

MEMPHIS AREA TRANSIT AUTHORITY

TRANSIT OPERATING ENVIRONMENT

June 16, 2011

Table of Contents

1	INTRODUCTION	1
2	AGENCY OVERVIEW	1
	Organizational and Institutional Structure	2
3	TRANSIT SERVICES	2
	Fixed Route Bus Service	2
	Rail Trolley Service.....	6
	Paratransit Service (MATApus).....	7
	Special Event Shuttle Service.....	7
4	PASSENGER FARES	7
	Fixed-Route Bus Fares.....	7
	Rail Trolley Fares.....	8
	MATApus Fares.....	9
	Special Event Shuttle Service.....	9
5	FLEET, FACILITIES AND INFRASTRUCTURE	9
	Transit Vehicles	10
	Transit Centers	11
	Shelters and Stops	15
	Park-N-Ride Lots	16
	Bicycle Accommodations	16
6	PASSENGER INFORMATION SYSTEMS	17
	Printed Materials.....	17
	Customer Service Centers.....	17
	On-Route Information	17
	Telephone Resources.....	17
	Web-Based Resources.....	18
7	INTELLIGENT TRANSPORTATION SYSTEMS	19
8	RIDERSHIP	19
	Ridership by Route	20
	Rider Characteristics	22
9	COSTS AND REVENUES	23
	Operating Budget.....	24
	Capital Budget	25

10	SYSTEM PRODUCTIVITY	26
11	SUMMARY	28
12	REFERENCES	30

List of Figures

Figure 1	MATA Organizational Chart	3
Figure 2	Existing MATA Transit Routes	4
Figure 3	Vintage Rail Trolley	6
Figure 4	MATA Fixed-Route and Express Service Cash Fares	8
Figure 5	MATA Passenger “Fast Pass” Fares	8
Figure 6	MATA Trolley Fares	9
Figure 7	MATA Special Event Bulk Discount Fares	9
Figure 8	Active MATA Fixed-Route Fleet	10
Figure 9	Active MATA Rail Trolley Fleet	11
Figure 10	Active MATA <i>Plus</i> Fleet	11
Figure 11	Location of MATA Transit Centers	13
Figure 12	American Way Transit Center	14
Figure 13	MATA Transit Centers.....	15
Figure 14	MATA Shelters and Stops.....	16
Figure 15	MATA Sign.....	18
Figure 16	Google Transit with MATA Integration	18
Figure 17	Annual Unlinked Passenger Trips.....	20
Figure 18	MATA Five Highest Ridership Routes.....	21
Figure 19	MATA Five Routes with Highest Ridership per Hour	22
Figure 20	MATA Rider Profile	23
Figure 21	MATA Operating Budgets for FY 2010 and FY 2011	24
Figure 22	Sources of MATA Operating Revenue 2003-2009.....	25
Figure 23	MATA Capital Budgets for FY 2010 and FY 2011.....	26
Figure 24	MATA Annual Performance Data and Indicators for 2009	28



1 INTRODUCTION

The Memphis Area Transit Authority (MATA) retained a team of consultants (“the study team”), led by Nelson\Nygaard Consulting Associates to develop a Short-Range Transit Plan (SRTP). The objective of the SRTP is to conduct a detailed review of MATA services and the service network and consider the effectiveness and efficiency of the existing structure. The ultimate goal of the project is to identify opportunities to improve the service and best meet the needs of the Memphis community.

As an initial step in the SRTP, the study team prepared the following overview of MATA’s transit organization and operations, including the agency’s organizational structure, existing service types, major facilities and funding structure. This inventory of the existing transit environment is intended to provide a baseline understanding of MATA operations.

2 AGENCY OVERVIEW

MATA is the largest transit agency in the State of Tennessee, transporting about 40,000 riders per weekday throughout Memphis and the surrounding areas. The MATA service area currently spans two states (Tennessee and Arkansas) and includes the City of Memphis and the suburban cities of Bartlett, Germantown, and Lakeland in Shelby County, Tennessee; and the City of West Memphis in Arkansas.

MATA was formed in 1975 to serve the Memphis metropolitan area. It currently operates 33 numbered fixed-route bus routes, three rail trolley lines and a paratransit service for persons with disabilities. Of the 33 routes, 31 operate within Shelby County, Tennessee. The remaining routes (75, 77, and 78) operate entirely or mostly within West Memphis, Arkansas. MATA provides these bus routes as a contracted service, funded by the City of West Memphis.

MATA employs about 530 individuals and has an annual operating budget of nearly \$60m. As of December 2010, the operation consists of about 250 transit vehicles, which are used to operate four types of transportation services: fixed-route bus, paratransit, vintage rail trolley, and special event shuttle.

The mission of the agency, as stated publically, is to provide a quality regional transit system that meets the present and future needs of all the people it serves. The agency vision statement is “to provide the safest, cleanest, most efficient and most progressive transit service as the mode of choice for the greatest number of people in the Memphis area by fostering development, increasing mobility, alleviating congestion and pollution within Board-established performance levels and within available financial resources.



Short Range Transit Plan

Organizational and Institutional Structure

MATA is governed by a Board of Commissioners appointed by the Mayor of Memphis and confirmed by the Memphis City Council. The Board of Commissioners has nine positions and typically meets monthly.

The General Manager has two Assistant GM's who are served by eight Directors. Directors manage agency departments and are organized by function. MATA employs an extensive network of employees, about 80% of whom are bus operators and maintenance personnel. The complete MATA organizational chart is shown in Figure 1.

MATA has a transit management contract with First Transit. Management responsibilities are assigned in part to Mid-South Transportation Management, Inc. (MTM), a Tennessee not-for-profit corporation and subsidiary of First Transit. All transit personnel are employed by MTM with the exception of the Director of Fixed Route Transportation who is employed by First Transit. MTM implements transit policy established by the MATA Board and manages and operates the transit system. The Amalgamated Transit Union (ATU) Local Union 713 represents the non-supervisory personnel, including bus and paratransit operators, trolley operators, bus maintenance staff, trolley maintenance staff, and information specialists.

3 TRANSIT SERVICES

As discussed, MATA operates four types of public transportation services: fixed-route bus; rail trolley service; ADA complementary paratransit and special event shuttle services. The following section provides an overview of each of these services.

Fixed Route Bus Service

MATA currently operates daily bus service with 33 numbered bus routes. Fixed-route bus service is by far the largest component of the MATA service network. The bus route network is primarily comprised of local service, plus two express routes. Although the individual span of service varies by route, bus services generally operate weekdays between the hours of 5:00 am and 12:15 am; on Saturdays between 5:00 am and 8:00 pm and on Sundays and Holidays between 9:00 am and 6:00 pm.

A map of MATA's existing routes is shown in Figure 2. This map does not show the complete network, however, and excludes services contracted by the City of West Memphis (Routes 75, 77, and 78). The complete list of current routes by service option is as follows:

Figure 1 MATA Organizational Chart



Memphis Area Transit Authority/Mid-South Transportation Management Inc.
Short Range Transit Plan

