

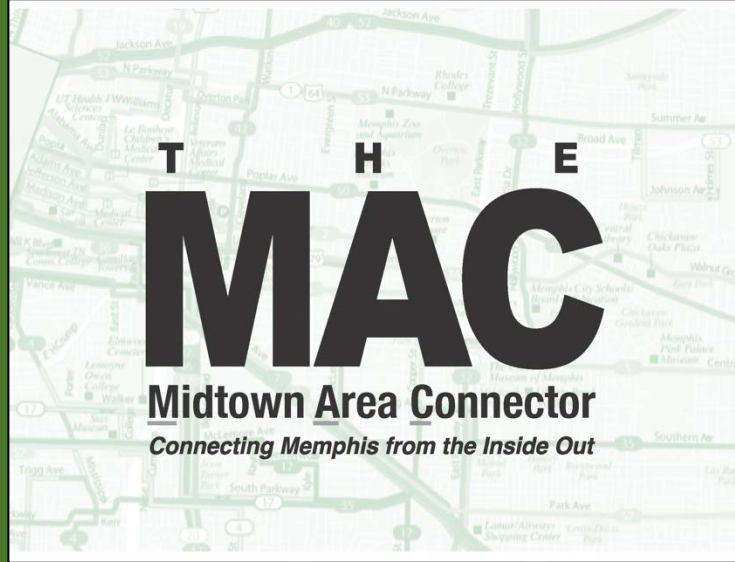
MEMPHIS AREA TRANSIT AUTHORITY

Midtown

Alternatives Analysis

TECHNICAL MEMORANDUM: 4

Potential Alignments



July 2014

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Section 1 |

Potential Alignments

Introduction

The Memphis Midtown Alternatives Analysis is a multi-phase process designed to select a Locally Preferred Alternative (LPA) for improved High Capacity Transit (HCT) service such as light rail, streetcar, and/or BRT in Memphis' Midtown corridor. The process includes an initial identification of potential alignments, a Tier 1 screening of these potential alignments to narrow the list down, the development of mode-specific service alternatives, and a Tier 2 Service Alternative evaluation to select a LPA. This document describes the process to identify the potential alignments for further consideration.

