the milwaukee STREETCAR project

City of Milwaukee, Wis.

Draft Environmental Assessment

July 7, 2011

DRAFT ADMINISTRATIVE COPY FOR INTERNAL REVIEW

Prepared by the City of Milwaukee
in cooperation with the Federal Transit Administration

City of Milwaukee

U.S. Department of Transportation
Federal Transit Administration

MILWAUKEE STREETCAR

ENVIRONMENTAL ASSESSMENT

Milwaukee, Wisconsin

Prepared in accordance with:

National Environmental Policy Act of 1969 (42 U.S.C. 4332 et. seq.), as amended

Federal Transit Act (U.S.C. 5301 et. seq.) as amended

Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) (Public Law 104-59)

By the:

The City of Milwaukee, Wisconsin

In cooperation with:

The Federal Transit Administration, U.S. Department of Transportation

Date of Approval	INSERT NAME, Regional Administrator Federal Transit Administration
Date of Approval	INSERT NAME, TITLE City of Milwaukee

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RESPONSIBLE AGENCIES

Lead Agency: Federal Transit Administration

Project Sponsors: City of Milwaukee

A hard copy of the document is available for public inspection at the Federal Transit Administration field office at the following location:

Federal Transit Administration Region V
200 West Adams Street, Suite 320
Chicago, Illinois 60606

To view an electronic copy of this document, please visit the project Web site at www.themilwaukeestreetcar.com.

Hard copies of the document will be available at:

Milwaukee Department of City Development
809 Broadway, 1st Floor
Milwaukee, WI 53202

Legislative Reference Bureau, Milwaukee City Hall
City Hall, Room B-11
200 East Wells Street
Milwaukee, WI 53202

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ABSTRACT

The proposed Milwaukee Streetcar project would establish a starter streetcar system in and around downtown Milwaukee connecting workers, visitors and residents to key destinations and attractions.

This Environmental Assessment (EA) considers the effects of a streetcar starter system in the City of Milwaukee. The alternative reviewed in the EA was selected through an Alternatives Analysis conducted as part of the Milwaukee Streetcar project. This analysis resulted in a recommended locally preferred alternative (LPA) that provides streetcar service from the Milwaukee Intermodal Station on St. Paul Avenue, through downtown to Ogden Street on the City's northeast side (initial route). Proposed route extensions could expand the system north along 4th Street on the west side of the Milwaukee River and along the Prospect and Farwell corridors to the Brady Street area.

This EA considers the potential short-term and long-term effects of the project including social and economic factors, physical factors and indirect and cumulative effects. The analysis also includes a summary of the project's public involvement activities and describes the project's cost estimates.

SUBMITTING COMMENTS

Comments on this environmental assessment must be received at the City of Milwaukee by 5:00 PM CST, INSERT DAY OF THE WEEK AND DATE.

Comments may be submitted to the City of Milwaukee in writing, by email, by website, or by telephone to the City's public involvement coordinator at:

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PROJECT NOMENCLATURE

The locally preferred alternative (LPA) reviewed in this Environmental Assessment (EA) is a streetcar starter system in the City of Milwaukee. In the EA and supporting documentation, it is described as two separate phases as follows:

1. Initial Route (also known as Package 1, initial phase, or initial system)
2. Route Extensions (also known as Package 2)

The initial route and route extensions are mapped in Figure 1.

Figure 1: Locally Preferred Alternative. Initial Route and Route Extensions

GLOSSARY OF TERMS AND ACRONYMS

Acronyms and Abbreviations

ADA	American Disabilities Act of 1990
AHI	Architecture & History Inventory of the Wisconsin Historical Society
APE	Area of Potential Effect
AQMA Air	Quality Maintenance Area
AQMP Air	Quality Maintenance Plan
AST	Aboveground Storage Tank
BMP	Best Management Practice
CAAA	Clean Air Act Amendments
CERCLIS Co	mprehensive Environmental Response Compensation and Liability Information System
CFR	Code of Federal Regulations
CO Carbon	Monoxide
dBA A-weighted	decibel
DBE	Disadvantaged Business Enterprise
DNR	Wisconsin Department of Natural Resources
DOE	Determination of Eligibility for the National Register of Historic Places
EA Environm	ental Assessment
EBE	Emerging Business Enterprises
EC Engineering	Control
EJ Environm	ental Justice
EPA	U. S. Environmental Protection Agency
ERNS	Emergency Response Notification System
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
FTA	Federal Transit Administration
HMA Hazardous	Materials Assessment
HNTB HNTB	Corporation
I-794	Interstate Highway 794
IC Institutional	Control
Ldn	Day-night sound level
LOS	Level of Service
LPA	Locally Preferred Alternative
LUST	Leaking Underground Storage Tank
MCTS	Milwaukee County Transit System
MOA	Memorandum of Agreement
MORE	Milwaukee Opportunities for Restoring Employment Ordinance
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFRAP	No Further Remedial Action Planned
NHPA	National Historic Preservation Act of 1966
NOX Nitrogen	Oxides
NRHP	National Register of Historic Places
OCS	Overhead Contact System
ppb	Parts per billion

ppm Parts	per million
RCRA	Resource Conservation and Recovery Act
RTP	Regional Transportation Plan
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SEWRPC	Southeast Wisconsin Regional Plan Commission
SHPO	State Historic Preservation Officer
SWL	Solid Waste Landfill
TIF	Tax Incremental Finance District
TIP	Transportation Improvement Program
TOD	Transit Oriented Development
TPSS	Traction Power Substation
USFWS	United States Fish and Wildlife Service
UST Underground	Storage Tank
VCP	Voluntary Clean-up Program
VDC Volts	Direct Current

Glossary of Technical Terms

Americans with Disabilities Act of 1990 (ADA) – The legislation defining the responsibilities of and requirements for transportation providers to make transportation accessible to individuals with disabilities.

Best Management Practices (BMPs) – In this document Best Management Practices refers to controlling stormwater runoff to minimize the release of soils and pollution into the water system. BMPs include primarily erosion control measures that capture soils before they are released either into nearby storm sewers or natural waterways, such as the Milwaukee River. To implement the national Clean Water Act, which regulates water pollution, the Department of Natural Resources and the City require the application of BMPs when excavation will be taking place.

Capital Costs – The expenses incurred within the year related to the construction of facilities, and purchase of vehicles and equipment.

Disadvantaged Business Enterprise (DBE) – Small business owned and operated by socially and economically disadvantaged individuals with at least a 51% interest. African Americans, Hispanics, Native Americans, Asian-Pacific and Subcontinent Asian Americans, and women are presumed to be socially and economically disadvantaged. Other individuals can also qualify as socially and economically disadvantaged on a case-by-case basis.

Emerging Business Enterprise (EBE) – An EBE is defined by the City of Milwaukee as a small business that is owned, operated and controlled by one or more individuals who meet three out of the five following criteria: are at a disadvantage with respect to education, employment, residence or business location, at a social disadvantage, and have a lack of business training.

Environmental Justice (EJ) – The fair treatment and meaningful involvement of all people regardless of race, color, national origin, educational level, or income with respect to the development, implementation, and enforcement of environmental laws.. Formal federal policy on environmental justice was established in February 1994 with Executive Order 12898 *Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations.*

Finding of No Significant Impact (FONSI) – The lead agency will make this finding if after the environmental assessment is prepared and comments received and addressed they find that the project is not likely to have any significant impacts. The lead agency for the Milwaukee Streetcar is the Federal Transit Administration.

Headways – The time between two streetcars travelling on the same route, in other words, the time between streetcars at a streetcar stop.

Interstate Cost Estimate funding - Federal funds distributed to states for transportation improvements. The ICE fund apportionment for the Milwaukee Streetcar was based on Interstate completion needs per State and compared with overall needs.

Low Floor Boarding – A low floor streetcar vehicle having one or more entrances that have no steps between the entrances and the passenger cabin. Low floor boarding improves accessibility for passengers and is well suited for people who use push chairs, wheelchairs, or who have difficulty walking up and down stairs.

Milwaukee Intermodal Station – An intercity transit hub that is utilized by both bus and train services. It is a center for regional bus lines carrying passengers on Greyhound Lines, Jefferson Lines, Indian Trails, Lamers, and Coach USA. Passenger rail service to the Intermodal Station is provided by Amtrak through the Hiawatha and Empire Builder train routes.

National Environmental Policy Act (NEPA) – (40 CFR §§ 1500–1508). The federal policy that requires consideration of the potential impacts of federal actions on the environment. To assist Federal agencies in effectively implementing the environmental policy the Council on Environmental Quality (CEQ) issued the guidance document: *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*.

National Register of Historic Places (NRHP) – The National Register of Historic Places is the official list of historic places in the United States worthy of preservation. Authorized by the National Historic Preservation Act of 1966, the National Park Service's National Register of Historic Places is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America's historic and archeological resources.

Opticom – The City of Milwaukee traffic signals are currently working with 170 controllers that use emergency vehicle preemption (EVP) through the "Opticom" system. Vehicle detection equipment such as Opticom detects a signal sent when the driver pushes a button to activate a light signal to allow vehicles to travel through signalized intersections.

Overhead Contact System (OCS) – Overhead lines situated over the streetcar tracks, used to transmit electrical power to the streetcar. The overhead lines are mounted on a support system comprised of poles and mast arms. The power is transmitted by means of a sliding contact between the overhead wire and the current collector (pantograph) of the streetcar.

Park Once – Park Once is a parking enhancement concept designed to reduce traffic congestion and improve visitor friendliness. Park Once encourages downtown employees and visitors to only park once during their visit by relying on pedestrian way-finding signage, real-time parking signage and public forms of transportation. Elements of the Park Once concept include:

- Newly installed pedestrian way-finding signs, which divide downtown into districts and steer visitors to key points of interest

- Static parking signs similar to directional signage that guides visitors to parking options
- Dynamic parking signs that direct drivers to garages in a particular downtown district and provide real-time information on the number of parking spaces available

SAFETEA-LU – On August 10, 2005, the President signed into law the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). This federal act guaranteed funding for highways, highway safety, and public transportation totaling $244.1 billion.

Section 4(f) – Section 4(f) of the U.S. Department of Transportation regulations protects publicly owned historic properties, parklands, wildlife refuges and recreational areas from impacts from transportation projects.

Section 106 – Section 106 of the National Historic Preservation Act (Federal historic preservation regulations).

Streetcar – The type of streetcar proposed for this project is a modern public transit vehicle that runs in mixed traffic on rails embedded into the street. It is electrically powered using an overhead contact system.

Streetcar Stops – The streetcar stops or stations are locations where passengers can enter or exit a streetcar vehicle. They are similar in size and fashion to bus stops with some of the stops including signage and a shelter for passengers waiting for the streetcar to arrive.

Tax Incremental Finance – Is when a municipality borrows money to spend it on new streets, utilities, environmental cleanup work or other project expenses. The municipality can then recover those funds through the new project's property taxes. Once the municipality's debt is paid off, the project's property taxes go back to the municipality, school district and other local governments.

Title VI – As in Title VI of the Civil Rights Act of 1964, prohibits discrimination on the basis of race, color, and national origin in programs and activities receiving federal financial assistance.

Transit oriented development (TOD) – This term is used to describe urban development that surrounds access to transit stops or stations. It is often made up of the mixed land uses that are attracted to transit including workplaces, homes, and shopping districts.

Wisconsin Center District – The Wisconsin Center District (WCD) is a government body created under Wisconsin State Statute in 1994 to fund, build and operate the Midwest Express Center (now Frontier Airlines Center) in downtown Milwaukee, and continue operating the existing venues now called the U.S. Cellular Arena and Milwaukee Theatre. Not a unit of state, county or city government, the WCD is instead a semi-autonomous municipality called a "district," meaning its leaders are appointed and it can issue bonds and collect taxes within strict limits. The Wisconsin Center District has been the Federal Transit Administration grantee for the Milwaukee Connector Study and Milwaukee Streetcar project, through partnerships with local government bodies including the City of Milwaukee.

1. EXECUTIVE SUMMARY

The City of Milwaukee proposes to construct a starter streetcar system in downtown Milwaukee and the nearby neighborhoods. This executive summary explains the basics of the project, project need and the project's effects.

1.1 PURPOSE AND NEED

The **purpose** of the project is to implement a starter streetcar system with modern vehicle technology that circulates people around downtown, links downtown destinations, activity centers and neighborhoods and supports planned development.

The **need** for the streetcar project is based on the following issues:

- Project need 1: Milwaukee's downtown is a large area with dispersed activity centers that has experienced a resurgence of new development over the past 15 years.
- Project need 2: Milwaukee's downtown lacks high quality transit that circulates people around downtown and adjacent neighborhoods and destinations.
- Project need 3: Improved transit services and facilities are needed to support local land use and development goals and objectives.
- Project need 4: Legislation has set forth a requirement to spend reserved federal dollars on a downtown rail circulator.

1.2 ALTERNATIVES ANALYSIS

The City of Milwaukee developed three streetcar route alternatives along with their respective sub-options and potential route extensions. Each route focused on creating a streetcar transit connection between the major business and entertainment areas of downtown Milwaukee with nearby neighborhoods that contain high density residential housing. Each alternative was developed with an initial system that would be paid for with existing federal Interstate Cost Estimate funds and a sub-option. In addition, each alternative considered potential route extensions that would only be constructed if additional funding could be secured.

Figure 8 is a complete summary of the alternatives analysis process. Descriptions and maps of each alternative are included in the Environmental Assessment. Technical analysis for each alternative was completed. The City conducted a number of public outreach meetings and stakeholder briefings to obtain feedback on the route alternatives. The Environmental Assessment includes a detailed description of the public outreach efforts.

Alternatives were ranked based on a number of criteria and evaluation factors, such as public interest, ridership, engineering, cost, effects on traffic operations, environmental justice considerations, future land use and economic development potential, and how well the alternatives met the City's adopted long range goals. Details of the ranking process are included in the EA. Using this ranking and elimination process the City narrowed the alternatives down until they came to a "locally preferred alternative" (LPA), which is the alternative analyzed in the EA.

A No Action Alternative is also considered in the Environmental Assessment. Even though the No Action Alternative would not affect biological, social, and cultural resources in the study area, it also would not

address the purpose and need for the project and it would not address the goals of the streetcar project. It is not consistent with Milwaukee's Downtown Area Plan. It would not be consistent with the intent of the project's federal funding.

1.2.1 Locally Preferred Alternative (LPA)

The City selected Alternative 1-2A, which includes an initial route that connects the Milwaukee Intermodal Station on St. Paul Avenue and circulates through downtown. The LPA also includes route extensions along 4th Street/Juneau Avenue and Prospect/Farwell Avenues. These extensions will be constructed if funds become available. The initial route would cover 2.05 miles while the extensions would be 1.5 miles for a total of 3.5 miles. A detailed description of the LPA route is included in the EA, including the routes and capital improvements including the tracks, stops and shelters, an overhead electrical power system including substations, poles and wires, and a maintenance and storage facility. The streetcar vehicle would be a modern streetcar on a fixed guideway similar to those used in the Portland, Tacoma and Seattle. The LPA will require improvements to the roadways to ensure safety and good traffic flow. These improvements will include lane reconfigurations, traffic signals, transit-only lanes, bike lanes. The project will be coordinated with other roadway projects.

The EA also describes the streetcar operating characteristics including service frequency and hours of operation. The streetcar would operate seven days a week with frequent service during busy times. The streetcar would have 10 to 15 minute headways depending on the time of day.

The streetcar service will be integrated with other modes so that people can conveniently transfer from one mode to another to get to their final destination quickly and easily. The streetcar will importantly have a stop next to the Milwaukee Intermodal Station to provide connections to passenger rail service, regional bus service and the Milwaukee County Transit System (MCTS) bus service.

Ridership on the initial route is expected to be 1,800 rides per day and 588,000 rides per year. The route extensions are expected to increase ridership to 3,600 rides per day and 1.16 million annual riders. Ridership is expected to increase by 19% by 2030.

The capital costs for the initial streetcar system are estimated to be $64.6 million. The route extensions would add $40.2 million for a total combined cost of $104.8 million. The streetcar route with extensions has an estimated annual Operation and Maintenance cost of $2.65 million for the initial route and $4.89 million with both route extensions based on the route characteristics and service plan.

1.3 ENVIRONMENTAL RESOURCES, IMPACTS AND MITIGATION

The environmental impacts of the Streetcar locally preferred alternative are summarized in the following tables. The Environmental Assessment provides greater details. The alternative of not constructing the project – the No Action Alternative - was eliminated early on in the Alternative Analysis phase but is considered in the Environmental Assessment as a baseline against which the Streetcar LPA is compared. Throughout the EA, for each resource evaluated, both the potential impacts of the Streetcar LPA and the No Action Alternative are discussed. The following table summarizes the potential effects of the Streetcar LPA.

Table 1: Summary of Effects

FACTORS	SUMMARY OF EFFECTS AND MITIGATION
SOCIAL & ECONOMIC FACTORS	
Land Use	The landscaped area of one parking lot will be impacted. Engineering designs will minimize impacts to parking spaces and maintain a five foot wide sidewalk. Property acquisition will follow the City's eminent domain process. The City will work with the property owner to replace landscaping as necessary. Land use at the maintenance facility will change from strictly freeway use to a building located under the freeway bridges. The City expects the introduction of streetcar downtown to have a positive indirect effect by promoting transit oriented development and increasing pedestrian activity downtown. See Indirect Effects below.
Economic Development	The City expects the streetcar to be a catalyst for reinvestment downtown. Streetcar is expected to create jobs to benefit local and regional economy and so it may create opportunity for disadvantaged businesses. Businesses along the streetcar route will be inconvenienced during construction as access is reduced but not eliminated. The City will employ typical construction management practices by avoiding full access closures, providing temporary alternative access and signage, and timely communication with businesses. Construction will be done in small segments. The City will hold business outreach meetings to inform them of what to expect before, during, and after construction. The City will use support tools including but not limited to a website, a handbook of tips and resources, signage, project summaries and regular updates about the project. The City's community liaisons will serve as the lead point of contact and the City will utilize its *Public Works Support for Business Program*. The City expects the introduction of streetcar downtown to have a positive effect by promoting transit oriented development and increasing pedestrian activity downtown. See Indirect Effects below.
Environmental Justice	Transit services will be increased and won't affect existing transit services. This will provide added choice for disadvantaged populations in the study area. The City will continue to seek the input of environmental justice populations as final designs are developed and through construction.

FACTORS	SUMMARY OF EFFECTS AND MITIGATION
Historic and Archaeological	No known historic or archaeological resources will be impacted. If Archaeological remains are discovered during construction, work will stop, the area will be protected and the State Historic Preservation and Burial Sites Preservation Offices, the Federal Transit Administration, and the City of Milwaukee will be notified as required. The site will be evaluated for significance and if necessary mitigation through avoidance or recovery will be applied before work proceeds. Coordination with the State Historic Preservation Office will continue.
Aesthetics	Streetcar stops and the overhead electrification system will introduce new visual elements into the downtown. Streetcar stops and elements will be designed to fit in with and enhance the streetscape and visual appearance of downtown. Overhead wires will utilize existing streetlight and traffic signal poles to reduce the potential for clutter in the street and make the OCS less visible. Mature healthy trees will be avoided where practical. The City will replace street trees as is appropriate to the character of the project's design.
Section 4(f) Resources	No Section 4(f) resources will be used for this project and so no mitigation measures are proposed.
Safety and Security	The project includes a number of design features that will promote passenger and driver safety and the vehicles and stops will be accessible for disabled passengers. This includes design elements on the streetcar vehicles and at stops that consider crime prevention. Good visibility will be maintained through the use of transparent shelters and lighting at the stops. Fare collection will be at meters instead of on vehicles. Streetcar operators will receive safety training. Stops will be designed for safe accessibility. Warning signage and or pavement marking will direct pedestrians, bicyclists, and motorcyclists traveling across or along the tracks. Where there is through-traffic, bike lanes will be kept separate from the track lane, and transition zones will be provided so bikes can cross the tracks at 90 degree angles. Bike lanes will stay to the right of the stop between a stop island and the curb and relocated as necessary to the opposite side of one-way streets to avoid conflicts. The City will implement an education program before the streetcar becomes operational to prepare the public.
PHYSICAL FACTORS	
Air Quality	The project is in conformance with the Clean Air Act and related regulations. No mitigation measures are proposed.

FACTORS	SUMMARY OF EFFECTS AND MITIGATION
Noise & Vibration	Noise and vibration analyses indicate that there are eight residential buildings that would be exposed to noise levels 2 dB above the moderate impact threshold. The streetcar vehicle will be designed to eliminate this impact. Maintenance of the wheels and rails will minimize noise. Projected ground-borne vibration impacts will not exceed the FTA's criteria. Proper maintenance will keep vibration low.
Hazardous Materials	The construction activities that take place within the public right of way for track construction are not expected to expose hazardous materials. The maintenance facility site may include historical fill such as brick fragments, wood, coal, cinders, and slag, as noted in the 2002-2003 geotechnical soil borings performed at the site. Proper management of the potentially impacted historic fill/soil during construction will be required as regulated by the Wisconsin Department of Natural Resources. If the results of a Phase II hazardous materials assessment on the Maintenance Facility site indicate the project is impacted with contaminants above regulatory standards, "Special Provisions and a Notice to Contractors" will be developed and incorporated into the construction specifications to address the impacted soils.
Traffic & Transportation *Vehicular Traffic*	The streetcar will introduce a new mode of transportation, running in mixed traffic. Streetcars are not expected to negatively affect any of the existing transit services offered downtown. Bus stop locations may be reevaluated so that they integrate well with the streetcar. The City will contact MCTS, Megabus, and other intra-city bus services to relocate the 4th Street passenger loading zone to a similarly convenient location and to coordinate streetcar and bus service where appropriate. The streetcar operations could affect vehicular traffic flow and a number of mitigation measures to eliminate conflict are proposed to address these including lane reconfigurations and new and adjusted traffic signals. The City will make the necessary improvements to lane configurations; install new traffic signals; install transit signal phases and Opticom; and add a signal phase to the existing signal network with the goal being that all intersections remain at an acceptable level of service.
Bikes and Pedestrians	The streetcar is expected to benefit pedestrians and bicyclists by providing a new transit system that can extend walk and bike trips. Design measures are proposed to maximize bicycle and pedestrian safety. Design features discussed under Safety will be implemented.