Figure 1. Organizational Chart

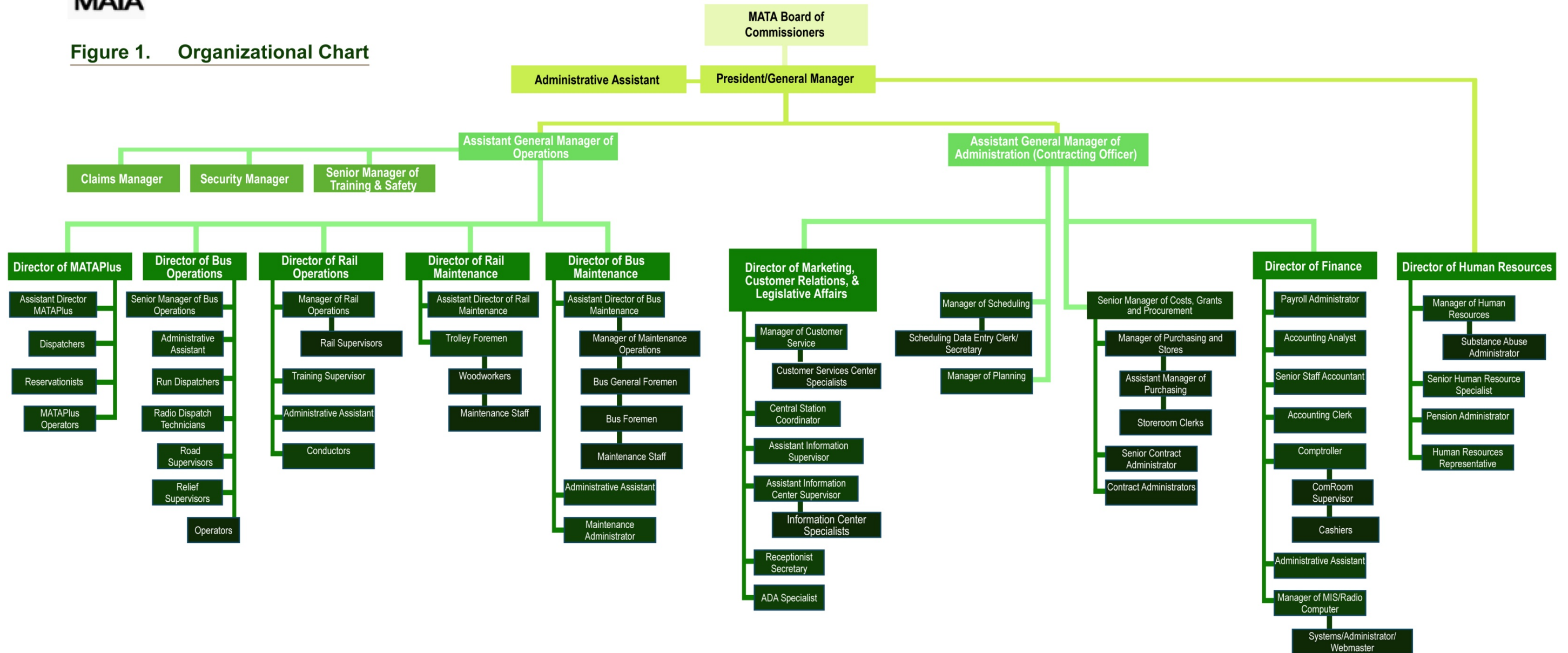
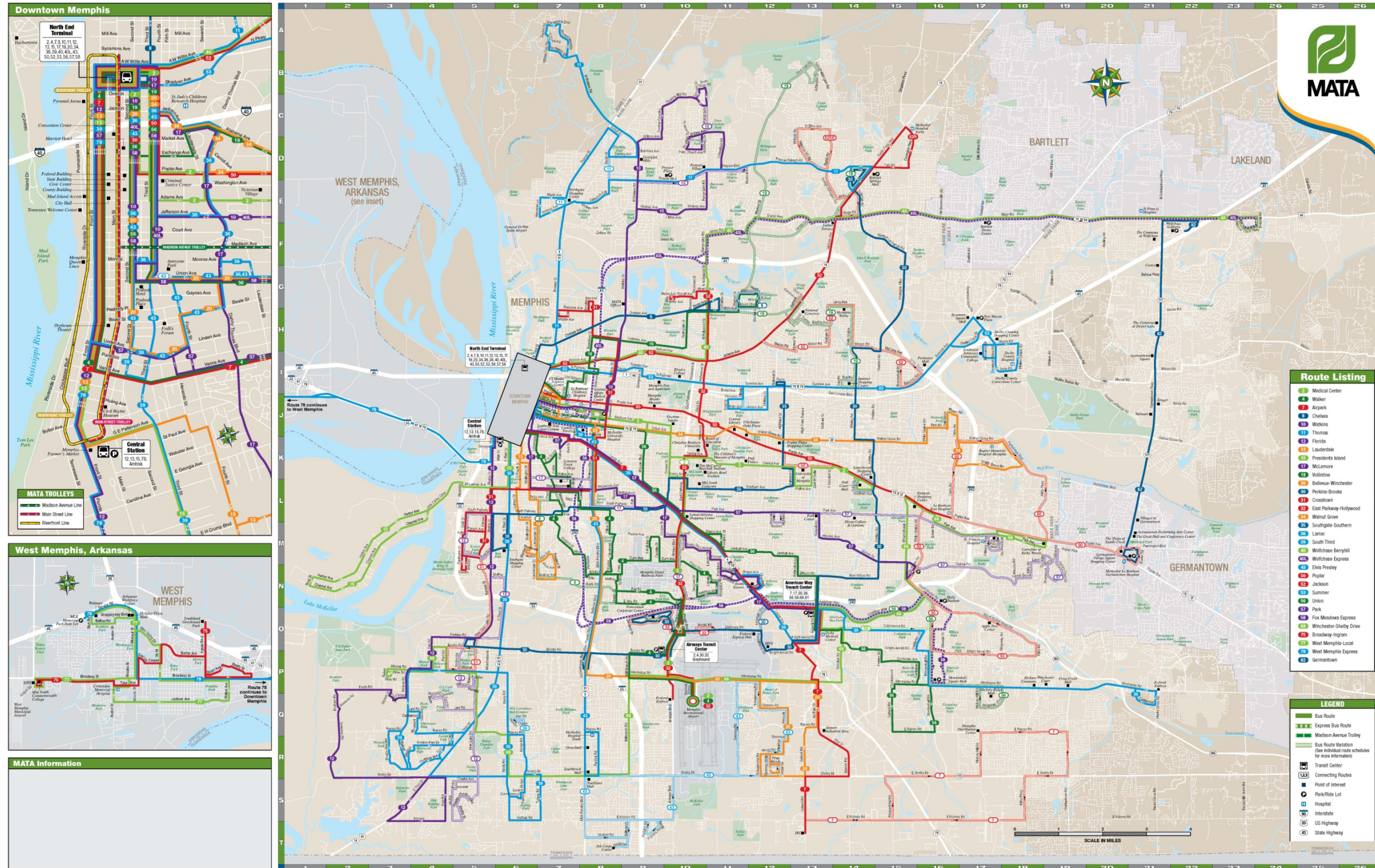




Figure 2 Existing MATA Transit Routes





Short Range Transit Plan

Radial

2 – Medical Center
4 – Walker
7 – Air Park
8 – Chelsea
10 – Watkins
11 – Thomas
12 – Florida
13 – Lauderdale - Wellington
15 – Presidents Island
17 – McLemore
19 – Vollintine
20 – Bellevue/Winchester

34 – Walnut Grove
35 – Southgate - South Parkway - Highland
36 – Lamar
39 – South Third
40 – Raleigh-Bartlett
43 – Elvis Presley
50 – Poplar
52 – Jackson
53 – Summer
56 – Union
57 – Park

Express

40 – Wolfchase

58 – Fox Meadows Express

Crosstown

30 – Perkins/Brooks
31 – Crosstown
32 – East Parkway

69 – Winchester - Shelby Drive
82 – Germantown Parkway

West Memphis

75 – Broadway/Ingram
77 – West Memphis
78 – West Memphis Express

Rail Trolley Service

A distinctive feature of MATA's service network is the vintage rail trolley service that operates on seven miles of track in downtown Memphis. The trolley service operates daily and provides a high level of service in terms of service frequency and span of operations. MATA currently maintains an active fleet of 19 vintage trolleys which provide service on three lines:

The Main Street Line operates along a north-south alignment between Central Station and the North End Terminal on Main Street. In addition to connecting MATA's two downtown terminals, the Main Street Line also provides circulation between downtown destinations.

Trolleys are scheduled to arrive every 10 minutes. The operating hours on Mondays through Thursdays are between approximately 6:30 am and 11:30 pm. The trolley offers late night service on Fridays (to 12:45 am) and Saturdays (to 12:00 am). Sunday service operates between 10:15 am and 6:15 pm. The Madison Avenue Line is a 2.1 mile east-west route that extends from Main Street to Watkins Street along Madison Avenue. This line allows passengers to travel between the Medical District and downtown via trolley. The Madison Avenue Line also connects with the Main Street and Riverfront Lines. The weekday service operates with 16 minute frequencies between the hours of 6:00 am and 11:00 pm. Saturday service has a slightly longer service span and Sunday operates both for a shorter time frame and has reduced service frequencies (every 25 minutes).

