



DETROIT DEPARTMENT OF TRANSPORTATION
1301 EAST WARREN, DETROIT, MICHIGAN 48207
GENERAL INFORMATION: (313) 933-1300
MICHIGAN VOICE RELAY: 1-800-649-3777
WWW.RIDEDETROITTRANSIT.COM



April 2, 2009

Matthew Welbes
Executive Director
Federal Transit Administration
1200 New Jersey SE
Washington, DC 20590

Dear Mr. Welbes:

My staff and I have reviewed FTA's comments from the February 6, 2009 e-mail from Brian Jackson on the results of our Alternatives Analysis (AA) – the Detroit Transit Options for Growth Study (DTOGS). This report documents how we developed the Locally Preferred Alternative (LPA) to move forward with light rail transit service on Woodward Avenue from downtown Detroit to the State Fairgrounds near Eight Mile Road. The LPA report has been revised based on these comments and is being submitted with this correspondence. I have also attached a table that describes each of FTA's comments and summarizes what we have done to address the comment.

Since July 2008, when the LPA report was submitted to FTA, DDOT has taken a number of significant steps to advance this project:

- The LPA has been incorporated into the region's Transportation Improvement Plan (TIP) and Long Range Transportation Plan (LRP).
- Preparation of an application to FTA to enter Preliminary Engineering (PE) and a submission to enter FTA's New Starts' program have begun.
- Discussions with local civic leaders about a unique private funding approach for the "local" share of the project have been held.

At this time our most pressing milestone is to file a Notice of Intent (NOI) so that we can continue with our DEIS and satisfy the NEPA requirements for this project. Your staff has indicated that prior to the FTA publication of the NOI, the FTA comments on the DTOGS LPA Report must be satisfactorily addressed. As noted above, the revised LPA Report is being resubmitted with this correspondence.

Considering the critical role that this project has in strengthening the economic vitality of Southeast Michigan, I request that FTA publish the NOI immediately. As you may know, the FTA published an Early Scoping Notice on July 17, 2007 and DDOT held public and agency scoping meetings between July 25 and 28, 2007. Additionally, DDOT submitted a draft NOI to FTA on December 19, 2008.

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Not only will publication of the NOI allow us to move forward with this project, but it will also allow us to further refine the DTOGS LPA No-Build, Baseline, and Build Alternatives as your staff has requested through formal project scoping meetings.

Thank you for your continued support of our efforts to bring light rail service to Woodward Avenue. Please feel free to contact me at (313) 833-7670 with any follow-up questions or discussions.

Sincerely,

A handwritten signature in cursive script that reads "Norman L. White".

Norman L. White
Director

Cc: Brian Jackson, FTA Office of Planning & Environment
Stewart McKenzie, FTA Region V

DETROIT TRANSIT

Options for Growth Study

Locally Preferred Alternative Report

Final Draft: June 2008
Expanded Version: April 2009

Submitted to:



Submitted by:

URS

100 South Fifth Street, Suite 1500
Minneapolis, Minnesota 55402

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All of the appendices are included on the attached CD.

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Appendix N	Detailed Parking Analysis of LRT on Woodward Avenue
Appendix O	Woodward LRT Station Design

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EXECUTIVE SUMMARY

Project Background

The Detroit Transit Options for Growth Study (DTOGS) was conducted by the City of Detroit, Department of Transportation (DDOT), along with its planning partners, to advance the implementation of regional and local rapid transit improvements to serve current and future population and employment centers and destinations. The study identified and evaluated options to improve access and mobility and to foster economic development within the study area, as depicted in **Figure ES-1** on the following page.

Relationship with Local and Regional Plans

The DTOGS project built upon previous transportation plans for the Detroit metropolitan area, each of which called for the implementation of rapid transit in the Detroit area, and identified several corridors whose suitability were examined for rapid transit implementation:

- Michigan Transportation Plan
- 2030 Regional Transportation Plan for Southeast Michigan
- Improving Transit in Southeast Michigan: A Framework for Action
- City of Detroit Master Plan of Policies Revision

The DTOGS project considered several transit corridor alternatives and employed a systematic and iterative method to refine the number of alternatives for evaluation in this Transit Alternatives Analysis (AA). This methodology is similar to the process employed by the Southeast Michigan Council of Government (SEMCOG) and that resulted in its *Regional Transportation Plan* (see **Figure ES-2** on page ES-3). As with the adopted regional plan, this iterative evaluation considered factors such as traffic congestion, population and employment, proximity to major activity centers, and the location of low income and elderly populations.



Figure ES-1
DTODS Project Area

July 25, 2006



- Legend**
- Study Area
 - Primary Road
 - Secondary Road
 - Connecting Road
 - Neighborhood Road
 - Special Road Feature
 - Walkway
 - Unclassified Railroads
 - Lake, River

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Figure ES-2

**Proposed
Transit Plan**
Southeast Michigan



Relationship with Federal Process and Regulation

The DTOGS project is the first step in the Federal Transit Administration’s (FTA) New Starts project development process (see **Figure ES-3** on the following page) and the National Environmental Policy Act of 1969 (NEPA) regulations. Following FTA guidelines for conducting an Alternatives Analysis, the DTOGS project identified a wide range of transit improvement options and refined the definition of these alternatives methodically and logically in a series of technical steps such that a narrower set of options was examined in greater detail and would result in the selection of a Locally Preferred Alternative (LPA). The LPA – LRT on Woodward Avenue between downtown Detroit and the Michigan State Fairgrounds – will now advance to the next step in the FTA New Starts process, which entails environmental documentation and preliminary engineering.

Transportation Deficiencies

According to a recent study by the Texas Transportation Institute, the Detroit metropolitan area has the eighth worst congestion among major metropolitan areas in terms of annual delay per driver¹. In 2005, traffic congestion cost the Detroit area an estimated \$2.1 billion. Moreover, the Surface Transportation Policy Project² found that in 2005, the average household in Detroit spent the third highest percentage of household income on transportation, and was one of only six metropolitan areas where the average transportation expenditure exceeded 20 percent of the median household income.³ This translates to a potential annual savings for the Detroit metropolitan area of \$1 billion if the percent of household income spent on transportation were lowered to the national average of 19.1 percent.

¹ *The 2007 Urban Mobility Report*, Texas Transportation Institute, The Texas A & M System. September 2007.

² The Surface Transportation Policy Project (STPP) is a “diverse, nationwide coalition working to ensure safer communities and smarter transportation choices that enhance the economy, improve public health, promote social equity, and protect the environment. STPP is a 501(c)(3) non-profit organization funded by individual donations and a range of national and regional foundations.” Source: <http://www.transact.org/who.asp>

³ *Driven to Spend: Pumping Dollars out of Our households and Communities*, Center for Neighborhood Technology: Strategies for Livable Communities. Surface Transportation Policy Project. June 2005.