FACTORS	SUMMARY OF EFFECTS AND MITIGATION
Parking	The project is not expected to substantially affect parking with the removal of about 1.4% of the total 7,750 on-street parking spaces in the study area. Existing downtown parking structures and on street parking spaces are expected to be able to accommodate these spaces. The City will coordinate with affected businesses and residents to inform them of changes to parking before streetcar service begins.
Loading Zones	Two loading zones will be eliminated. Alternative loading zones are available. Some loading patterns will be altered. Business outreach will continue with affected businesses to inform them of changes to loading zones before streetcar service begins.
Driveways	Three driveways will be affected on one parcel. Access from the site's other driveways as well as from public alleys is available. The City will work with the owner of the affected lot to ensure that driveway access is provided.
Intercity Transportation	Streetcar is expected to benefit intercity travelers by providing needed intra-city connections to places downtown. No mitigation is proposed.
Construction	Construction activities will have temporary impacts to existing bus stops and vehicular traffic while construction is underway. Construction will create temporary noise and dust. The City will utilize its *Public Works Support for Business Program* to help businesses before and during construction, including a handbook of tips and resources, signage, project summaries, and regular updates about the project. The City will coordinate closely with MCTS to notify riders of bus or trolley changes during construction. The City will coordinate with property owners to manage and minimize access closures and relocations during construction. Construction management practices to minimize business impacts will be implemented. Construction dust and noise will be controlled. Erosion control measures will be developed and applied to prevent soils from tracking or running off site during construction. No changes to park access will be made during construction. The City will continue to coordinate with utility providers to minimize disruption. Construction and staging areas will be maintained and restored to original condition after construction.
Utilities	Utilities primarily exist underground throughout the streetcar corridors. The City is coordinating with utility providers and the track design and construction process will minimize impacts to existing utilities within the public right of way. The City will continue to coordinate with utilities during the construction phase to avoid interruptions to utility services.

FACTORS	SUMMARY OF EFFECTS AND MITIGATION
Energy Use	For the initial route the total annual energy consumption would be approximately 1,400,000 kilowatt hours. The total annual energy consumption for the initial system and the extensions would be approximately 2,450,000 kilowatt hours. The project will move people from their cars to the streetcar. The project team estimates an annual reduction of 205,000 vehicle miles traveled for the initial route and the route extensions. No mitigation measures are proposed.
Stray Current & Corrosion	Design criteria have been developed to minimize stray current. The City will implement corrosion control measures that conform or exceed the latest versions of relevant local, state, and national codes and standards. No adverse impacts are expected. The rail will include the installation of a rubber boot and a dielectric coating may also be applied to the rail components. The City will work with utilities to implement feasible design methods to minimize stray current.
Livability & Sustainability	The streetcar would support sustainability by reducing automobile travel and thereby reducing green house gas emissions. This additional transit option and associated transit oriented development will support compact neighborhoods and improve connections to other modes of transportation. No mitigation measures are proposed.
Water Quality	Water quality impacts are not expected due to the application of best management practices for erosion control during construction. No new impervious surfaces that would increase water runoff are expected since the project area is currently developed. The City will implement a Stormwater Management Plan and an Erosion and Sediment Control Plan for construction. Construction will include Best Management Practices to minimize soil erosion and runoff. The City will continue to coordinate with the DNR as design progresses. If dewatering is required, water will be pumped into a sediment basin as needed prior to discharge.
Wetlands and Floodplains	There will be no direct impacts to wetlands or floodplains. The City will use Best Management Practices to ensure protection of off-site water resources.
Biological Impacts	No impacts to wildlife or plant communities are expected. No mitigation measures are proposed.

FACTORS	SUMMARY OF EFFECTS AND MITIGATION
Indirect Effects	The increased mobility from the streetcar project in combination with local development policies that are favorable for development are likely to contribute to growth induced effects within the study including a concentration of development, increased densities and accelerated growth rates around the stops. These effects may facilitate new housing development; encourage the reuse of historic properties; improve the tourism and entertainment industry; and increase the City's economic development potential. The growth inducing effects of the streetcar project are considered positive because they are consistent with the City's long range plans. Any negative aspects associated with development such as increased stormwater, removal of historic structures and increased demand for on-street parking would be managed by local land use and development policies and regulations.
Cumulative Effects	Given the history of urban development within the study area, there are many past, present and reasonably foreseeable future actions that may contribute to positive cumulative effects including continued land use and economic development consistent with City plans and policies; increased mobility for environmental justice populations, elderly and disabled persons; new transit service, and more bike lane mileage. Any potential negative cumulative effects such as increased traffic congestion, removal of on-street parking, increased noise, access interruptions during construction would be managed by project design and construction strategies and by City policies and regulations.

2. PURPOSE AND NEED FOR ACTION

The City of Milwaukee proposes to construct a starter streetcar system in downtown Milwaukee and the nearby neighborhoods. The purpose and need for the Milwaukee Streetcar is discussed in this section following some background information.

2.1 PROJECT BACKGROUND

The Milwaukee Streetcar project originated from the Milwaukee Connector Study that was initiated to carry out transit recommendations from previous transportation planning efforts that took place during the 1990's. At the onset, the Milwaukee Connector Study was focused on evaluating transit improvements in and around downtown Milwaukee. However, the study area expanded after a series of meetings with the public in 2000 showed a need to connect people to places, not only in downtown, but to surrounding neighborhoods. During the 2000's many different routes and types of transit technologies were evaluated, including light rail, bus and bus rapid transit. Between 2001 and 2004, the study focused on evaluating light rail transit and bus technologies. The study area also expanded to included potential routes north to Highland Avenue west of I-43, along Fond du Lac Avenue to North Avenue, 44th Street and Miller Park, and Canal Street in the Menomonee Valley. Multiple alignments were studied to connect Brady Street, Canal Street, the Historic Third Ward, 30th Street and Fond du Lac Avenue. At the request of Milwaukee County, a connection to Miller Park was included at the western terminus in all route alternatives. Figure 2 shows a map of alignments that have been considered as part of the Milwaukee Connector study.

Throughout the study, ongoing public meetings were held, focus groups were conducted and workshops were held to study land use, ridership, routes, vehicle technologies, financing, and governance. In addition, hundreds of small group meetings were conducted as part of an aggressive community outreach effort. The meetings and outreach efforts focused on including the public in the decision making process. Through the course of the study and public outreach, further additions were made to the study area to include additional near-downtown neighborhoods, dozens of routes options and numerous vehicle technologies, such as bus rapid transit and streetcar. Each option was weighed against the goals of improving the transit system for transit riders, increasing transit use (ridership) and encouraging economic development along the routes.

In January of 2004, the Steering Committee approved a two-route system that would utilize guided bus technology, referred to as Guided Street Tram. An east-west line extended from Miller Park to downtown and continued northeast to the University of Wisconsin-Milwaukee. The other route ran southeast along Fond du Lac Avenue from Burleigh Street into downtown and the Third Ward. Resolutions supporting this system were approved by the Milwaukee Common Council and the Milwaukee County Board. However, the respective resolutions were vetoed due to concerns about cost.

Then, in the spring of 2007, the Milwaukee Connector Study project sponsors, comprised of representatives from Wisconsin Center District, Metropolitan Milwaukee Association of Commerce, Milwaukee County and the City of Milwaukee, initiated the next phase of the study with a refocused effort to connect downtown with adjacent neighborhoods using modern fixed rail transit technology. During this time, the City of Milwaukee was beginning to update their Downtown Plan and recognized the value of a modern streetcar transit system to attract and focus their economic development initiatives. At the same time, a bus rapid transit route that would connect the Milwaukee County Grounds to the west with downtown and the University of Wisconsin-Milwaukee to the east was also being evaluated.

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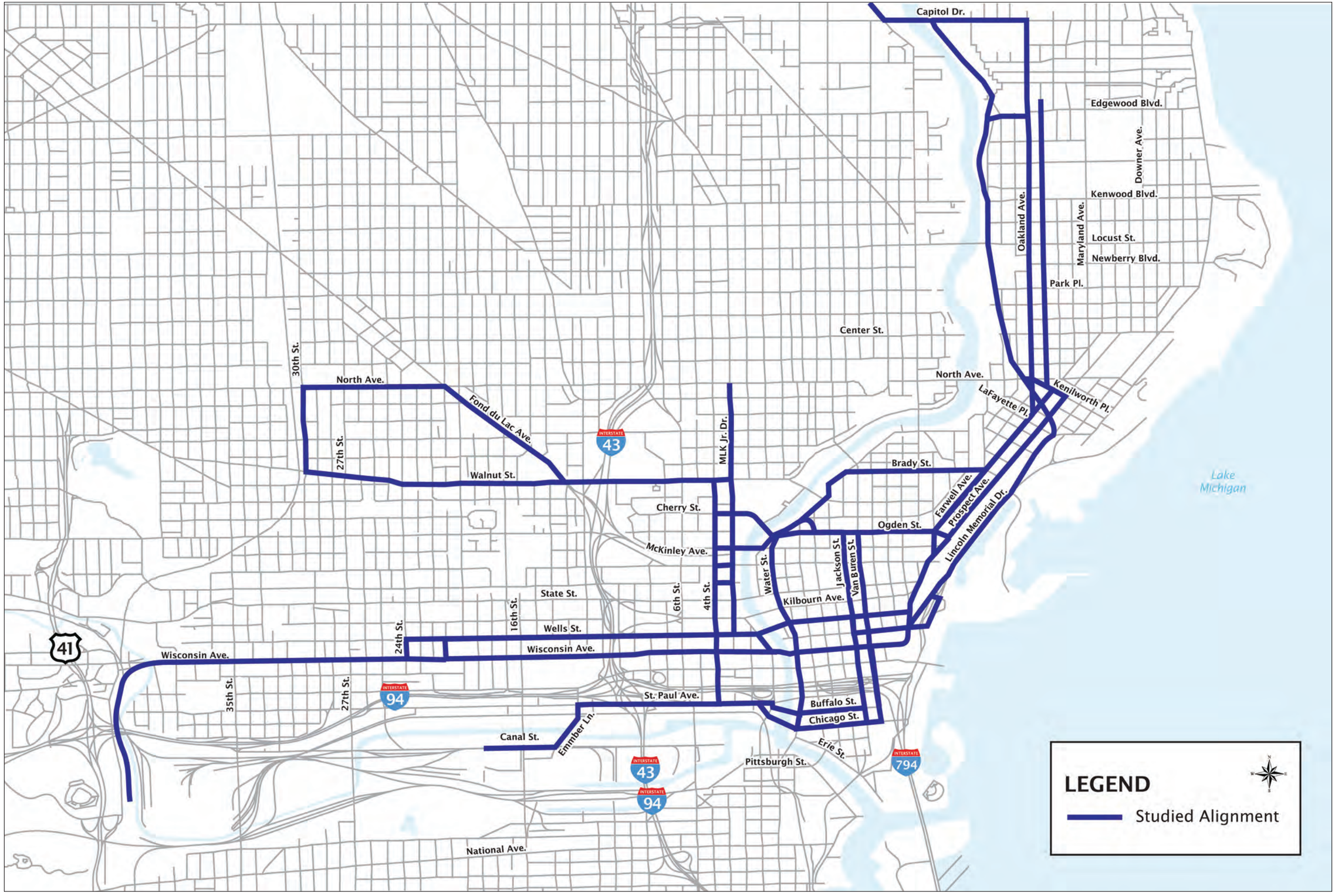
Figure 2: Previously Studied Alignments



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In February 2009, the project sponsors held public scoping meetings to introduce the new project phase of the Milwaukee Connector Study. Shortly thereafter, in March 2009, the Federal Omnibus Appropriations Act of 2009 split $91.5 million in Interstate Cost Estimate funding reserved for the results of the Milwaukee Connector Study. It directed 60% of the money to the City of Milwaukee for a downtown fixed rail circulator and 40% of the money to Milwaukee County for energy efficient buses.

Since the legislation was passed, the City of Milwaukee completed an alternatives analysis for the purpose of selecting a streetcar alignment. The project is moving forward with the Project Development phase including Preliminary Engineering and the Environmental Assessment on the locally preferred alternative (LPA) approved by the Milwaukee Connector Study Steering Committee.

2.2 PROJECT PURPOSE AND NEED

The **purpose** of the project is to implement a starter streetcar system with modern vehicle technology that circulates people around downtown, links downtown destinations, activity centers and neighborhoods and supports planned development.

The **need** for the streetcar project is based on the following issues:

- Project need 1: Milwaukee's downtown is a large area with dispersed activity centers that has experienced a resurgence of new development over the past 15 years.
- Project need 2: Milwaukee's downtown lacks high quality transit that circulates people around downtown and adjacent neighborhoods and destinations.
- Project need 3: Improved transit services and facilities are needed to support local land use and development goals and objectives.
- Project need 4: Legislation has set forth a requirement to spend reserved federal dollars on a downtown rail circulator.

Each of these topics will be discussed in greater detail below.

2.2.1 Project Need 1 – Large Downtown with Dispersed Activity Centers

Milwaukee's downtown has experienced a renaissance over the past 15 years with the development of new housing, retail and entertainment facilities. However, the relatively large area of downtown can be a challenge for residents and visitors to reach their destinations. The recent development trends affecting the study area and its existing mobility challenges are discussed below.

Study Area

The streetcar study area encompasses approximately 1,200 acres and incorporates a large portion of downtown Milwaukee including the central business district in East Town and the large civic and entertainment uses in the Westown area. In addition the streetcar study area includes several mixed use neighborhoods including the Historic Third Ward, Yankee Hill, Lower East Side and Brady Street. It also includes a portion of the Park East and Pabst Brewery redevelopment areas. The streetcar study area and the neighborhoods within the study area are shown on Figure 3. The boundary for downtown as defined by the 2010 Downtown Area Plan is also shown on Figure 3 for reference.

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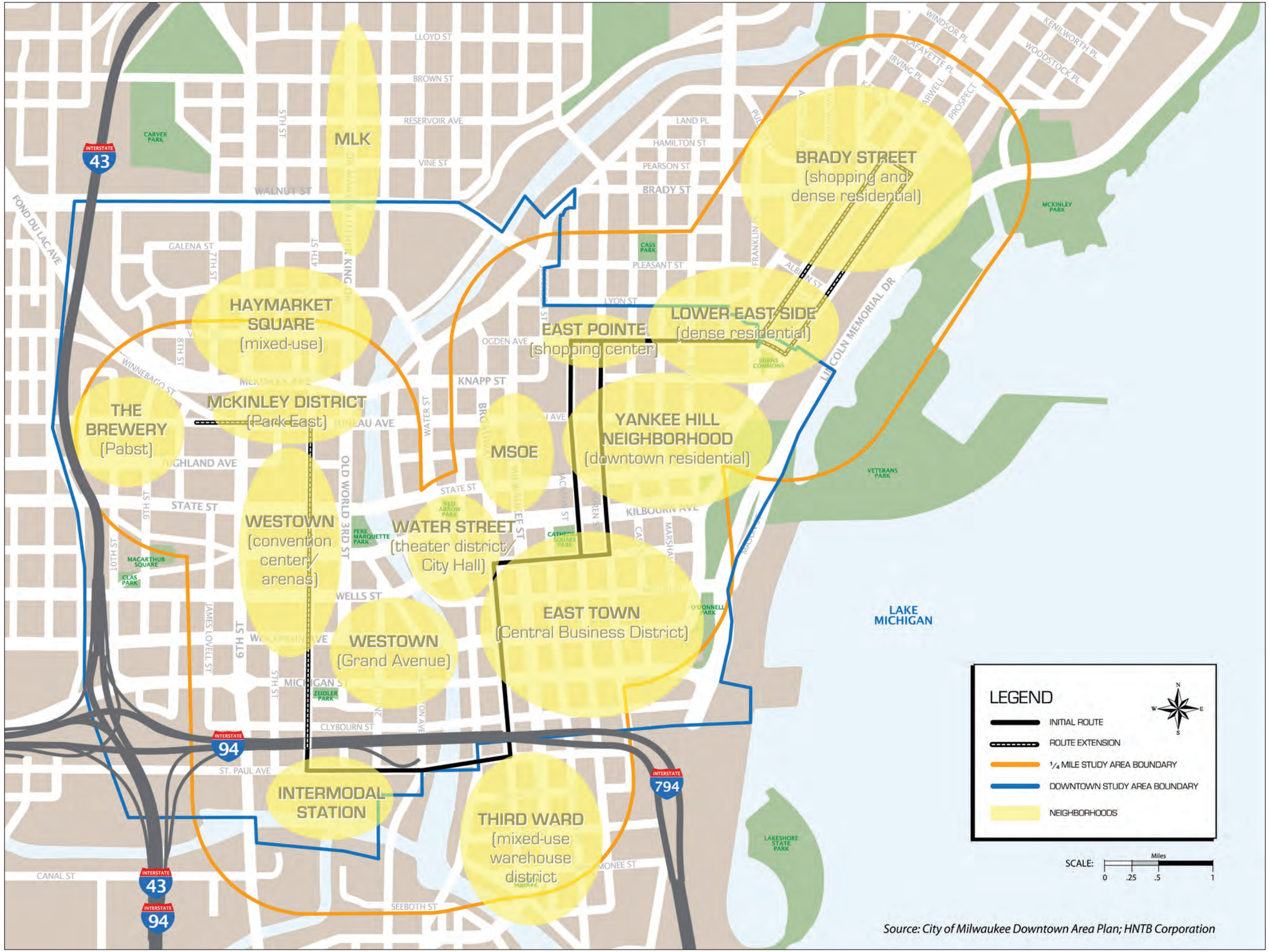
Figure 3: Streetcar Study Area and Neighborhoods



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Development Patterns and Pedestrian Activity

Downtown Milwaukee has historically been centered around Wisconsin Avenue on both the east and west sides of the Milwaukee River. Over the past 15 years Milwaukee's downtown has expanded to include areas to the north and south of this core that have been redeveloped and transformed into mixed use neighborhoods such as the Historic Third Ward.

The reinvestment in downtown and the study area has brought about many positive changes such as new housing choices, new entertainment and cultural amenities, new retailers and restaurants, and the construction of a Riverwalk system along the Milwaukee River. However, it has also created a relatively large area with a dispersed development pattern. As discussed in the Downtown Area Plan[1], this dispersed development pattern can present mobility challenges within downtown especially for those traveling by foot.

This is a concern for the study area because a large percentage of the population relies on walking or transit to get to work or to seek goods and services. Based on 2000 U.S. Census Bureau data, 77% of the households in the streetcar study area do not own a vehicle or only has one vehicle available.

Furthermore, the streetcar study area has large volumes of foot traffic because of the concentration of office workers, visitors and residents. Comprehensive pedestrian counts are not available for the study area. However, data collected for the locally preferred alternative (LPA) study shows over 18,000 pedestrian movements occurred during a four-hour period at the planned streetcar stops. The pedestrian counts were taken in 2009 and 2010 during the following peak travel times: 7:30 AM to 8:30 AM; 11:30 AM to 12:30 PM; 4:30 PM to 5:30 PM and 6:30 PM to 7:30 PM Figure 4 shows the volume of pedestrian movements at each stop location.

Figure 5 shows how the various activity generators - hotels, large employers, parking facilities, attractions, government facilities, commercial centers, households and employees - are distributed across a large area within the streetcar study area. Table 2 shows the distance between many common destinations within the streetcar study area. As can be seen, many of the trips to common destinations exceed a quarter-mile, which is generally considered a comfortable walking distance.

The locations of the destinations in Table 2 are shown on Figure 6.

[1] *Downtown, A Plan for the Area.* City of Milwaukee, Department of City Development. October 2010.

