
**EAST
WEST BRT**
a feasibility study

MILWAUKEE COUNTY EAST-WEST BUS RAPID TRANSIT

**NEPA Class of Action
Request**

REVISION #1

DATE July 8, 2016



Prepared for:

Milwaukee County
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1. EXECUTIVE SUMMARY

Pursuant to 23 Code of Federal Regulations (C.F.R.) 771.115, Milwaukee County is providing this report to the Federal Transit Administration (FTA) to request advice on the probable National Environmental Policy Act (NEPA) class of action for a proposed nine-mile bus rapid transit (BRT) project running in a potential combination of mixed traffic and dedicated lanes between the Milwaukee Regional Medical Center (MRMC) in Wauwatosa and downtown Milwaukee at the site of the future Couture Building, currently the Milwaukee Downtown Transit Center (see Figure 1-1). This is an existing high transit ridership corridor; Bus Routes 30, 30x, 31, and the Goldline routes operating in the corridor had more than 17,000 average weekday boardings from December 6, 2015 through February 26, 2016.

1.1 Recommended Locally Preferred Alternative

The East-West Corridor Locally Preferred Alternative (LPA) is a nine-mile BRT route that will run along Wisconsin Avenue and Bluemound Road from the Downtown Transit Center in Milwaukee through the Milwaukee Regional Medical Center in Wauwatosa to the Swan Boulevard park-and-ride. While the LPA is routed along Wisconsin Avenue in downtown Milwaukee, a hybrid Wells Street/Wisconsin Avenue alignment will be carried forward into the next project phase as a backup alternative if it is determined that serious operational or infrastructure issues would occur because of the BRT operating along Wisconsin Avenue. The runningway type for the corridor will be determined in future NEPA and preliminary engineering phases, expected to begin in winter 2016/2017.

The Locally Preferred Alternative

Length: 9.0 miles

Number of Stations: 19

Frequency of Service:

Every 10 minutes (peak)

Every 15 – 30 minutes (off-peak)

Number of BRT Vehicles: 12

Capital Costs: \$42M - \$48M (2016 \$)

Annual Operating Cost: \$3.7 M (2016 \$)

Average Daily Ridership:

19,500 – 23,500

(+40% over existing corridor ridership)

Station Area Population: 47,000

Station Area Jobs: 120,000

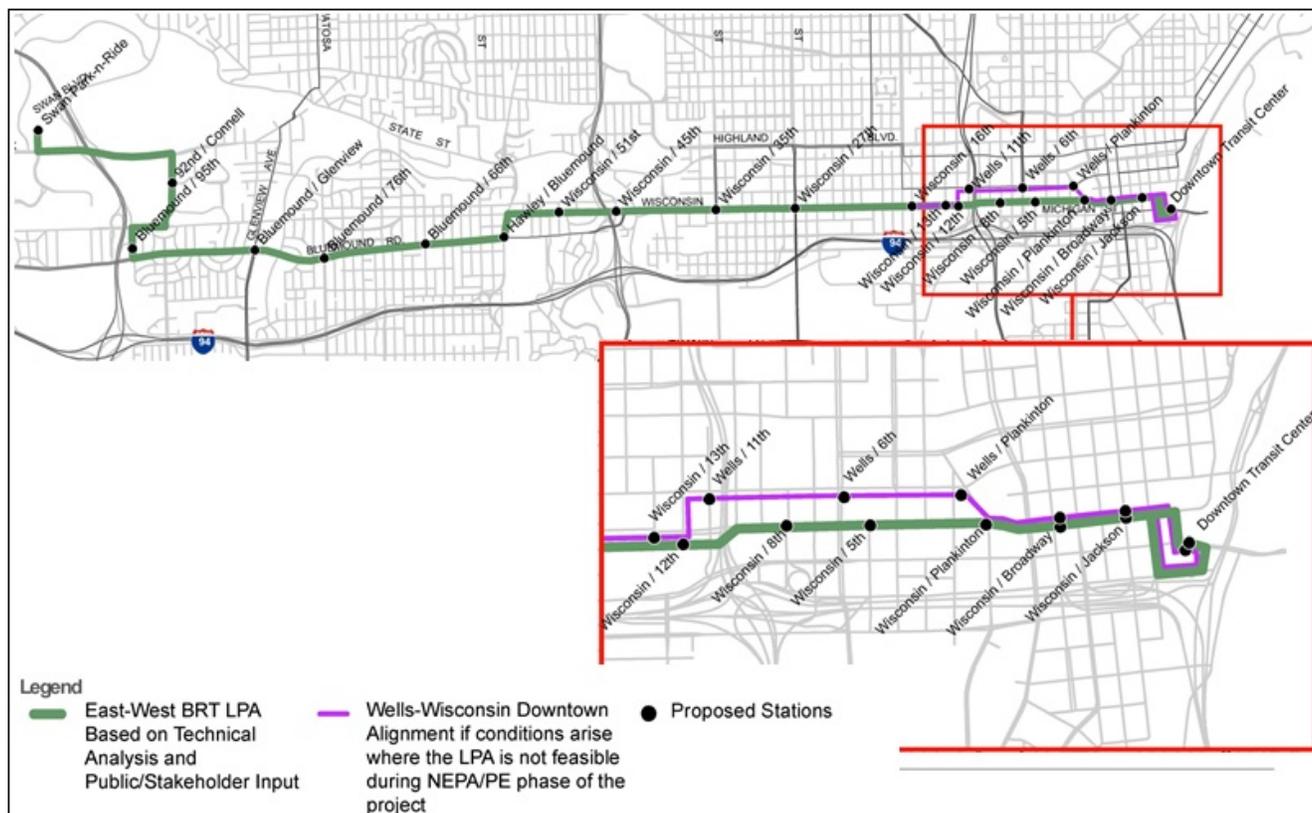
Key Station Area Demographics:

Zero-Car Households: 4,800 (23%)

Residents below the Poverty Line: 12,700 (26%)

Residents of Color: 19,700 (40%)

Figure 1-1: Milwaukee East-West BRT Recommended Locally Preferred Alternative



Station locations identified in the recommended LPA include the following:

- Downtown Transit Center
- Wisconsin Avenue / Jackson Street
- Wisconsin Avenue / Broadway
- Wisconsin Avenue / Plankinton Avenue
- Wisconsin Avenue / 5th Street
- Wisconsin Avenue / 8th Street
- Wisconsin Avenue / 12th Street
- Wisconsin Avenue / 16th Street
- Wisconsin Avenue / 27th Street
- Wisconsin Avenue / 35th Street

- Wisconsin Avenue / 45th Street
- Wisconsin Avenue / 51st Street
- Hawley Road / Bluemound Road
- Bluemound Road / 66th Street
- Bluemound Road / 76th Street
- Bluemound Road / Glenview Avenue
- Bluemound Road / 95th Street
- 92nd Street / Connell
- Swan Boulevard Park-and-Ride

The service will operate more frequently than it does today, with 10-minute headways, and evening and later evening providing service every 15 to 20 minutes. This improved service level will accommodate increasing connectivity within and through the East-West Corridor, demand from existing transit riders, and will encourage other local residents to consider transit as an attractive daily alternative to driving.

The LPA (see Figure 1-1) was selected based on a thorough technical analysis, feedback from the public, and guidance and input from the Stakeholder Advisory Group and city and county committees. It is also responsive to the following transportation needs that were defined in the project Purpose and Need Statement (available under separate cover).

- To reduce vehicle traffic volume, alleviate traffic congestion, and provide a reliable travel option unaffected by congestion in the Milwaukee area's most heavily travelled and congested travel corridor.
- To reduce transportation energy consumption and air pollutant emissions.
- To mitigate and operate as a viable alternative to the extreme traffic congestion which may be expected for multiple years during the reconstruction of the East-West Freeway (IH 94) between S. 70th and S. 16th Streets.
- To provide those without an automobile real access to jobs, healthcare, education, and other elements of daily life.
- To provide a transit alternative that will be an attractive choice for those who own an automobile and currently choose to travel by automobile in the East-West corridor.
- To efficiently serve the substantial travel demand of the Milwaukee Regional Medical Center, and to accommodate and encourage its planned aggressive growth.

- To efficiently serve the substantial travel demand of the Milwaukee central business district, and to accommodate and encourage its planned aggressive growth.
- To encourage new, denser, mixed-use development and redevelopment—which results in more efficient public infrastructure and services and lower energy use per household.
- To provide the transit element of the identified multi-modal improvements needed to address the existing and forecast long-range future travel demand in the East-West Corridor as recommended in the current and previous regional transportation plans.

The key outcomes of the alternative development and evaluation process include the following:

- **Optimize Station Locations.** By reducing the number of stations and integrating dedicated lanes / transit signal priority, the LPA will offer measurable time savings for transit trips in the corridor. Station locations were also designed to facilitate connections to the existing transit network to optimize connectivity and mobility throughout the Milwaukee County Transit System (MCTS) network.
- **Maximize Use of Dedicated Lanes.** A goal of this project is to maximize the use of dedicated lanes throughout the corridor as a means to increase reliability, reduce travel times, and catalyze economic development. There may, however, be portions of the corridor where dedicated lane operations would have adverse impacts; in those areas, the BRT would operate in mixed traffic. Design details will be developed in coordination with corridor stakeholders during the next project phase.
- **Minimize Impacts to Traffic and Parking.** Feedback from members of the public, project committees, and elected officials suggest concerns regarding the potential impact of dedicated lane operations on parking and traffic. As previously discussed, design details—including the use of mixed traffic operations in congested/constrained areas—will be developed in coordination with corridor stakeholders during the next project phase.

1.2 Anticipated Environmental Impacts

The results of an environmental screening completed for the East-West BRT Feasibility Study indicate that the proposed project is not likely to result in significant adverse environmental impacts. Consequently, Milwaukee County believes that the proposed project is a Class III action (Environmental Assessment) and will only require the completion of a NEPA-compliant Environmental Assessment, which is anticipated to result in a Finding of No Significant Impacts.

A preliminary assessment of potential impacts is shown in Table 1-1. An analysis of impacts will be conducted for all of these areas during the NEPA/Environmental Assessment process. However, adverse impacts requiring mitigation are not anticipated at this time for most impact areas.