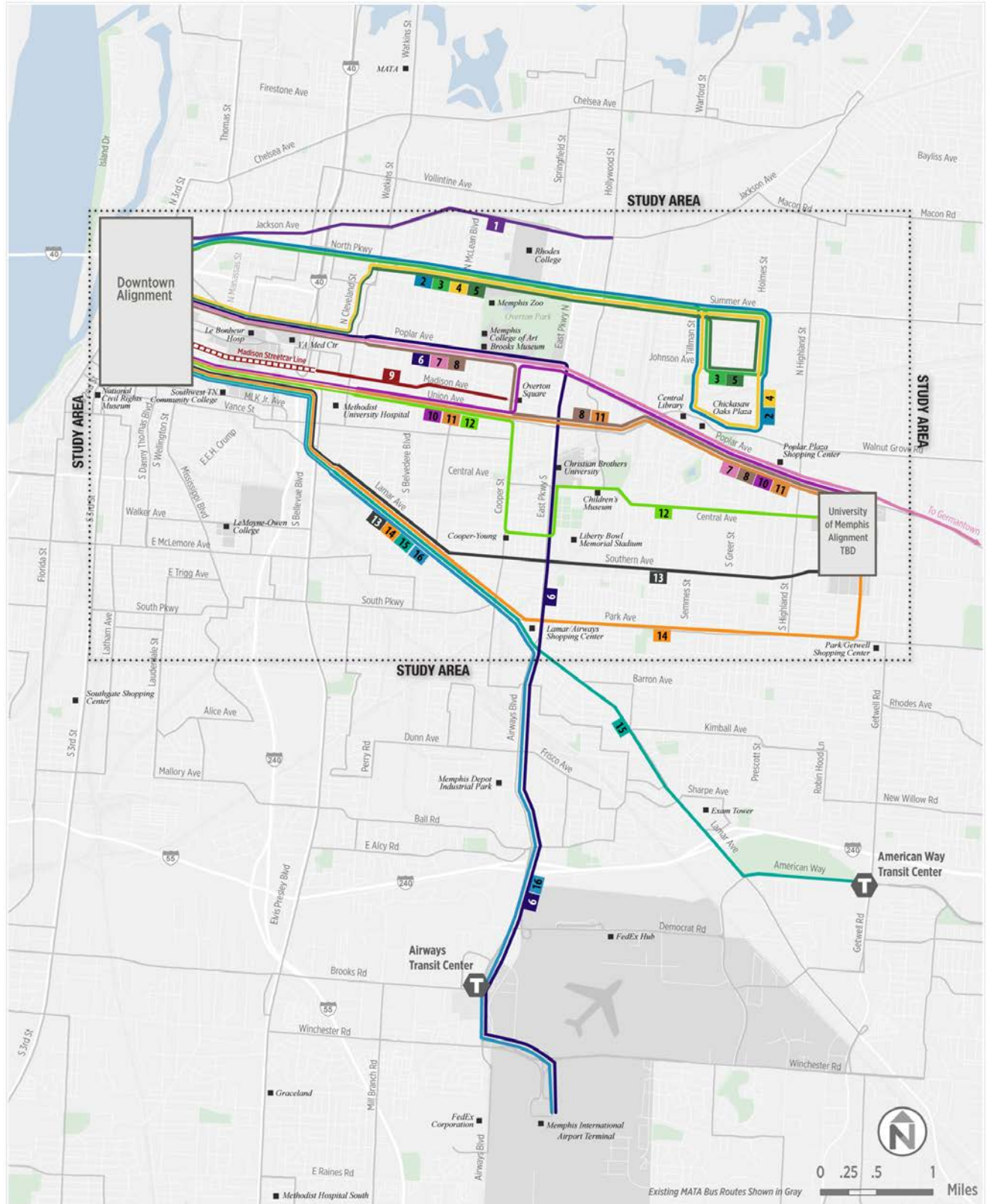
Development of Alignments

The study team began by soliciting input from stakeholders and the public to identify a long list of alignments that might be suitable for HCT. These candidate alignments included most of Midtown's major arterials and are shown in Appendix A. These initial candidates were then pre-screened to eliminate any alignments that had significant drawbacks that would compromise their feasibility, ensuring that all the alignments to be analyzed would meet the most basic requirements for HCT service. These basic requirements were threefold (the process is described in more detail in Appendix A):

- Alignments must serve sufficient population and employment density to generate sufficient demand for HCT service.
- Alignments must have adequate terminal anchors.
- Alignments must meet MATA's service design guidelines for good transit service design.

The process identified 16 potential alignments that meet the minimum requirements for HCT and will be carried forward into the Tier 1 Screening (see Figure 1-1).

Figure 1- 1: Potential Alignments



Potential Alignments

The 16 potential alignments that are proposed to be carried forward into the Tier 1 Screening are described below. All of these alignments would operate to and from downtown Memphis:

Alignment 1 Hollywood Street via Jackson. Alignment 1 would serve Jackson Avenue between downtown Memphis and Hollywood Street. This alignment would serve downtown Memphis, St. Jude Children's Hospital, and Rhodes College. This alignment would serve two important locations of transfer activity at Watkins Street and Hollywood Street.

Alignment 2 Walnut Grove Road via North Parkway and Summer. Alignment 2 would serve North Parkway and Summer Avenue between downtown Memphis and Holmes Street, with an eastern terminal loop at Walnut Grove Road. This alignment would serve downtown Memphis, the Memphis Zoo, Overton Park, Rhodes College, the Central Library, Chickasaw Oaks Plaza, and the Broad Avenue Arts District. This alignment would travel into and out of downtown via North Parkway and serve St. Jude Children's Hospital. This alignment would serve an important location of transfer activity at Watkins Street.

