

Metrobus Fleet Management Plan

Revision II :: January 2005



Miami-Dade Transit
Roosevelt Bradley, Director



Mission Statement

“To meet the needs
of the public
for the highest quality
transit service:
safe, reliable, efficient
and courteous”

MIAMI-DADE TRANSIT AGENCY METROBUS FLEET MANAGEMENT PLAN

January 2005

This document is a statement of the processes and practices by which Miami-Dade Transit (MDT) establishes its current and projected Metrobus revenue vehicle fleet size requirements and operating spare ratio. It serves as an update of the October 2000 Fleet Management Plan and includes a description of the system, planned revenue service, projected growth of the system, and an assessment of the vehicle maintenance current and future needs.

Revisions of the October 2000 Fleet Management Plan contained in this current plan include:

- Integration of the former "A" and Division "B" Fleets
- Expansion of the Operating & Inspections Divisions to include the Medley O&I Division operated by Penske Truck Leasing pursuant to a contract with Miami-Dade Transit
- Modification of the Plan format to facilitate analysis and presentation
- General update of data and procedures to reflect most recent performance and current maintenance practices

Metrobus processes and practices, as outlined in this plan, comply not only with Federal Transit Administration (FTA) Circular 9300.1, 9030.1 and 5010.1 that govern Vehicle Fleet, but also with supplemental information received from FTA.

This plan is a living document based on current realities and assumptions and is, therefore, subject to future revision. This plan is updated on a regular basis to assist in the planning for and operation of Metrobus.

The Fleet Management Plan is structured to present the demand for service and methodology for analysis of that demand in Section Two. Section Three of the plan addresses the supply of vehicles, explains the balance between the demand for and supply of vehicles, and summarizes the maintenance plan.

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List of Acronyms

ADA	Americans with Disabilities Act
BMC	Bus Maintenance Control
BSR	Behavioral Science and Research
CBOA	Comprehensive Bus Operational Analysis
FTA	Federal Transit Administration
FY	Fiscal Year
GSA	General Services Administration
MDC	Miami-Dade County
MDT	Miami-Dade Transit
MTA	Metropolitan Transit Authority
O&I	Operating & Inspections
OSR	Operating Spare Ratio
PAR	Preventable Accident Rate
PIP	Partners in Productivity
PM	Preventive Maintenance
PTP	People's Transportation Plan
PVR	Peak Vehicle Requirement
RSP	Recommended Service Plan
TDP	Transit Development Program
TEA	Transit Equipment Administration System
TIP	Transportation Improvement Program

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SECTION I: INTRODUCTION

Brief History

In 1960, the Dade County Commission passed an ordinance to create the Metropolitan Transit Authority (MTA). Over the years, under various administrations, MTA evolved into the Metro-Dade Transportation Administration and is now known as Miami-Dade Transit (MDT). Metrobus service began operating under the MTA in 1962. The Coral Gables Transit system merged with the County in 1975. This backbone of the MDT system currently provides daily countywide service with a fleet of 646 full size buses and 184 minibuses traveling more than 37.6 million total miles and 32.5 million revenue miles. With 92 routes, Metrobus offers express bus service from the north and south ends of Miami-Dade County (MDC), service to neighboring Broward County, all rail stations, local and limited-stop service, special events, and all major business, cultural and shopping centers throughout greater Miami. Miami-Dade Transit also contracts with a private bus operator to provide two routes from far south Miami-Dade to Monroe County.

Following is a brief description of Metrobus service:

Types of Service	Express Routes Regular Fixed Bus Routes Circulator Routes using Full-size and Minibuses
Hours of Service	24 Hours on 11 Routes Overnight service on 3 Routes Various times on remaining 78 Routes Reduced service on weekends
Frequency of Service	5-minutes on Express Routes up to 60-minutes on Regular Routes
Deployment of Service	Throughout Miami-Dade County and into neighboring counties Buses are dispatched from 4 facilities

During Fiscal Year (FY) 2003, Metrobus unlinked passenger trips totaled 64.5 million with an average weekday ridership of 224,103 passengers. Both unlinked passenger trips and average weekday ridership exceeded FY 2002 trips and ridership by 1.9% and 7.9%, respectively.

In FY 2003, the nearly 1.4 million Metrobus transfers to Metrorail accounted for approximately 20.5% of total Metrorail boardings. Metrorail transfers of nearly 800,000 to Metrobus represented 5.3% of total Metrobus boardings.

MDT provides both fixed route and paratransit service to provide accessible service to the disabled community and exceed standards set forth in the Americans with Disabilities Act (ADA). Demand-responsive paratransit service that serves the entire metropolitan area is provided through a private contract.

In November and December of FY 2005, 109 new buses were added to service and 25 buses were retired for a net increase of 84 buses. The number of full-size and minibuses buses in service increased on weekdays from 567 to 692 (22.0%); on Saturdays from 325 to 461 (41.8%); and, on Sundays from 249 to 402 (61.4%) for a net increase of 411 (36.3%) additional buses now in service.

Preventive Maintenance, corrective maintenance, cleaning and storage of vehicles are performed throughout Miami-Dade County at three (3) maintenance facilities operated by Miami-Dade Transit and one (1) facility managed by *Penske Truck Leasing* under contract to MDT:

- Central Operating & Inspections Division (O&I)
- Coral Way Operating & Inspections Division
- Northeast Operating & Inspections Division
- Medley Operating & Inspections Division

MDT also operates the Support Services Division, which is composed of the A/C Shop, Major Body Shop, Major Overhaul, and Unit Room. Bus components are rebuilt, power plants are removed and replaced, damage from major accidents is repaired, and all new buses are inspected prior to release to the O&I Divisions from the Support Services Division.

Overview of Current Metrobus Fleet and Operating Practices

Current Metrobus Vehicle Fleet

- MDT's revenue bus fleet consists of 830 buses
 - 66 articulated 60' buses with a capacity of 105 passengers; seated passenger load is 63, and standing passenger load is 42
 - 418 low floor 40' buses with a capacity of 66 passengers; seated passenger load is 38, and standing passenger load is 28
 - 162 regular 40' buses with a capacity of 75 passengers; seated passenger load is 43, and standing passenger load is 32
 - 68 low floor 31' minibuses with a capacity of 50 passengers; seated passenger load is 31, and standing passenger load is 19
 - 116 regular 26' minibuses with a capacity of 36 passengers; seated passenger load is 26, and standing passenger load is 10
- On weekdays, the system operates 24 hours per day on 11 routes. The service span for other routes varies based on ridership demand. On weekends and most holidays, a reduced schedule is in effect
- The current weekday peak vehicle requirement is 692
- Diesel fuels the entire fleet
- Consistent with Metrobus efforts to improve service to the community, new buses that are purchased include various upgrades and enhancements for all new 40' buses, including:
 - Bicycle racks
 - On-board video cameras that serve as a crime deterrent
 - Low floors with easy entry wheelchair ramps in compliance with the ADA (41% of the active fleet (344 vehicles) is equipped with hydraulic wheel chair lifts and 59% of the active fleet (486 vehicles) is equipped with ramps)
 - Automated voice enunciators
- New minibuses buses are being placed in service on low-density routes to provide service at a reasonable cost (special requirements on new minibuses mirror those of the 40' buses)

A description of the current fleet is presented in Table 1-1.

Table 1-1: Metrobus Current Fleet – FY 2004

Manufacturer	Fleet	Bus Length	Seating/ Standing	Engine	Transmission	ADA Compliance	Quantity				Model	Year
							Purchased	Active	Surplus	Retired		
Flxible	Full-size	40 ft	43/32	Cummins M-11	Voith	W/C Lift Equip	5	5	0	0	401026C	1992
Flxible	Full-size	40 ft	43/32	Cummins L-10	ZF	W/C Lift Equip	5	5	0	3	401026C	1992
Flxible	Full-size	40 ft	43/32	DDEC 6V92	ZF	W/C Lift Equip	5	0	0	5	401026C	1992
Flxible	Full-size	40 ft	43/32	Cummins C8.3	Voith	W/C Lift Equip	58	57	0	1	401026C68	1993
Flxible	Full-size	40 ft	43/32	Detroit Series 50	Voith	W/C Lift Equip	15	15	0	0	401026D50	1993
Flxible	Full-size	40 ft	43/32	Cummins M-11	Voith	W/C Lift Equip	5	5	0	0	401026M11	1994
Flxible	Full-size	40 ft	43/32	Detroit Series 50	Voith	W/C Lift Equip	25	25	0	0	40102650	1994
Ikarus	Full-size	60 ft	63/42	Detroit Series 50	ZF	W/C Lift Equip	1	1	0	0	436.04	1994
Ikarus	Full-size	60 ft	63/42	Cummins M-11	ZF	W/C Lift Equip	39	39	0	0	436.04	1994
Ikarus	Full-size	60 ft	63/42	Cummins M-11	ZF	W/C Lift Equip	26	26	0	0	436.04	1995
NABI	Full-size	40 ft	42/34	Detroit Series 50	Allison	W/C Lift Equip	50	50	0	0	416.11	1997
NABI	Full-size	40 ft	38/28	Detroit Series 50	Allison	Ramp	19	19	0	0	40LFW-02	1998
NABI	Full-size	40 ft	38/28	Detroit Series 50	Allison	Ramp	93	93	0	0	40LFW-02	1999
NABI	Full-size	40 ft	38/28	Detroit Series 50	Allison	Ramp	96	96	0	0	40LFW-17	2000
NABI	Full-size	40 ft	38/28	Detroit Series 50	Allison	Ramp	110	110	0	0	40LFW-17.02	2002
NABI	Full-size	40 ft	38/28	Detroit Series 50	Allison	Ramp	100	100	0	0	40LFW-17.06	2003
Blue Bird	Minibus	26 ft	26/10	Cummins ISB	Allison AT545	W/C Lift Equip	20	20	0	0	Transhuttle	1999
Blue Bird	Minibus	26 ft	26/10	Cummins ISB	Allison AT545	W/C Lift Equip	70	68	2	0	Transhuttle	2001
Blue Bird	Minibus	26 ft	26/10	Cummins ISB	Allison AT545	W/C Lift Equip	28	28	0	0	Transhuttle	2002
Optare (NABI)	Minibus	31 ft	31/19	Cummins ISB	Allison 2000	Ramp	20	19	1	0	30-LFN	2003
Optare (NABI)	Minibus	31 ft	31/19	Cummins ISB-02	Allison 2000	Ramp	50	49	1	0	30-LFN	2003
Total							840	830	4	9		

Current Metrobus Operating Practices

- Overview of operating hours: weekday service includes 24-hour service on 11 routes, overnight service on 3 routes, and varying service span on the remaining routes; reduced service is provided on weekends; service is designed to coincide with Metrorail, Metromover, and special events
- Troubleshooting and maintenance are routinely done at the four Operating and Inspection (O&I) Divisions
- Non-revenue operating periods are used for vehicle maintenance and testing, facilities and system maintenance, and other non-revenue activities
- Each morning, bus operators perform a pre-trip inspection in accordance with the requirements of equipment and operational safety standards governing public sector bus transit systems, Florida Administrative Code, Chapter 14-90; all safety-related defects are immediately repaired prior to the bus being placed in revenue service
- A daily safety inspection of each bus is performed by maintenance as buses are serviced at night
- Metrobus has implemented a Maintenance Program Policy that outlines scheduled preventive maintenance inspections at pre-established mileage intervals, brake inspections, wheelchair inspections, and a/c inspections
- Central Control, located at the Stephen P. Clark Center, 111 NW 1st Street, 5th Floor, is staffed on a 24-hour basis to ensure supervision, control, communications, and coordination of Metrobus Operations; Central Control is responsible for all revenue and non-revenue bus movements

Current Metrobus service, including improvements accomplished as of the July 18, 2004 lineup, is identified in Table 1-2:

Table 1-2: Metrobus Current Service

Route	Description	Service Frequency				Peak Vehicle Requirement		
		Peak	Mid-day	24-Hour	Weekend	Full-Size	Mini-bus	Total
A	Miami Beach to Omni Terminal via Venetian Causeway	20	20	N/A	40		2	2
B	Key Biscayne to CBD via Rickenbacker Causeway	12	30	N/A	30	6		6
C	Miami Beach to CBD via Collins Avenue, Washington Avenue, and MacArthur Causeway	20	20	N/A	20/30	7		7
E	Miami Lakes to Aventura Mall via Opa-Locka, North Miami Beach, Sunny Isles and Lehman Causeway	30	60	N/A	60		8	8
G	Opa-Locka to Miami Beach via NW 22 Avenue, NW 125 Street, Broad Causeway, and Collins Avenue	30	30	N/A	30	9		9
H	North Miami Beach to Miami Beach via 163 Street and Collins Avenue	20	20	N/A	20/30	11		11
J	Coral Gables to Miami Beach via LeJeune Road, 36 Street, and Collins Avenue	20	30	NA	30	11		11
K	Diplomat Mall to CBD via Collins Avenue and MacArthur Causeway	20	20	N/A	30	12		12
L	Miami Beach to Hialeah via Collins Avenue, 79th Street Causeway, and 79 Street Serves the Northside Station	10	12	60	15/20	18		18
M	Civic Center to Miami Beach via Omni Terminal and MacArthur Causeway	30	30	N/A	60	6		6
R	Surfside to south Miami Beach	30	60	N/A	N/A		4	4
S	Aventura Mall to CBD via Miami Beach Serves the Government Center Station	10	10	60	12/15	21		21
T	Bal Harbour to CBD via Miami Beach and Omni Terminal	20	30	N/A	24/30	7		7
V	Diplomat Mall to Golden Glades via Miami Beach and North Miami Beach	30	60	N/A	N/A		6	6
W	Miami Beach via Washington Avenue, West Avenue, and Alton Road	24	24	N/A	24		2	2
1	South Miami Heights to Dadeland South Station via Busway	20	40	N/A	40/60	6		6
2	163 Street Mall to CBD via Miami Avenue and NW 2 Avenue	15	15	N/A	20/30	9		9
3/16	163 Street Mall to CBD via North Miami Beach and Biscayne Boulevard	10	10	60	30	22		22
6	Allapattah to Coconut Grove via Little Havana and Downtown Miami	30	60	N/A	60		6	6
7	Dolphin Mall to CBD via Miami International Mall, Fontainebleau, NW 7 Street, Miami Springs and Little Havana	20	20	N/A	20/30	8		8
8	FIU South Campus to CBD via Westchester, SW 8 Street, and Little Havana	10	15	N/A	15/20	16		16
9	Aventura Mall to CBD via 163 Street Mall and NE 2 Avenue	10	30	N/A	30	13		13
10	163 Street Mall to CBD via NE 2 Avenue	40	30	N/A	30	7		7
11	FIU South Campus to CBD via West Flagler Street Serves the Government Center Station	7.5	10	60	12	20		20
12	Northside Station to Mercy Hospital via Liberty City, Allapattah, Civic Center, Little Havana and Coconut Grove Serves the Civic Center Station	30	30	N/A	30	6		6
17	Norwood to Vizcaya Station via NW 17 Avenue	12	30	N/A	30	12		12
21	Opa-Locka to CBD via Northside, Liberty City, Allapattah, Civic Center and Overtown	30	30	N/A	30	5		5
22	163 Street Mall to Douglas Road Station via Golden Glades, NW 22 Avenue and Coconut Grove	20	30	N/A	30	11		11
24	Westchester to CBD via Coral Way and Brickell Avenue	15	15	N/A	30	11		11
27	Carol City to Coconut Grove via 27th Avenue Serves the Coconut Grove and Dr. Martin Luther King, Jr. Stations	15	15	60	20/30	13		13
28	FIU North Campus to Hialeah Station via 135th Street and East 4th Avenue	30	30	N/A	60	4		4
29	Miami Lakes to Hialeah	70	70	N/A	N/A		2	2
31 (Busway Local)	Dadeland South Station to South Dade Government Center via Busway	15	30	N/A	30	5		5

Table 1-2: Metrobus Current Service (Continued)

Route	Description	Service Frequency				Peak Vehicle Requirement		
		Peak	Mid-day	24-Hour	Weekend	Full-Size	Mini-bus	Total
32	Carol City to Omni via Opa-Locka, Northside, Liberty City and Civic Center	20	30	N/A	40/60	11		11
33	Hialeah Gardens to Miami Shores via 103rd Street (49 St) and 95th Street	15	30	N/A	30	7		7
35	MDCC South to Florida City via Busway, US-1	30	30	N/A	30	7		7
36	Koger Office Park to Miami Springs to Omni Terminal via 36 Street and Biscayne Boulevard	10	30	N/A	30	10		10
37	Hialeah to South Miami via Palm Avenue and Douglas Road	30	30	N/A	30	9		9
38 (Busway MAX)	Dadeland South Station to Florida City via Busway and US-1 Serves the Dadeland South Station	15	30	60	20	13		13
40	West Miami-Dade to Coral Gables via Bird Road	20	20	60	30	9		9
42	Golden Glades to Coconut Grove via LeJeune Road	30	30	N/A	30	8		8
48	Civic Center to South Miami via Overtown, CBD, and Coral Gables	30	60	N/A	N/A		6	6
51 (Flagler MAX)	Miami Beach to West Miami-Dade via MacArthur Causeway and West Flagler Street	15	30	N/A	N/A	14		14
52	Coral Gables to Cutler Ridge via South Miami, Busway, Perrine and Richmond Heights	30	30	N/A	30	7		7
54	Hialeah to Liberty City via 54 Street	20	30	N/A	30	9		9
56	Coral Gables to Lakes of the Meadow/MDCC South Campus via Miller Road and SW 107/117 Avenues	20	30	N/A	N/A	4		4
57	South Miami to Pinecrest	30	N/A	N/A	N/A	3		3
62	Hialeah to Omni via 62nd Street and Biscayne Boulevard	10	15	N/A	20	11		11
65	Coconut Grove to Pinecrest via Busway and Old Cutler Road	30	N/A	N/A	N/A	3		3
70	Cutler Ridge to Florida City via Naranja, Goulds, Princeton, and Homestead	30	30	N/A	60	7		7
71	Dolphin Mall to MDCC South Campus via 107th Avenue	30	30	N/A	30	5		5
72	Coral Gables to Kendall via SW 57 Avenue and Sunset Drive	30	30	N/A	30	7		7
73	Miami Lakes to Dadeland South Station via Milam Dairy Road and Ludlam Road	30	60	60	30	8		8
75	Miami Lakes Tech to MDC North Campus via 175 Street, Miami Gardens Drive, West Dixie Highway, and 119 Street	30	30	N/A	30	8		8
77	Norwood to CBD via NW 7 Avenue Serves the Government Center Station	7.5	15	60	15/30	20		20
83	Miami Lakes to FIU North Campus via Miami Gardens Drive	15	30	N/A	30	13		13
87	Okeechobee Station to Dadeland North Station via 87th Avenue	30	30	N/A	30	6		6
88	Dadeland North Station to Kendall via SW 88 Street Serves the Dadeland North Station	15	30	60	20/30	7		7
91	Miami Lakes to 163 Street Mall via Carol City, California Club, and North Miami Beach	30	60	N/A	60	7		7
93 (Biscayne MAX)	Aventura Mall to CBD via Biscayne Boulevard	15	N/A	N/A	N/A	8		8
95X	Golden Glades, Carol City,	5	30	N/A	N/A	21		21
97 (27 MAX)	Carol City to Allapattah via NW 27 Avenue	15	N/A	N/A	N/A	5		5
99	Miami Gardens to Aventura Mall via Carol City, California Club, and North Miami Beach	30	60	N/A	60		5	5
104	Dadeland North Station to Kendall via SW 104 Street	30	30	N/A	60	4		4

Table 1-2: Metrobus Current Service (Continued)

Route	Description	Service Frequency				Peak Vehicle Requirement		
		Peak	Mid-day	24-Hour	Weekend	Full-Size	Mini-bus	Total
132 (Tri-Rail Doral)	Tri-Rail Station to Koger via NW 36 Street	60	N/A	N/A	N/A		1	1
133 (Tri-Rail Airport)	Miami International Airport Terminal to Tri-Rail Station	30	60	N/A	N/A	1		1
137 (West Dade Connection)	Miami International Mall to Cutler Ridge via SW 137 Avenue	30	60	N/A	60		6	6
152 (Gables Connection)	Coral Gables to South Miami	30	30	N/A	30		2	2
202 (Little Haiti Connection)	INS Office to NW 36 Street via 79 Street and NE 2 Avenue	30	30	N/A	30		3	3
204 (Killian KAT)	Dadeland North Station to Hammocks via Killian Drive	6.5	N/A	N/A	40/60		14	14
208 (Little Havana Circulator)	CBD to 27 Avenue via West Flagler Street and SW 7/8 Streets	15	20	N/A	20		7	7
212 (Sweetwater Circulator)	Sweetwater	15	20	N/A	20/30		2	2
224 (Coral Way MAX)	Douglas Road Station to West Dade via Coral Way	20	N/A	N/A	N/A		6	6
236 (Airport Owl)	Miami International Airport Terminal to CBD via Collins Avenue, NW 36 Street, LeJeune Road, and West Flagler Street	N/A	N/A	60	N/A		0	0
238 (East-West Connection)	Earlington Heights Station to Dolphin Mall via Miami International Airport, Blue Lagoon, Airport West, and Miami International Mall	30	60	N/A	60		6	6
240 (Bird Road MAX)	Dadeland North Station to Westwood Lakes via Bird Road	20	40	N/A	N/A		5	5
241 (North Dade Connection)	California Club to Miami Lakes via Uleta and Opa-Locka	30	60	N/A	N/A		4	4
242 (Doral Connection)	Palmetto Station to Dolphin Mall via Koger, Doral and Airport West	30	60	N/A	N/A		4	4
243 (Seaport Connection)	CBD to Port of Miami	15	30	N/A	30		2	2
245 (Okeechobee Connection)	Palmetto Station to Hialeah Gardens via Okeechobee/Frontage Road and Medley Industrial Parks	30	40	N/A	N/A		3	3
246 (Night Owl)	Downtown Miami, Miami Beach, North Miami Beach, Opa Locka, Civic Center	N/A	N/A	60	N/A		0	0
248 (Brickell Key Shuttle)	Brickell Station to Brickell Key	15	15	N/A	15		2	2
249 (Coconut Grove Circulator)	Coconut Grove Station to Douglas Road Station via SW 27 Avenue, Grand Avenue, and SW 37 Ave	15	15	N/A	15		3	3
252 (Coral Reef MAX)	Dadeland South Station to Country Walk via Coral Reef Drive	18	30	N/A	30		6	6
267 (Ludlam MAX)	Golf Club of Miami to Okeechobee Station vis Ludlam Road/West 12 Avenue	20	N/A	N/A	N/A		4	4
272 (Sunset KAT)	Dadeland North Station to Kendall via Sunset Drive	10	60	N/A	N/A		8	8
278 (Flagami Connection)	Flagami/West Miami area between Tamiami Boulevard and NW/SW 57 Avenue	30	30	N/A	30		2	2
282 (Hialeah Gardens Connection)	Miami Lakes to Hialeah Gardens to Palmetto station via NW 82 and 87 Avenues. Realigned to new Palmetto Station	30	60	N/A	60		4	4
287 (Saga Bay MAX)	Dadeland South Station to Saga Bay via Busway and SW 87 Avenue	24	N/A	N/A	N/A		3	3
288 (Kendall KAT)	Dadeland North Station to West Kendall via Kendall Drive	15	N/A	N/A	N/A		5	5
500 (Midnight Owl)	Palmetto Station to Dadeland South Station	N/A	N/A	60	N/A	0		0

Service based on July 2004 lineup

SECTION II: REVENUE VEHICLE DEMAND

Quality of Service

MDT is committed to providing a safe and reliable transportation system. The safety of the public and MDT employees is of primary concern to all Metrobus personnel. When service is interrupted, every attempt is made to restore that service with minimal disruption to the customer. Technicians from the Bus Maintenance Division are assigned to various areas of the County and are dispatched to vehicles that fail while in service. Service Truck Technicians diagnose and/or repair the failed vehicle on the road. Replacement buses are available to maintain scheduled service should a bus need to be removed from service.

Quality of service is considered to be a function of the following factors: safety, speed, cleanliness, frequency, comfort, and reliability. The frequency, comfort, and reliability factors are related primarily to fleet size.

Customer surveys are frequently used to obtain customer input and perceptions of Metrobus service. The survey results provide valuable information concerning the quality of Metrobus service from the customer's perspective and present suggestions for potential improvements in service.

Tracking Studies that examine transit usage, satisfaction and image among riders and non-riders in Miami-Dade County were conducted in 1997, 2000, and 2003 by Behavioral Science Research (BSR) under contract to Miami-Dade Transit. BSR reported a continuing trend in the decrease in "absolute non-riders and drops in the regular bus, regular rail, and bus-rail dual rider proportions" apparent in the 1997 and 2000 data. Upon completion of the 2003 study, BSR reported that "the 2003 data, however, indicated a reversal of this behavior; the current pattern of transit behavior appears to be a shift away from the periodic, occasional or episodic use of public transportation to once again a more regular use of the system."

BSR indicated that, in 2003, between 52% and 58% of bus-only and dual riders were "mostly satisfied" with the three bus related services (bus driver courtesy, mechanical reliability of buses, and signage at stops), up from between 36% to 43% in 2000. Between 30% and 35% were "very satisfied" with these services in 2003, down from between 40% to 48% in 2000. BSR found that "dissatisfaction" stayed between 13% and 17%.

Customer feedback in the form of complaints is also used to evaluate and improve Metrobus performance. Average monthly customer complaints received from 1999 through 2003 are illustrated in Table 2-1.