Table 1-1: Area of Potential Impact and Anticipated Mitigation

Area of Potential Impact	Potential Mitigation
Land Use and Economic Development	Not Anticipated
Demographic and Socioeconomic	Not Anticipated
Neighborhoods	Not Anticipated
Property Acquisition, Relocations, and Easements	Not Anticipated
Archaeological / Historical and Other Section 4(f) Resources	Not Anticipated
Visual Quality and Aesthetics	Not Anticipated
Hazardous and Contaminated Materials	Subject to study
Water Resources	Not Anticipated
Ecosystems and Natural Resources	Not Anticipated
Air Quality	Not Anticipated
Noise and Vibration	Subject to study
Utilities	Subject to study
Public Transportation	Subject to study
Roadways	Subject to study
Non-Motorized Transportation	Subject to study
Parking	Subject to study
Environmental Justice	Subject to study
Construction	Subject to study
Cumulative	Not Anticipated

1.3 Areas of Potential Controversy

Areas of potential controversy that will be addressed during the NEPA/Environmental Assessment process include the following:

- On-street parking impacts
- Traffic impacts (congestion)
- Pedestrian crossings/safety
- Cost

1.4 Public Involvement and Agency Coordination

Milwaukee County is planning a robust public outreach effort as part of the NEPA and preliminary engineering processes, as was conducted during the East-West BRT Feasibility Study, including outreach to Environmental Justice neighborhoods. It is anticipated that public meetings or open houses will be held; numerous meetings will be held with neighborhood, business, advocacy, and other community groups; a project website will be maintained; news releases and newsletters will be prepared; and other public outreach activities will occur as needed throughout the NEPA/Environmental Assessment and preliminary engineering processes.

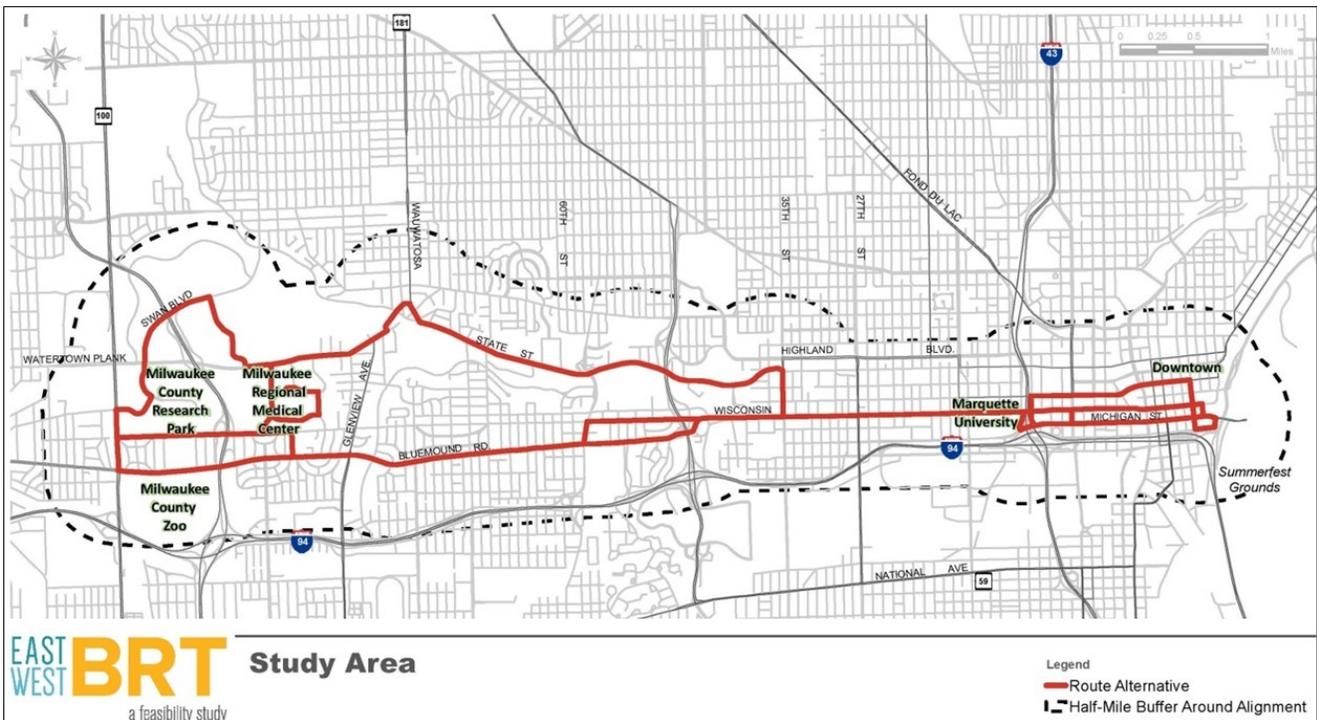
The East-West BRT Team will work closely with regulatory agencies as needed throughout the NEPA and preliminary engineering processes, including the State Historic Preservation Office, the Wisconsin Department of Natural Resources, Wisconsin Department of Transportation (WisDOT), Marquette University, Wisconsin Lutheran College, Southeastern Wisconsin Regional Planning Commission (SEWRPC), Cities of Wauwatosa and Milwaukee, Milwaukee County, and other agencies as needed.

2. BACKGROUND

2.1 Study Area

The Milwaukee East-West BRT represents a crucial early step toward developing higher quality transit service along one of the busiest corridors in Southeastern Wisconsin. The East-West BRT corridor, approximately nine miles long, connects downtown Milwaukee to the MRMC, the two largest job centers in the region. In between, it encompasses Milwaukee’s Marquette University and Near West side neighborhoods, through the Story Hill neighborhood, and to Wauwatosa’s Wisconsin Lutheran College neighborhood and the MRMC, terminating at the park-and-ride lot at Swan Boulevard and Watertown Plank Road (Figure 2-1).

Figure 2-1: Study Area



This corridor is already served by high-quality local bus service, the Goldline, which is utilized by Marquette University students, MRMC employees, and residents and other local employees. The primary goal of the study will be to determine whether, and which, transit enhancements could better meet the corridor's travel needs and support the long-term transportation and land use vision of the local communities, region, and major institutional stakeholders. The NEPA process duration is anticipated to last approximately 18 months, being completed in late 2017/early 2018. The lead agency is Milwaukee County, and its funding partner is the FTA. Other partners and stakeholders involved in the study are:

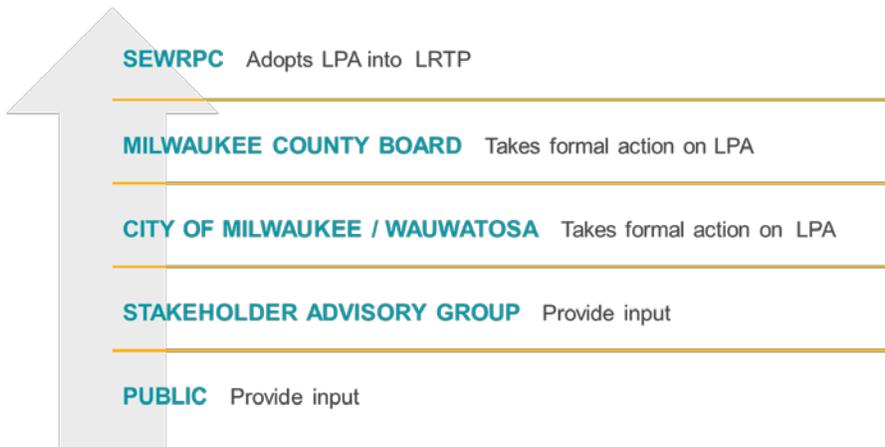
- City of Milwaukee
- City of Wauwatosa
- WisDOT
- Milwaukee County

2.2 Determination of the Recommended Locally Preferred Alternative

2.2.1 East-West Bus Rapid Transit

The recommended LPA is the product of the East-West Bus Rapid Transit Feasibility Study, a study that began in winter 2016 and was completed in summer 2016. This study examined various alignments and modes, including a No Build and BRT alternatives, within the nine-mile East-West Corridor between the MRMC and downtown Milwaukee. Figure 2-2 presents the decision-making structure for the East-West BRT Feasibility Study, which was guided by the BRT Project Team and supported by the Advisory Committee, public engagement, and focused stakeholder outreach, Project Management Team, and consultants.

Figure 2-2: Decision-Making Process



2.2.2 Project Purpose and Need

The purpose of the Milwaukee BRT East-West Feasibility Study is to identify and implement the transit investment strategy that will accommodate anticipated growth in travel demand and mitigate congestion within the corridor, support mobility options that match emerging demographic trends and preferences within the corridor, leverage the existing transportation infrastructure to expand network capacity and personal mobility within the corridor, and encourage sustainable development patterns that reduce reliance on single-occupant vehicles.

- **Project Need #1: To reduce vehicle traffic volume, alleviate traffic congestion, and provide a reliable travel option unaffected by congestion in the Milwaukee area’s most heavily travelled and congested travel corridor.**

The East-West Corridor has long been recognized as the most heavily travelled and congested corridor in the Milwaukee area. The only planned expansion of street and highway capacity in this corridor would occur with the reconstruction of the East-West freeway (IH 94), and it is acknowledged that even with this expansion, the corridor will remain congested. In addition, there is substantial development and redevelopment planned for this corridor, which is expected to significantly increase travel demand and congestion, particularly in downtown Milwaukee and the Milwaukee Regional Medical Center. Providing transit service in this corridor would increase the carrying capacity of the roadways in this corridor and provide a reliable travel option unaffected by congestion.

- **Project Need #2: To reduce transportation energy consumption and air pollutant emissions.**

The potential reduction by BRT of vehicle traffic volume and congestion may be expected to result in reductions in transportation energy consumption, and air pollutant emissions. These reductions are particularly important as the Milwaukee area has been a nonattainment area for national ozone and particulate air quality standards.