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Figure 4: Pedestrian Volumes at Streetcar Stops

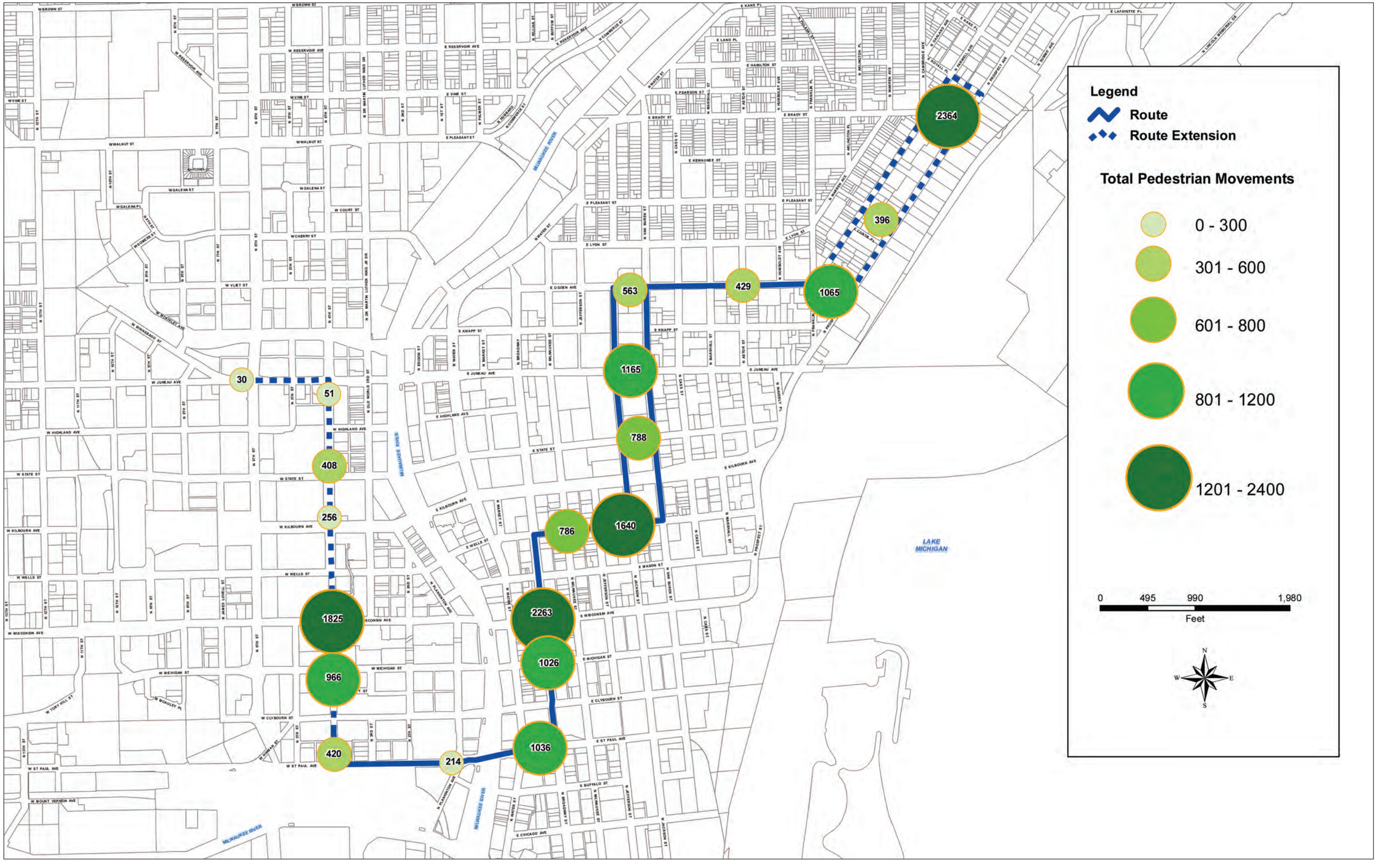

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Figure 5: Study Area Activity Generators

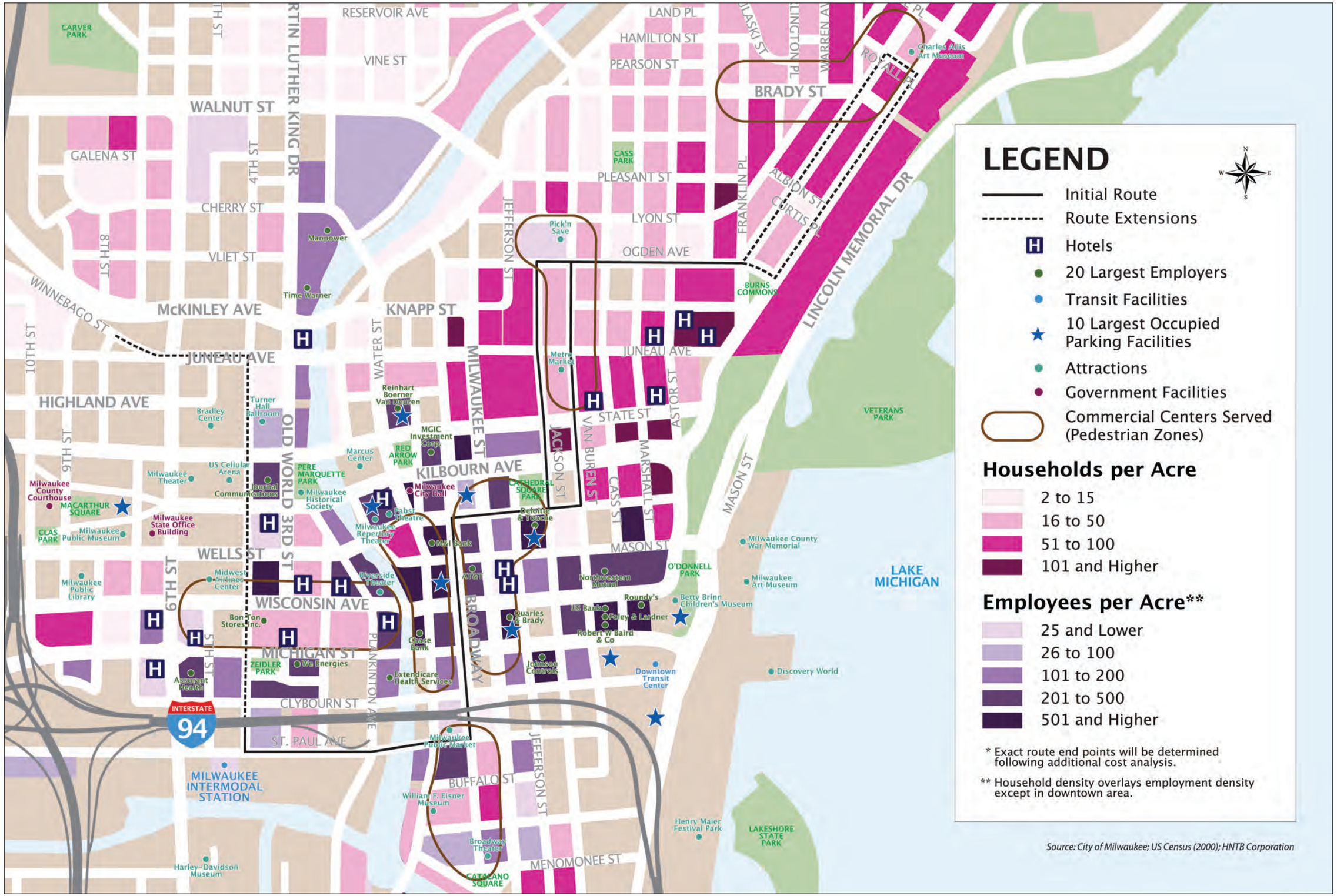

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Table 2: Distances (miles) Between Common Destinations within Study Area

	Destination	Bradley Center	Frontier Airlines Center	Shops at Grand Avenue	Inter-modal Station	Public Market	Wisconsin and Broadway	Cathedral Square	East Pointe Commons	Brady and Farwell
1	Bradley Center		0.4 0.	4	0.7	0.8	0.7	0.7	0.9	1.6
2	Frontier Airlines Center	0.4		0.1 0.	3	0.7	0.5	0.8	1.3	1.9
3	Shops at Grand Avenue	0.4 0.	1		0.4 0.	5	0.3	0.6	1.1	1.8
4	Intermodal Station	0.7 0.	3	0.4		0.4 0.	7	1.0	1.6	2.2
5	Public Market	0.8	0.7	0.5	0.4		0.3 0.	6	1.2	1.8
6	Wisconsin and Broadway	0.7 0.	5	0.3	0.7	0.3		0.3 0.	9	1.5
7	Cathedral Square	0.7	0.8	0.6	1.0	0.6	0.3		0.5 1.	1
8	East Pointe Commons	0.9 1.	3	1.1	1.6	1.2	0.9	0.5		0.7
9	Brady and Farwell	1.6 1.	9	1.8	2.2	1.8	1.5	1.1	0.7	

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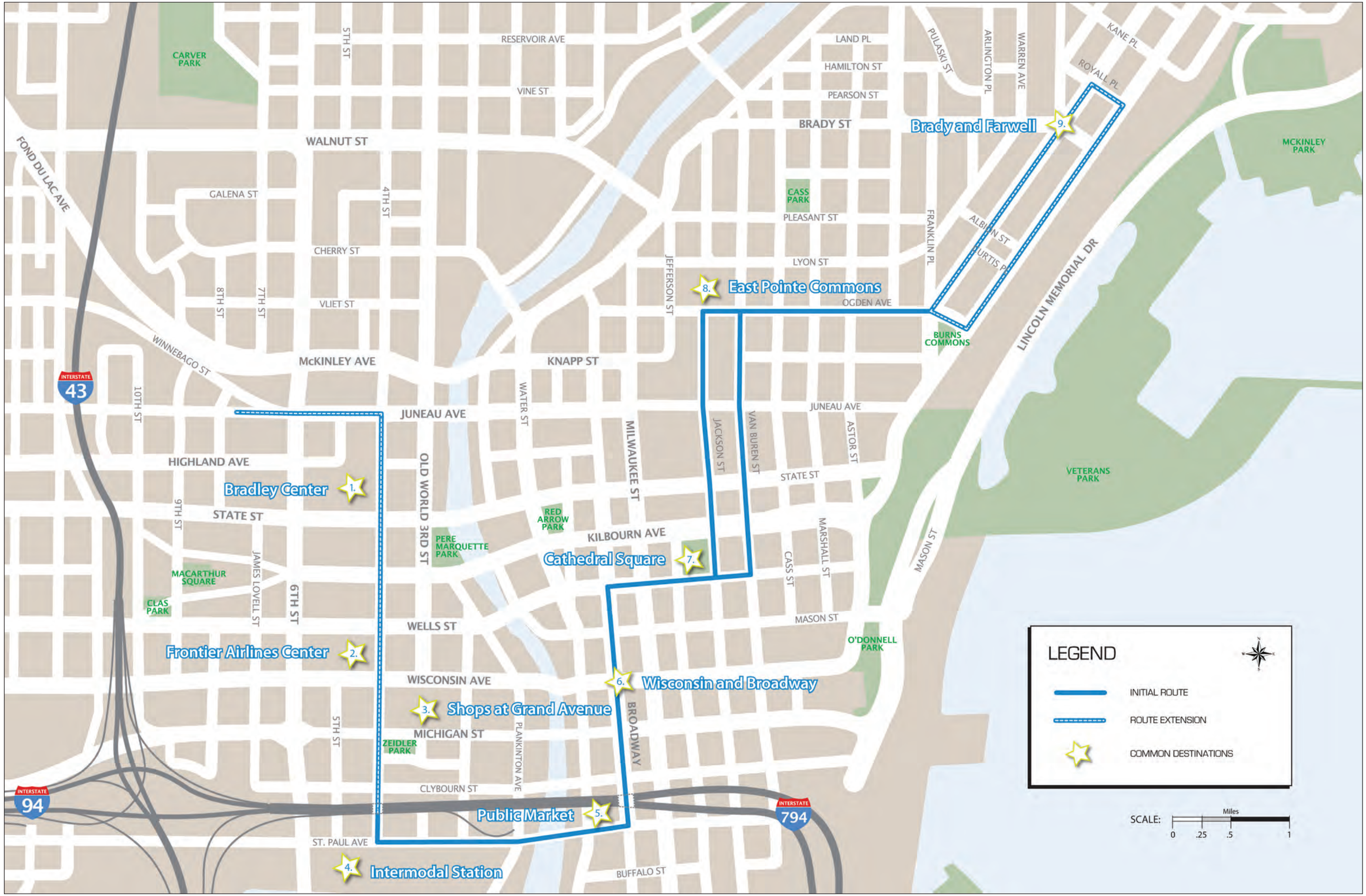
Figure 6: Common Destinations in Study Area



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Housing trends

Over the past 15 years the streetcar study area has seen substantial reinvestment in new housing. The housing growth is largely due to an influx of students, young professionals and empty nesters relocating to, or choosing to live in downtown and adjacent neighborhoods.

In 2000, the streetcar study area had a population of 19,806, according to the U.S. Census Bureau. Since that time, over 3,400 new housing units have been added to the streetcar study area[2]. More current U.S. Census Bureau population figures are not available for the streetcar study area. However, it is a reasonable assumption that over 5,500 new residents have been added to the study area since 2000. This is based on multiplying an average household size of 1.63 (2000 U.S. Census Bureau for streetcar study area) by the 3,400 new housing units.

Table 3 shows the population and household figures from a market analysis that was done for the Milwaukee Downtown Area Plan. These figures show a 1.3% annual increase of population and a 2% annual increase in households between 2000 and 2006 within the Downtown Area Plan boundary that is shown on Figure 3. These figures help to establish growth trends for the streetcar study area. However, these figures only partially include neighborhoods such as the Historic Third Ward, Brady Street and Lower East Side where a substantial number of new housing units have been constructed since 2000. For example, the market analysis completed for The Third Ward Area Plan shows the Third Ward's population increased by 826 persons between 2000 and 2005, representing an annual increase of 34%[3].

Table 3: Downtown Population and Household Trends

Year	Population	Households
1990 (Census)	12,701	5,887
2000 (Census)	13,829	6,429
2006 (Estimate)	14,898	7,201
Annual change 2000-2006	1.3%	2.0%

Source: Downtown Milwaukee Business Improvement District #21 Market Analysis, 2007

Downtown Employment and Office Environment

The streetcar study area had an estimated 87,885 jobs in 2000[4]. The highest concentrations of employment are located in the office towers east of the river in the East Town neighborhood. The streetcar study area contains nearly 14.5 million square feet of occupied office space[5].

Trends show a steady increase in new office space over recent decades. According to the City of Milwaukee, from 1980 to 2010 the downtown area has added over 4.4 million square feet of office space. Recent major office developments such as 875 East Wisconsin, Cathedral Place, Manpower, Time Warner, and ASQ have also brought new jobs to the area.

[2] City of Milwaukee permit data 2000 – 2010.

[3] *Milwaukee Comprehensive Plan. The Third Ward, A Plan for the Neighborhood*. May 20, 2005.

[4] US Census Bureau. 2000 Census (Census Transportation Planning Package-CTPP)

[5] *Streetcar Technical Memorandum: Land Use and Economic Development*. HNTB Corporation and City of Milwaukee Department of City Development. 2010.

Retail Environment

The streetcar study area contains over 3.2 million square feet of occupied retail space. As shown on Figure 5, commercial centers within the study area are focused around Wisconsin Avenue, Water Street, Milwaukee Street, Van Buren Street, Brady Street and Broadway in the Historic Third Ward.

Retail within the study area and downtown has seen some new investment in recent years along with the resurgence of new housing units. Restaurants have been particularly successful and make up 35% of the downtown retail mix[6]. According to the *Downtown Milwaukee Market Analysis*[7] neighborhood-serving retail and services located within a five to ten minute walk are needed to increase access to goods and services for residents, visitors and employees in the downtown area. More convenient transit like the streetcar would help to minimize the walking distance for people in the study area, which would increase access to retail goods and services. It would also provide a consistent customer base for businesses located near stops.

Attractions and Tourism

The streetcar study area has a large concentration of attractions and activity generators as shown in Figure 5 that generates nearly 10 million in annual attendance from both residents and visitors[8]. A summary of attendance by attraction type is provided in Table 4.

Table 4: Annual Attendance at Downtown Events

Attraction	Annual Attendance
Museums 2	,182,000
Entertainment and sports events	3,254,000
Festivals 4	,319,000
Run/walks 7	1,500
Parades 31,	750
Total	**9,858,250**

Source: City of Milwaukee Permit Data and HNTB Corporation

According to the *2009-2010 Downtown Milwaukee Economic Report*, Milwaukee County ranks first in the state for tourist spending[9]. This is largely due to the annual visitors that come to Milwaukee each year to attend various downtown attractions[10].

The downtown attractions have helped to support over 3,400 hotel rooms within the streetcar study area. This includes over 600 hotel rooms that have been added since 2000 from new hotel developments such as the Aloft, Residence Inn, and Hampton Inn and Hilton City Center addition.

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[6] *2009-2010 Downtown Milwaukee Economic Report.* Milwaukee Downtown Business Improvement District #21.

[7] *Milwaukee Downtown Market Analysis, 2007*. Milwaukee Downtown Business Improvement District #21, University of Wisconsin-Extension Center for Community and Economic Development, and University of Wisconsin-Extension Milwaukee County. 2007.

[8] City of Milwaukee Permit Data and HNTB Corporation. 2007.

[9] *2009-2010 Downtown Milwaukee Economic Report.* Milwaukee Downtown Business Improvement District #21.

[10] *2009-2010 Downtown Milwaukee Economic Report.* Milwaukee Downtown Business Improvement District #21.

The dispersed nature of the various activity generators throughout a relatively large downtown area often makes it difficult for visitors to walk from one destination to another. The streetcar would provide convenient transit service that could circulate visitors between their destinations. See Figure 5 that shows where the activity generators such as hotels, large employers, parking facilities, attractions, government facilities, commercial centers, households and employees are located.

2.2.2 Project Need 2 – Lack of High Quality Transit Circulator

This section describes the second project need, which is a lack of high quality transit that circulates people around downtown and nearby neighborhoods and destinations. Figure 3 shows the boundary for downtown and shows the neighborhoods within and adjacent to downtown. Figure 5 shows activity generators within the streetcar study area.

Lack of Existing Transit that Circulates

The Milwaukee County Transit System (MCTS) currently provides a system of feeder buses to downtown and the streetcar study area. The main route to downtown for the bus system is along Wisconsin Avenue where six regular bus routes (10, 12, 14, 23, 30, 31), 11 express routes (39, 40, 43, 44, 45, 46, 47, 48, 49, 79, 143), and one special route (137) operate. Six additional bus routes (11, 15, 18, 19, 57, and 80) pass through downtown primarily in a north-south direction. In 2007, of the top ten MCTS routes by ridership, eight cross the streetcar study area (10, 12, 15, 18, 19, 23, 30 and 80).[11] Figure 7 shows the MCTS routes within the streetcar study area.

These MCTS routes are designed to move people in and out of downtown, but are not designed to circulate people within downtown. For example, the route 30 bus runs through the east side of downtown, but it does not connect the east side to the entertainment, civic and employment uses along 4th Street on the west side of downtown, the Historic Third Ward and the Intermodal Station.

Furthermore, the existing buses are not likely to capture visitors that come to downtown including office workers and tourists. The complexity of the routes can be difficult for infrequent riders to learn in a short time frame, discouraging them from even trying to use transit.

[11] *MCTS 2007 Annual Report.* Milwaukee County Transit System.

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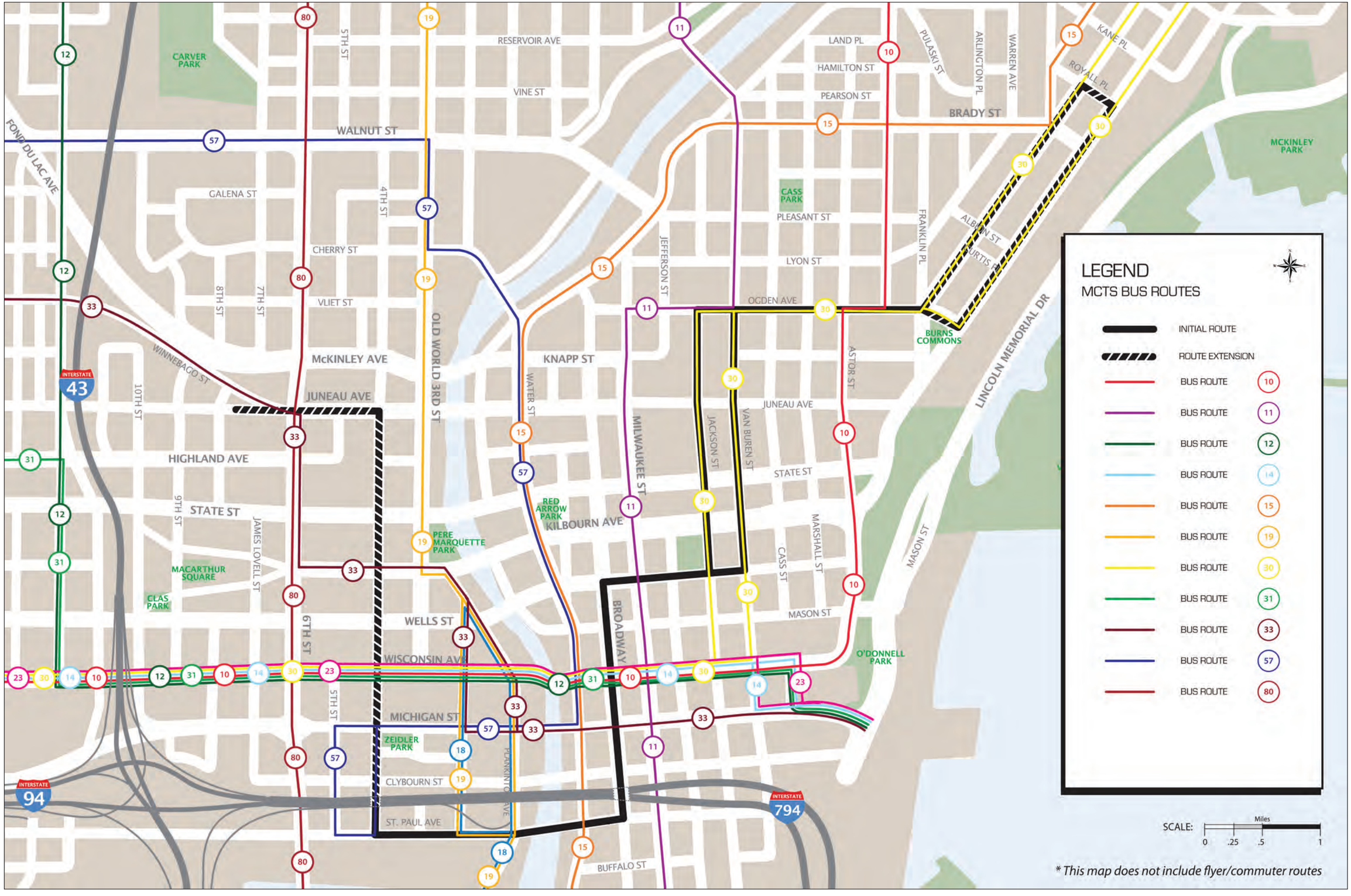
Figure 7: Milwaukee County Transit System Bus Routes



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Limited link between intercity and local transit

The Milwaukee Intermodal Station is an important intercity transit hub for both bus and train service. According to the Wisconsin Department of Transportation, approximately 1.4 million passengers per year use the Intermodal Station. It receives regional bus lines carrying passengers on Greyhound Lines, Jefferson Lines, Indian Trails, Lamers, and Coach USA. Additionally, the Megabus passenger stop is located within a block of the Intermodal Station and Badger Coaches drops off at the Station upon request.