The Riverfront Line is a looping service that runs counter-clockwise between Central Station and the North End Terminal along Main Street, near the Mississippi River just east of Riverside Drive, and on-street on portions of Tennessee Street and G.E. Patterson Avenue. Because the Riverfront Line also operates on Main Street, the effective service frequency of the northbound trolley service is nearly doubled on this segment of track (i.e. between the North End Terminal and Central Station). The Riverfront Line operates weekdays and Saturdays from approximately 9:00 am and 11:00 pm, with later service on Friday and Saturday nights. Sunday services are scheduled between 10:00 and 6:00 pm. Service is scheduled on 13 minute frequencies.

Figure 3 Vintage Rail Trolley





Paratransit Service (MATAplus)

In accordance with the federal Americans with Disabilities Act (ADA), MATA provides paratransit services (MATAplus) for individuals who are unable to use its fixed-route service. Under ADA, MATA is required to offer complementary paratransit services for eligible individuals who begin and end their trip within $\frac{3}{4}$ mile of a fixed-route during the operating hours of the route. ADA regulations also set the fares for complementary paratransit service at not more than twice the adult cash fare for fixed-route service.

Special Event Shuttle Service

In addition to the regularly scheduled service, MATA operates shuttle service to special events at the FedEx Forum in downtown Memphis and the Liberty Bowl Memorial Stadium. Events are primarily sporting events including University of Memphis basketball and Memphis Grizzlies basketball games. The frequency of service, and pick-up locations vary based on the event and venue, although pick-up locations are usually departing from locations in Collierville, Southeast Memphis, Germantown, Bartlett, and East Memphis.

MATA provides pickup location information online for this express service. Information regarding MATA's special event shuttle service is also typically shown online at the event or venue's website.

4 PASSENGER FARES

MATA's fare structure mirrors its service structure with different fares set for fixed-route buses, trolleys, MATAplus and special event shuttles. For all services except special event shuttles, passengers can pay for their trip with cash or with a MATA pass, which offer varying discounts. MATA pass products can be purchased at MATA's Customer Service Centers at the North End Terminal on N. Main Street in downtown Memphis and the American Way Transit Center on American Way. In addition, certain passes (such as the daily pass) can be purchased on the bus through the farebox.

Fixed-Route Bus Fares

The adult one-way cash fare for a trip on MATA's fixed-route bus service is \$1.50. The fare on an express route is \$2.10. MATA also has a zonal fare system for longer distance trips that begin or end outside of the Memphis City limits. In practice, the zone system applies to only a handful of routes and currently consists of a \$0.75 surcharge per one-way trip. MATA also sells daily, weekly, and monthly passes, for both regular fixed-route and express service, which offer substantial savings for frequent riders.



Short Range Transit Plan

Older adults aged 65 or more and individuals with a disability can ride MATA fixed-route services during the off-peak for half fare, or \$0.75 cash fare for a one-way trip. A MATA –issued identification (ID) card is required to qualify for the half fare program. The half fare program also applies to passes. MATA also offers a student discount. This discount varies according to the student’s home base; discounts are available for both cash fares and pass sales, although there is not a student express pass program (see Figures 4 and 5).

Figure 4 MATA Fixed-Route and Express Service Cash Fares

Service	Fare
Adult Cash Fare	\$1.50
Zone fare for boardings/alightings outside Memphis City limits	\$0.75
Express Fare	\$2.10
City Student Cash Fare	\$1.20
County Student Cash Fare	\$1.40
Half-Fare for Older Adults and Individuals w/ Disabilities	\$0.75

Figure 5 MATA Passenger “Fast Pass” Fares

Service	Base Fare	Student Fare	Senior/Disabled Fare
Daily Fast Pass	\$3.25	\$2.60	\$1.60
7-Day Fast Pass	\$15.00	\$12.00	\$7.50
31-Day Fast Pass	\$50.00	\$40.00	\$25.00
31-Day Express Fast Pass	\$60.00	-	\$30.00

Rail Trolley Fares

The adult cash fare for a one-way trip on the trolley service is \$1.00. Older adults and persons with disabilities (with MATA ID) can ride the trolley for half fare, or \$0.50 per trip. In addition, there are several fare options for using the trolley, including 2-ride tickets, daily passes, 3-day passes, monthly passes and 6 month passes (see Figure 6). With the exception of the 2-ride tickets, these fare media also include a half-fare option for older adults and persons with disabilities. In addition, on weekdays, all passengers can ride the trolley for \$0.50 per trip between the hours of 11:00 am and 1:30 pm. This discounted fare program is known as the Lunchtime Fare. There are no student discounts available on the trolley service.



Figure 6 MATA Trolley Fares

Service	Base Fare	Senior/Disabled Fare
Cash Fare	\$1.00	\$0.50
2-Ride Ticket	\$1.50	-
Daily Pass	\$3.25	\$1.75
3-day Pass*	\$8.00	\$4.00
31-Day Pass	\$25.00	\$12.50
6 Month Pass	\$75.00	\$37.50

*Note: 3-day pass is not transferrable to fixed-route service.

MATAPlus Fares

The federal ADA law governs the MATAPlus program, including fares. Per ADA, fares for the complementary paratransit can be no more than twice the fixed-route fare. Consequently, the base fare for MATAPlus is \$3.00 per one-way trip, with a zonal surcharge of \$1.50 per trip that begins or ends outside of the Memphis City limits. In addition, MATA sells monthly passes for MATAPlus service for \$50.00 for travel within Memphis and \$80.00 for travel within the entire MATA service area.

Special Event Shuttle Service

The round trip cash fare for a ride on MATA’s special event shuttle service is \$6.00 (see Figure 7). There is no half-fare or other discount program for these services. MATA does offer bulk purchase discounts in the form of a 14-ride “Power Pass” (\$55.00) and season passes (\$105 for University of Memphis games and \$225 for Memphis Grizzlies).

Figure 7 MATA Special Event Bulk Discount Fares

Service	Base Fare
Round-trip cash fare	\$6.00
Tiger Basketball Express Season Pass	\$105.00
Grizzlies Season Pass	\$225.00
Grizzlies Express 14 Ride Power Pass	\$55.00

5 FLEET, FACILITIES AND INFRASTRUCTURE

MATA’s fixed-route and paratransit operating functions are performed at its headquarters location at 1370 Levee Road in Memphis. This single site has multiple facilities for agency administration, vehicle maintenance and storage, and training. All buses and drivers are based at



Short Range Transit Plan

this location. Trolleys are maintained and stored at the Operations and Maintenance facility located at 547 North Main Street. In addition, MATA has a variety of passenger related facilities throughout its service area. These include transfer centers, bus shelters and stops, trolley stops, and Park-N-Ride lots.

Transit Vehicles

MATA manages an active fleet of about 250 transit vehicles. Vehicles within the fleet are assigned by service types so that vehicle specifications match the needs associated with each type of service.

Fixed-Route Fleet

MATA’s fleet assigned to the fixed-route and special event shuttle service currently consists of 169 vehicles, of which about 149 are active. Most of MATA’s fixed-route buses are 40 feet long and have capacity to seat between 38 and 40 people. The fleet also includes six 60-foot articulated Neoplan buses which have seating capacity for 60 people. All buses used for passenger service are accessible to people with disabilities and are equipped with bike racks and heating and air-conditioning systems.

MATA is in the process of replacing vehicles and has started to diversify the fleet by replacing old vehicles with hybrid electric buses and smaller buses (see Figure 8). The bus replacement program is ongoing; MATA will continue to replace vehicles as they reach their useful life, as funds are available.