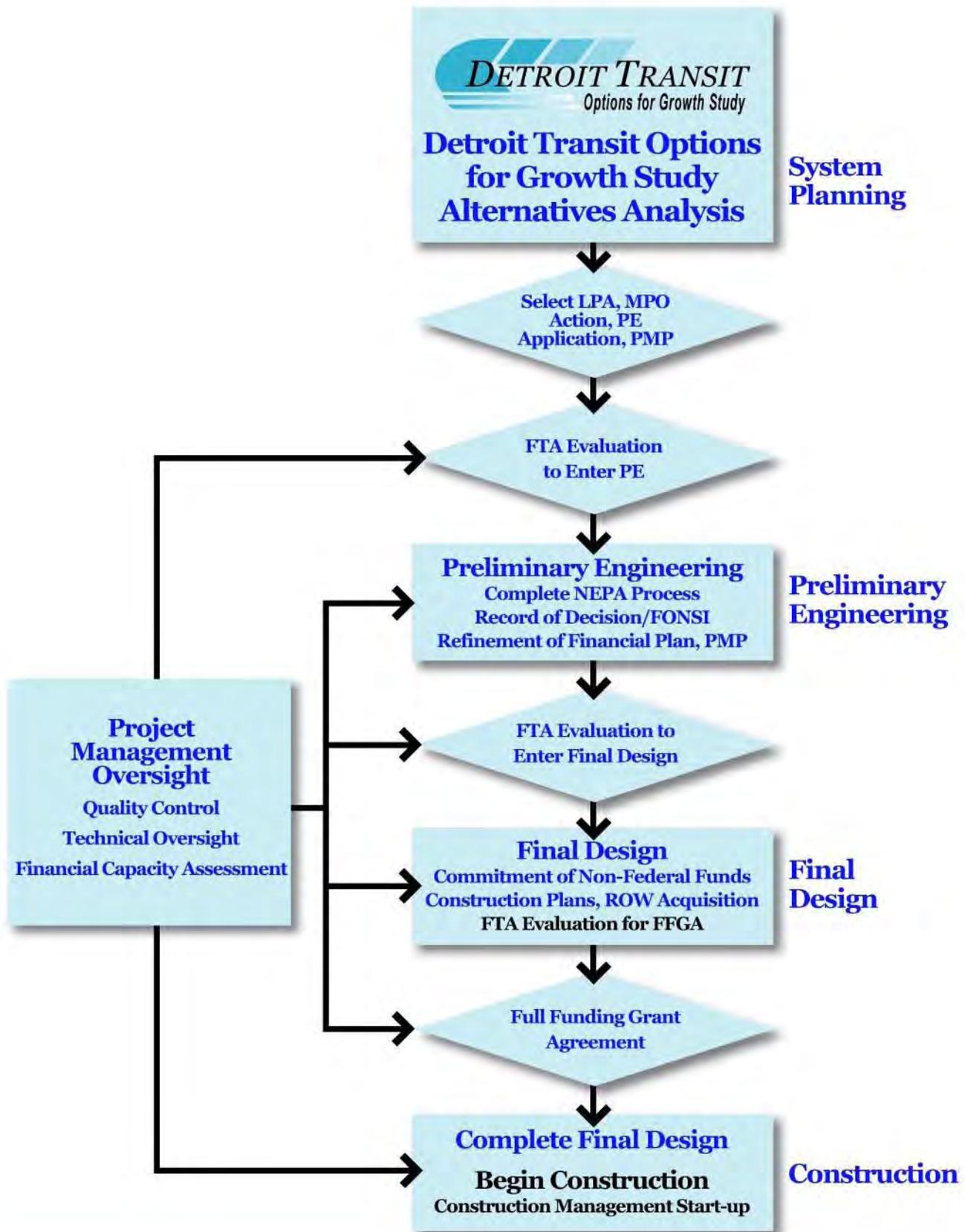


Figure ES-3

FTA Project Development Process

According to SEMCOG forecasts, the region will gain approximately 575,000 more people and 436,000 more jobs, between years 2000 and 2030. This growth would exacerbate existing traffic congestion in the region. By 2030, Wayne County – where Dearborn, Detroit, Hamtramck and Highland Park are located – will incur 26 miles of bottleneck congestion and 331 miles of congested roadways. In 2030, all seven counties in the region will have congested corridors -- Wayne County roadways will have the second highest percentage of congestion at 23 percent of its mileage, which is nearly one in every four miles.

Project Goals and Objectives

The DTOGS project’s transportation vision is to innovate and to implement rapid transit in order to facilitate economic development and redevelopment in the Detroit area and the region. Following are the goals and objectives developed in collaboration with DDOT, the DTOGS Technical Committee, stakeholders, and public to realize the project’s vision and to provide a framework for evaluating transit alternatives.

Transportation and Mobility

Goal: Create transportation improvements that add people-carrying capacity as necessary, minimize operating costs, improve operating efficiency, provide high quality rapid transit alternatives, reduce travel times, and strengthen the project area’s transportation system.

Objective: Provide a customer-focused transportation system that is integrated, responsive, flexible, and adaptable to technological advancements and changes.

Objective: Expand opportunities for diverse populations to move freely to, through, and within the project area.

Objective: Enhance the existing transportation infrastructure to serve the high number of transit-dependent persons in the project area.

Objective: Attract choice riders and offer alternatives to single-occupancy vehicles (SOV).

Economic Opportunity and Investment

Goal: Support investments in infrastructure, business, and community that sustain the heart of the region.

Objective: Create a reliable rapid transit system that:

- Supports an efficient, effective land use development pattern in major activity centers.
- Reduces the need for parking facilities downtown.
- Facilitates the highest and best use of adjacent properties.

Objective: Strengthen transit linkages within the project area that support economic development and redevelopment investments.

Objective: Equip employers with the confidence that their employees have reliable, fast transit options to travel to and from work.

Objective: Attract new residents and promote residential development in the project area.

Communities and Environment

Goal: Facilitate the preservation and enhancement of Wayne County's diverse communities by supporting economic and strategic goals of those areas.

Objective: Acknowledge the individual character, identity, and aspirations of each place served, in addition to the vision for the project area.

Objective: Support regional goals for cleaner air and water, more efficient energy use, a safer and healthier environment, and the sustainable use of resources.

Public Involvement

Goal: Engage the community in a manner that educates and generates informed consent.

Objective: Establish and maintain a partnership between residents, the business community, and the core area stakeholders.

Objective: Connect with the communities and local units of government early and at key junctures throughout the study.

Purpose and Need Statements

The DTOGS project examined how transit enhancements can be utilized to address three primary issues in the study area, given existing financial constraints:

- **High concentrations of transit-dependent populations** – A third of residents of the DTOGS project area (over 300,000 people) are transit-dependent. The introduction of rapid transit into the area would have a dramatic effect on the quality of life for these persons by providing them with greater access to employment, education, medical care, retail, and other destinations.

- **Continued and growing dependence on the personal automobile, increasing congestion and the environmental impacts of auto dependence** – The Detroit region is consistently ranked as having among the worst congestion in the country. Traffic forecasts show that congestion will continue to worsen in the region unless people are provided alternatives to the personal automobile. Continued dependence on automobiles and petroleum has a profound impact on the environment. The Detroit-Ann Arbor region is a non-attainment area for ozone. Automobile use has been linked to ozone emission and diesel powered trucks and buses to production of particulate matter. Rapid transit in the Detroit area will provide residents and visitors with greater mobility while reducing reliance on personal automobiles, vehicle miles traveled within the region, petroleum consumption, and vehicle emissions that contribute to air pollution.

- **Lagging economic reinvestment in the urban core** – In recent decades, the DTOGS project area has experienced depopulation and loss of employment, a troubling trend that is predicted to continue through 2030 despite predicted growth of the metropolitan region. Rapid transit is one tool that can be used to invest in the economic revitalization of the Detroit area.

The DTOGS project's Locally Preferred Alternative is LRT on Woodward Avenue between downtown Detroit and the Michigan State Fairgrounds (see **Figure ES-4** on the following page). The introduction of rapid transit into Woodward Avenue has the potential to address all three of these issues. Thirty-seven percent of the residents of the Woodward Corridor are transit-dependent. Transit ridership in the corridor is currently over 22,000 trips per weekday. The introduction of rapid transit into the corridor will improve the mobility of the transit-dependent population.

Providing rapid transit in the Woodward Avenue corridor would provide Detroit residents and visitors with increased options for traveling throughout the city. The Woodward Avenue Corridor has a population of approximately 275,000 and more than 260,000 people work in the corridor. It is also the location of several entertainment venues, medical centers, and Wayne State University. Rapid transit would allow the residents of the corridor to access a variety of destinations without relying on a personal automobile.

The areas around the downtown Detroit and New Center have experienced economic redevelopment since 2000. Connecting these two growth centers with rapid transit along the Woodward Avenue corridor will allow them to build on the growth of the other. The economic reinvestment may also carry over and act as a catalyst for redevelopment and rehabilitation of other portions of the corridor.



Major Destinations

- | | | |
|---|--|---|
| <ul style="list-style-type: none"> 1. Downtown 2. Detroit Opera House 3. Ford Field 4. Comerica Park 5. State Theatre 6. Fox Theatre 7. Max M. Fisher Music Center 8. Detroit Medical Center 9. Wayne State University 10. College for Creative Studies | <ul style="list-style-type: none"> 11. Cultural Center
<i>Detroit Institute of Arts</i>
<i>Detroit Science Center</i>
<i>Charles H. Wright</i>
<i>Museum of African American History</i>
<i>Detroit Main Library</i>
<i>Detroit Historical Museum</i> 12. New Center 13. Detroit Amtrak Station 14. Barsamian Preparatory Center 15. Northern High School | <ul style="list-style-type: none"> 16. Boykin Continuing Education Center 17. City of Highland Park 18. Palmer Park 19. Palmer Park Municipal Golf Course 20. Detroit Golf Club 21. Woodlawn Cemetery 22. Michigan State Fairgrounds |
|---|--|---|

Figure ES-4

Woodward Avenue Corridor Characteristics



Public and Agency Participation

Public participation was a vital part of the DTOGS project and took many forms. The DTOGS project employed committees, public meetings, various media (including the internet), and surveys, in addition to small-group discussions that provided valuable information used to make project decisions. Further, as required by the FTA New Starts process, the DTOGS project developed a Public Participation Plan (dated October 2006). The findings of various outreach methods are presented in subsequent sections of this document, coinciding with project milestones.

Public Participation Process

The purpose of the public participation process was to support decision-making efforts and encourage an open, collaborative approach regarding a balanced transportation system. The key was to actively involve the community to create enthusiasm and consensus for rapid transit within the project area. The DTOGS project public participation process approach was to complete the following principles:

- Communicate with and involve local residents in refining the proposed alternatives.
- Communicate with and educate the public, neighborhoods, and agencies in the project area on the opportunities and impacts the proposed alternatives present for their community and/or area of interest.
- Involve local residents in the decision-making process, thereby creating a sense of public ownership of the project.
- Gain insight into the issues of greatest concern or interest to the public and municipalities of the DTOGS project area and incorporate them into decision making factors.
- Meet or exceed the requirements and intent of federal, state, and local public involvement policies in a manner that is consistent with the federal NEPA process.

Outreach Techniques

The following outreach techniques were utilized throughout the project to communicate with and educate the public, in addition to regularly scheduled meetings, workshops, and briefings:

- Open houses and informational meetings
- Project web site
- Newsletters
- Presentations to the DTOGS Technical Committee, the public and other organizations
- Media alerts and news releases
- Interviews with key stakeholders
- Surveys.