- **Project Need #3: To mitigate the extreme traffic congestion which may be expected for multiple years during the reconstruction of the East-West Freeway (IH 94) between S. 70th and S. 16th Streets.**

The reconstruction of the East-West Freeway (IH 94) may be initiated as soon as 2019 and extend for at least a few years, during which traffic congestion may be expected to increase significantly on the freeway and arterial streets in the corridor, as the freeway is narrowed during construction from three to two lanes in each direction and on- and off-ramps are closed. During reconstruction, vehicle travel times will increase substantially, and travel time reliability will be severely affected. Transit investment in the corridor will provide a reliable means of travel unaffected by congestion during the reconstruction.

- **Project Need #4: To provide those without an automobile real access to jobs, healthcare, education, and other elements of daily life.**

Current excessively long travel times via transit effectively result in a lack of access to jobs, healthcare, education, and other activities for those without an automobile. Within the Cities of Milwaukee and Wauwatosa -- the communities through which the BRT facility would extend--an estimated 18 percent of households do not have access to an automobile. The current excessive travel times on transit are a result of nearly all transit being local service with frequent stops, with no traffic signal preferential treatment, and operation in mixed traffic subject to congestion. Infrequent transit service and the grid nature of transit service in Milwaukee County also contribute to long transit travel times. A BRT facility operating at a convenient service frequency will significantly reduce travel time and increase access to jobs, healthcare, and education in the East-West Corridor for those without access to an automobile.

- **Project Need #5: To provide a transit alternative that will be an attractive choice for those who own an automobile and currently choose to travel by automobile in the East-West Corridor.**

The existing travel times and speeds of transit service in the East-West corridor are not competitive with the automobile. All transit service is in mixed traffic subject to traffic congestion, and there is no traffic signal preferential treatment. Nearly all of the existing East-West Corridor transit service is local service with frequently spaced stops, and the limited existing express service has, for much of its route, closely spaced stops of one-quarter mile. Providing a fast transit alternative that is competitive with the automobile will give travelers in the East-West Corridor an alternative cost-effective choice for travel.

- **Project Need #6: To efficiently serve the substantial travel demand of the Milwaukee Regional Medical Center, and to accommodate and encourage its planned aggressive growth.**

The MRMC, located in Wauwatosa at the west end of the study corridor, is comprised of six separate medical institutions: Froedtert Hospital, the Medical College of Wisconsin, the Blood Center of Wisconsin, Children’s Hospital and Health System, Curative Care Network, and the Milwaukee County Behavioral Health Division. Together, the complex houses approximately 16,000 employees on its 240-acre campus, and draws approximately 30,000 daily visitors. Currently, the campus provides 12,900 parking spaces, occupying 58 acres of the campus, all free to employees, patients and visitors.

- **Project Need #7: To efficiently serve the substantial travel demand of the Milwaukee central business district, and to accommodate and encourage its planned aggressive growth.**

The Milwaukee central business district, or downtown, encompasses about 640 acres and is home to 81,000 employees and 25,000 residents. Substantial development is underway--the Northwestern Mutual Life Insurance office tower, the 833 East office building, the new arena with attendant development; planned--the Couture apartment tower; and, being discussed--a Johnson Controls headquarters office tower. It is the location of the greatest traffic congestion in the Milwaukee area, and has the greatest potential for increased transit use due to its density of employment and higher costs for parking. A BRT facility has the potential to substantially increase transit use to the Milwaukee central business district, by providing a reliable travel option unaffected by congestion with travel times competitive with the automobile. It is the location of the greatest traffic congestion in the Milwaukee area, and has the greatest potential for increased transit use due to its density of employment and higher costs for parking.

- **Project Need #8: Encourage new, denser, mixed-use development and redevelopment—which results in more efficient public infrastructure and services and lower energy use per household.**

Research shows that high quality public transit facilities, such as BRT, can encourage higher density mixed use development and redevelopment within walking distance of its stations. Such development typically costs less per household to serve with public infrastructure and services, requires less energy use per households, and generates fewer air pollutant emissions.

- **Project Need #9: To provide the transit element of the identified multi-modal improvements needed to address the existing and forecast long-range future travel demand in the East-West corridor as recommended in the current and previous regional transportation plans.**

The regional transportation plan has long identified the East-West corridor as the most heavily travelled and congested corridor in the Southeastern Wisconsin Region. An

important improvement long recommended in the regional transportation plan is the development of a BRT facility. A BRT facility is recommended in the year 2035 regional transportation plan which was last reviewed and updated in 2014, and was also recommended in the first regional plan completed in 1966 for the design year 1990.

2.2.3 Project Goals and Objectives

The following four goals and related objectives have been established for the East-West Corridor. These will be utilized for the development of evaluation criteria used in comparing the alternative transit investment options for the corridor.

Table 2-1: Project Goals and Objectives

Goal	Objectives
Increase the efficiency, attractiveness and utilization of transit for all users	<ul style="list-style-type: none"> • Provide reliable, frequent service that improves the experience of existing customers and attracts “choice” riders • Provide capacity for future growth in transit ridership • Provide enhanced passenger amenities and infrastructure
Efficiently manage the forecasted increase in corridor travel demand	<ul style="list-style-type: none"> • Provide frequent, high-capacity, one-seat transit connections between key East-West Corridor activity generators • Manage increasing corridor travel demand through more efficient use of the existing transportation network • Contribute to acceptable levels of traffic operations and parking supply in the corridor • Improve pedestrian and bicycle connections to East-West Corridor transit • Coordinate with existing and planned transit services
Contribute to a socially-, economically-, and environmentally-sustainable transportation network	<ul style="list-style-type: none"> • Promote a more efficient and sustainable transportation system that reduces energy usage, emissions, and costs of living • Increase mobility and accessibility for transit-dependent populations • Support regional planning efforts for a more balanced, multi-modal transportation network in the region • Support local and regional goals for compact, mixed-use development along the corridor • Support institutional and key stakeholder planning efforts

Goal	Objectives
Develop and select an implementable and community-supported project	<ul style="list-style-type: none"> • Define and select transit improvements with strong public, stakeholder and agency support • Define and select transit improvements that are cost-effective and financially feasible, both in the short- and long-term • Define and select transit improvements that are competitive for Federal Transit Administration funding

2.2.4 Tier 1 Evaluation

The Tier 1 Evaluation was structured to efficiently identify the alternatives that do not meet the project purpose and need or goals and objectives, and to remove them from further consideration in future phases of the project. This initial level of screening focuses on two areas:

- Transit modes
- Alignments

2.2.4.1 Transit Modes

Transit can be provided through a variety of modes; however, not all modes are appropriate for all environments, so the first step of this Tier 1 Evaluation was to identify the modes that are appropriate for the East-West Corridor and to screen out those that are not.

The modes under consideration in the Tier 1 Evaluation are shown in Table 2-2.

Table 2-2: Transit Modes

Mode	Typical Characteristics	Example Services
No Build	<ul style="list-style-type: none"> • Standard bus in mixed traffic operations • Varied service depending on route; on-time performance over 90% on weekdays. • Headway average (#30 Wisconsin Avenue Service) ¹ Weekday am/pm 7-19 minutes Saturday/Sunday am/pm 11-25 minutes • Single (40-foot) low-floor, diesel buses • Stops spacing generally varies between every other block and ¼-mile • Stations (over 5,500 total) vary between sheltered bus stops and basic bus stops • Vehicle carries approximately 60-70 riders • Cost: \$400,000 to \$700,000 per vehicle 	 <p data-bbox="1105 680 1365 709">Milwaukee, WI MCTS</p>
BRT	<ul style="list-style-type: none"> • Mixed traffic with transit signal priority or exclusive bus lanes • Level boarding at high-quality stations • 40- to 60-foot buses that have multiple doors, sleek styling, and onboard visual/automated next stop announcements • Wide stop spacing (typically half to one mile) and frequent, seven-day-a-week service • Branded service through use of a distinct name, logo, color scheme, bus wrap, and set of visual identifiers • Off-board fare payment • Transit signal priority • “Real time” bus arrival information available at stations and through web/mobile apps on desktop computer or smartphone • Typical corridor length of five to 20 miles • Vehicle carries approximately 50-90 riders (depending on length of bus) • Cost: \$5 – \$30 million per mile; \$500,000 to \$1,200,000 per vehicle 	 <p data-bbox="1105 1157 1373 1186">Kansas City, MO MAX</p>

Mode	Typical Characteristics	Example Services
<p>Modern Streetcar</p>	<ul style="list-style-type: none"> • Rail tracks embedded within mixed traffic lanes Dedicated lane options • Powered by overhead electrical system or battery Battery powered technology currently being used • Level boarding at high-quality stations • Single car trains • Stops spaced ¼ - 1/2 mile apart • Frequent service (10-15 mins) • Off-board fare payment • Signal priority • “Real time” bus arrival information available at stations and through web/mobile apps on desktop computer or smartphone • Typical corridor length of two to five miles • Vehicle carries approximately 100-150 riders • Cost: \$25 – \$50 million per mile (including vehicles); Vehicles: approximately \$4-\$6 million 	 <p>Dallas, TX Streetcar</p>
<p>Light Rail</p>	<ul style="list-style-type: none"> • Exclusive rail corridor or tracks embedded within lane of roadway (except in downtowns) • Overhead electrical system • Level boarding at high-quality stations • One to four car trains • Stops spaced one mile apart (except in downtowns) • Frequent service (10 minutes or less) • Off-board fare payment • “Real time” bus arrival information available at stations and through web/mobile apps on desktop computer or smartphone • Typical corridor length of 10 to 20 miles • Trains carry approximately 150-200 riders per train car • Cost: \$50 – \$150 million per mile (including vehicles) 	 <p>Minneapolis, MN Green Line</p>

Mode	Typical Characteristics	Example Services
Commuter Rail	<ul style="list-style-type: none"> • Rail corridor (separate from roadway) required; shared with intercity or freight trains • Electric or diesel trains • Every 30 minutes to one hour (sometimes only during peak commuter periods) ² • Typical corridor length of 20-40 miles • Train carries approximately 100-150 rider per train car Typically more seating and less standing room than other modes • Cost: \$3-\$25 million per mile³; Vehicle costs vary based on type of vehicle and number of cars in train. 	 <p>Austin, TX MetroRail</p>

¹ 2011 Average Headways for Regular Routes, <http://www.ridemcts.com/docs/default-source/default-document-library/2014-mcts-title-vi-update.pdf?sfvrsn=0>

² Austin, TX MetroRail service characteristics, http://www.lightrailnow.org/news/n_au_2010-04a.htm

³ Transit technologies worksheet, <http://www.reconnectingamerica.org/assets/Uploads/bestpractice175.pdf>

Transit modes were evaluated based on six criteria:

- Ridership capacity
- Typical service characteristics
- Environmental impacts
- Demonstrated ability to catalyze economic development
- Consistency with existing and planned corridor character
- Compatibility with local and regional plans
- Typical per-mile capital costs

Modes with one or more “fail” rating were removed from further definition and evaluation in subsequent phases of the study. As shown in Table 2-3, the BRT is recommended for more detailed definition and evaluation in subsequent project phases.