Table 2-1: Metrobus Average Monthly Customer Complaints

Nature of Complaint	Fiscal Year									
	99	% of Total	00	% of Total	01	% of Total	02	% of Total	03	% of Total
Driving Safety	24	4.7%	23	6.4%	25	8.6%	25	8.0%	39	8.3%
Operator/Employee Behavior	77	15.0%	71	19.9%	54	18.6%	52	16.7%	75	16.0%
Equipment	18	3.5%	16	4.5%	12	4.1%	13	4.2%	21	4.5%
Fares/Transfers	121	23.6%	7	2.0%	6	2.1%	7	2.3%	11	2.3%
Planning/Scheduling	50	9.8%	15	4.2%	11	3.8%	9	2.9%	17	3.6%
Service	222	43.4%	225	63.0%	182	62.8%	205	65.9%	307	65.3%
Total	512		357		290		311		470	

A significant increase occurred in customer complaints during FY 2003 as compared to FY 2000 through FY 2002; although, complaints were actually 8% below FY 1999 levels. Service continues to be the primary customer complaint, while concerns in most other areas have shown some improvement. A graphic representation of average monthly customer complaints from FY 1995 through FY 2003 is presented in Figure 2-1.

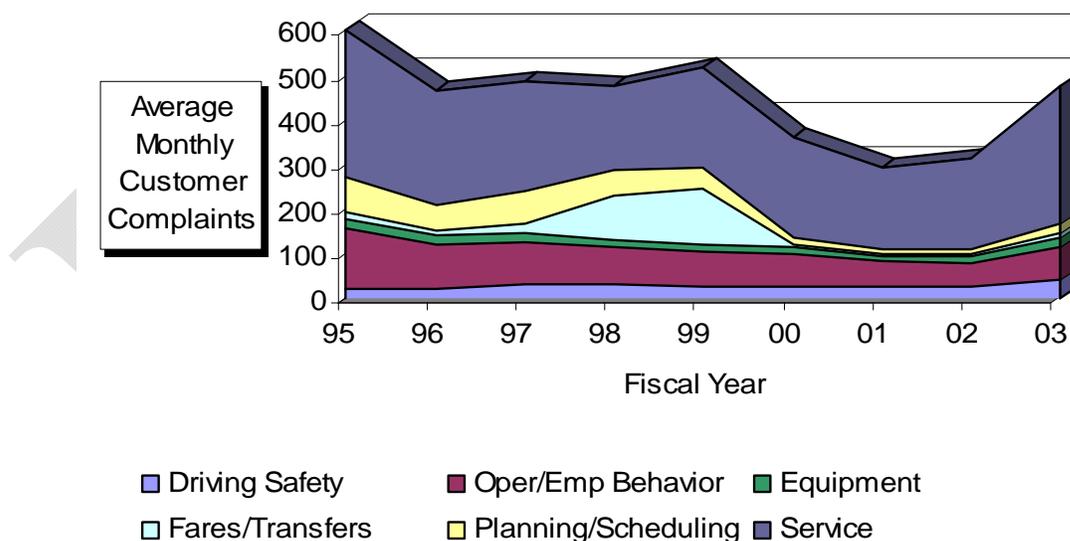


Figure 2-1: Metrobus Average Monthly Customer Complaints

Metrobus On-time Performance

On-time performance is critical to customer satisfaction. **On-time is defined as within 0-5 minutes of schedule; late is more than 5 minutes after schedule; and, early is anything before schedule.** The goal for on-time performance for fixed routes is 70%, which Metrobus achieved during five of the last six fiscal years. Metrobus on-time performance for FY 1995 through FY 2003 is illustrated in Figure 2-2.

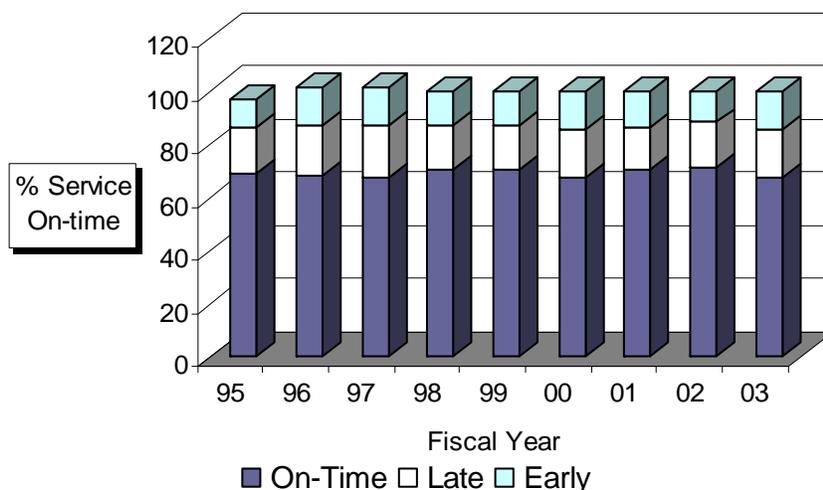


Figure 2-2: Metrobus On-time Performance

Metrobus average on-time performance in FY 2003 dipped to 67%, the lowest level reported since FY 2000. The percentage of late departures rose to 18% and the percentage of early departures increased to 15%, the same levels reported in FY 2000. Metrobus schedule adherence from FY 1995 through FY 2003 is presented in Table 2-2.

Table 2-2: Metrobus Schedule Adherence

Schedule	Fiscal Year								
	95	96	97	98	99	00	01	02	03
On-Time	69%	68%	67%	70%	70%	67%	70%	71%	67%
Late	17%	19%	20%	17%	17%	18%	16%	17%	18%
Early	11%	14%	14%	13%	13%	15%	14%	12%	15%

Metrobus Safety

Safety is paramount in every aspect of MDT operations. The rate of accidents is tracked for evaluation and potential reduction. The preventable accident rate is calculated by dividing the number of preventable accidents during the month by the number of bus vehicle miles, which is divided by 100,000.

Figure 2-3 illustrates preventable accidents per 100,000 vehicle miles for a merger of the formerly designated “A” and “B” fleets. Prior to March 2003, separate accident data were maintained for the full-size fleet (“A”) and the minibus (“B”) fleet. The total preventable accident rate (PAR) data have been restated for January - February 2003. In-service revenue mileage was approximated using fleet fueling mileage. A comparison of the MDT preventable accident rate to a baseline average is under development. While caution must be used in interpreting the FY 2003 data, there does appear to be a gradual increase in the MDT preventable accident rate.

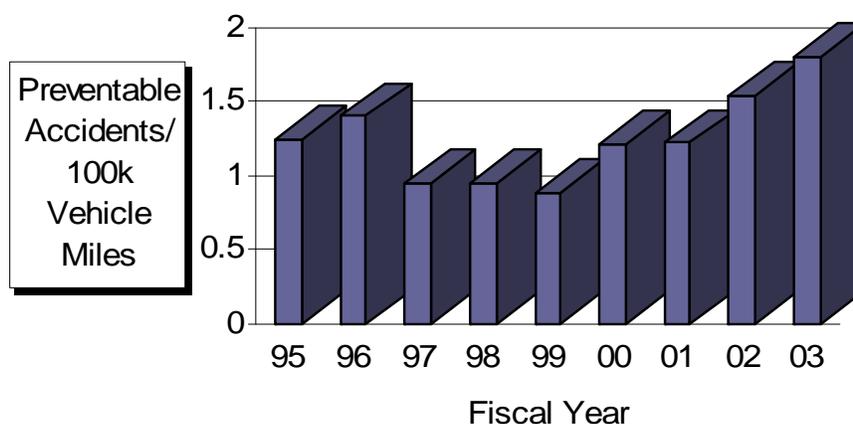


Figure 2-3: Metrobus Preventable Accidents

MDT’s commitment to reducing preventable accidents and improving the overall safety of the system is evidenced by its commitment to Bus Operator training. Bus Operators, as part of their initial comprehensive six week training, are taught operational procedures, defensive driving, and other matters related to safety. Refresher training continues to be conducted among Bus Operators, and a two hour pre-lineup training session is conducted annually. Individualized safety training also occurs when an operator’s accident rate is excessive.

SECTION II-A: ESTIMATION OF PASSENGER DEMAND AND RESULTING PEAK VEHICLE REQUIREMENTS

Passenger Demand

The determination of load factors for each Metrobus route on a periodic basis is a significant task that is cost and labor intensive.

MDT is currently looking at adjusting service in the future, based on the results of an operational analysis, if there is little demonstrated use of new or existing service or if there are needs that are not being addressed. The University of South Florida's Center for Urban Transportation Research (CUTR) has been engaged to perform a Comprehensive Bus Operational Analysis (CBOA) to help the County match transit service with citizens' needs and travel patterns. The CBOA will provide the planning information and monitoring baseline data from which planned PTP improvements can be fine tuned, new improvements can be determined, and implemented improvements can be monitored.

At the request of the Transportation Committee of the Board of County Commissioners, as the results of the CBOA become available, District Transit Needs Studies will be conducted at a localized level to address concerns. These studies will examine, at a local scale, the communities requirements and preferences, specific origin and destinations, and emerging needs to meet planned development. The first of the District Transit Needs Studies is being conducted in the Board of County Commissioners District 13 and serves as the pilot study for the other districts.

In the absence of a comprehensive operational analysis, typical MDT monitoring of passenger loads and route performance is based on three sources of information:

- 1) Field staff check buses for passenger loads and on-time performance. Data are collected on an as needed basis, such as when reports of overcrowding are received, and are used to adjust headways and for other proposed service changes.
- 2) Automatic registering fareboxes provide the number of passenger boardings per trip. Data can be extrapolated to provide an estimate of the maximum load for specific trips. Farebox information is usually corroborated by field staff before any service changes are implemented.
- 3) The Monthly MDT Ridership Technical Report provides information on the average daily ridership and other productivity measures of the bus routes. Analysis of this information alerts planners of those routes that could be exceeding the passenger loading guidelines.

Passenger load data are compared with MDT's Service Guidelines to determine the level of service needed to meet passenger demand. The schedule is based on ridership and corresponding headways from 5 minutes on express routes to 60 minutes on low ridership routes in the peak periods. During off-peak hours, headways vary from 10 minutes to 60 minutes. On weekdays, the system operates 24 hours per day on 11 routes. The service span for other routes varies based on ridership demand. On the weekends and most holidays, a reduced schedule is in effect. By the end of 2004, MDT plans to reduce the maximum peak headway from the current 60 minutes to 30 minutes.

Service and Mobility Planning specify the number of buses required for the prepared schedule by time of day. Upon receipt of the Service Plan and Metrobus schedule, Bus Operations prepares an Operational Plan, which includes, among other characteristics, distribution of the total vehicle fleet to each of the O&I Divisions based on assigned service requirements.

General Ridership Growth

General ridership growth is evaluated using several factors. MDT examines ridership growth in terms of increase in average weekday boardings, which represents the total weekday boardings divided by the number of weekdays. Average weekday boardings from FY 1995 through FY 2003 are illustrated in Figure 2-4.

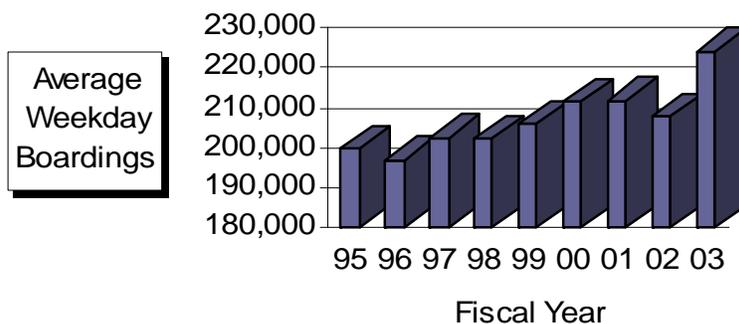


Figure 2-4: Metrobus Average Weekday Boardings

Average weekday boardings in FY 2003 show an increase in FY 2002 average weekday boardings of 7.9% and exceed the previous high of 211,863 in FY 2001 by over 12,000 or 5.8%.

MDT also analyzes Metrobus total annual unlinked passenger trips, which are represented in Figure 2-5. Unlinked passenger trips, which appear to have peaked at 65.8 million in FY 2000, fell to 63.4 million in FY 2002 and then rose to 64.6 million in FY 2003, an increase of 1.9%.

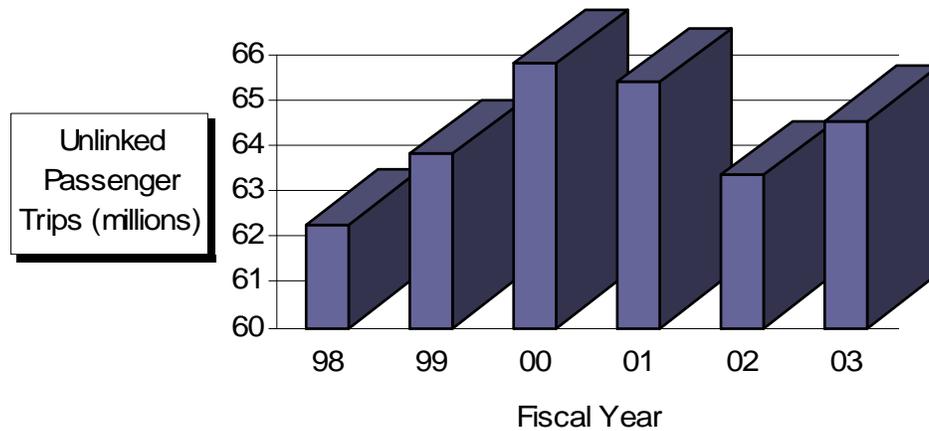


Figure 2-5: Metrobus Annual Unlinked Passenger Trips

In determining general ridership growth, MDT also examines the transfer of Metrobus passengers to and from Metrorail. FY 2003 transfer data show there were 3.4 million Metrorail transfers to Metrobus, accounting for 4.5% of Metrobus passengers, while Metrobus transfers to Metrorail equaled 2.9 million or almost 24% of Metrorail passengers. The flow of passengers to and from Metrorail and Metrobus is displayed in Figure 2-6.

FY 2003 Boardings

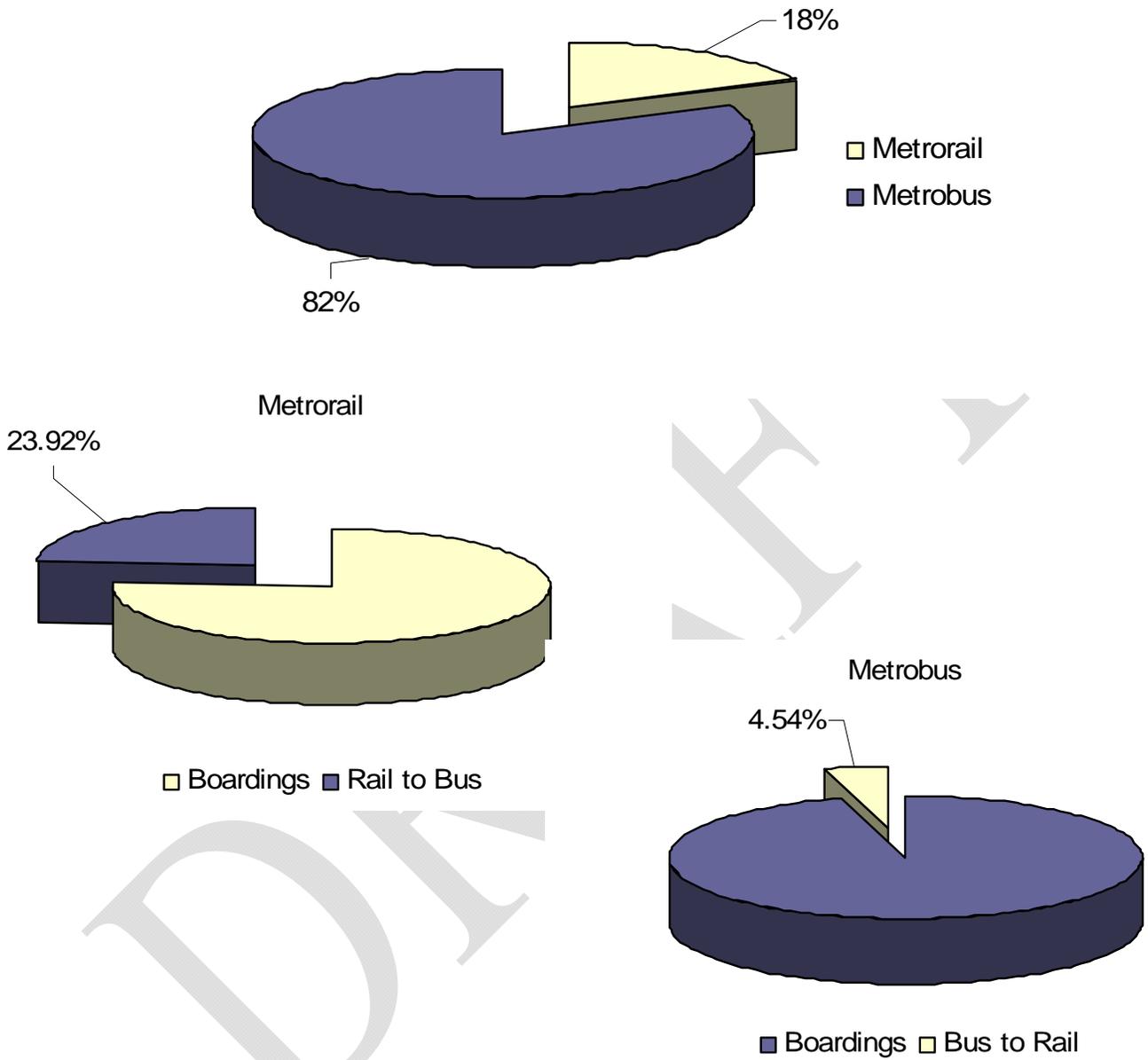


Figure 2-6: Metrobus and Metrorail Boardings & Transfers

Estimates of Future Demand

Bus Operations supports the Service Plan developed by the Service and Mobility Division of Miami-Dade Transit.

Passenger Load Standards

The average maximum loading guidelines, presented in Table 2-3, are used to determine the vehicle requirements for each bus route. These guidelines provide a sliding scale that allows for lighter loads when headways are longer. According to MDT's 1998 Service Guideline Report, these guidelines can be reduced when the percentage of elderly and handicapped riders exceeds 18.7%, or adjusted higher if the routes are prone to shorter duration of standing time, such as trips with high numbers of school passengers.

The maximum allowable load factor for a single trip is 175 %.

**Table 2-3: Metrobus Average Maximum Loading Guidelines by Time Period
(at the peak load point, based on a 30-minute interval of service)**

<i>Headway (minutes)</i>	<i>Peak</i>	<i>Midday/ Weekend</i>	<i>Night</i>	<i>Limited/ Express</i>
1 - 10	145%	125%	110%	120%
11 - 20	140%	110%	100%	100%
21 - 30	125%	100%	100%	100%
31 - 60	100%	100%	100%	100%

System and Route Load Factors

Ridership data obtained during the ongoing Comprehensive Bus Operational Analysis were reviewed to develop estimated passenger load factors for the overall weekday system of bus routes and the six major bus routes in the system were identified. A mathematical relationship between the maximum load factor per trip and the average load factor was created using a sample of weekday ridership data collected. This factor was applied to the average load factor for the system and six major routes. The average load factor was derived from the average trip length per passenger and the average boardings per revenue mile. The average trip length was calculated from the 2002 National Transit Database information for bus. The source for the average boardings per revenue mile is the September 2003 MDT Ridership Technical Report.

Average Trip Length: 4.32 miles per passenger

Estimated load factors by Revenue Hour and Revenue Mile for the six major routes are presented in Table 2-4.

Table 2-4: Metrobus Estimated Major Route Load Factors

Route	Weekday Passengers per Revenue Hour	Weekday Passengers per Revenue Mile	Average Passenger Load	Estimated Average Maximum Load Weekday	Estimated Average Peak Maximum Load Factor
3	42.0	3.42	NA	34.5	94%
11	50.7	5.34	NA	50.3	120%
27	49.7	4.10	NA	27.8	65%
77	49.8	3.97	NA	39.3	89%
J	30.6	2.41	NA	30.8	84%
L	40.9	3.53	NA	38.5	85%

Service Planning Model

The major factors considered in the service planning guidelines for MDT’s Metrobus service are those associated with schedule design. Schedule design entails the span and frequency of service and loading factors.

Schedule Design

The criteria for schedule design are used in establishing or re-establishing the scheduled interval between buses as well as the hours during which the buses operate. The elements include span of service, frequency of service, and loading factors.

Span of Service and Peak Periods

The span of service for Metrobus is 24 hours on 11 routes and varying spans based on demand for the remaining routes. Peak periods are designated from 6:30 a.m. to 9:00 a.m. and from 3:30 p.m. to 6:00 p.m.

Frequency of Service (Headways)

Bus headway is defined as the *interval of time between buses traveling in any given direction*. Factors considered when adjusting bus frequencies include:

- Number of buses available
- Load factors
- Passenger demand

- Route length
- Running time
- Attraction of new riders.

Peak Vehicle Requirement (PVR)

The Peak Vehicle Requirement (PVR) is the total number of buses needed simultaneously in the peak periods to satisfy passenger demand while keeping vehicle passenger loads at or below a pre-determined level, based on MDT's load factors. The current service demand, which is detailed in Table 2-5, is 688.

Table 2-5: Metrobus Peak Vehicle Requirements

Division	Vehicle Type	Buses for Peak Service Demand	Vehicle Type	Number of Buses Assigned
Central	Full-size	164	40 ft	156
			60 ft	41
			Total	197
Northeast	Full-size	175	40 ft	210
			60 ft	0
			Total	210
Coral Way	Full-size	161	40 ft	168
			60 ft	25
			Total	193
Medley	Full-size	36	40 ft	43
			60 ft	0
			Total	43
Central	Minibus	34	26 ft	28
			31 ft	13
			Total	41
Northeast	Minibus	23	26 ft	16
			31 ft	12
			Total	28
Coral Way	Minibus	48	26 ft	15
			31 ft	42
			Total	57
Medley	Minibus	47	26 ft	56
			31 ft	0
			Total	56
Fleet	Full-size	536	40 ft	577
			60 ft	66
			Total	643
Fleet	Minibus	152	26 ft	115
			31 ft	67
			Total	182
Grand Total		688		825

As of July 18, 2004 Lineup

Factors Influencing Peak Period Ridership

Peak period ridership is the primary factor that determines PVR. Service demand changes over time and is particularly influenced by special events such as the Coconut Grove Art Festival and activities at various sports arenas.

Events and Influencing Factors Accounted for in Fleet Management Plan

Various expansions of the system are the main events and factors that will impact future PVR and vehicle requirements. Several issues impact the size of the future bus fleet. This analysis considers the impact represented from these various plans for bus system expansion.

PTP Commitment/Transit Development Program

The 2004 Transit Development Program (TDP) update provides a five-year service plan for all existing modes within MDT. The 5-year Recommended Service Plan (RSP) covering Fiscal Years 05 – 09 for Metrobus identifies service improvements as new routes, alignment adjustments, service frequency, or capital improvements that are scheduled to be completed by the fifth year of the RSP (2009). The RSP includes all improvements in the People's Transportation Plan. The RSP service improvements, identified in the TDP, may be implemented over the next five years (to the year 2009), given funding availability. The impact on the peak vehicle requirement (PVR) is identified in the TDP update. A summary of operating service levels for the new routes is presented in Table 2-6, which is followed by a description of each of the new routes.

**Table 2-6: Recommended PTP Service Plan Improvements
Summary of New Routes**

New Route	Service Frequency (minutes)				Peak Vehicle Requirement (PVR)		
	Peak	Midday	24-hour	Weekend	Full-size	Minibus	Total
Florida City/Homestead Connection	15	30	N/A	30		4	4
Goulds Connection	15	30	N/A	30		4	4
Airport West Connection	15	30	N/A	60		10	10
Gratigny Connection	15	30	N/A	45		6	6
Kendall Connection	15	30	N/A	N/A		8	8
Liberty City Connection	15	15	N/A	15		4	4
Busway Flyer	15	N/A	N/A	N/A	8		8
Route 200 to Americana Village	15	30	N/A	N/A		4	4
79 Street MAX	15	N/A	N/A	N/A		7	7
97 Avenue Crosstown	15	30	N/A	15		16	16
7 Avenue MAX	15	N/A	N/A	N/A	6		6
Beach MAX	15	30	N/A	30	4		4
Red Road MAX	15	N/A	N/A	N/A		6	6
Route 122	15	30	N/A	30		6	6
80 Street MAX	15	N/A	N/A	N/A		6	6
96 Street MAX	15	N/A	N/A	N/A		7	7
120/136 Street Crosstown	15	30	N/A	N/A		6	6
163 Street Shuttle	15	30	N/A	30		5	5
Intercounty Connection	15	N/A	N/A	N/A		5	5
Kendale Lakes Connection	15	30	N/A	30		8	8
Kendall Circulator	15	30	N/A	30		8	8
West Kendall Crosstown	15	30	N/A	30		16	16
Western Express	15	30	N/A	30		10	10

New Routes

Florida City/Homestead Circulator

Description: MDCC Homestead Campus to Florida City City Hall via Krome Avenue, Villas of Homestead and East/West Palm Dr

Improvement: New seven day feeder route operating 30-minute daily service
Start Date: 2004

Goulds Connection

Description: Saga Bay to Goulds via Hainlin Mill Drive

Improvement: New weekday only feeder route operating every 20 minutes
Start Date: 2004

Airport West Connection

Description: Allapattah Station to Miami International and Dolphin Malls via NW 36/58 St, Doral and NW 107 Ave

Improvement: New route operating seven days a week. Peak period service would be at 30-minute headways with off-peak and weekends at 60-minute headways
Start Date: 2004

Gratigny Connection

Description: Hialeah Gardens City Hall to MDCC North Campus via NW 122 Street (West 68 Street)

Improvement: New route operating seven days a week with a daily 30-minute headway
Start Date: 2004

Kendall Connection

Description: Miami International Mall to Kendall-Tamiami Executive Airport via SW 147 Avenue

Improvement: New weekday only route. Peak period service would be at 30-minute headways with off-peak at 60-minute headways
Start Date: 2004

Liberty City Connection

Description: NW 7 Avenue to NW 27 Avenue via NW 54 and 62 Streets connecting to Metrorail

Improvement: New route operating seven days a week. Peak period service would be at 15-minute headways with off-peak and weekends at 30-minute headways
Start Date: 2004

Busway Flyer

Description: Along Phase 1 Busway, the Flyer would stop at SW 152 St., SW 168 St., and SW 200 St. Stations. South of SW 112 Avenue, the Busway Flyer would operate along U.S. 1 with stops in the adjacent area of future Busway extension stations. The end of the line would be at Florida City Hall and would operate on roadways near the Busway through Homestead and Florida City.

