While construction of BRT median stations, center running bus-only lanes and TSP upgrades would first be constructed in this area, limited stop service would be provided throughout the entire 16.1-mile corridor at the proposed BRT station locations using existing curbside bus stops until Phase 2 is constructed. The BRT vehicles would include doors on both sides of the vehicle in order to serve (1) the median stations and (2) existing curbside bus stops until Phase 2 is constructed. Conceptual plans for the Build Alternative, indicating the layout for both Phase 1 and Phase 2 are included in **Appendix G**. Corridor design in Phase 2 would be similar to that in Phase 1 and would include center running, dedicated BRT lanes and center median stations. Details on the proposed phasing plan are provided in **Section 2.3**.

A trademark of BRT is increased frequency and capacity of service compared to regular bus service. The Ashland Avenue BRT Project is anticipated to operate at between five and 15 minute headways in peak and off-peak hours. The BRT service would operate from 4:00 a.m. to 1:00 a.m., a span of service of 21 hours per day. CTA estimates that the total number of buses required to operate BRT peak and off-peak service with the proposed headways would be 12 vehicles (peak) and four vehicles (off-peak) in each direction for the 16.1-mile corridor.

Existing local CTA Bus Route #9 bus service would continue to operate in a similar manner as today when Phase 1 is implemented. Due to expected ridership shifts from Route #9 to the faster and more reliable BRT service, Route #9 frequency may be adjusted once the BRT service has matured. CTA is committed to maintaining Route #9 to provide local bus service as a complement to the BRT service. This configuration of service provides benefits to customers making both local and express transit trips.

There are 35 proposed BRT station locations that would be implemented approximately every half mile and at CTA rail stations to provide faster and more reliable service in the corridor, with fewer stops than the existing bus service. As mentioned above, the Route #9 service would continue to operate as it does currently, stopping at every bus stop (approximately every one-eighth of a mile) along the corridor.

Under the Build Alternative, improvements to pedestrian crossings and enhanced access to adjacent transit facilities would be provided at station locations, with increased amenities at BRT stations compared to local bus stops. These improvements to the pedestrian environment are proposed along with complete streets design considerations (i.e., designs that consider all users of the roadway), such as special sidewalk and curb design, to create an integrated and holistic transportation network in the corridor that not only accommodates all modes, but which would accommodate all users of the transit service and pedestrian environment. CTA and CDOT have both established complete streets design guidelines that would be incorporated into final design. CDOT's *Complete Streets Chicago Design Guidelines*[9] and CTA's *Transit Friendly Design Guide*[10] would be used to ensure that the design of stations and crossings fit the form and function of adjacent land uses and roadway typologies within the corridor.

Potential benefits to the transit system as a result of the Build Alternative which are discussed within the context of this EA include:

1. Travel Time and Reliability Changes
2. Changes to Transit Patronage and Demand
3. Station Access and Circulation

The following presents the summary of findings in each of these areas. A description of the methodologies used and detailed data inputs and results are located in **Appendix D.** Potential temporary impacts on transit operations resulting from implementation of Phase 1 are also discussed.

3.4.1 Travel Time and Reliability Changes

Three transit operational factors were estimated and evaluated to determine the benefits to travel time and reliability of the Build Alternative, as follows:

- *Bus Speed* – Bus speed represents average bus speed along the corridor under peak hour travel conditions during a typical weekday. Implementation of the Build Alternative would increase average speed along the corridor to 15.9 miles per hour, an increase in bus speed up to 83 percent compared to existing local bus service on the corridor. Additional bus speed increases would result from buses operating in dedicated lanes, increased station spacing compared to current local bus stops, the potential for off-board fare collection to further reduce bus dwell times, TSP improvements, left-turn removal at intersections and

[9] Chicago Department of Transportation, Complete Streets Chicago Design Guidelines, 2013. http://www.cityofchicago.org/content/dam/city/depts/cdot/Complete%20Streets/CompleteStreetsGuidelines.pdf

[10] Chicago Transit Authority, Transit-Friendly Development Guide: Station Area Typology, 2009. http://www.cityofchicago.org/dam/city/depts/zlup/Planning_and_Policy/Publications/Transit_Friendly_Development_Guide/CTA_Typology_Study.pdf

traffic signal optimization. Route #9 would continue to operate in a general purpose traffic lane and stop at all existing local bus stops. Existing Route #9 average speed is 8.7 miles per hour during peak periods and is less than projected general purpose traffic average speed of 12.8 mile per hour during peak periods. Route #9 may experience minor delays associated with the reduction in general purpose traffic lanes. However, these minor impacts to local bus speeds would be offset by the substantial increases in speed of the BRT service that would provide riders with more efficient options to reach their destinations.

- *Bus Travel Time* – Bus travel time represents travel time along the corridor under peak hour travel conditions during a typical weekday for average trip lengths. Bus travel time under the Build Alternative is anticipated to decrease to 9.4 minutes for a typical 2.5-mile trip, representing an approximately 45 percent travel time savings for passengers of the BRT service. These time savings are realized from BRT operating in center running dedicated bus-only lanes and having fewer stops than the local bus service. Route #9 is anticipated to maintain existing travel time for riders since impacts to local bus speed are anticipated to be minimal and to be offset by the substantial gains in travel time associated with the Build Alternative.

- *Bus Reliability* – Bus reliability represents the on-time performance of buses compared to the published schedule under daily travel conditions during a typical weekday and is measured in average extra wait time. The Build Alternative would operate in a dedicated center lane, resulting in bus reliability improvements of almost 50 percent (43 seconds is the existing extra wait time compared to the schedule versus 22 seconds of extra wait time projected under the Build Alternative). Route #9 would continue to operate in a general purpose traffic lane and stop at all existing local bus stops. Route #9 may experience minor delays leading to a minor reduction in bus reliability associated with the reduction in general purpose traffic lanes. However, the impact to the overall Route #9 reliability would be less than significant due to the substantial increases to overall transit service (BRT and local bus) with the Build Alternative.

In sum, the Build Alternative would result in overall increased bus speeds and greater reliability along the corridor through the implementation of center running, dedicated lanes for the BRT service, limited stop locations for BRT service, level boarding with the potential for off-board fare collection at BRT stations to further reduce bus dwell times, TSP improvements, left-turn removal at intersections, and traffic signal optimization.

Off-board fare collection = Customers pre-pay their fare at the station prior to boarding the transit vehicle.

Dwell Time = The time a bus spends at a stop loading and unloading passengers.

Implementation of the Build Alternative is anticipated to result in

- improved travel times,
- greater schedule reliability,
- easier transfers,
- shorter wait times,
- greater customer satisfaction,
- improved pedestrian features, and
- increased system operating efficiencies.

The BRT service would operate with frequent service which would reduce travel delays, improve transit accessibility, and enhance the land use and transportation relationship. These service improvements are expected to positively benefit transit patronage by attracting more choice riders, i.e., those that have a choice on whether to drive an automobile or use transit service but elect to take a trip on transit.

3.4.2 Changes to Transit Patronage and Demand

Based on 2012 CTA ridership data, there are over 31,000 trips taken per day on Ashland Avenue Route #9, which mirrors the proposed BRT route. Two ridership factors were estimated and evaluated using the CMAP 2010 travel demand model data and TCRP Report #118[11] to determine potential changes to transit patronage and demand resulting from the Build Alternative, as follows:

- *Daily Boardings* – For the purposes of evaluating changes to daily boardings, total transit boardings along the corridor (local bus and BRT service) during a typical weekday were evaluated. Initial estimates of daily boardings along the Ashland Avenue corridor indicated an increase of approximately 29 percent with implementation of the Ashland Avenue BRT Project. This estimated daily boarding increase would result from increased transit capacity, speed, timing, and reliability.
- *Mode Split* – Mode split was also evaluated and represents the percentage of trips on buses (transit) within the corridor (local bus and BRT service) under daily travel conditions during a typical weekday. CMAP 2010 data indicated an existing transit mode split of 14 percent which is estimated to increase to 26 percent as a result of implementation of the Ashland Avenue BRT Project. Estimated transit mode split increases would result from increased transit ridership and decreased roadway traffic volume capacity.

[11] Transportation Research Board, 2007, TCRP Report 118 – Bus Rapid Transit Practitioner's Guide.

3.4.3 Station Access and Pedestrian Space

Implementation of the Build Alternative is expected to benefit pedestrians and bicyclists by providing a new transit option that would encourage walk and bike trips. In addition, the complete streets design of the project would encourage traffic calming, creating a system that benefits all users of the transportation system. Three station access and pedestrian space factors were estimated and evaluated to determine potential impacts of the Build Alternative, as follows:

- *Pedestrian Space* – Pedestrian space calculations were developed at proposed BRT station intersections along the corridor to represent net gains in sidewalk space and raised median space at station locations that could be realized by the Build Alternative. The proposed Build Alternative would expand the sidewalk width and install a median at stations, increasing pedestrian space at station intersections by 52 percent.

- *Raised Medians* – Raised medians represent the linear feet of raised medians along the corridor alignment between stations. The total length of raised medians (excluding station platforms) is anticipated to increase by over 173 percent compared to existing conditions. Because raised medians would restrict pedestrian crossings at unsignalized intersections, mid-block crossings would be installed at select locations. At these locations, a break in the median would provide a crossing point and a refuge (waiting area) for pedestrians crossing Ashland Avenue.

- *Sidewalk Buffers* – As part of this analysis, the amount of linear feet of sidewalk buffers (parking lane or landscaping between sidewalks and vehicle travel lanes along the corridor) was evaluated. Compared to existing conditions, a 34 percent increase to sidewalk buffers would be provided through implementation of the Build Alternative. These increases would enhance the pedestrian environment and support safe pedestrian circulation in the corridor.

3.4.4 Phased Transit Operations Plan

The first phase (Phase 1) of BRT implementation would operate between Cortland Street in the north and 31st Street in the south (5.4 miles). Construction of BRT median stations, center running bus-only lanes and TSP upgrades would first be constructed in this area. Outside of the Phase 1 area, the BRT bus service would stop curbside at the proposed BRT station locations using existing curbside bus stops until Phase 2 is constructed. Upon completion of Phase 2, operations of the BRT service in the Phase 2 areas would be similar to Phase 1, with center running BRT vehicles and center median stations. Until Phase 2 is completed, detailed interim operational plans would be developed to ensure proper integration of BRT and local bus service at the ends of the corridor outside of the Phase 1 area, so that bus idling times are not substantially increased in these areas or on adjacent streets.

4. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the affected environment and environmental consequences of the No-Build Alternative and construction and operation of the Build Alternative on the social, cultural, and natural environment. The following topics are considered: displacements, social, and neighborhood impacts; land use and economic development; environmental justice; historic and archaeological resources; parklands and recreational resources; visual and aesthetic conditions; noise; air quality; water and biological resources; geology and soils; hazardous materials; energy; safety and security; construction impacts; and indirect and cumulative impacts. Mitigation to address potential impacts is provided where determined appropriate.

The Build Alternative alignment extends approximately 16.1 miles, from Irving Park Road in the north to 95th Street in the south. While the first phase of construction is planned to extend within a smaller portion of this corridor (5.4 miles), from Cortland Street in the north to 31st Street in the south, the sections below disclose environmental impacts for the full Build Alternative. The discussions below also acknowledge the phased nature of the project where appropriate.

4.1 Displacements and Relocation of Existing Uses

The project would be constructed within the right-of-way of Ashland Avenue, and as such land acquisition would not be necessary. However, in some Bus Rapid Transit (BRT) station locations along the corridor the existing roadway narrows. In these locations acquisition of small slivers of land may be necessary to accommodate the project facilities. No temporary or permanent displacements or relocations to homes or businesses would occur as a result of the proposed action. Should any property acquisition become necessary that would result in the displacement or relocation of businesses or individuals through project development, it would be conducted in accordance with the provisions in the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970* [42 United States Code (USC) § 61, and the implementing regulation 49 Code of Federal Regulations (CFR) § 24].