Passenger rail service to the Intermodal Station is provided by Amtrak through the Hiawatha (short distance, regional route) and Empire Builder (long distance, national route) train routes.

After passengers arrive at the Intermodal Station, their options for transportation are to walk, take a taxi or ride the bus. Walking from the Intermodal Station is often challenging because it is somewhat removed from the rest of downtown. As shown on Figure 6, all common destinations from the Station are greater than 1/4 mile, which is considered a comfortable walking distance. Also, the area around the Intermodal Station is not pedestrian friendly because there are many parking lots and underutilized buildings that contribute to an unsafe feeling for pedestrians especially after dark.

Taking the bus from the Intermodal Station can also be challenging. Current transit connections between the Intermodal Station and downtown are limited and do not provide a convenient connection between intercity travelers and people destined for downtown. The MCTS bus route 57, shown in Figure 7 is the only bus route that serves the Intermodal Station and it has limited coverage to the downtown area. It heads north along Water Street bypassing a large portion of the dense office uses on the east side of downtown and heads towards its main destination in the northwest side of Milwaukee along the Lisbon/Walnut corridor. It also does not provide a link to the City's densest residential neighborhoods on the northeast side of the study area.

The expansion of bus services to improve connections between the Intermodal Station and downtown are not likely because Milwaukee County is facing large budget shortfalls to maintain existing bus service levels.

2.2.3 Project Need 3 – Support Planned Development

The next project need discusses how improved transit services and facilities are needed to support local land use and development goals and objectives.

Downtown Area Plan

The City of Milwaukee's Downtown Area Plan refocuses efforts to increase density and intensity within downtown and to connect activity centers such as the Intermodal Station, the convention center and offices that are dispersed throughout a relatively large downtown area. To achieve these goals, the plan has set forth policies and recommendations to support density, walking and mixed use development. The Downtown Plan can be viewed at: http://city.milwaukee.gov/AreaPlan/Downtown.htm.

Specifically, the plan has identified a streetcar system as a catalytic project that is needed to serve office workers, residents and visitors to downtown. The City prefers a streetcar over enhanced bus service because they feel a fixed guideway transit will generate economic benefits such as making properties within the study area more attractive for redevelopment and encouraging business development by providing a reliable customer base along the route. They also feel the streetcar will attract choice transit riders that would be willing to take a streetcar, but not a bus.

The plan states the streetcar is needed because of the relatively large downtown area, inclement northern climate and dispersed development pattern that makes walking inconvenient. The plan states the current transportation system does not adequately serve downtown businesses, office workers and the substantial residential population in nearby neighborhoods.

The plan encourages more pedestrian activity within the downtown and notes that the streetcar will be a pedestrian "accelerator", making it easier for pedestrians to go to places that are too far to comfortably walk. The plan also supports the streetcar to reduce the need for parking. Parking is often a limiting factor for development in downtown Milwaukee because financial institutions are reluctant to provide financing for developments that do not include structured parking. This is a particular impediment to the reuse of historic buildings that lack on-site parking. Furthermore, the plan discusses the need to enhance the retail environment. The streetcar supports this goal by providing a reliable customer base along its route and improving access to neighborhood goods and services.

The plan goes into detail about the need to improve connections between downtown's dispersed districts and activity centers. A streetcar circulator supports this goal by providing a transit route that is specifically designed to circulate between the major downtown destinations and districts. As discussed in the plan, connecting downtown destinations will create a more cohesive downtown encouraging people to spend more time downtown.

The plan also discusses establishing the Milwaukee Intermodal Station as a regional transit hub with expanded passenger rail services such as high-speed rail and commuter rail. The streetcar would support the Intermodal Station by providing a convenient and direct link to downtown and nearby destinations.

Citywide Policy Plan

The Citywide Policy Plan was approved by the Common Council on March 2, 2010. The plan is available at: http://city.milwaukee.gov/Plansandstudies/CitywidePolicyPlan.htm.

The Plan's Transportation chapter has many policies that support the development of transit. Specifically, the Transportation chapter states the City should support the development of bus rapid transit, streetcar, or an express bus network to promote transportation options that connect the greatest number of people to the greatest number of destinations. The plan also supports development policies that benefit transit. For example, the transportation chapter states the City should provide zoning and incentives for transit oriented development. The plan also supports the development of multiple modes of transportation and tries to create a balance between various modes (vehicles, transit, walking, biking) within the street and highway network.

Northeast Side Area Plan

The Northeast Side Area Plan, which covers the area northeast of downtown along the Prospect/Farwell corridor, including the Lower East Side and Brady Street neighborhoods, was approved by the Common Council in 2009. The plan is available at: http://city.milwaukee.gov/Plansandstudies/Northeast.htm.

Regarding transit improvements, the plan states the City should develop a fixed-guideway rail system that can be used as an economic development tool that will provide confidence for real estate investors that the route will be in place for the long term. In addition, the plan states that transit should connect people to jobs by getting the majority of transit users to major employment centers in the most efficient way possible and that Farwell and Prospect Avenues are key transit corridors in the City.

Third Ward Area Plan

The Third Ward Area Plan was adopted in May 20, 2006 for the historic neighborhood just south of downtown. The plan is available at: http://city.milwaukee.gov/Plansandstudies/ThirdWard.htm.

The Plan provides guidance for the reuse of existing structures and encourages mixed-use, infill development on vacant and underutilized parcels. The Plan recommends all new development and redevelopment should fit with the mid-rise urban character of the neighborhood and provide sufficient density (30 – 110 dwelling units per acre) to cover the blocks and give definition to the streets. Higher density developments are permitted at landmark sites.

The northeast section of the Third Ward is separated from downtown and the lakefront by the overhead Interstate 794 bridges to the north and east. This area has some manufacturing, office and warehousing uses, but is dominated by surface parking lots. The Third Ward Area Plan recommends redevelopment for this area in a manner that is consistent with the plan's vision for mixed use development. The plan also recommends structured parking in this area to allow visitors to park in this area and take a "transit connector" to other areas of the Third Ward, Downtown and the recreation and entertainment uses along the lakefront of Lake Michigan.

The plan also encourages improved connections to the Lake Michigan lakefront and the Maier Festival Park that borders the Third Ward on the east. A line of surface parking lots next to the festival grounds, a lack of a road network in this area and the relatively closed off nature of the festival park create a barrier between the neighborhood and lakefront. Furthermore, improvements to this area such as new mixed uses, improve transit services and a better road grid system would also improve access other lakefront amenities such as the Milwaukee Art Museum, Lake Shore State Park, Pier Wisconsin and Veterans Park.

The plan's transportation recommendations emphasize maintaining the traditional urban grid that provides for a multi-modal transportation network. It also encourages the extension of this transportation system into the eastern portion of the neighborhood where the grid system has been interrupted by development that expands more than one block.

Park East Redevelopment Plan

The Park East Redevelopment Plan was approved by the City of Milwaukee Common Council on June 15, 2004. The planning area includes the vacant lands made available from the removal of the former Park East Freeway spur on the western side of the Milwaukee River. The land has been prepared for development and new street infrastructure has been put into place. The Park East Redevelopment Plan has dedicated the area for mixed-use urban development. The plan is available at: http://city.milwaukee.gov/Redevelopment-plan.htm.

The Brewery

The Brewery is a 20-acre redevelopment site at the former Pabst Brewery complex. The project is located in downtown Milwaukee, just east of Interstate 43 between Winnebago Street and Highland Avenue. The site currently contains a mixture of historic buildings and lands that were once used by the brewery. The site is owned by a development firm that intends to rehabilitate the historic structures and attract new development to vacant parcels. The developer's plans call for a mix of residential, retail, office and educational land uses. More information is available at: http://www.mkedcd.org/projects/TheBrewery/index.html

The City of Milwaukee has been supportive of this development. The Common Council approved a Tax Increment District (TID) for the Brewery in 2007. In addition, the Common Council adopted a Brewery

Project Development Incentive Zone (DIZ) on December 12, 2006. The DIZ is a type of planned development zoning tool that expedites site plan reviews because a master plan and specific development guidelines for the area have been developed.

2.2.4 Project Need 4 – Legislative Requirement

The fourth project need is based on a legislative requirement to spend federal dollars on a downtown Milwaukee rail line. In March 2009, the Federal Omnibus Appropriations Act of 2009 split $91.5 million in Interstate Cost Estimate funding reserved for the results of the Milwaukee Connector Study directing 60% of the money to the City of Milwaukee for a fixed rail circulator and 40% of the money to Milwaukee County for energy efficient buses. As a result, the use of these funds must be directed to a fixed rail circulator in Milwaukee. The streetcar project would meet these requirements and is consistent with the intent of the funding program.

2.3 PROJECT GOALS AND OBJECTIVES

Based on the project purpose and need, the City of Milwaukee created a series of goals and objectives to guide the selection of a route for the streetcar project.

2.3.1 Goals

The goals for the streetcar project include the following:

- Developing a connector system that is economical and efficient
- Increasing transit utilization
- Supporting and enhancing economic development
- Improving transit service to help attract conventions, tourists and residents
- Preserving and protecting the environment.

2.3.2 Objectives

Within the framework of the goals, specific objectives of the streetcar include:

- Improving transit access to key origins and destinations (including the destinations listed in Table 2)
- Providing a downtown core system that can be expanded in the future to provide a larger, more effective transit network
- Maximizing transit accessibility and choices for residents, employees and visitors
- Providing transit service between residential areas and job centers
- Providing transit options for those people that depend on transit
- Promoting public/private partnerships
- Promoting transit-oriented developments
- Providing “branding” of the transit vehicles
- Providing intermodal connections
- Providing signage to help pedestrians locate and utilize the streetcar system
- Serving existing development and planned developments
- Contributing to job creation
- Promoting the “Park Once” concept for downtown visitors
- Reducing energy consumption and vehicle emissions through increased transit use

3. ALTERNATIVES ANALYSIS

The City of Milwaukee completed an alternative analysis to determine a route for the streetcar. This process began in August 2009 and was completed in May 2010. This section describes the alternatives that were considered for the streetcar route, the alternative evaluation process and the selection of the locally preferred alternative. The alternatives analysis process is summarized in Figure 8 and includes the several steps. These include the development of alternatives; evaluation of the alternatives using technical analysis and public input. The alternatives were ranked, and then refined before a locally preferred alternative (LPA) was chosen by the City.

3.1 ALTERNATIVES DEVELOPED AND CONSIDERED

The City of Milwaukee developed three streetcar route alternatives along with their respective sub-options and potential route extensions. The start and end points of the route alternatives were developed to meet the project's primary objective of improving access to key origins and destinations within the study area. As a result, all three original route alternatives begin at the Milwaukee Intermodal Station and connect downtown employment and entertainment areas with high density residential in the northeast section of the study area. Route extensions were developed to reach additional high density residential areas in the northeast section of the study area, additional employment and entertainment areas on the west side of the study area and two redevelopment areas in the northwest section of the study area.

The availability of existing capital funds was another important factor that influenced the route alternative start and end points. The City decided the extent of the initial route must be funded by the existing federal Interstate Cost Estimate funds. The route extensions would only be constructed if additional funding could be secured.

This section describes the original route alternatives that were developed and considered

3.1.1 Streetcar Route Alternative 1

Alternative 1, as shown on Figure 9, originated at the recently renovated Milwaukee Intermodal Station, proceeded east along St. Paul Avenue and crossed the Milwaukee River as it entered the Historic Third Ward neighborhood. Then, the route headed north along Van Buren Street and east along Ogden Street. As the route proceeded back, it traveled west along Ogden Street and then turned south along Jackson Street (the Jackson-Van Buren pair). Once the route intersected with St. Paul Avenue it traveled west and terminated at the Milwaukee Intermodal Station.

One sub-option for Alternative 1 was considered. As the route proceeded east along St. Paul Avenue from the Intermodal Station, it turned south along Water Street instead of continuing along St. Paul Avenue. Then, the route turned east along Chicago Street before connecting with the Jackson-Van Buren pair.

Potential route extensions for this alternative included a segment along 4th Street between St. Paul Avenue and Wells Street and a paired segment along Prospect Avenue and Farwell Avenue between Ogden Street and Brady Street.

Alternative 1 was 2.73 miles long and the sub-option was 3.11 miles long. Mileage included the potential route extensions.

Figure 8: Alternatives Analysis Summary for Streetcar Routes

Figure 9: Streetcar Route Alternative 1 and Sub-option 1

3.1.2 Streetcar Route Alternative 2

Alternative 2, as shown on Figure 10, originated at the Milwaukee Intermodal Station and proceeded east along St. Paul Avenue. After crossing the Milwaukee River, the route entered the Historic Third Ward neighborhood and proceeded north along Water Street. Then, the route turned east along Juneau Street, north along Van Buren Street and east along Ogden Street. On the way back, the route proceeded west along Ogden Street and then south along Jackson Street for two blocks before doubling back on Juneau Street and Water Street. At St. Paul Avenue the route proceeded west and terminated at the Milwaukee Intermodal Station.

Alternative 2 considered one sub-option. Instead of going north along Water Street, the route traveled north along Broadway, continued northeast along Water Street and headed east along Brady Street. Then, the route turned back along Brady Street, continued south along Water Street and headed back to its destination on St. Paul Avenue.

Like Alternative 1, Alternative 2 also considered route extensions along 4th Street between St. Paul Avenue and Wells Street and along Prospect Avenue and Farwell Avenue between Ogden Street and Brady Street.

Alternative 2 was 2.83 miles long and the sub-option was 2.66 miles long. Mileage included the potential route extensions.

Figure 10: Streetcar Route Alternative 2 and Sub-option 2

3.1.3 Streetcar Route Alternative 3

Alternative 3, as shown on Figure 11, began at the Milwaukee Intermodal Station. Then, the route proceeded north along 4th Street and east along Juneau Avenue. Once the route passed Water Street on the east side of the Milwaukee River, it mirrored Alternative 2.

Alternative 3 considered one sub-option. From Juneau Avenue the route headed north along Water Street and continued along Brady Street. The sub-option then doubled back along Brady Street and continued along Water Street until it reached Juneau Avenue. At this point, the sub-option went west along Juneau Avenue and south along 4th Street to its destination.

Alternative 3 considered a route extension along Prospect Avenue and Farwell Avenue between Ogden Street and Brady Street.

Alternative 3 was 2.36 miles long and the sub-option was 2.19 miles long. Mileage included the potential route extension.

Figure 11: Streetcar Route Alternative 3 and Sub-option 3

3.1.4 No Action Alternative

Under the No Action Alternative a streetcar system in downtown Milwaukee would not be constructed. The existing transportation choices within the study area, walking, biking, driving and taking the bus, would remain. This alternative was eliminated early on in the Alternative Analysis phase but is considered as a baseline against which the LPA is compared. Throughout the EA, for each resource evaluated, both the potential impacts of the LPA and the No Action Alternative are discussed.

Even though the No Action Alternative would not affect biological, social, and cultural resources in the study area, it also would not address the purpose and need for the project and it would not address the goals of the streetcar project.

The No Action Alternative is not consistent with the Milwaukee Downtown Area Plan. The streetcar project is identified in the Plan as a catalytic project to spur development and economic growth within the downtown area. The Plan states the objective of the streetcar is to implement a "business-quality" means of interconnecting downtown's working, living, and visiting population that is convenient, comfortable, and enjoyable.

The No Action Alternative would not be consistent with the intent of federal funding. In March of 2009, the Federal Omnibus Appropriations Act of 2009 split the $91.5 million in Interstate Cost Estimate funding reserved for the results of the Milwaukee Connector Study. It directed 60% of the money to the City of Milwaukee for a downtown fixed rail circulator and 40% of the money to Milwaukee County for energy efficient buses. Other use of these funds would be in violation of the Appropriations Act and is inconsistent with the commitment made by legislators when they approved the project's funding.

Even though the No Action Alternative has been ruled out at this time, no decisions are final until after the public hearing has taken place for this Environmental Assessment and all public comments have been received and reviewed during the public comment period.

3.2 EVALUATION OF ALTERNATIVES

After the alternatives were developed, the City of Milwaukee used a three step process to evaluate and distinguish the alternatives that included technical analysis, public outreach and alternative ranking. The evaluation process is described below.

3.2.1 Technical Analysis

Technical analysis for each alternative was completed and summarized in a series of technical memorandums as follows: Project Definition and Route Planning; Station Locations and Design; Land Use and Economic Development; Financial Planning; Governance Planning; Transportation, Parking and Pedestrian; Preliminary Engineering Assessment; Capital Costs; Operations Planning; Ridership; Maintenance Center; and Public Involvement and Environmental Justice. These memorandums provided information about each alternative that was used for evaluation purposes.

3.2.2 Public Feedback

The City conducted public outreach meetings to obtain feedback on the proposed streetcar project and the route alternatives. The City hosted a public information meeting at the Zeidler Municipal Building on October 8, 2009 to present the streetcar alternatives to the public and to obtain feedback. The City also conducted stakeholder briefings during this project phase to obtain feedback on the proposed streetcar routes from key stakeholders, elected officials and agencies. In addition, briefings were held with several organizations that represent environmental justice populations to make sure they had an opportunity to

provide feedback. A more detailed description of the public outreach efforts including a list of stakeholder who were briefed in included in Section 6 of this document.

3.2.3 Alternative Ranking

Information gathered during the technical analysis and public outreach steps were used to evaluate and rank the alternatives, sub-options and route extensions. Table 5 lists the eight criteria and evaluation factors that were used during the evaluation process. The eight criteria are: public interest, ridership, engineering, capital cost, operations and impacts, environmental justice, future land use and economic development potential and long range City goals. The eight criteria that were developed to evaluate the route alternatives were utilized to ensure a successful streetcar starter system that could be built with the available funding.

Table 5: Streetcar Route Criteria and Evaluation Factors

Criteria	Evaluation Factors	Importance
Public Interest	Written and verbal comments Stakeholder comments	Demonstrated the public's level of support for the project and LPA
Ridership	Trip generation potential Housing units Retail square feet Office square feet Hotel rooms Parking spaces Tourists Pedestrian activity Existing transit ridership	Ridership gave an indication of which alternative would serve the most number of people
Engineering	Utilities Pavement conditions Intersection conflicts Overhead clearance Steep grade Bridge replacement or repairs Pavement width	Engineering helped identify potential issues that could have prevented the project from moving forward
Capital Cost	Guideway facilities Utilities and environmental Systems Stops Yard and shop Miscellaneous cost	Capital cost was important due to the project's fixed budget
Operations and Impacts	Level of service Traffic volumes Number of turns Traffic signals	This criterion helped determine the alternative that would best integrate with the existing transportation network
Environmental Justice	Non-white population Household income below $32,000 Seniors Rental occupied housing Commuting Vehicle ownership Persons with disabilities Jobs Elderly and senior housing locations	Environmental Justice populations were evaluated to ensure the selected route would provide service to all persons within the study area
Future Land Use & Economic Development Potential	Total developable acres New housing units New residents New retail space New office space New total building space New tax base New employees New parking spaces	This criterion helped to identify the alternative with the greatest potential to generate economic development benefits
Long Range City Goals	Connects to the Intermodal Station Implements the Downtown Area Plan Connects to high density residential Connects to employment centers Local decision makers	This criterion was used to identify the alternative that was most consistent with the City's area plans

Using the criteria and the evaluation factors, a scoring process was used to identify distinguishing characteristics between the route alternatives and to guide the decision making process. Each factor was assigned a value based on how it compared to the other alternatives. Next, a total value was calculated for each criteria and each alternative to assign a rank. Criteria that had a higher level of importance for the City, including public interest, ridership and economic development potential were weighted higher. Table 6 shows how the alternatives scored by individual criteria and their overall rank.

