Chicago Transit Authority

How We Got Here: Western and Ashland Corridors Bus Rapid Transit Project Alternatives Analysis Summary

Winter 2012 – Winter 2013

The CTA, in partnership with the Chicago Department of Transportation, the Chicago Department of Housing and Economic Development, and the Federal Transit Administration, performed an Alternatives Analysis Planning Study as a means of exploring a variety of Bus Rapid Transit (BRT) options on Western and Ashland Avenues.

The Alternatives Analysis process involves a series of steps, including robust public outreach and technical evaluations of both positive and negative impacts that lead to the development of a Preferred Alternative. Details of this process and the results for the Western and Ashland Corridors Bus Rapid Transit Project are included in this summary.

Chicago Transit Authority
567 West Lake Street
Chicago, IL 60661

Project Partners:

- Illinois Medical District Chicago
- The Chicago Community Trust and Affiliates
- Active Transportation Alliance
- Institute for Transportation and Development Policy
- Urban Land Institute Chicago
- Civic Consulting Alliance – Smart Work. Great City.
- AARP
- Metropolitan Planning Council
- Chicago Architecture Foundation
- Rockefeller Foundation: Innovation for the Next 100 years

Document prepared by: CDM Smith

WESTERN AND ASHLAND CORRIDORS BUS RAPID TRANSIT PROJECT
Contents

How to Stay Involved

JOIN MAILING/E-LIST: Email us at *ashlandbrt@transitchicago.com*

MAIL:
Chicago Transit Authority
Strategic Planning & Policy, 10th Floor
Attn.: Joe Iacobucci
567 W. Lake Street
Chicago, IL 60661-1465

WEB: To access the full analysis and to provide comments go to:
www.transitchicago.com/ashlandbrt

To learn more about Bus Rapid Transit in Chicago, including other projects and events, visit
www.BRTCHICAGO.com

Chapter 1
Bus Rapid Transit in Chicago

Intersections: Intersections are a main source of delay. By giving buses priority at intersections, BRT systems make service more reliable and decrease travel times.

- Restricted turns: On Las Vegas' BRT corridor, left turns in front of bus lanes are prohibited, so buses spend less time yielding to other vehicles.
- Transit Signal Priority: Special transponders on some BRT buses make intersection magic: green lights linger and red lights are shortened for approaching buses. Meanwhile, BRT buses in Bangkok, Thailand, take advantage of exclusive traffic signals that let buses proceed ahead of car traffic.

Bus-only Lanes: The central feature of BRT is simple: put public transit riders on the fast track with bus-only lanes. Unimpeded by cars and other vehicles, buses cruise past traffic.

- Physically separated lanes: In Guangzhou, China- one of the world's fastest-growing cities—14 miles of bus-only lanes help 843,000 BRT passengers speed along each day. Barriers separate car and bus traffic.
- Visually separated lanes: Paint designates bus-only lanes in Seoul, South Korea.

Vehicles: By emphasizing passenger comfort, ease of access, and attractive design, BRT vehicles transcend riders' expectations of bus travel.

- Branding: Viva BRT in Canada's York Region uses a unique brand identity to distinguish its buses, signage, maps, and fare cards. This attention to detail signals a new, high-quality experience.
- Doors: Designing buses with extra and wider doors enables more passengers to enter and exit at once. Special buses on Bogotá, Columbia's TransMilenio system feature five sets of doors.
- Fuel: Many BRT vehicles, such as Cleveland's diesel-electric buses, take advantage of cleaner-burning fuel technology.

Stations: BRT stations have the power to build and reinforce community identity while facilitating a faster and more comfortable experience.

- Iconic Design: Curitiba, Brazil, is home to the world's first BRT system. Its tubular stations have become icons of innovative transportation design.
- Level Boarding: Station platforms that are level with the bus floor—such as those found along Eugene, Oregon's EmX line—make entering and exiting quick and easy. They also accommodate elderly and disabled passengers, as well as people with strollers and shopping carts.

Off-Board Fare Collection: Waiting for individual passengers to pay fare takes a lot of time. Paying before boarding eliminates this wait and lets passengers enter and exit at the same time, making boarding quicker and easier.

- Proof-of-payment: Riders on Los Angeles' Orange Line BRT system use fare machines to buy tickets before boarding.

Walking & Biking: BRT systems aren't just about better bus rides: they can improve walking and biking, too.

- Walking: Most train and bus trips start with walking. Attractive sidewalks and crosswalks are essential to transit's success. Many cities use BRT as an opportunity to improve pedestrian safety and access. In Mexico City, Mexico, clearly marked crosswalks safely lead people to BRT stations.
- Biking: In Guangzhou, China, people take advantage of dedicated cycling lanes and a bike sharing program integrated into the city's BRT system. Bike amenities increase access to transportation centers.

Bus rapid transit (BRT) refers to a form of public transportation that utilizes buses to provide faster, more efficient service than an ordinary bus line. This is typically achieved through improvements to existing infrastructure, vehicles and scheduling.

Chicago launched the Jeffery Jump (J14) bus service in 2012, which incorporates and demonstrates several BRT features. The Jeffery Jump built off an existing high-ridership bus route, the #14, adding enhancements along portions of Jeffery Boulevard, including dedicated peak-hour bus lanes, transit signal priority, limited stop spacing, and enhanced stations. Chicago is also planning for Central Loop BRT, scheduled to start service in 2014, which is expected to include designated bus-priority lanes on Madison, Washington, Canal, and Clinton. The Central Loop BRT will serve Union Station, Ogilvie Transportation Center, CTA rail connections, and Navy Pier. The lanes will provide a balanced separation of bus, bike and regular traffic lanes, and a new off-street transportation center just south of Union Station will provide key connections between the BRT system and other modes of transportation.

In 2012, CTA kicked off the Western and Ashland Corridors Alternatives Analysis, which is the next opportunity to explore the potential for BRT. This report describes this analysis and provides background on these corridors.