Committee Structure

Project guidance was carried out by the DTOGS Technical Committee that met monthly and at key milestones throughout the study process to provide guidance, to discuss interim results, and to review products. Project milestones included the development of Purpose and Need Statements; study goals and objectives; detailed definition of alternatives; ridership forecasts; and order-of-magnitude capital and operating and maintenance costs. The DTOGS Technical Committee was comprised of staff from agencies within the DTOGS area plus county, regional, state and federal agencies, listed as follows:

- City of Detroit – Transportation Public Works, Planning and Development, Municipal Parking, Coleman A Young International Airport, Environmental Affairs, and Public Lighting
- Wayne County
- City of Dearborn
- City of Hamtramck
- City of Highland Park
- Detroit Economic Growth Corporation (DEGC)
- Eastern Market Corporation
- Federal Highway Administration

- Federal Transit Administration
- HP Devco
- Michigan Department of Transportation (MDOT)
- Regional Transportation Coordinating Council (RTCC)
- SEMCOG
- Congresswoman Carolyn Kilpatrick's Office.

The following Detroit area policymakers and stakeholders (a group comprised of elected officials and representatives from business, healthcare, civic, entertainment, education, and public agencies) also provided guidance, listed as follows:

- Larry Alexander, President and CEO, Detroit Convention & Visitors Bureau
- Katherine Beebe, Executive Director, Eastern Market Corporation
- Arthur Blackwell, Financial Manager, City of Highland Park
- Richard Blouse, President and CEO, Detroit Regional Chamber
- Donna Burke (representing Gail Torreano), Vice President, External Affairs, AT&T
- Honorable Kenneth Cockrel, City Council President, Detroit City Council
- Matthew Cullen, General Manager, Economic Development and Enterprise Services, General Motors Corporation
- Peter Cummings, Chairman, RAM Development Company
- Michael Duggan, CEO, Detroit Medical Center
- John Hertel, Executive Director, Regional Transit Coordinating Council
- Harvey Hollins (representing Irvin Reid), Vice President, Government and Community Affairs, Wayne State University
- Atanas Ilitch, President, Olympia Development
- Dr. Curtis Ivery, Chancellor, Wayne County Community College District
- Denise Knobbloch Starr (representing Peter Karmanos), Chief Administrative Officer, Compuware
- Sandra Nelson (representing Robert Ficano), Wayne County Department of Public Service, Wayne County
- James Nicholson, President and CEO, PVS Chemicals, Inc.
- Megan Owens, Executive Director, Transportation Riders United (TRU)
- Cynthia Pasky, President, Strategic Staffing Solutions
- Charlie Pryde, Director of Public Policy, Ford Motor Company
- Doug Rothwell, President, Detroit Renaissance, Inc.
- Shirley Stancato, President & CEO, New Detroit, Inc.
- Paul Tait, Executive Director, SEMCOG
- Reverend Marvin Winans, Senior Pastor, Perfecting Church.

Public Meetings

The DTOGS project included three sets of public meetings. The first set of meetings were conducted in March 2007 and presented the project to the public and the preliminary results of the initial evaluation results. The public had opportunities to express their preferences on the various corridors and transit technologies under consideration.

The second set of public meetings was the Early Environmental Scoping meetings conducted in July 2007. The scoping process formally initiated the dialogue on the transportation alternatives being proposed; sought out additional options which could be evaluated; and identified issues to be considered and/or resolved during the project planning process. Additionally, scoping determined the scope and significance of social, economic, and environmental issues associated with the potential alternatives. Should the study proceed from the AA to an Environmental Impact Statement (EIS), this early scoping process was intended to satisfy standard National Environmental Policy Act (NEPA) scoping requirements. An Early Scoping Notice was published in the Federal Register on July 17, 2007, which began the scoping period. The official scoping comment period extended from July 17 to August 29, 2007. This scoping process was summarized and reported fully in the Scoping Summary Report (see **Appendix C**). Public comments and questions were documented and formally addressed as part of this process.

The third set of public meetings – held in March 2008 – presented the results of the detailed evaluation of three alignments and three transit technologies, along with the draft recommended locally preferred alternative and next steps in developing a rapid transit project in the DTOGS area.

Development and Evaluation of Alternatives

In developing and evaluating the wide range of alternatives, the DTOGS project entailed:

- A cooperative and collaborative process to establish the range of alternatives which were studied.
- An evaluation of the effectiveness and cost-effectiveness of measures designed to integrate multi-modal alternatives in attaining local, state, and national goals and objectives.

- Consideration of direct and indirect costs; effects on social, economic and environmental factors; safety; operating efficiencies; land use and economic development; financing; freight movement impacts; ridership impacts; mobility improvements; and energy consumption for each alternative.
- A proactive public involvement process that provided opportunities for the diverse public and other various interests to participate in a meaningful way.
- Documentation of the consideration given to alternatives and their impacts.

The DTOGS project used a two-tiered process to identify and evaluate transit improvement options prior to defining detailed alternatives for evaluation and the eventual selection of an LPA. The following sections describe the methodology and present the results of each step in the assessment leading up to the selection of the LPA.

Screen 1 Evaluation – Fatal Flaw Analysis

Screen 1 entailed a fatal flaw analysis of the universe of fourteen corridors, listed as follows and presented in **Figure ES-5** on the next page. Eight of the fourteen corridors were from the twelve Tier 1 rapid transit corridors identified in SEMCOG’s *Transit System Plan*. (The four other rapid transit corridors in SEMCOG’s *Transit System Plan* fell outside the DTOGS project area. They were 16 Mile Road, Greenfield Road, M-59, and Telegraph Road.) Following is the complete list of the fourteen corridors considered in Screen 1. The six other corridors on the list were included because they are major transportation corridors in the DTOGS project area. All fourteen corridors were assessed using broad criteria developed according to the DTOGS project goals and objectives, presented in **Table ES-1** (see page ES-17).

- Chrysler Freeway (I-75)
- Eight Mile Road⁴
- Ford Road
- Ford Freeway (I-94)
- Fort Street⁴
- Grand River Avenue⁴
- Gratiot Avenue⁴
- Jefferson Avenue⁴
- Jeffries Freeway (I-96)
- Lodge Freeway (M-10)
- Michigan Avenue⁴
- Southfield Freeway (M-39)
- Van Dyke Avenue⁴
- Woodward Avenue.⁴

⁴ One of SEMCOG’s twelve rapid transit corridors within the DTOGS project area.

**Table ES-1
Screen 1 Evaluation Criteria**

Socio-Economic Criteria	Social Equity Criteria
Total population and density Total employment and density	Zero car households Population below poverty level Population over 65
Community Goals & Objectives Criteria	Conceptual Engineering Criteria
Consistency with corridor plans Consistency with SEMCOG plans and City of Detroit master plan	Potential capital cost estimate Potential right-of-way availability
Transportation Criteria	Other Factors Criteria
Number of major trip generators ADT on major roadways in corridor ADT on parallel roadways Average daily ridership on transit	Public perception Development potential Technical Committee recommendation

Screen 1 reduced the number of corridors from fourteen to five. All six of the regional highway corridors were eliminated in this analysis, mainly due to cost and right-of-way impacts associated with constructing and operating rapid transit within a freeway environment. Therefore, the remaining five corridors after the Screen 1 evaluation were:

- Eight Mile Road
- Grand River Avenue
- Gratiot Avenue
- Michigan Avenue
- Woodward Avenue.

The Jefferson Avenue Corridor had the sixth highest score. Due to continued public interest, the DTOGS Technical Committee expressed a commitment to include Jefferson Avenue as part of a future phase of rapid transit development. However, for the purpose of this AA, Jefferson Avenue was excluded from further consideration for determining a rapid transit starter line in the Detroit metropolitan area.

Screen 2 – Detailed Evaluation

The second tier of assessment – called Screen 2 – identified and evaluated individual alignments within each of the five corridors. Eight alignments within the five corridors were recommended as suitable for rapid transit. The following assessments were completed as part of Screen 2 that identified transit alignments and technologies for further analysis. **Table ES-2** presents the evaluation criteria used under Screen 2 (see next page).

**Table ES-2
Screen 2 Evaluation Criteria**

Community Sentiment	Land Use and Development Opportunities
Resident/neighborhood sentiment Business community sentiment	Consistency with land use patterns Proximity to developed and redevelopable land
Transportation and Mobility	Conceptual Engineering
Multimodal connectivity Accessibility Ridership	Capital cost Operating cost per revenue hour Operating costs per passenger Right-of-way availability Ability to phase construction Traffic impacts Parking impacts
Communities and Environment	
Transit dependent population Water resources Parklands and open space Cultural and historic resources	

Evaluation of Alignments

- First Priority – Woodward Avenue
- Second Priority – Gratiot Avenue and Michigan Avenue
- Third Priority – Eight Mile Road and Grand River Avenue

The three other recommended alignments were not included in the priority rankings because their transit markets overlap with those of one or more of the higher-priority alignments.