4.2 Land Use and Economic Development

Regional and local planning bodies govern land use and zoning regulations. Within Chicago, the Chicago Metropolitan Agency for Planning (CMAP) as the regional planning body defines the regional planning principles for the project area, while the City of Chicago regulates land use policies and zoning within their local jurisdictional boundaries. As such, existing land use, zoning, overlay districts, and relevant land use plans were evaluated within a half mile buffer of Ashland Avenue to determine compatibility with the proposed project. Full land use and zoning analysis details may be found in **Appendix E-1**.

Land use within the project area is shown in **Figure 4-1** and **Figure 4-2** and is linked with the city's geography and historical pattern of urban development.

Figure 4-1: Existing Land Use (1 of 2)

Figure 4-1 is a map of the Ashland Avenue corridor between Irving Park Road and Pershing Road, proposed station locations, and color-coded existing land use within a half -mile of the corridor.

Figure 4-2: Existing Land Use (2 of 2)

Figure 4-2 is a map of the Ashland Avenue corridor between Cermak Road and 95th Street, proposed station locations, and color-coded Existing conditions land use within a half-mile of the corridor.

Ashland Avenue is a predominantly commercial corridor with retail, business industrial, and institutional land uses lining the street. Residential uses are located throughout the area and include a mix of medium density single-family, multifamily, and mixed use development. Commercial and retail uses are located along arterial east-west streets as well as Ashland Avenue.

Institutional uses, such as schools, are located throughout the project area and are typically located within residential neighborhoods. In addition, the Illinois Medical District (IMD) is located along Ashland Avenue, between Madison Street and 15th Street. The medical district has the highest concentration of hospitals within the city, and includes medical research facilities, a biotechnology business incubator, and universities. It is a major employment and educational center along the corridor.

Two waterways flow through the project area, including the south branch of the Chicago River and the Sanitary and Ship Canal, which connects the Des Plaines River and the Chicago River. Industrial uses flank these waterways, which historically provided water transport that supported industrial activities. Similarly, industrial uses are located along the Metra commuter rail corridors that pass through the project area, including Metra's Union Pacific, Burlington-Northern Santa Fe, and Heritage Corridor lines. Some industrial uses in these areas have converted to retail and commercial uses over time.

The Ashland Avenue corridor intersects with 20 of the city's 160 Tax Increment Financing (TIF) districts. TIF is a special funding tool used by the City of Chicago to promote public and private investment across the city.[12] Within a TIF district, the amount of property tax the area generates is set at a base amount. As property values increase, all property tax growth above that amount can be used to fund redevelopment projects within the district. The majority of these TIF districts are focused on mixed use residential and commercial development and encompass most retail oriented streets along Ashland Avenue. In addition to these mixed-use focused TIF districts, there are also five industrial corridor TIF districts that are concentrated near the three major rail lines and three interstate highways that pass through the corridor. Existing access to and from interstate highways would be retained in these areas as part of the proposed project. The Ashland Avenue corridor also intersects three previously designated Empowerment Zones and two of the city's three Enterprise Communities. The Empowerment Zones/Enterprise Communities program is a federal, state, and local government partnership for stimulating comprehensive renewal – particularly economic growth and social development – in distressed urban neighborhoods across the nation.[13] Combined, these areas provide a number of tax and business incentives in the corridor that contribute to the current and planned land use and transportation environments.

The city also has a number of Community Plans and Open Space Plans that were reviewed for relevance to the project area. Relevant, recently completed land use plans to the project area include the *Chicago River Corridor Development Plan*, *Reconnecting Neighborhoods Plan*, and the *Near Northwest Side Plan*. These plans provide a future vision for specific portions of the corridor and summaries of the contents of these reviewed plans are provided in **Appendix E-1**. In addition to existing plans, in May 2013, the Chicago City Council approved a *BRT Land Use*

[12] City of Chicago, Tax Increment Financing Program, http://www.cityofchicago.org/city/en/depts/dcd/supp_info/tax_increment_financingprogram.html.
[13] U.S. Department of Housing and Urban Development, Community Renewal Initiative, http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/economicdevelopment/programs/rc

Development Plan that is proposed specifically to analyze and identify improvements to local land use policies to support the eventual development of BRT along Ashland Avenue.

Environmental Impacts

No-Build Alternative

Under the No-Build Alternative, the project would not be constructed and no impacts to current land use or zoning would occur. The No-Build Alternative would not further incentivize economic development in the corridor and would have no impact on existing land uses.

Build Alternative

Relevant and recently completed community, open space, and land use plans were reviewed for consistency with the project. A summary of these plans is provided in **Appendix E-1**. These plans share common goals with the Build Alternative – namely, to improve connections to open space (including the Chicago River), enhancing pedestrian access, urban design, and economic development, and improving transit connectivity and bus stop or station amenities for passengers. The Build Alternative is consistent with and supportive of plans along the corridor.

The Build Alternative is also consistent with existing land use and zoning, and would have no adverse impacts on land uses in the corridor. Ashland Avenue is an urban corridor with predominantly mixed-use commercial and residential uses along with retail, business industrial and institutional land uses lining the street. The Ashland Avenue BRT Project is anticipated to strengthen the land use and transportation connection. In addition, the City of Chicago has recently begun a land use study to identify further improvements to land use policies in the corridor to support development of the Build Alternative. Finally, the implementation of BRT would further support economic development plans by providing greater cohesion between land use and transportation. The BRT service and street enhancements could incentivize new transit-oriented development (TOD) in the corridor, which would be consistent with current zoning.

4.3 Neighborhoods and Communities

This section describes the socioeconomic characteristics that define the project area and documents potential impacts to neighborhoods and communities. For this analysis, a demographic profile representing total populations within a half mile buffer around the corridor were obtained. Demographic estimates were developed based on data from three primary sources: 2010 Decennial Census (Summary File 1), 2010 American Community Survey (Five-Year Summary), and CMAP 2009 Travel Demand Model traffic analysis zone (TAZ) data for future (2040) demographic estimates. A summary of this demographic data within the project area is shown on **Table 4-1.** Additional detailed data and maps related to the demographics analysis, including comparisons of the corridor to city-wide demographics may also be found in **Appendix E-2**.

There are currently over 232,000 people and over 90,000 households located within a half mile of the Ashland Avenue corridor, equating to approximately nine percent of the population of the city as a whole. Approximately one in four households within walking distance to the Ashland Avenue corridor do not have access to a vehicle and rely upon transit for their travel needs. While the racial composition of the corridor is predominantly minority (55.7 percent), minority densities in the corridor (11.8 people per acre) are somewhat lower than for the city as a whole

(12.4 people per acre). Limited English proficiency (LEP) residents along the corridor make up approximately three percent of the population and are similar to city-wide averages. Low-income family densities (0.8 people per acre) are also similar to city-wide low-income densities (0.7 people per acre).

Table 4-1: Ashland Avenue Demographic Profile Summary

Demographic Factor	Universe	No-Build	Percent of Total Universe	Density (# per Acre)
2010 Population	Population	232,051	--	21.5
2040 Population	Population	286,779	--	26.5
2010 Households	Households	90,781	--	8.4
2040 Households	Households	108,405	--	10.0
2010 Minority	Population	127,550	55%	11.8
2010 Low-Income Families	Families	9,031	4%	0.8
2010 Youth	Population	21,518	9%	2.0
2010 Senior	Population	28,031	12%	2.6
2010 Limited English Proficiency	Households	6,894	3%	0.6
2010 No Vehicles Available	Households	22,538	10%	2.1

The Ashland Avenue corridor intersects 33 of Chicago's 228 designated neighborhoods, as shown in **Figure 4-3** and **Figure 4-4** Neighborhoods intersecting the corridor include the following:

- Beverly
- Longwood Manor
- McKinley Park
- West De Paul
- Near West Side
- Noble Square
- Tri-Taylor
- Wrigleyville
- Goose Island
- Graceland West
- Brainerd
- Ranch Triangle
- Bucktown
- Illinois Medical District
- West Englewood
- Gresham
- South East Ravenswood
- Lake View
- Bridgeport
- River West
- Heart of Chicago
- Pilsen
- Lathrop Homes
- University Village / Little Italy
- East Ukrainian Village

- North Center
- Roscoe Village
- Englewood
- Back of the Yards
- West Town
- Wicker Park
- Wrightwood Neighbors
- Sheffield Neighbors

Figure 4-3: Intersecting Neighborhoods (1 of 2)

Figure 4-3 is a map of the Ashland Avenue corridor between Irving Park Road and Pershing Road, proposed station locations, and neighborhoods that intersect the corridor.

Figure 4-4: Intersecting Neighborhoods (2 of 2)

Figure 4-4 is a map of the Ashland Avenue corridor between 18th Street and 95th Street, proposed station locations, and neighborhoods that intersect the corridor.

The corridor also intersects 20 of Chicago's 50 Aldermanic Wards. These 50 aldermen make up the City of Chicago's Council, who with the Mayor of Chicago, are charged with governing the city and representing communities within their ward. The following wards intersect the corridor:

- Ward 1
- Ward 2
- Ward 3
- Ward 11
- Ward 12
- Ward 15
- Ward 16
- Ward 17
- Ward 18
- Ward 19
- Ward 20
- Ward 21
- Ward 25
- Ward 26
- Ward 27
- Ward 32
- Ward 43
- Ward 44
- Ward 46
- Ward 47

There are also several community facilities located along Ashland Avenue. Three community facilities are located within 250 feet of a proposed BRT station. These include Lake View High School (4015 North Ashland Avenue) near the proposed Irving Park Road station, Burr Elementary School (1310 North Ashland Avenue) near the proposed North Avenue station, and Rush University Medical Center (1653 West Congress Avenue) near the proposed Harrison Street station. It is anticipated that these communities would benefit from increased transit access and enhanced pedestrian space at station intersections, and these community facilities would be considered in development of station design.

Police and fire stations located near the corridor were also identified. The 7th Precinct Police Station is located within a quarter mile of the corridor at 1400 West 63rd Street. There are also seven fire stations located within a quarter mile of the corridor, four of which are located directly on Ashland Avenue and one is near the intersection of Ashland Avenue and 33rd Street.

Environmental Impacts

No-Build Alternative

Under the No-Build Alternative, the project would not be constructed and no impacts to neighborhoods or communities would occur.

Build Alternative

The proposed improvements would not divide any neighborhoods or otherwise adversely affect community cohesion. BRT facilities would be designed and sited to complement the existing character of the project area neighborhoods. This would include station signage to important points of interest at specific BRT station locations, and decorative artwork consistent with community character. Inclusion of these features would be determined during final design with input from community stakeholders and neighborhood elected officials (i.e., aldermen). In addition, the Chicago Transit Authority (CTA) and the Chicago Department of Transportation (CDOT) have both established design guidelines that would be incorporated into final design. CDOT's *Complete Streets Chicago Design Guidelines*[14] and CTA's *Transit Friendly Design Guide*[15] would be used to ensure that the design of stations and crossing fit the form and function of adjacent land uses and roadway typologies within the corridor. Mid-block crossings would be provided at specific locations along the corridor to ensure safe pedestrian crossings between signalized intersections. Changes to the physical layout within the existing right-of-way would improve the quality of pedestrian access and transit service along and throughout the corridor, thereby enhancing community cohesion. Improvements at intersections would also help reduce the dividing effect between neighborhoods that Ashland Avenue currently has in some areas. Project designs would be sensitive to emergency access needs in the corridor. During operation, emergency vehicles would continue to have the right-of-way in emergency situations, and buses as well as other traffic would yield to emergency vehicles in these situations. Continued coordination with emergency service providers through final design would help to ensure that the project does not create any impediments to emergency access.