Table 6: Alternative Ranking Process Outcome

Criteria	Alternative Rank					
	1	**1 sub-option**	**2**	**2 sub-option**	**3**	**3 sub-option**
Public Interest (weighted 2x)	12	12	8	8	4	4
Ridership (weighted 2x)	44	52 38	40	30	24	
Engineering	16	16 17	16	18	19	
Capital Cost	7	7 5 6			10	11
Operations and impacts	7	7 5	6		10	11
Environmental Justice	16	19 19	26	17	19	
Economic Development Potential (weighted 2x)	38	52 22	46	22	24	
Long Range Goals	42	38 31	29	27	25	
Overall Score	191	212 1	56 1	87 1	46 1	44
Overall Rank	2nd	1st	4th	3rd	5th	6th

3.3 ALTERNATIVE ELIMINATION, REFINEMENT AND SELECTION

Based on the evaluation process, the City of Milwaukee eliminated some alternatives from further consideration, refined selected alternatives and chose a locally preferred alternative.

3.3.1 Route Alternatives Eliminated from Further Study

This section describes the rationale for route alternatives and sub-options that were eliminated.

Alternative 1 Sub-Option

Although the sub-option for Alternative 1 was the highest ranking alternative, the City decided to eliminate it from further study for the following reasons:

- Adds several turns to the alignment and there is not sufficient right of way to accommodate some of the turns through the Third Ward neighborhood,
- Includes right of way constraints at Chicago and Water Streets that could affect streetcar and traffic operations, auto traffic integration, and vehicle schedule timing,
- Is the most expensive because it is the longest route, and

Alternative 2 and Alternative 2 Sub-Option

Alternative 2 and its sub-option were eliminated based on the following reasons:

- The alternatives do not serve the east side of downtown as well as Alternative 1, including the major office district in the southeast corner of downtown and the high density residential area along Jackson and Van Buren streets,

- The alternatives do not serve the future economic development potential of the northeast portion of the Third Ward neighborhood where several surface parking lots are currently located,
- The Water Street alignment for Alternative 2 was too close to the 4th Street alignment and so service would be unnecessarily duplicated,
- Potential utility concerns and conflicts along Water Street,
- For Alternative 2 sub-option, Brady Street's narrow right of way with only two travel lanes and lack of alleys for loading and unloading goods could create operational concerns for the streetcar, and
- For Alternative 2 sub-option, streetcar service may need to be temporarily suspended several times during the year to accommodate Brady Street festivals that close the road.

Alternative 3 and Alternative 3 Sub-Option

Alternative 3 and its sub-option ranked the lowest overall in comparison to the other alternatives. Elements that contributed to the low rank included:

- Low public interest ranking, ridership generation, and economic development factors, which were considered the three most critical elements to create a successful streetcar system,
- For Alternative 3 sub-option, Brady Street's narrow right of way with only two travel lanes and lack of alleys for loading and unloading goods could create operational concerns for the streetcar. The narrow right of way could also create parking and traffic operation concerns, and
- Streetcar service may need to be temporarily suspended several times during the year to accommodate Brady Street festivals that close the road.

3.3.2 Route Alternatives and Variations Selected for Additional Study

Based on the evaluation process, the City selected route Alternative 1 and developed two new sub-options for further evaluation. The rationale for these decisions is discussed below.

Alternative 1 Selected for Further Analysis

Alternative 1 was selected for more detailed analysis for the following reasons:

- Best serves and links the main office district of downtown with the high density residential areas along Jackson and Van Buren streets,
- Serves the potential redevelopment areas in the northeast section of the Third Ward neighborhood and provides the best proximity to the lakefront,
- Received the most public interest and has the potential to generate positive ridership figures due to its proximity to activity generators along the alignment,
- Has strong economic development potential due to its proximity to lands that could be redeveloped, and
- Best meets the City's long range goals.

Developed two new Alternative 1 Sub-Options

Upon further evaluation of Alternative 1, it was determined that this alternative had some design and planning concerns as follows:

- Overhead clearance concerns with the Interstate 794 bridges and ramps over Van Buren Street
- Peak period traffic conflict concerns with the Interstate 794 ramp that exits northbound onto Van Buren Street

- Does not make the strongest connection to the western portion of East Town
- The route segment adjacent to Interstate 794 along St. Paul is not ideal for economic development, pedestrian activity, and neighborhood connectivity
- Lower potential pedestrian activity during off-peak periods especially along the southern portion of Jackson and Van Buren streets

To address these concerns, the City determined two new sub-options for Alternative 1 (Alternative 1-2A and 1-2B) would also be evaluated. The sub-options were similar to Alternative 1 except they added some desirable elements of the original sub-option for Alternative 2. Specifically, the sub-option Alternative 1-2A (Figure 12) would run along Broadway between St. Paul Avenue and Wells Street and then connect with the Jackson and Van Buren pair via Wells Street. The other sub-option Alternative 1-2B (Figure 13) was developed due to potential traffic operation concerns with two-way transit along Broadway. Currently, Broadway is a one-way southbound street south of Clybourn Street. Additionally, the southbound entrance ramp at Clybourn Street and Interstate 794 has high left turn volumes and could present complex streetcar operations. Therefore Alternative 1-2B considers a one-way pair option along Milwaukee Street and Broadway between St. Paul Avenue and Wells Street to eliminate the need to convert a block of Broadway into a two-way street and avoid the Interstate 794 entrance ramp.

The desirable elements that Alternative 1-2A and 1-2B provide are:

- Avoid the Interstate 794 bridges and ramps over Van Buren Street that has just over 14 feet of overhead clearance,
- Avoid the Interstate 794 ramp that exits northbound onto Van Buren Street, creating traffic conflicts during peak travel periods,
- Make a strong connection to the western portion of East Town while maintaining a connection to the high density residential and downtown office areas,
- Have strong redevelopment potential for the surface parking and underutilized buildings on the southern portion of Broadway,
- Link strong pedestrian activity along both Broadway and Milwaukee Street and serve the entertainment district along Milwaukee Street.

Figure 12: Streetcar Route Alternative 1-2A

Figure 13: Streetcar Route Alternative 1-2B

3.4 LOCALLY PREFERRED ROUTE ALTERNATIVE SELECTION

Additional analysis was completed to determine if Alternative 1, Alternative 1-2A or Alternative 1-2B would be recommended as the locally preferred alternative and to determine the length of route that could be built with the available funding.

Route Variations Eliminated from Study

Alternative 1, which utilizes Jackson and Van Buren Streets from Ogden Avenue to St. Paul Avenue was eliminated from further study due to the following factors:

- Overhead clearance concerns with the Interstate 794 bridges and ramps over Van Buren Street,
- Peak period traffic conflict concerns with the Interstate 794 ramp that exits northbound onto Van Buren Street,
- Does not make the strongest connection to the western portion of East Town,
- The route segment adjacent to Interstate 794 along St. Paul is not ideal for economic development, pedestrian activity, and neighborhood connectivity, and
- Lower potential pedestrian activity during off-peak periods, especially along the southern portion of Jackson and Van Buren streets.

Alternative 1-2B, which utilizes a one-way pair option along Milwaukee Street and Broadway between St. Paul Avenue and Wells Street, was introduced due to some potential traffic operation concerns with two-way transit on Broadway. These concerns were alleviated; therefore the Alternative 1-2B option was eliminated from further study. In addition, the following factors were also considered as rationale for eliminating Alternative 1-2B:

- Fewer redevelopment opportunities as compared to Alternative 1-2A, and
- Alternative 1-2A provides better direct connection between the Third Ward and East Town, including City Hall and other municipal buildings.

Route Selected for Locally Preferred Alternative

Alternative 1-2A is recommended as the locally preferred alternative. Alternative 1-2A was developed by combining segments of the two highest ranking alternatives (Alternative 1 and sub-option for Alternative 2), using the evaluation criteria presented in Table 5 (Streetcar Route Criteria and Evaluation Factors). In addition, Alternative 1-2A avoids overhead clearance issues with Interstate 794, traffic conflicts on Van Buren Street and connects well to both the eastern and western portions of East Town. Furthermore, through design modifications to the one-way segment of Broadway and lane restriping and traffic signal enhancements at the Interstate 794 entrance ramp at Clybourn Street the traffic concerns associated with two-way transit on Broadway were alleviated.

This alternative operates with two-way transit on Broadway between St. Paul Avenue and Wells Street. The portion that can be built with available federal funding includes the initial route between the Intermodal Station at 4th Street and St. Paul Avenue and Ogden Avenue and Farwell Avenue (at Burns Commons Park), as shown in Figure 14. The initial route length is 2.05 miles.

Figure 14 also shows the locally preferred alternative's route extensions along 4th Street/Juneau Avenue and Prospect/Farwell avenues. These would only be constructed if additional funds become available. The extensions would add 1.5 miles to the initial system for a total of 3.5 miles.

Steering Committee Action

The Milwaukee Connector Steering Committee met on May 6, 2010 to review the locally preferred alternative. At this meeting, the Steering Committee voted in favor to approve the recommended streetcar route alignment. The locally preferred alternative is described in detail in the next section of this document.

Figure 14: Streetcar Locally Preferred Route Alternative

4. DESCRIPTION OF LOCALLY PREFERRED ALTERNATIVE

This section describes the locally preferred alternative for the streetcar project. It describes the streetcar route, the capital improvements for the streetcar, the capital improvement for the roadways, the streetcar operating characteristics and the capital and operating costs for the streetcar system.

Appendix A shows the project plan sheets for the locally preferred alternative.

4.1 STREETCAR ROUTE

The initial system for the streetcar route is 2.0 miles. The route originates at the Milwaukee Intermodal Station where it will serve passengers transferring from other transportation modes, such as buses and trains. It then proceeds east along St. Paul Avenue, across the Milwaukee River and into the Historic Third Ward neighborhood as shown on Figure 14. Then, the route heads north along Broadway, east along Wells Street and north along Van Buren Street. At Ogden Street, the initial route extends east to Farwell Avenue (Burns Commons Park) where it terminates.

The return trip doubles back along Ogden Street, turns south at Jackson Street, west at Wells Street and south along Broadway. At St. Paul Avenue, the route travels west and finishes its cycle near the Milwaukee Intermodal Station.

The streetcar route extensions would add approximately 1.5 miles to the route for a total of 3.5 miles. On the west side of the study area, the extended route would continue north along 4th Street between St. Paul Avenue and Juneau Avenue. Then, it would turn west along Juneau Avenue for approximately three blocks where it would terminate. The Prospect/Farwell extension would continue the route north from Ogden Street along Prospect Avenue, go west along Royall Place for one block and proceed south along Farwell Avenue before doubling back along Ogden Street. The route extensions will only be constructed if additional funding becomes available.

4.2 STREETCAR CAPITAL IMPROVEMENTS

The capital improvements required for the streetcar include the purchase of vehicles, the installation of tracks, new stops, an electric power system and a maintenance facility. The streetcar capital improvements are shown on Figure 15.

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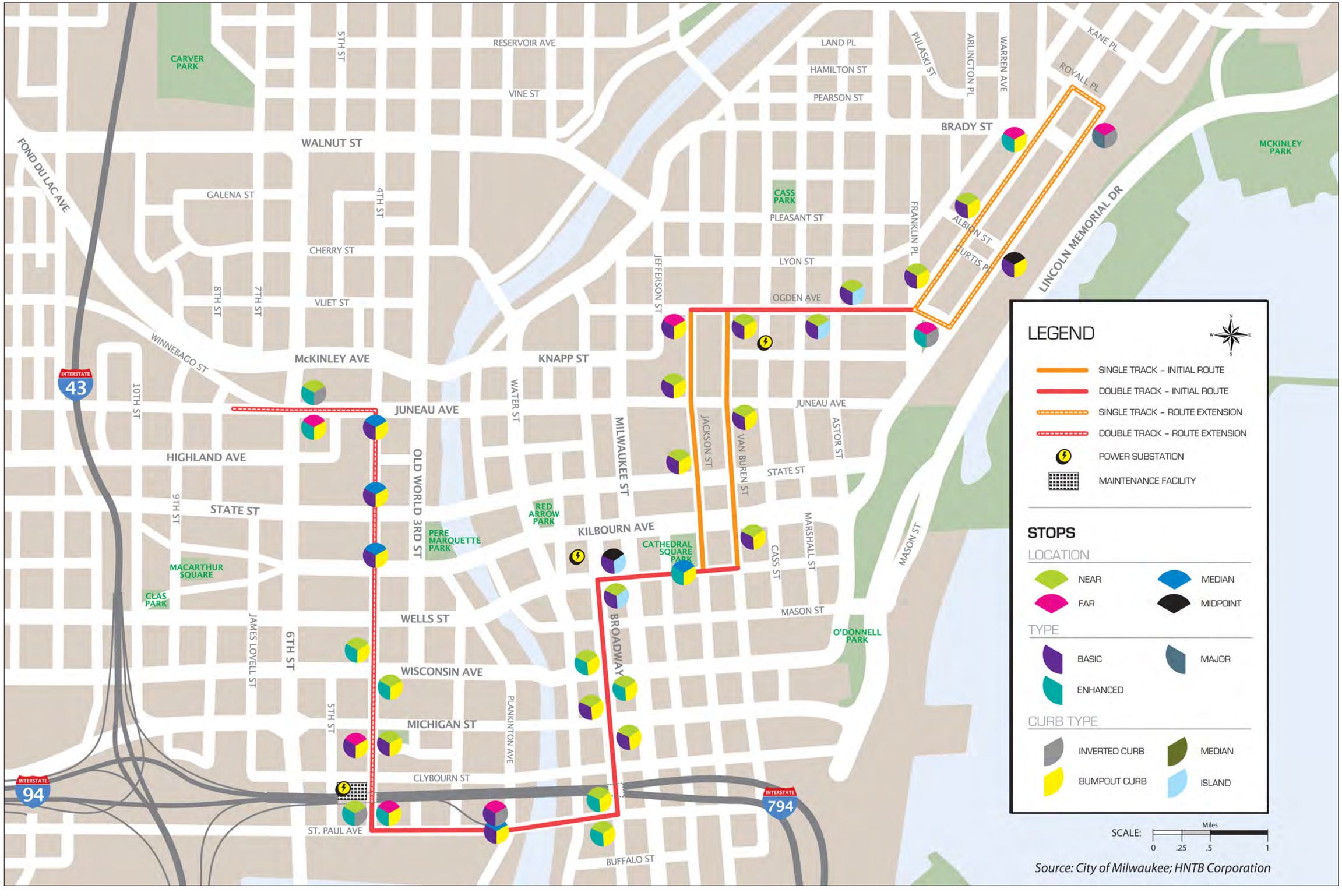
Figure 15: Streetcar Capital Improvements



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4.2.1 Streetcar Vehicle

The modern streetcar vehicle proposed for the project is a fixed guideway transit vehicle consisting of a single car with articulated sections. The vehicles would be similar to those used in the cities of Portland, Tacoma, and Seattle. Figure 16 shows an image of the streetcar used in Portland, which would be similar to the modern streetcar vehicle being proposed for Milwaukee.

Depending on the vehicle that is selected in a future project phase, it could range between 67 and 82 feet long and have a vehicle capacity of 170 to 240 passengers. Some streetcars are able to travel up to 56 miles per hour. However, a mechanism would be used to limit speeds to approximately 30 miles per hour for routes in dense urban areas operating in mixed traffic.

Four vehicles would be required for the initial system and three additional vehicles would be required for the route extensions. The vehicles would have low-floor and level boarding, electric power operations, bicycle access, and multiple doors.

Figure 16: Illustration of a Modern Streetcar Vehicle

Source: Keene Studio, Portland, Oregon and Weiss and Company, Milwaukee, Wisconsin

4.2.2 Streetcar Tracks

The streetcar tracks would be embedded within the existing right of way along general purpose travel lanes. A drawing of a cross section of the track zone is shown in Appendix A. Generally, where there are multiple lanes, the tracks would be located in the right-most travel lanes. The exception is along 4th Street where the tracks are located along the inside lanes to serve stops at platforms in the median. Double track as shown on Figure 15 would be installed on all streets, except for one-way running segments on Jackson and Van Buren streets and Prospect and Farwell avenues.

4.2.3 Streetcar Stops

Streetcar stops will be spaced every one to three blocks. The initial streetcar route would have 22 stops and the extensions would add 18 stops for a combined total of 40 stops. Figure 15 shows the location of the stops along the locally preferred alternative route. It also shows the location of the stop in relation to the intersection (near, far, median or midblock) and it shows if the stop will have an inverted curb, bump out or median location curb.

Three types of stops will be created – basic, enhanced, and major. Figure 17 shows a conceptual design layout of the stops and Figure 18 shows a rendering of the proposed shelters. Basic stops will be the most common type of stop as shown on Figure 15 and will include the following components:

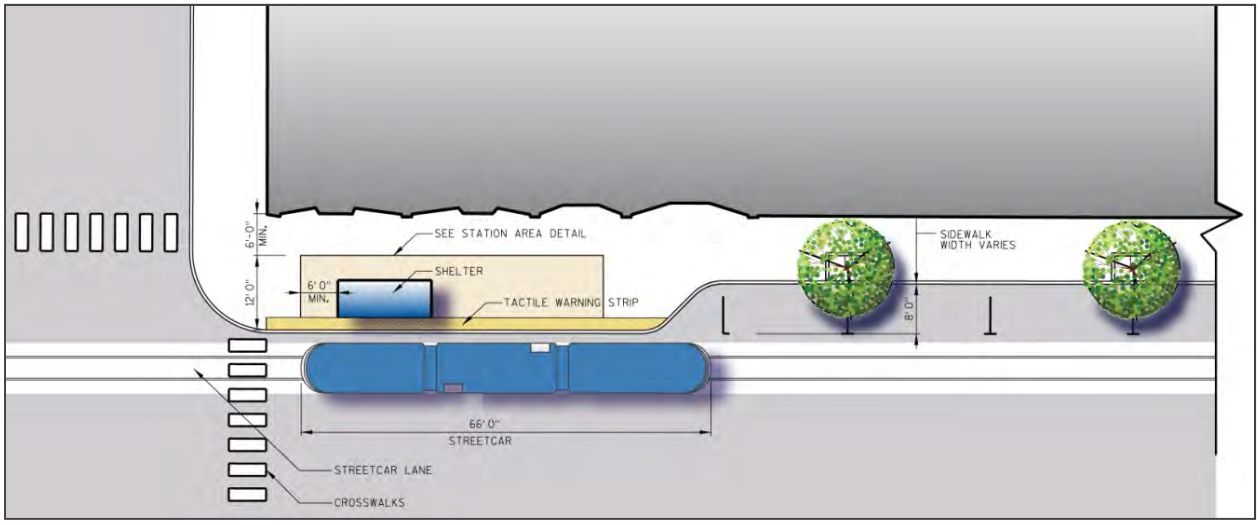
- Shelter
- Single vehicle length platform
- Raised platform for level boarding
- ADA provisions

- Off vehicle fare collection system
- Route and vehicle arrival information

Enhanced stops will be used at several locations and these will have the above features plus a wider shelter.

One major stop location is planned along Prospect Avenue between Brady Street and Royall Place. A major stop would include space for more than one streetcar vehicle and may have wider shelters or two shelters to accommodate more people.

Figure 17: Conceptual Design Layout for Streetcar Stops



Source: HNTB Corporation

Figure 18: Streetcar Shelter Rendering

Source: American Design

4.2.4 Electric Power System

The streetcar will be powered by electricity that will be delivered to the streetcar via an overhead contact system. Power to the overhead contact system will be supplied from substations which will be housed in single story prefabricated buildings. The initial route will require three substations, one at City Hall near the corner of Wells and Market streets, one near the maintenance facility west of 4th Street under Interstate 794 and one on Cass Street near Knapp Street. Figure 15 shows the approximate location of the substations and Appendix F shows details of the substation sites. Section 5.2.7, Energy Use, provides more details about the streetcar's power system.

4.2.5 Maintenance and Storage Facility

The maintenance facility site at 433 W. Clybourn Street was selected after a review of a number of possible locations in or near downtown Milwaukee. Ultimately, three specific locations were further analyzed. Figure 19 shows the location of the potential maintenance facility sites. The preferred maintenance facility site selection criteria was based on its proximity to the preferred streetcar route, size and availability, the cost to obtain use approval of the site and the sites development potential (ability to provide property tax revenue). The site that best addressed the selection criteria is the location at the southwest corner of Clybourn and 4th Street.