Table 2-3: Summary Results of the Initial Screening of Modes

Mode / Alternative	Tier 1 Mode Evaluation Criteria						
	Typical Ridership Capacity	Typical Service Characteristics	Environmental Impacts	Demonstrated Ability to Catalyze Economic Development	Consistency with Existing and Planned Corridor Character	Compatibility with Local and Regional Plans	Typical Per-Mile Capital Costs
Bus Rapid Transit	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Streetcar	Pass	Pass	Pass	Fail	Pass	Fail	Fail
Light Rail	Fail	Pass	Fail	Pass	Fail	Fail	Fail
Commuter Rail	Fail	Fail	Fail	Fail	Fail	Fail	Pass

2.2.4.2 Alignments

The East-West Corridor spans approximately nine miles from downtown Milwaukee to MRMC and Milwaukee County Research Park (MCRP). For purposes of the Tier 1 Evaluation, the corridor has been divided into seven segments to facilitate the comparison of alignment alternatives along the length of the corridor.

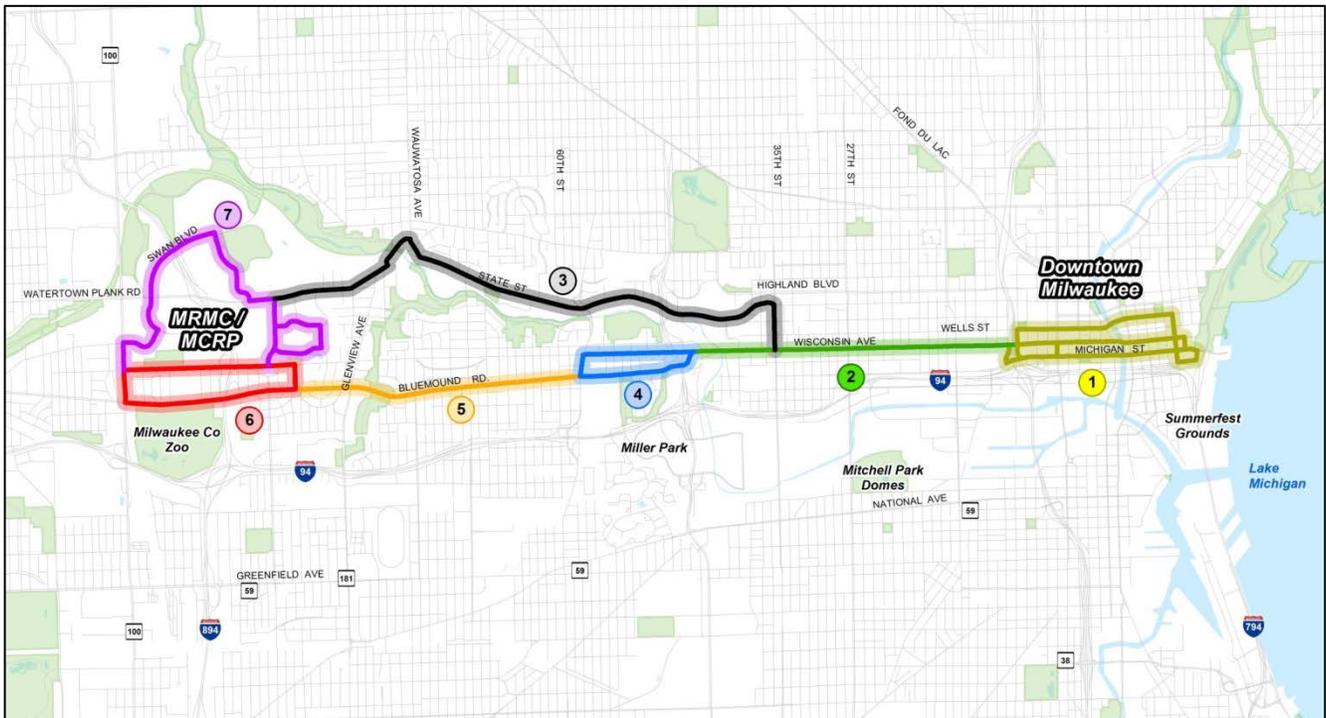
The Tier 1 Evaluation was structured to efficiently identify the alternatives that do not meet the project purpose and need or goals and objectives and to remove them from further consideration in future phases of the project. This initial level of screening focused on two areas:

- Transit modes
 - No Build (existing system and any committed improvements), BRT, modern streetcar, light rail, and commuter rail
- Alignments
 - Seven segments, as described in Table 2-4 and shown on Figure 2-3.

Table 2-4: East-West Corridor Tier 1 Alignment Segments

Segment	Segment Boundaries	Potential Alignments
1	Downtown	Wisconsin Avenue Michigan Street Wells Street
2	10th Street to 45th Street	Wisconsin Avenue
3	State Street	State Street
4	45th Street to Hawley Road	Wisconsin Avenue Bluemound Road
5	Hawley Road to 89th Street	Bluemound Road
6	89th Street to Highway 100 / Mayfair Road	Wisconsin Avenue Bluemound Road
7	MRCM / MCRP / Swan Boulevard / Mayfair Road	--

Figure 2-3: East-West Corridor Segments for Tier 1 Evaluation



2.2.5 Tier 2 Definition and Evaluation

The key physical and service elements of the transit alternatives that advanced through the Tier 1 evaluation of the East-West BRT Feasibility Study were refined and documented in the Detailed Definition of Alternatives report, which is summarized below and available under separate cover. The key characteristics used to define each detailed alternative included the following:

- Service plan
- Stop spacing
- Stop facilities
- Runningway
- Transit vehicles
- Technology and customer information
- Identity and branding
- Maintenance facility

The detailed alternatives are summarized below.

2.2.5.1 Detailed Mode Alternatives

The detailed mode alternatives that were studied included the following:

- No Build (no changes to existing transit service beyond planned and financially committed improvements)
- BRT in mixed traffic
- BRT in dedicated curb lane
- BRT in dedicated center lane

2.2.5.2 Detailed Alignment Alternatives

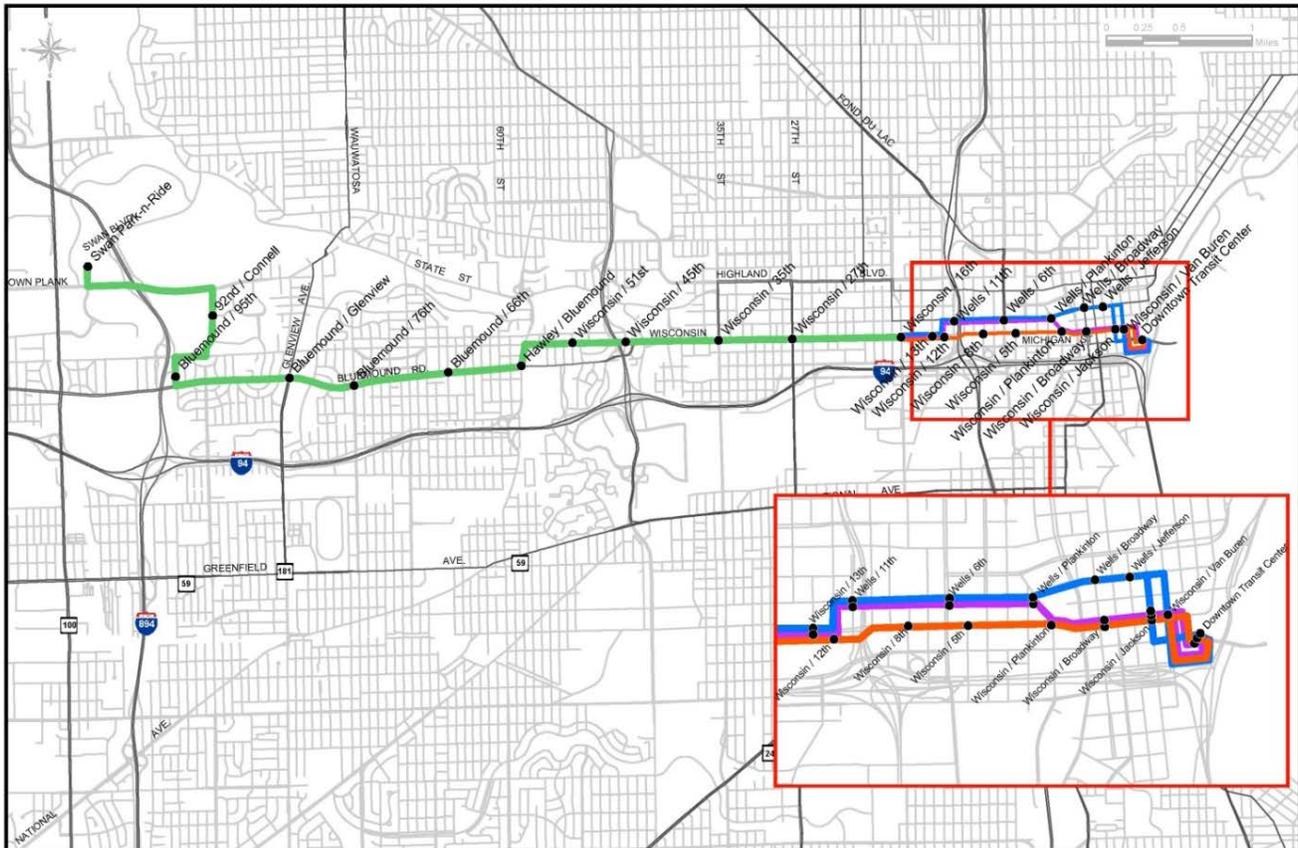
Figure 2-4 illustrates the alignment options that were studied during the initial screening phase and recommended for detailed development. These included the following:

- Downtown (Downtown Transit Center to approximately 12th Street);
 - Michigan Street

BACKGROUND

- Wisconsin Avenue
- Wells Street
- Wisconsin Avenue (from approximately 12th Street to Hawley Road);
- Bluemound (from Hawley Road to 95th Street);
- 95th Street (Bluemound Road to Wisconsin Avenue);
- Wisconsin Avenue (95th Street east to 92nd Street);
- 92nd Street (Wisconsin Avenue north to Watertown Plank Road); and
- Watertown Plank Road (92nd Street west to the Swan Boulevard Park-and-Ride).