4.4 Historical and Archaeological Resources

The National Environmental Policy Act of 1969 (NEPA), under 40 CFR 1500-1508, requires that all projects receiving federal funding take into account effects on historic and cultural resources, and identify all adverse and beneficial effects of a project on these resources. Cultural and historic resources are protected by various federal regulations; most notably Section 106 of the National Historic Preservation Act (NHPA) which requires federal agencies to consider impacts to historic resources from their actions and to balance preservation needs with the need for the action. The Section 106 process "seeks to accommodate historic preservation concerns with the needs of federal undertakings through consultation…". The goal of the consultation is to identify historic properties potentially affected by the undertaking, assess project effects, and seek ways to avoid, minimize, or mitigate any adverse effects on historic properties (36 CFR 800.1.a). The Section 106 consultation was conducted for this project; an Eligibility and Effects Meeting was held with the State Historic Preservation Officer (SHPO) of the Illinois Historic Preservation Agency (IHPA) and other consulting parties on July 15, 2013 and is discussed in further detail in the environmental impacts discussion contained within this section.

In addition to the Section 106 requirements, Section 4(f) of the Department of Transportation Act of 1966 protects publicly or privately owned historic sites listed or eligible for listing on the National Register of Historic Places (NRHP). Where projects involve the use, including temporary or constructive use, of land from a historic site or district, additional consultation with the SHPO is required to determine whether a programmatic and/or individual Section 4(f) Evaluation is required. Further details on the evaluation of Section 4(f) resources and determination of use are provided in **Section 4.5**.

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[14] Chicago Department of Transportation, Complete Streets Chicago Design Guidelines, 2013.
http://www.cityofchicago.org/content/dam/city/depts/cdot/Complete%20Streets/CompleteStreetsGuidelines.pdf

[15] Chicago Transit Authority, Transit-Friendly Development Guide: Station Area Typology, 2009.
http://www.cityofchicago.org/dam/city/depts/zlup/Planning_and_Policy/Publications/Transit_Friendly_Development_Guide/CTA_Typology_Study.pdf

For the assessment of historic and archaeological resources, the Federal Transit Administration (FTA) determined an Area of Potential Effect (APE) for cultural/historic resources along the Ashland Avenue corridor. Figures depicting the architectural and archaeological APE are included in **Appendix E-3**. The APE takes into account the location of proposed BRT stations as well as the potential for other effects (e.g., visual changes) that could impact historic resources. The APE is confined to the right-of-way in the areas between the station locations because the project activities (including milling of pavement, re-paving, re-striping, median improvements, and spot landscaping improvements) would not result in any potential adverse proximity effects to the location, design, setting, materials, workmanship, feeling, or association of nearby historic resources. Around station areas, the APE was expanded on a station by station basis to account for the character of the built environment at each location. In other words, the APE was expanded to consider the size and type of buildings surrounding each station, and how each station could potentially affect the existing visual, auditory, or vibrational environment. Figures indicating the APE around the stations are included in **Appendix E-3** for further reference.

To identify historic architectural resources in the APE, the Historic Architectural Resources Geographic Information System (HARGIS), the NRHP database, and city records – including the Chicago Landmarks List and the Chicago Historic Resources Survey (CHRS) – were reviewed. Using this information, a list of NRHP listed and previously determined eligible properties within the APE was compiled. This effort included the identification of known archaeological sites, NRHP listed districts and structures, CHRS properties rated Orange or Red, locally listed historic landmarks, and any additional properties previously identified as eligible for the NRHP.

Consistent with the regulations (36 CFR 800.4.b.1), the project team has considered past planning, research, and studies, the magnitude and nature of the undertaking, the nature and extent of potential effects on historic properties and the likely nature and location of historic properties within the APE in its identification efforts.

Portions of four NRHP listed historic districts fall within or adjacent to the APE including the East Ravenswood Historic District, West Jackson Boulevard Historic District, Pilsen Historic District, and Chicago Sanitary and Ship Canal Historic District. Details on these historic districts and locations are provided in **Appendix E-3**.

Following the archival research, the project team's architectural historian completed a windshield survey of the Ashland Avenue corridor APE, noting buildings within the APE that exhibit distinguishing architectural features associated with historic styles. During a March 2013 field visit, 72 individual structures within the APE were photographed and assessed to determine their eligibility for listing on the NRHP. In total, 24 individual properties are NRHP listed or recommended eligible. Further information on these properties is included in **Appendix E-3**.

Archaeological resources and properties were also identified in the field as potentially NRHP eligible for each station location. Two previously recorded archaeological sites were identified along the Ashland Avenue corridor. Site 11-Ck-350 is a historic site that contains the remaining endpoint of the Illinois and Michigan Canal. Site 11-Ck-781 is the Central Manufacturing District. It is part of the first American Industrial Park, established in 1905.

Environmental Impacts

No-Build Alternative

There would be no impacts to historic or archaeological resources under the No-Build Alternative.

Build Alternative

Effects of the Build Alternative are discussed here and are subject to final determination by FTA as part of the Section 106 process. The Build Alternative alignment and stations are anticipated to be located within existing right-of-way. The preferred configuration for station locations is in the median near signalized intersections along the corridor; however, exact placements of stations were still in development during the analysis of historic and archaeological resources in this Environmental Assessment (EA). As such, the assessment of environmental impacts considered all potential locations for near-side and far-side median stations as well as curbside stations. Detailed information and pictures related to this assessment are contained in *Cultural Resources Technical Memorandum* in **Appendix E-3**.

An Eligibility and Effects Meeting was held with the SHPO and interested consulting parties on July 15, 2013 as part of the Section 106 process, where the findings of this cultural resources technical analysis were presented. SHPO and consulting parties in the Section 106 process also provided their comments on this project. These consulting parties included the following: the Chicago Art Deco Society, the City of Chicago Department of Housing and Economic Development (DHED) - Historic Preservation Division, the Forest County Potawatomi Community, Greater Southwest Development Corporation, Ho-Chunk Nation, Landmarks Illinois, the Ridge Historical Society, and West Lakeview Neighbors. Letters of response to SHPO and these organizations are also provided in **Appendix F-1**.

As a result of the Eligibility and Effects meeting, responses to comments and subsequent coordination the SHPO has issued their concurrence with the No Adverse Effect finding for the project (see **Appendix F-1**). The conditions of SHPO's concurrence are as follows: (1) all stations and shelters located within historic districts be located in the center median and (2) the proposed stations and shelters located adjacent to properties listed or deemed eligible for the NRHP be placed in the median or the opposite side of the street. CTA is committed to continue coordination with the SHPO through final design as part of this project.

Archaeological Resources

The eastern edge of archaeological site 11-Ck-781 falls within the project's APE at the southwestern quadrant at the intersection of Pershing Road and Ashland Avenue where a BRT station is proposed. A modern building is currently located at this intersection within the boundaries of site 11-Ck-781. The BRT station planned for this location would be a center median station and no impacts to this archaeological site are anticipated. No other archaeological resource impacts are expected as a result of this project.

Historical Resources

Due to Section 106 of the NHPA requirements, FTA must consider both the direct and indirect impacts upon historic resources from this project. The following provides a detailed assessment of direct and indirect effects of the Build Alternative.

Direct Effects

Based on the preliminary assessment, no adverse effects are anticipated from construction of BRT stations within the four historic districts that fall within or adjacent to the project APE. This was confirmed with the SHPO through the Eligibility and Effects meeting held on July 15, 2013. Stations would be designed to fit the historic context of these areas, with modern, glass enclosures for median stations and shelters similar in size and scale to existing shelters for any curbside locations.

For the 24 NRHP-listed or potentially eligible structures identified in the APE, potential BRT station placement options were reviewed to identify any potential adverse effects, and are detailed in **Appendix E-3**. Based on the assessment, no adverse effects are anticipated from construction of stations near these structures. This has been confirmed with the SHPO through the Section 106 process. Stations would be designed to fit the historic context of these areas, with modern, glass enclosures for median stations, and shelters similar in size and scale to existing shelters for any curbside stations.

Indirect Effects

The project team also evaluated the potential for visual impacts that could result in indirect impacts to historical resources.

The potential for visual impacts to historic structures is limited since this is an existing transportation corridor and the proposed action is not expected to disturb or alter any of the characteristics that qualify the identified buildings as being historic. Sixteen station locations are proposed within or near the NRHP boundaries of individual historic properties or within the parcels of contributing properties within historic districts. Potential project impacts are limited to changes to historic properties' visual settings. The BRT stations would be located in a manner to avoid visual impacts to historic properties. Although some of the proposed stations are located within the view sheds of historic properties identified, no station structures would be located where they would obstruct or obscure any historically significant views to or from any historic properties. Changes to historic property settings as a result of the project would be minor and not adverse. Therefore, no adverse effects are anticipated for visual impacts to historic properties.

4.5 Parklands and Recreational Resources

The project study area was examined to determine the location of public parks and recreational areas along the proposed BRT corridor. Seven public parks are located adjacent to the Ashland Avenue corridor (see **Table 4-2 and Figures 4-5** and **4-6**), which provide residents and visitors access to passive and active recreation activities.

Table 4-2: Parks Adjacent to Ashland Avenue Corridor

Park	Location	Acres
Wrightwood Park	2534 North Greenview Avenue	4.3
Walsh Playground Park	1722 North Ashland Avenue	1.9
Polonia Triangle Park	Ashland Avenue and Milwaukee Avenue	0.1
Union Park	1501 West Randolph Street	13.8
Canal Origins Park/Park No. 516	2701 South Ashland Avenue	2.7
Mulberry Playlot Park	3150 South Robinson Court	0.6

Park	Location	Acres
Linear Greenspace	Ashland Avenue and Garfield Boulevard	1.1

Environmental Impacts

No-Build Alternative

Parklands would not be impacted under the No-Build Alternative as no construction would occur.

Figure 4-5: Parklands (1 of 2)

Figure 4-5 is a map of the Ashland Avenue corridor between Irving Park Road and 36th Place, proposed station locations, and public parks that are adjacent to the corridor.

Figure 4-6: Parklands (2 of 2)

Figure 4-6 is a map of the Ashland Avenue corridor between 18th Street and 95th Street, proposed station locations, and public parks that are adjacent to the corridor.

Build Alternative

None of the parks located adjacent to the Ashland Avenue corridor would be impacted by the proposed BRT project. BRT stations are planned to be constructed within the existing right-of-way of Ashland Avenue from Irving Park Road on the north to 95th Street on the south (approximately 16.1 miles) where practical and feasible. Only one of the 35 proposed station locations is in the immediate vicinity of a park: Union Park at the Ashland Avenue/Lake Street intersection. The proposed station location would not encroach on the park boundary and would increase transit access to the park; therefore, no impacts to this park are anticipated.

Section 4(f) of the Department of Transportation Act of 1966 (Section 4(f)) generally does not allow federally funded transportation projects to use land from publicly owned parks if there is a prudent and feasible avoidance alternative. Section 4(f) also requires that all possible planning be implemented to minimize harm to Section 4(f) resources. Since the construction and operation of the BRT station at the Ashland Avenue/Lake Street intersection is not anticipated to result in any permanent use, proximity effects, or temporary adverse effects to public parkland and recreation areas, no Section 4(f) impacts are anticipated, and no further Section 4(f) analysis is required.

4.6 Visual Quality

The entire length of the Ashland Avenue corridor is primarily commercial in nature as it is a major north-south corridor within the city. Each of the 35 intersections where stations are proposed contains a combination of commercial, educational, mixed-use, industrial, and multi-family residential buildings. As an urbanized corridor, buildings along Ashland Avenue have undergone continuous changes and re-use along with modern buildings being constructed at many of the intersections. Several vacant lots occur at various intersections and along the Ashland Avenue corridor.