Improvement: New route providing premium service approximately every 18 minutes during weekday peak hours
Start Date: 2004

Route 200 to Americana Village

Description: Along Quail Roost Drive/SW 200 Street and SW 208 Street to the Southland (Cutler Ridge) Mall bus terminal/park-ride lot on SW 211 Street

Improvement: New “demonstration” weekday-only Minibus route operating every 30 minutes from 6:00 a.m. to 8:00 p.m.

Start Date: 2004

79 Street MAX

Description: Haulover to Tri-Rail Metrorail Station via Collins Avenue and NW 79 Street

Improvement: New limited-stop weekday route. Peak service only with 15-minute headways

Start Date: 2005

97 Avenue Crosstown

Description: Palmetto Station to Coral Reef Hospital via 97th Avenue

Improvement: New route operating seven days a week. Service would be every 30 minutes daily

Start Date: 2005

7 Avenue MAX

Description: Golden Glades Park/Ride Lot to Central Miami via NW 7 Avenue

Improvement: New limited-stop weekday service during the morning and evening peak periods at 15-minute headways

Start Date: 2006

Beach MAX

Description: Aventura Mall to CBD via Collins Avenue, Julia Tuttle Causeway and Biscayne Boulevard

Improvement: New limited-stop route created by adjusting the Route T. Weekday peak periods would run every 15 minutes with off-peak and weekends at 30 minutes

Start Date: 2006

Red Road MAX

Description: Pembroke Lakes Mall to Hialeah Metrorail Station via Flamingo Road / Red Road (NW 57 Ave / W 4 Ave)

Improvement: New limited-stop weekday service during the morning and evening peak periods at 15-minute headways

Start Date: 2006

Route 122

Description: Dolphin/Miami International Malls to MDCC Kendall Campus via SW 122 / 127 Avenue

Improvement: New route operating seven days a week. Peak period service would be at 15-minute headways with off-peak and weekends at 30-minute headways

Start Date: 2006

80 Street MAX

Description: Kendall to Dadeland North Station via SW 80th Street

Improvement: New limited-stop weekday service during the morning and evening peak periods at 15-minute headways

Start Date: Beyond 2006

96 Street MAX

Description: Kendall to Dadeland North Station via SW 96th Street

Improvement: New limited-stop weekday service during the morning and evening peak periods at 15-minute headways

Start Date: Beyond 2006

120/136 Street Crosstown

Description: Kendall-Tamiami Executive Airport to Dadeland South via SW 120th / 136th Street

Improvement: New weekday route operating at 15-minute headways for peak periods with off-peak at 30 minutes

Start Date: Beyond 2006

163rd Street Shuttle

Description: Golden Glades Park/Ride Lot to Winston Towers via 163rd Street

Improvement: New route operating seven days a week. Peak period service would be at 15-minute headways with off-peak and weekends at 30-minute headways

Start Date: Beyond 2006

Intercounty Connection

Description: Southwest Broward County to Palmetto Station

Improvement: New premium, limited-stop route operating weekdays only. Service would be every 15 minutes in the peak

Start Date: Beyond 2006

Kendale Lakes Connection

Description: West Dade Bus Terminal to Lakes of the Meadow via Kendale Lakes and Sunset Harbor

Improvement: New route operating seven days a week. Peak period service would be at 15-minute headways with off-peak and weekends at 30-minute headways

Start Date: Beyond 2006

Kendall Circulator

Description: SW 133 Avenue to SW 157 Avenue via SW 80th and 96th Streets

Improvement: New weekday only route. Peak period service would be at 15-minute headways with off-peak at 30-minute headways

Start Date: Beyond 2006

West Kendall Connection

Description: West Dade Bus Terminal to Coral Reef Drive via SW 152, 157, 162 Avenues

Improvement: New route operating seven days a week. Peak period service would be at 15-minute headways with off-peak and weekends at 30-minute headways

Start Date: Beyond 2006

Western Express

Description: Sawgrass Mills Outlet Mall to Palmetto Station

Improvement: New limited-stop route operating every 15 minutes during the peak periods and every 30 minutes during mid-days and weekends

Start Date: Beyond 2006

Alignment Adjustments

The following routes are either recommended for an extension or a significant realignment of their existing route structure:

Route G

Restore alignment to Broad Causeway, 2005

Route 91

Extend alternate trips to Aventura Mall (named Route 99), 2004

Busway Local (Route 31)

Extend service to Florida City / Homestead along South Miami-Dade Busway Extension, 2005

Busway MAX (Route 38)

Re-align service along existing Busway and Busway extension to Florida City, 2005

Route 8

Extend service westward to SW 137 Avenue, 2005
Extend Westchester short trips to FIU Terminal, Beyond 2006

Route 11

Extend Mall of Americas leg to FIU, 2005

Route 24

Extend service westward to SW 147 Avenue, 2005

Route 35

Re-align along South Miami-Dade Busway Extension, 2005

Route 57

Extend route north of South Miami Metrorail Station to Miami International Airport primarily along 57 Avenue, 2005

Route 70

Re-align along South Miami-Dade Busway Extension, 2005

Route 88

Straighten route and extend westward to the West Kendall Bus Terminal, eliminate the SW 142 Avenue branch, 2005

Route 104

Extend route westward to future West Kendall Bus Terminal, 2005

Kendall KAT (Route 288)

Extend route westward to the future West Kendall Bus Terminal, 2005

Killian KAT (Route 204)

Extend route westward to the future Kendall Bus Terminal, 2005

Sunset KAT (Route 272)

Extend route westward to future West Kendall Bus Terminal, 2005

Tri-Rail-Airport Shuttle (Route 133)

Extend route to serve the Miami International Airport cargo area, 2005

West Dade Connection (Route 137)

Extend to Dolphin Mall, 2005

Route A

Extend route south in Miami Beach to South Pointe Drive, 2006

Route T

Extend to Aventura Mall; modify into Beach MAX (limited-stop) route, 2006

Route 36

Extend route south to serve the Miami International Mall, beyond 2006

Route 28

Extend route to serve the Northeast Bus Terminal, 2006

Route 37

Extend weekday service to the Miami Lakes Technical Education Center, 2006

Route 75

Extend service to the Northeast Bus Terminal, 2006

Route 87

Extend route to the Okeechobee Station on the weekends, 2006

Route 91

Re-structure route to serve the future Northeast Bus Terminal, 2006

Route 2

Re-align northern terminus to future Golden Glades Intermodal Terminal, beyond 2006

Route 6

Extend route to serve the Miami Intermodal Center, beyond 2006

Route 17

Extend service to the Golden Glades Intermodal Center, beyond 2006

Route 21

Extend route from Bunche Park to the future Golden Glades Intermodal Terminal, beyond 2006

Service Frequency Improvements

The following routes are recommended for improved frequency:

Route J

Improve peak headways from 20 to 15 minutes, 2004

Route K

Improve peak headways from 20 to 15 minutes, 2004

Route W

Improve peak headways from 24 to 15 minutes, 2004

Route 3

Improve weekday headways from 20 to 15 minutes, 2004

Route 7

Improve daily headways from 40 to 30 minutes on each branch or 15 minutes on main line, 2004

Route 7

Improve weekend headways from 40/60 to 30 minutes, 2004

Route 9

Improve peak headways from 15 to 12 minutes, 2004

Route 16

Improve peak headways from 20 to 15 minutes, 2004

Route 22

Improve peak headways north from 20 to 15 minutes along mainline and 30 minutes on Civic Center and Coconut Grove branches, 2004

Route 29

Improve peak headways from 70 to 30 minutes, 2004

Route 32

Improve peak headways from 20 to 15 minutes, 2004
Improve Saturday headways from 40 to 30 minutes, 2004

Route 54

Improve peak headways from 20 to 15 minutes, 2004

Route 73

Improve mid-day headways from 60 to 30 minutes, 2004

Route 88

Improve peak headways from 15 to 12 minutes, 2004

Coral Reef MAX (Route 252)

Improve peak headways from 18 to 15 minutes, 2004

Kendall KAT (Route 288)

Improve peak headways from 15 to 12 minutes, 2004

Killian KAT (Route 204)

Improve peak headways from 6 1/2 to 5 minutes, 2004

Okeechobee Connection (Route 245)

Improve mid-day headways from 40 to 30 minutes, 2004

Sunset KAT (Route 272)

Improve peak headways from 10 to 7 ½ minutes, 2004

West Dade Connection (Route 137)

Improve mid-day headways from 60 to 30 minutes, 2004

Route E

Improve mid-day headways from 60 to 30 minutes, 2005

Improve weekend headways from 60 to 30 minutes, 2005

Route G

Improve peak headways from 30 to 15 minutes, 2005

Route K

Improve daily headways north of Haulover from 40 to 30 minutes, 2005

Route L

Improve peak headways from 10 to 7 ½ minutes, 2005

Route R

Improve mid-day headways from 60 to 30 minutes, 2005

Route V

Improve mid-day headways from 60 to 30 minutes, 2005

Route 1

Improve peak headways from 20 to 15 minutes, 2005

Improve off-peak and Saturday headways from 40 to 30 minutes, 2005

Improve Sunday headways from 60 to 30 minutes, 2005

Route 2

Improve weekday headways north of NW 84 Street from 60 to 30 minutes, 2005

Route 6

Improve mid-day headways from 60 to 30 minutes, 2005

Route 12

Improve peak headways from 30 to 15 minutes, 2005

Route 21

Improve peak headways from 30 to 15 minutes, 2005

Improve daily headways from 60 to 30 minutes north of the Northside Metrorail Station, 2005

Route 36

Improve peak headways from 20 to 15 minutes, 2005

Route 48

Improve mid-day headways from 60 to 30 minutes, 2005

Route 73

Improve weekend headways from 60 to 30 minutes, 2005

Route 75

Improve peak headways from 30 to 20 minutes, 2005

Improve peak headways from 20 to 15 minutes, 2005

Route 95X

Operate several peak hour trips in reverse direction, 2005

Route 104

Improve weekend headways from 60 to 30 minutes, 2005

Bird Road MAX (Route 240)

Improve mid-day headways from 40 to 30 minutes, 2005

Biscayne MAX (Route 93)

Introduce mid-day service at 30-minute headway, 2005

Busway Local (Route 31)

Improve peak headways from 15 to 10 minutes, 2005

Busway MAX (Route 38)

Improve mid-day and evening headways from 30 to 15 minutes, 2005

Sunset KAT (Route 272)

Improve mid-day headways from 60 to 30 minutes, 2005

Tri-Rail-Airport Shuttle (Route 133)

Improve headway as Tri-Rail headway improves, 2005

Tri-Rail-Doral Shuttle (Route 132)

Improve headway as Tri-Rail headway improves, 2005

West Dade Connection (Route 137)

Improve weekend headways from 60 to 30 minutes, 2005

Route A

Improve weekend headway from 40 to 30 minutes, 2006

Route H

Improve peak headways from 20 to 15 minutes, 2006

Route M

Improve peak headways from 30 to 15 minutes, 2006

Improve weekend headways from 60 to 30 minutes, 2006

Route 6

Improve weekend headways from 60 to 30 minutes, 2006

Route 10

Improve peak headways from 30 to 15 minutes, 2006

Route 28

Improve weekend headways from 60 to 30 minutes, 2006

Route 29

Improve mid-day headways from 70 to 30 minutes, 2006

Introduce weekend service at 60-minute headways, 2006

Route 33

Improve peak headways from 30 to 15 minutes, 2006

Route 37

Improve peak headways from 30 to 15 minutes, 2006

Route 42

Improve peak headways from 30 to 15 minutes, 2006

Route 52

Improve peak headways from 30 to 15 minutes, 2006

Route 56

Improve peak headways from 30 to 15 minutes, 2006

Route 70

Improve weekend headways from 60 to 30 minutes, 2006

Route 72

Improve peak headways from 30 to 15 minutes, 2006

Route 73

Improve peak headways from 30 to 15 minutes, 2006

Route 87

Improve peak headways from 30 to 15 minutes, 2006

Route 104

Improve peak headways from 30 to 15 minutes, 2006

17 Avenue MAX (Route 97)

Improve peak headways from 15 to 10 minutes, 2006

Airport West Connection

Improve mid-day and weekend headways from 60 to 30 minutes, 2006

Bird Road MAX (Route 240)

Improve peak headways from 20 to 15 minutes, 2006

Busway Local (Route 31)

Improve mid-day headways from 30 to 15 minutes, 2006
Improve weekend headways from 30 to 20 minutes, 2006

Coral Way MAX (Route 224)

Improve peak headways from 20 to 15 minutes, 2006

Doral Connection (Route 242)

Improve mid-day headways from 60 to 30 minutes, 2006

East-West Connection (Route 238)

Improve mid-day headways from 60 to 30 minutes, 2006
Improve weekend headways from 60 to 30 minutes, 2006

Hialeah Gardens Connection (Route 282)

Improve mid-day and weekends from 60 to 30 minutes, 2006

Little Haiti Connection (Route 202)

Improve peak periods from 30 to 15 minutes, 2006

Ludlam MAX (Route 267)

Improve peak headways from 20 to 15 minutes, 2006

Saga Bay MAX (Route 287)

Improve peak headways from 24 to 15 minutes, 2006

Route A

Improve peak headway from 20 to 15 minutes, beyond 2006

Route E

Improve peak headways from 30 to 15 minutes, beyond 2006

Route R

Improve peak headways from 30 to 15 minutes, beyond 2006

Route V

Improve peak headways from 30 to 15 minutes, beyond 2006

Route 6

Improve peak headways from 30 to 15 minutes, 2007

Route 28

Improve peak headways from 30 to 15 minutes, beyond 2006

Route 29

Improve peak headways from 30 to 15 minutes, beyond 2006
Improve weekend headways from 60 to 30 minutes, beyond 2006

Route 35

Improve peak headways from 30 to 15 minutes, beyond 2006

Route 48

Improve peak headways from 30 to 15 minutes, beyond 2006

Route 57

Improve peak headways from 30 to 15 minutes, beyond 2006

Route 65

Improve peak headways from 30 to 15 minutes, beyond 2006

Route 70

Improve peak headways from 30 to 15 minutes, beyond 2006

Route 71

Improve peak headways from 30 to 15 minutes, beyond 2006

97 Avenue Crosstown

Improve peak headways from 30 to 15 minutes, beyond 2006

Airport West Connection

Improve peak headways from 30 to 15 minutes, beyond 2006

Doral Connection (Route 242)

Improve peak headways from 30 to 15 minutes, beyond 2006

East-West Connection (Route 238)

Improve peak headways from 30 to 15 minutes, beyond 2006

Flagami Connection (Route 278)

Improve peak headways from 30 to 15 minutes, beyond 2006

Florida City/Homestead Circulator

Improve peak headways from 30 to 15 minutes, beyond 2006

Gratigny Connection

Improve peak headways from 30 to 15 minutes, beyond 2006

Hialeah Gardens Connection (Route 282)

Improve peak headways from 30 to 15 minutes, beyond 2006

Kendall Connection

Improve peak headways from 30 to 15 minutes and off-peak headways from 60 to 30 minutes, beyond 2006

North Dade Connection (Route 241)

Improve peak headways from 30 to 15 minutes, beyond 2006
Improve mid-day headways from 60 to 30 minutes, beyond 2006

Okeechobee Connection (Route 245)

Improve peak headways from 30 to 15 minutes, beyond 2006

Saga Bay/Goulds Circulator

Improve peak headways from 20 to 15 minutes, beyond 2006

West Dade Connection (Route 137)

Improve peak headways from 30 to 15 minutes, beyond 2006

The projects identified above are considered to have a potential impact on bus vehicle procurement in the next 5 years. There are other projects identified in MDT's Program of Inter-related Projects (PIP) and Miami-Dade County Long Range Transportation Planning that must be evaluated as required.

The projected demand for revenue vehicles, assuming that resources are available, is summarized in Table 2-7.

Table 2-7: Projected 2007 Demand for Metrobus Revenue Vehicles

Improvement	PVR	20% Spare	Total Buses
Existing Routes	688	138	826
New Routes	81	16	97
Alignment Adjustments	33	7	40
Service Frequency Improvements	197	39	236
Total*	999	200	1,199

* Includes 8 Over-the-Road Coaches

Non-vehicle Capital Infrastructure Improvements

Various capital improvements are planned during the 5-year period of the TDP. These improvements are outlined in the Multimodal Transit Section of the 2005 Transportation Improvement Program (TIP), provided in Appendix A. Each improvement has been coordinated with associated bus service improvements.

Capital projects include the construction of the following:

- South Miami-Dade Busway Extension is under construction using Federal discretionary and State funds. The Bus way extension will stretch over 11 miles south of the existing 8.2-mile Busway, terminating in Florida City. The project is scheduled for completion in August 2005.
- State Transit Corridor Program funds will be used for the continuation of several successful South Miami-Dade Busway routes as well as the Flagler MAX route

Other capital projects programmed during the covered five-year period include:

- Design and construction of a new bus garage
- Farebox rehabilitation and replacements
- Fare media dispensing equipment
- Maintaining AVL/AVM radio system

- Renovation of bus facilities to include replacement of bus washers, bus vacuums, roofs, lifts at garages, and improvement of safety conditions at all garages
- Replacing bus washers and vacuums at all bus garages
- Continuing Metrobus vehicle preventive maintenance

Fully or partially funded projects related to passenger amenities are as follows:

- ADA: projects, which promote compliance with the Americans with Disabilities Act (ADA) requirements, are continued in FY 2005. Funds are programmed in the five-year plan to assess and modify all bus stops and to provide amenities for disabled passengers, such as voice annunciators and signage upgrades
- Buses: In FY 2003, MDT received one hundred (100) 40' low floor buses and seventy (70) 30' buses as part of the People's Transportation Plan (PTP) bus fleet expansion program. During FY 2005, one hundred nine (109) new 40' low floor buses entered service beginning in November and December 2004. MDT anticipates delivery of seventy (70) additional low floor buses in late summer or early fall for entry into service in September 2005.
- Safety: Funding is programmed to purchase security equipment, upgrade and complete CCTV installations on the bus fleet, and replace fire detection and reporting systems
- Passenger Facilities: Park and ride lots, which include acquisition and construction of new facilities as well as modifications to existing sites, are programmed with State and local funds. Funding is also included for the installation of protective canopies at Metrorail stations bus stops and over outdoor escalators

Park & Ride lots needed along the South Miami-Dade Busway include the following locations:

- SW 152 Street
- SW 168 Street
- SW 200th Street
- SW 244 Street

Other Park & Ride lot locations include:

- Bird Road/SW 89th Ct
- SW 8th Street/127th Avenue
- Dadeland North Metrorail Station
- Douglas Road Metrorail Station

Scheduling and Operating Strategies Used to Reduce in-Service Failures

The Miami Dade Transit Agency's Metrobus service operates throughout the entire Metropolitan Miami area and into neighboring Broward County. Revenue service is provided from four (4) facilities, which are located in the northeast, northwest, southwest, and central parts of Miami-Dade County.

Currently, Metrobus operates at various headways and dispatches additional buses out of the O&I facilities to meet peak vehicle requirements.

The vast area being served by Metrobus makes it difficult at times to replace a bus that must be pulled from service due to an equipment malfunction without incurring lost time. Therefore, maintaining a high level of reliability and providing quick response time are critical to keeping acceptable passenger loads and reducing the level of inconvenience to the public. The effect of a peak period service delay can inconvenience many passengers whose trip may be lengthened due to crush loads that prevent them from boarding the overcrowded buses. Naturally, buses that are overly crowded cause passenger flow to suffer, which in turn cause buses to be delayed and thereby lengthens travel time and further exacerbates the delay in service.

Service interruptions whether minor or severe tend to leave passengers frustrated and in a state of anxiety. Feedback from passengers is almost immediate as they inform the agency of their dissatisfaction with transit service.

When a bus must be removed from revenue service for whatever reason, it leads to a delay equal to its headway plus the time required to physically remove and replace the bus from service. The removal of a disabled bus from revenue service often results in a delay greater than the headway interval.

Although there may not be a reserve bus available in a particular area to provide immediate assistance to passengers in the vicinity of the incident, a replacement bus will be sent as quickly as possible from the nearest O&I facility.

Outside of utilizing additional buses for special event coverage, all replacement buses used to recover from a delay, are sent from one of the O&I's.

Bus Operators, Bus Supervisors, Bus Traffic Controllers and Bus Technicians receive formalized training regarding disabled buses. Mechanics are instructed on how to troubleshoot malfunctions, and perform the required corrective action to move and/or repair defective buses on the road.

Miami-Dade Transit has also developed the "**Roadcall Reference Guide**" for use by Bus Operators and Traffic Controllers to improve assessment of in-service failures. The

August 2003 Guide as well as an updated August 2004 “draft” version of the Roadcall Reference Guide are included in Appendix B.

Service Truck Operation

When service is interrupted, restoration of service with minimal disruption is of primary concern to MDT.

Starting in FY 2005, Metrobus increased the number of Service Trucks available on Monday through Friday between the hours of 6:00 a.m. and 10:00 p.m. from four (4) to six (6). The Service Trucks are stationed throughout the service area and work under the direction of Central Control. There are three (3) Service Trucks available as needed by Central Control after 10:00 p.m. from the O&I Divisions. On weekends, three (3) Service Trucks are operated from 6:00 a.m. to 10:00 p.m. For special events, additional buses are allocated and a Service Trucks may be assigned as needed.

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SECTION II-B: ESTIMATION OF FLEET DEMAND RESULTING FROM VEHICLE MAINTENANCE REQUIREMENTS

Preventive maintenance is performed on the bus fleet and includes:

Operating Maintenance

Scheduled Maintenance (Preventive MDT “A”, “B” and “C” inspections as well as Penske BC1 and BC3 inspections) to include scheduled replacement of specific components and/or systems to improve the reliability of the buses

Unscheduled Maintenance (Corrective)

Bus Reliability and Appearance

Complete repair and painting of the vehicle as well as the replacement of power plants, etc, to meet new operational standards. These are performed as needed and exclude modifications. The typical engine is evaluated at 300,000 miles

Campaigns

Scheduled improvements or modifications to the original design of the vehicle performed as needed. The design change may come from the original equipment manufacturer (OEM) or from within the Agency’s Technical Section

Maintenance Assigned Vehicles

Maintenance assigned vehicles are those vehicles out of service for “scheduled” preventive maintenance (PM) and “unscheduled” corrective maintenance.

The number of vehicles in this category is determined by historical experience as reflected in the records and the Preventive Maintenance Program specifications.

Scheduled Preventive Maintenance (PM)

The Metrobus transit bus scheduled maintenance program is designed to maintain vehicle reliability by detecting potential defects and allowing them to be corrected before they fail. It also permits servicing of equipment requiring lubrication, measurement, and adjustment. Buses are withdrawn from service at regular mileage-based intervals to permit scheduled preventive maintenance actions.

Daily Inspection

- Visual inspection of the interior and exterior of the bus
- Functional test of safety-critical and passenger convenience components
- Defects are corrected prior to releasing the bus for service.

Schedule for Different Types of Maintenance Inspections

- Scheduled inspections are classified as MDT Type A, B, and C; Penske Types BC1 and BC3
- Inspections take place inside the shop
- Frequency of these inspections is listed in Table 2-8,
- Sample PM forms are included in Appendix C

Table 2-8: Metrobus Preventive Maintenance Schedule

<i>Inspection Type</i>	<i>Inspection Interval</i>	<i>Time to Complete (Hours)</i>
Daily Safety & Operating	Daily	0.3
A (MDT)	6,000	4
B (MDT)	18,000	8
C (MDT)	54,000	16
BC1 (Penske)	6,000	6
BC3 (Penske)	60,000	8

Type A

- Base level PM scheduled at a 6,000-mile interval
- Aimed at preventing the most common problems

Type B

- Scheduled at an 18,000-mile interval
- Includes all the requirements of the Type A Inspection
- Includes additional tasks aimed at more in-depth checks of the components

Type C

- Scheduled at a 54,000-mile interval
- Encompasses all the requirements of the previous inspections
- Adds more detailed checks of the engine, transmission, brakes, and electrical systems
- Transmission fluid is changed on this PM

Type BC1

- Base level PM scheduled at 6,000-mile interval
- Aimed at preventing the most common problems

Type BC3

- Scheduled at 60,000-mile interval
- Encompasses all of the requirements of the previous inspection
- Transmission fluid and filter change; coolant sample

Cleaning Program

The Cleaning Program consists of two levels of interior and exterior cleaning, performed during off-peak and non-revenue hours as follows:

Level One

- Performed daily
- Includes running the bus through the bus wash and blowing the interior

Level Two

- Performed once a week pursuant to contract with Goodwill Industries
- Includes detail cleaning (hand washing) of the interior ceilings, light fixtures, seat backs, and polishing interior stainless steel with steel bright, sweeping and mopping floors, cleaning interior windows, removing gum from floors and replacing seat covers as needed

Preventive Maintenance Program Monitoring and Support

Responsibility for development of and revisions to the scheduled maintenance program lies with Field Engineering and Systems Maintenance Division, Bus Vehicle Maintenance, and Bus Maintenance Control (BMC).

The Bus Maintenance Division continues to strive to meet all preventive maintenance schedules at 100% on-time completion and corrective maintenance requirements achievable with allocated resources.

Maintenance Management Information System

The Transit Equipment Administration System (TEA) has been utilized to insure efficient planning of maintenance activities. The PM scheduling program and reliability reports are generated from TEA.

Reliability Improvement Program

Philosophy

The philosophy of the Metrobus Maintenance Program is to provide safe, clean and dependable vehicles to serve the public in a cost-effective manner using prudent business practices. Metrobus Maintenance is guided by a philosophy that mandates maintenance of vehicles to achieve their maximum life. Appendix D provides an outline of the MDT Metrobus Maintenance Philosophy, as referenced in the updated “draft” version of *Metrobus Maintenance Policies, Revision 2, September 06, 2002*.