Figure 2-4: Alignments for Detailed Definition and Evaluation



For purposes of the Tier 2 Evaluation, the alternatives are referred to as:

- Alternative 1: via Wisconsin
- Alternative 2: via Wells
- Alternative 3: Hybrid

Each of the alternatives can operate in mixed traffic, a dedicated curb lane, or a dedicated center lane. For purposes of the Tier 2 Evaluation, it is assumed that each alternative will maintain consistent runningway operations for the length of the corridor. For instance, the

BRT in a dedicated curb lane will operate in a dedicated curb lane from downtown Milwaukee to the Swan Boulevard park-and-ride.

During future project phases, mixed traffic and dedicated lane operations may be linked at different points along the corridor in response to engineering and operational constraints and opportunities.

The characteristics of each runningway type are summarized in Table 2-5.

Table 2-5: Summary of Detailed Alternatives – Runningway Types

Characteristic	No Build	BRT in Mixed Traffic	BRT in Dedicated Curb Lane	BRT in Dedicated Center Lane
Service Plan	Same as existing bus routes / services	Substantial increase in service levels throughout the week (i.e., more frequent weekday service and weekend service)		
Stop Spacing	No changes to existing stop location or spacing	Station locations altered to maximize ridership activity and community development impact Fewer overall stations for rapid transit line Stations generally spaced a one-half mile to one mile apart Underlying local bus service present		
Stop Facilities	No changes from existing	Station shelters and associated facilities to include level boarding, customer information, seating, and other features		
Runningway	Operates in mixed traffic		Operates in dedicated side-running lane throughout corridor An existing traffic lane could be converted to transit-only use	Operates in dedicated center-running lane throughout corridor An existing traffic lane could be converted to transit-only use
Transit Vehicles	Uses existing 40-foot bus vehicles	Uses 40- or 60-foot articulated buses with right-door loading		Uses 40- or 60-foot articulated buses with right- and/or left-door loading
Technology / Customer Information	Uses existing technology and customer info	Integration of next-bus variable message signs at stations, online/mobile customer information, and traffic signal priority for bus vehicles in the corridor		
Identity / Branding	No modifications to service branding	Unique identity and branding elements integrated into vehicles, stations, and associated service materials		

Characteristic	No Build	BRT in Mixed Traffic	BRT in Dedicated Curb Lane	BRT in Dedicated Center Lane
Maintenance Facility	Utilizes existing maintenance facility			

2.2.6 Detailed Evaluation Criteria and Summary Results

The Tier 2 Evaluation results are organized into six technical memoranda, the results of which are summarized in the following six technical memoranda listed below, included as the following appendices:

- Technical Memorandum #1: Station Area
- Technical Memorandum #2: Transportation
- Technical Memorandum #3: Environmental Impacts
- Technical Memorandum #4: Capital Costs
- Technical Memorandum #5: Operating and Maintenance Costs
- Technical Memorandum #6: Ridership

Tables 2-6 and 2-7 present high-level summaries of the results of the six technical memoranda by alternative and by runningway type, respectively. Further details and information are available under separate cover.

Table 2-6: Summary of Detailed Evaluation Results by Alternative

	Alternative 1: via Wisconsin	Alternative 2: via Wells	Alternative 3: Hybrid
Average Weekday Ridership (2035)			
BRT	14,350	13,900	13,900
Corridor	32,500	32,000	31,700
Linked Trips on Project	21,500	21,350	20,900
New Riders	8,350	8,250	8,000
O&M Costs	\$3.70 M	\$ 3.78 M	\$ 3.75 M

Station Area Population and Employment

	Alternative 1: via Wisconsin	Alternative 2: via Wells	Alternative 3: Hybrid
2010 Population	46,600	48,500	47,100
2035 Population	53,500	56,000	54,250
2010 Population Density (per square mile)	5,800	5,950	5,800
2035 Population Density (per square mile)	6,650	6,850	6,700
Percent Change in Population Density	15%	15%	15%
2010 Employment	119,200	121,150	120,800
2035 Employment	126,100	128,850	128,250
2010 Employment Density (per square mile)	14,800	14,850	14,900
2035 Employment Density (per square mile)	15,650	15,7800	15,850
Percent Change in Employment Density	6%	6%	6%
Equitable Access to Transit			
Number of Residents below Poverty	12,700	13,300	12,950
Percent of Residents below Poverty	26%	26%	26%
Number of Residents of Color	19,650	20,400	20,100
Percent of Residents of Color	40%	40%	40%
Number of Zero-Car Households	4,800	5,250	4,850
Percent of Zero-Car Households	23%	24%	23%
Development Potential	Medium - High	Medium - High	Medium - High

Safety

	Alternative 1: via Wisconsin	Alternative 2: via Wells	Alternative 3: Hybrid
Reduction in Disabling Injuries	~11 to 14 fewer disabling injuries every 5 years		
Reduction in Fatalities	~1 less fatality every 5 years		
Cultural and Historic Impacts			
Number of Historic Resources	84	84	84
Number of Cultural Resources	19	19	19
Natural Environment			
Change in Vehicle Miles Travelled	-14,237,000 to -17,401,000	-14,226,000 to -17,387,000	-13,762,000 to -16,821,000
Carbon Monoxide (metric tons)	200 to 300	200 to 300	200 to 300
Mono-Nitrogen Oxides (metric tons)	11 to 13	11 to 13	10 to 13
Volatile Organic Compounds (metric tons)	9 to 10	8 to 10	8 to 10
Particulate Matter (kg)	11 to 14	2 to 3	2 to 2
Greenhouse Gases (metric tons)	7,100 to 8,700	7,100 to 8,700	6,900 to 8,400
Energy Use (million Btu)	103,000 to 125,000	102,000 to 125,000	99,000 to 121,000

Table 2-7: Summary of Detailed Evaluation Results by Alternative and Runningway Type

	Alternative 1: via Wisconsin			Alternative 2: via Wells			Alternative 3: Hybrid		
	Mixed Traffic	Dedicated Curb Lane	Dedicated Center Lane	Mixed Traffic	Dedicated Curb Lane	Dedicated Center Lane	Mixed Traffic	Dedicated Curb Lane	Dedicated Center Lane
Capital Costs	\$41.9 M	\$41.7 M	\$47.9 M	\$43.7 M	\$43.4 M	\$48.1 M	\$42.5 M	\$42.4 M	\$47.6 M
Right-of-Way Impacts	none	none	none	none	none	none	none	none	none
Parking Impacts									
Number of Existing Spaces	1,425	1,425	1,425	1,536	1,536	1,536	1,416	1,416	1,416
Number of Impacted Spaces	90	232	471	85	278	522	80	216	460
Percent of Spaces Impacted	6%	16%	33%	6%	18%	34%	6%	15%	32%
Traffic Impacts	Certain intersections will require mitigation measures to enable the use of dedicated transit lanes; additional detailed traffic analysis will be performed during detailed engineering in the next project phase.								
Bike and Pedestrian Impacts									
Impacts on Existing Facilities*	1	1	1	1	1	1	1	1	1
Compliance with Plans	yes	no	no	yes	no	no	yes	no	no

* 0 = No impact
 1 = Some positive impacts for bicycles and pedestrians
 2 = Definite positive impacts for bicycles and pedestrians

2.2.7 The Preferred Alternative

Based on this detailed evaluation of alternatives, a preferred alternative has emerged that is responsive to the need for transportation investment within the corridor (as defined in the Purpose and Need Statement) and will be competitive for federal funding.

The Preferred Alternative is Alternative 1: via Wisconsin – BRT primarily operating on Bluemound Road and Wisconsin Avenue between an end-of-line station at the Swan

engineering phases that indicates significant operational or other issues along Wisconsin Avenue downtown.

Preliminary stop locations, which may be modified during the refinement of the preferred alternative and the environmental clearance process, include the following:

- Downtown Transit Center
- Wisconsin Avenue / Jackson Street
- Wisconsin Avenue / Broadway
- Wisconsin Avenue / Plankinton Avenue
- Wisconsin Avenue / 5th Street
- Wisconsin Avenue / 8th Street
- Wisconsin Avenue / 12th Street
- Wisconsin Avenue / 16th Street
- Wisconsin Avenue / 27th Street
- Wisconsin Avenue / 35th Street
- Wisconsin Avenue / 45th Street
- Wisconsin Avenue / 51st Street
- Hawley Road / Bluemound Road
- Bluemound Road / 66th Street
- Bluemound Road / 76th Street
- Bluemound Road / Glenview Avenue
- Bluemound Road / 95th Street
- 92nd Street and Connell
- Swan Boulevard park-and-ride
- Maintenance facility – It is anticipated that the East-West BRT vehicles will be maintained at an existing maintenance facility where both 40-foot and 60-foot buses can be accommodated for maintenance.

2.3 Summary of Public Involvement

Milwaukee County has engaged the public throughout the feasibility study with public information meetings, in person meetings, an advisory group, and online platforms in order to share study progress and receive input on the alternative development and evaluation process.