Transportation infrastructure within the existing roadway right-of-way includes roads, bus stops, traffic signals, and signage, and is already a major part of the visual landscape of this highly urbanized area. **Figure 4-7** illustrates the current visual conditions of several of these intersections and **Figure 4-8** shows the proposed design concepts for the Build Alternative for purposes of comparison.

Environmental Impacts and Mitigation

No-Build Alternative

There would be no impacts to the visual or aesthetic quality of the project area under the No-Build Alternative.

Figure 4-7: Current Visual Conditions at Select Intersections along Ashland Avenue

Figure 4-7 has nine images showing current visual conditions at select intersections along the Ashland Avenue corridor. The specific intersections include:
Image 1 is of Ashland Avenue at Irving Park Road
Image 2 is of Ashland Avenue at Belmont Avenue
Image 3 is of Ashland Avenue at Cortland Street
Image 4 is of Ashland Avenue at Division Street
Image 5 is of Ashland Avenue at Jackson Boulevard
Image 6 is of Ashland Avenue at 18th Street
Image 7 is of Ashland Avenue at Pershing Road
Image 8 is of Ashland Avenue at 74th Street
Image 9 is of Ashland Avenue at 95th Street

Figure 4-8: Build Alternative Station and Alignment Concepts

Figure 4-8 has two images:
Image 1 is a photo-simulation of proposed typical Build Alternative station concept.
Image 2 is a photo-simulation of proposed typical Build Alternative conditions roadway alignment along Ashland Avenue at a station.

Build Alternative

No adverse effects to visually sensitive resources are anticipated as a result of the Ashland Avenue BRT Project. Implementation of the BRT project would result in two primary improvement types: construction of BRT stations at key intersections, and additional improvements within the corridor right-of-way.

BRT stations are proposed at 35 key intersections along the corridor. No impacts are anticipated from implementation of BRT median stations since they would fit within the aesthetic character of their surroundings – a medium density commercial area with scattered high density residential development along Ashland Avenue. Bus service currently operates along Ashland Avenue and the majority of the proposed features for the Ashland Avenue BRT Project are already present along the corridor (i.e., shelters, benches, signage, trash cans, etc.).

Furthermore, BRT station designs would be sensitive to the local character of the area and not detract from the context of surrounding architecture. As part of the station design process, an extensive public involvement/design charette effort is being pursued to obtain station design input as well as to assure the appropriate mitigation options are determined that would minimize and avoid any potential visual impacts to historic resources and the visual setting along the Ashland Avenue corridor. New BRT station materials, colors, and detailing are intended to be aesthetically pleasing and complementary with surroundings. The final design of the shelters is anticipated to be consistent with the context of the surrounding community. Overall, the shelters are not expected to change the aesthetic character along Ashland Avenue.

Proposed improvements along the road corridor itself would involve milling of pavement, re-paving, re-striping, median improvements, and spot landscaping improvements, and would be confined to the existing right-of-way. As such, no adverse visual impacts are anticipated. In addition, no potential adverse proximity or visual effects to the location, design, setting, materials, workmanship, feeling, or association of nearby historic resources in the areas between the proposed stations are anticipated. The visual quality of the surrounding environment is expected to benefit from the Build Alternative.

In summary, the overall changes in the visual setting as the result of the Build Alternative, including improvements at station locations, striping of designated BRT lanes, and streetscape improvements (including medians, landscaping, and Americans with Disabilities Act of 1990 [ADA]-accessibility upgrades) would be beneficial to residents, businesses, and the pedestrian environment.

4.7 Noise and Vibration

Noise is "unwanted sound" and, by this definition, the perception of noise is a subjective process. Several factors affect the actual level and quality of noise as perceived by the human ear and can generally be described in terms of loudness, pitch (or frequency), and time variation.

The loudness, or magnitude, of noise determines its intensity and is measured in decibels (dB). The A-weighted decibel (dBA) is commonly used to describe the overall noise level from transit sources because it is an attempt to take into account the human ear's response to audible frequencies. Because the decibel is based on a logarithmic scale, a 10-decibel increase in noise level is generally perceived as a doubling of loudness, while a three-decibel increase in noise is just barely perceptible to the human ear.

The *FTA Transit Noise and Vibration Impact Assessment Manual* has three levels of analysis that may be used to evaluate noise impacts of a transit project, depending on the type and scale of the project, the stage of project development, and the environmental setting. The three levels of analysis are:

- Screening procedure
- General assessment
- Detailed analysis

The screening procedure is used to identify noise and vibration-sensitive land uses in the vicinity of a project and whether there is likely to be an impact. The screening procedure takes into account the noise impact criteria, the type of project, and noise-sensitive land uses.

The screening procedure for a bus way was deemed most appropriate for this noise analysis. The screening procedure provides an impact distance, which is defined as the distance large enough to include all locations potentially impacted by noise from this project. This distance is measured from the center of the noise-generating activity – in this case, the centerline of Ashland Avenue. This distance was calculated using a maximum operational BRT scenario for the proposed bus way project with a low threshold of 50 dBA as the impact criteria. Based on FTA's guidelines for screening distances, which are prescribed distances for the noise analysis based on the type of project being implemented, the screening distance for a bus way system was used in this analysis. Screening distances for bus way systems are 500 feet (for unobstructed areas) and 250 feet (for areas where there are intervening buildings).

In order to analyze and compare specific categories of noise impacts associated with the Build Alternative, two noise assessment buffers at 500 feet and 250 feet from the center of the bus way facility (in this case, the centerline of Ashland Avenue) were developed. Maps of the noise assessment buffers are provided in **Appendix E-4**. The existing noise environment was assumed to be 60 dBA based on the *FTA Transit Noise and Vibration Impact Assessment Manual* (*Figure 2-17*). Based on the screening analysis, residential land use categories were found to be located within the noise buffers and a general assessment was conducted to determine the noise levels at the residential land use category using the FTA's Noise Impact Assessment Spreadsheet. The average number of buses per hour was assumed to be 12 buses in each direction (24 total buses) for the daytime as well as nighttime hours traveling at 15.9 mph.

Environmental Impacts

No-Build Alternative

No noise impacts would result from the No-Build Alternative.

Build Alternative

The proposed project would be located along an existing roadway corridor, in an urban setting, and would not substantially increase the number of transit vehicles on the roadway. **Table 4-3** shows the noise levels at 50, 100, 150, and 200 feet from the proposed alignment measured from the center of the noise generating activity.

Table 4-3: Noise Level Impact Summary

Distance	Project 24-Hour Sound (Ldn)	Existing 24-Hour Sound (Ldn)	Moderate Impact Criteria	Severe Impact Criteria	Impacted?
50 ft.	59 dBA	56 dBA	58 dBA	63 dBA	Moderate Impact
100 ft.	55 dBA	52 dBA	58 dBA	63 dBA	No
150 ft.	52 dBA	49 dBA	58 dBA	63 dBA	No
200 ft.	50 dBA	47 dBA	58 dBA	63 dBA	No

Note: Ldn refers to day-night average sound level and is the primary metric for measuring noise impacts.

At 50 feet from the Ashland Avenue alignment, the increase in noise level is expected to be approximately 3 dBA and the receivers would meet the Moderate Impact Criteria of 58 dBA. The contour distance to moderate impact is 62 feet and for severe impact is 26 feet from the center of the noise generating activity. The FTA's Noise Impact Assessment Spreadsheets for each representative distance are included in **Appendix E-4**.

Based on the anticipated frequency and speed of the proposed BRT service, the proposed project is not expected to result in any severe noise impacts to the project area within the existing right-of-way. Receivers within 62 feet from the Ashland Avenue alignment measured from center of the noise generating activity would experience a moderate impact, or a 3 dBA increase. An increase of approximately 3 dBA is a barely perceptible change and is not expected to create a disruption of normal activities. Also, noise level increases are expected to be lower with the re-designation of one travel lane in each direction as a center running, dedicated bus-only lane. The overall average daily traffic volume within the Ashland Avenue corridor is expected to be reduced by 35 percent with implementation of the Build Alternative. Roadway noise is the predominant noise influence in the area, and the additional contribution from BRT traffic would be relatively minor. As indicated in **Chapter 3**, diverted traffic would be absorbed throughout the robust Chicago roadway network and no other notable increases to noise are anticipated on any one roadway within the network absorbing this traffic diversion.

In addition to noise, vibration impacts associated with rubber-tired vehicles are unlikely. The Build Alternative also includes milling and resurfacing of the existing roadway pavement, which would repair and smooth existing holes, dips, and bumps. Although the number of buses operating along the corridor would increase with the Build Alternative, by smoothing irregular portions of Ashland Avenue, there would be a reduction in vibration from roadway surface irregularities affecting existing buses along the project corridor. Therefore, no adverse vibration effects would be expected.

4.8 Air Quality

The *1970 Clean Air Act* (CAA) and *1990 Clean Air Act Amendments* require that the United States Environmental Protection Agency (EPA) set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. EPA therefore regulates ambient concentrations of seven common pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$), and sulfur dioxide (SO_2). Called criteria pollutants, various human health and environmentally-based criteria set permissible levels for these pollutants.

The Federal CAA requires states to classify air quality control regions (or portions thereof) as either attainment or non-attainment with respect to criteria air pollutants, based on whether the NAAQS have been achieved. Areas that previously exceeded the NAAQS, but have since attained the standard, are called maintenance areas. States are also required to prepare State Implementation Plans (SIPs) containing emission reduction strategies to maintain the NAAQS for those areas designated as attainment and to attain the NAAQS for those areas designated as non-attainment. Based on the findings of this analysis, Cook County, or portions thereof, is designated as a non-attainment area for O_3, $PM_{2.5}$, and Pb and as a maintenance area for PM_{10}. In non-attainment and maintenance areas, transportation conformity with the SIP must be substantiated. If a potential project is included in a conforming transportation plan[16] and Transportation Improvement Program (TIP), then the project is already included in the emission budgets developed and approved for the region and determined to be in conformance with the SIP. Thus, a unique, regional analysis of project emissions would not be required.

The Ashland Avenue BRT Project is pending inclusion in the fiscal year 2010 to 2015 TIP. The Metropolitan Planning Organization (MPO) Policy Committee of CMAP for the region is responsible for endorsing the TIP. Projects in the TIP are considered to be consistent with *GO TO 2040*, the 2040 regional transportation plan. While this project is currently not included in the TIP, CTA is currently working with CMAP to include the project within the TIP in the future. For the purposes of this analysis, it is assumed that the current TIP would be modified to include this project and would be in compliance with air emissions budgets. It is necessary, however, to complete an analysis for localized impacts of CO, PM_{10}, and $PM_{2.5}$. As listed in 40 CFR 93 Subpart A, project-level conformity occurs when the following three conditions are met:

- The Federal Highway Administration (FHWA)/FTA project must not cause or contribute to any new localized CO, PM_{10}, and/or $PM_{2.5}$ violations
- The project must not increase the frequency or severity of any existing CO, PM_{10}, and/or $PM_{2.5}$ violations in non-attainment or maintenance areas
- The project must comply with any PM_{10} and $PM_{2.5}$ control measures in the applicable implementation plan

CO Hot Spot Analysis

Although Cook County is not a non-attainment or maintenance area for CO, a CO hot spot analysis was still completed to evaluate possible localized impacts as part of the NEPA analysis. Because of the LOS of the affected intersections (LOS D, E, or F) and the proposed modifications to the traffic lanes, it was necessary to evaluate if the proposed action could cause adverse effects to air quality. Additional details on the CO hot spot analysis process and findings are included in **Appendix E-5** and are summarized herein.