Mission

The mission of the maintenance program is accomplished through the following objectives:

- Eliminate increases in component failure rates due to equipment age and improve efficiency of maintenance operations through:
 - A comprehensive diagnostics inspection program that is continually improved
 - A progressive parts and procurement function, which is responsive to the changes in the maintenance program
 - A comprehensive and flexible training program
 - A sophisticated computerized maintenance record keeping system

Performance Goals

Metrobus Maintenance Divisions have identified the following performance goals to address short and long-term problems:

1. Attain and maintain 100% on-time performance for Bus Maintenance PM Inspections
2. Attain and maintain 100% fleet vehicle availability versus PVR
3. Attain and maintain average Miles Between Mechanical Roadcalls of 2,800
4. Maintain zero tolerance for any environmental violations system-wide
5. Improve the relationship between management and labor

Priorities

Safety

- Of primary concern and above all others, is ensuring that the bus system, specifically passenger vehicles, operates safely at all times

Reliability

- The Bus System's reputation and ridership depend on overall performance
- Excessive disruptions in service are unacceptable and must be kept to a minimum
- To maintain a high standard of reliability, all required maintenance must be performed at the proper interval
- To assist in lowering vehicle failures, the maintenance engineering process of identification of problems and equipment modification in the event of ongoing equipment malfunctions through MDT's Change Review Board must be supported

Quality

- Safe and reliable performance can only be achieved if quality work is performed
- Quality increases reliability and safety
- Safety, reliability, and quality are inseparable, dependent concepts essential to the provision of first class transit service

Cleaning

- Vehicles are cleaned on a regularly scheduled program and maintained free of graffiti

Safety, reliability, quality, and cleaning are inseparable, dependent concepts essential to the provision of first class transit service.

Programs

Several programs are in place to improve the reliability of equipment through upgrade of existing components and/or replacement of units. These include:

- HVAC
- Engines (regular and new configuration)
- Transmission rebuilding
- The Partners in Productivity (PIP) Program

The PIP process consists of a collective review of issues that affect Metrobus performance and development of strategies, actions plans, and solutions to improve performance measures efficiently. PIP consists of small groups of employees with related interests who:

- Voluntarily form a team
- Meet regularly
- Analyze work-related issues using participative problem-solving techniques
- Recommend improvements to management
- Monitor effectiveness of the implemented improvements

The first application of the PIP concept focused on the issue of roadcalls.

Unscheduled Corrective Maintenance

When maintenance is accomplished as a result of in-service failures, it is difficult to compensate for the absence of the equipment. Service quality suffers and is more expensive.

The average miles between failures for full-size buses, as illustrated in Table 2-9 and Figure 2-7, is a ratio of miles operated to the number of failures during the period and is calculated by dividing the number of mechanical roadcalls (resulting in service interruptions) by the number of bus vehicle miles. A "road call" is defined as a mechanical revenue service interruption of five (5) minutes or more. The measure is an overall indicator of the combination of failures, maintenance program, and execution.

Table 2-9: Average Miles per Mechanical Road Call

Vehicle Type	Fiscal Year					
	98	99	00	01	02	03
Fleet Total	2,581	2,499	2,262	2,227	2,053	2,520
RTS-80	2,308	2,379	n/a	n/a	n/a	n/a
FLX-87	4,068	3,374	3,305	2,399	2,515	n/a
FLX-88	3,056	2,966	3,554	2,563	3,281	n/a
FLX-90	2,317	2,168	2,359	2,027	2,290	2,021
FLX-92	2,735	2,581	1,827	1,813	1,835	1,709
FLX-93	2,254	2,058	1,825	1,697	2,300	2,424
FLX-94	3,149	2,501	1,936	1,911	2,116	2,104
Ikarus	1,759	1,444	1,392	1,183	1,495	1,630
NABI 97	3,403	4,898	2,613	2,357	2,519	2,168
NABI 98	n/a	5,297	2,405	2,429	2,762	2,760
NABI 99	n/a	2,455	2,357	3,521	3,214	2,402
NABI 00	n/a	n/a	n/a	3,955	2,952	2,676
NABI 02	n/a	n/a	n/a	n/a	5,665	8,996
NABI 03	n/a	n/a	n/a	n/a	n/a	3,484

A road call is a mechanical revenue service interruption of 5 minutes or more

MBMR=Total Miles/Total Mechanical Revenue Service Interruptions; road calls based on symptom codes

Note: MBMR data for January-March 2003 revised due to the elimination of 4 symptom codes, which are no longer categorized as "mechanical"

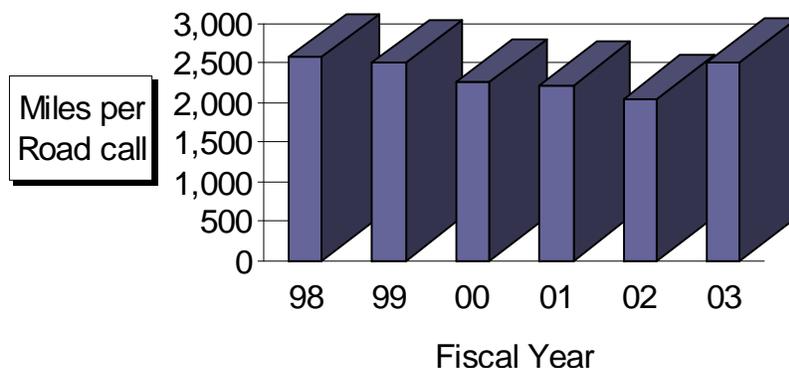


Figure 2-7: Average Miles per Mechanical Road Call

The reliability of the full-size buses within the Metrobus fleet, as measured by the average miles per mechanical road call, is approaching the highest level for the total fleet, which was recorded in FY 1998, and appears to be driven by the positive performance of the new NABI buses. Maintenance planning for overhauling components has been implemented to improve reliability of various components and vehicles.

The Bus Maintenance Division has had in place an excellent preventive maintenance program for routinely inspecting, cleaning, adjusting, testing, and repairing components to prevent revenue failures. Because of this excellent program, with nearly 100% completion rates, service failures have been minimized, and the division has consistently been able to provide the required number of buses for revenue service throughout the years.

Bus Failure Definitions and Actions

Safety-Related Failures

A number of safety-related conditions require that a bus be removed from service. Systems where these failures are likely to occur include:

- Engine/transmission
- Brakes
- Headlights and taillights
- Passenger door problems

When a bus exhibits one or more of these problems, the vehicle is examined for corrective action. If the problem cannot be remedied, passengers are removed from the bus, and the bus is removed from service. The disabled bus will be sent back to the shop empty, either immediately or at the earliest possible time.

Safety to passengers and employees is of utmost importance in the operation of Metrobus. Any bus exhibiting a system failure that impacts the safety of passengers or employees is removed from service. This action is consistent with the operating philosophy and MDT's System Safety Operating Plan.

The *MDT Metrobus and Paratransit (Fixed-Route) Operation Rules and Procedures Manual, Second Edition*, specifies that buses must be removed from passenger service under a number of safety-related failure conditions. A sampling of the rules is listed in Appendix E.

Other Types of Failures

In addition to safety related conditions, MDT removes buses from service that have an adverse affect on passengers. For example:

- Due to the climate of Miami, anytime a bus experiences an air conditioning problem, the bus is removed from service at the earliest possible time
- A bus that experiences vandalism involving graffiti (abusive or not), window, seat, or other types of damage is removed from service

The most common road calls are identified in Table 2-10 followed by service interruption road calls resulting from failures presented in Table 2-11.

The extremely hot and humid weather of South Florida continues to have an adverse impact on the bus engine (26%) and A/C system (15%); nonetheless, interruptions due to buses running late (13%), accidents (7%), and flat tires (6%) appear to be on the rise as well, as can be seen in Figure 2-8. Improvements made in most equipment areas have been offset by a dramatic increase in engine stalls. This is particularly noticeable in Figure 2-9, which includes service interruption roadcalls due exclusively to equipment failures.

Table 2-10: Most Common Service Interruption Road Calls

Failure Symptom	97	98	99	00	01	02	03	Total	Average	Ranking
								FY01-03	FY01-03	FY 01-03 All Symptoms
Engine Stalls	2,126	2,141	2,164	2,232	2,257	2,421	2,703	7,381	2,460	1
No A/C	1,920	1,672	2,226	2,023	1,945	1,556	1,561	5,062	1,687	2
**Running Late	0	55	231	379	931	1,059	1,400	3,390	1,130	3
Bellows	578	572	762	841	912	897	796	2,605	868	4
Accident - Bus/Auto	696	654	693	671	806	722	781	2,309	770	5
Brakes Slack	454	467	645	719	733	742	666	2,141	714	6
Wheelchair Lift	323	371	380	490	644	671	522	1,837	612	7
Tire Flat	412	438	365	484	482	572	629	1,683	561	8
Air Pressure Low	643	531	508	471	448	549	525	1,522	507	9
Dirty Bus	336	331	416	455	487	463	459	1,409	470	10
No Charge	415	317	438	497	349	466	519	1,334	445	11
Total	7,903	7,549	8,828	9,262	9,994	10,118	10,561			

Road call is a mechanical revenue service interruption of 5 minutes or more

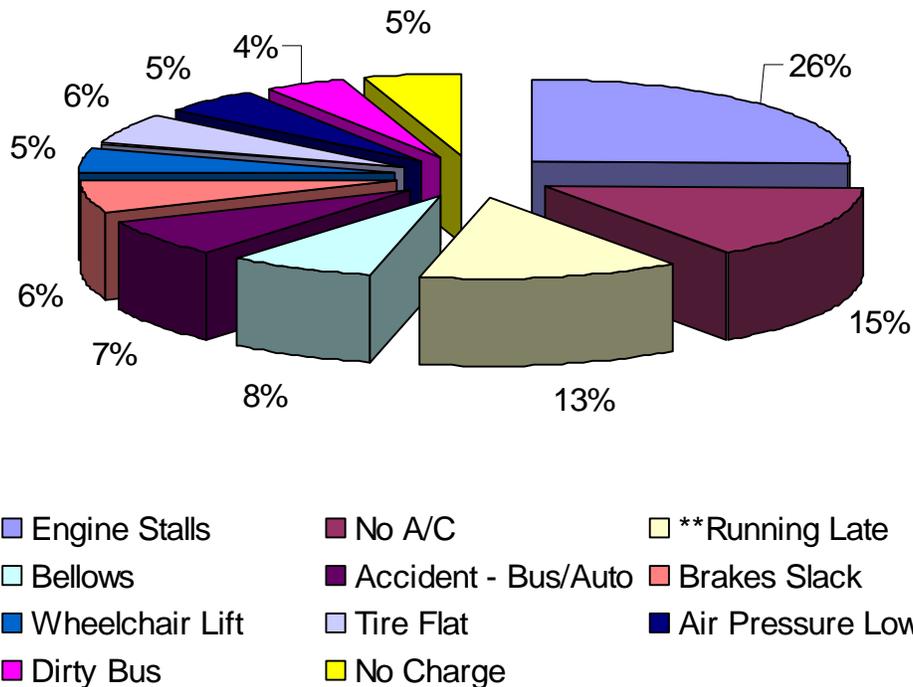


Figure 2-8: FY 2003 Service Interruption Road Calls

Table 2-11: Service Interruption Road Calls Resulting from Failures

Failure Symptom	97	98	99	00	01	02	03	Total FY01-03	Average FY01-03	Ranking FY 01-03 Failures Only
Engine Stalls	2,126	2,141	2,164	2,232	2,257	2,421	2,703	7,381	2,460	1
No A/C	1,920	1,672	2,226	2,023	1,945	1,556	1,561	5,062	1,687	2
Bellows	578	572	762	841	912	897	796	2,605	868	3
Brakes Slack	454	467	645	719	733	742	666	2,141	714	4
Wheelchair Lift	323	371	380	490	644	671	522	1,837	612	5
Air Pressure Low	643	531	508	471	448	549	525	1,522	507	6
No Charge	415	317	438	497	349	466	519	1,334	445	7
Total	6,459	6,071	7,123	7,273	7,288	7,302	7,292			

Road call is a mechanical revenue service interruption of 5 minutes or more

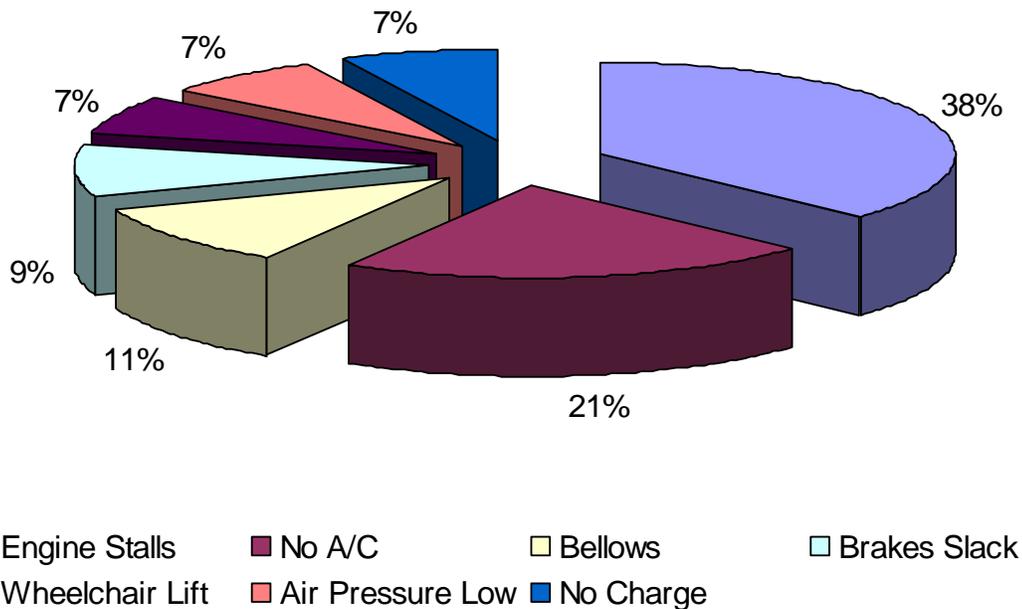


Figure 2-9: FY 2003 Service Interruption Road Calls Resulting from Failures

Environmental Conditions Affecting the Spare Factor

The following environmental impacts criteria have been analyzed, and it appears they have no significant impact in the Operating Spare Ratio (OSR):

- a) Socioeconomic and land use
- b) Displacements and relocations
- c) Neighborhoods and community facilities
- d) Visual and aesthetics
- e) Air quality
- f) Noise and vibration
- g) Wildlife and habitat
- h) Wetlands
- i) Flood plain
- j) Coastal zone
- k) Water quality-surface water and groundwater
- l) Farmland
- m) Energy
- n) Cultural resources: archeological and historical sites, and parklands
- o) Contamination
- p) Environmental justice
- q) Construction

The OSR, therefore, is not adjusted to account for exceptional environmental hazards.

The main issues regarding environmental conditions that do affect the OSR in Miami are:

- 1) Bus system is at grade
- 2) Buses are stored in open air lots
- 3) Buses traverse parts of Miami-Dade County that are, for the most part, within the 100 – and/or 500-year flood plain
- 4) Possible environmental hazards include:
 - a. On a regular, seasonal basis: flooding; wind-driven rain; sun exposure (ultraviolet rays) impact on vehicle appearance and direct hits by lightning on buses and equipment;
 - b. On an irregular, seasonal basis: area is subject to direct and/or indirect effects of tropical storms, including category 1-5 hurricanes (during the wet season, i.e., June 1 until November 30); and very infrequently, tornadoes can occur
 - c. Potential contaminated water runoff at the maintenance facilities

Based on recent history, it appears the only significant serious danger is in areas where major portions of the fleet are located sustain a direct hit by a tornado or a major category hurricane. The last and only (major) hurricane experienced in the area in the

last 20 years was Hurricane Andrew, in August 1992. This was a Category 4 storm whose center passed through the southern part of the County, and some 20 miles from the nearest O&I facility. Should a similar storm pass closer to (or over) one of the O&I's parking lot and shop area, some damage can be expected to the bus fleet.

Since these are unpredictable natural occurrences, a "hurricane preparedness" plan has been developed to help mitigate the possible damage done by a storm's direct hit. This plan is revised and re-issued annually prior to the hurricane season.

Covered and protected areas of the bus maintenance buildings vary by location.

The Operating Spare Ratio

FTA defines the Operating Spare Ratio (OSR) as follows:

$$\text{Operating Spare Ratio} = \frac{\text{Total Fleet} - \text{Peak Vehicles Required (PVR)}}{\text{Peak Vehicles Required (PVR)}}$$

MDT chooses to use the OSR as an indicator of proper available fleet utilization. For FY 2003 and FY 2004, the MDT OSR, as defined by FTA, equals 20% and 18%, respectively, as indicated by the following calculations:

FY 2003: JP Update from BMC

Total Fleet	=	760
PVR	=	632
Operating Spare Ratio	=	$((760 - 632) / 632) = 20.3\%$

FY 2004:

Total Fleet	=	830
PVR	=	692
Operating Spare Ratio	=	$((830 - 692) / 692) = 18.5\%$

Revenue vehicle supply and demand for FY 1997 through FY 2007 for the 40-foot and 60-foot bus fleet are reflected in Table 2-12. Revenue vehicle supply and demand for FY 1997 through FY 2007 for the 32-foot and under fleet are outlined in Table 2-13.

**Table 2-12: Vehicle Demand and Supply Balance
40-foot and 60-foot Bus Fleet**

Category	40-foot and 60-foot Bus Fleet										
	FY97	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07
Peak Vehicle Requirement (PVR)	477	479	479	485	486	486	526	539	606	643	651
Maintenance Requirement											
General Maintenance	25	30	35	36	36	36	40	40	48	48	49
Campaigns	3	3	6	6	6	6	6	6	4	2	2
Paint & Body	10	12	12	12	12	12	13	15	18	19	20
Component Replacement/Rebuild	7	7	6	8	8	8	8	8	9	10	10
Vendor Repairs	3	3	4	4	4	4	5	5	6	6	7
No Parts Available							5	5	6	6	7
Total Scheduled Maintenance	48	55	63	66	66	66	77	79	91	91	95
Unscheduled Maintenance	65	46	33	33	32	32	29	28	31	38	35
Total Maintenance Requirement	113	101	96	99	98	98	106	107	122	129	130
Active Fleet	590	580	575	584	584	584	632	646	728	772	781
Operating Spare Ratio	24%	21%	20%	20%	20%	20%	20%	20%	20%	20%	20%

**Table 2-13: Vehicle Demand and Supply Balance
"32' and Under" Bus Fleet**

Category	32' and under Bus Fleet				
	FY03	FY04	FY05	FY06	FY07
Peak Vehicle Requirement (PVR)	106	153	151	277	348
Maintenance Requirement					
General Maintenance	8	11	11	21	29
Campaigns	0	2	2	0	0
Paint & Body	3	4	5	7	10
Component Replacement/Rebuild	2	2	2	4	6
Vendor Repairs	1	2	2	3	4
No Parts Available	2	2	2	3	4
Total Scheduled Maintenance	16	23	24	38	53
Unscheduled Maintenance	6	8	7	17	24
Total Maintenance Requirement	22	31	31	55	77
Active Fleet	128	184	182	332	463
Operating Spare Ratio	21%	20%	21%	20%	33%

Definitions of Terms

General Maintenance

Preventive Maintenance
Inspections (PMI),
Inspection Defects,
A/C Inspection Program,
Brakes, engines,
transmissions, etc.

No Parts Available

Parts not in stock and
unavailable for the repair

Unscheduled Maintenance

Road Calls,
Operator Reports,
Radio Shop,
Farebox

Peak Vehicle Requirement (PVR)

Total buses required
to operate scheduled
service

Paint & Body

Body Damage Repairs,
Decals,
Paint Rehab Program

Active Fleet

Buses available for
revenue service and
maintenance shops

Operating Spare Ratio (OSR)

$(\text{Total Active Fleet} - \text{PVR}) / \text{PVR}$

Component-Replacement/Rebuild

Major engine and
Transmission
replacement/rebuild

Campaigns

Original Equipment
Manufacturer (OEM) and
MDT modifications
to improve reliability

Vendor Repairs

Repairs made by
OEM Authorized Service
Center

Special Events

Additional service is provided by using extra buses and/or extending service hours to transport customers to and from special events. Special events include:

- Marlins Baseball Games
- Dolphins Football Games
- UM Football Games
- Black History Tours
- County Sponsored Events
- Hispanic History Tours
- COMTO Conferences
- Labor Union Sponsored Events
- APTA Conferences
- Hurricane Evacuations
- Funerals
- Family Reunions
- County Commissioner Events
- County Picnic

The Effect of Maintenance Policy on the Spares Ratio

Summary of Maintenance Requirements

Spare Vehicles

Spare vehicles are revenue vehicles required by Miami-Dade Transit to accommodate routine and heavy maintenance requirements, unexpected vehicle breakdowns, accidents, and so forth, while maintaining planned schedules.

Peak Vehicle Requirement

The Peak Vehicle Requirement (PVR), for purposes of the spare ratio calculation, is referred to in FTA circulars as “vehicles operated in maximum service” and defined by FTA as “the total number of revenue vehicles operated to meet the annual maximum service requirement.” The PVR varies and is based on the level of service being provided on weekdays or weekends. The level of service is determined by ridership and demand patterns.

Past Experience

Over the past two (2) years, we have determined that adequate spare ratio was necessary to ensure the PVR is met daily. If not for the fact that MDT had an adequate fleet spare ratio, service quality would have deteriorated.

Current Spares Requirements

To maintain the current level of performance in the maintenance shop, approximately 108 - 40-foot/60-foot and 30 – 32-foot and under vehicles are held out of service for scheduled and unscheduled repairs. Maintenance demand is identified in Table 2-12 and Table 2-13.

An overview of Miami-Dade Transit bus maintenance facilities is provided in Table 2-14.

Table 2-14: Bus Maintenance Facilities

<i>Maintenance Facility</i>	<i>Location</i>	<i>Year Opened</i>	<i>Function</i>	<i>Assigned Buses</i>		<i>Full-size Equivalent Capacity</i>	<i>Expansion Potential</i>
				<i>Full-size</i>	<i>Minibus</i>		
Northeast O&I Facility 360 NE 185 Street Miami, Florida 33179	Northeast Dade County	1985	PM Inspections and Repairs, Body Shop	200	28	250	Limited
Central O&I Facility 3411 NW 31 Street Miami, Florida 33142	Central Dade County	1969 ¹	PM Inspections and Repairs	197	41	237	Limited
Coral Way O&I Facility 2775 SW 74 Avenue Miami, Florida 33155	Southern Dade County	1981	PM Inspections and Repairs, Body Shop	193	57	265	None
Support Services Metrobus Major Overhaul Building 3295 NW 31 Street Miami, Florida 33142	Central Dade County	1969 ²	Power Plant Replacements, Component Rebuild, Body Shop, A/C Shop	0	0	0	None
Medley O&I Facility 8141 NW 80 Street Miami, Florida 33166	Northwest Dade County	2004 ³	PM Inspections and Repairs	43	56		Limited

¹New building in 1982
²Expanded in 1982
³Operated by Penske pursuant to contract with MDT
Assignments as of August 2004

Metrobus Fleet Allocation

Vehicles are distributed among the four Operating and Inspection Divisions as reflected in Table 2-15:

**Table 2-15: Sample Bus Fleet Allocation
As of the July 18, 2004 lineup**

Northeast Division						
Year	Bus Types	Quantity	Engine	Transmission	A/C	Wheelchair
1992	FLXIBLE 9200 SERIES	1	Detroit 6V92	ZF	Sutrak	1
1992	FLXIBLE 9200 SERIES	2	Cummins M-11	Voith	Thermoking	2
1992	FLXIBLE 9200 SERIES	4	Cummins L-10	ZF	Sutrak	4
1993	FLXIBLE 9300 SERIES	15	Detroit Series 50	Voith	Thermoking	15
1993	FLXIBLE 9300 SERIES	18	Cummins ISC-Series	Voith	Thermoking	18
1994	FLXIBLE 9400 SERIES	25	Detroit Series 50	Voith	Thermoking	25
1994	FLXIBLE 9400 SERIES	5	Cummins M-11	Voith	Thermoking	5
1997	NABI 9700 SERIES	13	Detroit Series 50	Allison	Thermoking	13
1999	NABI 9900 SERIES (Low Floor)	31	Detroit Series 50	Allison	Thermoking	31
2000	NABI 2000 SERIES (Low Floor)	14	Detroit Series 50	Allison	Thermoking	14
2002	NABI 2002 SERIES (Low Floor)	44	Detroit Series 50	Allison	Thermoking	44
2003	NABI 2003 SERIES (Low Floor)	38	Detroit Series 50	Allison	Thermoking	38
	Subtotal Full-size	210		Average Age 6.49 years		210
2002	Blue Bird"02"	16	Cummins ISB	Allison AT 545	Rifled Air	16
2003	Optare 2003	12	Cummins ISB-02	Allison 2000	Thermoking	12
	Subtotal Minibus	28		Average Age 2.57 years		28
	Total Fleet	238		Average Age 6.03 years		238

Coral Way Division						
Year	Bus Types	Quantity	Engine	Transmission	A/C	Wheelchair
1993	FLXIBLE 9300 SERIES	24	Cummins IS C-Series	Voith	Thermoking	24
1994	IKARUS 4000 SERIES	24	Cummins M-11	ZF	Sutrak	24
1994	IKARUS 4000 SERIES	1	Detroit Series 50	ZF	Sutrak	1
1997	NABI 9700 SERIES	19	Detroit Series 50	Allison	Thermoking	19
1999	NABI 9900 SERIES (Low Floor)	32	Detroit Series 50	Allison	Thermoking	32
2000	NABI 2000 SERIES (Low Floor)	30	Detroit Series 50	Allison	Thermoking	30
2002	NABI 2002 SERIES (Low Floor)	36	Detroit Series 50	Allison	Thermoking	36
2003	NABI 2003 SERIES (Low Floor)	27	Detroit Series 50	Allison	Thermoking	27
	Subtotal Full-size	193		Average Age 6.09 years		193
2002	Blue Bird"02"	15	Cummins ISB	Allison AT 545	Rifled Air	15
2003	Optare 2003	15	Cummins ISB	Allison 2000	Thermoking	15
2003	Optare 2003	27	Cummins ISB-02	Allison 2000	Thermoking	27
	Subtotal Minibus	57		Average Age 2.26 years		57
	Total Fleet	250		Average Age 5.22 years		250

Central Division						
Year	Bus Types	Quantity	Engine	Transmission	A/C	Wheelchair
1993	FLXIBLE 9300 SERIES	15	Cummins IS C-Series	Voith	Thermoking	15
1994	IKARUS 4000 SERIES	15	Cummins M-11	ZF	Sutrak	15
1995	IKARUS 5000 SERIES	26	Cummins M-11	ZF	Sutrak	26
1997	NABI 9700 SERIES	18	Detroit Series 50	Allison	Thermoking	18
1999	NABI 9900 SERIES (Low Floor)	30	Detroit Series 50	Allison	Thermoking	30
2000	NABI 2000 SERIES (Low Floor)	32	Detroit Series 50	Allison	Thermoking	32
2002	NABI 2002 SERIES (Low Floor)	30	Detroit Series 50	Allison	Thermoking	30
2003	NABI 2003 SERIES (Low Floor)	31	Detroit Series 50	Allison	Thermoking	31
	Subtotal Full-size	197		Average Age 6.07 years		197
2001	Blue Bird "01"	15	Cummins ISB	Allison AT 545	Rifled Air	15
2002	Blue Bird"02"	13	Cummins ISB	Allison AT 545	Rifled Air	13
2003	Optare 2003	1	Cummins ISB	Allison 2000	Thermoking	1
2003	Optare 2003	12	Cummins ISB-02	Allison 2000	Thermoking	12
	Subtotal Minibus	41		Average Age 3.05 years		41
	Total Fleet	238		Average Age 5.55 years		238

Sample Bus Fleet Allocation (Continued)

Medley Division						
Year	Bus Types	Quantity	Engine	Transmission	A/C	Wheelchair
1999	NABI 9900 SERIES (Low Floor)	19	Detroit Series 50	Allison	Thermoking	19
2000	NABI 2000 SERIES (Low Floor)	20	Detroit Series 50	Allison	Thermoking	20
2003	NABI 2003 SERIES (Low Floor)	4	Detroit Series 50	Allison	Thermoking	4
Subtotal Full-size		43	Average Age 4.70 years			43
1999	Blue Bird "99"	20	Cummins ISB	Allison AT 545	Rifled Air	20
2001	Blue Bird "01"	36	Cummins ISB	Allison AT 545	Rifled Air	36
Subtotal Minibus		56	Average Age 4.71 years			56
Total Fleet		99	Average Age 4.84 years			99

Summary			
Bus Types	Quantity	Average Age	Damaged Vehicles
Full-size	643	6.12 years	5011 01/27/00
Minibus	182	3.29 years	4037 11/08/02
Total Fleet	825	5.46 years	

Maintenance Manpower Allocation

Available maintenance manpower, as delineated in Table 2-16, is allocated to the various facilities based on their respective needs. The criteria used represent a combination of the number of vehicles assigned and total scheduled miles operated.