Community Sentiment

One of the criteria used in Screen 2 was Community Sentiment. It encompassed how residents, neighborhoods and the business community felt about each corridor and alignment identified in the DTOGS project at that time. Community Sentiment was assessed through the conduct of four DTOGS project public meetings in March 2007. In addition to comments received at these meetings and the project web site, the public was also asked to prioritize each of the initial fourteen corridors through a survey. The results of this survey indicated preference for the following corridors (excluding highway corridors, which were eliminated in Screen 1):

- Most Important Corridor: Woodward Avenue
- Second Most Important Corridor: Michigan Avenue
- Third Most Important Corridor: Gratiot Avenue.

Based on the March 2007 survey, Gratiot, Michigan and Woodward Avenues were identified as the three alignments to move forward for further analysis. (The survey identified Eight Mile Road and Grand River Avenue as significantly lower in priority than these Gratiot, Michigan and Woodward Avenues.)

Refinement of Alignments

Through the evaluation of the corridors and alignments it became apparent, to the DTOGS Technical Committee – and was supported by feedback received at the first two public meetings – that the segment of Woodward Avenue Corridor between downtown Detroit and Grand Boulevard serves a significant transit market. As such, the DTOGS project Team and Technical Committee refined the definition of rapid transit alignments to add this segment of Woodward Avenue to the Gratiot Avenue and Michigan Avenue alignments, listed as follows and presented in **Figures ES-6, ES-7 and ES-8** (see pages ES-21 through ES-23):

- Gratiot/Woodward – Along Gratiot Avenue between Eight Mile Road and downtown Detroit, and along Woodward Avenue between downtown Detroit and Grand Boulevard. This alignment is approximately 13.5 miles long.
- Michigan/Woodward – Along Michigan Avenue between Greenfield Village in Dearborn and downtown Detroit, and along Woodward Avenue between downtown Detroit and Grand Boulevard. This alignment is approximately 15 miles long.
- Woodward Avenue – Along Woodward Avenue between Eight Mile Road and downtown Detroit. This alignment is approximately 10.5 miles long.

Evaluation of Transit Technologies

Consistent with FTA definition that an AA examines the breadth of transit options, the DTOGS project assessed thirteen different transit technologies to determine their consistency with the DTOGS project's goals. Transit modes that were evaluated included conventional bus, bus rapid transit (BRT), light rail transit (LRT), commuter rail, automated guideway transit (people mover, monorail and personal rapid transit), magnetic levitation, heavy rail, and modern streetcar. Criteria used in determining the suitability of each of these modes included capital cost, operating and maintenance cost, right-of-way requirements, passenger-carrying capacity, and trip length. The result of the transit technology assessment is to carry forward the following modes for further analysis. (The FTA New Starts process requires analysis of both conventional bus and BRT in addition to other types of transit alternatives requiring significant capital outlay.)

- Conventional Bus
- Bus Rapid Transit
- Light Rail Transit.

Detailed Definition of Alternatives

The transit alignments and modes identified at the end of Screen 2 were paired together to define the alternatives to be evaluated in the DTOGS project. Consistent with FTA guidelines, a No-Build and a Transportation System Management (TSM) alternative was developed for each of the three alignments, in addition to BRT and LRT alternatives. In summary, the DTOGS project identified twelve alternatives for detailed analysis, where a number of detailed information would be generated, including conceptual design, order-of-magnitude capital and operating maintenance costs, and ridership forecasts:

Recommended Transit Modes

Conventional Bus
(Baseline - Required by FTA)



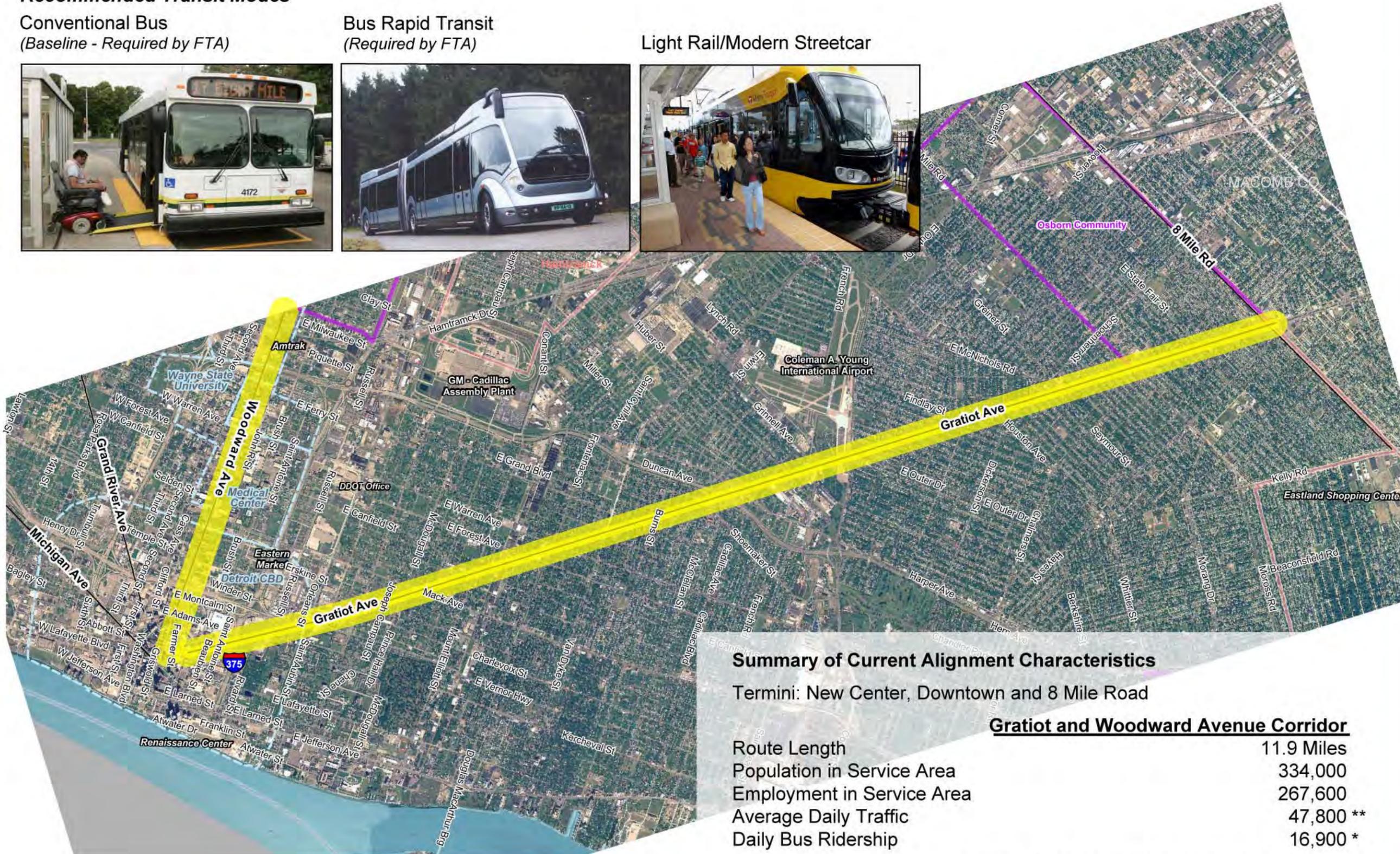
Bus Rapid Transit
(Required by FTA)



Light Rail/Modern Streetcar



Figure ES-6
Recommended Alternative for Gratiot Avenue



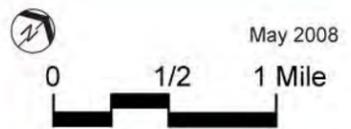
Summary of Current Alignment Characteristics

Termini: New Center, Downtown and 8 Mile Road

Gratiot and Woodward Avenue Corridor

Route Length	11.9 Miles
Population in Service Area	334,000
Employment in Service Area	267,600
Average Daily Traffic	47,800 **
Daily Bus Ridership	16,900 *

Source: SEMCOG & U.S. Census Bureau * Does not reflect traffic/ridership on Woodward Ave. ** Excluding I-94, where there are no current traffic counts available.