The components of BRT.
Source: Chicago Architecture Foundation
For more information on best practices in BRT design, visit www.itdp.org/brtstandard.

Public and Community Interest in BRT

BRT has received broad support from a number of civic groups and transportation stakeholders.

MPC Publishes BRT Report

The Metropolitan Planning Council (MPC), with support and strategic guidance from CTA and Chicago Department of Transportation (CDOT), assessed BRT opportunities within Chicago in 2011 using quantitative criteria that scored roadway segments based on the Livability Principles developed by the federal government's Partnership for Sustainable Communities.

This study identified 10 feasible BRT routes within the city that would provide premium transit service. Western and Ashland Avenue Corridors were identified as candidate corridors with some of the highest potential ridership within the city.

CAF Highlights Possibilities for BRT in Chicago

In an exhibit titled "Bus Rapid Transit: Next Stop, Chicago" the Chicago Architectural Foundation (CAF) outlined the features and benefits of BRT, while exploring how it is transforming cities around the globe.

The exhibit highlighted how features like dedicated bus lanes and innovative station design are improving bus transportation and people's lives. Architects were invited to visualize BRT stations, one of which was located on Daley Plaza. Experts and transit riders reflected on how public transportation can support a lively, sustainable, and connected Chicago.

MPC/Active Trans Provide Outreach Support

MPC and Active Transportation Alliance (Active Trans) conducted outreach in 2012 to local aldermen and community and stakeholder groups within or near the Western and Ashland Corridors. MPC and Active Trans also created BRT fact sheets and Active Trans developed an infographic showcasing the benefits of implementing BRT in general and on Western and Ashland Avenues.

Other BRT Projects in Chicago

Jeffery Jump

Project Launch in November 2012:

- High-quality stations with amenities such as lighted shelters, Bus Tracker displays, and ADA accessible sidewalk ramps
- Buses with unique graphics for easy identification as Jump service
- Dedicated bus lanes between 67th and 83rd Streets during congested periods
- Improved bus speeds, positive customer and media response
- Coming in Winter 2013/2014:
    - Transit Signal Priority from 73rd – 84th Streets
    - Chicago's first queue jump at 84th Street
    - On-Bus Bus Tracker screens

Central Loop BRT

- New transportation center near Union Station
- Level-boarding platforms
- Designated bus lanes
- New bikeways
- Combined service Michigan Avenue to Ogilvie every two – three minutes during rush hour.

BRT an d Complete Streets

CDOT's new Complete Streets Guidelines* provide policies to ensure the public right-of way is safe and designed for all users. BRT on Western and Ashland Avenues would be examples of Transit Priority streets, where transit is prioritized ahead of other modes. BRT improvements will support Complete Streets by including:

- Pedestrian Safety Features
    - Improving stations with widened sidewalks, refuge medians, designated crosswalks, and landscaped planters.
- Transit Priority
    - Providing bus-only lanes and improved station features.
- Bicycle Amenities
    - Improved bicycle parking
    - Bicycle lanes are provided for these corridors on parallel Damen and California Avenues.

*CDOT has adopted a pedestrian-first policy for transportation projects with some adjustments allowed, such as for Transit Priority Streets.

BRT and Economic Development

BRT can be an economic driver, attracting new development, visitors, and customers. CTA and CDOT are coordinating with the Chicago Department of Housing and Economic Development (DHED) to ensure plans for BRT align with economic opportunities. Strategies include:

- Transit Oriented Development (TOD)
    - Coordinate land use policy surrounding proposed BRT stations to increase ridership and attract investment.
- Pedestrian-Focused Design
    - Create a safe and pedestrian-friendly environment to increase foot traffic.
- Placemaking
    - Encourage placemaking around stations by providing shelters, seating, bicycle parking and sharing, and other public amenities.

Source: CDOT has adopted a pedestrian-first policy for transportation projects with some adjustments allowed, such as for Transit Priority Streets.

CDOT's Complete Streets Modal Hierarchy for Transit Priority Streets

CDOT's Complete Streets program accommodates and balances the safety and convenience of all users of the transportation system, in all types of transportation and development projects and through all phases of a project, so all transportation users operate safely within the public right-of-way.

1. Transit
2. Pedestrian
3. Bicycle
4. Auto

BRT Economic Development Case Studies

- NEW YORK CITY
  Since Select Bus Service (SBS) has been implemented, on 1st & 2nd Avenues in Manhattan there have been 47% fewer commercial vacancies compared to 2% more borough-wide, and on Fordham Road in the Bronx, there has been a 71% increase in retail sales at locally-based businesses, compared to 23% borough-wide.

- CLEVELAND, OHIO
  The Cleveland Healthline is estimated to have contributed between $4-$5 billion worth of investment since it began operations in October, 2008.

- EUGENE, OREGON
  According to city officials from Eugene, Oregon, $100 million worth of construction projects are underway near the Franklin EmX line.

Sources: New York - Measuring the Street: New Metrics for 21st Century Streets. Cleveland and Eugene - U.S. Government Accountability Office Report GAO-12-811, July 2012.

Chapter 2:
Western and Ashland Corridors Project Background

The CTA, in partnership with CDOT, DHED, and the FTA, performed an Alternatives Analysis Planning Study as a means of exploring options for a variety of BRT features and service on both Western and Ashland Avenues. This planning study included analyzing the positive and negative impacts of these BRT options.
The Alternatives Analysis (AA) process involves a series of steps in the development of a Preferred Alternative. As a first step in this process, an existing conditions evaluation was conducted to delineate the problems within the corridors and succinctly define the purpose and need for implementation of this project.
Implementation of BRT was identified as a cost efficient strategy to provide premium transit along these two corridors in GO TO 2040, the regional long-range plan developed by the Chicago Metropolitan Agency for Planning (CMAP).