Table 2-16: Metrobus Maintenance Manpower Allocation

Employee Classification	Total	Total Available	Central Division	Northeast Division	Coral Way Division	Medley¹ Division	Support Services	Bus
								Maintenance Control
Bus Technician	227	184	47	46	47	17	27	0
Bus Tech Trainees	22	21	4	7	5	2	3	0
Bus Tech Appentice	40	40	10	10	11	4	5	0
Bust Hostler	91	71	19	19	23	9	1	0
Bus General Helper	38	36	8	10	9	4	5	0
Bus Body Tech	40	39	1	9	12	1	16	0
Bus Main Clerks	16	14	4	3	4	1	1	1

¹ Medley Division is operated by Penske under a contract with MDT

SECTION III: THE SUPPLY OF REVENUE VEHICLES

This section of the Metrobus Fleet Management Plan addresses the supply of Metrobus revenue vehicles, explains the balance between the demand for vehicles and the supply of vehicles, and summarizes the maintenance plan.

Planned Bus Procurements

Plans are in place at this time to replace older existing vehicles and add vehicles to the fleet to improve service and reliability as indicated in Table 3-1.

Table 3-1: Projected MDT Bus Fleet Replacement Plan

Model	Bus Type	Funding Source	Lift Equipped	1999	2000	2001	2002 ¹	2003	2004	2005	2006	2007
1987	FLX	FTA		73	45	20	0					
1988	FLX	FTA		63	63	31	0					
1990	FLX	FTA	L/E	93	93	93	84	0	0			
1992	FLX	FTA	ADA	15	15	15	15	15	0			
1993	FLX	FTA	ADA	73	73	73	73	73	63	2	0	0
1994	FLX-40'	FTA	ADA	30	30	30	30	30	30	30	0	0
1994	ARTICULATED	FTA	ADA	40	40	40	40	40	40	20	0	0
1995	ARTICULATED	FTA	ADA	26	26	26	26	26	26	26	26	0
1996	30 FT	FTA	ADA	3	3	0	0	0	0	0	0	0
1997	30 FT	FTA	ADA	22	22	10	0	0	0	0	0	0
1998	NABI 40'	FTA	ADA	50	50	50	50	50	50	50	50	50
1998	NABI LF	FTA	ADA	19	19	19	19	19	19	19	19	19
1999	NABI LF	FTA	ADA	93	93	93	93	93	93	93	93	93
1999	30 FT	FTA	ADA	20	20	20	20	20	20	20	20	20
2000	30 FT	FTA	ADA			70	70	70	70	70	70	70
2000	LF	FTA	ADA		35	96	96	96	96	96	96	96
2001	30 FT	FTA	ADA				28	28	28	28	28	28
2002	LF	FTA	ADA				110	110	110	110	110	110
2003	LF (NEW)	PTP	ADA					100	100	100	100	100
2003	30 FT	PTP	ADA					10	10	10	10	10
2003	30 FT	PTP	ADA						60	60	60	60
2004	LF	FTA/FDOT/PTP	ADA						110	110	110	110
2004	30 FT	FTA/PTP	ADA						0	0	0	0
2005	LF	FTA/PTP	ADA						0	70	70	70
2005	30 FT	fta/ptp	ADA							120	120	120
2005	Over-the-road Coach	FTA/FDOT	ADA							8	8	8
2006	30 FT	fta/ptp	ADA								62	62
2006	ARTICULATED	fta/ptp	ADA							0	20	20
2006	LF	fta/ptp	ADA								75	75
2007	30 FT	fta/ptp	ADA									100
2007	ARTICULATED	fta/ptp	ADA								0	26
2007	LF	fta/ptp	ADA									12

¹ Beginning in 2002, figures include contingency buses for the PTP

The active fleet at the end of each calendar year, projected through FY 2007, is identified in Table 3-2.

Table 3-2: Active Fleet at End of Calendar Year

Active Fleet		1999	2000	2001	2002	2003	2004	2005	2006	2007
BUSES										
Total	Buses	620	627	686	680	780	925	982	1087	1199
Peak	Buses	516	522	571	564	640	769	866	955	999
Spare	Ratio	20%	20%	20%	20%	22%	20%	13%	14%	20%
BUSES 40'										
Total	Buses	575	582	586	586	652	737	726	769	781
Conting	Buses				50					
Peak	Buses	479	485	488	488	533	612	648	684	650
Spare	Ratio	20%	20%	20%	20%	22%	20%	12%	12%	20%
BUSES 30'										
Total	Buses	45	45	100	92	128	188	248	310	410
Conting	Buses				26					
Peak	Buses	37	37	83	76	107	157	212	265	343
Spare	Ratio	22%	22%	20%	21%	20%	20%	17%	17%	20%
VANS										
Total					2					
Peak					1					
Spare					50%					
OVER-THE-ROAD COACHES										
Total	Buses							8	8	8
Peak	Buses							6	6	6
Spare	Ratio							33%	33%	33%

Bus Funding Plan

The bus funding plan from FY 1995 through FY 2003 is presented in Table 3-3.

**Table 3-3: Actual Bus Funding Plan
FY 1995-FY 2003**

	FY 1995	FY 1996	FY 1997	FY 1998	ACTUAL FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
GRANT PROGRAM									
NUMBER									
40 Foot	25	39	0	0	0	0	0	0	0
Low Floor	0	0	0	19	51	42	96	110	160
Small buses	25	1	20	0	20	20	70	15	70
Over-the-road	0	0	0	0	0	0	0	0	0
Total	50	40	20	19	71	62	166	125	230
REPLACEMENT PLAN									
NUMBER									
40 Foot	0	0	0	50	0	0	0	0	0
Low Floor	0	0	0	19	51	42	96	110	160
Small buses	0	0	46	0	20	20	70	15	70
Over-the-road	0	0	0	0	0	0	0	0	0
Total	0	0	46	69	71	62	166	125	230
SOURCE									
LOGT	\$0	\$0	\$0	\$210,000	\$0	\$2,200,000	\$0	\$0	\$0
Leverage lease							\$0	\$0	
Formula Funding – Buses	\$8,046,000	\$60,000	\$1,080,000	\$4,534,900	\$6,800,000	\$11,371,000	\$2,404,000	\$2,251,610	\$0
Formula Funding – RTS Overhaul*	\$0	\$0	\$312,000	\$0	\$0	\$0	\$0	\$0	\$0
FDOT Funding								\$0	\$0
Cash PTP									\$12,773,738
Financing							\$33,062,000	\$26,300,000	\$48,376,262
Discretionary – Buses	\$0	\$9,132,696	\$4,962,500	\$4,885,981	\$2,250,000	\$2,729,421	\$3,600,000	\$3,432,944	\$4,500,000
Total	\$8,046,000	\$9,192,696	\$6,354,500	\$9,630,881	\$9,050,000	\$16,300,421	\$39,066,000	\$31,984,554	\$65,650,000
REQUIREMENTS									
40 Foot (NABI)	0	0	0	50	0	0	0	0	0
40 Foot (Low Floor)	0	0	0	19	51	42	96	110	160
Articulated	0	0	0	0	0	0	0	0	0
Small buses	0	0	46	0	20	30	70	15	70
Over-the-road	0	0	0	0	0	0	0	0	0
Total	0	0	46	69	71	72	166	125	230
RTS Overhaul	\$0	\$528,000	\$1,500,000	\$0	\$0	\$0	\$0	\$0	\$0
Small Buses @ \$123,000 FY98&99	\$1,415,000	\$60,000	\$1,080,000	\$0	\$2,460,000	\$2,867,380	\$10,035,830	\$2,164,110	
Small Buses Optara \$265,000									\$18,550,000
40 Foot (NABI) @ \$268,831	\$0	\$0	\$0	\$13,441,550	\$0	\$0	\$0	\$0	\$0
Contingency	\$0	\$0	\$223,600	\$280,000	\$230,000	\$300,000	\$110,000	\$450,000	\$700,000
40 Foot (Low Floor)**	\$0	\$0	\$0	\$5,510,000	\$14,790,000	\$12,644,142	\$27,685,440	\$31,350,000	\$46,400,000
Original inventory acquisition	\$0	\$0	\$0	\$500,000	\$0	\$0	\$0	\$0	\$0
Over-the-road	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$1,415,000	\$588,000	\$2,803,600	\$19,731,550	\$17,480,000	\$15,811,522	\$37,831,270	\$33,964,110	\$65,650,000
BALANCE FOR REPROGRAMMING	\$6,631,000	\$8,604,696	\$3,550,900	(\$10,100,669)	(\$8,430,000)	\$488,899	\$1,234,730	\$0	\$0
CUMULATIVE BALANCE	\$6,631,000	\$15,235,696	\$18,786,596	\$8,685,927	\$255,927	\$744,826	\$1,979,556	\$0	\$0

* RTS Overhauls included in Bus Related category

** Assumes buses will cost an average of \$290,000 per unit through 1999 and increase to \$305,000 in 2000. Includes camera and voice enunciator

During FY 2004, Miami-Dade County commissioned an update of the financial capacity analysis by Miami-Dade Transit's financial advisers with the input of staff from the

County's Transit Department, Finance Department, the Office of Strategic Business Management and the Office of the Mayor. At the suggestion of the CITT, ten additional years were added to the 20-year financial plan for a total of 30 years, 2004-2033.

The updated financial capacity analysis included all of the PTP projects and took into account a variety of changes such as wage adjustments in the current collective bargaining contracts, employee retirement and health insurance costs, fare-box recovery rates, ridership on newly implemented routes, sales tax revenues, an expanded Golden Passport Program, and federally-proposed limits on funding participation. The County anticipates that expected revenues will be sufficient to cover expected expenses for delivering existing and enhanced transit services during the 30 years of the forecast.

Expenditure assumptions and projections derived from the financial capacity analysis are presented in Tables 3-4 through 3-8:

**Table 3-4: Bus Service Implementation Schedule
Annual Increase in Bus Service**

Base Vehicle Miles FY 2002 = 26,340,650				
Fiscal Year	Revenue Miles	Revenue Hours	Peak Vehicle Requirement	
2003	4,585,865	359,865	71	
2004	2,163,180	174,104	54	
2005	3,332,971	261,710	87	
2006	3,572,806	262,974	96	
2007	3,455,491	263,151	110	
Total Incremental Increase¹	12,524,448	961,939	347	
Cumulative Total Miles	43,450,963			

¹ New service implemented at some point during the year; full year's impact is felt the following year

**Table 3-5: Incremental Bus Costs
FY 2004 Budget Allocation**

	Vehicle Hours	Vehicle Miles	Vehicle Days
Base Service Levels:	2,520,822	32,117,032	209,406
<u>Cost Categories</u>			
Labor	\$92,389,500	\$24,581,828	\$5,034,832
Services	\$0	\$5,416,795	\$3,301,061
Materials	\$0	\$8,204,400	\$362,926
Utilities	\$0	\$9,523,932	\$0
Insurance	\$0	\$2,249,100	\$207,360
Taxes	\$0	\$805,300	\$0
<u>Other</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>
TOTAL	\$92,389,500	\$50,781,355	\$8,906,179
Results: Incremental Cost Factors			
Cost Per Vehicle Hour	\$36.65		
Cost Per Vehicle Mile	\$1.58		
Cost Per Peak Vehicle Day	\$42.53		

**Table 3-6: New Bus Service
Bus Purchase Requirements**

Fiscal Year	Additional Bus Service Requirements		"Net" Purchasing Requirements	
	Large Bus	Small Bus	Large Bus	Small Bus
2004	29	36	0	0
2005	38	66	15	42
2006	55	60	55	60
2007	11	133	11	133
TOTAL	133	295	81	235

Table 3-7: Bus Purchase Costs

	40-ft Buses	30-ft Buses
Cost per bus to year 2005	\$285,000	\$165,000
Cost per bus from 06 to 10	\$293,550	\$169,950
Cost per bus from 11 to 15	\$302,357	\$175,049
Cost per bus from 16 to 20	\$311,427	\$180,330
Cost per bus from 21 to 23	\$320,770	\$185,709

Moving forward, bus acquisition is assumed to be funded using a combination of federal funds, state funds, and bus financing proceeds, which include a combination of bond proceeds and/or a lease program. The term of the lease program financing is assumed to be 12 years, associated with the average life of a bus and is structured as level payments. No debt service reserve fund is assumed with the lease structure nor are there other costs included (e.g., underwriter's discount) that are general part of a bond transaction. Total costs of new and replacement buses are detailed in Table 3-8; bus capital funding sources are detailed in Table 3-9.

**Table 3-8: Total Costs
New Bus Purchase and Bus Replacement Purchase**

<i>Fiscal Year</i>	<i>Total Costs</i>	
	<i>New Purchase</i>	<i>Bus Replacement</i>
2004-2007	\$93,154,650	
2004-2013		\$155,565,602
2014-2023		\$290,019,177
20-Year Total		\$445,584,779

Table 3-9: Bus Capital Funding Sources

<i>Bus Capital Funding Sources</i>	<i>2004-2013</i>	<i>2014-2023</i>	<i>20-Year Total</i>
Federal 5309 Bus Funds	\$36,150,108	\$44,626,497	\$80,776,605
Federal 5307 Grant Funds	\$14,000,000	\$16,000,000	\$30,000,000
State Funds	\$6,660,000		\$6,660,000
Bus Financing Proceeds	\$191,910,144	\$229,392,680	\$421,302,824
TOTAL	\$248,720,252	\$290,019,177	\$538,739,429

Adjustment to Vehicle Supply

Accident Damaged Vehicles

Metrobus has two (2) damaged vehicles:

Extensive Fire Damage: Bus 5011 – 01/27/2000
Extensive Damage: Bus 4037 – 11/08/2002

Stored/Rotation Vehicles

At the present time, Metrobus has six (6) small buses in storage and/or rotation status.

Adjustment to Vehicle Demand

With the adoption of the People's Transportation Plan, an ambitious sequence of bus service improvements and system expansion is programmed for Miami-Dade County. Through new routes and system expansions, the system service hours, route miles, and bus fleet are planned to increase dramatically. MDT has undertaken a Comprehensive Bus Operational Analysis (CBOA) to obtain planning information and baseline data from which planned PTP improvements can be fine tuned, new improvements can be determined, and implemented improvements can be monitored for their utilization.

Updated system information is critical to the success of the PTP, if service enhancements are to both meet community needs and provide increased system efficiency. In addition to providing much needed data for ongoing system and operations planning for MDT, the CBOA, through coordination of the route-level analyses and recommendations for service improvement, will include various recommendations for increasing system efficiency and improving service quality to the County's transit customers. It is anticipated that vehicle demand could be impacted as a result of the comprehensive analysis.

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APPENDIX A: Multimodal Transit Section

Transportation Improvement Program 2005

DRAFT



FY 2005-2009 TRANSPORTATION IMPROVEMENT PROGRAM
Multimodal Transit Improvements



MIAMI-DADE TRANSIT

Miami-Dade Transit (MDT) is one of the 16 largest public transit systems in the country and the largest public transit agency in Florida. MDT is responsible for marketing and providing all public transit services in Miami-Dade County. MDT provides Metrobus service with almost 100 routes, a 22-mile elevated Metrorail system, and a 4.4-mile elevated people mover system, and Medicaid Transportation and Special Transportation Services (STS). During FY 2005 the County will continue to expand park and ride lot facilities, develop several transportation corridors, maintain and improve public transportation facilities and equipment, and implement service improvements in accordance with the People's Transportation Plan (PTP).

Through the use of Federal, State, and local funding sources, all of Miami-Dade Transit's capital projects to include fixed guideway expansion and operational expenses are funded. On November 5, 2002, the voters of Miami-Dade County approved a one-half percent sales tax increase to be used exclusively for improving transportation in the County and the creation of a Citizen's Independent Transportation Trust (CITT) to provide oversight in the implementation of the PTP.

Miami-Dade County continues to use State Toll Revenue Credits, in addition to Capital Improvement Local Option Gas Tax funds as the required local match for federal formula and discretionary funding. The County also receives State Public Transit Block Grant funds, which are used exclusively for ongoing transit operations.

Miami-Dade County's five year program of service and capital improvements for the County's public transportation system is described in the pages that follow. This program encompasses the best estimates of local transit capital needs, with the greatest detail focused on the first two years.

SPECIFIC ASPECTS OF THE PROGRAM

The FY 2005 Transportation Improvement Program includes funding over the next five years for the following projects:

South Miami-Dade Busway Extension:

The South Miami-Dade Busway extension is under construction using Federal discretionary and State funds. The Busway extension will stretch over 11 miles south of the existing 8.2-mile Busway, terminating in Florida City. The project is scheduled for completion in August 2005.

Multimodal Transit Improvements

Urban Corridor Development:

State Transit Corridor Program funds will be used for the continuation of several successful South Miami-Dade Busway routes as well as the Flagler MAX route.

ROUTINE REPLACEMENT AND ENHANCEMENT

ADA:

Projects which promote compliance with the Americans with Disabilities Act (ADA) requirements are continued in FY 05. Funds are programmed in the five year plan to assess and modify all bus stops and to provide amenities for disabled passengers such as voice annunciators on Metrobus and Metrorail as well as signage upgrades.

Buses:

In FY 03 MDT received one hundred (100) 40' low floor buses and seventy (70) 30' buses as part of the People's Transportation Plan (PTP) bus fleet expansion program. For FY 04 MDT ordered one hundred ten (110) 40' low floor buses as part of MDT's bus replacement program.

Safety:

Funding is programmed to purchase security equipment, upgrade and complete CCTV installations on the bus fleet and replace fire detection and reporting systems.

Facilities:

Funding is programmed for the renovation of bus facilities to include replacement of bus washers, roofs, lifts at garages, and improvement of safety conditions.

Passenger Facilities:

Park and ride lots, which include acquisition and construction of new facilities as well as modifications to existing sites, are programmed with State and local funds. Funding is also included for the installation of protective canopies at Metrorail station bus stops and over outdoor escalators.

Multimodal Transit Improvements

ONGOING PROJECTS

***North Corridor:**

The North Corridor is a 9.5-mile, seven (7) station, heavy rail project with its northernmost terminus located at NW 215 Street (County Line Road) and NW 27th Avenue, its southernmost terminus will be located at the current Dr. Martin Luther King, Jr. Metrorail Station. The seven (7) proposed Metrorail stations are expected to be located at the Northside Shopping Center, City of Opa-Locka, Miami-Dade Community College/North Campus, Palmetto Expressway (SR 826), Carol City Shopping Center (N.W. 183 St.), Pro Player Stadium (N.W. 199 St.), and the Homestead Extension of Florida's Turnpike (HEFT). There is provision for a future station at the intersection of NW 103rd Street and NW 27th Avenue.

***MIC Extension to Earlington Heights:**

The MIC/Earlington Heights extension is a 2.3 mile heavy rail extension that will extend from the Miami Intermodal Center (MIC) to the existing Earlington Heights Metrorail Station. The project includes a station at the MIC. The MIC will serve as a central transfer point for Metrorail, Metrobus, Tri-Rail, Amtrak and charter services; it will also consolidate rental car agencies into one facility. Funding will enable further advancement of this project to coordinate with the completion of the MIC-Miami International Airport (MIA) Connector-People Mover Project, a 2008 completion is expected. The MIC-MIA Connector-People Mover will allow MIA to link with the MDT's Metrorail system.

***East-West Corridor:**

This 15-mile project starts at the Florida Turnpike and proceeds eastward along the length of SR 836, connecting to the MIC, and then continuing to downtown Miami. The proposed line connects some of the regions most important economic generators, including stops at downtown Miami, Port of Miami, NW 27 Avenue, the Orange Bowl, Blue Lagoon Corporate Park, Palmetto Expressway, the vicinity of FIU/Turnpike; as well as provides for direct transfers at the MIC, with Tri-Rail, Amtrak, Metrorail, and Metrobus.

***Kendall Corridor:**

The Kendall Corridor is approximately 15-miles long, with both east-west and north-south segments. The Kendall segment, from SW 157th Avenue to the southern terminus of Phase I Metrorail (Dadeland area) is centered along North Kendall Drive (SW 88 Street). The proposed north-south rail line connects Dadeland to the East-West Corridor. This project needs to complete the federal, state and

Multimodal Transit Improvements

local planning processes to determine feasibility, technology, and exact corridor alignment. The Metropolitan Planning Organization (MPO) selected the Locally Preferred Alternative (LPA) in 2000.

***Northeast Corridor:**

A 13.6-mile corridor from downtown Miami, through Little Haiti, the cities of El Portal, North Miami, North Miami Beach, Aventura to NE 215th Street, generally along the Biscayne Blvd./U.S. 1 Corridor and Florida East Coast railroad right-of-way connecting to SE Broward County. This project needs to complete the federal, state and local planning processes to determine feasibility, technology, and exact corridor alignment.

***South Dade Corridor:**

This proposed segment along U.S. 1 from the Dadeland South Metrorail Station to Florida City is a 21-mile extension connecting Metrorail to Florida City. This extension needs to complete the federal, state and local planning processes to determine feasibility, technology, and exact corridor alignment.

OTHER CAPITAL PROJECTS

Other capital projects programmed during the covered five year period include the following: an intermodal center located at NW 7th Avenue and NW 62nd Street; the design and construction of a new bus garage; rail and mover vehicle midlife rehabilitation; farebox and faregate rehabilitation and replacements; fare media dispensing equipment; bill changers and other miscellaneous equipment; upgrading of the existing Central Control facility using fiber optics technology; purchasing and replacing radios; maintaining AVL/AVM radio system; replacing bus washers and vacuums at all bus garages; continuing Metrobus, Metrorail, and Metromover vehicle preventive maintenance activities; and refurbishing Metrorail and Metromover maintenance facilities. ADA related projects include renovating Metrorail and Metromover stations, constructing passenger landing pads, and installing voice annunciators on buses

UNFUNDED PROJECTS

All of Miami-Dade Transit's projects are funded for the five year period of this Transportation Improvement Program.*

* FDOT funding is dependent upon the MPO requesting that the Department reprogram projects currently in the tentative work program or the County getting a special State or Federal appropriation adding funding to the work program.