Figure 8 Active MATA Fixed-Route Fleet

Number in Fleet	Vehicle Description	Seating Capacity	Average Age (in Years)
1	26 Foot Bus Chance - Diesel	22	17
50	40 Foot Gillig Bus - Diesel	40	0-6
8	40 Foot Gillig Bus - Hybrid	40	0
7	60 Foot Articulated Neoplan Bus – Diesel	60	6
83	40 Foot Nova Bus	38	8-12

Source: MATA

Rail Trolley Fleet

MATA has a fleet of 20 trolley vehicles, 19 of which are active. All trolleys in MATA’s fleet are electric-powered vintage vehicles and vary in age from six to 90 years, with the majority being about 60 years old. The vehicles vary in terms of length, manufacture and seating capacity (see



Short Range Transit Plan

Figure 9). These vehicles are maintained at the Trolley Operations and Maintenance facility. Mechanics are specifically assigned to work on trolley vehicles and typically do not work on buses.

Figure 9 Active MATA Rail Trolley Fleet

Number in Fleet	Vehicle Description	Seating Capacity
1	30 Foot Brill Trolley	19
1	30 Foot Gomaco Trolley	19
5	31 Foot Brill Trolley	19
11	47 Foot Melbourne Trolley	52
1	47 Foot Brill Trolley	38

Source: MATA

MATApplus Fleet

The MATApplus fleet consists of 90 heavy duty transit vehicles, of which 77 are in the active fleet. The current MATApplus fleet is comprised of a mix of vehicles (see Figure 10), but the fleet currently primarily consists of 29-foot heavy duty transit vehicles with seating capacity for between 22 and 29 individuals. All MATA buses are fully accessible and have heating and air conditioning. Several of the vehicles, including the Champion and Blue Bird Buses are at or nearing the end of their useful life. As part of its vehicle replacement program, MATA is in the process of integrating vans into its MATApplus fleet.

Figure 10 Active MATA Plus Fleet

Number in Fleet	Vehicle Description	Seating Capacity	Average Age
13	29 Foot Champion Bus	22-23	12
22	29 Foot Blue Bird Bus	29	8-9
11	29 Foot Optima Bus	22	5-6
22	29 Foot Gillig Bus - Diesel	17-24	2-3
7	29 Foot Gillig Bus – Hybrid	17-24	2-3
1	26 Foot GCA Bus	17	11
1	15 Foot Dodge Caravan	7	11

Source: MATA

Transit Centers

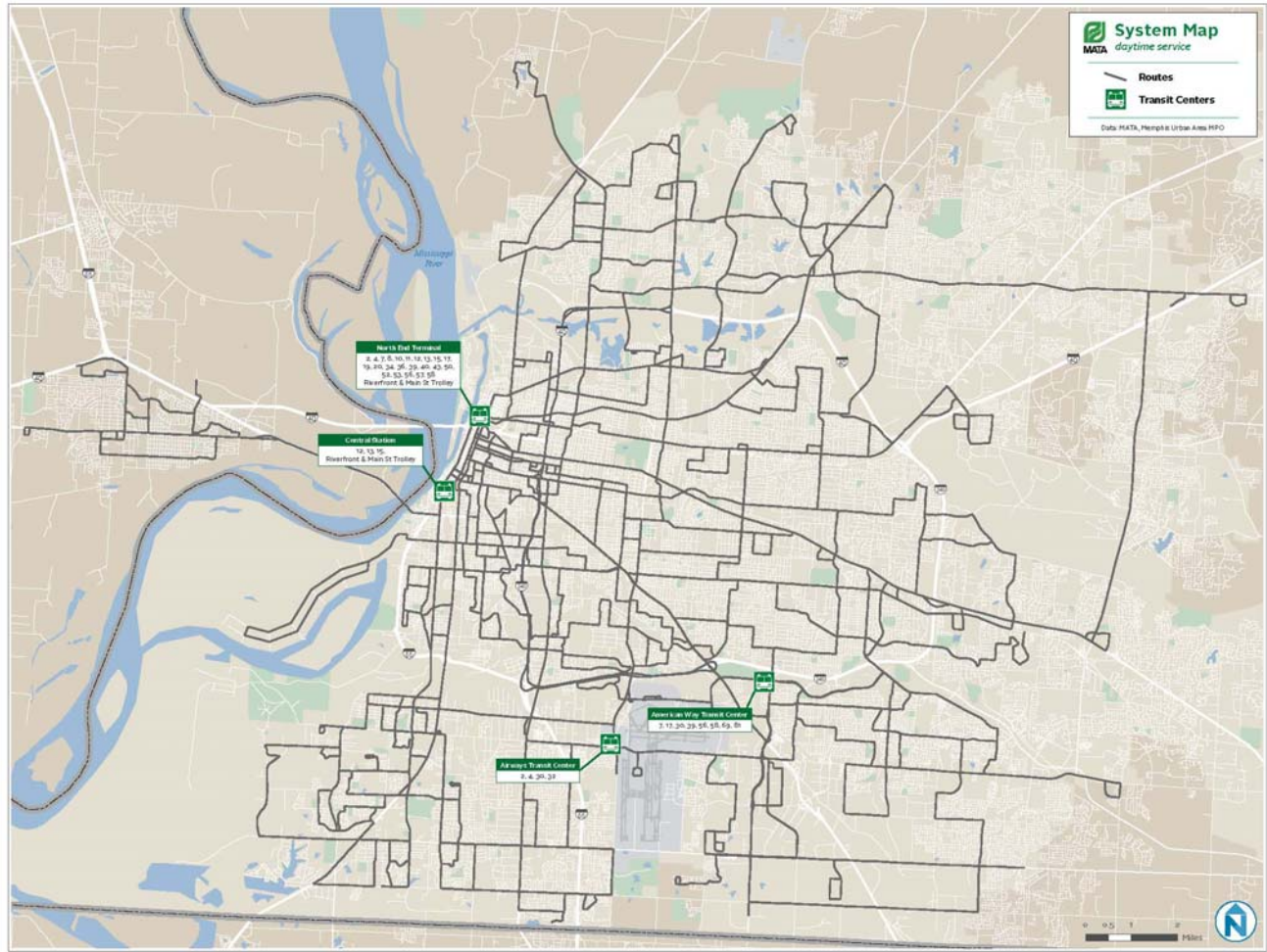
MATA transit services operate from three transit centers including the North End Terminal (NET), Central Station, and the American Way Transit Center, plus a fourth facility, the Airways



Short Range Transit Plan

Transit Center (formerly known as the South Intermodal Terminal), which is currently under construction. The location of each of these facilities is shown in Figure 11.

Figure 11 Location of MATA Transit Centers



North End Terminal

The main MATA transfer facility is the NET, located at the corner of Main Street and Auction Avenue. Currently, 24 of MATA's 33 routes (see Table 3) serve the NET; this means over 70% of all routes pass through the facility. The NET includes climate controlled indoor waiting area, outdoor waiting areas, a customer service center, restrooms, route information systems and bicycle parking. This facility is located just blocks south of the Trolley Operations and Maintenance facility and offers interchange between the bus and trolley services; there is also free parking available on-site as well as a job placement center which leases space in the building.

Central Station

Central Station is MATA's other downtown Memphis transit center. It is located at the corner of Main Street and G.E. Patterson Avenue. There is an indoor waiting area and restrooms are available at the facility, but it is not staffed by customer service personnel. Central Station is currently served by three MATA bus routes (12, 13 and 78) as well as the Main Street and Riverfront Line trolleys. Of the three bus routes serving Central Station, two (12 and 13) also serve the North End Terminal. Central Station is Memphis' AMTRAK station and there is free parking available.

American Way Transit Center

The American Way Transit Center (Figure 12) is located at American Way and Getwell Road. This facility is served by eight MATA bus routes (see Figure 9) and offers indoor climate controlled waiting areas, covered outdoor waiting areas, restrooms and bicycle parking. The American Way Transit Center is staffed on weekdays between 7:00 am and 11:00 am and 2:00 pm to 6:00 pm. There is also a limited amount of free parking available at the American Way Transit Center.

Figure 12 American Way Transit Center



Airways Transit Center

In addition to the three operational transit centers, MATA is in the process of constructing a fourth terminal, the Airways Transit Center. This transit center will be located at the intersection of Brooks Road and Airways Boulevard near the Memphis International Airport. Existing plans



Short Range Transit Plan

are to have four bus routes (2, 4, 30, and 32) serve the facility initially (see Figure 13). When complete in the summer of 2011, the Airways Transit Center will feature a bus transit center, a Greyhound bus terminal, a taxi stand, a park and ride lot, a police substation, and provisions for a future light rail station.