To determine if a CO hot spot (high localized ambient concentration) is created due to activities of the proposed project, an analysis must be conducted to predict ambient CO concentrations from the near-field dispersion of the emissions. The analysis was completed using EPA's *Guideline for Modeling Carbon Monoxide from Roadway Intersections* (1992). The guidelines provide a ranking and selection procedure to determine the intersections expected to have the

[16] A transportation plan is defined as the "official intermodal metropolitan transportation plan that is developed through the metropolitan planning process for the metropolitan planning area, developed pursuant to 23 CFR part 450" (40 CFR 93.101).

highest CO concentration. The procedures require a CO hot spot analysis be completed for the top three intersections based on the worst LOS and the top three intersections based on the highest traffic volumes. This process was used for both the AM and PM peak hour for the Build Alternative and duplicate intersections were removed. As a result, the following five intersections along Ashland Avenue were used in the analysis: (1) West Belmont Avenue / North Lincoln Avenue, (2) West Cermak Road, (3) West Diversey Parkway, (4) West Irving Park Road, and (5) West Roosevelt Road.

The first step in an air dispersion analysis is the selection of an applicable model. EPA's *Guideline on Air Quality Models* and EPA's 1992 CO Hot Spot Guidelines recommend the use of CAL3QHC as the screening model for such analyses. CAL3QHC combines CALINE3 with a traffic model to calculate delays and queues that occur at signalized intersections.

CO emission factors were estimated using EPA's Motor Vehicle Emission Simulator (MOVES), Version 2010b. Emission factors were developed in accordance with EPA's *Using MOVES in Project-Level Carbon Monoxide Analyses* guidance document. The Illinois Environmental Protection Agency (IEPA) provided data for input into MOVES2010b, including fuel supply and formulation, inspection and maintenance information, and vehicle age distribution files. The average January temperature for 2015 from IEPA's data files was used as the input for meteorology.

Regional emissions were calculated from projected Vehicle Miles Traveled (VMT) for each of the project alternatives. Regional daily VMT data were developed for the CMAP planning area for both the No-Build and Build Alternatives. The vehicle fleet mix was determined from the Highway Performance Monitoring System (HPMS) data provided by IEPA with its MOVES2010b input files. The EPA's annual average weekday VMT calculator was used to convert the daily VMT data to annual VMT (see **Appendix E-5** for further details).

This analysis used the current EPA-approved version of MOVES2010b (as revised January 2013) to develop emission factors for different vehicle classes. All vehicle types (motorcycles, passenger cars, passenger trucks, buses, and other trucks) contained in the IEPA's input data files were used to define the vehicle fleet mix (i.e., relative ratio of each vehicle type to total population). There would be no change to intercity buses and school buses between alternatives. It was assumed that all transit buses would be diesel-fueled.

$PM_{2.5}$ Hot Spot Analysis

Based on the assessment of the operational elements of the Build Alternative, it was determined that a $PM_{2.5}$ hot spot analysis would not be required. It is estimated that a peak of 10 local buses per hour would operate under the No-Build Alternative. The local bus frequency would be based on demand following implementation of the BRT service. The Build Alternative would add up to an additional 24 buses per hour (12 per hour in each direction). While this would be a 50 percent increase in bus traffic, the overall number of total buses required is still relatively small. All buses would operate with clean diesel technology (i.e., diesel particulate filters), resulting in a decrease in regional $PM_{2.5}$ emissions compared with the No-Build Alternative. CTA has coordinated with CMAP as part of the interagency consultation process to confirm that this project is not a project of air quality concern and that a $PM_{2.5}$ analysis is not required. Results of that coordination process are included in **Appendix F-2**.

Environmental Impacts

No-Build Alternative

The No-Build Alternative would not create new emissions or have negative operational air quality impacts. However, the No-Build Alternative would also not reduce regional VMT-related emissions like the Build Alternative.

Build Alternative

The Build Alternative would provide an alternative to automobile transportation in the region. Regional traffic emissions were evaluated as part of this analysis to assess how the proposed project would increase or decrease operational emissions from passenger vehicles. The findings of this analysis are included in Table 6 of **Appendix E-5** and indicate that emissions from regional traffic would decrease compared to the No-Build Alternative, and transit bus emissions would increase. The net effect would be a decrease in emissions for all pollutants. The Build Alternative would therefore have beneficial effects to air quality.

Based on the results of the CO hot spot analysis, the operation of the BRT service would increase the one-hour and eight-hour CO concentrations compared to the No-Build Alternative. While concentrations would increase, the NAAQS would not be exceeded. As a result, there would be no adverse air quality effects associated with the Build Alternative.

4.9 Water Resources

This section describes the existing water resources within the project corridor and at BRT station locations. The potential impacts to these resources were determined based on acreage or linear feet of impact to water resources. Readily available data on these resources was used for the analysis.

4.9.1 Surface Water

Lake Michigan is the dominant topographic feature in the region. The project would be located within the Chicago/Calumet watershed. The project corridor would cross two rivers: the North Branch of the Chicago River, just north of Webster Avenue, and the Chicago Sanitary and Ship Canal (CSSC), just north of the Stevenson Expressway. The North Branch of the Chicago River and the Chicago Sanitary and Ship Canal are regulated under the Illinois Administrative Code's Secondary Contact and Indigenous Aquatic Life Standards (35 I. Adm. Code 302, Subpart D). Water bodies regulated under this standard are suited for secondary contact uses and are capable of supporting indigenous aquatic life. The North Branch of the Chicago River is on Illinois' 303(d) list of impaired waterways; it is listed as impaired for mercury, polychlorinated biphenyls, aldrin, chloride, DDT, hexachlorobenzene, dissolved oxygen, total phosphorus, total suspended solids, fecal coliform, iron, and oil and grease. A Total Maximum Daily Load (TMDL) analysis for the North Branch of the Chicago River is ongoing for fecal coliform. The CSSC is on Illinois' 303(d) list of impaired waterways; it is listed as impaired for polychlorinated biphenyls, iron, oil and grease, dissolved oxygen, total phosphorous, mercury, and un-ionized ammonia. A TMDL analysis for the CSSC has not been developed.

The North Branch of the Chicago River and the CSSC also lie within the Inland Waterway Coastal Zone boundary. The inland waterway corridor consists of both the waterway and designated land area on either side of the waterway, and meets the requirements of federal regulations and guidelines for the inclusion within the coastal zone of rivers (waterways), on which uses may have direct impacts on coastal waters.

Environmental Impacts

No-Build Alternative

There would be no impact to surface waters under the No-Build Alternative.

Build Alternative

The Build Alternative would utilize existing bridges above the North Branch of the Chicago River and the CSSC; there would be no modifications to navigable waterways as part of this project. Given that the project area is already highly urbanized, there would be no increase in impervious area as part of this project. Alterations and minor changes to topography would not greatly affect the direction of drainage through the project area and would not change drainage within the watershed. Since the new BRT service would replace automobile trips, there would be an associated reduction in roadway pollutants. As a result, no adverse impact on surface waters is anticipated.

4.9.2 Groundwater

Groundwater is not a drinking water source within the project area. There are no sole source aquifers in the project area.

Environmental Impacts

No-Build Alternative

There would be no impact to groundwater under the No-Build Alternative.

Build Alternative

Due to the predominance of impervious surfaces throughout the project area, minimal percolation to the underlying groundwater occurs. Therefore, any potential increases in contaminated surface water runoff as a result of the Build Alternative would have no adverse impact on groundwater quality.

4.9.3 Wetlands

Under the National Wetland Inventory (NWI) Program, the U.S. Fish and Wildlife Service (USFWS) maintains a digital database of wetland and surface water resources in the United States. The NWI was reviewed including updates made by Ducks Unlimited, a wetlands conservation organization, to identify any wetlands or surface waters within the project area. According to the updated NWI maps, both the North Branch of the Chicago River and the CSSC are listed as riverine wetlands. Riverine wetlands include wetlands and deep water habitats contained in natural or artificial channels that periodically or continuously contain flowing water.

A review of the NWI database and the Illinois Department of Natural Resources' (IDNR) Ecological Compliance Assessment Tool (EcoCAT) for any wetlands located within 200 feet of the proposed project identified no wetlands in the project area other than North Branch of the Chicago River and CSSC (**Appendix E-6**). A review of the National Resources Conservation

Service Soil Data identified no hydric soils within 200 feet of the proposed BRT stations. Sites that have soils classified as "not hydric" are unlikely to contain wetlands. The 200-foot buffer was determined to be suitable for this analysis as it would capture any potential impacts outside of the project that might be affected by construction activities.

Environmental Impacts

No-Build Alternative

There would be no impact to wetlands under the No-Build Alternative.

Build Alternative

Since the Build Alternative would utilize existing bridges over the North Branch of the Chicago River and the CSSC, and would be limited to BRT operations along Ashland Avenue, limited physical modifications or ground disturbance would occur. As a result, no impact to wetland resources is anticipated from the project.

4.9.4 Floodplains

Executive Order 11988 requires federal agencies to avoid impacts associated with the occupancy and modification of floodplains. Two floodplains on Federal Emergency Management Agency Flood Insurance Rate Maps were identified within the project corridor: (1) along the North Branch of the Chicago River and (2) along the CSSC.

Environmental Impacts

No-Build Alternative

There would be no impact to floodplains under the No-Build Alternative.

Build Alternative

Since the Build Alternative would utilize existing bridges over the North Branch of the Chicago River and the CSSC, and would be limited to BRT operations along Ashland Avenue, limited physical modifications or ground disturbance would occur. As a result, no impact to existing floodplains is anticipated from the project.

4.10 Biological Resources

Nature areas along the project corridor listed in *the Chicago Nature and Wildlife Plan* include the following:

- Canal Origins Park – 2800 S. Ashland Avenue, east of Ashland Avenue, south of the CSSC and north of the Stevenson Expressway. This site is among the best fish habitats in the city and is a stopping ground for migrating birds.
- Webster Wildlife Site – 2200 N. Ashland Avenue, east of Ashland Avenue and south of the North Branch of the Chicago River.

The IDNR EcoCAT database was consulted for information about known occurrences of State-listed species within the project area (see **Appendix E-6**). The IDNR EcoCAT database recorded occurrences of peregrine falcons (*Falco peregrinus*) between Chicago Avenue and 38th Street. Peregrine falcons are large falcons that are specialized for capturing smaller birds in the air. They typically nest on cliff ledges, and in urban areas they can be found nesting on ledges of tall buildings and high bridges.

Environmental Impacts

No-Build Alternative

No impacts to biological resources would occur from the No-Build Alternative.

Build Alternative

Falcons could be expected to forage for small birds and pigeons throughout the project area. They would be found flying high above the project area and perched on buildings and other structures within the project area. Although peregrine falcons are migratory, falcons have been observed in the Chicago area in the winter in recent years. There are no known nesting pairs along the project corridor. Tall buildings that would be likely to be attractive to nesting falcons do not appear to occur within the project corridor. There is no part of the project corridor that would be expected to provide unique or particularly rich foraging habitat for peregrine falcons. In addition, the project corridor represents a small proportion of a falcon's foraging territory.

The proposed project site is not appropriate habitat for any threatened, endangered, proposed, or candidate species listed by USFWS as occurring in Cook County. Listed species and other protected resources are provided in **Appendix E-6**. Given the highly urbanized nature of the project area, none of these habitats is found near the project corridor.

The project would be limited to BRT operations along Ashland Avenue. Limited physical modifications or ground disturbances would occur. As a result, no adverse impacts to natural/native plant communities are anticipated by the project.

The trees along the project corridor occur primarily in the median and the sidewalks of Ashland Avenue. These narrow bands of trees have a lower value to wildlife than blocks of habitat and thus reduce the potential for street tree removal to affect wildlife. During project permitting, a detailed tree inventory would need to be prepared for each work zone. A small number of trees would likely be removed as a result of construction activities. Tree removal would be regulated by local ordinances, would impact the urban tree inventory, and might affect birds protected under the Migratory Bird Treaty Act (MBTA).