DETROIT TRANSIT
Options for Growth Study

DETROIT **URS**
DEPARTMENT OF TRANSPORTATION

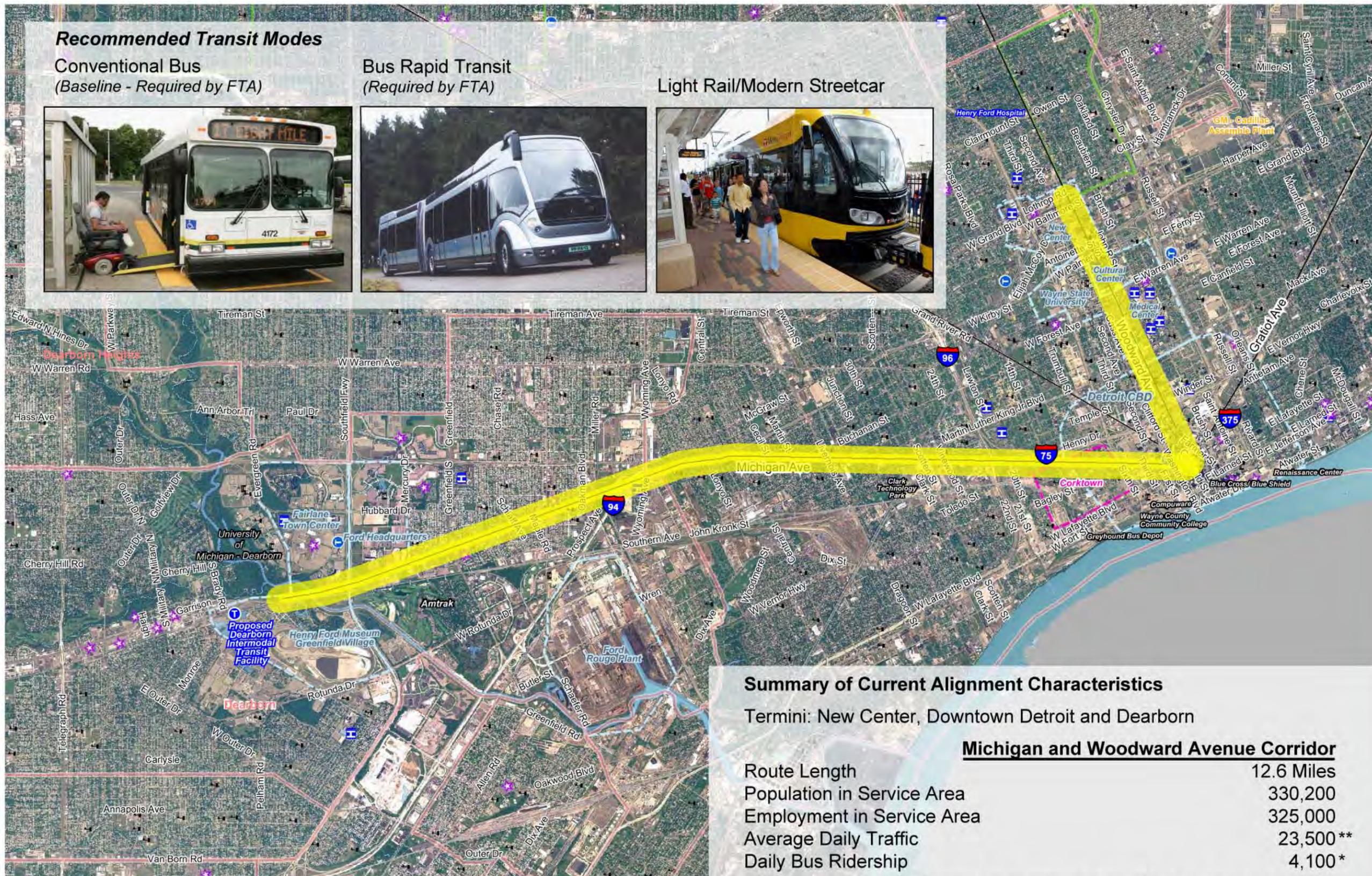
Recommended Alternative for Michigan Avenue

Recommended Transit Modes

Conventional Bus
(Baseline - Required by FTA)

Bus Rapid Transit
(Required by FTA)

Light Rail/Modern Streetcar



Summary of Current Alignment Characteristics

Termini: New Center, Downtown Detroit and Dearborn

Michigan and Woodward Avenue Corridor

Route Length	12.6 Miles
Population in Service Area	330,200
Employment in Service Area	325,000
Average Daily Traffic	23,500**
Daily Bus Ridership	4,100*

Source: SEMCOG & U.S. Census Bureau * Does not reflect traffic/ridership on Woodward Ave. ** Excluding I-94, where there are no current traffic counts available.



DETROIT TRANSIT
Options for Growth Study



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Downtown Detroit Alignments

Three downtown Detroit alignment concepts were identified as part of the DTOGS project (**Figures ES-9, 10 and 11** on pages ES-28 through ES-30). Concept A would serve the northern part of downtown, relying on the People Mover for downtown circulation. Concept B would operate in a one-way loop in downtown opposite the People Mover and as a complementary service to the People Mover. Finally, Concept C would operate as a two-directional system through downtown, connecting to the Renaissance Center on Jefferson Avenue and offering a one-seat ride to light rail patrons. An initial assessment of these concepts were completed with the Technical Committee and from these discussions, the Technical Committee determined that at this juncture, the consensus is to further analyze all three downtown concepts during the preliminary engineering phase.

Evaluation of Alternatives

Evaluation criteria developed under Screen 1 and Screen 2 were further refined to provide greater detail and to illuminate the nuances and salient differences between the twelve alternatives. **Table ES- 3** on the next page presents these refined evaluation criteria.

Select results of this detailed evaluation are presented in **Figures ES-12, 13 and 14** on pages ES-31 through ES-33 for the TSM, BRT and LRT alternatives associated with the Gratiot/Woodward, Michigan/Woodward and Woodward alignments.

Table ES-3
Evaluation Criteria

Transportation and Mobility
Improve Mobility Year 2030 Daily Ridership on TSM/BRT/LRT Year 2030 Daily Ridership – Corridor Total Year 2030 Daily New Riders Year 2030 Regional Travel Time Savings Relative to No-Build Year 2030 Level of Service – Average Travel Speed for Autos (in miles per hour) Cost Effective and Efficient Travel Options Year 2007 Order-of-Magnitude Capital Cost Year 2007 Operating and Maintenance Costs Year 2007 Operating Cost per Revenue Hour Year 2007 Operating Cost per Passenger Mile
FTA New Starts Benchmark
Cost Effectiveness Index (Cost per New Rider)
Economic Opportunity and Investment
Redevelopment Potential Transit-Oriented Development Potential at Stations Low – Number of Stations with Low TOD Potential Medium – Number of Stations with Medium TOD Potential High – Number of Stations with High TOD Potential Year 2000 Employment within One-Half Mile of Stations Year 2007 Population within One-Half Mile of Stations (Social Compact) Parking Impacts – Number of On-Street Spaces Change in Number of On-Street Spaces Relative to TSM Percent Change in Number of On-Street Spaces Relative to TSM
Communities and Environment
Year 2000 Transit-Dependent Population within One-Half Mile of Stations Year 2030 Change in Annual Regional vehicle Miles Travelled (Relative to TSM) Year 2030 Change in Annual CO ₂ Emissions, in Tons (Relative to TSM) Population Potentially Affected by Noise and Vibration within 100 feet of Alignment Chance of Affecting Natural Environment Number of Community Facilities within One-Half Mile of Station Multimodal Connections (bus routes, Amtrak Station, non-motorized trail) Consistency with Plans Right-of-Way Impacts
Public Involvement
Community Sentiment – Including July 2007 Scoping Meetings and March 2008 Public Meetings Alignment Preference Transit Technology Preference

Findings and Locally Preferred Alternative

Based on technical evaluation and public outreach activities undertaken as part of the DTOGS project, LRT on Woodward Avenue between downtown Detroit and the Michigan State Fairgrounds is the recommended Locally Preferred Alternative (see **Figure ES-15** on page ES-34). Following is a summary of the salient points of the evaluation that has led to this recommendation:

- **Transportation and Mobility** – Woodward Avenue has the highest level of existing transit ridership. As such, there is high level of transit service. To achieve a substantial increase in ridership will require the combination of a dedicated right-of-way, providing shorter travel time and more reliable service, and the higher capacity provided by light rail service. Light rail on Woodward Avenue would create the largest reduction in forecast 2030 travel time. Although travel speeds on Woodward Avenue are anticipated to decrease slightly (by 4 mph), this change is similar to that projected for the Michigan alternatives and less than the Gratiot alternatives.
- **Cost-Effectiveness Index** – The DTOGS project examined how rapid transit could best enhance the transportation and mobility of the residents and visitors to the DTOGS project area. Several alternatives were considered and in this evaluation both order-of-magnitude capital costs (one-time expenditure) and operating and maintenance costs (recurring annual expense) are factored into the comparison of alternatives. Further, these costs were then compared to a measure of the benefit which they would provide. In the case of the DTOGS project, the sum of the annual capital and annual O&M costs was divided by the number of new riders per year relative to the TSM Alternative, with the following results (**Table ES-4**).

Table ES-4
Summary of Cost Effectiveness Indices – BRT and LRT Alternatives

	BRT			LRT		
	Gratiot/ Woodward	Michigan/ Woodward	Woodward	Gratiot/ Woodward	Michigan/ Woodward	Woodward
Cost Effectiveness Index	\$22.49	\$25.00	\$16.12	\$29.35	\$32.79	\$20.69

While the Woodward BRT has lower incremental cost per new rider than the Woodward light rail alternative, peak load factors are relatively high, indicating that higher frequencies could be required. Increasing service frequency could have inherent problems in that it is likely to increase O&M cost, resulting in reduced efficiency of BRT. Additionally, at this time, BRT vehicles do not have the capability to be coupled like trains, so at some point, its passenger-carrying capacity would be limited. In addition, since the FTA requires analysis of BRT during Preliminary Engineering (PE), the DTOGS project has opted to carry study BRT further at that later stage.