Figure 13 MATA Transit Centers

Transit Center	Location	MATA Routes Served
North End Terminal	Main Street at Auction Avenue	2, 4, 7, 8, 10, 11, 12, 13, 15, 17, 19, 20, 34, 36, 39, 40, 43, 50, 52, 53, 56, 57, 58, 78, Riverfront and Main Street Trolley
Central Station	Main Street at G.E. Patterson Avenue	12, 13, 15, Riverfront and Main Street Trolley
American Way	American Way at Getwell Road	7, 17, 30, 39, 56, 58, 69, 81
Airways Transit Center (under construction)	Brooks Road at Airways Boulevard	2, 4, 30, 32

Shelters and Stops

There are 5,600 bus stops, 326 bus shelters and 37 trolley stops in the MATA service network (see Figure 14). Historically, MATA’s policy has been to locate shelters at high volume stops and identify a bus stop at roughly every two blocks for local service and every four block for express service.

MATA’s shelter program is divided into two programs: shelters that are installed, owned and maintained by MATA; and shelters that are installed, owned and maintained by a private contractor in exchange for advertising rights. Of the 326 shelters, approximately 100 of these shelters are owned by MATA and the remaining 226 are privately owned. While the service provided by the private contractor is at no expense to MATA as it is provided in exchange for the right to place advertising at the shelter and a percentage of the advertisement revenue; MATA does not have as much control over where the shelters are located. There are, for example, shelters at bus stops that near high volume traffic locations, but have very low passenger boardings.

In addition to the bus shelters, there are 37 trolley stops. The trolley stops are designed to be consistent with the historic features of the trolley vehicles and are equipped with passenger information, sheltered waiting areas and seating (see Figure 14). All stops are accessible to persons with disabilities with a wheelchair lift or ramp incorporated at each stop.

Figure 14 MATA Shelters and Stops



(a.) Bus shelter



(b.) Trolley Stop

Park-N-Ride Lots

MATA currently has four Park-N-Ride lots and by the end of 2011, MATA will be operating five Park-N-Ride lots, four of which are at MATA transit centers. These facilities are located throughout the service area and are intended as ways to extend the service coverage area by providing opportunities for passengers to access MATA buses by car. The four lots currently in operation are located at:

- North End Terminal – approximately 160 spaces
- American Way Transit Center, – approximately 50 spaces
- Central Station – approximately 210 spaces
- Cleveland Street/Madison Avenue – approximately 65 spaces.

The fifth Park-N-Ride lot will be provided at the Airways Transit Center. This lot will have approximately 90 parking spaces.

In addition to the formal Park-N-Ride system, there are several informal park and ride locations across MATA’s service area. Although there are no agreements between MATA and properties adjacent to stops, motorists wishing to use transit often use parking lots of shopping centers, regional malls, churches, or grocery stores as defacto park and ride facilities. MATA does not promote or condone this practice.

Bicycle Accommodations

All MATA buses that operate in the fixed-route network have bike racks. The bike racks hold up to two bikes and are mounted on the front of the bus. In addition, there are bicycle parking



Short Range Transit Plan

facilities at each of MATA's transit centers. The bicycle parking is secured parking and is intended to allow patrons to store their bikes while using transit. Although there are no bike racks on trolley vehicles, MATA's policy allows for bicycles to be brought onboard if the bicycle does not block the doors and there is room available.

6 PASSENGER INFORMATION SYSTEMS

MATA provides a variety of methods and services for displaying and distributing information to existing and potential passengers. It is MATA's desire to convey the most essential information, including route location and cost of service, to riders in a way that makes traveling easier and more user-friendly. MATA currently uses the following methods of communication as a service to every rider, whose goal is to reach their destination as efficiently and cost effectively as possible. As discussed in Section 7, MATA is in the process of implementing new technologies which will upgrade several of these systems.

Printed Materials

MATA provides a printed schedule for each of its fixed-route bus routes. These schedules contain a route map, timetable, and fare information. The schedules are dated and updated every time the schedule changes. There is also a trolley system brochure and a MATAplus Riders Guide available in print format.

Customer Service Centers

As discussed, there are staffed customer service centers at the NET and the American Way Transit Center that sell passes and provide passenger assistance. MATA's bus routes and schedules are also available at these locations. Monitors mounted in the lobby provide schedule bus arrival and departure information as well.

On-Route Information

All bus stops are marked with Bus Stop signs (Figure 15), which display an image of a bus as well as the telephone number for MATA's Information Center. Some signs also include route and bus numbers. Buses display route numbers and names in a lighted destination sign above the windshield to make it easier for passengers to confirm their itinerary before they board the bus.

Telephone Resources

MATA also staffs an Information Center devoted to providing route and schedule information on a one-on-one basis over the telephone. Riders seeking information need only provide their trip information and desired arrival time and the representative will provide all needed information

for the trip. This service is in operation on weekdays from 6:00 AM to 6:30 PM and on Saturdays from 7:30 AM to 4:30 PM.

Web-Based Resources

MATA maintains a website that provides information about their services, bus schedules, fares, and future plans (www.matatransit.com). A system map is available on-line with separate maps for individual bus routes and rail trolley services.

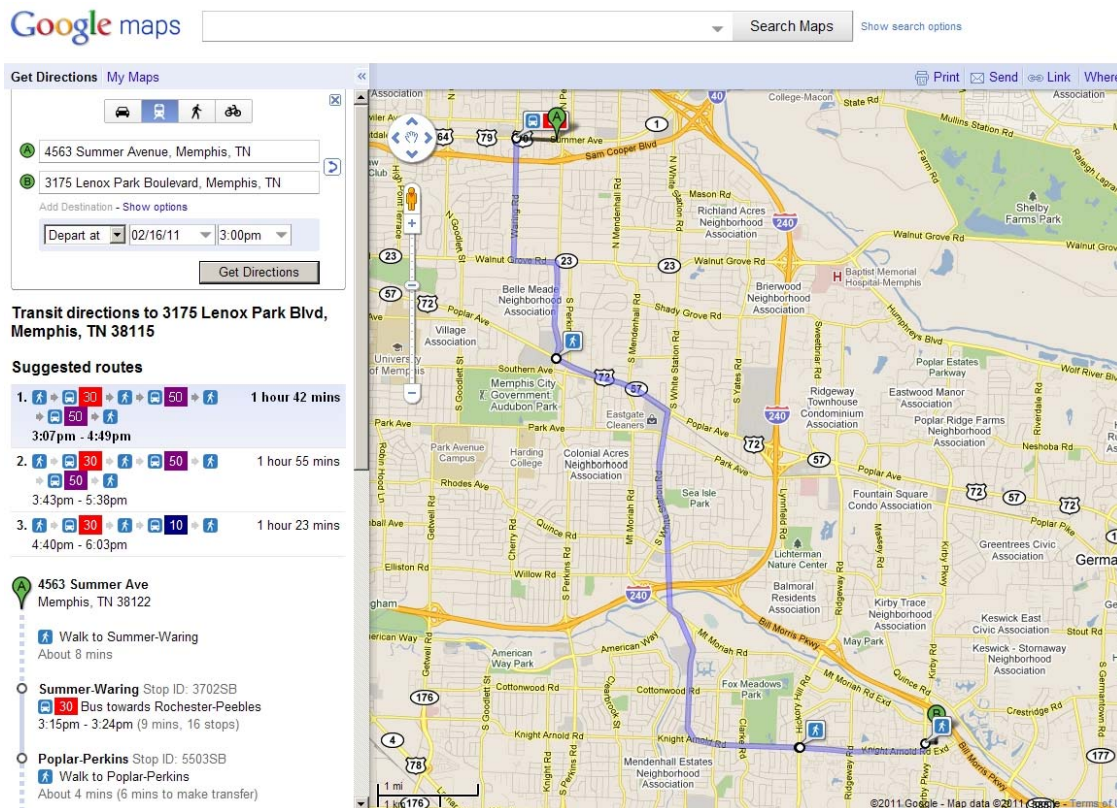
MATA also provides on-line trip planning service through Google Transit (Figure 16). This service allows the user to input the starting point and destination, and it produces a suggested route complete with bus routes and travel times.