If construction occurs at night, then the necessary lighting would generate a temporary adverse impact on wildlife. Throughout much of the corridor, there is considerable night lighting. Light impacts would not be expected to affect birds during the spring or fall migration because migrating birds would experience greater light impacts from the surrounding urban areas. With the implementation of mitigation measures (described below) to avoid impacts on nesting migratory birds, potential light impacts during construction would not be adverse.

Bird species that may utilize trees that could be removed or disturbed during construction could be affected by the project. Potential mitigation measures that would reduce adverse impacts would include the following:

- Tree removal would be timed as much as possible to occur outside the migratory bird nesting season, which occurs generally from April 1 to September 15 and as early as March 1 for some species.
- If construction must occur during the nesting season, two biological surveys would be conducted: one 15 days prior and a second 72 hours prior to the construction that would remove or disturb suitable nesting habitat. The surveys would be performed by a biologist with experience conducting breeding bird surveys. The biologist would prepare survey reports documenting the presence or absence of any protected bird in the habitat to be removed, and any other such habitat within 300 feet of the construction work area. If a protected bird is found, surveys would be continued in order to locate any nests. If an active nest is located, construction within 300 feet of the nest would be postponed until the nest is vacated and juveniles have fledged, and when there is no evidence of a second attempt at nesting.
- Avoidance measures would be incorporated into the design of the project during preliminary engineering where feasible. However, if construction of the project requires removal of a protected tree, a permit would be required in accordance with applicable City of Chicago codes and ordinances in which the affected tree is located. Tree removal permits may require replanting of protected trees within the project area or at another location to mitigate for the removal of these trees. Replanting would be done according to the ratios required by tree removal permits and in a size that is appropriate for the species and setting as determined by an arborist. In addition, planted trees would be maintained such that ninety percent are in good condition after six months, and irrigation would be carried out until the trees are established.

With these measures employed, there would be no measurable impacts on biological resources remaining.

4.11 Geology and Soils

Local topography in the project area is generally flat and varies less than 50 feet with a minimum elevation of 580 feet and a maximum elevation of 699 feet above sea level. The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Data was used to confirm that soil within 200 feet of the proposed BRT stations is classified as urban land. This soil type is reserved for highly disturbed soils that have resulted from human activities, and have been altered over time through construction activities. Bedrock is unlikely to be encountered during construction.

Environmental Impacts

No-Build Alternative

No impacts to geology or soils would occur from the No-Build Alternative.

Build Alternative

Construction of the BRT stations would include minimal subsurface excavation. There is the potential to change the soil materials and topography at these locations; however, these changes would be minor and would not result in adverse impacts. Furthermore, the project would, in accordance with federal disposal guidelines, remove urban fill that is potentially contaminated with hazardous materials. Removing this material, disposing of it properly, and as needed, filling with tested materials, could be beneficial to human health and the environment.

4.12 Hazardous Materials

Potential sources of hazardous materials impacts, both within and adjacent to the Ashland Avenue BRT Project, were identified. **Appendix E-7** (*Hazardous Materials Technical Memorandum*) describes the methodology and results are summarized within this section.

A search of local, state, and federal regulatory databases was conducted by Environmental Data Resources, Inc. (EDR) to identify sites that currently or have historically handled, stored, transported, released, or disposed of hazardous or regulated waste, as these types of sites are potential sources of hazardous material contamination. Search distances were either 0.1 or 0.25 mile from Ashland Avenue. The different search distances were based on the type of hazardous materials sites included in the database and the separation distance between the project and these sites at which impacts become unlikely. In **Appendix E-7,** Table 2 and Figure 1 through Figure 6 provide a complete list of each site identified by EDR and their locations.

Eight sites of the greatest concern adjacent to the proposed project are also summarized in Table 3 of **Appendix E-7**. None of these sites listed in Table 3 of **Appendix E-7** are Superfund sites. Five of these sites are located more than 500 feet from proposed station locations. There are three sites within 500 feet of proposed station locations: Medill Material Recovery and Recycling Facility (1633 West Medill Avenue) near the proposed Fullerton station, Compass Rose Boat Club (2841 South Ashland Avenue) near the proposed 31st Street station, and the Wrigley Company (3535 South Ashland Avenue) near the proposed 35th Street station.

There are no known contamination plumes in the project study area. While the potential for contamination exists at any location that has underground storage tanks (USTs) for hazardous materials, the sites identified as having USTs are regularly monitored to ensure they are not leaking and do not threaten human health and welfare.

Given the urban setting of the project area, the potential exists for the presence of typical urban fill throughout the entire project corridor. Typical urban fill materials contain elevated concentrations of polynuclear aromatic hydrocarbons and metals due to nearby roadways, railways, and industrial and commercial land uses and activities. In addition, urban fill may include contaminated building demolition debris. This type of contamination is not necessarily associated with a release from a specific site or source.

Environmental Impacts and Mitigation

No-Build Alternative

The No-Build Alternative would not affect any known hazardous materials.

Build Alternative

Although the project footprint is limited to within the existing right-of-way and no property acquisition is expected, soil and/or groundwater within the right-of-way could be contaminated with hazardous materials from urban fill and/or adjacent or nearby regulated hazardous material sites identified in the database search. Based on this assessment, a number of measures are proposed as part of this project to ensure no impacts result from implementation of the proposed improvements. These measures primarily relate to construction and pre-construction activities as described below. With these project measures incorporated, no impacts to hazardous materials sites would be expected, and no mitigation would be required.

Construction of the proposed project would include subsurface ground disturbance activities, which could result in contaminated soil and/or groundwater being encountered. However, the majority of excavation would be associated with construction of the BRT stations, such as for the slab-on-grade platforms and shelters, and would be limited to the top three to five feet below ground surface. Because of these limited actions, no hazardous material impacts are anticipated. Any contaminated material excavated during construction would be disposed of at a facility permitted to accept such material.

Right-of-way acquisition is not anticipated for this project; however, if it were to occur, there is a substantial potential liability associated with ownership and acquisition of property that is contaminated. A Phase I Environmental Site Assessment (ESA) would be conducted before acquisition of any new properties. Based on the Phase I findings, a Phase II ESA could also be recommended prior to purchasing a property.

Should a Phase II ESA be required, site testing and additional analysis would be conducted to identify whether there is no reasonable risk of contamination at the site, or confirming and detailing the risk of contamination at the site. If a site is contaminated and remediation is needed, the Phase II ESA would provide recommendations for remediation. Once remediation of the site has occurred, there would be no impacts.

4.13 Energy

Energy supplies primarily include sources of energy (e.g., electrical, gas/oil, solar) potentially consumed by the project. The following provides a qualitative assessment of impacts to energy resulting from the Build Alternative.

Environmental Impacts

No-Build Alternative

No impacts to energy would occur from the No-Build Alternative.

Build Alternative

The Build Alternative proposes to provide center running, dedicated bus-only lanes with center station platforms. This would separate BRT services from automobile traffic, thereby improving travel speeds and reliability for the BRT. Improved transit service is anticipated to result in an increase in the transit mode share in the corridor, with more people utilizing the transit system. These changes, in turn, would result in a reduction in the number of automobiles that contribute to VMT in the corridor. As a result, slight improvements to energy efficiency in operating BRT are expected as a result of the Build Alternative compared with the No-Build Alternative.

Further, articulated buses are planned for the corridor, which use less energy per passenger than a standard bus. More efficient, reliable BRT service would also result in greater maintenance of bus flow and limit bus idling times.

Finally, minimal differences in energy use at stations are anticipated as a result of the Build Alternative. Potential offsets of energy use at stations such as solar panels and the use of LED lighting are being considered to further improve energy efficiency at stations.

Based on all of these factors, the Build Alternative is not anticipated to result in major changes to energy consumption.

4.14 Safety and Security

The following discusses potential impacts to safety and security resulting from the Build Alternative.

Environmental Impacts and Mitigation

No-Build Alternative

No changes to the safety and security of pedestrians and transit users would occur under the No-Build Alternative.

Build Alternative

No negative impacts to safety and security are anticipated from the proposed improvements. The Build Alternative would provide several improvements that would serve to increase safety in the corridor. At BRT stations, enhanced lighting, ADA ramps, glass enclosures, and other features would be provided. The design configuration of the project, particularly in the station areas, would incorporate a complete streets approach to Ashland Avenue and create natural traffic calming – in other words, design measures that would ensure the safety and prioritization of all users of the roadway. These measures would include an enhanced pedestrian space in the form of curb extensions with new curb ramps at stations, enhanced landscaped medians between stations to limit dangerous or prohibited pedestrian mid-block crossings, signage and pedestrian striping, median refuge islands at designated mid-block crossings, and a narrower street design with one general use travel lane removed in each direction. While some parking at BRT stations would need to be removed to accommodate the BRT station design, this would translate into enhanced pedestrian access at the station intersections. On-street parking would be retained between stations to create an additional barrier between pedestrians and moving traffic. The result of the design approaches described above would serve to improve the safety of automobiles, pedestrians, and bicyclists along Ashland Avenue.

4.15 Environmental Justice Communities

The Environmental Justice analysis was performed in accordance with related federal and Illinois laws and guidance including Title VI of the 1964 Civil Rights Act, Executive Order (EO) 12898, EO 13166, State Bill 2193, and FTA Circulars 4703.1 and 4702.1B. Further details on the regulatory framework for this environmental justice analysis may be found in **Appendix E-8**.

To establish the presence of low-income and minority populations, year 2010 census data was analyzed for all census tracts within a half mile of the proposed Build Alternative alignment along Ashland Avenue. Figures 1 and 2 in **Appendix E-8** provide maps of minority and low-income populations along the Ashland Avenue BRT corridor. The community area boundaries defined by the City of Chicago typically coincide with geographic features that are more meaningful to residents than census tract boundaries, such as boulevards, freight corridors, highways, and other major divisions between neighborhoods. To avoid artificially diluting or inflating the presence of minority and low-income populations, all census tracts along Ashland Avenue within each affected community area were analyzed to determine whether the community area as a whole contains a predominantly minority or low-income population.

Community areas where populations in the census tracts along Ashland Avenue consist of more than 50 percent minorities were classified as predominantly minority communities. Community areas where the percentage of low-income families in the census tracts along Ashland Avenue is greater than the city-wide percentage of 17.2 percent were classified as communities with concentrations of low-income populations. All community areas containing predominantly minority populations and/or concentrations of low-income populations were classified as environmental justice communities. The findings of the environmental technical memoranda were then analyzed to determine whether impacts and benefits would occur disproportionately in community areas with environmental justice populations.

Table 4-4 presents the summary findings of whether environmental justice populations are present in each community area and additional detailed demographic data is provided in **Appendix E-8**. All of the community areas along the Ashland Avenue corridor south of Kinzie Street and the Union Pacific train tracks have been determined to contain environmental justice populations. These identified environmental justice populations by community area are identified in bold in **Table 4-4** below.