APPENDIX B: Road Call Reference Guide

August 2003 & “Draft” August 2004 UPDATE

DRAFT



ROADCALL REFERENCE GUIDE

**EFFECTIVE
AUGUST 4, 2003**

Concur:

Date

Melissa Rolle-Scott, Acting Chief
Bus Maintenance Control

Date

Derrick Gordon, Acting General Supt.
Bus Operations

Date

Guido Valdes, Gen. Superintendent
Bus Maintenance

Date

William Foster, Chief
Human Resources

Approved:

Date

Mayra S. Bustamante, Asst. Director
Administration

Maintenance Roadcall Information for BTC Reference

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Maintenance Roadcall Information for BTC Reference

WON'T MOVE or GO IN GEAR

Bus Type	What to check	What to do	
<u>NABI</u>	1. Is Engine running?	If yes , go to next step.	If no , start engine and confirm resolved.
	2. Is parking brake released?	If yes , go to next step.	If no , release parking brake by pushing park-brake knob; confirm resolved.
	3. Is Transmission in gear?	If yes , go to next step.	If no , put in gear; confirm resolved.
	4. Is Transmission Selector flashing?	If yes , means bus still not in gear. <ul style="list-style-type: none"> • Must reselect neutral, firmly apply brake, wait for fast idle to come down, firmly push drive button while foot still on brake. • Release brake. • Confirm no longer flashing and resolved. 	If no , go to next step.
	5. Will doors cycle (open and close)?	If yes , call service truck. Report symptom MISC (Won't move).	If no , go to "Doors Won't Close" page.
<u>FLXIBLE AND IKARUS</u>	1. Is Engine running?	If yes , go to next step.	If no , start engine and confirm resolved.
	2. Is parking brake released?	If yes , go to next step.	If no , release parking brake by pushing park-brake knob; confirm resolved.
	3. Is fast idle switch on?	If yes , turn off and confirm resolved.	If no , go to next step.
	4. Is Transmission Selector in drive?	If yes , must reset as follows. <ul style="list-style-type: none"> • Put in neutral, depress accelerator a few times, and then put back in drive. • With foot off pedal, let engine go to idle. • If not resolved, go to next step. 	If no , go to next step.
	5. Will doors cycle (open and close)?	If yes , call service truck. Report symptom MISC (Won't move).	If no , go to "Doors Won't Close" page.

Maintenance Roadcall Information for BTC Reference

DOORS WON'T CLOSE

<u>Bus Type</u>	<u>What to check</u>	<u>What to do</u>	
ALL	1. Is Engine running?	If yes , go to next step.	If no , start engine, build pressure at least to 100 psi and confirm resolved.
	2. Is air pressure over 100 (psi)?	If yes , go to next step.	If no <ul style="list-style-type: none"> • Pump brakes until pressure goes below 85 psi. • Put in neutral, run engine for 5 mins. – until pressure returns at least to 100 psi. • If pressure goes above 100 psi, confirm resolved. • If pressure remains below 100 psi, call service truck. Report as symptom AIR1 (Low Air Pressure).
	3. Is there air on doors?	If yes , go to next step.	If no , reposition door dump valve to put air on doors.
	4. Has the door control handle been reinstalled correctly?	If yes , go to next step.	If no , remove handle and reposition, then confirm resolved.
	5. Is either the bus kneeled, or the kneel switch in the “down or lower” position?	If yes , flip kneel switch to the “up or raise” position and confirm resolved. If this does not raise bus, call service truck. Report symptom as KNL1 (Kneeling System).	If no , go to next step (neither kneeled nor switch in “down” position).
	6. Is the “not stowed or no step” light on for the wheelchair lift or ramp?	If yes , must reset: <ul style="list-style-type: none"> • For lift-equipped coaches, cycle the lift. • For ramp-equipped, cycle the ramp (must check for coins or trash in its gutter prior to stowing). • Confirm resolved. • If light remains on and not resolved, call service truck. Report symptom as WCL1 (Wheelchair Lift). 	If no , go to next step.
	7. Is any debris in door area or stepwell?	If yes , remove debris and confirm resolved.	If no , call service truck. Report as symptom DOR2 (Front door) or DOR3 (Rear door).

Maintenance Roadcall Information for BTC Reference

NO INTERLOCK

Clarifying definition

The interlock is a safety device which automatically applies the brakes whenever the vehicle is stopped with the doors open. Most coaches, with the exception of #9067 through #9073, will also have no accelerator function when the interlock is engaged. The interlock is separate from the green exit signal over the rear door.

<u>Bus Type</u>	<u>What to check</u>	<u>What to do</u>	
<u>ALL</u>	1. Will bus roll when <i>doors are open</i> – either the front or rear?	If yes , call for service truck. Report symptom as DOR5 (Door interlock).	If no , confirm resolved.

Maintenance Roadcall Information for BTC Reference

NO PASSENGER SIGNAL

<u>Bus Type</u>	<u>What to check</u>	<u>What to do</u>	
<u>NABI</u>	1. Is chime switch on?	If yes , go to next step.	If no , turn switch on and confirm resolved.
	2. Is "Stop Request" light on?	If yes , pull signal cords several times to reset them and confirm resolved. If not resolved, Service Truck, LIS or RTG as appropriate. Report symptom as ELE4 (Passenger signal).	If no , means chime is inoperative. Service Truck, LIS or RTG as appropriate. Report as ELE4 (Passenger signal).
<u>FLXIBLE AND IKARUS</u>	1. Is chime switch on?	If yes , go to next step.	If no , turn switch on and confirm resolved.
	2. Is "Stop Request" light on?	If yes , means there is a short in tape switch. Service Truck, LIS or RTG as appropriate. Report as ELE4 (Passenger signal).	If no , means chime is inoperative. Service Truck, LIS or RTG as appropriate. Report as ELE4 (Passenger signal).

Maintenance Roadcall Information for BTC Reference

WON'T GO IN GEAR, NO DIRECT DRIVE/SHIFT/POWER/ACCELERATION

WON'T GO IN GEAR:

Refer to "Won't Move" Section on page 73.

NO DIRECT DRIVE:

This term no longer applies to any vehicles in MDT fleet – refer to information below for "No Shift" complaint.

NO SHIFT:

Bus will move but transmission will not change to higher gears at higher mph (in other words, not upshifting). Call service truck, LIS or RTG as appropriate. Report as symptom TRA1 (Trans no shift).

NO POWER:

Have a "slow bus" with or without smoke; some acceleration, however, concerned whether enough. Call service truck, LIS or RTG as appropriate. Report as symptom ENGD (Engine no power).

Report as ENG6 if engine smoke only.

NO ACCELERATION:

Bus will move but with absolutely no acceleration – bus can only reach up to 3 mph, engine only at idle. Call service truck, LIS or RTG as appropriate. For this very rare case, report as symptom FUE1 (Accelerator).

Maintenance Roadcall Information for BTC Reference

BRAKES WON'T RELEASE - NABI

<u>Bus Type</u>	<u>What to check</u>	<u>What to do</u>	
<u>NABI</u>	1. Is Transmission in gear (in drive)?	If yes , go to next step.	If no , put in gear and confirm resolved. If won't go in gear, refer to "Won't move" section on page 73.
	2. Are doors closed?	If yes , go to next step.	If no , close doors and confirm resolved. If won't close, refer to "Doors won't close" section on page 75.
	3. Is parking brake released?	If yes , go to step 5 below.	If no , depress park brake valve again and go to next step.
	4. Will park brake valve stay down?	If yes , go to next step.	If no , reset air pressure. <ul style="list-style-type: none"> • Pump brakes until pressure goes below 85 psi. • Put in Neutral, run engine for 5 mins. – until pressure returns at least to 100 psi. • If pressure goes above 100 psi, confirm resolved. • If pressure will not go over 100 psi, call service truck. Report as symptom AIR1 (Low Air Pressure).
	5. Is the "not stowed or no step" light on for the wheelchair lift or ramp?	If yes , must reset: <ul style="list-style-type: none"> • For lift-equipped coaches, cycle the lift. • For ramp-equipped, cycle the ramp (must check for coins or trash in its gutter prior to stowing). • Confirm resolved. • If light remains on and not resolved, call service truck. Report symptom as WCL1 (Wheelchair Lift). 	If no , call service truck. Report as symptom BRA4 (Brakes Locked).

Maintenance Roadcall Information for BTC Reference

BRAKES WON'T RELEASE – FLXIBLE & IKARUS

Bus Type	What to check	What to do		
<u>FLXIBLE AND IKARUS</u>	1. Is Transmission in gear (in drive)?	If yes , go to next step.	If no , put in gear and confirm resolved. If won't go in gear, refer to "Won't move" section on page 73.	
	2. Are doors closed?	If yes , go to next step.	If no , close doors and confirm resolved. If won't close, refer to "Doors won't close" section on page 75.	
	3. Is parking brake released?	If yes , go to step 5 above.	If no , depress park brake valve again and go to next step.	
	4. Will park brake valve stay down?	If yes , go to next step.	If no , reset air pressure. <ul style="list-style-type: none"> • Pump brakes until pressure goes below 85 psi. • Put in Neutral, run engine for 5 mins. – until pressure returns at least to 100 psi. • If pressure goes above 100 psi, confirm resolved. • If pressure will not go over 100 psi, call service truck. Report as symptom AIR1 (Low Air Pressure). 	
	5. Is fast idle on?	If yes , turn fast idle switch off and confirm resolved. If not resolved, call service truck and report symptom DOR5 (Door interlock).	If no , go to next step.	
	6. Is the "not stowed or no step" light on for the wheelchair ramp?	If yes , must reset: <ul style="list-style-type: none"> • Cycle the ramp (must check for coins or trash in its gutter prior to stowing). • Confirm resolved. • If light remains on and not resolved, call service truck. Report symptom as WCL1 (Wheelchair Lift). 	If no , call service truck. Report as symptom BRA4 (Brakes Locked).	

Maintenance Roadcall Information for BTC Reference

ENGINE STALL OR NO START

ENGINE STALL:

Engine was running and stopped on its own. Call service truck, LIS or RTG as appropriate. Report as symptom ENG2 (Engine stalls).

NO START:

Engine was intentionally turned off and operator is unable to re-start. Follow steps as shown below.

<u>Bus Type</u>	<u>What to check</u>	<u>What to do</u>	
<u>ALL</u>	Is Transmission in neutral?	<p>If yes, cycle master switch (turn off, then turn on again). Firmly press start; confirm resolved.</p> <p>If not resolved, continue as shown below.</p> <ul style="list-style-type: none"> • Turn off master switch (again) <i>and all lights</i>. • Wait 15 minutes. Re-start bus. • If still not resolved, call service truck. Report as ENG1 (Engine no start) 	If no , put in neutral; confirm resolved.

Maintenance Roadcall Information for BTC Reference

NO FLASHERS

<u>Bus Type</u>	<u>What to check</u>	<u>What to do</u>	
<u>ALL</u>	1. Is only one side working or neither?	If one side working , call service truck for end-of-line. Report symptom as LIT2 (Turn Signal).	If neither side working , call service truck. Report symptom as LIT2 (Hazards not working).

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Maintenance Roadcall Information for BTC Reference

NO A/C OR NO CHARGE OR GENERATOR LIGHT

<u>Bus Type</u>	<u>What to check</u>	<u>What to do</u>	
<u>ALL</u>	1. Is A/C switch on?	If yes , cycle switch (turn off, then turn on again) and confirm resolved. If not resolved, go to next step.	If no , turn switch on and confirm resolved. If not resolved, go to next step.
	2. Is switch for operator's fan on?	If yes , go to next step.	If no , turn switch on and confirm resolved. If not resolved, go to next step.
	3. Is heat control off?	If yes , call service truck, LIS or RTG as appropriate. Report as A/C1 (No A/C). Note if Generator Light is on.	If no , turn switch off and allow 5 minutes for cooling; confirm resolved.

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Maintenance Roadcall Information for BTC Reference

WHEELCHAIR LIFT WON'T DEPLOY – NABI

<u>Bus Type</u>	<u>What to check</u>	<u>What to do</u>		
<u>NABI</u>	1. Is Engine running?	If yes , go to next step.	If no , start engine and confirm resolved. If not resolved, go to next step.	
	2. Is there air on doors?	If yes , go to next step.	If no , place door air (dump) valve in “closed” position and confirm resolved. If not resolved, go to next step.	
	3. Are front doors fully open?	If yes , go to next step.	If no , check for debris blocking doors and confirm resolved. If not resolved, go to next step.	
	4. Is Transmission in neutral?	If yes , go to next step.	If no , put in neutral and confirm resolved. If not resolved, go to next step.	
	5. Is park brake applied?	If yes , go to next step.	If no , depress park brake and confirm resolved. If not resolved, go to next step.	
	6. For lift-equipped bus, does wheelchair power button light come on when pressed?	If yes , confirm resolved. If not resolved, call service truck. Report as WCL1 (Wheelchair lift).	If no , must reset in order to cycle. <ul style="list-style-type: none"> • Press Emergency Stop button twice. • Press power button again and confirm resolved. • If not resolved, press Emergency Stop button <i>one</i> more time. • Press power button again and confirm resolved. • If still not resolved, call service truck. Report as WCL1 (Wheelchair lift). 	
	7. For ramp-equipped bus (which do not have power button)	Manually deploy ramp.		

Maintenance Roadcall Information for BTC Reference

WHEELCHAIR LIFT WON'T DEPLOY – FLXIBLE & IKARUS

<u>Bus Type</u>	<u>What to check</u>	<u>What to do</u>	
<u>FLXIBLE AND IKARUS</u>	1. Is Engine running?	If yes , go to next step.	If no , start engine and confirm resolved. If not resolved, go to next step.
	2. Is there air on doors?	If yes , go to next step.	If no , place door air (dump) valve in “closed” position and confirm resolved. If not resolved, go to next step.
	3. Are front doors fully open?	If yes , go to next step.	If no , check for debris blocking doors and confirm resolved. If not resolved, go to next step.
	4. Is fast idle switch on?	If yes , turn off and confirm resolved. If not resolved, manually deploy ramp.	If no , manually deploy ramp.

WHEELCHAIR LIFT WON'T STOW

<u>Bus Type</u>	<u>What to check</u>	<u>What to do</u>	
<u>ALL</u>	Is bus equipped with a ramp?	If yes , manually stow ramp.	If no , check for debris on platform of lift and confirm resolved. If not resolved, call service truck. Report as symptom WCL1 (Wheelchair Lift).

FLIPCHART of Maintenance Road Call Info for BTC Reference – 2004 update

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FLIPCHART of Maintenance Road Call Info for BTC Reference – 2004 update

WON'T MOVE or GO IN GEAR

<u>Bus Type</u>	<u>What to check</u>	<u>What to do</u>		
<u>Bluebird</u>	1. Is Engine running?	If yes , go to next step.	If no , start engine and confirm resolved.	
	2. Is parking brake released?	If yes , go to next step.	If no , release parking brake by pushing park-brake knob; confirm resolved.	
	3. Is Transmission in gear?	If yes , go to next step.	If no , put in gear; confirm resolved.	
	4. Is Brake Light illuminated?	If yes , cycle doors and go to next step.	If no , go to next step.	
	5. Will doors cycle (open and close)?	If yes , go to next step.	If no , ensure following: <ul style="list-style-type: none"> • no obstruction for doors, • door's safety tab is in up position, • door handle is fully forward in locked position. Confirm resolved.	
	6. Is wheelchair door closed?	If yes , call service truck. Report symptom MISC (Won't move).	If no , go to "Doors Won't Close" page.	
<u>Optare</u>	1. Is Engine running?	If yes , go to next step.	If no , start engine and confirm resolved.	
	2. Is parking brake released?	If yes , go to next step.	If no , release parking brake by pushing park-brake knob; confirm resolved.	
	3. Is fast idle switch on?	If yes , turn off and confirm resolved.	If no , go to next step.	
	4. Will doors cycle (open and close)?	If yes , close doors and place transmission in Drive. Tap brake pedal or accelerator. Confirm resolved.	If no , go to "Doors Won't Close" page.	
	5. Confirm resolved	If yes , return to service.	If no , reset by turning off bus, then restart. If still not resolved, call service truck. Report symptom MISC (Won't move). Note, if won't restart, refer to "No Start" page.	

FLIPCHART of Maintenance Road Call Info for BTC Reference – 2004 update

DOORS WON'T CLOSE - Bluebird

<u>Bus Type</u>	<u>What to check</u>	<u>What to do</u>	<u>Bus Type</u>
<u>Bluebird</u>	1. Will front door cycle?	If yes , go to next step	<p>If no, ensure following:</p> <ul style="list-style-type: none"> • no obstruction for door, • door's safety tab is in up position, • door handle is fully forward in locked position. <p>Cycle door.</p> <p>If still not resolved, call service truck. Report as symptom DOR2 (Front door)</p>
	2. Will rear (wheelchair lift) door cycle?	If yes , return to service.	<p>If no, perform following.</p> <ul style="list-style-type: none"> • Manually open rear door • Confirm wheelchair lift is fully stowed • Check no obstruction for door • Carefully close door and hold (push with one hand) while locking with other hand • If difficult to lock, must push and hold harder <p>Confirm resolved. If still not resolved, call service truck. Report as symptom DOR3 (Rear door)</p>

FLIPCHART of Maintenance Road Call Info for BTC Reference – 2004 update

DOORS WON'T CLOSE - Optare

<u>Bus Type</u>	<u>What to check</u>	<u>What to do</u>	
<u>Optare</u>	1. Is Engine running?	If yes , go to next step.	If no , start engine, build pressure at least to 100 psi and confirm resolved.
	2. Is air pressure over 100 (psi)?	If yes , go to next step.	If no <ul style="list-style-type: none"> • Pump brakes until pressure goes below 85 psi. • Put in neutral, run engine for 5 mins. – until pressure returns at least to 100 psi. • If pressure goes above 100 psi, confirm resolved. • If pressure remains below 100 psi, call service truck. Report as symptom AIR1 (Low Air Pressure).
	3. Is there air on doors?	If yes , go to next step.	If no , pull down knob for door dump valve to put air on doors.
	4. Will doors cycle (open and close)?	If yes , return to service.	If no , foot brake must be applied to open or close door, then push “open door” button. If not resolved, go to next step.
	5. Is either the bus kneeled, or the kneel button illuminated?	If yes , press kneel button and confirm resolved. If this does not raise bus, call service truck. Report symptom as KNL1 (Kneeling System).	If no , go to next step (neither kneeled nor button illuminated).
	6. Is the “not stowed” indicator light for the wheelchair ramp illuminated?	If yes , must reset: <ul style="list-style-type: none"> • Cycle the ramp (must check for coins or trash in its gutter prior to stowing). • Confirm resolved. • If light remains on and not resolved, call service truck. Report symptom as WCL1 (Wheelchair Lift). 	If no , go to next step.
	7. Is any debris in door area or stepwell?	If yes , remove debris and confirm door undamaged. Confirm resolved.	If no , call service truck. Report as symptom DOR2 (Front door) or DOR3 (Rear door).

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NO INTERLOCK

Clarifying definition

The interlock is a safety device which automatically applies the brakes whenever the vehicle is stopped with the doors open. The interlock is separate from the exit signal.

<u>Bus Type</u>	<u>What to check</u>	<u>What to do</u>	
<u>Bus Numbers 3301 -3311*</u>	1. Is parking brake in applied position?	If yes , go to next step.	If no , apply park brake and confirm resolved. If not resolved, go to next step.
	2. Is transmission in neutral?	If yes , go to next step.	If no , shift selector to neutral and confirm resolved. If not resolved, go to next step.
	3. Is “door light” on dash illuminated?	If yes , call service truck. Report symptom as DOR5 (Door interlock).	If no , press button and confirm resolved. If not resolved, report symptom as DOR5 (Door interlock).
<u>ALL other Minibuses</u>	Will bus roll when <i>doors are open</i> – either the front or rear?	If yes , call for service truck. Report symptom as DOR5 (Door interlock).	If no , confirm resolved.

***Only applies if retrofit has not been completed, per list provided by Field Engineering.**

FLIPCHART of Maintenance Road Call Info for BTC Reference – 2004 update

NO PASSENGER SIGNAL

<u>Bus Type</u>	<u>What to check</u>	<u>What to do</u>	
<u>Bluebird</u>	1. Is chime switch on?	If yes , pull signal cords several times to reset them and go to next step.	If no , turn switch on and confirm resolved.
	2. Cycle door and confirm resolved.	If yes , return to service.	If no , means chime is inoperative. Service Truck, LIS or RTG as appropriate. Report as ELE4 (Passenger signal).
<u>Optare</u>	Is Passenger Signal indicator light illuminated?	If yes , means chime is inoperative. Service truck, LIS or RTG as appropriate. Report as ELE4 (Passenger signal).	If no , at end of line, turn off bus and restart. Cycle door and confirm resolved. If still not resolved, Service truck, LIS or RTG as appropriate. Report as ELE4 (Passenger signal).

**UNKNOWN BUZZER OR ALARM,
without any indicator light illuminated**

<u>Bus Type</u>	<u>What to do</u>
<u>ALL Bluebirds</u>	Cycle Wheelchair Lift (as applicable), and ensure it is fully locked/stowed position.

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WON'T GO IN GEAR, NO DIRECT DRIVE/SHIFT/POWER/ACCELERATION

WON'T GO IN GEAR:

Refer to “Won’t Move” Section on page 73.

NO DIRECT DRIVE:

This term no longer applies to any vehicles in MDT fleet – refer to information below for “No Shift” complaint.

NO SHIFT:

Bus will move but transmission will not change to higher gears at higher mph (in other words, not upshifting).

On Bluebirds and Optares, confirm shift selector is at “D” position (not “1” or “2”). If not resolved, call service truck, LIS or RTG as appropriate. Report as symptom TRA1 (Trans no shift).

NO POWER:

Have a “slow bus” with or without smoke; some acceleration, however, concerned whether enough.

Confirm parking brake is released. If not resolved, call service truck, LIS or RTG as appropriate. Report as symptom ENGD (Engine no power).

Report as ENG6 if engine smoke only.

NO ACCELERATION:

Bus will move but with absolutely no acceleration – bus can only reach up to 3 mph, engine only at idle.

Optares: Confirm “Wheelchair Tie-Down” Switch is Off.

Call service truck, LIS or RTG as appropriate. For this very rare case, report as symptom FUE1 (Accelerator).

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BRAKES WON'T RELEASE - Bluebird

<u>Bus Type</u>	<u>What to check</u>	<u>What to do</u>	
<u>Bluebird</u>	1. Is Transmission in gear (in drive)?	If yes , go to next step.	If no , put in gear and confirm resolved. If won't go in gear, refer to "Won't move" section on page 73.
	2. Are doors closed?	If yes , go to next step.	If no , close doors and confirm resolved. If won't close, refer to "Doors won't close" section on page 75.
	3. Is parking brake released?	If yes , go to step 5 above.	If no , depress park brake valve again and go to next step.
	4. Will park brake valve stay down?	If yes , go to next step.	If no , reset air pressure. <ul style="list-style-type: none"> • Pump brakes until pressure goes below 85 psi. • Put in Neutral, run engine for 5 mins. – until pressure returns at least to 100 psi. • If pressure goes above 100 psi, confirm resolved. • If pressure will not go over 100 psi, call service truck. Report as symptom AIR1 (Low Air Pressure).
	5. Is wheelchair door closed?	If yes ,	If no , call service truck. Report as symptom BRA4 (Brakes Locked).

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BRAKES WON'T RELEASE – Optare

Bus Type	What to check	What to do	
Optare (except noted below)	1. Are doors closed?	If yes , go to next step.	If no , close doors and confirm resolved. If won't close, refer to "Doors won't close" section on page 75.
	2. Is parking brake released?	If yes , go to next step.	If no , depress park brake valve again and go to next step.
	3. Will park brake valve stay down?	If yes , go to next step.	If no , reset air pressure. <ul style="list-style-type: none"> • Pump brakes until pressure goes below 85 psi. • Put in Neutral, run engine for 5 mins. – until pressure returns at least to 100 psi. • If pressure goes above 100 psi, confirm resolved. • If pressure will not go over 100 psi, call service truck. Report as symptom AIR1 (Low Air Pressure).
Bus Numbers 3301-3311*	1. Are doors closed?	If yes , go to next step.	If no , close doors and confirm resolved. If won't close, refer to "Doors won't close" section on page 75.
	2. Is parking brake released?	If yes , go to next step.	If no , depress park brake valve again and go to next step.
	3. Will park brake valve stay down?	If yes , go to next step.	If no , reset air pressure (same directions as above). <ul style="list-style-type: none"> • If pressure goes above 100 psi, confirm resolved. • If pressure will not go over 100 psi, call service truck. Report as symptom AIR1 (Low Air Pressure).
	1. Is transmission selector at "D" (not "1" or "2")?	If yes , call Service Truck. Report as symptom BRA4 (Brakes Locked).	If no , put selector in "D" and confirm resolved.

*Only applies if retrofit has not been completed, per list provided by Field Engineering.

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ENGINE STALL OR NO START

ENGINE STALL:

Engine was running and stopped on its own. Turn off bus and restart. If not resolved, call service truck, LIS or RTG as appropriate. Report as symptom ENG2 (Engine stalls).

NO START:

Engine was intentionally turned off and operator is unable to re-start. Follow steps as shown below.

<u>Bus Type</u>	<u>What to check</u>	<u>What to do</u>	
<u>Optare</u>	1. Has “Power Off” procedure been properly completed?	If yes , go to next step.	If no , complete “Power Off” procedure and wait 15 minutes. If not resolved, go to next step.
	2. Is “Tailgate Open” indicator light illuminated?	If yes , close tailgate. Firmly press start; confirm resolved.	If no , go to next step.
	3. Is Bus in Neutral?	If yes , call Service truck. Report as symptom ENG1 (Engine No Start).	If no , put shift selector in neutral, press start and confirm resolved.
<u>Bluebird</u>	Is Transmission in neutral?	<p>If yes, cycle master switch (turn off, then turn on again). Firmly press start; confirm resolved.</p> <p>If not resolved, continue as shown below.</p> <ul style="list-style-type: none"> • Turn off master switch (again) <i>and all lights</i>. • Wait 15 minutes. Re-start bus. • If still not resolved, call service truck. Report as ENG1 (Engine no start). 	If no , put in neutral; confirm resolved.

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NO FLASHERS

<u>Bus Type</u>	<u>What to check</u>	<u>What to do</u>	
<u>ALL</u>	1. Is only one side working or neither?	If one side working , cycle master switch. If not resolved, call service truck for end-of-line. Report symptom as LIT2 (Turn Signal).	If neither side working , cycle master switch. If not resolved, call service truck. Report symptom as LIT2 (Hazards not working).