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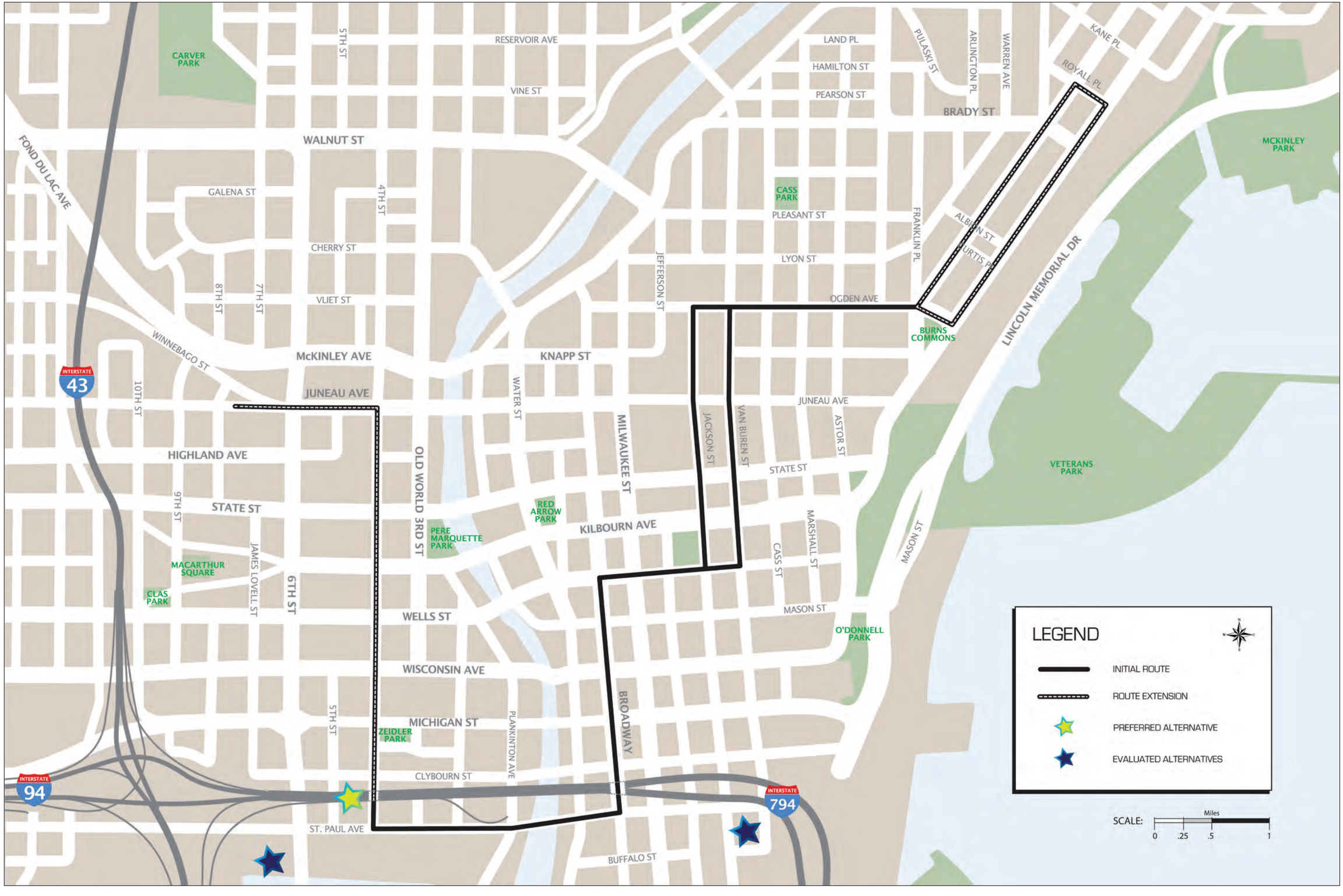
Figure 19: Maintenance Facility Alternatives Map



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Maintenance Facility Sites Eliminated

The site evaluated near the Intermodal Station is owned and controlled by WisDOT, but would cost more than the preferred site due to its distance to the streetcar route, the need for additional track turnouts for full crossings over existing freight and passenger rail lines and would have use limitations due to negotiations with freight and passenger rail entities. Due to the additional costs and coordination required, this site was eliminated from the maintenance facility options for the streetcar.

The third site evaluated near Van Buren and Buffalo streets was the most expensive option. The site is controlled under private ownership and would require four additional blocks of streetcar track to access the site. The site is partially located below Interstate 794, but the other portion of the site could be developed in the future and generate additional property tax revenues, therefore it was eliminated.

Preferred Maintenance Facility Site

The preferred maintenance facility site is located directly adjacent to the streetcar route and contains approximately two acres which allows for the storage of at least eight modern streetcar vehicles. The site is currently owned by Milwaukee County and controlled by the Wisconsin Department of Transportation (WisDOT) and is currently vacant and underutilized; therefore acquisition/lease costs would be minimal compared to other properties along the route. Additionally, the site is entirely located below Interstate 794 and controlled by public entities, thus it would be very difficult to ever utilize the site for a taxable use.

Figure 20 shows the site plan and Figure 21 shows a rendering of the proposed building.

The facility would accommodate administration offices, two maintenance bays, a shop with storage areas, a wash enclosure, locker rooms, support areas and common space. A control room where a supervisor can maintain radio contact with the streetcar operators would also be located here.

The streetcars would be stored overnight at this location, which has room to store a maximum of eight vehicles. Two streetcars would be parked in the maintenance bays and one streetcar would be stored in the wash enclosure. The remaining streetcars would be parked outdoors. The maintenance facility and rail yard are estimated to cost approximately $8.7 million (not including design fees, contingencies or escalation costs, which could add approximately $4.4 million in costs).

Figure 20: Maintenance and Storage Facility Site Plan

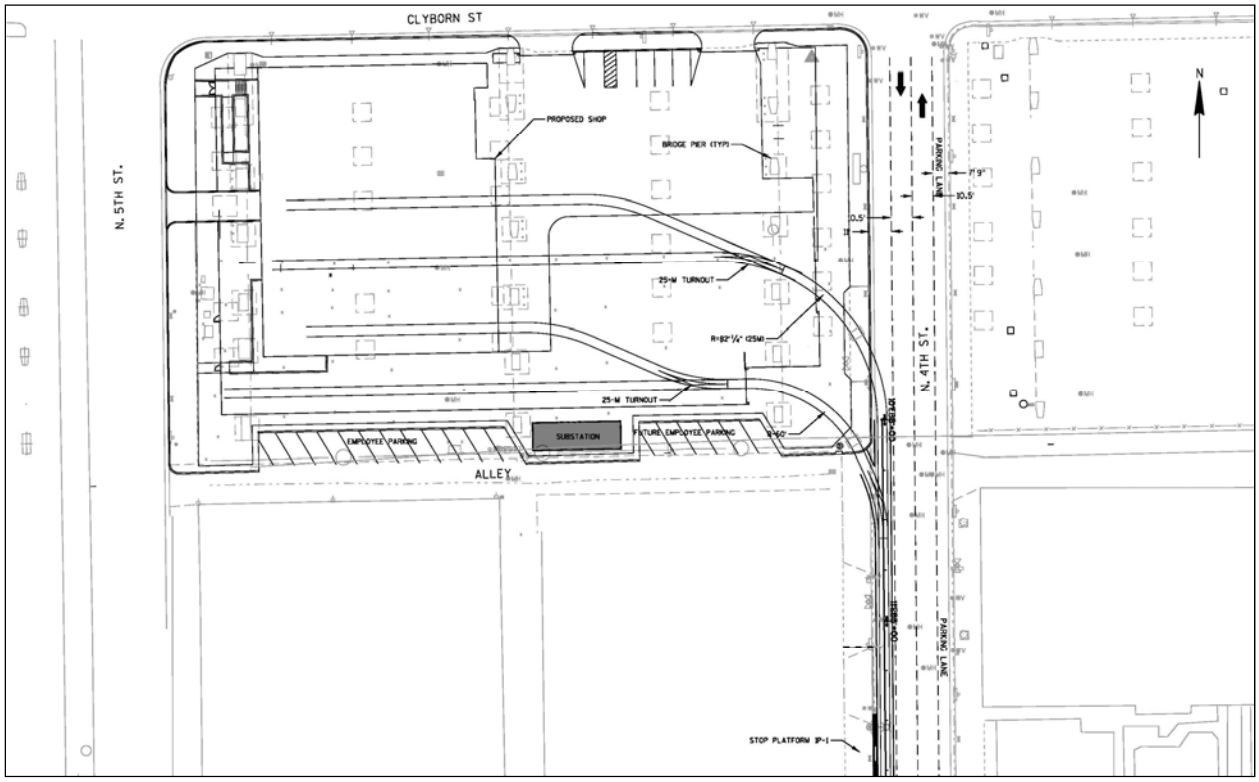
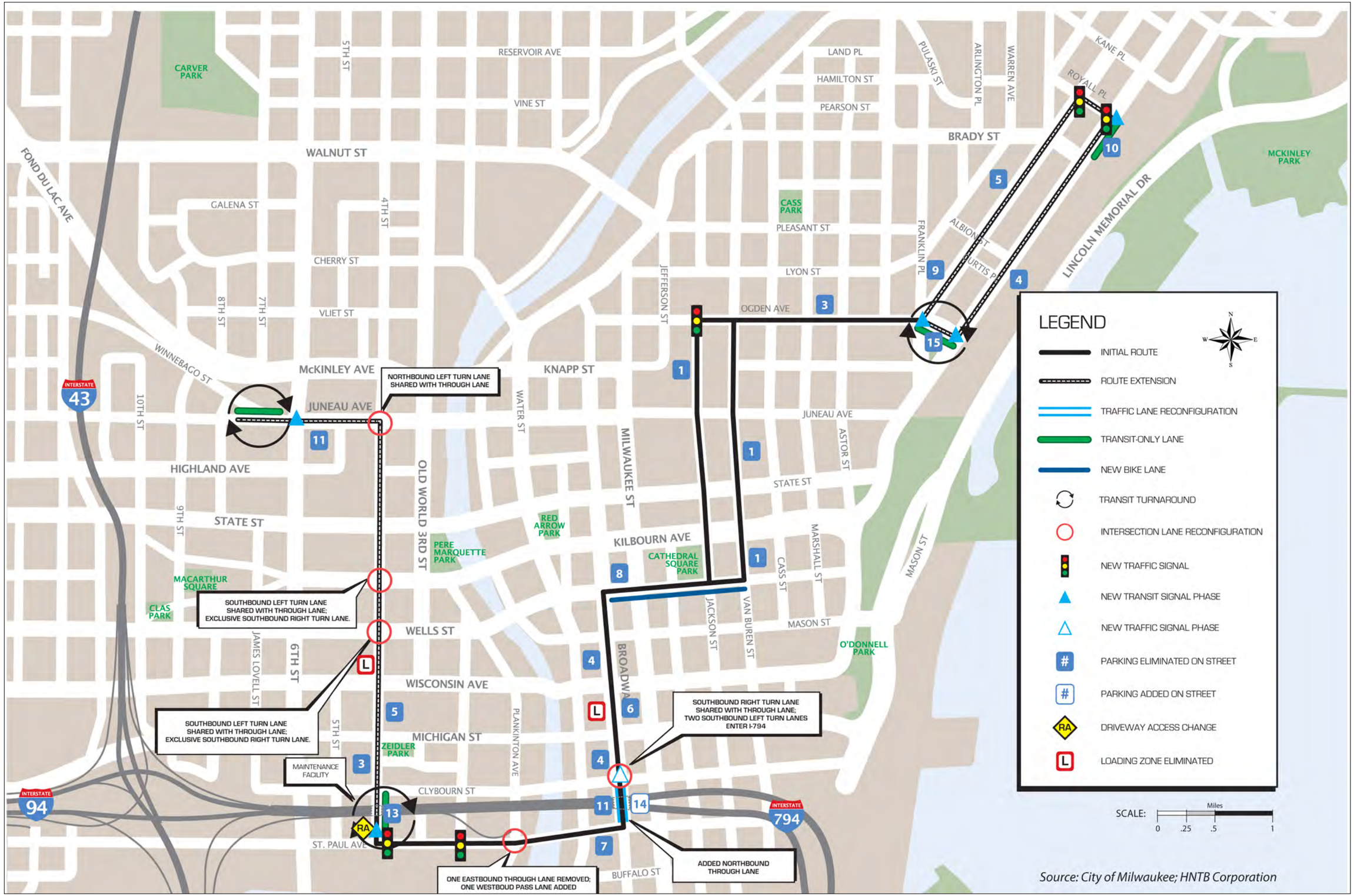


Figure 21: Maintenance and Storage Facility Perspective Rendering

4.3 ROADWAY CAPITAL IMPROVEMENTS

The locally preferred alternative will require improvements to the roadways to make sure the streetcar operates efficiently and safely with other modes of transportation. Figure 22 summarizes these improvements which are discussed in greater detail below. Section 5.2.4 provides more details about the effects the project will have on transportation.

Figure 22: Roadway Capital Improvements



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4.3.1 Lane Reconfigurations

This section describes the reconfiguration for through traffic lanes and intersections for the streetcar project.

Through Lanes

The streetcar will share a general purpose travel lane with automobiles and other vehicles. As a result, the roadway cross section will generally not change except the existing exclusive auto lanes will become mixed travel lanes to accommodate automobiles and streetcars within the same travel lane. Figure 23 shows the existing and proposed typical cross section for Ogden Avenue.

As shown on Figure 22, traffic lanes will be reconfigured in two areas. One area is along St. Paul Avenue between 4th Street and 2nd Street. The current road cross section includes one eastbound and one westbound lane. The proposed cross section will contain two eastbound lanes and one westbound lane. This can be accomplished with new striping since the existing lane widths are relatively wide.

The other lane reconfiguration as shown on Figure 22 will take place along Broadway between St. Paul Avenue and Clybourn Street. Broadway is currently a one way street for southbound traffic in this location. The streetcar project will add a northbound lane allowing traffic to flow in both directions. This change will also be accomplished with new striping on the roadway.

Intersections

The lanes at two intersections for the initial route will need to be modified. At St. Paul Avenue and Plankinton Avenue one eastbound through lane will be removed and one westbound pass lane will be added. The intersection of Clybourn Street and Broadway will be modified so that the southbound right turn lane will be shared with the through lane and two southbound left turn lanes will be provided to enter Interstate 794. For the route extensions, three additional intersections would be modified along 4th Street. Modifications would be to turn lanes as shown on Figure 22.

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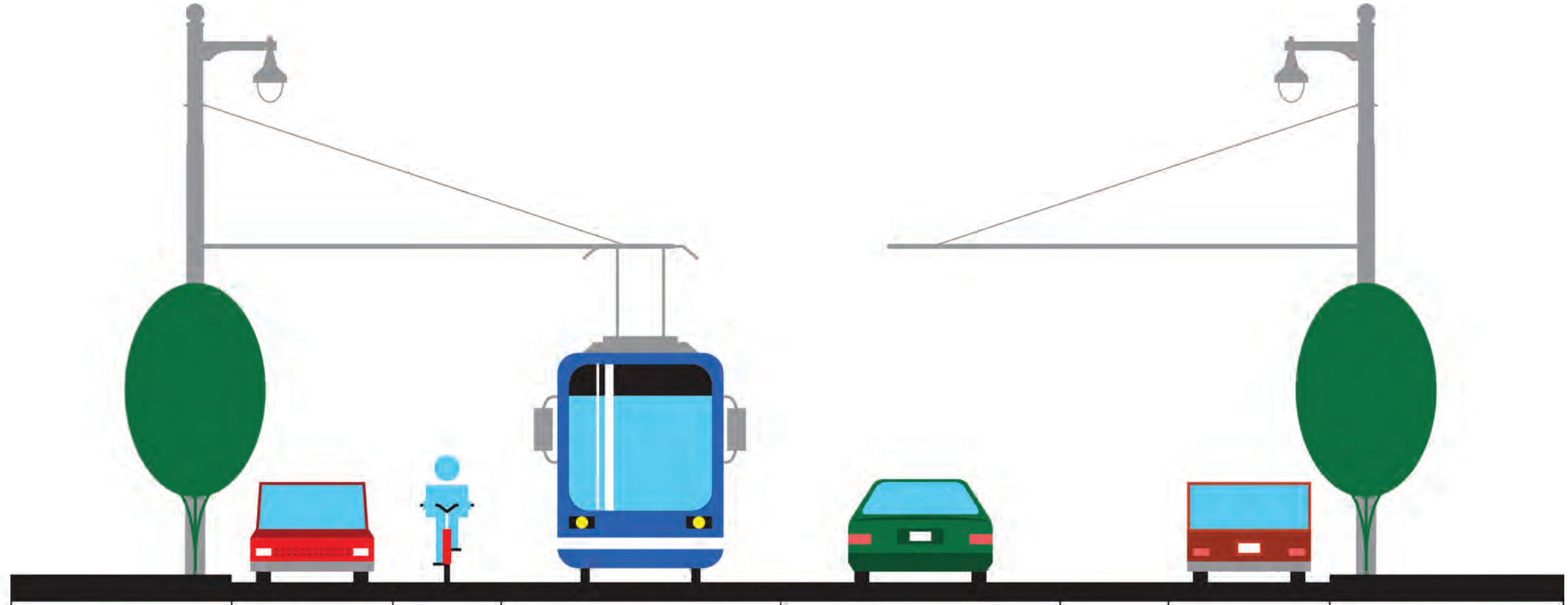
Figure 23: Typical Roadway Cross Section – Ogden Avenue



PROPOSED	**TERRACE AND SIDEWALK 15'**	**PARKING 8'**	**BIKE LANE 6'**	**MIXED LANE* 11'**	**MIXED LANE* 11'**	**BIKE LANE 6'**	**PARKING 8'**	**TERRACE AND SIDEWALK 15'**
EXISTING	TERRACE AND SIDEWALK 15'	PARKING 8'	BIKE LANE 6'	AUTO LANE 11'	AUTO LANE 11'	BIKE LANE 6'	PARKING 8'	TERRACE AND SIDEWALK 15'

OGDEN AVENUE, 80' RIGHT OF WAY

NOTE: diagram not to scale

***MIXED LANE:** a shared travel lane, with streetcar and automobile travel allowed

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4.3.2 Traffic Signals

The streetcar project will require the installation of new traffic signals at some intersections and modifications to existing traffic signals at other intersections to manage traffic operations as shown on Figure 22.

Two new traffic signals would be installed for the initial route at the intersections of St. Paul Avenue and 4th Street and Jackson Street and Ogden Avenue. If the route is extended, two more traffic signals would be installed where Farwell Avenue and Prospect Avenue intersect with Royall Place.

A new transit signal phase would be added to several existing traffic signals. A transit signal phase is used when there is a potential conflict with another direction of traffic. A transit signal phase is a period of time when all directions of vehicular traffic will have a red light, and the transit vehicle will move through the intersection. The standard symbol is with a vertical bar. The vertical bar will appear and give the transit vehicle permission to proceed through the intersection. An example of a vertical bar is shown in Figure 38.

4.3.3 Transit-Only Lanes

Very few transit only lanes are needed since the streetcar will operate mostly in a mixed traffic lane. Transit-only lanes are needed in a few locations to avoid impacts to traffic. One segment of transit-only lane is from the maintenance facility at the southwest corner of 4th and Clybourn streets to 2nd Street and St. Paul Avenue. The transit-only lane is designed to accommodate additional streetcar track if future funding is obtained for extensions. Additional transit-only lanes are proposed where the streetcar would turn around, at the maintenance facility, at Ogden Avenue near Burns Commons park for the initial route or at a transit layover along Prospect Avenue north of Brady Street and west of 6th Street on Juneau Avenue for the proposed extensions See Figure 22.

4.3.4 Driveways, Loading Zones and Parking

In a few instances driveways and loading zones may need to be altered or moved to accommodate the streetcar track and stop locations as shown on Figure 15. On-street parking stalls along the streetcar route would only be removed for stop locations and transit-only lanes as shown on Figure 22. These impacts are discussed in greater detail in Section 5.2.4.

4.3.5 Bike Lanes

The proposed design maintains existing bike lanes located on streetcar routes, and adds a new bike lane along Wells Street between Van Buren Street and Broadway as shown on Figure 22. Issues concerning bicycles are discussed in Section 5.1.7, Safety and Security and Section 5.2.4, Traffic and Transportation.

4.3.6 Other Roadway Projects

Two planned projects influence the streetcar project, but are not part of this project. The St. Paul Avenue bridge reconstruction project over the Milwaukee River is scheduled for replacement in the fall of 2012. The bridge replacement will include the installation of streetcar tracks to accommodate the streetcar project.

The City of Milwaukee also plans to convert Wells Street east of 6th Street from a one-way to a two-way street during the summer of 2011. This will include the portion of Wells Street between Broadway and Van Buren Street where the streetcar will run. The streetcar project design will incorporate the planned two-way conversion.

4.4 STREETCAR OPERATING CHARACTERISTICS

This section describes the operating characteristics of the locally preferred alternative for the streetcar.

4.4.1 Service Frequency and Hours of Operation

The streetcar would operate seven days per week with more frequent service during the day and somewhat less frequent service during early mornings, late night hours and on weekends. The streetcar would have 10 minute headways during the weekday daytime and 15 minute headways on weekends, late night, and early morning. It would operate Monday through Friday between 5 AM and midnight, 7 AM to midnight on Saturday and 7 AM to 10 PM on Sundays. The headways and hours of operation are listed in Table 7. The end-to-end travel time is about 15 minutes for the initial system and 28 minutes for the system with the extensions.

Table 7: Streetcar Operations

Operating Hours	Headways (minutes)
Monday through Friday	
5 AM to 7 AM	15
7 AM to 10 PM	10
10 PM to 12 AM	15
Saturday	
7AM to 12 AM	15
Sunday	
7 AM to 10 PM	15

4.4.2 Integration with Other Modes

The City's goal is to create a transportation system that can accommodate even people without a car. Connectivity and convenience is needed to successfully implement streetcar service. In some cases people need to be able to transfer from one transportation mode to another to get to their final destination. If these transfers are not convenient, people will not use the service or their trip could take too long.

The locally preferred alternative will connect with other modes of transportation. The streetcar will have a stop next to the Milwaukee Intermodal Station which serves approximately 1.4 million existing annual users with passenger rail service provided by AMTRAK, regional bus service, and Milwaukee County Transit System bus service.