- **Economic Opportunity and Investment** – The Woodward Alignment scored highly in several categories, including redevelopment potential. All but one of the proposed station areas along the Woodward Alignment were determined to have a medium or high potential for transit-oriented development.
 - Approximately 50 percent more people live along the Gratiot/Woodward Alignment than the Michigan/Woodward and Woodward Alignments. The Gratiot/Woodward and Michigan/Woodward Alignments would serve more jobs (11 percent and 20 percent, respectively) than the Woodward Alignment. However, despite the lower population and employment along the Woodward Alignment, it is still expected to have the highest levels of ridership.
 - Two-thirds of on-street parking on Woodward Avenue may need to be eliminated, mostly along the narrower right-of-way of the avenue within Highland Park. The DTOGS project has identified potential areas for replacing these parking spaces and this topic would be further examined in the PE phase. In contrast, right-of-way on both Gratiot and Michigan Avenues are generally wider such that impacts on on-street parking are less compared to the Woodward Avenue BRT and LRT alternatives.

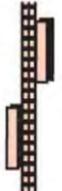
Figure ES-9

Downtown Alternative A
Downtown Alignment Options

Legend:

 Existing Detroit People Mover (DPM) One-Way Alignment and Stations

LRT Alignments and Stations:

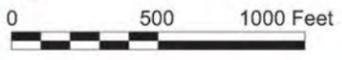
 Proposed Routing & Stations
 Alternate Routing & Stations
 Potential Future Extensions

LRT Alignment Configurations & Station Types:

 Two-Way Tracks with Center Platforms
 Two-Way Tracks with Side Platforms
 One-Way Track with Side Platforms

 1/4 Mile Radius or 5 Minute Walking Distance from LRT Stations



 May 2008


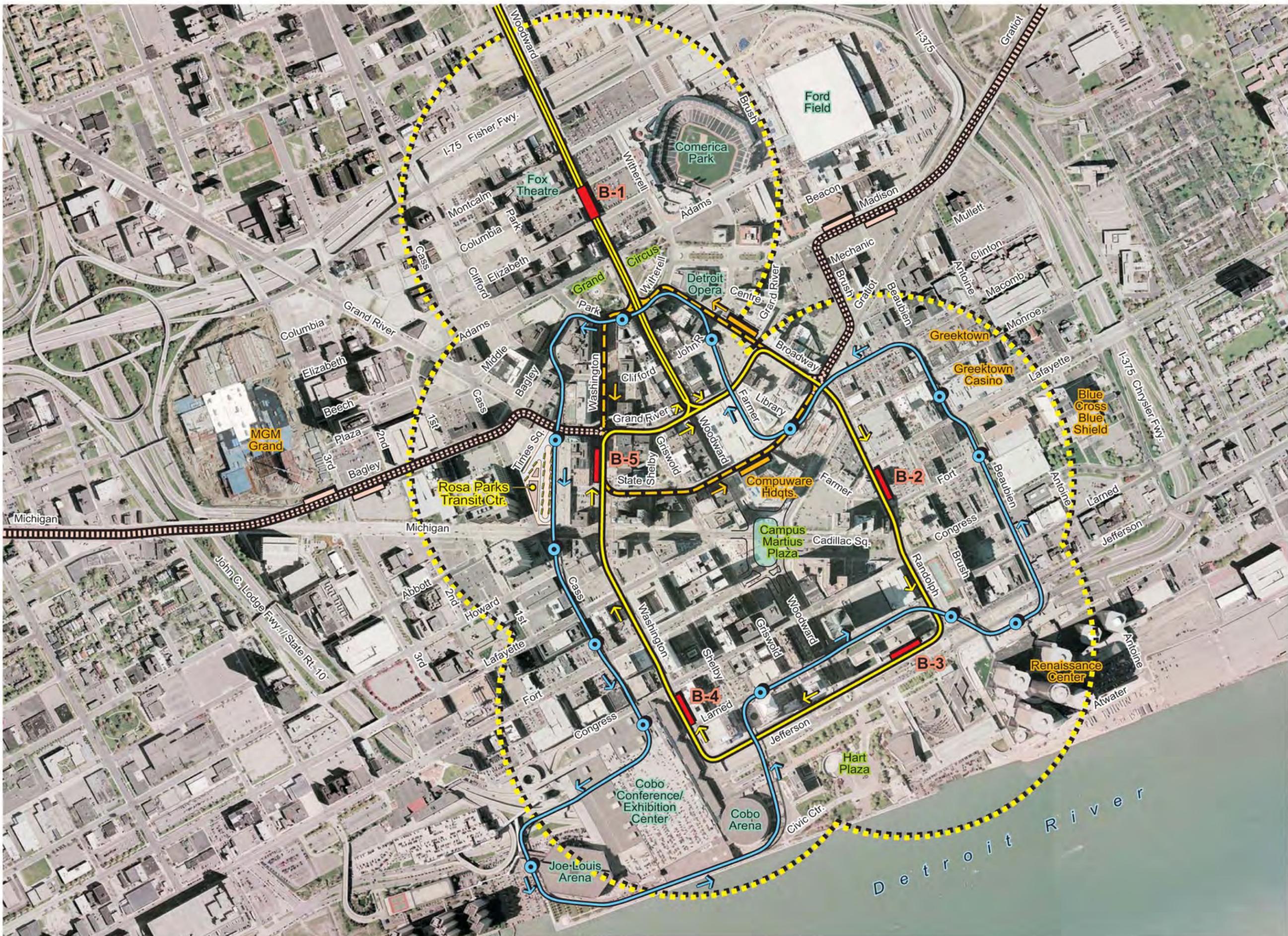


Figure ES-10

Downtown Alternative B Downtown Alignment Options

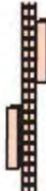
Legend:

 Existing Detroit People Mover (DPM) One-Way Alignment and Stations

LRT Alignments and Stations:

 Proposed Routing & Stations

 Alternate Routing & Stations

 Potential Future Extensions

LRT Alignment Configurations & Station Types:

 Two-Way Tracks with Center Platforms

 Two-Way Tracks with Side Platforms

 One-Way Track with Side Platforms

 1/4 Mile Radius or 5 Minute Walking Distance from LRT Stations

 May 2008

 0 500 1000 Feet

DETROIT TRANSIT
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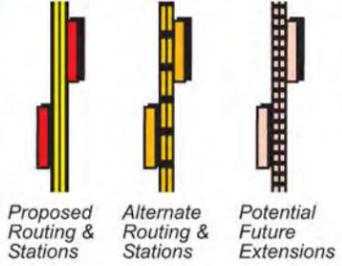
 **URS**

Downtown Alternative C
Downtown Alignment Options

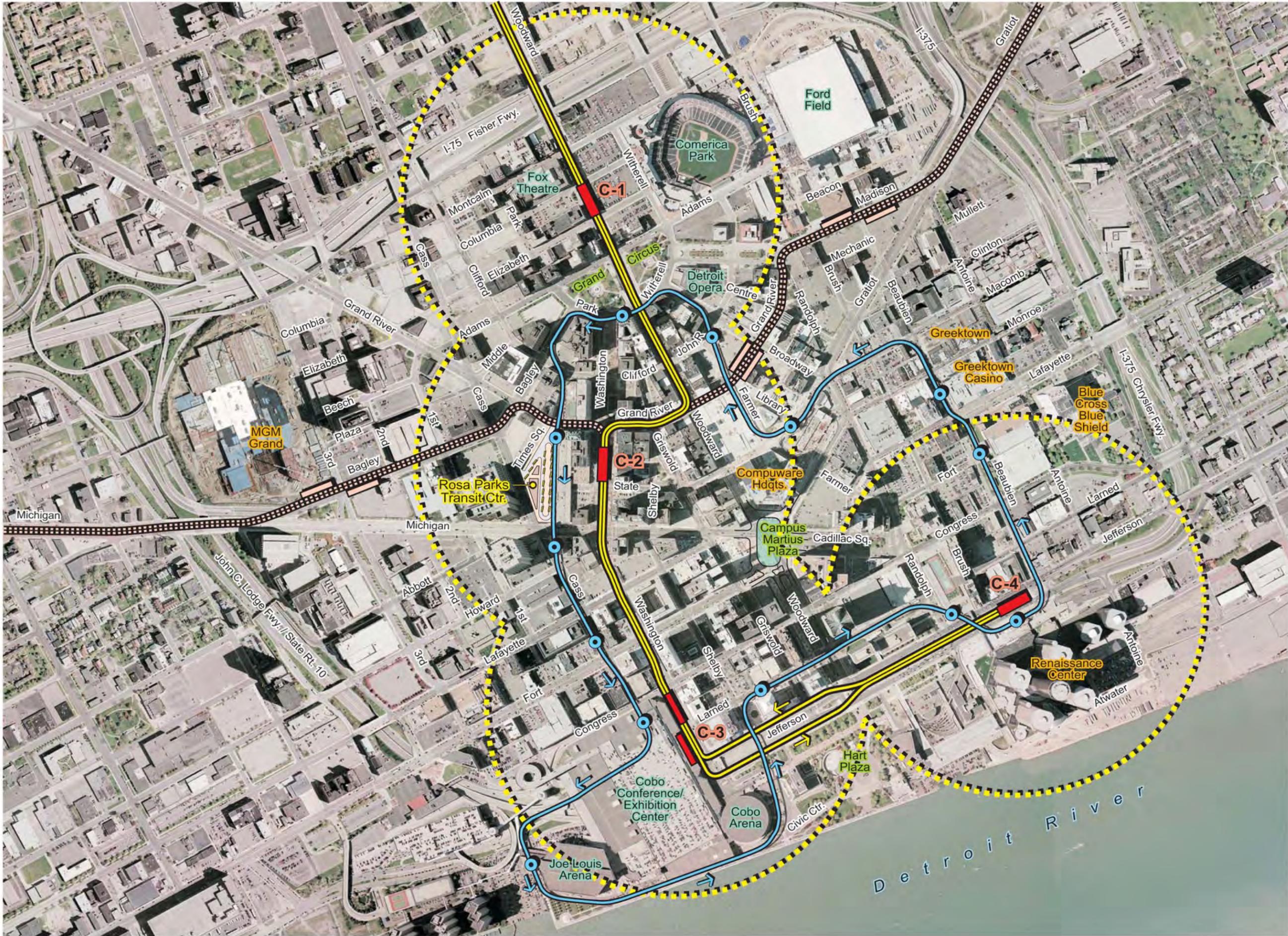
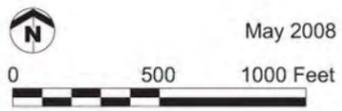
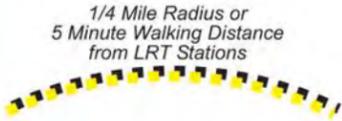
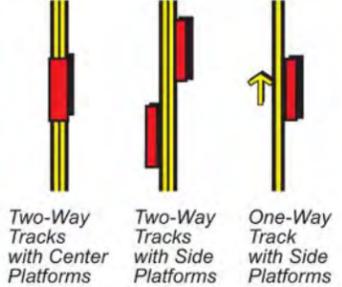
Legend:

 Existing Detroit People Mover (DPM) One-Way Alignment and Stations

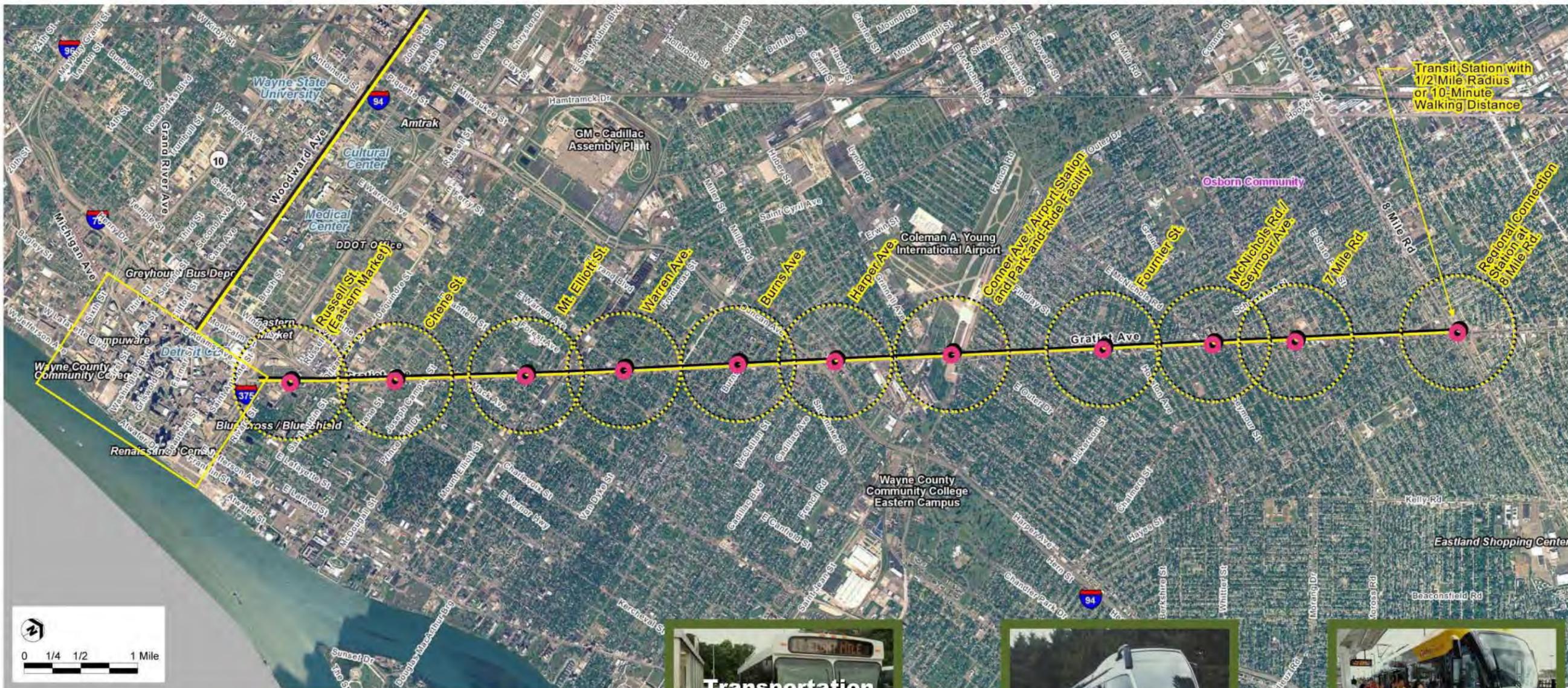
LRT Alignments and Stations:



LRT Alignment Configurations & Station Types:



Gratiot Avenue Alignment



* TSM ridership includes local (trunk) and skip-stop routes

FTA New Starts Benchmarks

Cost Effectiveness Index Relative to TSM (needs to be under \$23)

Transportation & Mobility

Improve Mobility
 Year 2030 Daily Ridership on Alternative*
 Year 2030 Daily Ridership Total Corridor
 Year 2030 Daily New Riders
 Year 2030 Level of Service - Average travel speed for autos

Cost Effective & Efficient Travel Options

Year 2007 Order-of-Magnitude Capital Cost
 Year 2007 Operating Cost
 Parking Impacts - Number of on-street spaces
 Change (relative to TSM)
 Percent Change (relative to TSM)

Communities and Environment

Year 2000 Transit Dependent Population within 1/2 Mile of Stations
 2030 Change in Daily Regional Vehicle Miles Travelled (relative to TSM)
 2030 Change in Annual CO2 Emissions - Relative to TSM (tons)
 Population Potentially Affected by Noise & Vibration within 100' of Alignment

Public Involvement

Community Sentiment - Through July 2007 Scoping Meetings
 Alignment Preference
 Mode Preference



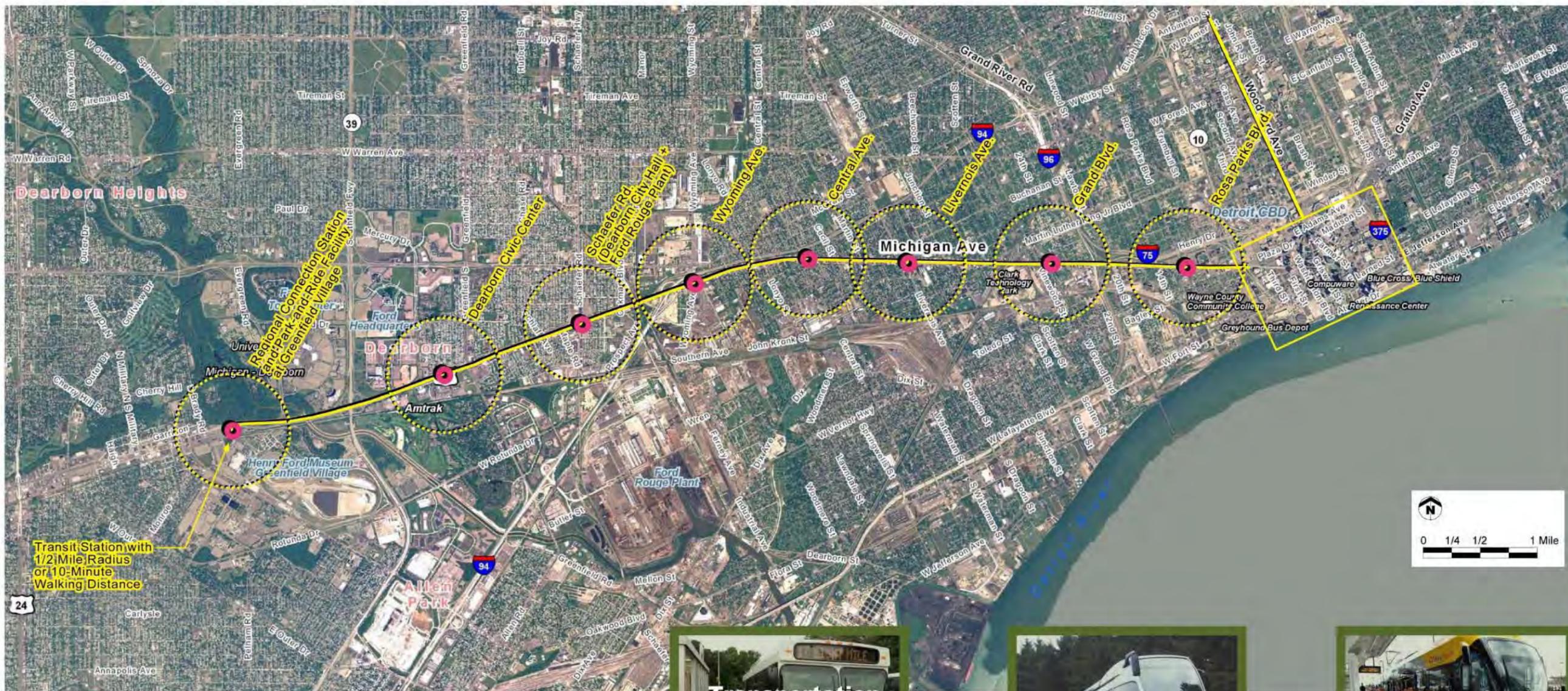
	Transportation System Management (Required by FTA)	Bus Rapid Transit (Required by FTA)	Light Rail
Cost Effectiveness Index Relative to TSM (needs to be under \$23)	Not applicable	\$22.49	\$29.35
Year 2030 Daily Ridership on Alternative*	6,400	8,200	9,900
Year 2030 Daily Ridership Total Corridor	15,600	18,100	19,800
Year 2030 Daily New Riders	680	3,280	4,090
Year 2030 Level of Service - Average travel speed for autos	25 MPH	19 MPH	19 MPH
Year 2007 Order-of-Magnitude Capital Cost	\$26.0 million	\$280 million	\$523 million
Year 2007 Operating Cost	\$2.6 million (skip-stop service)	\$7.7 million	\$11.0 million
Parking Impacts - Number of on-street spaces	2,670	1,820	1,780
Change (relative to TSM)	Not applicable	(850)	(890)
Percent Change (relative to TSM)	Not applicable	(32%)	(33%)
Year 2000 Transit Dependent Population within 1/2 Mile of Stations	21,810	19,100	19,100
2030 Change in Daily Regional Vehicle Miles Travelled (relative to TSM)	Not applicable	(18,700)	(31,900)
2030 Change in Annual CO2 Emissions - Relative to TSM (tons)	Not applicable	(2,320 tons)	(3,955 tons)
Population Potentially Affected by Noise & Vibration within 100' of Alignment	2,590	2,590	2,590
Community Sentiment - Through July 2007 Scoping Meetings			
Alignment Preference	Medium	Medium	Medium
Mode Preference	Low	Medium	High

