



**Customer Services, Operations, and Safety Committee**

**Board Information Item III**

**September 11, 2008**

**Operational Performance**

Washington Metropolitan Area Transit Authority  
**Board Action/Information Summary**

<input type="checkbox"/> Action <input checked="" type="checkbox"/> Information	MEAD Number:	Resolution: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
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**TITLE:**

Operational Performance

**PURPOSE:**

To provide the Committee with monthly operational highlights and system performance trends for FY08 vs. FY07.

**DESCRIPTION:**

Information contains operational highlights that have occurred during FY08 providing an end of year review of significant accomplishments, on-time performance and reliability for Metrorail, Metrobus, MetroAccess and Vertical Transportation.

**FUNDING IMPACT:**

No impact on funding.

**RECOMMENDATION:**

None



# Operational Performance

*Presented to the Board of Directors:*

**Customer Service, Operations, and Safety  
Committee**

September 11, 2008





## Operations Year End Review - RAIL

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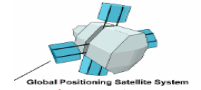
- Achieved Rail on-time performance goal of 95% on two Metrorail Lines: Red and Orange
- Accepted and received 182 of the 6000 series rail cars
- Completed 338 of the 364 2/3K rehabilitations
- Revised maintenance scheduling to minimize impact to customers & ensure maximum use of track
- Installing grab handles in 6000 series rail cars
- Implemented cleaning program significantly reducing debris fires





## Operations Year End Review - BUS

- Achieved Mean Distance Between Failures of 6,326 exceeding the goal of 6,300
- Completed integration of all components for Bus on-time performance
- Awarded 5-year procurement; designed new color scheme; commenced delivery of Nabi Articulated Buses
- Installed operator enclosures pilot program for review and evaluation to increase operator safety
- Relocated 114 buses and personnel from Southeast garage with no service interruption





# Building Blocks to Metro's On-Time Performance



GPS based Vehicle Location



Automatic Passenger Counters



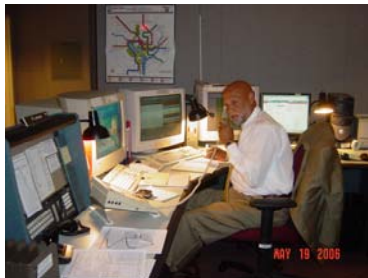
Destination Signs



Intelligent Vehicle Network  
Automated Voice Annunciation  
Automated Vehicle Monitoring



Smart Mobile Data Terminal  
Voice and Data Radio



Bus Operations Control Center  
Computer Aided Dispatching  
Automatic Vehicle Location