2.3.1 Public Meetings

As part of the public engagement program, Milwaukee County hosted three open house-style public involvement meetings in April and May 2016, connected with Title VI groups, neighborhood and community groups, business improvement districts, business groups, educational and healthcare institutions, employers, and elected officials. A Stakeholder Advisory Group comprised of institutional, governmental, and stakeholder representatives has met three times to review the analyses and provide study guidance and feedback. The Stakeholder Advisory Group also served as a conduit of study information back to their constituencies.

Milwaukee County engaged in over 70 individual stakeholder meetings, including briefings for two dozen local officials and neighborhood meetings. The county used an email contact list of hundreds of local third-party organizations and individuals in order to expand the reach of the study. These third-party representatives included neighborhood associations, business improvement districts, educational institutions, local organizations, and engaged citizens who, in turn, provided study information to their respective constituencies. The study also conducted outreach to Title VI organizations representing groups like minorities, low-income residents, the elderly, persons with limited English proficiency, and persons with disabilities.

Milwaukee County held three public information meetings for the feasibility study on April 12, April 14, and May 18, 2016. In total, 308 people attended the meetings, which were held in the east, west, and central portions of the corridor in downtown Milwaukee, at the Zoofari Conference Center in Wauwatosa, and at Marquette University, respectively. In addition to spoken comments and questions during the meetings, 113 written comments were received from the public. Of those comments, 44 percent supported BRT in Milwaukee, 19 percent were neutral, and 37 percent were opposed. Comments from the downtown Milwaukee meeting were the most positive (83 percent positive or neutral) compared to the Marquette (63 percent) and Wauwatosa (56 percent) meetings. The range of topics was quite broad and included safety for pedestrians and bicyclists, traffic and parking, integration with existing bus

service, funding, dedicated versus shared lanes, and disruption to existing neighborhoods. The feedback favored Wisconsin Avenue for the downtown alignment and including dedicated lanes wherever possible.

Finally, Milwaukee County developed and maintained a dedicated website (EastWestBRT.com) to share study information and provide an additional opportunity for the public to provide feedback. The study has received 85 online comments (as of June 20, 2016), of which more than half were in support of BRT, about 33 percent neutral, and 16 percent against. While the range of topics covered was similar to the public meetings, as the study has developed the online comments have grown increasingly positive. Since the May 18 public meeting, 80 percent of the online comments have been either positive or neutral about the East-West BRT Feasibility study.

2.3.2 Public Involvement Results

Public input, feedback, and ideas were instrumental in developing the East-West BRT LPA. Key input derived from the public resulted in the following results during the evaluation and alternative development:

- State Street was eliminated from consideration
- Wisconsin Avenue from Hawley Road west was eliminated from consideration
- Bluemound Road from 45th Street to Hawley Road was eliminated from consideration
- Wells Street in downtown Milwaukee should remain as an option Wisconsin Avenue should Wisconsin Avenue fail in NEPA/Engineering phases

2.4 Next Steps

2.4.1 Approval and Adoption of the Locally Preferred Alternative

The LPA was recommended by the project team to the Cities of Milwaukee and Wauwatosa in June 2016. The City of Wauwatosa Common Council approved the LPA June 2016; the City of Milwaukee Common Council approved the LPA in July 2016. The Advisory Committee on Transportation System Planning and Programming for the Milwaukee Urbanized Area (Milwaukee TIP Committee) approved the preliminary planning and design for a BRT route between downtown Milwaukee and MRMC in Milwaukee County (TIP No. 551) TIP Amendment in June 2016. SEWRPC is scheduled to adopt TIP No. 551 in July 2016.

- Selection of a LPA:
 - City of Wauwatosa’s Transportation Affairs Committee approved LPA – June 14, 2016
 - City of Wauwatosa’s Common Council approved LPA – June 21, 2016
 - City of Milwaukee Public Works Committee anticipated to approve LPA – July 13, 2016
 - City of Milwaukee Common Council anticipated to approve LPA – July 26, 2016
 - Milwaukee County Transportation Committee anticipated to approve LPA – July 13, 2016
 - Milwaukee County Board anticipated to approve LPA – July 28, 2016
 - Milwaukee Regional Medical Center passed a resolution to support the BRT LPA – June 16, 2016
- Adoption of the LPA in the fiscally-constrained long-range transportation plan: July 28, 2016

2.4.2 National Environmental Policy Act

Milwaukee County has begun preliminary work to ensure compliance with NEPA. The first step in this process will be to work with the FTA to make a Class of Action (COA) Determination. At this time it is anticipated that the COA for this project will either be a Categorical Exclusion (CE) or an Environmental Assessment (EA). Based on similar BRT projects in peer cities in the Midwest, a CE COA Determination may be likely. The COA will depend upon the final LPA and the potential impacts of the LPA. Milwaukee County anticipates receiving a COA determination in summer 2016.

The COA will affect the estimated time required to complete the appropriate NEPA documentation. A CE would likely take approximately six months to a year to complete, wrapping up in the late summer or early fall 2017. However, an EA is anticipated to take longer, one year to 18 months, and would be completed in the winter of 2017/2018.

2.4.3 Request to Enter Small Starts Project Development

It is anticipated that the proposed project will be funded through a portion of the FTA’s Capital Investment Program, commonly known as Small Starts. This requires Milwaukee County to request entry into the Small Starts Project Development program from the FTA. This can be

done either during or following the completion of the NEPA process. The anticipated timeline for the Small Starts application is outlined below:

- Request to enter Project Development: July 2016
- FTA review request to enter Project Development: July - August 2016
- Request to rating and inclusion in FY 2018 budget: September 2, 2016
- FTA review request for include in FY 2018 budget: September 2016 – February 2017
- Congress approval of budget: February 2017 – September 2017
- Negotiate/sign Small Starts Grant Agreement: October 2017 – February 2018

2.4.4 Small Starts Project Development

During Small Starts Project Development, Milwaukee County will complete the requirements of the NEPA process, final engineering, and vehicle procurement. The final design will be developed from the Preliminary Engineering completed for NEPA and include preparing the final plans, specifications, and bid package for construction of the project.

2.4.5 Grant Agreement / Construction

Milwaukee County will work with the FTA to and execute a Grant Agreement, with the grant anticipated in winter 2017/2018. A Grant Agreement is the means by which FTA provides funds for the capital costs of Small Starts projects. It will identify the maximum federal share and capital cost for the project.

Upon receipt of the Grant Agreement, Milwaukee County will begin the construction of the East-West Corridor in late spring 2018. The proposed construction schedule is outlined below:

- Prepare bid documents: December 2017 – February 2018
- Procurement: March 2018 – April 2018
- Construction: May 2018 – August 2019
- Testing: September 2019 – December 2019
- Revenue operations 2020 – January 2020

2.4.6 Project Funding

The funding for the East-West BRT Corridor project will likely involve a combination of federal, state and local funding. These funding sources will likely include FTA Small Starts funds and matching funds from Milwaukee County. However, throughout the NEPA and Project Development phases, Milwaukee County will continue to explore additional funding sources. These additional sources include, but are not limited to, using WisDOT traffic mitigation funding before and during the construction of the IH 94 East-West corridor, as discussed in the IH 94 East-West Final Environmental Impact Statement - 3.9.6 Interstate Investment effects on Transit.

2.5 Schedule for Environmental Assessment

The East-West BRT expects to fully engage the NEPA process in January 2017 with completion in the winter of 2017/2018 for an EA. If the COA is determined to be a CE, the CE would be completed by the fall of 2017. Following the completion of the NEPA process the East-West BRT will work with its project partners, in particular the SEWRPC, to incorporate the LPA for the East-West BRT into its long-range transportation plan.

3. POTENTIAL FOR CONTROVERSY

Extensive public involvement has been conducted during the East-West BRT Feasibility Study and the development of the recommended LPA reflects public input and efforts to address the concerns that have been identified. Specific issues that may arise during the environmental process include the following:

- On-street parking impacts
- Traffic impacts (congestion)
- Pedestrian crossings/safety
- Cost

To address these and other potential issues, Milwaukee County will continue regular stakeholder coordination efforts that have been initiated during the East-West BRT Feasibility Study.

4. PRELIMINARY ASSESSMENT OF PROJECT IMPACTS

4.1 Land Use and Socioeconomic Effects

4.1.1 Land Use and Economic Development

The recommended LPA has been defined to be consistent with adopted land use plans and would enhance the economic development potential of the study area by way of improving local accessibility in the regional transit network and providing an alternative to driving. Additionally, the anticipated impacts to the land use and economic development potential of the East-West Corridor would be beneficial to improving access to both regional and local job markets, medical care, and educational institutions.

Businesses adjacent to the line, throughout the corridor, may have concerns regarding impacts of BRT stops on sidewalks, parking, and access to their businesses. While adverse impacts are not anticipated, the environmental process and design phases would need to minimize and/or address any potential impacts to these uses.

Impact Assessment

The recommended LPA is not anticipated to result in significant adverse land use and economic development impacts.

Mitigation Measures

- No special mitigation anticipated.
- Specific mitigation required as listed.

4.1.2 Demographic and Socioeconomic Factors

The recommended LPA would not alter demographic or socioeconomic factors compared to the No Build condition. The recent trend in both Milwaukee and Wauwatosa has been an increase in dense residential developments with the construction of new apartments and condos while parking is limited. Population and employers along the corridor would be afforded enhanced commuting and travel options with the East-West BRT. Overall, the project would have a positive impact within the study area by improving the experience of transit patrons.

Impact Assessment

The recommended LPA is not anticipated to result in significant adverse impacts on overall demographic trends, but would add transportation alternative benefits to residents and employers.

Mitigation Measures

- No special mitigation anticipated.
- Specific mitigation required as listed.

4.1.3 Neighborhoods

The proposed project would improve connectivity between neighborhoods. A diverse list of trip generators in the corridor is presented in Table 4-1.