Corridor Description
The Ashland Avenue corridor extends between Irving Park Road on the north and 95th Street on the south. The Western Avenue corridor extends between Berwyn Avenue on the north and 79th Street on the south.

Image: This image depicts a pie chart of the study area's population composition. The total population is 463,545. This study area is 32% is Hispanic or Latino, 34% is White, 28% is Black, 4% is Asian and 2% is "other." There are 208,923 jobs, 177,888 households and 18,246 low-income families in this study area. Source: U.S. Census, 2010 for the Study Area Profile represents 1/2 mile buffer surrounding Screen 2

corridor limits. Job information's source is CMAP, 2009.

Image: Western and Ashland BRT Outreach. This image is a map of the full corridors of Western Avenue and Ashland Avenue. Light grey areas depict wards unaffected by BRT, dark grey areas depict wards where alderman were contacted an offered briefings on BRT and brown areas (the majority of the area around the two corridors) depict wards where aldermen were met and briefed on BRT. The colored circles label and depict outreach sites: blue depict open public meetings, purple depict direct ridership outreach and red depict meetings with community organizations. The Source is Metropolitan Planning Council. Open public meetings were led by CTA and CDOT; other outreach types were performed by project partners in coordination with CTA and CDOT.

Project Planning Process
Overall Process:

- Determined by Federal Transit Administration
- Two phases: 1) Project Development, and 2) Detailed Design and Construction

Alternatives Analysis

- Part of Project Development
- Identifies options or "alternatives" that include different features and service plans
- Studies the potential impacts of the various project options

Image: This image depicts a process flow of project development and detailed design and construction. In project development, conceptual development leads to alternative analysis and alternative analysis, which leads to both concept design and environmental assessment. Then, detailed design and construction begins. Under detailed design and construction, detailed design leads to construction and construction leads to operation.

Project Need
CTA and CDOT are studying these corridors for improvements to address the following concerns:

- Slow Bus travel speeds and frequent stops.
- Unreliable bus travel times.
- Large number of transit-reliant customers.
- Regional growth patterns outside of Chicago's Loop
- Existing street design no longer meets corridors travel needs or city transportation and land use policy objectives.
- Non-downtown north/south connections lack a fast transit alternative for long trips.

Project Purpose: The purpose of the Western and Ashland Corridors BRT Project is to expand connectivity to the region's existing transit system by providing a new high quality, high capacity, and cost-effective premium transit service that will address the transportation needs of an expansive population and employment growth outside of the Central Business District (CBD), and support local and regional land use, transportation and economic development initiatives by improving accessibility, mobility, transit travel times and reliability, and passenger facilities in these heavily transit reliant corridors.

Project Goals: The goals and objectives were developed to provide a comparative analysis of alternatives for this project and include the following:

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

- Goal 2: Provide a high quality bus travel experience by improving reliability, travel speed, and ease of use.
- Goal 3: Provide a BRT alternative to meet city/regional livability and economic goals.
- Goal 4: Balance road design with current and future demand for increased capacity along the corridors.
- Goal 5: Develop premium transit solutions that effectively address physical and financial constraints.

Image: Bus Rapid Transit is faster than regular buses. For proposed Bus Rapid Transit on Western the average speed ranges between 15.6 and 18.4 miles per hour, depending on the design alternative chosen. The current bus on Western has an average speed of 10.1 miles per hour. For proposed Bus Rapid Transit on Ashland the average speed ranges between 13.5 and 15.9 miles per hour, depending on the design alternative chosen. The current bus on Ashland has an average speed of 8.7 miles per hour. The average speed for the 'L' train (on the Red Line) is 19-21 miles per hour, depending on the extent of slow zones. Source: CDM Smith Western and Ashland BRT Alternatives Analysis, 2012.

Study Area Characteristics: The study area includes high population and employment densities with major centers of activity and employment.

Image: Graphic shows a map comparing speeds and travel times for the proposed Western Bus Rapid Transit, proposed Ashland Bus Rapid Transit, and the Red Line. The average speed for the Red Line is 21 miles per hour. The average speed for proposed Bus Rapid Transit on Western is 18 miles per hour. The average speed for proposed Bus Rapid Transit on Ashland is 16 miles per hour.
On the Red Line, trip times are as follows:

- From Berwyn to Lawrence, 2.0 minutes
- From Lawrence to Sheridan, 4.5 minutes
- From Sheridan to Addison, 2.5 minutes
- From Addison to Fullerton, 4.0 minutes
- From Fullerton to North/Clybourn, 2.5 minutes
- From North/Clybourn to Clark/Division, 2.5 minutes
- From Clark/Division to Chicago Ave., 2.5 minutes
- From Chicago Ave. to Roosevelt, 7.0 minutes
- From Roosevelt to Sox-35th , 6.0 minutes
- From Sox-35th to 47th , 3.0 minutes
- From 47th to Garfield, 2.5 minutes
- From Garfield to 63rd , 2.0 minutes
- From 63rd to 79th , 5.0 minutes
- From 79th to 87th , 2.0 minutes
- From 87th to 95th/ Dan Ryan, 2.0 minutes

On proposed Bus Rapid Transit on Western, trip times are as follows:

- From Berwyn to Lawrence, 2.0 minutes
- From Lawrence to Irving Park, 3.5 minutes
- From Irving Park to Addison, 1.5 minutes
- From Addison to Fullerton, 5.0 minutes

- From Fullerton to North Avenue, 3.5 minutes
- From North Avenue to Division, 1.5 minutes
- From Division to Chicago Ave., 1.5 minutes
- From Chicago Ave. to Roosevelt, 6.5 minutes
- From Roosevelt to 35th , 8.0 minutes
- From 35th to 47th , 5.0 minutes
- From 47th to Garfield, 3.5 minutes
- From Garfield to 63rd , 3.5 minutes
- From 63rd to 79th , 6.5 minutes

On proposed Bus Rapid Transit on Ashland, trip times are as follows:

- From Irving Park to Addison, 2.0 minutes
- From Addison to Fullerton, 5.5 minutes
- From Fullerton to North Ave., 4.0 minutes
- From North Ave. to Division, 2.0 minutes
- From Division to Chicago Ave., 2.0 minutes
- From Chicago Ave. to Roosevelt, 7.5 minutes
- From Roosevelt to 35th , 9.5 minutes
- From 35th to 47th , 5.5 minutes
- From 47th to Garfield, 4.0 minutes
- From Garfield to 63rd , 4.0 minutes
- From 63rd to 79th , 7.5 minutes
- From 79th to 87th , 4.0 minutes
- From 87th to 95th , 4.0 minutes

The sources are CDM Smith Western and Ashland BRT Alternatives Analysis, 2012; GoRoo trip times; CTA scheduling information. Red Line times reflect 2010 speeds, before slow zones along the Dan Ryan worsened, and therefore more accurately reflect the Red Line speeds after the upcoming construction on the south Red Line to eliminate those slow zones. The Red Line times reflect the fastest times during a day; rush hour and midday can often be longer due to dwell times.

Image: Western and Ashland are wide enough to construct Bus Rapid Transit: 70 feet curb-to-curb. Constructing Bus Rapid Transit will make a more complete street that works better for all users. The source is CDM Smith Western and Ashland BRT Alternatives Analysis, 2012. There is some variability in street width along the corridor, but both Ashland and Western Avenues are approximately 70 feet curb-to-curb in most sections.

Image: This map of the Western and Ashland BRT corridors is depicted with population density per acre, the CTA system and Metra's rail system. Between Lake Street and 18th Street have low population densities, while between Chicago Avenue and streets more north have higher population densities. Manufacturing districts are picture as well and generally follow Metra Rail lines. Additionally images are used to exemplify industrial corridors, the Illinois Medical District, which is a major employment centers and an image of medium to high density mixed use neighborhoods. The source is CDM Smith "Screen 2 Alternatives Report – Western and Ashland Corridors Bus Rapid Transit (BRT) Project," 2013.

Chapter 3:

Alternatives Analysis: Definition and Evaluation

Alternatives Analysis Process

Based on the project purpose and need statements, and an engineering and planning analysis, a series of alternatives were developed for further screening: No Build, Transportation Systems Management (TSM), and several Build Alternatives further described on pages 13 -15

This AA assumes BRT as the preferred mode because it was identified by a series of previous CTA system planning efforts. It focuses on a multi-tiered evaluation of BRT features within the existing Western and Ashland Corridors. The ultimate goal of the AA is to select a Preferred Alternative that can move forward through the environmental documentation, design, construction, and operation phases.

Because this is a mode-specific AA, a two-level alternatives screening process was conducted. The Screen 1 Evaluation included a "fatal flaw" analysis of the universe of BRT alternatives considered. The purpose of the Screen 1 Evaluation was to review the range of alternatives suggested during project scoping and identify feasible alternatives to move forward in the Screen 2 Evaluation. The purpose of the Screen 2 Evaluation was to further evaluate feasible alternatives against project goals and objectives criteria, and provide a more detailed assessment of alternatives.

Potential BRT Station Improvements

These types of amenities are anticipated or will be considered throughout the corridors.

- BRT Median Shelters
- BRT Curb Shelters
- Off-Board Fare Collection
- Bike Racks
- Bus Tracker Signs
- Additional Landscaping and Streetscaping

Other Station Improvements

- Trash Cans
- Custom Signage
- Seating

Roadway Improvements

- New Traffic Signals
- The roadway would be milled and resurfaced to include colored bus lanes.
- Improved streetscaping, such and medians and sidewalks, would be constructed.

Screen 1 Analysis

A series of No-Build, TSM, and Build Alternatives were developed for the Screen 1 Evaluation. The build alternatives considered a variety of lane configuration designs to accommodate BRT, including curbside bus lanes, center bus lanes, reversible center lane strategies; barrier separated bus lanes, as well as two way adjacent bus lanes. Screen 1 criteria included the following:

- Transit Network and Performance

- Transit Rider Experience
- Livability, Urban Design and Economic Vitality
- Road Design, Traffic and Parking
- Costs and Construction

Screen 2 Analysis

Screen 2 included a detailed definition of the remaining alternatives and an evaluation of multiple factors that enabled CTA to assess the differences between the alternatives. Screen 2 included modified alternatives based on community input and further evaluation of safety and operations, including bus speed, costs, parking, and pedestrian space. Screen 2 criteria included the following:

- Demographics
- Economic
- Environmental
- Ridership
- Transit Operations
- Complete
- Traffic and Parking
- Capital and Operating Cost
- Public Support

BRT Alternatives: Screen 1 to Screen 2

Image: The screen 1 alternatives of center running BRT included travel lane removal, parking removal on both sides and sidewalk width reduction. Travel lane removal advanced to screen 2 alternatives without any changes. Parking removal on both sides advanced to screen 2 with a modification of only one side of parking needs removed, becoming parking and median removal. The sidewalk width reduction alternative was not acceptable and added significant costs and did not advance to screen 2.
The screen 1 alternatives of curbside running BRT included travel lane removal, parking removal on both sides and sidewalk width reduction. The travel lane removal alternative advanced to screen 2 alternatives without changes. Parking removal on both sides advanced to screen 2 alternatives with the modification of removing one side of parking. The sidewalk width reduction did not advance to screen 2 alternatives because reducing sidewalk was not acceptable and added significant costs.
Screen 2 included modified alternatives based on community input and further evaluation of safety and operations, including bus speed, costs, parking and pedestrian space.

BRT Route Extents and Station Locations

Following public review and CTA and CDOT internal review during Screen 2, it was decided to reduce the proposed route extents to mimic the existing #9 and #49 CTA bus routes. Western Avenue BRT service would be located between Berwyn Avenue in the north and 79th Street in the south, while Ashland Avenue BRT service would be located between Irving Park Road in the north and 95th Street in the south.
Both corridors contain unique intersections and sections, which may require special design considerations. This includes the portion of Ashland Avenue within the Illinois Medical District (IMD) and the Boulevard section of Western Avenue where the roadway configurations are atypical.