Digital Video Recorders



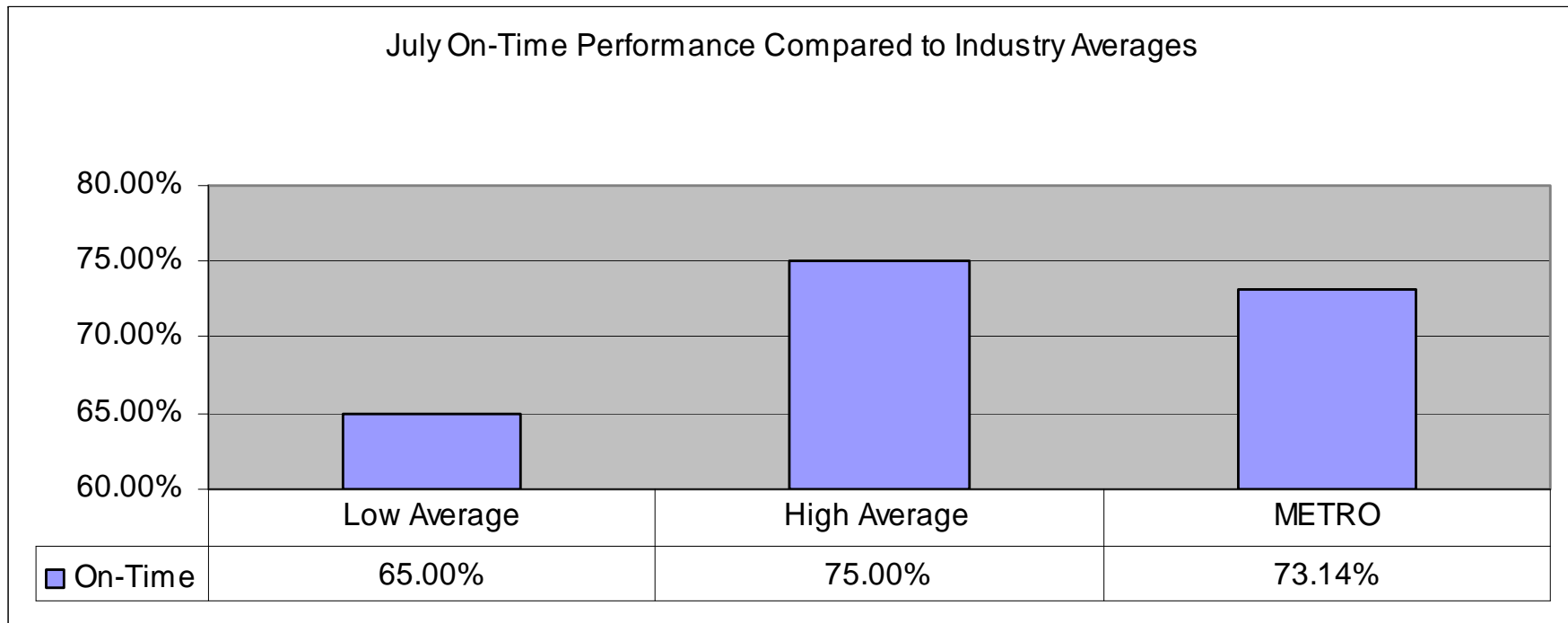
Universal Fare System



# Bus On Time Performance Comparison Chart

**DEFINITION** – Measurement of time throughout the day (from beginning to end of service) for all routes by capturing the data recorded by the CAD/AVL whenever a bus encounters a timepoint. Parameters used by other agencies have a broad range and use selected time points vs WMATA using all time points.

**CALCULATION** – Difference between scheduled time and actual time arriving at a timepoint based on 2 minutes early and 7 minutes late parameters.



### Impact Delays:

- Traffic congestion – 2<sup>nd</sup> in the nation according to the Texas Transportation Institute
- Incidents (assaults, police activity)



## Bus Improvement Measures

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- Restructuring Bus Operations to increase accountability
- Strengthen coordination with Division and Street Supervision on low performing lines to resolve delay issues
- Work with planning to verify schedules and make any necessary adjustments
- Implement process to improve yard pull out timeliness
- Assign Communication Specialist to track and monitor real-time on lowest performing lines





# Operations Year End Review - MetroAccess

- Maintained a 91.9% on-time performance with a 16% increase in overall ridership, delivering 1.5M passenger trips
- Received and placed into service, 65 new vehicles
- Implemented Door-to-Door Service
- Established Web-based reservation system
- Published new Customer Guide

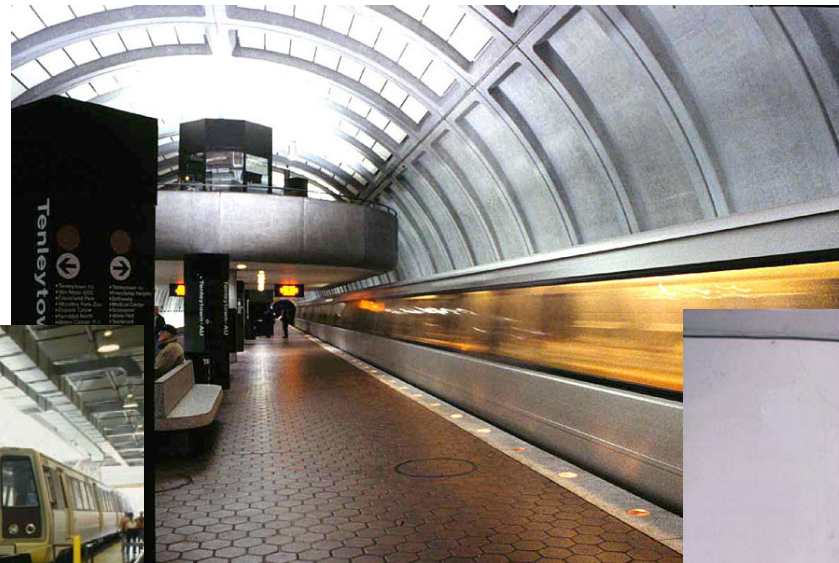




# Operations Year End Review – Operation Services

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- Achieved 94.1% escalator availability exceeding the goal of 93%
- Improved the appearance of 19 Metrorail stations with the completion of station enhancements
- Completed Navy Yard Station Entrance prior to National's Opening Day
- Completed Metro Matters Yard Expansions
- Completed rehabilitation of 14 elevators and 6 escalators