The streetcar will not require modifications to the existing Milwaukee County Transit System bus routes. However, the City of Milwaukee will coordinate with Milwaukee County Transit System to determine if modifications are needed to more efficiently integrate bus service with the streetcar.

4.4.3 Ridership

One year after streetcar operations begin, the initial route is anticipated to generate 1,800 rides per day and 665,000 rides per year. The route extensions are expected to increase ridership to 3,600 daily and 1.31 million annual riders. By 2030, ridership is expected to increase by 19%.

4.5 CAPITAL AND OPERATING COSTS

The capital costs for the initial streetcar system are estimated to be $64.6 million. The route extensions would add $40.2 million for a total combined cost of $104.8 million. These costs will continue to be

refined as the design is refined. Ways to minimize costs will be examined by the City during the design process.

The streetcar route with extensions has an estimated annual Operation and Maintenance cost of $2.65 million for the initial route and $4.89 million with both route extensions based on the route characteristics and service plan.

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5. ENVIRONMENTAL RESOURCES, IMPACTS, AND MITIGATION

This section of the EA describes the existing conditions and environmental impacts of the No Action Alternative and of the proposed streetcar locally preferred alternative (LPA) This section includes discussion about social and environmental factors, physical factors, indirect effects and cumulative effects. Descriptions of relevant laws, regulations and guidelines are described and where appropriate, proposed mitigation strategies are included.

This section documents the finding that there would be no significant environmental impacts as a result of either the No Action Alternative or the Streetcar LPA. There would be some minor effects from both of the alternatives as described in the following sections. Benefits of the alternatives are also presented.

5.1 SOCIAL AND ECONOMIC FACTORS

The discussions in this section focus on how the project would affect quality of life issues.

5.1.1 Land Use and Property Impacts

This section summarizes the affected land use environment in the vicinity of the streetcar project. This section only addresses the direct effects to land use. Specifically, it focuses on the project activities that immediately result in the conversion of land from its existing use. Indirect and cumulative land use effects are discussed in Section 5.3 and 5.4 respectively.

Affected environment

The streetcar study area encompasses a large portion of downtown Milwaukee on both the east and west sides of the Milwaukee River and neighborhoods adjacent to downtown including the Historic Third Ward, Lower East Side and Brady Street as shown on Figure 3.

Existing Land Use

Table 8 provides a breakdown of the existing land use types within the streetcar study area and Figure 24 shows the existing land use on a map. Residential land uses comprise the largest land use category at 208 acres and are concentrated on the northeast side of the study area where there is a large amount of high-density multi-story housing. Public and quasi-public land uses are the second largest category within the streetcar study area at 185 acres. These uses include public lands owned by the City of Milwaukee or another governmental body and quasi- public lands that are private owned, but provide services for the public such as churches, cemeteries, sports and entertainment facilities and the convention center. Public and quasi-public uses are concentrated on the western side of the study area where the large scale civic and entertainment facilities and Milwaukee County and State of Wisconsin buildings are located. The next largest land use category is 168 acres of commercial. The commercial land uses are focused along the Wisconsin Avenue and Michigan Street corridors to the east and west of the Milwaukee River in the area of downtown that is considered to be the traditional downtown core.

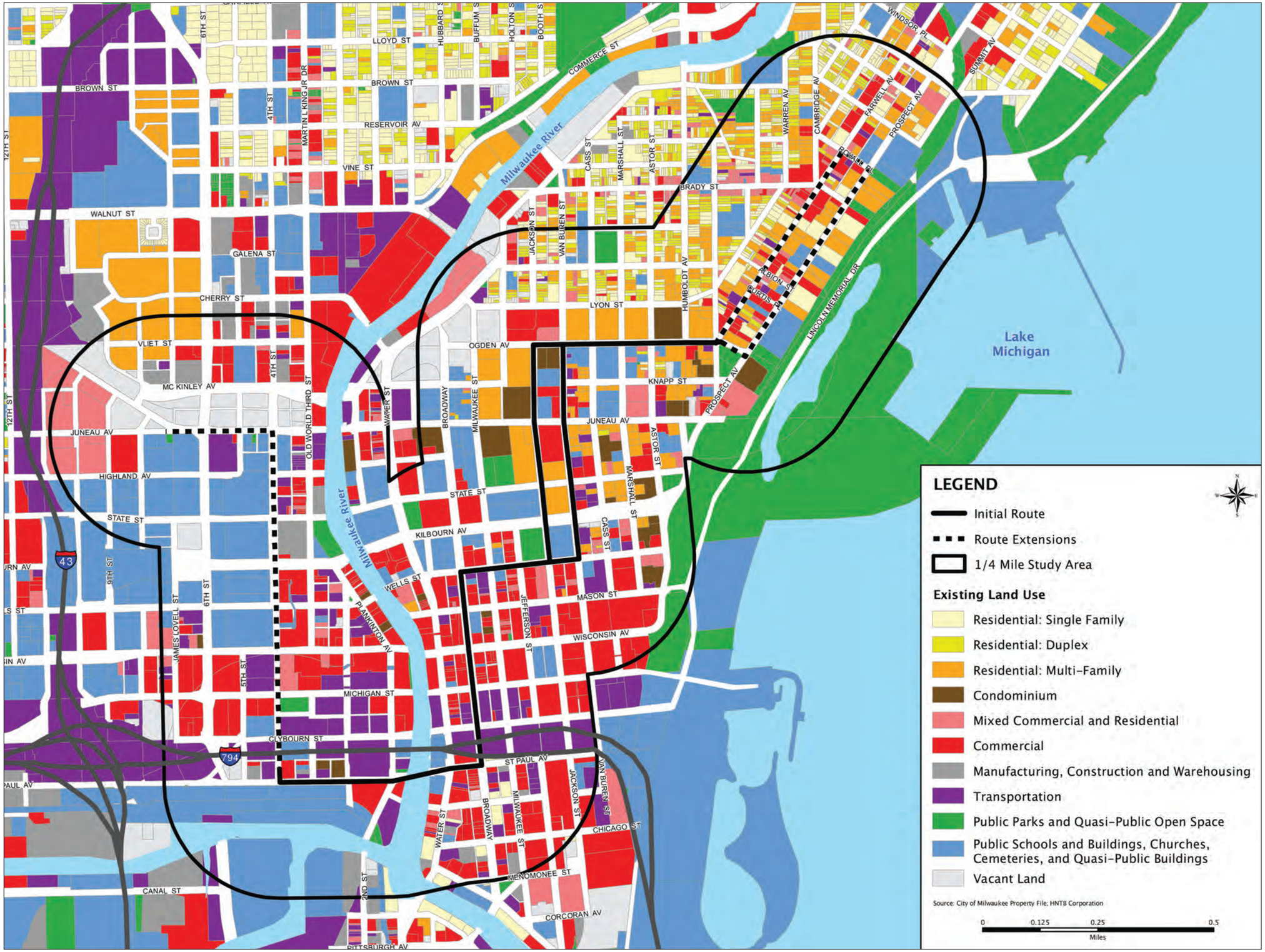
Transportation, vacant and manufacturing land uses make up smaller portions of the study area. Transportation land uses are primarily associated with Interstate 794 on the southern end of the study area as well as some of the large surface parking lots next to the freeway. Vacant lands are generally associated with the lands contained in the Park East redevelopment area (described below). The study area contains very little manufacturing, construction and warehousing land uses which is typical of the downtown urban setting.

Table 8: Existing Land Use Acreages

Land use type	Acres
Residential 2	08
Public and Quasi Public	185
Commercial 16	8
Open Space	108
Transportation 78	
Vacant Land	35
Manufacturing, Construction and Warehousing	17
Total	**799**

Source: Milwaukee Property File, 2007

Figure 24: Existing Land Use Map



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Land Use by Route Segment

The following subsections describe the land use more specifically by route segment for the initial system and the extensions:

Initial Route

- St. Paul (4th Street to Broadway):

Land uses along the western portion of the St. Paul Avenue segment are mostly public. This is where the Milwaukee Intermodal Station and the U.S. Post Office are located. Some vacant parcels, warehouse uses and multi-family residential are also located in this area. The eastern side of the St. Paul segment across the Milwaukee River is part of the Historic Third Ward neighborhood. This area is a former warehouse district that has been converted to mid-rise mixed use commercial (retail and office) and residential land uses. The Milwaukee Public Market is located at the intersection of St. Paul Avenue and Water Street. Interstate 794 is elevated just to the north of St. Paul and extends along this entire route segment.

- Broadway (St. Paul Avenue to Wells Street):

Land uses along the Broadway segment contain mostly downtown commercial office spaces. The very southern portion under and just north of Interstate 794 contains several parcels that are used for surface parking lots.

- Wells Street (Broadway to Van Buren Street):

Land uses along the Wells Street segment are mostly multi-story commercial office uses along the northern end of the central business district. This segment also passes the City of Milwaukee Municipal buildings.

- Jackson Street and Van Buren Street (Wells Street to Ogden Street):

Land uses along the Jackson Street and Van Buren Street pair depart from the downtown multi-story office uses and change to predominately multi-story high density residential uses.

- Ogden Street (Jackson/Van Buren streets to Farwell/Prospect streets):

The Ogden Street segment is characterized by neighborhood scale mixed land use types including neighborhood shopping center, midrise residential uses and first floor neighborhood serving commercial space. A substantial portion of the Ogden Street segment contains school and church lands.

Route Extensions

- Juneau Avenue (4th Street to 7th Street) and 4th Street (Juneau Avenue to St. Paul):

The north end of the 4th Street /Juneau Avenue route segment includes two redevelopment districts. The Brewery is a 20 acre redevelopment site that includes the former Pabst Brewery complex. This site currently contains a mixture of historic buildings and lands that were once used by the brewery. Future plans call for a mix of residential, retail, office and educational land uses. The other district is the McKinley redevelopment district. It includes the vacant lands made available from the removal of the former Park East Freeway spur on the western side of the Milwaukee River. The land has been prepared for development and new street infrastructure has been put into place. The Park East Redevelopment Plan has dedicated the area for mixed-use urban development.

The central portion of the 4th Street corridor transitions from the redevelopment areas to large-scale civic uses and entertainment venues. This includes Milwaukee Area Technical College, the Bradley Center, US Cellular Arena, Frontier Airlines Convention Center and the Hilton City Center hotel. The southern portion of the 4th Street corridor is characterized by the presence of corporate headquarters including Bon-

Ton Stores, Assurant Health and We Energies. It also includes a major shopping area on the western side of downtown at the Shops of Grand Avenue.

- Prospect Avenue and Farwell Avenue (Ogden Street to Royall Place):

Prospect Avenue is comprised primarily of multi-story residential land uses. This area has the highest population density within the City of Milwaukee and State of Wisconsin. Farwell Avenue also has many multi-story residential uses, but more commercial uses are found along this corridor. The north end of Farwell Avenue ties into the Brady Street neighborhood, which contains neighborhood scale retail and residential uses.

Environmental Effects

Under the No Action Alternative a streetcar system in downtown Milwaukee would not be constructed. The purpose of the project to improve transit facilities to serve and support existing and planned local land use and development may not be satisfied as the City has planned. These plans are described in the Purpose and Need Statement (Section 2). Project Need 3 – Support Planned Development, would not be satisfied.

The Streetcar LPA's direct impacts to land use are very minor because the improvements fall primarily within the existing public right of way.

One exception is the parcel on the northeast corner of 4th Street and St. Paul Avenue (350 West St. Paul Avenue), "The Palmolive" mixed-use office building and its surface parking lot. The property is currently owned by Van Buren Management Inc. Approximately 100 square feet of land could be affected to accommodate the turning radius of the streetcar from westbound St. Paul Avenue to northbound 4th Street for the proposed 4th Street extension. The impact is necessary to maintain at least five feet of sidewalk at the intersection. The affected area currently contains a landscape buffer around the parking lot. No parking spaces will be affected.

One other parcel of land that will change as a result of the project is the planned site of the streetcar maintenance facility. It is an approximately two-acre parcel located under Interstate 794 south of Clybourn Street and west of 4th Street as shown on the site plan in Figure 20. The vacant parcel is within the Interstate 794 right of way, currently owned by Milwaukee County, but under the control of the Wisconsin Department of Transportation.

Mitigation Measures

Engineering designs for the impacted parcel at the northeast corner of 4th Street and St. Paul Avenue have been created to minimize the impact to property and to avoid impacts to parking spaces while maintaining at least a five foot wide sidewalk. Project plans and drawings are shown in Appendix A.

Acquisition of any lands for the streetcar project will follow the City of Milwaukee's eminent domain process as authorized through Wisconsin Statute, Chapter 32. Additionally, the City of Milwaukee will work with the property owner to purchase the land affected by the streetcar project if funding is obtained for the 4th Street extension. Other mitigation measures may be utilized to minimize impacts to the property such as replacement of the landscaped area and notification of the impacts to the property owner throughout the project development process. Impacted landscaping at this site will be replaced by the project if requested by the property owner. Further efforts to minimize or avoid this impacted property will be made as the project design proceeds.

5.1.2 Economic Development

This section describes the existing economic conditions within the streetcar study area, the economic effects associated with the project and mitigation measures.

Affected Environment

Downtown Milwaukee and the streetcar study area are part of the southeastern Wisconsin region, an area defined by the counties of Washington, Ozaukee, Waukesha, Milwaukee, Walworth, Racine and Kenosha. As shown in Table 9, Milwaukee County had 441,519 people employed in the labor force as of 2008. This represents nearly half of the region's employment.

Overall, the region's employed labor force has remained steady as shown in Table 9, declining only slightly from 1,004,963 employees in 2000 to 991,972 employees in 2008. Milwaukee County's employed labor force declined by 4% during this time frame. It is likely that employment has continued to decline over the past two years for Milwaukee County and the region given the recent economic downturn.

Table 9: Employed Labor Force

Year	Milwaukee County	Southeast Region
2000 4	58,091	1,004,963
2002 43	6,867	973,401
2004 42	7,655	967,835
2006 43	1,293	985,622
2008	441,519 99	1,972
Percent Change 2000-2008	-4% -1%	

Source: Choose Milwaukee website. Milwaukee 7 Region. Accessed on 12/15/2010

Employment projections completed by the Southeastern Wisconsin Regional Planning Commission (SEWRPC) in 2004 indicated that employment levels for Milwaukee County are expected to remain stable through 2035 due in large part to the built out nature of the County. The region as a whole is expected to see approximately 12% growth in employment by 2035[12]. However, Milwaukee County is expected to continue as the area's employment hub, employing the largest number of people.

The streetcar study area had an estimated 87,885 jobs in 2000[13]. This encompasses a large portion of downtown, which had estimated employment at 81,947 in 2009.[14] The highest concentrations of employment are located in the office towers east of the Milwaukee River in the East Town neighborhood as shown on Figure 3. Several large corporations are also located on the west side of the river. The streetcar study area contains nearly 14.5 million square feet of occupied office space.

The 2007 Downtown Market Analysis found that downtown has a higher percentage of white-collar occupations such as management, financial, business and administrative support occupations in

[12] *The Economy of Southeastern Wisconsin. Technical Report No. 10, 4th Edition*. Southeastern Wisconsin Regional Planning Commission. July 2004.

[13] US Census Bureau. Census Transportation Planning Package-CTPP, 2000.

[14] *2009-2010 Downtown Milwaukee Economic Report.* Milwaukee Downtown Business Improvement District #21.

comparison to the southeast region as a whole[15]. This is typical of a downtown area that has a high concentration of office space. Conversely, the Downtown Market Analysis found that downtown has fewer blue-collar occupations such as construction, production and transportation, which reflects the limited amount of land dedicated to manufacturing, construction, warehousing and transportation industries. (See Section 5.1.1 for land use information.)

In addition to a concentration of office related employment, the streetcar study area contains over 3.2 million square feet of occupied retail space[16]. Major retail corridors within the study area are focused around Wisconsin Avenue, Water Street, Milwaukee Street, Van Buren Street, Brady Street and Broadway in the Historic Third Ward. See Figure 3.

Environmental Effects

Under the No Action Alternative a streetcar system in downtown Milwaukee would not be constructed. The purpose of the project to serve the many dispersed activity centers in downtown Milwaukee may not be satisfied as the City has planned. These plans are described in the Purpose and Need Statement (Section 2). The No Action Alternative would not meet the City's goal to use the streetcar to support and enhance economic development.

The streetcar LPA is expected to create jobs that will benefit the local and regional economy. As shown on Table 10, the construction of the initial route and the extensions would create approximately 500 direct local construction jobs. All major streetcar manufacturers are located outside the state so an additional 150 direct out of state jobs would be created to construct the streetcar vehicles.

The ongoing operations and maintenance of the streetcar system would create a total of 35 direct local jobs for the initial route and the extensions. Furthermore, approximately 445 indirect jobs would be created locally and throughout the U.S. from suppliers that would provide materials for the construction of the system and the construction of the vehicles. Approximately 440 of these indirect jobs are expected to be created from workers spending money on goods and services.

[15] *Milwaukee Downtown Market Analysis, 2007*. Milwaukee Downtown Business Improvement District #21, University of Wisconsin-Extension Center for Community and Economic Development, and University of Wisconsin-Extension Milwaukee County.

[16] *Streetcar Technical Memorandum: Land Use and Economic Development*. HNTB Corporation and City of Milwaukee Department of City Development. 2010.

Table 10: Streetcar Job Creation

Category	Type	Estimated Jobs*		
		Initial Route	Route Extensions	Total
Direct	System construction	305	170	475
	Vehicle construction**	85	65	150
	Operations and maintenance	20	15	35
Indirect	Suppliers	290	165	455
Induced	Discretionary spending	280	160	340

Source: Streetcar Technical Memorandum: Potential Job Creation. HNTB Corporation and City of Milwaukee. April 2010.

*Estimated jobs are based on methodology outline in Job Impacts of Spending on Public Transportation: An Update (prepared for the American Public Transportation Association), Economic Development Research Group, Inc. April 2009.

**Vehicle construction jobs are based on an estimate for the Portland East Side Loop vehicle contract.

The jobs created by the streetcar construction and operation may create opportunities for City residents and Emerging Business Enterprises (EBE)[17] or Disadvantaged Business Enterprises (DBE). The streetcar project is a federally funded project and will meet the federal contracting standards directed through the Federal Transit Administration. The City of Milwaukee will develop a plan and establish goals to hire City residents and EBE/DBE firms for the design, construction and operations of the streetcar system. See Section 5.2.5 for a discussion of the project's overall Construction effects.

Streetcar service will increase travel options for residents living within the project area and will therefore improve access to jobs. Regional commuting patterns will not be impacted as a result of this project, due to the initial route length.

Businesses along the streetcar route could be inconvenienced during construction. Streetcar construction may reduce access to properties and businesses along its route, may reduce the number of on-street parking spaces and require alternate loading zone locations. Access would not be completely eliminated during construction. See Section 5.2.5 for a discussion of the project's Construction Impacts.

Mitigation Measures

The project will employ typical construction management practices to avoid or minimize adverse economic consequences to business establishments, such as avoiding full access closures, providing temporary alternate access and signage, and timely communications with business owners. Furthermore, streetcar construction will be done in small segments as described in Section 5.2.5, to avoid impacting an entire street or neighborhood.

The City of Milwaukee is planning a series of targeted outreach meetings for businesses owners along the route to precede the public hearing on this Environmental Assessment. These meetings will continue during the design and construction phases of the project. The business outreach meetings will inform business owners of what they can expect before, during, and after project construction.

[17] Emerging Business Enterprise (EBE) is defined by the City of Milwaukee as a small business that is owned, operated and controlled by one or more individuals who are at a disadvantage with respect to education, employment, and business location.

The City will also utilize its *Public Works Support for Business Program*[18] for the streetcar project. Recognizing that transportation infrastructure projects are critical to long-term economic development, but can also impact surrounding businesses in the short term, the City of Milwaukee developed the program to help nearby businesses before and during construction projects. The City will communicate important project information and updates and provide businesses with support tools, such as a handbook of tips and resources, signage, project summaries, and regular e-mail updates about the projects.

The City has established a team of community liaisons with a minimum of one liaison assigned to each infrastructure project. Liaisons will serve as the lead point of contact regarding the construction project and communicate with neighborhood businesses and property owners through letters, e-mail updates, individual meetings and the program website (http://city.milwaukee.gov/mpw/supportforbusiness/).The liaison's primary roles will be to:

- Explain plans, procedures, and timelines to the neighborhood
- Educate neighborhood businesses and property owners on potential impact mitigation resources available
- Advocate on behalf of neighborhood members with the City, and
- Assess the impact of the planned construction on the neighborhood and request a corresponding level of support from the City.

In addition to the community liaisons, the City provides opportunities for neighborhood groups and businesses in highly affected areas to receive professional consulting on issues ranging from business management and financial planning to human resources and information technology. Qualifying entities will be selected on a case-by-case basis, based on the assessment and recommendation from the community liaison in each area. Groups may also qualify for marketing/advertising consulting through the Public Works Support for Business Program. As with business/technical consulting, qualifying entities are selected on a case-by-case basis, based on the assessment and recommendations from the community liaison in each area.

5.1.3 Environmental Justice

This section addresses how the City involved minorities, people with low income, and other disadvantaged groups and businesses. These groups are also called "Environmental Justice Populations".

In 1997, the U.S. Department of Transportation issued its *DOT Order to Address Environmental Justice in Minority Populations and Low-Income Populations* to summarize and expand upon the requirements of *Executive Order 12898 on Environmental Justice*. This project is consistent with the Executive Order as described in this Section.