Alignment 3 Johnson Avenue via North Parkway and Summer. Alignment 3 would be identical to Alignment 2 but would make a smaller eastern terminal loop at Johnson Avenue instead of Walnut Grove Road.

Alignment 4 Walnut Grove Road via Poplar and Summer. Alignment 4 would be identical to Alignment 2, but would serve downtown via Poplar Avenue instead of North Parkway. Unlike Alignment 2, this alignment would not serve St. Jude Children's Hospital, but it would serve Le Bonheur Children's Hospital and the VA Medical Center.

Alignment 5 Johnson Avenue via Poplar and Summer. Alignment 5 would be identical to Alignment 4, but would make a smaller eastern terminal loop at Johnson Avenue instead of Walnut Grove Road.

Alignment 6 Airport via Poplar and Airways. Alignment 6 would serve Poplar Avenue, East Parkway, and Airways Boulevard between downtown Memphis and the Memphis International Airport. This alignment would serve downtown Memphis, Le Bonheur Children's Hospital, the VA Medical Center, Overton Park, the Levitt Shell, Christian Brothers University, the Kroc Center, Lamar/Airways Shopping Center, Airways Transit Center, and the airport. This alignment would serve several important transfer locations at Cleveland Street, Cooper Street, East Parkway, Southern Avenue, Park Avenue, and Lamar Avenue.

Alignment 7 Germantown via Poplar. Alignment 7 would serve Poplar Avenue between downtown Memphis and Exeter Village Shopping Center in Germantown. This alignment would serve downtown Memphis, Le Bonheur Children's Hospital, the VA Medical Center, Overton Park, the Brooks Museum, the Levitt Shell, the Memphis College of Art, Benjamin Hooks Central Library, the University of

Memphis, Oak Court Mall, Eastgate Shopping Center, Le Bonheur East Hospital, and Exeter Village Shopping Center. This alignment would serve a very important transfer location at Poplar Avenue and Cleveland Street.

Alignment 8 U of M via Poplar, Cooper and Union. Alignment 8 would serve Poplar Avenue, Cooper Street, and Union Avenue between downtown Memphis and the University of Memphis. This alignment would serve downtown Memphis, Le Bonheur Children's Hospital, the VA Medical Center, Overton Park, the Brooks Museum, the Levitt Shell, the Memphis College of Art, Overton Square, Benjamin Hooks Central Library, and the University of Memphis. This alignment would serve a very important transfer location at Poplar Avenue and Cleveland Street.

Alignment 9 Overton Square via Madison. Alignment 9 would extend the Madison Avenue trolley 1.5 miles from its current eastern terminus at Cleveland Street to Cooper Street. As an extension of the existing Madison Avenue trolley, this alignment's mode would be limited to trolley. This alignment would serve Minglewood Hall, Overton Square, and the various retail and commercial stores along Madison Avenue.

Alignment 10 U of M via Union, Overton Square, and Poplar. Alignment 10 would serve Union Avenue, Cooper Street, and Poplar Avenue between downtown Memphis and the University of Memphis. This alignment would serve downtown Memphis, Southwest Tennessee Community College, Methodist University Hospital, Overton Square, Overton Park, the Levitt Shell, the Memphis College of Art, Benjamin Hooks Central Library, and the University of Memphis. This alignment would serve a very important transfer location at Poplar Avenue and Cleveland Street.

Alignment 11 U of M via Union and Poplar. Alignment 11 would serve Poplar Avenue and Union Avenue between downtown Memphis and the University of Memphis. This alignment would serve downtown Memphis, Southwest Tennessee Community College, Methodist University Hospital, Overton Square, Benjamin Hooks Central Library, and the University of Memphis. The alignment would serve an important location of transfer activity at Cleveland Street and Bellevue Boulevard. Depending on the alignment downtown, it could also serve AutoZone Park.