## PERFORMANCE FY07 vs. FY08

MEASUREMENT	FY07	FY08	FY08 Target
<b>RAIL</b>			
On-Time Performance (end-to-end)	93%	92%	95%
<b>Safety and Security</b>			
Part 1 Crimes, Excluding Parking	399	494	
Part 1 Crimes in Parking	890	961	
<b>Customer Satisfaction: Metrorail</b>			
Customer Satisfaction Survey	87%	85%	89%
<b>Avg Weekday Ridership</b>	701,110	730,143	711,245
<b>BUS</b>			
Mean Distance Between Failures	6,267	6,326	6,300
<b>Safety and Security</b>			
Part 1 Crimes	103	117	
<b>Customer Satisfaction: Metrobus</b>			
Customer Satisfaction Survey	81%	78%	81%
<b>Avg Weekday Ridership</b>	441,221	444,519	445,054
<b>VERTICAL TRANSPORTATION</b>			
Escalator System Availability	91.3%	94.1%	93%
Elevator System Availability	95.2%	96.7%	97.5%
<b>Customer Satisfaction Measure:</b>			
Customer Satisfaction Survey - Escalator	63%	68%	64%
Customer Satisfaction Survey - Elevator	74%	74%	78%
<b>METROACCESS</b>			
On-time Performance	93.2%	91.9%	93.5%
Percent of Missed/Excessively Late Trips (30 mins beyond the scheduled pick-up window)	1.9	1.6	1.9
<b>Average Weekday Ridership (for comparison only)</b>	4,669	4,965	4,850



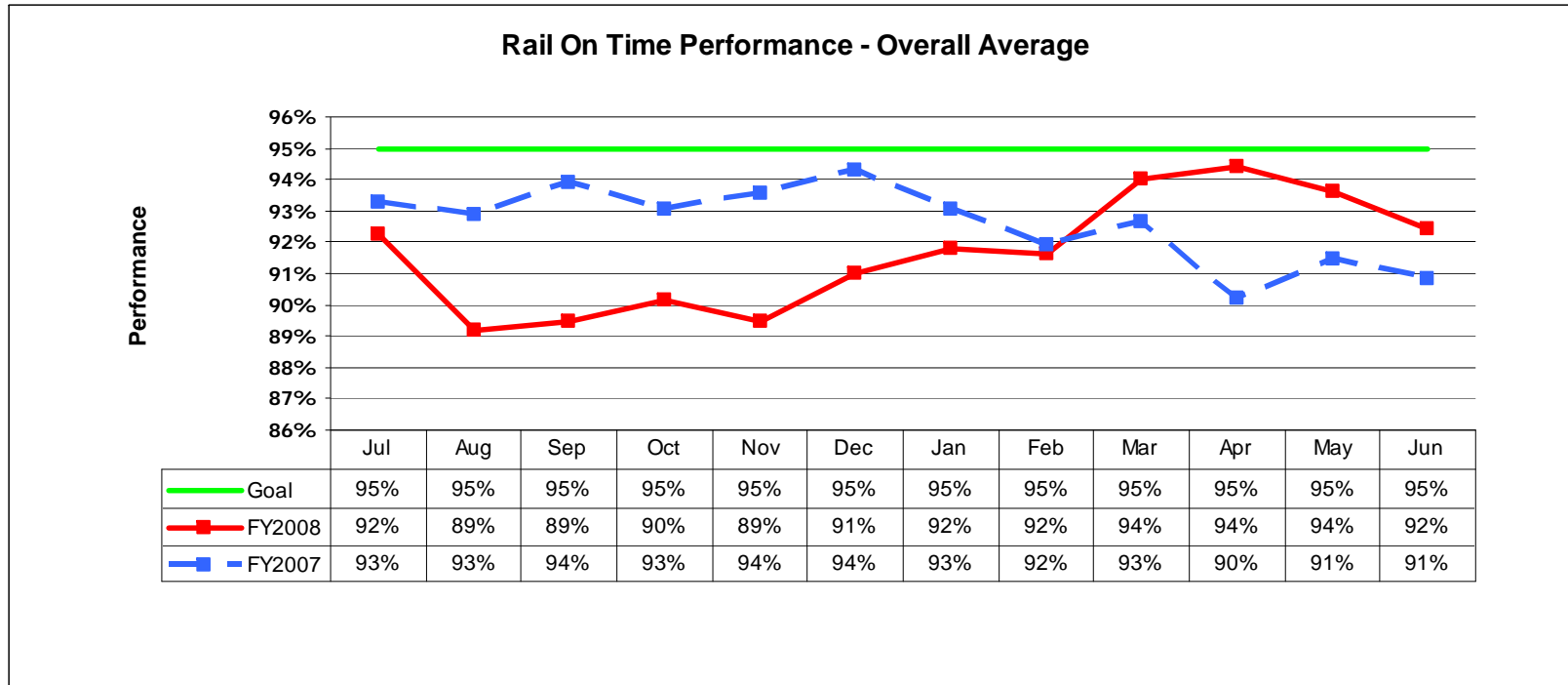
# APPENDIX



# Rail On-Time Performance Summary

**DEFINITION** – Measured during peak service (morning, evening), identifying percentage of trains on each line **end-to-end** within a 2 minute headway deviation and measured mid day and late night within a 50% headway deviation. This measures how well we are providing service.