The user has the option to manipulate or choose a different route if desired. Google Transit reflects the latest bus stop locations and bus routes that MATA provides to them and attempts to suggest the most convenient and efficient route for the rider.

Figure 15 MATA Sign



Figure 16 Google Transit with MATA Integration





7 INTELLIGENT TRANSPORTATION SYSTEMS

As part of its ongoing program to modernize service, MATA is implementing a variety of other transportation programs to offer more user friendly information, most notably an intelligent transportation systems (ITS) upgrade. ITS is the application of electronic technologies and communication systems that support the efficient operation of roadway and transit systems. Working as a key stakeholder, MATA worked with the Memphis Metropolitan Planning Organization, and other key stakeholders to ensure that MATA's ITS project was compatible with the ITS regional architecture.

MATA's new technology investments under this program include automatic passenger counters (APCs), automatic vehicle locators and computer aided dispatching (AVL/CAD), automated vehicle health monitoring, automated voice annunciation, real-time next bus information via signage and cell phone messaging, a new radio system, mobile data terminals for operators, and on-board security cameras. These new technologies will help MATA offer better, safer, more reliable and more efficient and cost effective service. The new APCs will provide MATA with a wealth of ridership information on an automated and ongoing basis. Other improvements, such as the customer information systems will be particularly helpful for riders on low-frequency routes and at transit centers.

8 RIDERSHIP

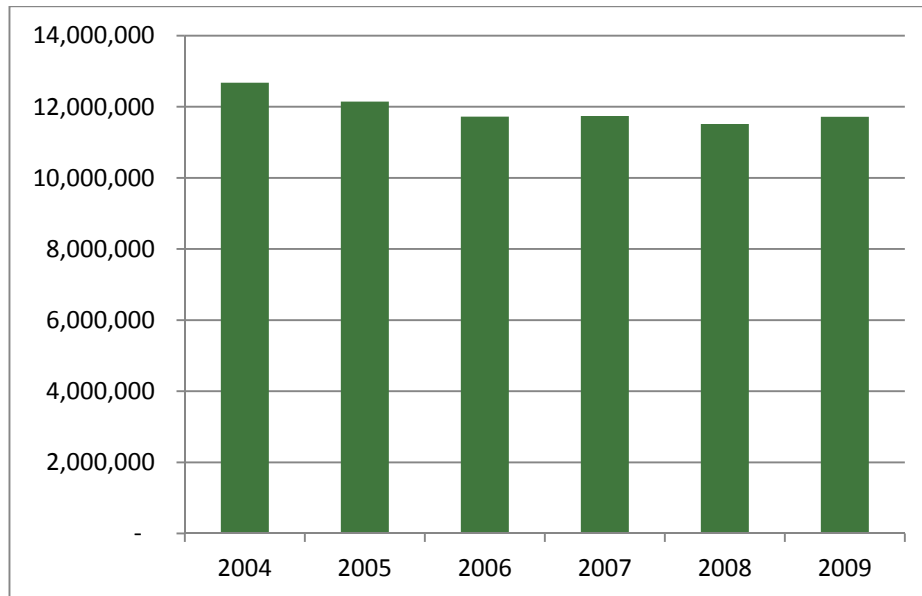
The population of the Memphis metropolitan area has increased by around 8 percent during each of the last three decades. However, most of this growth has occurred in the suburban parts of the region and outside of the urban core. Consequently, the population of the City of Memphis has remained largely flat over the last decade.

Consistent with this trend, ridership on MATA services overall has also been flat or has decreased slightly from year to year; between 2004 to 2009 total MATA ridership (all services) has declined approximately 8% (see Figure 17). Most of the change in ridership is attributable to the bus service, which according to data report to the National Transit Database (NTD) lost approximately 10% of its ridership between 2004 and 2009. By comparison, the rail trolley service increased ridership by 13% over the same time period while MATA^{plus} paratransit increased ridership fluctuated from year to year but remained flat overall¹. The slow decline in

¹ NTD datasheets 2004 - 2009

ridership is at least partially explained by the slow or negative growth of population within Memphis' urbanized area and service cuts that occurred during this timeframe.

Figure 17 Annual Unlinked Passenger Trips

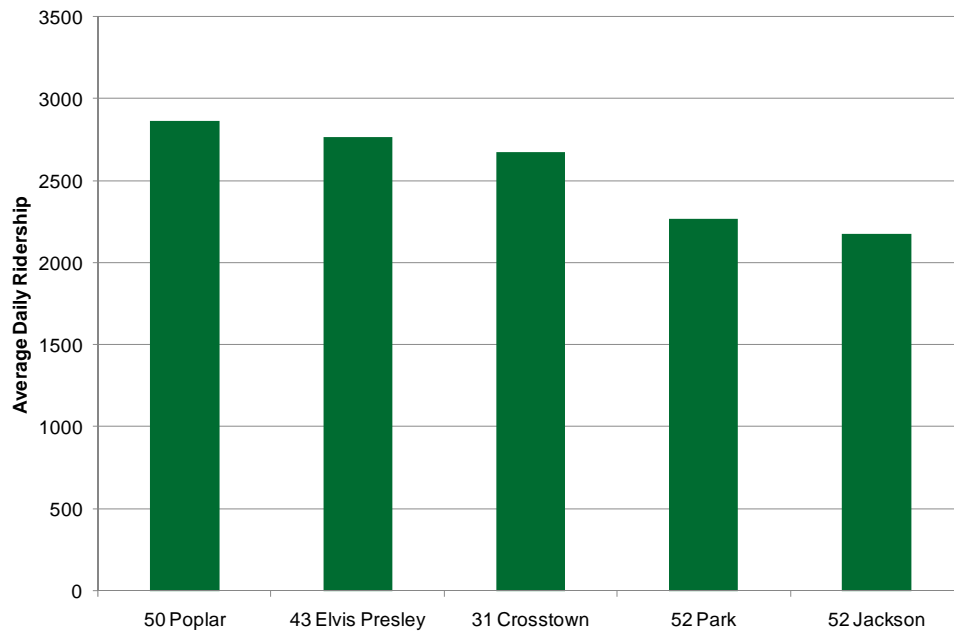


Source: National Transit Database

Ridership by Route

To understand how ridership is distributed across the MATA network, we examined ridership by route for the fixed-route bus system. MATA collects ridership counts on select routes annually, based on route changes and service performance. However, the most recent complete set of ridership data for all routes is from 2006. The system has changed only incrementally since 2006, therefore the 2006 data set was considered sufficient for this baseline analysis. Based on this information, the data shows that about half (17) of the MATA routes carry the majority (81%) of the riders. Indeed, the top five routes (50 Poplar, 43 Elvis Presley, 31 Crosstown, 52 Park and 52 Jackson) carry 36% of all riders (see Figure 18).

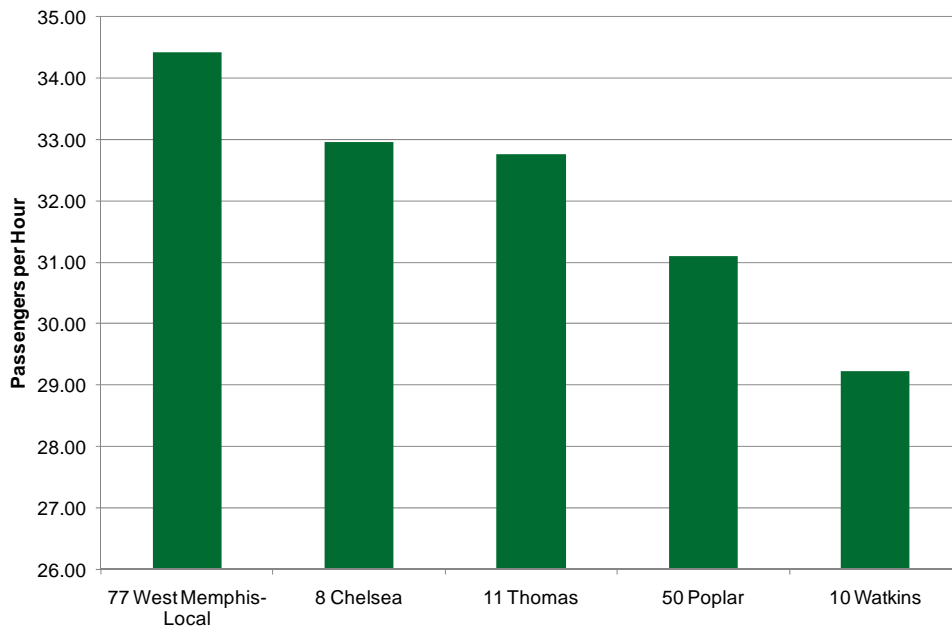
Figure 18 MATA Five Highest Ridership Routes



Source: MATA

In addition to looking at the top routes in terms of weekdays passengers, we also considered passengers carried per hour. Similar with the weekday ridership data, the 17 routes that carried the majority of all MATA riders all carried more than 20 passengers per hour. The top five routes with the strongest productivity in terms of passengers per hour, however were slightly different and included 77 West Memphis (which is a free-fare service), 8 Chelsea, 11 Thomas, 50 Poplar and 10 Watkins (see Figure 19).