Alignment 12 U of M via Union, Overton Square, Cooper-Young, and Central. Alignment 12 would serve Union Avenue, Cooper Street, and Poplar Avenue between downtown Memphis and the University of Memphis. This alignment would serve downtown Memphis, Southwest Tennessee Community College, Methodist University Hospital, Overton Square, Cooper-Young, Overton Park, Benjamin Hooks Central Library, the Christian Brothers University, the Children's Museum, the Liberty Bowl, and the University of Memphis. This alignment would serve two important locations of transfer activity at Cleveland Street/Bellevue Boulevard and Hollywood Street.

Alignment 13 U of M via Lamar and Southern. Alignment 13 would serve Union Avenue, Bellevue Boulevard, Lamar Avenue, and Southern Avenue between downtown Memphis and the University of Memphis. This alignment would serve downtown Memphis, Southwest Tennessee Community College,

Cooper-Young (indirectly), Methodist University Hospital, the Mid-South Coliseum, the Liberty Bowl, and the University of Memphis. This alignment would serve two important locations of transfer activity, at Bellevue Boulevard and Union Avenue, and at Bellevue Boulevard and Lamar Avenue.

Alignment 14 U of M via Lamar and Park. Alignment 14 would serve Union Avenue, Bellevue Boulevard, Lamar Avenue, and Park Avenue between downtown Memphis and the University of Memphis. This alignment would serve downtown Memphis, Southwest Tennessee Community College, Methodist University Hospital, the Lamar/Airways Shopping Center, and the University of Memphis. This alignment would serve several important locations of transfer activity – at Bellevue Boulevard and Union Avenue, at Bellevue Boulevard and Lamar Avenue, and at Lamar Avenue and Airways Boulevard.

Alignment 15 American Way Transit Center via Lamar. Alignment 15 would serve Union Avenue, Bellevue Boulevard, Lamar Avenue, and American Way between downtown Memphis and the American Way Transit Center. This alignment would serve downtown Memphis, Southwest Tennessee Community College, Methodist University Hospital, the Lamar/Airways Shopping Center, and the American Way Transit Center. This alignment would serve several important locations of transfer activity in addition to the American Way Transit Center – at Bellevue Boulevard and Union Avenue, at Bellevue Boulevard and Lamar Avenue, and at Lamar Avenue and Airways Boulevard.

Alignment 16 Airport Lamar and Airways. Alignment 16 would serve Union Avenue, Bellevue Boulevard, Lamar Avenue, and Airways Boulevard between downtown Memphis and the Memphis International Airport. This alignment would serve downtown Memphis, Southwest Tennessee Community College, Methodist University Hospital, the Lamar/Airways Shopping Center, and the Airways Transit Center. This alignment would serve several important locations of transfer activity in addition to the Airways Transit Center – at Bellevue Boulevard and Union Avenue, at Bellevue Boulevard and Lamar Avenue, and at Lamar Avenue and Airways Boulevard.

Appendix A

Pre-Screening of Candidate Alignments

Pre-Screening Methodology

This appendix describes the process for pre-screening the long list of initial candidate alignments into the potential alignments for consideration in subsequent phases of analysis. The initial list of 25 candidate alignments is shown in Figure A-1.

These initial candidates were pre-screened to eliminate any alignments that had significant drawbacks that would compromise their feasibility, ensuring that all the alignments to be analyzed would meet the most basic requirements for HCT service.

- Alignments must serve sufficient population and employment density to generate sufficient demand for HCT service.
- Alignments must have adequate terminal anchors.
- Alignments must meet MATA's service design guidelines for good transit service design.

Population and Employment

Population and employment densities along each candidate alignment were measured to determine whether there would be sufficient demand for High Capacity Transit service along each alignment, because density is by far the strongest indicator of demand for transit service.

Because population and employment densities vary along an alignment, the study team used a process that considered how much of an alignment's length would meet minimum density levels. Each alignment was split into short segments at major intersections or juncture points, and population and employment densities were calculated for the area within a half-mile radius of each segment. Each segment was then given a "Pass" or "No Pass" rating, based on whether the segment had a total population and employment density of at least eight jobs or residents per acre. This low threshold was set to ensure that most alignments would meet the standard and only the very worst alignments would not meet the standard. Alignments would meet the minimum population and employment criteria and given a "Pass" if 60% or more of the segments (weighted by length) met the standard. If the alignment did not pass, but had a logical truncating point so that it could pass, this was noted in the results as well.