Table 4-1: Special Trip Generators in the East-West Corridor

Name	Address	City
Milwaukee Regional Medical Center	9455 W Watertown Plank Road	Wauwatosa
Milwaukee County Research Park	10437 W Innovation Drive Ste 123	Wauwatosa
Milwaukee County Zoo	10001 W Bluemound Road	Milwaukee
Wisconsin Lutheran College	8800 W Bluemound Road	Milwaukee
Miller Park (Brewers Baseball)	One Brewers Way	Milwaukee
MillerCoors	3939 W Highland Boulevard	Milwaukee

Name	Address	City
Milwaukee Public Museum	800 W Wells Street	Milwaukee
Northwestern Mutual	720 E Wisconsin Avenue	Milwaukee
Aurora Sinai Hospital	945 12 th Street	Milwaukee
Milwaukee Art Museum	700 N Art Museum Drive	Milwaukee
Marquette University High School	3401 West Wisconsin Avenue	Milwaukee
Potawatomi Casino	1611 West Canal Street	Milwaukee
Henry W. Maier Festival Park (Summerfest)	200 N Harbor Drive	Milwaukee
Bradley Center	1001 N 4th Street	Milwaukee
Milwaukee School of Engineering	1025 N Broadway	Milwaukee
Harley-Davidson Motor Co.	3700 W Juneau Avenue	Milwaukee
Wisconsin Center	400 W Wisconsin Avenue	Milwaukee
Milwaukee Area Technical College	700 West State Street	Milwaukee
Marcus Center for the Performing Arts	929 N Water Street	Milwaukee
Riverside Theater	116 W Wisconsin Avenue	Milwaukee
Milwaukee Theater	500 W Kilbourn Avenue	Milwaukee

Impact Assessment

The recommended LPA is not anticipated to result in significant impacts to neighborhoods.

Mitigation Measures

- No special mitigation anticipated.
- Specific mitigation required as listed.

4.1.4 Property Acquisition, Relocations, and Easements

The East-West BRT, including stations, is expected to operate within existing transportation right-of-way. No property acquisitions are anticipated.

Impact Assessment

The recommended LPA is not expected to require property acquisition or relocations. Easements may be required for the station infrastructure.

Mitigation Measures

- No special mitigation anticipated.
- Specific mitigation required as listed.

4.1.5 Archaeological / Historical and other Section 4(f) Resources

A historical data review and visual assessment of historic structures, parks, and trails was undertaken as part of the East-West BRT project review. A number of resources are listed in the National Register of Historic Places (NRHP) database along the recommended LPA (Table 4-2). The land disturbance for the project will be minimal (for signal upgrades and stations) and is located in an urban, disturbed area and is not expected to affect any archaeological resource.

It is unknown at this time whether any effects to known or unknown cultural resources that may result from the recommended LPA would be considered adverse. The environmental review and/or advanced design will attempt to avoid, minimize, and/or mitigate impacts to cultural resources. This level of more detailed analysis would be completed during the NEPA and Section 106 processes. This detailed analysis will include defining the area of potential effect; conducting a cultural resources survey to identify any currently unknown resources that may be eligible for listing in the NRHP; and evaluating the historical significance of resources identified as eligible for listing.

Table 4-2: Section 4(f) Resources Identified in the East-West Corridor

Name	Address	City	Resource Type
Plankinton Avenue/Wells Street/Water Street Historic District	700 N Plankinton Avenue	Milwaukee	Historic
West Side Commercial	800 N 2nd Street	Milwaukee	Historic

PRELIMINARY ASSESSMENT OF PROJECT IMPACTS

Name	Address	City	Resource Type
Calvary Cemetery	5503 W Bluemound Road	Milwaukee	Historic
Cass & Wells Street	750 N Cass Street	Milwaukee	Historic
East Side Commercial District	625 N Broadway Street	Milwaukee	Historic
Calvary Presbyterian Church	935 W Wisconsin Avenue	Milwaukee	Historic
Central Library	814 W Wisconsin Avenue	Milwaukee	Historic
Dahinden, Edward J., House	3316 W Wisconsin Avenue	Milwaukee	Historic
Eagles Club	2401 W Wisconsin Avenue	Milwaukee	Historic
Federal Building	517 E Wisconsin Avenue	Milwaukee	Historic
Otto F. Fiebing House	302 N Hawley Road	Milwaukee	Historic
Germania Building	135 W Wells Street	Milwaukee	Historic
Church of the Gesu	1145 W Wisconsin Avenue	Milwaukee	Historic
Grand Avenue Congregational Church	2133 W Wisconsin Avenue	Milwaukee	Historic
Northwestern Mutual Life Insurance Company	720 E Wisconsin Avenue	Milwaukee	Historic
Iron Block Building	205 E Wisconsin Avenue	Milwaukee	Historic
Johnston Hall	1121 W Wisconsin Avenue	Milwaukee	Historic
Kilbourn Masonic Temple	827 N 11th Street	Milwaukee	Historic
Milwaukee City Hall	200 E Wells Street	Milwaukee	Historic
Milwaukee County Dispensary and Emergency Hospital	2430 W Wisconsin Avenue	Milwaukee	Historic
Milwaukee County Home for Dependent Children-- Administration Building	9480 Watertown Plank Road	Wauwatosa	Historic
Milwaukee County School of Agriculture and Domestic Economy Historic District	9722 Watertown Plank Road	Wauwatosa	Historic
Old St. Mary's Church	836 N Broadway	Milwaukee	Historic
Oneida Street Station	108 E Wells Street	Milwaukee	Historic
Pabst Theater	144 E Wells Street	Milwaukee	Historic

Name	Address	City	Resource Type
Frederick Pabst House	2000 W Wisconsin Avenue	Milwaukee	Historic
St. James Episcopal Church	833 W Wisconsin Avenue	Milwaukee	Historic
St. John's Roman Catholic Cathedral	812 N Jackson Street	Milwaukee	Historic
Cathedral Square	NE of Jefferson & Wells	Milwaukee	Park
Tripoli Temple	3000 W Wisconsin Avenue	Milwaukee	Historic
Underwood Parkway	Underwood Parkway	Wauwatosa	Park
Oak Leaf Trail	Various	Wauwatosa/Milwaukee	Trail
Hank Aaron State Trail	Various	Milwaukee	Trail
Honey Creek Parkway	Honey Creek Parkway	Milwaukee	Park/Historic
Juneau Playfield	64 th – 66 th Streets, south of Bluemound Road	Milwaukee	Park
O'Donnell Park	Michigan Street and Lincoln Memorial Drive	Milwaukee	Park
Juneau Park	Michigan Street and Lincoln Memorial Drive	Milwaukee	Park
Alfred C. Clas Park	10 Street and Wells Street	Milwaukee	Park
Gravel Sholes Park	NW of Watertown Plank Park and Ride Lot	Wauwatosa	Park
Milwaukee Riverwalk	Milwaukee River Banks	Milwaukee	Park/Trail

Impact Assessment

The proposed project is not anticipated to result in significant adverse impacts, but additional study is needed to determine potential impacts.

Mitigation Measures

- No special mitigation required.
- Specific mitigation may be required and will be determined in compliance with Section 4(f) of the Department of Transportation Act and Section 106 requirements.

4.1.6 Visual Quality and Aesthetics

The proposed project would be located within an existing urban transportation corridor and is compatible with the visual character of the surrounding area. The proposed project would require enhanced transit stations and buses along the alignment. Efforts will be made to consider the local character in the station design. Since most of the corridor currently has regular bus service, it is unlikely these project characteristics could potentially impact the visual quality and aesthetics of the areas adjacent to the proposed project.

Impact Assessment

The proposed project could result in adverse visual impacts to adjacent areas surrounding the proposed projects.

Mitigation Measures

- No special mitigation anticipated.
- Specific mitigation may be required as identified during the environmental process.

4.2 Environment Effects

4.2.1 Hazardous and Contaminated Materials

A review of federal, state, and local databases will be conducted to identify known contaminated sites in the project area. The databases to be searched include leaking underground storage tank facilities, landfill, salvage yards, voluntary investigation and cleanup (VIC) sites, Superfund sites, and dump sites. Potential hazardous substances and contaminated soils that may exist within the project area could affect the project. An evaluation including site visits will be conducted during the NEPA process. If the proposed project disturbs hazardous or contaminated materials, mitigation may be required in order to prevent adverse impacts.

Impact Assessment

The proposed project is not anticipated to result in significant adverse impacts, but additional study is needed to determine potential impacts.

Mitigation Measures

- No special mitigation anticipated.
- Specific mitigation may be required as identified during the environmental process and design.

4.2.2 Water Resources

4.2.2.1 Bodies of Water

The project area has a few bodies of water, the largest being Lake Michigan, which is located just to the east of the project, and crosses over the Milwaukee and Menomonee Rivers. The proposed project would use existing roadway rights-of-way including Wisconsin Avenue, which extends over both the Milwaukee and Menomonee Rivers. Small accidental spills and incidental losses of petroleum grease, fluids, and oils could occur from the buses. Areas exposed to stormwater runoff could contribute small quantities of contaminants to the stormwater system and natural water system. However, potential impacts from the construction and operation of the proposed project on bodies of water in the project area would be minimal.

4.2.2.2 Flood Hazard

A preliminary review of FEMA flood maps identified one floodway (Zone AE) in the Miller Valley. The East-West BRT route travels over the Miller Valley out of the floodway on the Wisconsin Avenue Viaduct. The East-West BRT would use existing roadway rights-of-way including Wisconsin Viaduct; therefore, potential impacts would be minimal.

The proposed project may require permits from various federal and state agencies, since the Menomonee and Milwaukee Rivers are designated as navigable waterways.

Impact Assessment

The proposed project is not anticipated to result in significant adverse impacts.

Mitigation Measures

- No special mitigation anticipated.
- Specific mitigation may be required as identified during the environmental process.

4.2.3 Ecosystems and Natural Resources

A review of natural resources in the East-West BRT study area will need to be completed as part of the NEPA process. However, the project is located in an urban area, within existing transportation rights-of-way, so impacts to ecosystems and natural resources in the project area are expected to be minimal.

Impact Assessment

The proposed project is not anticipated to result in significant adverse impacts.

Mitigation Measures

- No special mitigation anticipated.
- Specific mitigation may be required as identified during the environmental process.