Affected Environment

Based on the most recent Census data (2000), the zone within ¼ mile of the proposed streetcar route has a high percentage of environmental justice populations. This is based on the following statistics:

- At least 21% of the population is minority compared to 50% citywide, 34% countywide, 22% region wide (within the Milwaukee Racine Consolidated Metropolitan Statistical Area) and 11% statewide. (Minority here is defined as Black or African American, American Indian or Alaskan Native, Asian, Native Hawaiian or other Pacific Islander, or some other race other than white).

[18] http://city.milwaukee.gov/mpw/supportforbusiness/

- At least 13% of the population is black compared to 37% citywide, 25% countywide, 15% region wide and 6% statewide. See Figure 25. (Black or African American is defined by the 2000 Census as a person having origins in any of the black racial groups of Africa.)
- Over 42% of the household incomes in the area are below the City of Milwaukee's median household income ($32,216).

Even though the study area has a lower percentage of minorities than the City as a whole, the study area still has a substantial number of minorities that would be served by the streetcar in comparison to Milwaukee County (excluding the City of Milwaukee) or any other city in the state.

Other characteristics of the study area may also indicate additional environmental justice populations including:

- A large number of people are over 65 years (12%) compared to 10% citywide.
- At least 87% of the population live in renter occupied housing units, compared to 54% citywide, 47% countywide, and 38% region wide.
- A high percentage of residents rely on non vehicular transportation for commuting. Over 35% car pool, use transit, bike or walk compared to 28% citywide, 22% countywide, and 17% region wide.
- A larger number of households, 77%, have only one vehicle or no vehicles compared to 65% citywide, 58% countywide, and 47% region wide.
- At least 30% of the population has disabilities compared to 20% citywide, 18% countywide, and 15% region wide.

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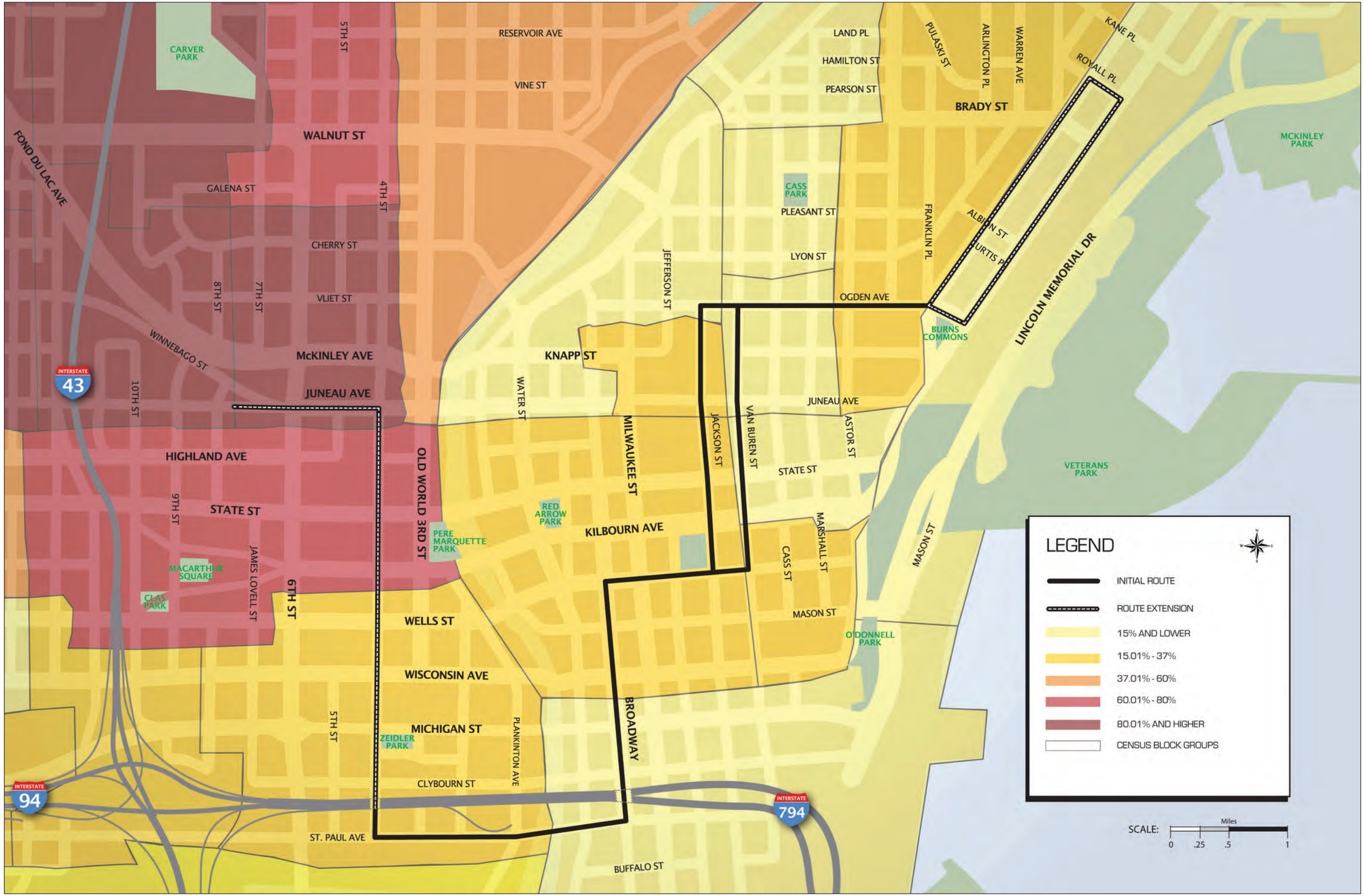
Figure 25: Map of African American Populations



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The City made every effort to reach out to organizations that represent environmental justice populations. This helped the City avoid disproportionately high and adverse effects to people's health and environment. It also allowed full and fair participation by these groups, helping them to be involved in decisions made about transportation in their community.

To make sure disadvantaged populations had an opportunity to participate in the process, the project team worked with the local American Civil Liberties Union to identify a list of organizations (see below) that may represent environmental justice populations or that may be able to help the City make contacts with environmental justice populations. These organizations were invited to the October 8, 2009 public information meeting and were given the opportunity to meet with members of the project team to learn about the proposed streetcar project. Individual meetings were also held with the following organizations beginning in September 2009:

- American Civil Liberties Union (advocates individual rights)
- Urban Economic Development Association (supports housing and economic development initiatives to revitalize communities)
- The Milwaukee Urban League (advocates for African Americans)
- Independence First (serves people with disabilities)
- Esperanza Unida (represents minority, injured, and unemployed workers)
- 9 to 5 (serves disadvantaged working women)
- Citizen Action/Good Jobs and Livable Neighborhoods (a coalition committed to achieving social, economic, and environmental justice
- SEIU Local 1 (State Employees International Union)
- NAACP (National Association for the Advancement of Colored People)
- MICAH (Milwaukee Inner-city Congregations Allied for Hope (MICAH) an interfaith organization committed to addressing community justice issues)
- Disability Rights Wisconsin (advocates for rights for disabled people)

These groups generally expressed support for the streetcar project and indicated they understood the need to start with a small system that originates from downtown. Many organizations indicated they would like to see new routes in the future to service additional low income and minority neighborhoods. The starter system, if successful will lead to future investment in areas with higher Environmental Justice populations.

Other issues cited included: local hiring requirements; construction job opportunities; the cost to ride the streetcar; incentives and support for local business development; and accessibility for people with disabilities.

They also advised the City about additional groups that should be involved and other way to reach out. The study team acted on these recommendations, such as the Mayor speaking about streetcar on radio station WMCS. WMCS is committed to the Milwaukee urban community focusing on issues and concerns important to people. Some people in turn discussed the project at their organization's regular meetings. The comments are documented in the project's Public Involvement Technical Memorandum.[19]

[19] *Milwaukee Streetcar Technical Memorandum: Public Involvement and Environmental Justice.* HNTB Corporation and City of Milwaukee. January 2010.

Environmental Effects

Under the No Action Alternative a streetcar system in downtown Milwaukee would not be constructed and the City's project objective to provide greater transit options for those people that depend on transit would not be met. Another City objective for the project is to maximize transit accessibility and choices for residents, employees and visitor, which the No Action Alternative would not address in any way.

Based on work with community groups and organizations, the streetcar LPA is expected to have an overall positive effect on environmental justice populations by increasing transit services for all citizens' living, working and visiting the study area. At the same time, the project will not affect existing transit services that serve the area.

Having a new alternative mode of public transportation was indicated as an important factor for many groups that represent environmental justice populations. Many low-income and minority populations have no other way than public transit to get to work, shopping, child care, medical appointments, recreation, or other places. By increasing public transit service, quality of life will improve for those who have no other way to get around within the study area.

Accessibility of the vehicles and stops for persons with disabilities was also indicated as a concern from some groups that represent environmental justice groups. To address the needs of the disabled, the streetcar vehicles and stops will comply with standard ADA provisions. Vehicles will include low floor and level boarding to make getting on and off the streetcar easy and fast. Also, the City plans to include both visual and audio displays on vehicles so everyone can see what the next stop will be as well as hear the next stop.

An often cited concern for environmental justice populations is that gentrification may accompany development that is spurred by introducing new transit service. "Gentrification" involves the renovation of an aging neighborhood into a wealthier one, usually through redevelopment. This can lead to the need for the lower income populations to relocate because they cannot afford to pay higher rents.

In this case, redevelopment that may be stimulated by the addition of streetcar transit is not expected to gentrify the neighborhoods to the detriment of existing residents because many of the areas targeted for redevelopment downtown and near downtown are former warehousing and industrial districts rather than residential neighborhoods.

There is affordable housing within ¼ mile of the proposed streetcar route. Many of these residential developments used various forms of government provided incentives to build affordable housing. Because of this, these programs limit the conversion of these units to market rate and protect them from being converted to higher rents. See Section 5.3.3 and Table 25 for more information.

All in all, the streetcar is expected to support environmental justice principles by ensuring that the streetcar facilities, services, maintenance, and vehicle replacement deliver equitable levels of service and benefits to minority and low-income populations.

Mitigation Measures

No disproportionately high and adverse impacts to any minority businesses, or low income or minority communities or individuals were identified. However, the City will continue to seek the input of environmental justice populations as final designs are developed and through construction.

5.1.4 Historic and Archaeological Resources

This section explains whether the streetcar will affect historic and archaeological sites. The National Historic Preservation Act requires this review.[20] Sites that are on or eligible to be listed on the National Register of Historic Places (NRHP) are afforded special protection.

Affected Environment

Historical Context

The present-day City of Milwaukee was settled by three land speculators, Byron Kilbourn, Solomon Juneau and George Walker and so three separate communities emerged around the convergence of the Menomonee, Milwaukee, and Kinnickinnic rivers. By 1846, the settlements of Kilbourntown, Juneautown and Walker's Point were incorporated as the City of Milwaukee, which within two years, had a population of 16,521. As a port and railroad hub, Milwaukee was the world's leading shipper of wheat by the early 1860s. The ethnically diverse population increased nearly three-fold by 1860 and nearly quadrupled by 1890. In 1910, the City contained approximately 373,857 residents. In 1920, the City had a population density of 18,213 per square mile, which was second only to New York City nationally. As Milwaukee grew, distinct areas serving the residential, commercial, and industrial needs of its citizens emerged. Brief historical overviews of the areas served by the proposed streetcar route follow.[21]

In general, the western, southern, and central portions of the study area are located in downtown Milwaukee, while the northeastern portion is situated in Milwaukee's Lower East Side neighborhood. The downtown portion is dominated by large-scale commercial, educational, and governmental buildings. Most of these buildings are four-stories high or taller and range in construction from the late nineteenth century to the present and incorporate most architectural styles popular during those periods. Significant structures adjacent to the project area include the four square-block campus of the Milwaukee Area Technical College (MATC), a pair of large sports arenas (Bradley Center and US Cellular Arena), a modern intermodal transportation center, a large postal processing facility, two one square-block parks and a Roman Catholic cathedral complex that occupies an entire block (St. John's).

Area of Potential Effect (APE)

Project staff identified the project's APE[22] in consultation with the FTA and the State Historic Preservation Office (SHPO). The streetcar project's APE is limited to those structures immediately adjacent to streets where streetcar lines are to be placed and where stops, electrical substations or the maintenance facility will be constructed. A survey of the APE was conducted by registered historians. They coordinated their survey with the Wisconsin Historical Society (SHPO) and historians in the City of Milwaukee Historic Preservation Office. The Wisconsin Department of Transportation was also consulted to help determine which properties along the route might be considered historic. Project staff conducted a walk-by survey within the APE and reviewed existing inventories and surveys of historic resources, including the NRHP, the City of Milwaukee's list of locally designated landmarks and districts, other City

[20] Section 106 of the National Historic Preservation Act, and its implementing regulation (36 CFR part 800 – Protection of Historic Properties).

[21] *Architecture History Survey Worksheet A – Milwaukee Downtown Connector*; SHPO # 10-0983. Heritage Research Limited of Menomonee Falls, Wisconsin. February 2011.

[22] The APE is defined in 36 CFR § 800.16 as the: "geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking."

surveys, and prior determinations of eligibilities. See Figure 26 showing the boundaries of the APE. Figure 27 is a map of the historic districts within the APE.

Historic Resources in the APE

The City of Milwaukee and the FTA solicited comments from potential consulting parties regarding the historic resources in the APE. Consulting parties can be individuals and/or organizations that may be interested in the project. In particular property owners and historic societies were asked to provide input.

The City and FTA found that the APE contains numerous historic properties. Table 11 and Table 12 list the identified resources in the project's APE and Figure 27 contains a map of the historic resources.

Figure 26: Map of Area of Potential Effect (APE)

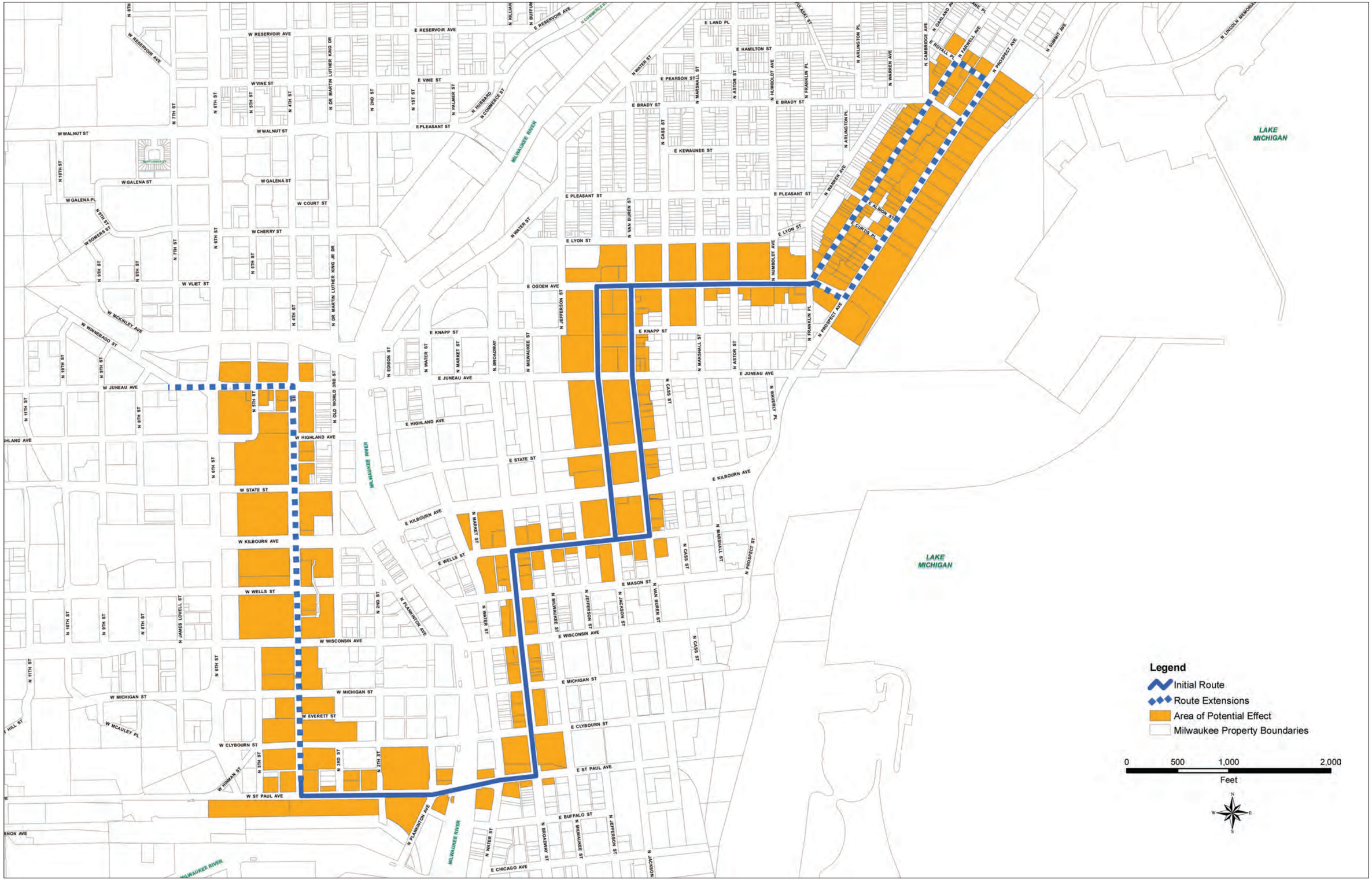

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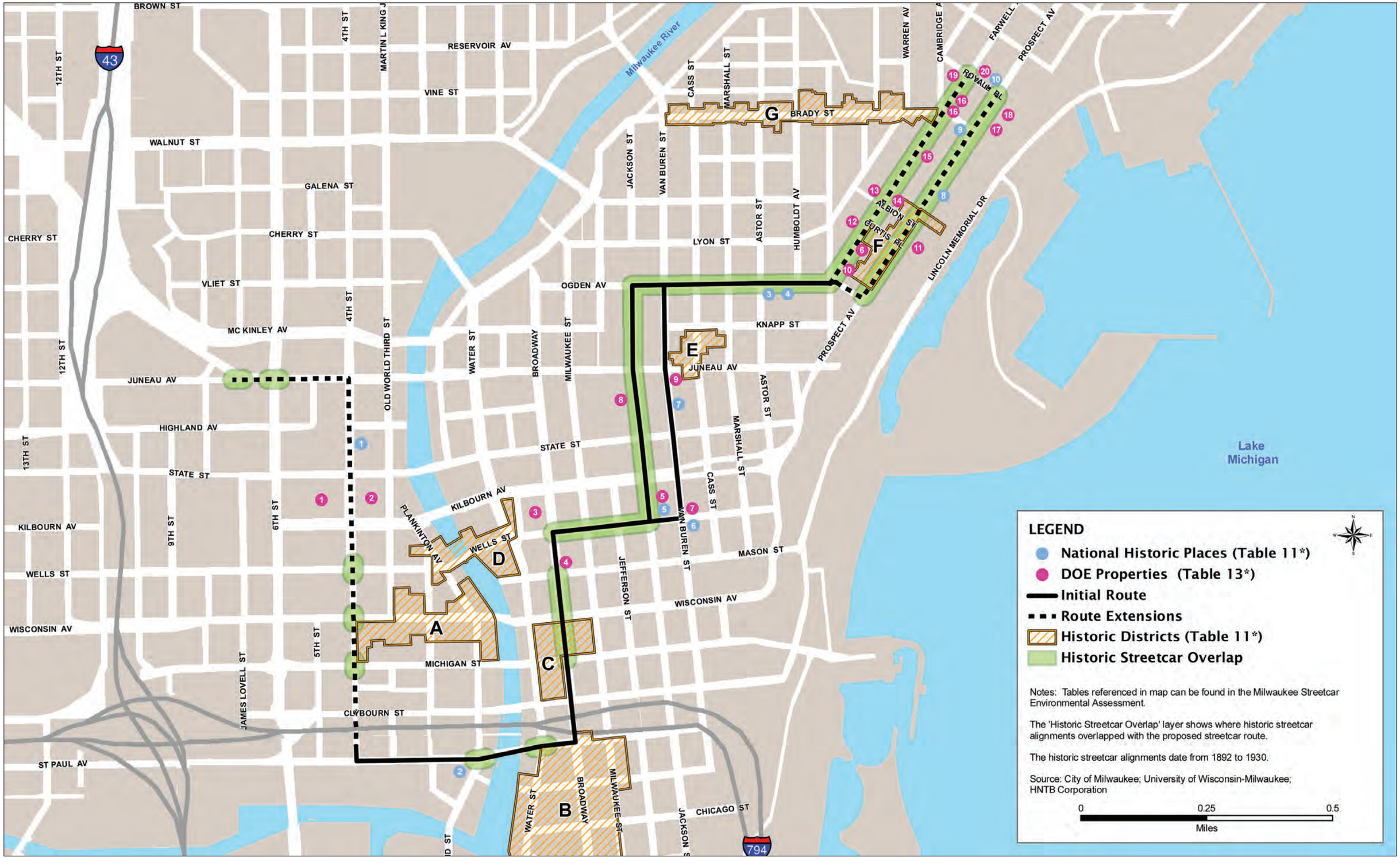
Figure 27: Historic Resources



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