February 28, 2008



Figure ES-13

Michigan Avenue Alignment



* TSM ridership includes local (trunk) and skip-stop routes

FTA New Starts Benchmarks

Cost Effectiveness Index Relative to TSM (needs to be under \$23)

Transportation & Mobility

Improve Mobility

Year 2030 Daily Ridership on Alternative*

Year 2030 Daily Ridership Total Corridor

Year 2030 Daily New Riders

Year 2030 Level of Service - Average travel speed for autos

Cost Effective & Efficient Travel Options

Year 2007 Order-of-Magnitude Capital Cost

Year 2007 Operating Cost

Parking Impacts - Number of on-street spaces

Change (relative to TSM)

Percent Change (relative to TSM)

Communities and Environment

Year 2000 Transit Dependent Population within 1/2 Mile of Stations

2030 Change in Daily Regional Vehicle Miles Travelled (relative to TSM)

2030 Change in Annual CO2 Emissions - Relative to TSM (tons)

Population Potentially Affected by Noise & Vibration within 100' of Alignment

Public Involvement

Community Sentiment - Through July Scoping Meetings

Alignment Preference

Mode Preference



	Transportation System Management (Required by FTA)	Bus Rapid Transit (Required by FTA)	Light Rail
Cost Effectiveness Index Relative to TSM (needs to be under \$23)	Not applicable	\$25.00	\$32.79
Year 2030 Daily Ridership on Alternative*	2,500	5,200	6,400
Year 2030 Daily Ridership Total Corridor	5,600	8,600	9,700
Year 2030 Daily New Riders	430	2,530	3,140
Year 2030 Level of Service - Average travel speed for autos	27 MPH	23 MPH	23 MPH
Year 2007 Order-of-Magnitude Capital Cost	\$14.1 million	\$292 million	\$521 million
Year 2007 Operating Cost	\$1.6 million (skip-stop service)	\$5.6 million	\$8.0 million
Parking Impacts - Number of on-street spaces	1,510	860	860
Change (relative to TSM)	Not applicable	(650)	(480)
Percent Change (relative to TSM)	Not applicable	(43%)	(43%)
Year 2000 Transit Dependent Population within 1/2 Mile of Stations	12,390	11,400	11,400
2030 Change in Daily Regional Vehicle Miles Travelled (relative to TSM)	Not applicable	(21,300)	(29,000)
2030 Change in Annual CO2 Emissions - Relative to TSM (tons)	Not applicable	(2,640 tons)	(3,595 tons)
Population Potentially Affected by Noise & Vibration within 100' of Alignment	2,300	2,300	2,300
Community Sentiment - Through July Scoping Meetings	Medium	Medium	Medium
Alignment Preference	Low	Medium	High
Mode Preference	Low	Medium	High

May 2008

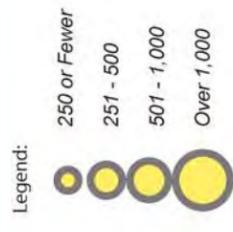


Estimated Capital Cost
(Year 2007 Dollars)

Total Cost
\$371 Million

2030 Daily Roundtrips Forecast
(by Station)

Total Roundtrips
11,100



* Includes ridership at Grand Boulevard Station

Figure ES-15
Locally Preferred
Alternative
**2030 Daily
Roundtrips for
Woodward LRT**

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- **Communities and Environment** – All three alignments were similar in the number of people potentially impacted by noise, number of community facilities served, intermodal connections, and right-of-way impacts. Woodward Avenue scored highly in several categories, including consistency with plans and decreases in forecasted 2030 vehicles miles traveled and CO₂ emissions. Although all three alignments would potentially serve large, transit-dependent populations, a higher percentage of the residents living along the Woodward Alignment are transit-dependent. As such, the Woodward alignment would best meet the DTOGS project goals for communities and environment.
- **Community Sentiment** – Repeatedly throughout the DTOGS project public sentiment showed a preference for both LRT and for Woodward Avenue. This was apparent based on stakeholder interviews, public feedback surveys, questionnaires, and the March 2007 open houses, July 2007 early scoping meetings, and March 2008 open houses.

Next Steps

The next step in the FTA New Starts project development process is Preliminary Engineering and development of the Draft Environmental Impact Statement (DEIS). The FTA has a specific list of products and tasks to be completed as part of DDOT's request to enter preliminary engineering that includes:

- **Include DTOGS Project LPA in SEMCOG's RTP and TIP:** The DTOGS project's LPA – light rail on Woodward Avenue between downtown Detroit and the Michigan State Fairgrounds – has to be included in the regional transportation plan (RTP) and transportation improvement program (TIP). This entails amendment of SEMCOG's RTP and TIP. DDOT completed its application for the RTP and TIP amendment in March 2008. SEMCOG anticipates that final approval of the application by the General Assembly will take place in July 2008.
- **Products of the DTOGS Project:** This information includes the Purpose and Need statements, ridership methodology, detailed definition of alternatives, and capital and operating and maintenance cost methodologies and estimates.

- **Determine Transportation User Benefits:** These benefits are determined using SUMMIT software and SEMCOG’s travel demand model. SEMCOG’s model is the foundation of the 2030 travel forecasts for the DTOGS project.
- **Definition of Baseline Alternative:** In the PE and DEIS phases, the basis of comparison of BRT and LRT alternatives will be the Baseline Alternative. The Baseline Alternative is a bus-only alternative that attempts to optimize transit service and ridership without significant capital outlay. In essence, this is a much refined TSM Alternative. This would include a detailed operating plan and capital and operating and maintenance costs.
- **Before and After Study Documentation of Methods:** According to the FTA, the purpose of before and after study is “to expand insights into the costs and impacts of major transit investments; and to improve the technical methods and procedures used in the planning and development of those investments.”⁵ This document is a statutory requirement for projects seeking New Starts funding.
- **Development of a Program Management Plan (PMP):** The PMP identifies schedules and procedures which will be used throughout preliminary engineering. Its basic requirements include identification of project sponsor staff organization and project budget and schedule. Procedures and plans are also included in the PMP, such as document control, change order, quality assurance and control, and various management plans (e.g. rail fleet, contracting, contingency).
- **New Starts Templates, Certifications and Other Reports:** The project sponsor for the preliminary engineering phase of the DTOGS project LPA must submit a series of other information to the FTA. This information includes FTA’s New Starts Criteria Templates, Standard Cost Category Annualized Cost Worksheets, supporting land use information, Project Finance Plan, Making the Case document, legal capacity of project sponsor to undertake light rail on Woodward Avenue, and grantee’s letter of request for PE initiation.

⁵ Source: *Before and After Studies of New Starts Projects – Report to Congress*. Federal Transit Administration. September 2007.



Additionally, there are a number of topics to undertake during the PE phase such as: downtown Detroit alignments; location of a maintenance facility; specific location of and potential impacts on underground utilities; and determination of the impacts of the Detroit People Mover in the travel demand model and subsequent ridership forecasts for each alternative.

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