Table 4-4: Summary of Environmental Justice Populations by Community Area

Census Tracts within a half mile of Build Alternative Alignment organized by Community Area [1]	Percent Low-Income	Concentrations of Low-Income Populations [2]	Percent Minority	Concentrations of Minority Populations [3]	Summary Finding: Presence of Environmental Justice Populations
North Center	3.20%	No	18.50%	No	No
Lake View	2.30%	No	17.30%	No	No
Lincoln Park	7.60%	No	17.30%	No	No
Logan Square	0.00%	No	24.40%	No	No
West Town	9.20%	No	36.80%	No	No
Near West Side	15.30%	No	**54.10%**	**Yes**	**Yes**
Lower West Side	**26.60%**	**Yes**	**88.50%**	**Yes**	**Yes**
Bridgeport	**22.60%**	**Yes**	**64.50%**	**Yes**	**Yes**
McKinley Park	13.70%	No	**83.50%**	**Yes**	**Yes**
New City	**29.80%**	**Yes**	**88.10%**	**Yes**	**Yes**
West Englewood	**31.50%**	**Yes**	**99.60%**	**Yes**	**Yes**
Auburn Gresham	**24.10%**	**Yes**	**99.80%**	**Yes**	**Yes**
Washington Heights	**23.80%**	**Yes**	**99.60%**	**Yes**	**Yes**
Beverly	4.00%	No	**52.50%**	**Yes**	**Yes**

1. Analysis included Census tracts within half mile of the corridor. They are organized by community area. Counts do not represent totals for the entire community area, only census tracts within half mile of the project area.
2. Supporting data provided in Appendix E-8 (Table 3).
3. Supporting data provided in Appendix E-8 (Table 6).

Environmental Impacts

This section describes the potential for disproportionate impacts and unevenness of benefits in the project area's environmental justice communities. As identified above, all community areas along Ashland Avenue south of Kinzie Street and the Union Pacific train tracks have been determined to contain environmental justice populations.

No-Build Alternative

The No-Build Alternative would not have adverse environmental impacts. Therefore, no disproportionately high and adverse impacts would occur to low-income or minority populations. However, the No-Build Alternative would lack the benefits of the Build Alternative, including enhanced mobility, economic development, and livability. Bus travel times along Ashland Avenue would remain lengthy and unreliable, thereby limiting the mobility of riders, many of whom are low-income and transit-dependent.

Build Alternative

The design of the Build Alternative would be similar throughout the corridor. The BRT facilities would be constructed within the existing roadway right-of-way along Ashland Avenue, and would not require any displacements. One traffic lane would be removed in each direction to accommodate the addition of dedicated bus-only lanes, and parking would be retained on both sides of the street to allow continued automobile access to local businesses. Sufficient parking is located on adjacent streets throughout the corridor to accommodate small amounts of parking removal at station areas. Local bus service would be retained, which would benefit elderly riders and persons with disabilities who may have difficulty walking to the less-closely-spaced BRT stations. The level boarding and ADA-compliant features at BRT stations would also enhance access to transit service for these groups. Left turn lanes would be removed at most intersections, and left turn movements would be restricted. Some traffic is anticipated to divert to other major thoroughfares nearby, and sufficient traffic calming measures would be implemented to address concerns raised about possible cut-through traffic on residential streets and no adverse impacts are expected. Some drivers may also elect to use transit more frequently due to the improved premium transit service along the corridor. Additional details about roadway and traffic pattern changes are provided in **Section 3.1** of this EA. Mobility and access would improve overall due to the enhanced transit capacity and convenience.

Based on the environmental analyses conducted for this EA, there may be some moderate noise increases from additional BRT vehicles (up to12 added BRT buses in peak hours) being added to the corridor; however, no significant noise impacts are anticipated to occur as a result of the Build Alternative. In addition, noise levels are expected to be lower with the re-designation of one vehicular travel lane in each direction to a dedicated bus-only lane. With respect to air quality, this project is not anticipated to be a project of air quality concern, would utilize newer and more efficient buses throughout the corridor to reduce air pollution factors, and therefore no impacts are expected. Implementation of the proposed project would provide incentives for more commuters to use the BRT service within the Ashland Avenue corridor. As a result, the number of vehicles spending time in congestion would be reduced and therefore the Build Alternative has the potential to enhance air quality. No other adverse environmental impacts have been identified in this EA from the operation of the BRT project.

Construction related activities would be minimal and temporary at any one location along the project corridor, and would be similar throughout the corridor. These activities would affect all populations within the corridor, including minority and low-income populations, and would consist of repaving and restriping of lanes, sidewalk improvements, temporary lane and sidewalk closures, and placement of shelters and other BRT station features. Temporary traffic delays would be likely during construction and detours would be provided to maintain access for motorists, transit riders, and pedestrians. Construction would be staged so as to limit impacts to the surrounding communities. The CTA would keep community members apprised of construction schedules in readily accessible public locations as well as on the CTA website, and seek community input when developing construction plans.

Operation of the Ashland Avenue BRT Project would result in transportation benefits to all populations within the project corridor, including minority and low-income populations. Benefits would take the form of faster bus service, new BRT stations, landscape and sidewalk enhancements, and associated quality of life improvements. These physical enhancements would also contribute to potential economic development and livability improvements. The BRT service and street enhancements could incentivize new TOD in the corridor, which would be consistent with zoning. BRT facilities would be designed and sited to complement the existing character of the project area neighborhoods. Improvements at intersections would also help reduce the dividing effect between neighborhoods that Ashland Avenue currently has in some areas.

Since the results of the environmental analyses completed for this EA have not identified any adverse impacts associated with the Ashland Avenue BRT Project, the project is therefore not expected to result in disproportionately high and adverse impacts on minority or low-income populations. Furthermore, the overall effects of the Build Alternative are expected to be beneficial, with these benefits accruing to all populations within the project corridor, including minority and low-income populations. Based on these findings, no additional mitigation measures specific to environmental justice would be needed. Based on the findings of the demographic analysis, specialized outreach to organizations representing minority and low-income populations along the corridor was conducted during the EA process to obtain their input on the project. Specifics on the approach to public outreach are included in **Section 5.2**.

4.16 Temporary Construction Impacts

The following section discusses temporary construction impacts resulting from the Build Alternative.

Environmental Impacts and Mitigation

No-Build Alternative

Under the No-Build Alternative, no construction would occur and therefore no impacts would occur.

Build Alternative

Construction would primarily consist of earth removal and hauling, grading, repaving and restriping of lanes, median and landscaping improvements, sidewalk improvements, streetscaping and installation of curb extensions for enhanced pedestrian space at BRT station intersections, and placement of shelters and other BRT station features. Construction would be phased to minimize disruption to businesses and communities.

Specific construction staging requirements would be determined during final design and provided in construction staging plans. Although detailed construction plans are not yet determined, there are options to establish work areas such that several non-contiguous segments could be constructed at the same time. This could assist in minimizing impacts during construction and shorten overall duration such that no more than a few contiguous blocks are under construction at any one time.

CTA and CDOT would keep community members apprised of construction schedules, and seek community input when developing construction plans. Construction schedules would be publicly available and posted on CTA's website. Construction would predominantly take place during daylight hours, and would take into account peak travel hours so as to minimize delays wherever possible. Some nighttime work may be required where specific work activities would disrupt traffic or create safety concerns.

During construction, one lane of traffic along Ashland Avenue would be maintained in each direction to continue to provide vehicular access to public services, facilities, and businesses during regular business hours. Because this project proposes to convert one existing travel lane in each direction to dedicated bus-only lanes, lane closures required for construction would be similar to post-construction conditions.

Traffic delays would likely occur during construction, but would be temporary in nature. Adherence to local, state, and federal construction and temporary traffic management guidelines would result in no lasting adverse direct traffic impacts from the Build Alternative. Detours with alternative routing and appropriate signage would be provided to maintain access for motorists, transit riders, and pedestrians. Some closures to streets and intersections as well as removal of on-street parking would occur; however, these closures would be limited in duration. Detailed maintenance of traffic plans would be developed during final design in coordination with CDOT and the Illinois Department of Transportation (IDOT) to ensure safety during construction and to ensure that emergency vehicle access is not impeded.

Existing bus service would continue to operate within the corridor, with temporary changes to headways and routing anticipated at certain stages of construction. Some temporary closures to existing bus stops may occur as BRT stations are constructed. Should this occur temporary bus stops would be located at nearby locations during active construction periods. Pedestrian access would be maintained and may include placement of temporary sidewalks and wheelchair access ramps. Passengers and the general public would be informed of construction effects in advance through a variety of communication means. This would include press releases to community organizations and news outlets, website materials, and notifications on local buses and rail stations potentially impacted.

Generally, construction noise impacts, such as temporary speech interference for passersby and individuals living or working near the project, can be expected. In some areas, construction noise impacts can be expected to be greater due to the close proximity of existing housing. However, considering the relatively short-term nature of construction noise at any one location along the project corridor, these impacts are not expected to be substantial.

No major impacts would occur to water resources during construction. Best management practices and the appropriate erosion and sediment control measures would be employed during construction to offset any potential surface run-off or soil erosion.

Prior to construction, procedures for identifying, characterizing, managing, handling, storing, and disposing of contaminated soil and groundwater encountered during construction activities would be developed by the construction contractor as part of the project construction plan. These procedures would cover the entire project area, as it is assumed that all material has at least some level of contamination associated with it. Contaminated material encountered during construction would be disposed of at a facility permitted to accept such material.

No relocation of utilities under the BRT transit-way would be needed. Utility relocation at station areas would consist of valves, fire hydrants, electric poles, utility boxes, and vaults. Where utility access is required underneath station areas, utility relocations may be required; however, this work would be short-term in duration and could be completed in tandem with other lane closure work to minimize impacts to traffic flow during this time.

Health and safety plans for construction activities would be developed by the construction contractors and read and signed by all workers prior to starting any work. Compliance with the Occupational Safety and Health Act of 1970 (29 CFR 1903), U.S. Department of Labor Occupational Safety and Health Administration (OSHA) processes and guidelines, and the Illinois Employee Classification Act of 2008 (820 [Illinois Compiled Statues] ILCS 185) would be followed. The health and safety plans would identify potential contaminants of concern, required personal protection equipment and procedures, and emergency response procedures.

4.17 Indirect Effects and Cumulative Impacts

While the other sections of this EA provide analysis and findings on direct impacts of the project, NEPA also requires the consideration of the potential indirect and cumulative impacts of federally funded projects. The following provides further definition of these types of impacts and the methodology of assessing those impacts for the Ashland Avenue BRT Project.

Indirect impacts, also known as secondary impacts, are defined under 40 CFR 1508.8. These impacts are caused by the project or plan, but are separated from direct impacts by time and/or distance (yet still in the foreseeable future). Indirect impacts include induced growth and related environmental impacts, such as changes to land use patterns, population density or growth rates, and related effects to air quality, water and other natural systems. To determine the potential indirect impacts of this project, an assessment of the potential for and impacts of induced growth that could result from this project were determined. These factors relate to changes to growth and development expected as a result of the increases in transit accessibility from the project.

Cumulative impacts are defined under 40 CFR 1508.7 as the aggregate result of the incremental direct and indirect effects of a project or plan, the effects of past and present actions, and effects of reasonably foreseeable future actions by others on resources of concern. To identify the potential for cumulative impacts, applicable current and future regional and local plans within the project area were reviewed. In addition, the cumulative impacts assessment included an evaluation of the proposed phasing of this project to assess any cumulative impacts associated with the phased project implementation.

Environmental Impacts and Mitigation

No-Build Alternative

No indirect effects or cumulative impacts are caused under the No-Build Alternative.

Build Alternative

The Ashland Avenue BRT Project would create a new and upgraded, faster and more efficient transit service along the corridor. Enhancing transit access can have a number of indirect effects to growth and development. Indirect effects identified for this project are related to both travel along the corridor, and land use and economic development. These are discussed in further detail below.

Based on regional travel demand model data (see **Section 3.4.2**), transit mode split is anticipated to increase to 26 percent along the corridor as a result of the implementation of this project. Existing and new riders would benefit from enhanced bus speed and reliability. While BRT would offer limited stop service approximately every half mile, local bus service would remain along the corridor to provide service to transit passengers with stops approximately every one-eighth of a mile.