4.2.4 Air Quality

The proposed project would help to reduce dependence on single-occupant vehicles and increase transit ridership. Buses can carry many more people per vehicle than automobiles. The proposed project is expected to remove 6,700 cars a day off the roadways. The East-West BRT would increase the ridership and connectivity between MRMC and downtown Milwaukee, providing an alternative to traveling by car. These factors have the potential to improve air quality through the reduction in vehicle emissions and consumption of fossil fuels.

Impact Assessment

The proposed project is not anticipated to result in significant adverse impacts.

Mitigation Measures

- No special mitigation anticipated.
- Specific mitigation may be required as identified during the environmental process.

4.2.5 Noise and Vibration

The proposed project could result in noise and vibration impacts on different resources along the alignment. Additional studies will be completed during environmental review and advanced design to determine potential noise and vibration impacts and, as needed, to develop and implement mitigation strategies.

Impact Assessment

The proposed project is not anticipated to result in significant adverse impacts.

Mitigation Measures

- No special mitigation anticipated.
- Specific mitigation, if needed, will be identified through a noise and vibration impact analysis that will be conducted as part of the environmental process.

4.2.6 Utilities

The proposed project could result in the relocation of utilities within the BRT alignment and facilities. Additional studies would be completed during advanced concept design to minimize impacts, including development and implementation of mitigation strategies.

Impact Assessment

The proposed project is not anticipated to result in significant adverse impacts, but additional study is needed to determine potential impacts.

Mitigation Measures

- No special mitigation anticipated.
- Specific mitigation would be identified during utility analysis and advanced design.

4.3 Transportation Effects

4.3.1 Public Transportation

The East-West BRT would be the first enhanced bus route for Milwaukee County, serving as the east-west backbone of the system from downtown Milwaukee to the MRMC. Other local bus services, which extend throughout Milwaukee County, can be used to link to the East-West BRT service. In addition, the City of Milwaukee is in the process of constructing a streetcar service that will connect with the East-West BRT system in downtown Milwaukee at a proposed multi-use residential development, The Couture, at Michigan Street and Lincoln Memorial Drive. To prevent duplication of service, the East-West BRT would most likely replace the Goldline bus service that currently provides bus service from downtown Milwaukee to MRMC and west to Brookfield. Other bus services that currently run on Wisconsin Avenue may be relocated as a result of the East-West BRT project. This will be further studied in the NEPA/Engineering phase of the project.

Impact Assessment

The proposed project is not anticipated to result in significant adverse impacts.

Mitigation Measures

- No special mitigation anticipated.
- Specific mitigation would be identified as part of the environmental process.

4.3.2 Roadways

The proposed project would include the East-West BRT operating in the existing roadway right-of-way. The runningway type(s) for the corridor will be determined in the NEPA/Engineering phases as more detailed traffic and parking studies will be performed to determine potential impacts. The goal of the project is to have as much of the corridor in a dedicated BRT lane, but where it is feasible, and whether the dedicated lanes would come from a parking lane or a travel lane, will be determined in the NEPA/Engineering phases of the project. During NEPA, more detailed traffic and parking analysis will be conducted and will focus on areas of transition from dedicated lanes to mixed traffic.

Impact Assessment

The proposed project is not anticipated to result in significant impacts.

Mitigation Measures

- No special mitigation anticipated.
- Specific mitigation, if needed, will be determined as part of the traffic analysis conducted during design.

4.3.3 Non-Motorized Transportation

Some of the communities along the East-West BRT have had concerns about existing pedestrian crossing issues along Bluemound Road and Wisconsin Avenue. With the addition of BRT service utilizing those roadways, questions have been raised about whether the project BRT will improve or make street crossings more difficult. In the NEPA phase of the project, pedestrian access and pedestrian crossings at station locations will be studied in more detail and discussed with the local communities and public stakeholders. Local communities have developed pedestrian and bicycle transportation plans and the BRT project will be consistent with those plans. Currently, Hawley Road is the only segment of the project with concurrent bike paths, but the City of Milwaukee has striped portions of Wells Street for bike use. The recommended LPA is consistent with the adopted plans and would facilitate pedestrian and bicycle activity in the corridor.

Impact Assessment

The proposed project is not anticipated to result in significant adverse impacts.

Mitigation Measures

- No special mitigation anticipated.
- Specific mitigation may be required as identified during the environmental process.

4.3.4 Parking

Off-street parking may be impacted to accommodate a dedicated BRT lane in the corridor. However, in the City of Milwaukee, a travel lane may be used instead of on-street parking for the dedicated BRT lane. There appears to be more potential to use on-street parking for a dedicated BRT lane on Bluemound Road. The East-West BRT will remain within existing rights-of-way and access to adjacent parking lots will remain. In the NEPA/Engineering phases, more detailed traffic and parking studies will be performed to determine potential impacts.

Impact Assessment

The proposed project has the potential to impact parking loss in the corridor:

- 32 percent to 34 percent of available on-street parking in the corridor for dedicated center runningway
- 15 percent to 18 percent of available on-street parking in the corridor for dedicated curb runningway
- 6 percent for mixed traffic

Mitigation Measures

- No special mitigation anticipated.
- Specific mitigation may be required as identified during the environmental process.

4.4 Environmental Justice

Milwaukee County determined the following as they pertain to an area within one-half mile of the proposed project stations:

- 40 percent of the population is minority
- 26 percent of the population live in low-income households
- 23 percent of the population live in zero-car households

These populations have a higher propensity to use transit and are a significant component of the strong existing transit market in the corridor.

Impact Assessment

The proposed project is not anticipated to result in significant, permanent disproportionate adverse impacts on Environmental Justice populations due to the use of existing transportation right-of-way and limited indirect effects that are anticipated (e.g., noise and vibration). Adverse impacts during construction would be temporary and short-term. The minority and low-income populations in the study area would also benefit from long-term improved transit service. Stakeholder outreach to low income and minority populations will be conducted as part of the alternatives analysis during the NEPA/Engineering phases of the project.

Mitigation Measures

- No special mitigation anticipated.
- Additional study and outreach during the NEPA phase will determine the need for mitigation. Further analysis will be conducted during the environmental process in compliance with the Executive Order on Environmental Justice and Title VI of the Civil Rights Act.

4.5 Construction Impacts

Construction is anticipated to result in temporary disruptions to traffic, community services, and utilities. Some businesses in the project area may experience economic impacts during construction. Construction of the BRT would not result in violations to local, state, or federal air, noise, or water quality standards.

Construction would relocate or displace some sidewalks where curb extensions are constructed for transit stops, resulting in temporary impacts for pedestrians. However, pedestrian access would be maintained throughout the construction period. Construction could also result in the temporary relocation of some bus stops.

Construction could also temporarily impact businesses that use sidewalks for vending or outdoor dining. Potential impacts and mitigation as needed would be determined during the NEPA/Engineering phases.

Impact Assessment

The proposed project could result in adverse temporary impacts during construction as identified above but is not anticipated to result in significant permanent impacts.

Mitigation Measures

- No special mitigation anticipated.
- Specific mitigation would be determined during the environmental process and design phase.

4.6 Cumulative Impacts

It is likely that past and future projects throughout the East-West Corridor would include roadway improvements, ongoing land use plans and development, and ongoing development of the MCTS. If a proposed project's impacts are mitigated, the cumulative impacts caused by that project should not contribute to the cumulative effect. As previously discussed, the proposed East-West BRT project between downtown Milwaukee and MRMC would either not result in significant impacts requiring mitigation or the mitigation would alleviate the project's contribution to cumulative considerable impacts. The project will comply with federal, local, and state requirements. The project may have beneficial cumulative impacts in that it would integrate the neighborhoods within the study area and encourage transit-oriented development that is more pedestrian-friendly.

Impact Assessment

The proposed project is not anticipated to result in significant adverse cumulative impacts, although more detail will be considered during the NEPA phase of the project.

Mitigation Measures

- No special mitigation anticipated.
- Specific mitigation would be determined during the environmental process and design phase.

5. PROPOSED CLASS OF ACTION

Pursuant to 23 C.F.R. 771.115, Milwaukee County is providing this report to FTA and requesting FTA to advise on the probable NEPA COA.

The results of an environmental screening completed for the East-West BRT Feasibility Study indicate that the proposed project is not likely to result in significant adverse environmental impacts. Consequently, Milwaukee County believes that the proposed project is a Class III action and will only require the completion of a NEPA-compliant EA, which is anticipated to result in a Finding of No Significant Impact. It is understood that a Class III action could be elevated should potentially significant adverse impacts be identified during the preparation of the EA. As defined in 23 C.F.R. 771.119:

FTA may require an applicant for financial assistance to prepare an Environmental Assessment when the significance of the environmental impact is not clearly established. An EA can result in either a Finding of No Significant Impact (23 C.F.R 771.121) requiring no further environmental evaluation, or identification of potentially significant impacts requiring the applicant to conduct an Environmental Impact Statement.

As part of the NEPA process, Milwaukee County will evaluate the full range of potential social, economic, and environmental impacts as required by NEPA, Section 106, Section 4(f), and other applicable laws and regulations. In addition, Milwaukee County is planning numerous meetings with stakeholders and the public as well as governmental agencies throughout Project Development. A public meeting is proposed to present the findings of the NEPA EA, once FTA approves it for circulation. This public meeting/hearing will occur during the comment period but no less than 15 days after the local Notice of Availability of the EA for review and comment is published. An early public “scoping” meeting may also be held as part of continuing outreach from the end of the alternatives analysis to commencement of the NEPA process. This early “scoping” meeting would present the purpose and need that has been developed during the alternatives analysis and address potential issues.

In addition to the public and agencies involved during the East-West BRT Feasibility Study, the NEPA process for the recommended LPA is likely to involve additional agencies, including those identified below. Milwaukee County also anticipates initiating the development of an agency coordination plan as soon as a NEPA COA is determined with FTA.

- State Historic Preservation Office
- Wisconsin Department of Natural Resources

6. REFERENCES

East-West BRT Feasibility Study documents are or will be available on the project website, <http://www.eastwestbrt.com>

- Infographic: The Basics of BRT
- Public Engagement Document
- Study Purpose and Need Statement
- Technical Report: Existing Conditions
- Evaluation and Screening Framework
- Tier 1 Evaluation
- Tier 2 Evaluation
- Locally Preferred Alternative