Preliminary BRT station locations on Western and Ashland Avenues were identified through the review of existing conditions data including:

- Corridor demographics and land use
- CTA local bus stop locations
- CTA local bus stop boarding and alighting Activity
- CTA and Pace local bus stop transfer locations
- CTA rail station transfer locations
- Metra rail station transfer locations
- CTA local bus stop locations previously served by the discontinued #X49 and #X9 express routes
- Recommended BRT station locations included in *Integrating Livability Principles Into Transit Planning: An Assessment of Bus Rapid Transit Opportunities in Chicago* (MPC, 2011)
- Distance between preliminary BRT station locations (1/2 miles preferred)
- Physical constraints, such as overpasses, along the corridor

Public Meetings: CTA conducted six public Open House meetings throughout the AA process to gather public input.

- *Screen 1: June 12, 13, 14, 2012*
- *Screen 2: October 16, 17, 18, 2012*

No-Build Alternative

The No-Build Alternative consists of the existing street configuration and bus service.
CTA bus routes #49, #49A, and #49B provide primary north-south service along the Western Avenue Corridor, while CTA bus route #9 currently provides primary north south service along the Ashland Avenue Corridor. Pace bus route #349 also provides primary north-south service along Western Avenue. During weekday peak periods, buses are scheduled along the Western and Ashland Corridors every four to 10 minutes. The No-Build Alternative provides a baseline for comparing Build Alternatives against existing conditions within the corridor.

TSM Alternative

The Transportation Systems Management (TSM) Alternative consists of the existing street configuration and implementation of express bus service without exclusive travel lanes. The TSM Alternative does assume Traffic Signal Prioritization (TSP) upgrades along Western and Ashland Avenues, which are currently under study by CTA. For analysis purposes, the headway for the TSM Alternative is assumed to be five minutes.
The TSM alternative provides a baseline for comparing Build Alternatives against minimal transit investments within the corridor.

Image: This graphic depicts the entire Western BRT corridor and Ashland BRT corridor. The Ashland BRT corridor stretches north to south, with stops at 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 Western BRT corridor stretches north to south, with stops at Berwyn, Foster, Lawrence, Leland, Montrose, Irving Park, Addison, Belmont, Diversey, Fullerton, Cortland, North, Division, Chicago, Hubbard, Madison, Eisenhower Expressway, Roosevelt, 18th, 21st, 26th, 35th, Pershing, 43rd, 47th, 49th, 51st, Garfield, 59th, 63rd, Marquette, 71st, 74th and 79th.

Center Running BRT Build Alternatives

- Travel Lane removal
  This BRT Alternative includes one center running bus lane in each direction, one automobile travel lane in each direction, parking on both sides, and a median. One automobile travel lane is removed in each direction to accommodate bus lanes, while parking is retained on both sides of the street. Sidewalk widths remain the same and curb extensions are provided at station intersections. Existing medians will be retained and new landscaped medians will also be provided where none exist. Left turn lanes and left turn pockets at intersections are removed.
    - One travel lane in each direction
    - Parking retained on both sides
    - Left turns removed
    - Sidewalk at station intersections bump out
    - Landscaped medians provided
- Parking and Median Removal
  This BRT Alternative includes one center running bus lane in each direction, two automobile travel lanes in each direction, and parking on one side. One side of parking is removed as well as all medians. Sidewalk widths remain the same in most instances. Left turn lanes and left turn pockets at intersections are removed.
    - Two travel lanes in each direction
    - Parking retained on one side
    - Left turns removed

Curbside Running BRT Build Alternatives

- Travel Lane Removal
  This BRT Alternative includes one curbside running bus lane in each direction, one automobile travel lane in each direction, parking on both sides, and a median. One automobile travel lane is removed in each direction to accommodate bus lanes, while parking is retained on both sides of the street. Sidewalk widths remain the same and curb extensions are provided at station intersections. Existing medians will be retained or reconstructed. All left turn lane pockets and approximately 25 percent of left turn lanes will be retained.
    - One travel lane in each direction
    - Parking retained on both sides
    - Left turns retained
    - Sidewalk at station intersections bump out
    - Landscaped medians provided
- Parking and Median Removal
  This BRT Alternative includes one curbside running bus lane in each direction, two automobile travel lanes in each direction, and parking on one side. One side of parking is removed as well as all medians. Sidewalk widths remain the same and curb extensions are provided at station intersections. Existing medians will be retained or reconstructed. All left turn lane pockets and approximately 25 percent of left turn lanes will be retained.
    - Two travel lanes in each direction
    - Parking retained on one side
    - Left turns retained

Applies to All BRT Build Alternatives:

All BRT Build Alternatives assume TSP upgrades along Western and Ashland Avenues, which are currently under study by CTA. For analysis purposes, the headway for all BRT Alternatives are assumed to be five minutes. The ultimate service headways will be between five and 15 minutes, and will meet the FTA definition of BRT. Local bus service would continue to operate along the corridor.

Evaluation Criteria

- Substantially Worse than No-Build

- Worse than No-Build
- Similar to No-Build
- Better than No-Build
- Substantially Better than No-Build

Ashland Avenue Evaluation

Each alternative's performance on Ashland Avenue was compared and assigned a rating for each factor as compared with the No-Build Alternative. Detailed evaluation results for Ashland Avenue, presented to the public at the Screen 2 Open House meetings, are included in the Appendix.

The Center Running BRT, Travel Lane Removal is the Preferred Alternative based on technical review of evaluation criteria.