Anchors

Successful High Capacity Transit routes are anchored at the endpoints by major activity centers and destinations that generate significant demand for transit service. Each potential alignment was evaluated based on whether it would serve strong terminal anchors. The strongest transit anchors would consist of major activity centers or destinations such as downtown central business districts, universities, and hospitals. Transit centers, airports, community nodes, and transit transfer locations would serve as more weak anchors, while un-anchored transit routes would turn around in neighborhoods or low density environments.

Service Design

MATA adopted Service Design Guidelines as part of the agency's Short Range Transit Plan. These service design guidelines established minimum standards for the design and operation of MATA service. These guidelines are based on national best practices for transit service design, and are particularly relevant for HCT such as what is envisioned for Midtown Memphis. Thus, each potential alignment was evaluated to determine whether it would meet MATA's service guidelines, particularly:

- Alignments should follow a straight and direct path
- Alignments should be simple
- Major transit routes should operate along arterials
- Deviations should be minimized
- Alignments should be symmetrical, operating along the same alignment in both directions

Each potential alignment was given a "Pass" if it met all of these design guidelines, or a "No Pass" if it failed to meet all of these guidelines.

Table 1- 1: Pre-Screening of Candidates

Candidate Alignment and Description	Population and Employment	Anchors	Service Design	Final Result
1: Jackson Ave	✗	✓	✓	TRUNCATE
2: North Pkwy, Summer Ave, Walnut Grove Rd loop	✓	✓	✓	PASS
3: North Pkwy, Summer Ave, and Johnson St loop	✗	✓	✓	PASS
4: Poplar Ave, Cleveland St, North Pkwy, and Walnut Grove Rd loop	✓	✓	✓	PASS
5: Poplar Ave, Cleveland St, North Pkwy, and Johnson Ave loop	✓	✓	✓	PASS
6: Poplar Ave, East Parkway, and Airways Blvd	✓	✓	✓	PASS
7: Poplar Ave	✓	✓	✓	PASS
8: Poplar Ave, Cooper St, and Poplar Ave	✓	✓	✓	PASS
9: Madison Ave Trolley Extension	✓	✓	✓	PASS
10: Union Ave, Cooper St, and Poplar Ave	✓	✓	✓	PASS
11: Union Ave and Poplar Ave	✓	✓	✓	PASS
12: Union Ave, Cooper St, and Central Ave	✓	✓	✓	PASS
13: Union Ave, Lamar Ave, and Southern Ave	✓	✓	✓	PASS
14: Union Ave, Lamar Ave, and Park Ave	✓	✓	✓	PASS
15: Union Ave and Lamar Ave	✓	✓	✓	PASS
16: Union Ave, Lamar Ave, and Airways Blvd	✓	✓	✓	PASS
17: Walnut Grove Rd	✗	✓	✓	NO PASS
18: Union Ave, Peabody St, Central St, Cooper St, and Lamar Ave	✓	✓	✗	NO PASS
19: East Parkway and Airways Blvd	✗	✗	✓	NO PASS
20: Union, Bellevue, Elvis Presley Blvd, Airport	✗	✓	✓	NO PASS
21: Cleveland St, Elvis Presley Blvd, and Brooks Rd	✗	✓	✓	NO PASS
22: Cleveland St, Elvis Presley Blvd	✗	✗	✓	NO PASS
23: Elvis Presley Blvd, Bellevue Blvd, and Watkins St	✗	✗	✓	NO PASS
24: Cleveland St, Bellevue Blvd, and McLemore Ave	✗	✗	✓	NO PASS

25: Cleveland St, Bellevue Blvd, Wellington St, and Vance loop	✓	✗	✗	NO PASS
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Figure 1- 2: Candidate Alignments