Automobile traffic on Ashland Avenue would decrease due to the removal of one travel lane in each direction and the anticipated mode shifts. Compared to existing (No-Build) conditions, Build Alternative conditions are anticipated to decrease VMT by 35 percent and increase congested VMT by seven percent along Ashland Avenue (see **Section 3.1.3**). Similarly, this would result in a net ten percent decrease in travel speed along Ashland Avenue.

The Build Alternative would result in a traffic shift from Ashland Avenue to other facilities in the surrounding roadway network. However, the results of the analysis indicate that the robust Chicago grid network is sufficient to absorb the traffic shifts across multiple parallel facilities, resulting in minor VMT increases (two percent to 12 percent) along any one facility within the project area. As such, minor indirect impacts to parallel facilities are anticipated to result from the Build Alternative. From a regional standpoint, the traffic analysis indicates a slight reduction in VMT overall as a result of the Build Alternative, resulting in a slight improvement in air quality.

The provision of BRT service on the Ashland Avenue corridor is anticipated to have positive indirect effects to land use and economic development along the corridor. Often, implementation of premium transit services serves to incentivize economic investment along a corridor and transit-oriented development or TOD (mixed-use residential and commercial development that maximizes and supports access to public transportation). Existing land use in the corridor is already largely a mix of these residential and commercial land uses, and the City's zoning ordinance and land use policies support further development of mixed-use and TOD development in the project study area. Some industrial uses along the corridor have been converted to residential and commercial uses over time as a result of land use policies along the corridor and economic investment, and indirect effects of this project would support those investments. Given the corridor location within designated economic development areas (TIFs, Empowerment Zones, and Enterprise Communities), the Build Alternative is anticipated to have a positive effect on local, regional, and statewide initiatives to support public and private partnership in additional infrastructure improvements along the corridor. Access to local businesses would be improved through the provision of BRT service along the corridor. Minor direct impacts to on-street parking at BRT stations are anticipated to result (between 11 to 12 percent); however, adjacent parking facilities are available to accommodate parking losses near these stations and minimal changes to parking allocations are anticipated.

In sum, no adverse indirect effects are anticipated to result from the Build Alternative. The BRT project is expected to have a positive impact on land use, economic development and transit accessibility, and offers an alternative approach to addressing congestion in the corridor.

To assess the potential for cumulative impacts, a review of the regional TIP, other local and regional plans, and coordination with agency stakeholders was conducted. Planned and programmed projects involve regular maintenance activities, such as repaving and traffic signal timing improvements. Other nearby projects of note being implemented in the foreseeable future include:

- **Ashland Avenue at Pershing Road** – This project involves reconstruction of a portion of Ashland Avenue at Pershing Road once an existing viaduct is removed. Based on coordination efforts to date with CDOT, plans for this reconstruction on Ashland Avenue were obtained and are being used in the development of conceptual engineering plans for this project. Continued coordination with CDOT would occur as this project moves forward to coordinate these efforts.

- **Bloomingdale Trail** – This project involves converting approximately 2.7 miles of an old railroad line along Bloomingdale Avenue from Ashland Avenue on the east and continuing west to Ridgeway Avenue. Construction of this project began in summer 2013. Coordination is ongoing with DHED to ensure consistency between these projects. The proposed Build Alternative would enhance the surrounding pedestrian environment in this area and further support complete streets efforts in the area.

Regular and routine maintenance projects, such as signal timing and repaving would not impact construction of the Ashland Avenue BRT Project. As projects continue to be identified through conceptual engineering and into final design, coordination with CDOT, DHED, CMAP, IDOT, Cook County Department of Transportation and Highways (CCDOTH) and other agencies (as appropriate) would continue for all project efforts. No cumulative impacts are anticipated to result from these planned and programmed activities.

In addition to the planned and programmed improvements described above, the cumulative impacts assessment considered whether phased planning of this project would result in cumulative impacts. A proposed schedule for phased implementation is provided in **Section 2.3**. Phase 1 and the subsequent Phase 2 of this project would not be constructed at the same time. Phase 1 would be operational prior to construction beginning on Phase 2. Outside of the Phase 1 limits, the BRT service would stop at the BRT station locations using existing curbside bus stops for the remainder of the 16.1-mile corridor until the next phase is built. As final design plans for Phase 2 are completed, transit operational plans would be developed to maintain transit access along the corridor until both phases are built out. No cumulative impacts are anticipated to result from the phasing of this project.

5. AGENCY COORDINATION AND PUBLIC INVOLVEMENT

The Chicago Transit Authority (CTA) and the Chicago Department of Transportation (CDOT) conducted a year-long planning effort as part of the Alternatives Analysis (AA) process to arrive at the selection of a Preferred Alternative (Build Alternative) along Ashland Avenue. Further details on the AA process are discussed in **Section 2.1** of this Environmental Assessment (EA). This effort included an extensive public outreach program with six public open houses and a number of other stakeholder and agency outreach efforts. During the environmental study phase of this project, CTA and CDOT continued to engage the community, elected officials, and other agencies in the project's development. Public outreach activities conducted during the environmental study phase included general outreach, environmental justice outreach, community meetings for concept designs, agency coordination, stakeholder and technical advisory meetings, elected official briefings, and a round of public hearings. Information obtained through public and agency involvement has been incorporated into this EA and the project development.

5.1 Agency Coordination

Coordination with agencies directly affected by the project was undertaken as part of the EA. At a local level, both CDOT and the Chicago Department of Housing and Economic Development (DHED) are project partners and concept plans have been developed with full coordination of these agencies. Final design plans would also be developed with full coordination of these agencies. Both departments have provided technical input and were involved in all aspects of project development. Other city departments, such as the Mayor's Office for People with Disabilities (MOPD), were also engaged during the process and received presentations and status updates on the project analyses, with opportunities for providing input throughout this EA process.

In addition to local agencies, coordination at the regional, county, and state level was also conducted. This included coordination with Cook County, the Illinois Department of Transportation (IDOT) and Metra to provide background about the project, the EA process, and to provide an opportunity for comments. CTA and CDOT met with Cook County Department of Transportation and Highways (CCDOTH) and IDOT to discuss the project. Additional meetings with these organizations took place from May through August 2013. Meetings were scheduled prior to concept design community meetings and occurred once more prior to the public hearings on the EA. A list of these agency coordination meetings is provided in **Appendix F-3**.

5.2 Public Involvement Plan

The following provides details on specific outreach efforts included in the Public Involvement Plan for this project. A full listing of public involvement meetings and media articles regarding the project are provided in **Appendix H**. All comments and responses will be summarized in the final EA.

5.2.1 General Outreach

Throughout the environmental process, CTA and CDOT continually prepared and distributed public information materials to update the public on the project at key milestones in project development. A press release, fact sheet, and pamphlet were developed to provide an overview of the project and the opportunities for public input. This information and further details on the project characteristics and project status were continually updated on the project website (www.transitchicago.com/ashlandbrt). A project e-mail address was included on all outreach materials for the public to contact CTA and to submit comments.

After the Preferred Alternative was announced, CTA also initiated a mobile texting campaign published on its website to inform the public about and gauge support for the Ashland Avenue Bus Rapid Transit (BRT) Project. Car cards (posters placed in buses and at rail stations) with the project information and how to participate in the campaign were also placed on approximately 257 CTA buses and in 11 rail stations. The public was able to text support of the project and/or text to obtain more information about the project. Supporters were asked to provide their address so that CTA could track support by geographic areas. At the end of October 2013, 654 people have texted their support of the project, 278 people have signed a petition in support of the project, and 273 people have requested further information on the project.

5.2.2 Environmental Justice and Limited English Proficiency

As part of the EA, an environmental justice analysis was performed to identify low-income and minority populations that may be affected by the project. The analysis found that minority and low-income populations are present in the central and southern portions of the project corridor. Organizations representing these populations were contacted via e-mail and U.S. postal service through which they received a project fact sheet, directions to the project website for additional information, and contact information for submitting comments. These groups were also provided information on the public hearing. A list of the organizations contacted is included in **Appendix E-8.**

In addition, as part of CTA's public outreach efforts during the AA phase of the project, a Limited English Proficiency (LEP) analysis was also conducted to determine if language support was needed during the public outreach process. Based on this analysis, in addition to English, outreach materials have also been provided in Spanish, and a Spanish interpreter would be made available for the public hearing. All Spanish materials were translated to be linguistically appropriate and culturally competent. A sign language interpreter would also be provided at the public hearing. In addition, because there are isolated areas of Chinese and Polish-speaking LEP populations, public notices also included an offer of additional interpretation services with advance notice.

5.2.3 Community Concept Design Meetings

During the conceptual engineering phase, several rounds of small-group community meetings were conducted. These community meetings were focused on the Phase 1 area (from Cortland Street on the north to 31st Street on the south) and took place in June and July 2013. The purpose of these meetings was to provide information on the proposed conceptual design and obtain feedback for use in the final design of Phase 1. Similar meetings with community groups from the remainder of the corridor would occur during future phases and prior to final design in those respective areas.

5.2.4 BRT Steering Committee

A BRT Steering Committee was formed as part of Chicago's overall efforts to develop BRT in the City of Chicago. The BRT Steering Committee comprises representative stakeholders, public agencies, and civic groups, including the Metropolitan Planning Council, Active Transportation Alliance, Urban Land Institute, Civic Consulting Alliance, Chicago Community Trust, and Chicago Architecture Foundation, in addition to CTA, CDOT and DHED. The group is a supporter of the Ashland Avenue BRT Project and continues to meet regularly to discuss this project and other Chicago BRT projects. The BRT Steering Committee has been afforded an opportunity to provide feedback on the project.

5.2.5 Elected Official Briefings

Elected officials, including aldermen and staff, were continually briefed on the project. Briefings provided background about the project, the EA process, and project status updates. Opportunities for briefings with aldermen were also offered prior to concept design community meetings in June and July of 2013. Briefings with aldermen were offered prior to the public hearings on the EA to solicit any additional feedback. Details on engagement with the aldermen are included in **Appendix H**.

5.3 EA Distribution and Public Comment Period

The Federal Transit Administration (FTA) has issued a Notice of Availability for this EA to provide the public an opportunity to review and comment on the EA. All comments received during the 30-day public comment period will be incorporated into the EA, and responses to comments will be published as part of the final EA. The EA was also sent to participating and cooperating agencies for their comments. A copy of the EA is available on the CTA website (www.transitchicago.com/ashlandbrt), and at CTA headquarters. Copies of the EA are also available at the following libraries during the public review period:

- Lincoln Belmont, 1659 W. Melrose Street, Chicago, IL 60657
- West Town, 1625 W. Chicago Avenue, Chicago, IL 60622
- Lozano (Pilsen), 1805 S. Loomis Street, Chicago, IL 60608
- West Englewood, 1745 W. 63rd Street Chicago, IL 60636
- Harold Washington Library Center, 400 S. State Street, Chicago, IL 60605

5.3.1 Public Hearings

Two public hearings are scheduled to solicit comments from the community about findings presented in the EA. The public hearings were advertised through display ads in local and regional newspapers, an email blast, and through CTA press releases, flyers, and transit alert cards placed on CTA buses and rail stations within the project corridor. Additional details concerning the public hearings were also posted on CTA's website. Meeting locations are within the project area and are Americans with Disabilities Act of 1990 (ADA)-compliant and accessible by public transit. Comments received during the public hearings will be submitted to the FTA and entered into public record. Written comments will also be accepted via U.S. mail and email.

5.3.2 Next Steps

While subject to final public comments received during the 30-day comment period and at the public hearing, FTA expects to find that there would be no significant impacts from the project and to issue a Finding of No Significant Impact (FONSI). The FONSI document will summarize the results of the EA and will reflect all applicable public and agency comments and responses. CTA will distribute the FONSI to federal, state, and local agencies. Copies of the FONSI will be made available upon request by the public.

6. REFERENCES

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