Evaluation Category	**TSM**	**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**
Demographics *Population 2010 and 2040, households 2010 and 2040, employment 2010 and 2040, populations of youth, senior, minority, low-income, and households with no vehicle available*	Similar to No-Build	Similar to No-Build	Similar to No-Build	Similar to No-Build	Similar to No-Build
Economic *Tax increment financing districts, empowerment zones, enterprise communities*	Similar to No-Build	Better than No-Build	Better than No-Build	Better than No-Build	Better than No-Build
Environmental *Wetlands, historic districts, historic buildings, parklands, open space, hazardous materials, archaeological sites, air quality, noise and vibration, critical habitat, visual impacts*	Similar to No-Build	Similar to No-Build	Worse than No-Build	Similar to No-Build	Worse than No-Build
Ridership *Daily boardings, mode split*	Similar to No-Build	Substantially better than No-Build	Better than No-Build	Substantially better than No-Build	Better than No-Build

Transit Operations *Bus speed, bus travel time, mode split, bus reliability, auto speed*	Similar to No-Build	Substantially better than No-Build	Substantially better than No-Build	Better than No-Build	Better than No-Build

Center Running BRT with Travel Lane Removal is the preferred alternative.

Evaluation Category	**TSM**	**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**
Complete Streets *Pedestrian space, medians, sidewalk buffers*	Similar to No-Build	Substantially better than No-Build	Similar to No-Build	Better than No-Build	Similar to No-Build
Traffic and Parking *Auto speed, left turns, parking*	Similar to No-Build	Worse than No-Build	Worse than No-Build	Worse than No-Build	Worse than No-Build
Capital and Operating Cost *Capital costs, operating efficiency/savings*	Similar to No-Build	Similar to No-Build	Similar to No-Build	Similar to No-Build	Similar to No-Build
Public Support *Comments heard or submitted at Aldermanic briefings, Screen 1 and 2 Open Houses, stakeholder group meetings, and comments received via email*	Similar to No-Build	Substantially better than No-Build	Better than No-Build	Better than No-Build	Better than No-Build

Center Running BRT with Travel Lane Removal is the preferred alternative.

Western Avenue Evaluation

Each alternative's performance on Western Avenue was compared and assigned a rating for each factor as compared with the No-Build Alternative. Detailed evaluation results for Western Avenue, presented to the public at the Screen 2 Open House meetings, are included in the Appendix.

The Center Running BRT, Travel Lane Removal is the Preferred Alternative based on technical review of evaluation criteria.

Evaluation Category	**TSM**	**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**
Demographics *Population 2010 and 2040, households 2010 and 2040, employment 2010 and 2040, populations of youth, senior, minority, low-income, and households with no vehicle available*	Similar to No-Build	Similar to No-Build	Similar to No-Build	Similar to No-Build	Similar to No-Build
Economic *Tax increment financing districts, empowerment zones, enterprise communities*	Similar to No-Build	Better than No-Build	Better than No-Build	Better than No-Build	Better than No-Build
Environmental *Wetlands, historic districts, historic buildings, parklands, open space, hazardous materials, archaeological sites, air quality, noise and vibration, critical habitat, visual impacts*	Similar to No-Build	Similar to No-Build	Worse than No-Build	Similar to No-Build	Worse than No-Build

Ridership *Daily boardings, mode split*	Similar to No-Build	Substantially better than No-Build	Better than No-Build	Substantially better than No-Build	Better than No-Build
Transit Operations *Bus speed, bus travel time, mode split, bus reliability, auto speed*	Similar to No-Build	Substantially better than No-Build	Substantially better than No-Build	Better than No-Build	Better than No-Build

Center Running BRT with Travel Lane Removal is the preferred alternative.

Evaluation Category	**TSM**	**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**
Complete Streets *Pedestrian space, medians, sidewalk buffers*	Similar to No-Build	Substantially better than No-Build	Similar to No-Build	Better than No-Build	Similar to No-Build
Traffic and Parking *Auto speed, left turns, parking*	Similar to No-Build	Worse than No-Build	Worse than No-Build	Worse than No-Build	Worse than No-Build
Capital and Operating Cost *Capital costs, operating efficiency/savings*	Similar to No-Build	Similar to No-Build	Similar to No-Build	Similar to No-Build	Similar to No-Build
Public Support *Comments heard or submitted at Aldermanic briefings, Screen 1 and 2 Open Houses, stakeholder group meetings, and comments received via email*	Similar to No-Build	Substantially better than No-Build	Better than No-Build	Better than No-Build	Better than No-Build

Center Running BRT with Travel Lane Removal is the preferred alternative.

Chapter 4:
Preferred Alternative

Based on Screen 2 evaluation criteria, the Preferred Alternative is Center Running BRT, Travel Lane Removal for both Western and Ashland Avenues. The Preferred Alternative includes the following features:

- Dedicated center running bus lane in each direction to keep buses out of general traffic

- Limited stops: every 1/2 mile and at CTA 'L' stations
- Transit Signal Priority intersections and longer green lights to keep traffic moving
- Potential pre-payment for faster boarding, similar to 'L' stations
- Wide doors on left side of new, high-capacity vehicles
- Improved lighting, ADA ramps, and real-time travel info
- Maintains existing medians and adds more than 75 blocks of new streetscaping, including medians and sidewalks

In order to accommodate BRT, the following adjustments would occur:

- Elimination of two vehicle travel lanes (one lane in each direction), typically leaving one travel lane in each direction
- Small reduction in parking (92% retained) and loading zones (96% retained)
- Removal of left-hand turns

In addition to identifying the Preferred Alternative for street configuration, the Alternatives Analysis and input at public open houses led to the prioritization of Ashland Avenue between Irving Park Road and 95th Street as the first step towards implementing a vision for BRT in the Western and Ashland corridors.

Why BRT on Ashland?