Figure 19 MATA Five Routes with Highest Ridership per Hour



Rider Characteristics

MATA’s On-Board Survey conducted in 2005 shows the typical MATA passenger uses MATA to travel to/from work. The survey data suggests MATA riders are primarily transit dependent individuals. More than half (60%) of MATA riders live in households that do not have access to an automobile and another 25% live in households where only one vehicle is available. In 2005, on average, MATA riders also have fairly low incomes; nearly 66% have annual incomes of \$18,000 or less (see Figure 20).

Despite having low average incomes, nearly half (43%) of MATA riders work full time and another 18% work part-time. Riders were nearly evenly split by gender and tended towards middle-age with 36% aged between 35 and 49. Eighty-nine percent of the riders are African-American and another 8% are white. Other ethnic groups comprise less than 3% of ridership.



Figure 20 MATA Rider Profile

Characteristic	Category and Proportion of MATA Riders				
Age	18 & Under 9%	19-35 38%	35-49 35%	50-64 16%	65+ 2%
Race	African American 89%	Caucasian 8%	Other 3%		
Gender	Female 50%	Male 50%			
Employment Status	Full Time 43%	Part Time 18%	Student 15%	Other 24%	
Household Income	Less than \$18K 66%	\$18K-\$30K 18%	\$30K-\$42K 11%	Over \$42K 5%	
Household Auto Ownership	Zero 60%	One 25%	Two or More 15%		

Source: Memphis On-Board Survey – Final Report

9 COSTS AND REVENUES

The cost to operate public transportation services consists of both operating and capital costs. Operating costs include the costs associated with putting buses and rail vehicles on the road, such as driver wages, fuel, vehicle maintenance and agency administration. Capital costs are associated with developing new infrastructure, such as transit centers, transit vehicles and maintenance facilities, and maintaining existing infrastructure, such as preventive maintenance. MATA spends approximately \$55-60 million annually on operating expenses (including preventive maintenance) and another \$5 -\$10 million on new infrastructure.

Funding for public transportation in Memphis is available through a combination of federal, state, and local sources, plus agency revenues raised through other sources, such as passenger fares and advertisement on buses. Most federal grants are provided through the Federal Transit Administration (FTA) and are distributed on a formula basis. Other FTA funds from



Short Range Transit Plan

discretionary programs can be secured either through direct appropriation by Congress (i.e., earmarks) or through competitive proposals (e.g., TIGER). For urban systems operating in an area of over 200,000 people, such as Memphis, most FTA grant funds can only be used for capital expenditures and require a 20% non-federal match. Notable exceptions are the “New Starts” program which normally requires a higher non-federal match, and Jobs Access/New Freedom program which can be used to cover selected operating expenses. One formula-based program allows certain operating expenses associated with ADA paratransit service and preventive maintenance as eligible items. In the State of Tennessee there are also state funds available to help support operating and capital costs. Historically the State funds a portion of operating costs and provides about one-half of the non-federal match (generally 10%) on FTA formula and some discretionary capital grant programs. The City of Memphis also funds a portion of operating costs and provides the other one-half of the non-federal share on capital programs.

Operating Budget

For FY 2011, MATA’s Board of Commissioners approved an operating budget of \$58.2 million, which is approximately 1.5% lower than the previous year’s approved budget of \$59.1 million (see Figure 21). The reduction in funding for public transportation services reflects the general economic conditions associated with the national recession which has resulted in sustained pressure on regional and local agency budgets.

The operating budget includes the costs associated with the three West Memphis bus routes. These services are operated under contract to the City of West Memphis, which fully funds the service. Outside of the contracted revenues provided by the City of Memphis, MATA receives no financial support from Shelby County or the other municipalities in Shelby County.

The majority of agency costs are associated with employee salaries, wages and benefits (60%). The next largest portion of the agency budget is assigned to materials and supplies (17%) and the remainder of the budget is attributable to services (12%) and miscellaneous expenses (10%).

Figure 21 MATA Operating Budgets for FY 2010 and FY 2011

Expense	2010 FY	2011 FY
Salaries and Wages	\$22,049,400	\$21,873,300
Employee Benefits	\$13,488,700	\$14,244,700
Services	\$6,647,200	\$4,449,500
Materials and Supplies*	\$9,789,100	\$10,330,500
Miscellaneous	\$7,093,700	\$7,258,600
Total	\$59,068,100	\$58,156,600



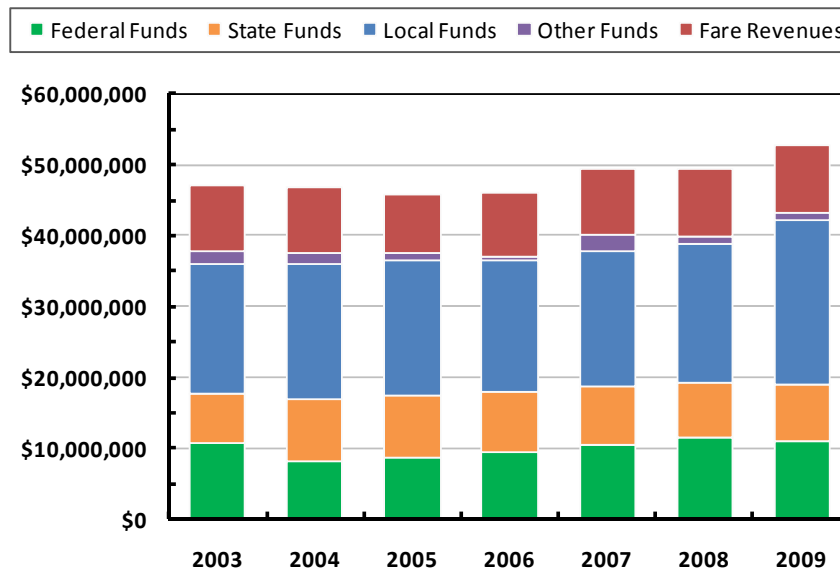
Short Range Transit Plan

Source: MATA

Note: * Materials and supplies includes some expenditures that are funded by capital grants.

MATA's operating resources are provided through a combination of federal, state and local funding plus passenger fares. In FY 2009, the City of Memphis, which is MATA's largest and only source of local funds, contributed nearly \$22 million, or about 40% of MATA's operating revenue. FTA grants contributed approximately \$11 million to agency revenues and the State of Tennessee provided an additional \$8 million. The remaining \$10 million (20%) is raised through fares and advertisements other revenues generated by the system (see Figure 22). Note that Figure 22 uses data from the National Transit Database to show historical data. This data, however, shows actual revenues as compared with budgeted revenues in Figure 21. Variations are the result of the timing of receipt of revenues and differences in methods of accounting for capital funds.

Figure 22 Sources of MATA Operating Revenue 2003–2009



Source: National Transit Database

Capital Budget

MATA's FY 2011 capital budget for major capital projects is approximately \$8 million. These funds are assigned to develop and maintain MATA's infrastructure, primarily associated with transit vehicles, but also including system technology. System technology projects, as described in Chapter 7 will include fare collection equipment, vehicle location devices, security cameras, passenger counting devices and other management systems. The capital budget also includes funds for preliminary engineering for a regional light rail line.