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FLIPCHART of Maintenance Road Call Info for BTC Reference – 2004 update

NO A/C OR NO CHARGE OR GENERATOR LIGHT

<u>Bus Type</u>	<u>What to check</u>	<u>What to do</u>	
<u>Optares</u>	1. Is A/C switch on?	If yes , cycle switch (turn off, then turn on again) and confirm resolved. If not resolved, go to next step.	If no , turn switch on and confirm resolved. If not resolved, go to next step.
	2. Is switch for operator's fan on?	If yes , go to next step.	If no , turn switch on and confirm resolved. If not resolved, go to next step.
	3. Is defroster temperature knob in "off" position?	If yes , call service truck, LIS or RTG as appropriate. Report as A/C5 (Heater). Note if Generator Light is on.	If no , turn knob and blower motor to off and allow 5 minutes for cooling; confirm resolved.
	4. Is Generator indicator light illuminated?	If yes , call service truck, LIS or RTG as appropriate. Report as ELE2.	If no , Return to Garage at end of line. Report as A/C1 (No A/C)
<u>Bluebirds</u>	1. Is either of the A/C control knobs (for fan setting) off?	If yes , turn to highest setting and confirm resolved.	If no , go to next step.
	2. Are Both temperature controls turned fully to the highest setting?	If yes , call service truck. Report as symptom A/C1.	If no , turn to highest setting and confirm resolved.

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WHEELCHAIR LIFT WON'T DEPLOY – Bluebird

<u>Bus Type</u>	<u>What to check</u>	<u>What to do</u>	
<u>Bluebird</u>	1. Is Engine running?	If yes , go to next step.	If no , start engine and confirm resolved. If not resolved, go to next step.
	2. Is parking brake in applied position?	If yes , go to next step.	If no , apply park brake and confirm resolved. If not resolved, go to next step.
	3. Is transmission in neutral?	If yes , go to next step.	If no , shift selector to neutral and confirm resolved. If not resolved, go to next step.
	4. Is this Wheelchair Lift the type that has a seatbelt?	If yes , confirm seatbelt is properly attached (to opposite end). Confirm resolved. If still not resolved, call service truck and report as WCL1.	If no , call service truck and report as WCL1.

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WHEELCHAIR RAMP WON'T DEPLOY – Optare

<u>Bus Type</u>	<u>What to check</u>	<u>What to do</u>	
<u>Optare</u>	1. Is Engine running?	If yes , go to next step.	If no , start engine and confirm resolved. If not resolved, go to next step.
	2. Is parking brake in applied position?	If yes , go to next step.	If no , apply park brake and confirm resolved. If not resolved, go to next step.
	3. Is transmission in neutral?	If yes , go to next step.	If no , shift selector to neutral and confirm resolved. If not resolved, go to next step.
	4. Will door cycle?	If yes , Manually deploy ramp.	If no , check for debris on platform of ramp and confirm resolved. If not resolved, go to “Doors won’t close” section on page 75.

WHEELCHAIR LIFT OR RAMP WON'T STOW

<u>Bus Type</u>	<u>What to check</u>	<u>What to do</u>	
<u>ALL</u>	Is bus equipped with a ramp?	If yes , manually stow ramp.	If no , check for debris on platform of lift and confirm resolved. If not resolved, call service truck. Report as symptom WCL1 (Wheelchair Lift).

APPENDIX C: Metrobus Preventive Maintenance Inspections and Forms

Metrobus PM Inspections

MDT "A" Inspection Form

MDT "B" Inspection Form

MDT "C" Inspection Form

Penske "BC1" and "BC3" Inspection Form

Sample PM Adherence Report

Pre Trip Card

Fuel Ticket



**METROBUS MAINTENANCE
6,000 MILES
"A" INSPECTION FORM**

TO BE FILLED OUT BY OFFICE		TO BE FILLED OUT BY CONTROL ROOM	
Bus Number _____	Mileage Insp. Due _____ Miles 'til due _____	Date Assigned _____ Date Completed _____	Mileage Completed _____
Avg. miles/day _____	As of (date) _____	Transfer Supervisor _____	
TO BE FILLED OUT BY MECHANIC			Oil Sample Taken
Mechanic's Name _____	Badge # _____	Yes ___ No ___	
Hub Miles _____	Engine S/No. _____	Transmission S/No. _____	

Check operation and condition of the following:

I. INTERIOR		II. EXTERIOR	
OK	NEEDS REPAIRS	OK	NEEDS REPAIRS
A. SAFETY			
	*Sun visor		*Headlights
	*Horn		*Marker lights
	*Directional & hazard signal		*Turn signal lights
	*Warning devices (air buzzer)		*Brake lights
	*Windshield wipers		*Tail lights
	*Steering column/Wheel		Tag lights
	*Seat belt adjustability		Reverse lights
	*Front and rear stepwell		Reverse alarm
	*Floors		Remote operated mirror (if applicable)
	*Interior lights		Windshield wiper arms, linkage & alignment
	*Glass windows, doors, mirrors		Windshield wiper blades
	*Destination sign door latch/chain		VIT Display
	*Floor yellow standee line & warning decal		*Check tires
	*Emergency triangle kit (secure in kit box and properly mounted/stored).		*Check wheels
	*Passenger seats, stanchions & grab rails		Wheel lug nuts
	*Emergency exits, window latches, ceiling hatches & decals		All compartment doors
	*Door interlocks & Speed switch		General body condition
	*Passenger stop request		Check kneeling operation (if applicable)
	*Fire alarm		Check & torque axle nuts to 100 FT. LBS.
	*Fire extinguisher (in-place, secure, legible and current inspection, label affixed and completely visible, gauge needle in green zone and pin in place).		Check axle seals
	*Defroster	III. ENGINE COMPARTMENT	
<i>If applicable:</i>		OK	NEEDS REPAIRS
	*Wheelchair tie down straps	A. ELECTRICAL	
	*Wheelchair seat belt		Motor/guard Engine protection system, lo-oil, lo-water and hot engine (Mechanical unit injection engines only).
	*Wheel locking claw		Alternator mounting brackets & retainers
	*Wheelchair decal - curbside exterior		All electrical connections at alternator
	*Wheelchair stop request		All elec. conn. & wire harness at eng. compmt.
			Engine protection for shut down feature
			<i>Plug in diagnostic reader and check for active & non-active codes.</i>
			<i>If active codes are found, schedule for repairs</i>
			<i>If applicable:</i>
			12V or A/C alternator output Record _____ volts
			24V or A/C alternator output Record _____ volts
			Connections at alternator
OK	NEEDS REPAIRS	OK	NEEDS REPAIRS
B. DASHBOARD		B. CRADLE ASSEMBLY	
	Telltale lights		Engine exhaust smoke
	Speedometer		Engine exhaust pipes & gaskets
	Air gauge & warning buzzer (Governor cut out in)		Engine comp. gauges
	All other gauges		Engine comp. lights
			Engine exhaust ram cap. (if applicable)
	<i>If applicable:</i>		Coolant: Check clarity & concentration to -34 ° polyglycol scale.
	Wheelchair lift controls		Hoses or wires chafing; routing incl. all clamps
	Check Amerex Fire Suppression system as follows:		All belts condition & tension
	Inspect & lubricate spray nozzles caps with silicone		Anderson plug
	Test time delay system with engine running		Air compressor discharge hose & port for excessive oil
			Air compressor intake hose
OK	NEEDS REPAIRS		Air filter housing water ejection valve
C. BATTERY COMPARTMENT			Air filter housing restriction indicator
	Battery mounting bolts & retainers		Air filter housing rubber elbows & connectors for cracks or loose clamps
	Cable insulation, abrasion, & chafing		
	Load test batteries		
	Clean batteries & covers		

*14-90 FDOT - SAFETY ITEM

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OK	NEEDS REPAIRS
	Air inlet piping to turbo for loose connections or holes
	Check for fuel leaks
	Check for oil leaks
	Check & lubricate throttle lever linkage
	Check fan clutch/Fan speed
	*Battery wiring-insulation abrasion or chafing
	*Exhaust system
	Adjust load transmitter
Replace the following:	
	Engine oil & Fill to proper level
	Engine oil filters
	Power Steering filter & Fill to proper level
	Engine air filter, Check & replace if restricted
	Clean Air Filter <i>Housing</i>
	Fuel filters
	Transmission oil filter & check for proper level
	Water filter (if applicable)
Pressurize cooling system to 9 psi and check all hoses, lines, and pipes connected to the following:	
	Engine oil cooler
	Transmission oil cooler
	Water pump
	Heater pump
	Radiator
	Surge tank
	Water filter (if applicable)

IV. LUBRICATION POINTS

OK	NEEDS REPAIRS
A. Check and lubricate the following:	
	Drive shaft – all U-joints fittings & torque bolts
	Front/Rear door – Lower pivot bearing
	Front door – Top roller
	Brake slack adjuster
	Brake cam shaft
	Check differential level
	Brake anchor pins
	Steering shaft U-joint & slip joint
	Steering drag link ends
	Steering tie rod ends
	Steering kingpin & knuckle
	Steering transfer box input shaft
	Steering column slip joint & U joint
	Steering gear box input & output shaft
	Accessory idler pulley (series 50 engine)
	Front & rear door mechanisms

V. UNDERCARRIAGE

OK	NEEDS REPAIRS
Check the following:	
	*Check suspension structure
	Check for air leaks
	Drain air tanks
	Air bellows
	Trunion bushing
	Shock bushing
	Radius rods
	Leveling valves
	*Service brakes
	*Parking brake
	Brake relay valves
	All undercarriage air valves & lines
	Clean differential breather

MECHANIC'S SIGNATURE

*14-90 FDOT – SAFETY ITEM

VI. A/C

OK	NEEDS REPAIRS
	A/C belt
	A/C compressor oil level
	A/C clutch gap (if applicable)
	Refrigerant level
Replace and clean the following:	
	Evaporator comp. with comp. Air (electrical box)
	R & R A/C filters
	Record return air temp. _____ °F
	Clean A/C evaporator with soap & cold water
	Check evaporator drains & check valves

VII. WHEELCHAIR LIFT

OK	NEEDS REPAIRS
Check the following:	
	Cycle lift, check pressure sensitive mats & edges
	Clean & blow out dirt with air
	Inspect hand rails
	Fluid level
	Hoses for leaks
	Bridge barrier for proper angle (87°)
Lubricate the following with Anti-Seize compound:	
	Slide link, rod guide, shoulder bolt, linkage pins
	Barrier linkage shoulder bolts, rod eye guides
	Lift master chains, slave chains, crutch bearing
	Stow hatch
	Sliding rail
T2000 series flip out wheelchair ramp:	
	Cycle ramp
	Sweep trash out from under ramp platform
	Oil bushing areas
	Check flow control jam nuts and/or set screws
	Check pressure settings and jam nuts on relief
	Check hydraulic systems for leaks
	Check all bolts for proper torque
	Grease bearings
T7000 series fold out wheelchair ramp:	
	Cycle ramp
	Remove debris from under ramp platform and inside platform rail covers
	Oil all platform arm connection points
	Check hydraulic system for leaks
	Check for loose bolts, nuts and screws
	Grease bearings

VIII. HYMER JOINT

OK	NEEDS REPAIRS
Check the following (if applicable):	
	Hinge light and buzzer for proper operation when master switch is first turned on
	Hymer interlock engagement by backing up bus to for a 42° angle to the right and then to left

SUPERVISOR'S SIGNATURE

Revised 11~2003



**METROBUS MAINTENANCE
18,000 MILES
"B" INSPECTION FORM**

TO BE FILLED OUT BY OFFICE		TO BE FILLED OUT BY CONTROL ROOM	
Bus Number _____		Date Assigned _____	Date Completed _____
Mileage Insp. Due _____ Miles 'til due _____		Mileage Completed _____	
Avg. miles/day _____ As of (date) _____		Transfer Supervisor _____	
TO BE FILLED OUT BY MECHANIC		Oil Sample Taken	
Mechanic's Name _____	Badge # _____	Yes _____	No _____
Hub Miles _____	Engine S/No. _____	Transmission S/No. _____	

Check operation and condition of the following:

I. INTERIOR		II. EXTERIOR	
OK	NEEDS REPAIRS	OK	NEEDS REPAIRS
A. SAFETY			
	*Sun visor		*Headlights
	*Horn		*Marker lights
	*Directional & hazard signal		*Turn signal lights
	*Warning devices (air buzzer)		*Brake lights
	*Windshield wipers		*Tail lights
	*Steering column/Wheel		Tag lights
	*Seat belt adjustability		Reverse lights
	*Front and rear stepwell		Reverse alarm
	*Floors		Remote operated mirror (if applicable)
	*Interior lights		Windshield wiper arms, linkage & alignment
	*Glass windows, doors, mirrors		Windshield wiper blades
	*Destination sign door latch/cham		VIT Display
	*Floor yellow standee line & warning decal		*Tire wear, not less than rear: 3/32", front: 4/32"
	*Emergency triangle kit (secure in kit box and properly mounted/stored).		*Check wheels
	*Passenger seats, stanchions & grab rails		Wheel lug nuts
	*Emergency exits, window latches, ceiling hatches & decals		All compartment doors
	*Door interlocks & Speed switch		General body condition
	*Passenger stop request		Check kneeling operation (if applicable)
	*Fire alarm		Check & torque axle nuts to 100 FT. LBS.
	*Fire extinguisher (in-place, secure, legible and current inspection, label affixed and completely visible, gauge needle in green zone and pin in place).		Check axle seals
	*Defroster	III. ENGINE COMPARTMENT	
<i>If applicable:</i>		OK	NEEDS REPAIRS
	*Wheelchair tie down straps	A. ELECTRICAL	
	*Wheelchair seat belt		Motor/guard/Engine protection system, lo-oil, lo-water and hot engine (Mechanical unit injection engines only).
	*Wheel locking claw		Alternator mounting brackets & retainers
	*Wheelchair decal - curbside exterior		All electrical connections at alternator
	*Wheelchair stop request		All elec. conn. & wire harnesses at eng. compmt.
			Engine protection for shut down feature
			<i>Plug in diagnostic reader and check for active & non-active codes.</i>
			<i>If active codes are found, schedule for repairs</i>
			<i>If applicable:</i>
			12V or A/C alternator output Record _____ volts
			24V or A/C alternator output Record _____ volts
			Connections at alternator
OK	NEEDS REPAIRS	OK	NEEDS REPAIRS
B. DASHBOARD		B. CRADLE ASSEMBLY	
	Telltale lights		Engine exhaust smoke
	Speedometer		Engine exhaust pipes & gaskets
	Air gauge & warning buzzer (Governor cut out in)		Engine comp. gauges
	All other gauges		Engine comp. lights
<i>If applicable:</i>			Engine exhaust ram cap. (if applicable)
	Wheelchair lift controls		Coolant: Check clarity & concentration to .34° polyglycol scale.
	Check Amerex Fire Suppression system as follows:		Hoses or wires chafing; routing including all clamps
	Inspect & lubricate spray nozzles caps with silicone		All belts condition & tension
	Test time delay system with engine running		Anderson plug
	Inspect all connections, pipings, hoses & fitting for tightness		Air compressor discharge hose & port for excessive oil
	Agent cylinder gauge - pointer should be in green area		Air compressor intake hose
OK	NEEDS REPAIRS		Air filter housing water ejection valve
C. BATTERY COMPARTMENT			Air filter housing restriction indicator
	Battery mounting bolts & retainers		Air filter housing rubber elbows & connectors for cracks or loose clamps
	Cable insulation, abrasion, & chafing		Air inlet piping to turbo for loose connections or holes
	Load test batteries		Check for fuel leaks
	Clean batteries & covers		Check for oil leaks
			Check and lubricate throttle lever linkage
			Check fan clutch/Fan speed

*14-90 FDOT - SAFETY ITEM

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OK	NEEDS REPAIRS
	*Battery wiring-insulation abrasion or chafing
	*Exhaust system
	Adjust load transmitter (if applicable)
Replace the following:	
	Engine oil & Fill to proper level
	Engine oil filters
	Power Steering filter & Fill to proper level
	Engine air filter & Clean Air Filter Housing
	Fuel filters
	*Transmission filter & fluid
	Water filter (if applicable)
Pressurize cooling system to 9 psi and check all hoses, lines, and pipes connected to the following:	
	Engine oil cooler
	Transmission oil cooler
	Water pump
	Heater pump
	Radiator
	Surge tank
	Water filter (if applicable)

*Fluid change only applies to buses with Allison Transmission

IV. LUBRICATION POINTS

OK	NEEDS REPAIRS
A. Check and lubricate the following:	
	Drive shaft – all U-joints fittings & torque bolts
	Front/Rear door – Lower pivot bearing
	Front door – Top roller
	Brake slack adjuster
	Brake cam shaft
	Check differential level
	Brake anchor pins
	Steering shaft U-joint & slip joint
	Steering drag link ends
	Steering tie rod ends
	Steering kingpin & knuckle
	Steering transfer box input shaft
	Steering column slip joint & U joint
	Steering gear box input & output shaft
	Accessory idler pulley (series 50 engine)
	Front & rear door mechanisms

V. UNDERCARRIAGE

OK	NEEDS REPAIRS
Check the following:	
	*Check suspension structure
	Check for air leaks
	Drain air tanks
	Air bellows
	Trunion bushing
	Shock bushing
	Radius rods
	Leveling valves
	*Service brakes
	*Parking brake
	Brake relay valves
	All undercarriage air valves & lines
	Remove & clean differential breather

VI. A/C

OK	NEEDS REPAIRS
	Return air thermostat (set at 70 degrees)
	A/C compressor bracket
	A/C pivot bushings & T-bolts
	A/C belt
	A/C compressor oil level
	A/C compressor oil color, Record color
	A/C clutch gap (if applicable)
	Refrigerant level
	Condenser blower motors
	Evaporator blower motors
Replace and clean the following:	
	Evaporator comp. with comp. Air (electrical box)

OK	NEEDS REPAIRS	Continue
		Clean condenser compartment
		R & R A/C filters
		Record return air temp. _____ °F
		Clean A/C evaporator with soap & cold water
		Check evaporator drains & check valves

VII. WHEELCHAIR LIFT

OK	NEEDS REPAIRS
Check the following:	
	Cycle lift, check pressure sensitive mats & edges
	Clean & blow out dirt with air
	Inspect hand rails
	Fluid level
	Hoses for leaks
	Bridge barrier for proper angle (87°)
Lubricate the following with Anti-Seize compound:	
	Slide link, rod guide, shoulder bolt, linkage pins
	Barrier linkage shoulder bolts, rod eye guides
	Lift master chains, slave chains, crutch bearing
	Cylinder clevis pins of main lift cylinders & sliding rail
	Stow hatch
	Sliding rail
Inspect the following:	
	Curbside barrier/Linkage/Cylinder
	Barrier angle & cylinder bolts
	Torque shaft coupling set screws
	Stow motor/Stow shaft
	Proper adjustment of crutch bearing
	All limit & proximity switches for proper operation
T2000 series flip out wheelchair ramp:	
	Cycle ramp
	Sweep trash out from under ramp platform
	Oil bushing areas
	Check flow control jam nuts and/or set screws
	Check pressure settings and jam nuts on relief valve
	Check hydraulic system for leaks
	Check all bolts for proper torque
	Grease bearings
T7000 series fold out wheelchair ramp:	
	Cycle ramp
	Remove debris from under ramp platform and inside platform rail covers
	Oil all platform arm connection points
	Check hydraulic system for leaks
	Check for loose bolts, nuts and screws
	Grease bearings

VIII. HYMER JOINT

OK	NEEDS REPAIRS
Check the following (if applicable):	
	Accordion surface for cracks and loose fasteners
	Hinge light and buzzer for proper operation when master switch is first turned on
	Hymer interlock engagement by backing up bus to form a 42° angle to the right and then to left
Hook up a gauge to the proportional valve and note the following pressures:	
	With the master switch off pressure (10-14 bars)
	Drive bus in yard making turns, pressure (60-90 bars)
	Test drive bus at 55 MPH, pressure (40-100 bars)
Place bus on lift and remove lower section of Hymer accordion and check the following:	
	All hydraulic lines and cylinders for leaks
	Cylinder mountings bolts and frame for cracks
	Lubricate Hymer middle section

MECHANIC'S SIGNATURE

SUPERVISOR'S SIGNATURE

*14-90 FDOT – SAFETY ITEM

Revised 11-2003



METROBUS MAINTENANCE
54,000 MILES
"C" INSPECTION FORM

TO BE FILLED OUT BY OFFICE		TO BE FILLED OUT BY CONTROL ROOM	
Bus Number _____	Mileage Insp. Due _____ Miles 'til due _____	Date Assigned _____	Date Completed _____
Avg. miles/day _____	As of (date) _____	Mileage Completed _____	Transfer Supervisor _____
TO BE FILLED OUT BY MECHANIC		Oil Sample Taken	
Mechanic's Name _____	Badge # _____	Yes ___ No ___	
Hub Miles _____	Engine S/No. _____	Transmission S/No. _____	

Check operation and condition of the following:

OK	NEEDS REPAIRS	I. INTERIOR
A. SAFETY		
		*Sun visor
		*Horn
		*Directional & hazard signal
		*Warning devices (air buzzer)
		*Windshield wipers
		*Steering column/Wheel
		*Seat belt adjustability
		*Front and rear stepwell
		*Floors
		*Interior lights
		*Glass windows, doors, mirrors
		*Destination sign door latch/chain
		*Floor yellow standee line & warning decal
		*Emergency triangle kit (secure in kit box and properly mounted/stored).
		*Passenger seats, stanchions & grab rails
		*Emergency exits, window latches, ceiling hatches & decals
		*Door interlocks & Speed switch
		*Passenger stop request
		*Fire alarm
		*Fire extinguisher (in-place, secure, legible and current inspection, label affixed and completely visible, gauge needle in green zone and pin in place).
		*Defroster
<i>If applicable:</i>		
		*Wheelchair tie down straps
		*Wheelchair seat belt
		*Wheel locking claw
		*Wheelchair decal - curbside exterior
		*Wheelchair stop request
OK	NEEDS REPAIRS	B. DASHBOARD
		Telltale lights
		Speedometer
		Air gauge & warning buzzer (Governor cut out/in)
		All other gauges
<i>If applicable:</i>		
		Wheelchair lift controls
		Check Amerex Fire Suppression system as follows:
		Inspect & lubricate spray nozzles caps with silicone
		Test time delay system with engine running
		Inspect all connections, pipings, hoses & fitting for tightness
		Agent cylinder gauge - pointer should be in green area
		Test sensors
		Replace 9V monitor battery
OK	NEEDS REPAIRS	C. BATTERY DEPARTMENT
		Battery mounting bolts & retainers
		Cable insulation, abrasion, & chafing
		Load test batteries
		Clean batteries & covers
OK	NEEDS REPAIRS	II. EXTERIOR
		*Headlights
		*Marker lights
		*Turn signal lights
		*Brake lights
		*Tail lights
		Tag lights
		Reverse lights
		Reverse alarm
		Remote operated mirror (if applicable)
		Windshield wiper arms, linkage & alignment
		Windshield wiper blades
		VIT Display

		*Tire wear, not less than rear 3/32", front: 4/32"
		*Check wheels
		Wheel lug nuts
		All compartment doors
		General body condition
		Check kneeling operation (if applicable)
		Check & torque axle nuts to 100 FT. LBS.
		Check axle seals
OK	NEEDS REPAIRS	III. ENGINE COMPARTMENT
A. ELECTRICAL		
		Motor/guard Engine protection system, lo-oil, lo-water and hot engine (Mechanical unit/injection engines only).
		Alternator mounting brackets & retainers
		All electrical connections at alternator
		All elec. connections & wire harnesses at eng. compt.
		Engine protection for shut down feature
		<i>Plug in diagnostic reader and check for active & non-active codes.</i>
		If active codes are found, schedule for repairs
<i>If applicable:</i>		
		12V or A/C alternator output Record _____ volts
		24V or A/C alternator output Record _____ volts
		Connections at alternator
OK	NEEDS REPAIRS	B. CRADLE ASSEMBLY
		Engine exhaust pipes & gaskets
		Engine comp gauges
		Engine comp lights
		Engine exhaust ram cap. (if applicable)
		Coolant: Check clarity & concentration to -34° polyglycol scale
		Hoses or wires chafing; routing including all clamps
		All belts condition & tension
		Anderson plug
		Air compressor discharge hose & port for excessive oil
		Air compressor intake hose
		Air filter housing water ejection valve
		Air filter housing restriction indicator
		Air filter housing rubber elbows & connectors for cracks or loose clamps
		Air inlet piping to turbo for loose connections or holes
		Check for fuel leaks
		Check for oil leaks
		Check and lubricate throttle lever linkage
		Air in fuel flow (use sight glass)
		Tune up engine and check fuel pump pressure
		Check fan clutch/Fan speed
		*Battery wiring-insulation abrasion or chafing
		*Exhaust smoke
<i>Replace the following:</i>		
		Engine oil & Fill to proper level
		Differential oil
		Transmission oil & Fill to proper level
		Transmission oil filter
		Engine oil filters
		Power Steering filter & Fill to proper level
		Engine air filter & Clean Air Filter Housing
		Fuel filters
		Water filter (if applicable)
<i>Pressurize cooling system to 9 psi and check all hoses, lines, and pipes connected to the following:</i>		
		Engine oil cooler
		Transmission oil cooler
		Water pump
		Heater pump
		Radiator
		Surge tank
		Water filter (if applicable)
OK	NEEDS REPAIRS	IV. LUBRICATION POINTS
A. Check and lubricate the following:		
		Drive shaft - all U-joints fittings & torque bolts
		Front/Rear door - Lower pivot bearing
		Front door - Top roller