Ashland Avenue was prioritized for a number of reasons:

- Demand: Ashland Avenue has the highest bus ridership of all CTA routes with 10 million boardings in 2012, over 31,000 per weekday
- Access to Jobs: Provides access to nearly 133,800 jobs, including large employment centers such as the Illinois Medical District
- Connections to Transit Network: Provides access to seven CTA 'L' stations, two Metra stations, and 37 US routes
- Speed/Time: Up to 83 percent increase in bus speeds
- Reliability: 50 percent more reliable than the local bus
- Riders: Saves the average commuter nearly 65 hours per year compared to local bus

Image: Ashland is the highest annual CTA bus ridership. Ashland #9 had 10 million boardings in 2012. Source is Annual Ridership Report: Calendar Year 2012, Chicago Transit Authority, 2013.

Image: Riding BRT would save the average commuter 65 hours per year, compared to current buses. This adds up to $820 for each bus commuter each year or $17 million annually for Ashland bus commuters combined. The source is CDM Smith "Screen 2 Alternatives Report – Western and Ashland Corridors Bus Rapid Transit (BRT) Project, Prepared for CTA," 2013; CTA Annual Ridership Report: Calendar Year 2012. Calculations utilize average Ashland trip length of 2.5 miles; current Ashland bus speed of 8.7 MPH; projected speed for center-lane Ashland BRT of 15.9 MPH; average hourly wage for the area ($12.65 per hour, from FTA's "Capital Investment Program FY 2013 Annual Report Evaluation and Rating Process"); and assumes average commuter makes 500 trips per year.

Image: 7 CTA rail stations, 2 Metra stations and 37 other bus routes would connect with BRT on Ashland. The source is CDM Smith "Screen 2 Alternatives Report – Western and Ashland Corridors Bus Rapid Transit (BRT) Project, Prepared for CTA," 2013.

Image: 99 schools are within walking distance (1/2 mile) of Ashland. The source is GIS analysis by CTA using City of Chicago Spatial Database, March 2013. Schools include public and private and include Pre-K, elementary, middle schools, and high schools. Any schools announced as possibly closing by the Chicago Public Schools or the Chicago Archdiocese as of March 25, 2013 were not included in the count.

Next Steps

BRT on Ashland Avenue is moving into its engineering and environmental design phase where the route and configuration will be comprehensively analyzed on a block-by-block basis. While BRT is planned for 16 miles of Ashland Avenue from Irving Park Road to 95th Street, implementation will be phased. The first phase (Phase 1) is being designed, with ongoing public input, for the 5.4-mile central area between Cortland and 31st Streets. Until subsequent phases are built, the BRT service would continue north of Cortland Street and south of 31st Street for the full 16-mile corridor, operating in mixed flow traffic and making stops curbside at the BRT station locations, using existing local bus stops.

Facts at a Glance: 16-mile Ashland Avenue Corridor

Image: Ashland trips graphic shows total trip times to and from the following destinations

- Ashland/95th to Illinois Medical District
    - With BRT, 45 minutes
    - Current Transit, 71 minutes
- Ashland/Fullerton to Midway
    - With BRT, 37 minutes
    - Current Transit, 58 minutes

The source is CDM Smith "Screen 2 Alternatives Report – Western and Ashland Corridors Bus Rapid Transit (BRT) Project, Prepared for CTA," 2013; Google Maps and Directions. Trip times include estimated walk times as appropriate for some segments. "Current Transit" includes bus, rail, or both as appropriate to the current fastest transit option.

Image: Construction of BRT on Ashland would add 75 blocks of new streetscaping, including medians and sidewalks. The source is CDM Smith "Screen 2 Alternatives Report – Western and Ashland Corridors Bus Rapid Transit (BRT) Project, Prepared for CTA," 2013. Anticipated change to medians for center-lane Ashland BRT is 100% retention of existing raised medians, and construction of 50,549 linear feet of additional raised medians. Assumes 660 feet/block.

Ashland Avenue BRT Project Schedule

- Project Start: Winter 2012
- Environmental Analysis and Conceptual Engineering: Spring 2013 to Fall 2013
- Public Engagement: Summer 2013
- Detailed Design: TBD -Contingent upon available fund

The 5.4 miles between Cortland and 31st Streets has been selected as Phase 1 for BRT on the 16-mile Ashland corridor.

Appendix: Detailed Alternatives Evaluation

This appendix includes additional detail, comparing the Preferred Alternative to the other alternatives on a number of factors. The evaluation was based on the best available data at the time.

Rendering of Preferred Alternative: Center Running BRT, Travel Lane Removal

Ashland Avenue Evaluation: Center Running BRT, Travel Lane Removal			
Transportation Changes	Bus Speed	15.9 mph Average bus speed 83% increase of local bus	CTA Rail: 20 mph Center, Travel Lane Removal:15.9 mph Center, Parking and Median removal: 15.9 mph Curbside, Travel Lane Removal: 13.5 mph Curbside, Parking and Median Removal: 13.5 mph Existing: 8.7 mph
Transportation Changes	Travel Time	7.8 Minutes Average time savings per trip compared to local bus	Center, Travel Lane Removal: 7.8 min Center, Parking and Median removal: 7.8 min Curbside, Travel Lane Removal: 6.1 min Curbside, Parking and Median Removal: 6.1 min
Transportation Changes	Mode Split	26% transit use Percent of daily trip son transit within corridor 86% increase over existing	Center, Travel Lane Removal: 26% Center, Parking and Median removal: 19% Curbside, Travel Lane Removal: 23% Curbside, Parking and Median Removal: 17% Existing: 14%
Transportation Changes	Bus Reliability	50% Improvement in bus reliability compared to existing (based on performance indicators for similar BRT projects)	Center, Travel Lane Removal: 50% Center, Parking and Median removal: 40% Curbside, Travel Lane Removal: 20% Curbside, Parking and Median Removal: 10%
Transportation Changes	Auto Speed*	17.4 mph Average vehicle speed (4.9% decrease compared to existing)	Center, Travel Lane Removal: 17.4 mph Center, Parking and Median removal: 18.5 mph Curbside, Travel Lane Removal: 17.4 mph Curbside, Parking and Median Removal: 18.3 mph Existing: 18.3 mph
Costs	Infrastructure Costs**	$9.9 million Average cost per mile ($161 million total)	Center, Travel Lane Removal: $9.9 Center, Parking and Median removal: $10.8 Curbside, Travel Lane Removal: $7.1 Curbside, Parking and Median Removal: $7.4