Short Range Transit Plan

MATA’s revenue sources for capital projects are provided primarily through federal grants (80%), State of Tennessee Department of Transportation (TDOT) grants (9%). The City of Memphis contributes the remaining 11% required for most capital projects.

Figure 23 MATA Capital Budgets for FY 2010 and FY 2011

Expense*	2010 FY	2011 FY
Bus Replacement (Fixed-Route)	\$3,300,000	\$4,940,000
Bus Replacement (Paratransit)	\$4,160,000	\$1,770,000
Service Vehicles	\$60,000	\$420,000
Advanced Public Transportation Systems	\$2,500,000	\$800,000
Total	\$10,020,000	\$7,930,000

Source: City of Memphis Capital Budget

Note: * Capital grant funds are also used for other minor projects and maintenance of capital assets.

10 SYSTEM PRODUCTIVITY

Service productivity data is based on service inputs, outputs and consumption. *Service inputs* are summarized as total annual operating costs, while *service outputs* include revenue service hours and revenue service miles. *Service consumption* includes ridership and farebox revenues. The performance data is then expressed in terms of three performance indicators commonly used in the transit industry, which can be categorized as follows:

- **Cost efficiency.** These indicators are the ratios of *service inputs* to *service outputs*, and measure the efficiency of resource allocation within the agency.
- **Cost effectiveness.** These indicators are the ratio of *service inputs* to *service consumption* and measure how well the service is utilized by the community.
- **Service effectiveness.** These indicators are the ratio of *service consumption* to *service outputs* and measure how well the capacity of service is being utilized by the consumer.

An assessment of how well MATA services performed with regard to the three categories of performance indicators (cost efficiency, cost effectiveness, and service efficiency), as well as average subsidy per passenger is shown in Figure 23 and discussed below. It is worth noting, however, different service types will perform differently and are not comparable. The fixed-route bus service and trolley services, for example, are scheduled services that are designed to carry large numbers of passengers per trip. Paratransit service, on the other hand, provides services to individuals with higher needs and is designed as more flexible service catering to individual transportation needs. As a result, while hourly costs of service are lower than fixed-route services,

the number of passengers carried per mile is considerably lower and thus average costs per passenger trip are higher.

Cost Efficiency

- **Operating Cost per Revenue Hour.** This indicator is a good measure of cost efficiency. It involves dividing total operating costs by the number of annual revenue hours (i.e., when vehicle is in service and working to carry passengers). MATA's system wide operating cost per hour is \$91. MATA's hourly operating costs are exactly the same as the peer group average of \$91 per hour.

Cost Effectiveness

- **Farebox Recovery Ratio.** This indicator measures cost effectiveness and is the ratio of fare revenue to total operating costs. A general rule of thumb for an urban transit system that primarily operates bus service is to maintain a recovery rate of approximately 20-25% (e.g., fares account for 20-25% of operating costs). MATA's farebox recovery rate is 18.3% (19.9% for bus service), which is right at this level. By comparison, the peers examined as part of the peer review prepared for this study had an average farebox recovery ratio of 16%.
- **Operating Cost per Passenger.** This standard also measures cost effectiveness by assessing total operating costs over consumption of service (total ridership). MATA's system wide operating cost per passenger is \$4.50 and the operating cost per passenger for bus service is \$4.05. Trolley services have a slightly higher cost per passenger trip (\$5.93) while paratransit service is much higher (\$16.70). As discussed, due to the type of service provided, paratransit costs are expected to be considerably higher as compared to fixed-route services. These costs are consistent the average cost per passenger of \$4.67 reported by the MATA peer group for the same time period.

Service Effectiveness

- **Passengers per Revenue Hour and Passengers per Revenue Mile.** These indicators provide a good measure of service effectiveness – that is, how well is the service being consumed in relation to the amount of service available. Both of these indicators track closely to each other. On average, MATA carries 20.14 passengers per hour and about 1.4 passengers per mile, inclusive of all service types. Consistent with other metrics, the bus and trolley services carry more passengers per hour and per mile than the paratransit service. MATA outperforms the peer group for both of these metrics; the peer group average number of passengers per revenue hour is 16.4 and the number of passengers per revenue mile is 1.2.
- **Average Subsidy per Passenger.** This indicator is closely related to operating cost per passenger, but also factors in fare revenues. This indicator is often better understood by policy makers who want to know how much each passenger is being subsidized. System wide, the subsidy per passenger trip is \$3.67. This subsidy is 17% less than the peer group subsidy of \$4.40 per passenger trip.



Short Range Transit Plan

Figure 24 MATA Annual Performance Data and Indicators for 2009

	System wide	Bus	Trolley	Paratransit
Service Supplied				
Vehicle Revenue Miles	8,525,398	6,207,708	374,280	1,943,410
Vehicle Revenue Hours	581,635	421,643	38,151	121,841
Service Costs				
Operating Expenses	\$52,672,966	\$41,981,656	\$6,602,770	\$4,088,540
Service Consumed				
Unlinked Passenger Trips	11,716,787	10,358,212	1,113,806	244,766
Farebox Revenue	\$9,616,007	\$8,350,435	\$769,193	\$496,379
Performance Metrics				
<i>Cost Efficiency</i>				
Cost per Hour of Service	\$90.56	\$99.57	\$173.07	\$33.56
<i>Cost Effectiveness</i>				
Operating Costs per Trip	4.50	\$4.05	\$5.93	\$16.70
Subsidy per Trip	\$3.67	\$3.25	\$5.24	\$14.68
Farebox Recovery Ratio	18.3%	19.9%	11.6%	12.1%
<i>Service Efficiency</i>				
Passengers per Vehicle Revenue Mile	1.37	1.67	2.98	0.13
Passengers per Vehicle Revenue Hour	20.14	24.57	29.19	2.01

Source: National Transit Database

11 SUMMARY

MATA serves a large and diverse service area which, as described above, primarily includes the urbanized portions of the City of Memphis, but also includes limited service to the suburban areas in Shelby County and West Memphis, Arkansas. While not specifically discussed in this document, the Memphis region has been growing outward towards the suburban parts of Shelby County as well as the surrounding counties. Despite the demographic trends, MATA's transit services have tended to remain focused on the City of Memphis. Demand for transit service has remained fairly consistent, with some erosion of service levels (due to budget constraints) and ridership over the years. It is also worth noting that the City of Memphis is the only local funding source of MATA services.

As the Memphis region grows and changes, however, the demand for transit service will become increasingly varied. Transit demand is likely to remain highest in urbanized Memphis and



Short Range Transit Plan

decrease with distance from the urban core. MATA services are structured to meet this need and include frequent trolley services in downtown Memphis and higher frequency bus service just outside of the urban core.

A major objective of the Short Range Transit Plan is to determine the best way for MATA to adapt to the current land use and growth patterns working within the region's financial constraints, provide the best possible service to meet today's need and needs over the five-year study period. MATA's ongoing investment in technology systems will help make the service easier to understand and also support the agency's ability to manage a potentially increasingly diverse set of services. Given MATA's large and diverse service area, this may lead to consideration of a "family of services" approach that follows the following principles:

- Ensure a basic level of service throughout most of the MATA service area.
- Provide higher levels of service where transit demand is greatest and transit can be most effective.
- Revise the structure of the transit network to respond to recent and ongoing development changes.



12 REFERENCES

Memphis Area Transit Authority (MATA), <www.matatransit.com>, Accessed February 2011.

Memphis Area Transit Authority, MATA Vehicle Inventory, December 2010.

Memphis Area Metropolitan Planning Organization and the Area Transit Authority, A Coordinated Human Services Transportation Plan for the Memphis Area, July 2007.

Memphis Area Transit Authority, MATAplus Rider's Guide, Revision 6. December 2009.

NUSTATS, Memphis On-Board Survey – Final Report, 2005

Federal Transit Administration, National Transit Database. <<http://www.ntdprogram.gov/ntdprogram/>>, Accessed February 2011.