		Brake slack adjuster
		Brake cam shaft
		Brake anchor pins
		Steering shaft U-joint & slip joint
		Steering drag link ends
		Steering tie rod ends
		Steering kingpin & knuckle
		Steering transfer box input shaft
		Steering column slip joint & U joint
		Steering gear box input & output shaft
		Accessory idler pulley (series 50 engine)
		Front & rear door mechanisms
OK	NEEDS REPAIRS	V. UNDERCARRIAGE
<i>Check the following:</i>		
		*Check suspension structure
		Check for air leaks
		Check & torque "A" frame & undercarriage bolts
		Drain air tanks
		Air bellows
		Trunion bushing
		Shock bushing
		Radius rods
		Leveling valves
		*Service brakes
		*Parking brake
		Brake relay valves
		All other undercarriage air valves
		Replace air dryer
		Clean and inspect differential breather
OK	NEEDS REPAIRS	VI. A/C
		Return air thermostat (minimum 70 degrees)
		A/C compressor bracket
		A/C pivot bushings & T-bolts
		A/C belt
		A/C compressor oil level
		A/C compressor oil color, Record color
		A/C clutch gap (if applicable)
		Refrigerant level
		Condenser blower motors
		Evaporator blower motor(s)
		Lubricate blower shaft block bearings
<i>Replace and Clean the following:</i>		
		Evaporator comp. with comp. Air (electrical box)
		Clean condenser compartment
		R & R A/C filters
		Record return air temp. _____ °F
		Clean A/C evaporator with soap & cold water
		Check evaporator drains & check valves
OK	NEEDS REPAIRS	VII. TRANSMISSION
		Adjust load transmitter (if applicable)
<i>Check the following connections for tightness; Apply lubricant</i>		
		Cable I, II, III at ECU
		Cable at load transmitter
		Green cable at transmission
		Speed switch connection
<i>Install test box and check the following:</i>		
		Inductive pickup (1050 or 1000 OHM)
		Coils, NP, DK, EK, PB, TK, RBK/25W
		Coils RBG, WP/SOW
		Batteries Pass/Fail
		Load transmitter, Pass/Fail
		Select, switch Pass/Fail
		Brake Switch Pass/Fail
		Install light box, pressure gauges & perform road test & tune up transmission
<i>Monitor the lights, illuminate for the following:</i>		
		Load Signal, L0, L1, and L3
		Braking, Signal, B1, B2, B3
		1 st Gear EK and TB
		2 nd Gear EK and PB and WP
		3 rd Gear PB, DK, WP
		Reverse, EK, RBK and RBG
		RBK, RBG and WP (over 3mph throttle)
		RBK and RBG (over 3mph throttle depressed)
NOTE: "WP" LIGHT IS LIT IN 2 nd AND 3 rd GEAR IN TRANSMISSION WITH "C.P.R." FUNCTION ONLY (9000FLX)		
<i>Retarder:</i>		
		Brake stage I: RBK AND RBG
		Brake stage II: RBK, RBG AND WP (oscillating)
		Brake stage III: RBK, RBG AND WP (full)

		Pressures: Install pressure gauges, record and adjust Operating, Converter and Brake stage pressures
		Operating Pressure (OP) (8.5±0.5 BAR) Test (OP): _____
		Converter (CP) min 3.0 Test (CP): _____
		Brake Stage II (B2) Test (B2): _____
		Brake Stage III (B3) Test (B3): _____
OK	NEEDS REPAIRS	VIII. WHEELCHAIR LIFT
<i>Check the following:</i>		
		Cycle lift, check pressure sensitive mats & edges
		Clean & blow out dirt with air
		Inspect hand rails
		Slide channel bearing blocks
		Check fluid level & hoses for leaks
<i>Lubricate the following with Anti-Seize compound:</i>		
		Slide link, rod guide, shoulder bolt, linkage pins
		Barrier linkage shoulder bolts, rod eye guides
		Lift master chains, slave chains, crutch bearing
		Cylinder clevis pins of main lift cylinders & sliding rail
		Stow hatch
<i>Inspect the following:</i>		
		Curbside barrier/Linkage/Cylinder
		Barrier angle & cylinder bolts
		Torque shaft coupling set screws
		Stow motor/Stow shaft
		Proper adjustment of crutch bearing
<i>Inspect and Check the following:</i>		
		Proper adjustment lift master chains & conn links
		Proper adjustment slave chains & conn links
		Torque lift mounting bolts
		Main lift cylinder, forward/rear (minimum thread engagement of 1" on turnbuckle bolts
		Switches on dash & connections
		Proper routing & chafing of hoses
		Stow switch - Activate 1/2" before fully stowed
		Deploy switch - Activate 1/2" before fully deployed
		Proper adjustment between limit switch arm & trip for chain limit switch
		Proximity switches/Gap of .030 to .060 between sensing end & targets
		Replace filter element & check manual operation of hydraulic system
<i>T2000 series flip out wheelchair ramp:</i>		
		Cycle ramp
		Sweep trash out from under ramp platform
		Oil bushing areas
		Check flow control jam nuts and/or set screws
		Check pressure settings and jam nuts on relief valve
		Check hydraulic system for leaks
		Check all bolts for proper torque
		Grease bearings
<i>T7000 series fold out wheelchair ramp:</i>		
		Cycle ramp
		Remove debris from under ramp platform and inside plat form rail covers
		Oil all platform arm connection points
		Check hydraulic system for leaks
		Check for loose bolts, nuts and screws
		Grease bearings
OK	NEEDS REPAIRS	VIII. HYMER JOINT
<i>Check the following (if applicable):</i>		
		Hinge light and buzzer for proper operation when master switch is first turned on
		Hymer interlock engagement by backing up bus to for a 42° angle to the right and then to left
<i>Hook up a gauge to the proportional valve and note the following pressures:</i>		
		With the master switch off pressure (10-14 bars)
		Drive bus in yard making turns, pressure (60-90 bars)
		Test drive bus at 55 MPH, pressure (40-100 bars)
<i>Place bus on lift and remove lower section of Hymer accordion and check the following:</i>		
		All hydraulic lines and cylinders for leaks
		Cylinder mountings bolts and frame for cracks
		Lubricate Hymer middle section
<i>Test as per the Maintenance Manual:</i>		
		Coach main harness
		Potentiometer. Adjust if needed
		Speed pulse
		Proportional valve & ECU

MECHANIC'S SIGNATURE
*14-90 FDOT - SAFETY ITEM Revised 11-2003

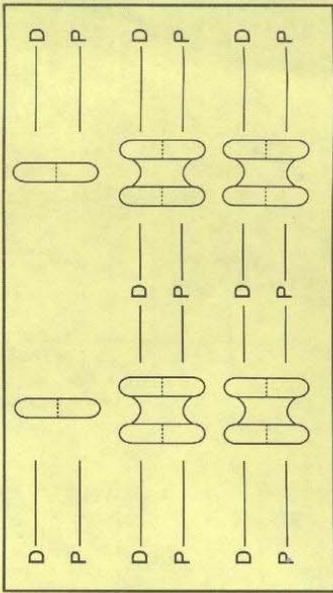
SUPERVISOR'S SIGNATURE

BUS COACH PM SERVICE SERIES BC

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UNIT NUMBER

DESCRIPTION	CODE	INIT.	ADDITIONAL WORK REQUIRED
IV. UPPER CHASSIS, ENGINE & ELECTRICAL (CONT.)			
90. VISUALLY INSPECT TIRES FOR CONDITION, DAMAGE & WEAR			
91. RECORD TIRE DEPTH IN 37046 BELOW OUTLINE			
92. CHECK CONDITION OF VALVE CAPS & STEMS. RECORD TIRE PRESSURE BELOW OUTLINE, THEN ADJUST TO PROPER PRESSURE.			
VII. WHEEL CHAIR LIFT			
93. INSPECT OPERATION & WARNING DECAL			
VIII. FINAL INSPECTION			
94. CHECK ENGINE OIL FOR CORRECT LEVEL			
95. UPDATE P.M. STICKER			
IX. BC2 SERVICE			
96. DRAIN AUTOMATIC TRANSMISSION. CHANGE FILTERS. REFILL TRANSMISSION TO MFG. SPECS			
X. BC3 SERVICE			
97. CHANGE NEED RELEASE WATER FILTER IF EQUIPPED			
98. TAKE COOLANT SAMPLE			
99. CHANGE POWER STEERING FILTER			
IV. UPPER CHASSIS, ENGINE & ELECTRICAL (CONT.)			
82. INSPECT ENGINE COMPARTMENT LIGHTS, SWITCHES & WIRING FOR CONDITION & OPERATION			
83. INSPECT REAR BUMPER/UNDERRIDE FOR DAMAGE AND FIRMLY ATTACHED			
V. ENGINE INSPECTION (W/ENGINE RUNNING)			
84. RECORD ENGINE OIL PRESSURE READING AT ENGINE COMPARTMENT _____ PSI			
85. INSPECT FILTERS, LINES, GASKETS FOR LEAKS			
86. EXHAUST - CHECK FOR LEAKS AT ALL CONNECTIONS, INCLUDING AIR INTAKE DOOR SEALS			
87. CHECK PRINT & CLEAR FAULT CODES. PRINT AND RESET TRIP DATA			
VI. TIRES AND WHEELS			
88. CHECK WHEEL RUNDOUT AND RESERVOIRS FOR CORRECT LEVEL & LEAKS			
89. INSPECT WHEELS, NUTS, STUDS & AXLE FLANGE NUTS FOR CRACKS & LOOSENESS			



INSPECTION PERFORMED BY _____ DATE _____

INSPECTION APPROVED BY _____ DATE _____

ADDITIONAL WORK COMPLETED BY _____ DATE _____

APPROVED BY _____ DATE _____

Sample PM Adherence Report

SMART/TEA AUTOMATED REPORTING SYSTEM 18:03 Tuesday, July 6, 2004 1
 METROBUS PREVENTIVE MAINTENANCE INTERVAL ADHERENCE
 CENTRAL PREVENT. MAINT. PERFORMED 06/01/2004 TO 06/30/2004

BUS	PM TYPE	LAST PM DATE	LAST PM MILES	PREV PM LEVEL	PREV PM DATE	PREV PM MILES	MILES BETWEEN	MILES OVER UNDER(-) PM INTVL	LATE FLAG
B02145	PM A	25JUN2004	112,514	C	02APR2004	106,699	5,815	-185	
B02146	PM A	14JUN2004	124,716	B	15MAY2004	119,141	5,575	-425	
B02147	PM B	16JUN2004	120,839	C	18MAR2004	103,725	17,114	-886	
B02148	PM B	27JUN2004	123,860	C	24MAR2004	106,948	16,912	-1,088	
B02149	PM A	10JUN2004	125,073	B	15MAY2004	119,241	5,832	-168	
B02150	PM A	13JUN2004	126,458	A	18MAY2004	120,839	5,619	-381	
B02151	PM C	02JUN2004	107,003	C	19AUG2003	53,611	53,392	-608	
B02152	PM B	12JUN2004	119,362	C	23MAR2004	102,531	16,831	-1,169	
B02153	PM A	03JUN2004	122,878	B	10MAY2004	117,727	5,151	-849	
B02154	PM B	05JUN2004	122,486	C	16MAR2004	106,446	16,040	-1,960	
B02155	PM A	26JUN2004	114,750	A	30MAY2004	108,758	5,992	-8	
B02156	PM A	09JUN2004	121,402	B	12MAY2004	115,724	5,678	-322	
B02157	PM B	07JUN2004	117,417	C	29FEB2004	100,842	16,575	-1,425	
B02158	PM A	26JUN2004	125,592	A	29MAY2004	120,023	5,569	-431	
B02160	PM A	15JUN2004	119,093	C	18MAY2004	113,432	5,661	-339	
B02161	PM A	21JUN2004	106,768	C	22MAY2004	101,174	5,594	-406	
B02162	PM A	12JUN2004	114,067	A	13MAY2004	107,866	6,201	201	
B02163	PM A	23JUN2004	118,463	A	21MAY2004	112,782	5,681	-319	
B02164	PM A	17JUN2004	113,014	C	19MAY2004	107,191	5,823	-177	
B02166	PM A	15JUN2004	115,593	A	14MAY2004	109,882	5,711	-289	
B02167	PM B	15JUN2004	117,206	C	17MAR2004	100,209	16,997	-1,003	
B02168	PM A	24JUN2004	112,739	C	23MAY2004	106,997	5,742	-258	
B02170	PM C	15JUN2004	101,624	C	31AUG2003	53,056	48,568	-5,432	
B02171	PM A	29JUN2004	109,350	C	28MAY2004	103,543	5,807	-193	

Pre Trip Card

(Front)

(Back)

P96-

**MIAMI-DADE
TRANSIT**

METROBUS OPERATOR'S PRE-TRIP INSPECTION

BUS NUMBER DATE

ENTERING BUS:

0 O.K.	1 STEPS (FRONT DOOR)	2 FRONT DOOR GLASS	3 GRAB RAILS	4 METER	5 DEST. SIGN LATCHES	C
0 O.K.	1 FIRE EXTN- GUISHER	2	3 SUNVISOR	4 SAFETY TRIANGLE KIT	5	D

SIT IN SEAT...START BUS:

0 O.K.	1 BROKEN WIND- SHIELD	2 ENG. NO START	3 BATTERY LIGHT	4 RADIO	5 HORN	6 TELL- TALE LIGHTS	E
-----------	--------------------------------	-----------------------	-----------------------	------------	-----------	------------------------------	----------

WALK BACK THROUGH BUS:

0 O.K.	1 PASS BUZZER	2 WHEEL- CHAIR TIE DOWN	3 FLOOR AND SEATS	4 REAR DOOR GLASS	5 DOME LIGHTS	F
0 O.K.	1 SIDE SIGNS	2 EMERG. HATCH	3 STOP REQUEST LIGHT	4	5	G

WALK AROUND BUS:

0 O.K.	1 OIL WATER LEAKS	2 AIR LEAKS	3 FLAT TIRE	4 WORN TIRES	5 WHEEL LUGS	H
0 O.K.	1 OPEN COMPART- MENT	2 SWINGING WINDOWS	3 MIRRORS	4 BRAKE LIGHTS	5 TAIL LIGHTS	I
0 O.K.	1 HEAD LIGHTS	2 DESTI- NATION SIGN	3 MARKER LIGHTS	4	5	J

IN DRIVER'S SEAT:

0 O.K.	1 DOOR CONTROL	2 DOOR WORKING	3 LOW AIR PRESSURE	4 WIND- SHIELD WIPERS	5	K
0 O.K.	1 DOOR INTER- LOCK	2 TILT STEERING WHEEL	3 BRAKE (SOFT)	4 BRAKES (GRAB PULL)	5 TURN SIGNAL	L
0 O.K.	1 HAZARD SIGNAL	2 SEAT BELT	3 DRIVER'S SEAT	4 CYCLE WHEEL- CHAIR LIFT	5	M
0 O.K.	1 PARKING BRAKE	2 STEERING HARD	3 STEERING LOOSE	4 CLIMATE CONTROL	5 DEFROST	N
0 O.K.	1 FUMES OR ODORS	2 WON'T GO IN GEAR	3 TRANS. NOISY	4 TRANS. WON'T SHIFT	5	O

DEFECT? X OUT APPROPRIATE SQUARES
NO DEFECTS? X OUT "O.K." SQUARES

**DEFECTS WITHIN HEAVY BLACK SQUARES
MUST BE TAKEN TO HOT LINE**

CIRCLE ITEMS CORRECTED ON HOT LINE

405.01-24 5/96 TG7530F0054

BODY DAMAGE REPORT

O.K. 0	MAJOR 1	MINOR 2	A
-----------	------------	------------	---

1 FRONT	2 REAR	3 LEFT FWD.	4 LEFT REAR	5 RIGHT FWD.	6 RIGHT REAR	B
------------	-----------	-------------------	-------------------	--------------------	--------------------	----------

LEFT FWD LEFT REAR

RIGHT REAR RIGHT FWD

FRONT

REAR

OPERATOR'S NAME: _____

BADGE NO. _____

ROUTE _____ **RUN** _____

**QUALITY
RESPECT
SATISFACTION**

MDT Fuel Ticket

MDTA FUEL TICKET			
VEHICLE NO.		DATE	
ODOMETER			
GAS <input type="checkbox"/> DIESEL <input type="checkbox"/>	PUMP NO.	FUEL	
		GALLONS	TENTHS
SAFETY		OK	NEEDS ATTEN.
Interior Lights		_____	_____
Exterior Lights		_____	_____
All Mirrors		_____	_____
Windshield Wipers		_____	_____
Horn		_____	_____
Fire Extinguisher		_____	_____
OIL	ATF	WATER	
		YES	<input type="checkbox"/>
QUARTS	QUARTS	NO	<input type="checkbox"/>
FUELER'S BADGE NO.		FUELER'S INITIALS	

405.01-127 5/97

TG-7530-FO-0001

APPENDIX D: MDT Metrobus Maintenance Program Policy

DRAFT

MAINTENANCE PHILOSOPHY

Metrobus Maintenance is responsible for providing safe, clean and dependable vehicles to properly service the public in a cost-effective manner using prudent business practices. To accomplish this task, Metrobus Maintenance is guided by a philosophy that mandates that vehicles are maintained in order to achieve their maximum life. This approach differs from the two “old standard” approaches:

- Replacing a part at a pre-determined time or after it fails.
- If it's not broken, don't fix it.

When a bus, equipment or part is replaced at a pre-determined time, there are some inherent problems. A vehicle eligible for replacement because of age may be one of the most economical vehicles to maintain and operate. Therefore, we do not schedule vehicles for replacement based solely on the age of the vehicle but rather on how cost effective and dependable it is. Similarly, the routine scheduled change of these parts could waste considerable money if it is replaced before it has served its useful life. It was once thought that this was a small price to pay for avoiding service interruptions. The problems with that is, it is not a small price at all.

The second approach to maintenance, “if it's not broken, don't fix it”, is not an acceptable philosophy either. Maintenance departments that adhere to this approach will have severe problems providing reliable service and they will also require an inflated number of reserve buses. This approach does not really save the agency money because it does not allow for advance scheduling of work. More often than not, when a part fails it also causes failure of other parts that normally would have lasted longer.

The approach that is followed now takes the positive elements from both of these dated procedures and combines them into one workable course of action. It's a logical assumption that bus equipment, units, and parts should be replaced just prior to failure. This requires a progressive maintenance program to determine when a part or a unit is about to fail. For maintenance to be able to use this approach, the following elements must be in place:

- A comprehensive and constantly improving diagnostic inspection program.
- A progressive parts and procurement function which is responsible to the changes in the maintenance program.
- A comprehensive and flexible training program.
- A sophisticated computerized maintenance record keeping system.

The first three elements are needed so that a maintenance employee can accurately determine when a part is about to fail. The computerized maintenance system is needed to enable management to spot trends and gradual changes in the performance of equipment and vehicles.

For any maintenance program to succeed there must be well-defined goals that everyone in the organization can strive to meet. The Metrobus Maintenance Divisions within MDT are goal-oriented. The following is a list of performance-oriented goals that address both short and long term problems:

- | | |
|-------------|--|
| First Goal | Attain and maintain 100% on-time performance for Bus Maintenance PM Inspections. |
| Second Goal | Attain and maintain 100% fleet vehicle availability vs. PVR. |
| Third Goal | Attain and maintain average Miles Between Mechanical Roadcalls of 2,800. |
| Fourth Goal | Maintain zero tolerance for any environmental violations system-wide. |
| Fifth Goal | Improve the relationship between management and labor. |

The achievement of these goals by an aggressive and hard working maintenance team will reflect the basic maintenance philosophy that was provided and supported by MDT Metrobus Management.

APPENDIX E: Sample Operating Rules

From Metrobus Operations Rules and Procedures Manual

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Sample Operating Rules

Rule No.	Text
550	TIRE TROUBLE Upon detecting a flat or partially flat tire, stop the bus and call Bus Central Control (using the RTT function) for instructions. -----
551	BREAKDOWNS
551.1	An attempt should be made to reach the right shoulder or curb when it is realized that the bus is breaking down. This attempt should be made ONLY if this maneuver can be performed safely. Notify Bus Central Control of the problem by radio (using the RTT function) immediately and follow instructions given. As soon as possible set out emergency triangles in compliance with state law.
551.2	If the bus breaks down on an expressway, the customers must remain on the bus. Transfer of customers to another bus will be done only by instruction of a police officer or MDT supervisor. EXCEPTION: <i>In case of fire, direct customers off the bus in an orderly fashion to a safe area in front of the bus and at a safe distance away from the bus. (See Subsection 1204, Fire or Smoke on the Bus).</i>
551.3	If on an expressway, drivers of other buses approaching the scene of a disabled bus ARE NOT to stop unless directed to do so by a Florida Highway Patrol (FHP) Trooper or MDT Supervisor. Transfer of customers or removal of a bus from the bus/car-pool lane will be performed ONLY by instructions from a police officer or MDT Supervisor.
551.4	If a disabled bus is not on an expressway, following buses may stop to pick up stranded customers. -----
552	DISABLED BUS
552.1	Should the bus become disabled, radio or telephone the Bus Central Control immediately. Bus Operators or PDAs should not call Bus Central Control via telephone if the radio is working properly. Give name, badge number, bus number, route, location and nature of

- | Rule No. | Text |
|-----------------|---|
| | problem. Explain the trouble as clearly as possible so that the mechanic can make repairs with a minimum of delay. |
| 552.2 | Set out the emergency triangles, as per state law, to prevent possible rear-end-collisions. |
| 552.3 | <i>Be careful when moving a bus that is partially disabled</i> , especially when customers are on board. Bus Operators and PDAs will be held responsible for injuring a customer or colliding with another vehicle or pedestrian while moving a partially disabled bus. |
| 552.4 | <i>Do not</i> push a disabled bus with another bus (see Subsection 549, Pushing a Bus). |
| 552.5 | <i>Do not</i> tamper with any adjustments on the bus engine. |
| 552.6 | The maintenance personnel are in complete charge of the disabled bus from their arrival until they release the bus and state that the trouble has been corrected. |
| 552.7 | Do not start a bus undergoing repairs unless instructed to do so by the maintenance person. Such instructions should be repeated back to the maintenance person and verified to avoid accidents. |

805 ENGINE OVERHEATING

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|-------|--|
| 805.1 | If the engine begins to overheat, stop immediately, and turn the engine off. Notify Bus Central Control (using the RTT function). |
| 805.2 | If the engine should start losing power or start knocking or thumping, stop at once, turn the engine off, and call Bus Central Control (using the RTT function). |

806 WATER TEMPERATURE: GAUGE/OVERHEAT ALARM

The gage indicates coolant temperature; the needle should be on the center of the gauge. When a buzzer sounds and/or a light comes on; the engine is overheating. Pull over safely, stop the engine and call Bus Central Control for assistance (using the RTT function).

NOTE: Only Flexible buses have water temperature gauges.

Rule No.	Text
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807	AIR PRESSURE: GAUGE/LOW AIR ALARM
807.1	Air pressure on a bus is very important. The brake, air suspension system, and other parts of the bus depend on air pressure to operate. Normal air pressure is 125 psi.
807.2	If, during route operation, LOW AIR light comes on and the buzzer sounds indicating low air pressure, pull over safely, stop the engine as quickly as possible, and call Bus Central Control for assistance (using the RTT function).
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808	12-VOLT AND 24-VOLT SYSTEM
	The needle should be in the middle section of the gauge. If the needle fluctuates or moves into the top or bottom sections, note this on a Defect Card and explain when it does it and which section the needle was in.
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809	LOW BATTERY
809.1	In the event the generator is not charging, the tell-tale will light and the buzzer will sound. If the tell-tale lights and the buzzer sounds indicating the generator has stopped charging, call Bus Central Control at once (using the RTT function).
809.2	When attempting to start a bus, all lights should be turned off except marker lights. Make certain that the shift lever is in " <i>neutral</i> ."
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810	OIL PRESSURE: GAUGE/LOW OIL ALARM
810.1	In Flixible buses, the engine oil pressure gauge is mounted on the gauge panel in front of the driver. Normal readings with engine hot and idling – 4 pounds minimum; operating speed – 25 pounds minimum. The engine must not be operated when oil pressure falls below 25 pounds at operating speed under full load. If oil pressure falls below 3 pounds, the LOW OIL tell-tale will light and the buzzer will sound.
810.2	If within 8 to 10 seconds after starting the engine the oil pressure does

Rule No. **Text**
not rise, turn the engine off and call Bus Central Control (using the RTT function) for assistance.

810.3 When the buzzer sounds and/or the light comes on and the needle shows a sudden reduction in pressure, wide fluctuation in pressure, or a pressure drop to lower than 3 pounds, pull over safely, stop the engine, and call Bus Central Control for assistance (using the RTT function).

811 FIRE TELL-TALE LIGHT

Whenever the engine senses a fire or unusual heat in the engine compartment, this light and a bell will go off.

If the light comes on and the bell sounds, pull over safely, stop the engine, assist passengers in getting off the bus, and call the dispatcher for assistance.

812 BRAKES

812.1 Do not take a bus out of the garage until 90 pounds of air pressure is built up and the brakes are in proper working order.

812.2 Test the brakes in the first block after relieving another Operator or PDA or before leaving the garage.

812.3 Notify Bus Central Control at the first sign of soft or otherwise faulty brakes.

812.4 *NEVER* press the accelerator and the brake at the same time. This can cause brake, transmission, and engine damage.

812.4 When making any stop other than an emergency stop, smoothly apply the brakes to avoid undue wear on the brake system.

813 DEFECT REPORTS

813.1 Upon return to the garage, complete a Defect Card providing information on any problem with the bus. Anything that interferes with the safe

Rule No. **Text**
operation of the bus must be reported immediately. Arrangements will be made to correct the defective equipment.

813.2 Do not continue to operate a bus or turn it over to a relief Operator/PDA if the bus is so unsafe or defective that it will not give good service. Report the problem to Bus Central Control (using the RTT function).

814 TIRES

814.1 Do not operate bus when tires are not adequately inflated.

814.2 Be careful in pulling to the curb or making turns to avoid striking the curb with the tires. A hard impact against a concrete curbing or steel sewer top will cause severe and costly damage to tires and often throws customers.

814.3 Should curbing of tires occur, be sure to report it on Defect Report so that tires can be inspected and wheels checked for alignment.

814.4 Avoid running over objects in the streets that might damage the tires.

814.5 Observation of bad holes or other dangerous street conditions must be noted and reported on the Service Improvement Report.