Costs	Operating Costs	36% Annual cost efficiency of operating BRT service compared to local bus service	Center, Travel Lane Removal: 36% Center, Parking and Median removal: 36% Curbside, Travel Lane Removal: 28% Curbside, Parking and Median Removal: 28%
Infrastructure Changes	Pedestrian Space	43 feet 10 to 19 ft sidewalk on each side 14 ft station median (at station intersections)	Center, Travel Lane Removal: 43 ft Center, Parking and Median removal: 34 ft Curbside, Travel Lane Removal: 38 ft Curbside, Parking and Median Removal: 30 ft Existing: 27 ft
Infrastructure Changes	Parking	92% 3,317 of 3,610 parking spaces retained - 459 of 533 paid parking retained - 87 of 91 loading zones retained	Center, Travel Lane Removal: 3,317 Center, Parking and Median removal: 1,662 Curbside, Travel Lane Removal: 3,461 Curbside, Parking and Median Removal: 1,662 Existing: 3,610
Infrastructure Changes	Left Turns	0% 0 of 248 left turns retained at intersections (0 of 226 left turn lanes retained)	Center, Travel Lane Removal: - Center, Parking and Median removal: - Curbside, Travel Lane Removal: 248 Curbside, Parking and Median Removal: 248 Existing: 248
Infrastructure Changes	Medians	100% retained and 50,949 feet added - 29,331 of 29,331 linear feet of raised medians retained - 50,949 linear feet of additional raised medians	Center, Travel Lane Removal: 80,280 ft Center, Parking and Median removal: - Curbside, Travel Lane Removal: 29,331 ft Curbside, Parking and Median Removal: 2,998 ft Existing: 29,331 ft

*The evaluation was based on the best available data at the time; refined analysis is included in the Ashland BRT Environmental Assessment, available at www.transitchicago.com/ashlandbrt.
**Does not include fleet purchase.

Western Avenue Evaluation: Center Running BRT, Travel Lane Removal			
Transportation Changes	Bus Speed	18.4 mph Average bus speed 82% increase of local bus	CTA Rail: 20 mph Center, Travel Lane Removal:18.4 mph Center, Parking and Median removal: 18.4 mph Curbside, Travel Lane Removal: 15.6 mph Curbside, Parking and Median Removal: 15.6 mph Existing: 10.1 mph
Transportation Changes	Travel Time	7.8 Minutes Average time savings per trip compared to local bus	Center, Travel Lane Removal: 7.8 min Center, Parking and Median removal: 7.8 min Curbside, Travel Lane Removal: 6.1 min

			Curbside, Parking and Median Removal: 6.1 min
Transportation Changes	Mode Split	31% transit use Percent of daily trip son transit within corridor 107% increase over existing	Center, Travel Lane Removal: 31% Center, Parking and Median removal: 21% Curbside, Travel Lane Removal: 26% Curbside, Parking and Median Removal: 18% Existing: 15%
Transportation Changes	Bus Reliability	50% Improvement in bus reliability compared to existing (based on performance indicators for similar BRT projects)	Center, Travel Lane Removal: 50% Center, Parking and Median removal: 40% Curbside, Travel Lane Removal: 20% Curbside, Parking and Median Removal: 10%
Transportation Changes	Auto Speed	16.3 mph Average vehicle speed (8.9% decrease compared to existing)	Center, Travel Lane Removal: 16.3 mph Center, Parking and Median removal: 18.3 mph Curbside, Travel Lane Removal: 16.3 mph Curbside, Parking and Median Removal: 17.9 mph Existing: 17.9 mph
Costs	Infrastructure Costs*	$9.8 million Average cost per mile ($155 million total)	Center, Travel Lane Removal: $9.8 Center, Parking and Median removal: $10.7 Curbside, Travel Lane Removal: $7.1 Curbside, Parking and Median Removal: $6.8
Costs	Operating Costs	43% Annual cost efficiency of operating BRT service compared to local bus service	Center, Travel Lane Removal: 43% Center, Parking and Median removal: 43% Curbside, Travel Lane Removal: 37% Curbside, Parking and Median Removal: 37%
Infrastructure Changes	Pedestrian Space	48 feet 15 to 21 ft sidewalk on each side 12 ft station median (at station intersections)	Center, Travel Lane Removal: 48 ft Center, Parking and Median removal: 34 ft Curbside, Travel Lane Removal: 38 ft Curbside, Parking and Median Removal: 30 ft Existing: 26 ft
Infrastructure Changes	Parking	95% 2,895 of 3,063 parking spaces retained - 237 of 279 paid parking retained - 74 of 78 loading zones retained	Center, Travel Lane Removal: 2,895 Center, Parking and Median removal: 1,448 Curbside, Travel Lane Removal: 2,979 Curbside, Parking and Median Removal: 1,448 Existing: 3,063
Infrastructure Changes	Left Turns	0% 0 of 237 left turns retained at intersections (0 of 206 left turn lanes retained)	Center, Travel Lane Removal: - Center, Parking and Median removal: - Curbside, Travel Lane Removal: 237 Curbside, Parking and Median Removal: 237 Existing: 237

Infrastructure Changes	Medians	100% retained and 59,092 feet added - 6,048 of 6,048 linear feet of raised medians retained - 50,092 linear feet of additional raised medians	Center, Travel Lane Removal: 65,140 ft Center, Parking and Median removal: - Curbside, Travel Lane Removal: 6,048 ft Curbside, Parking and Median Removal: - Existing: 6,048 ft

*Does not include fleet purchase.