**CALCULATION** – (Number of Metrorail station arrivals – number of headways with >2 minute deviation or 50% headway deviation) / number of Metrorail station arrivals = Metrorail On Time Performance End to End.



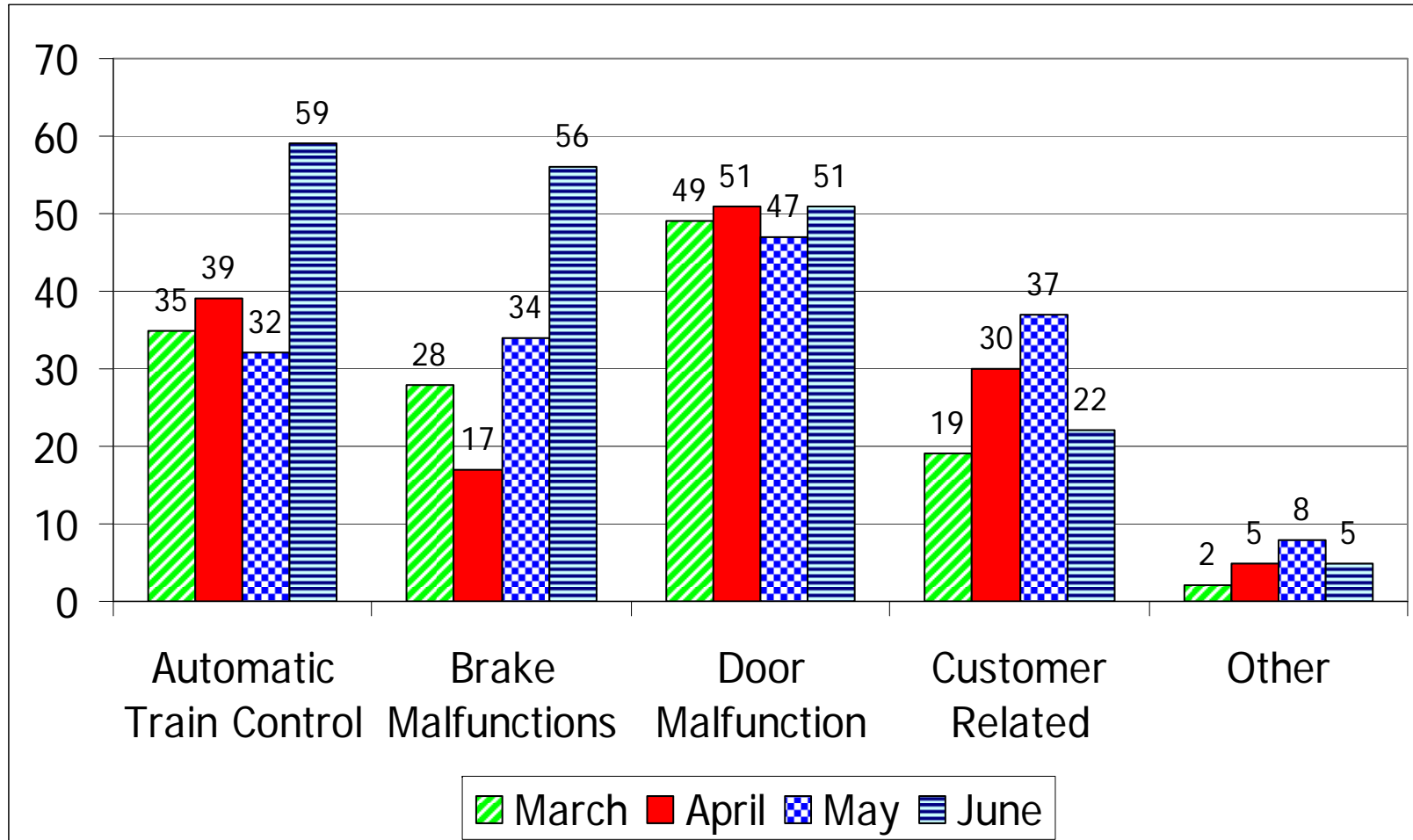
## Year to Date Average

2007 - 93%

2008 - 92%



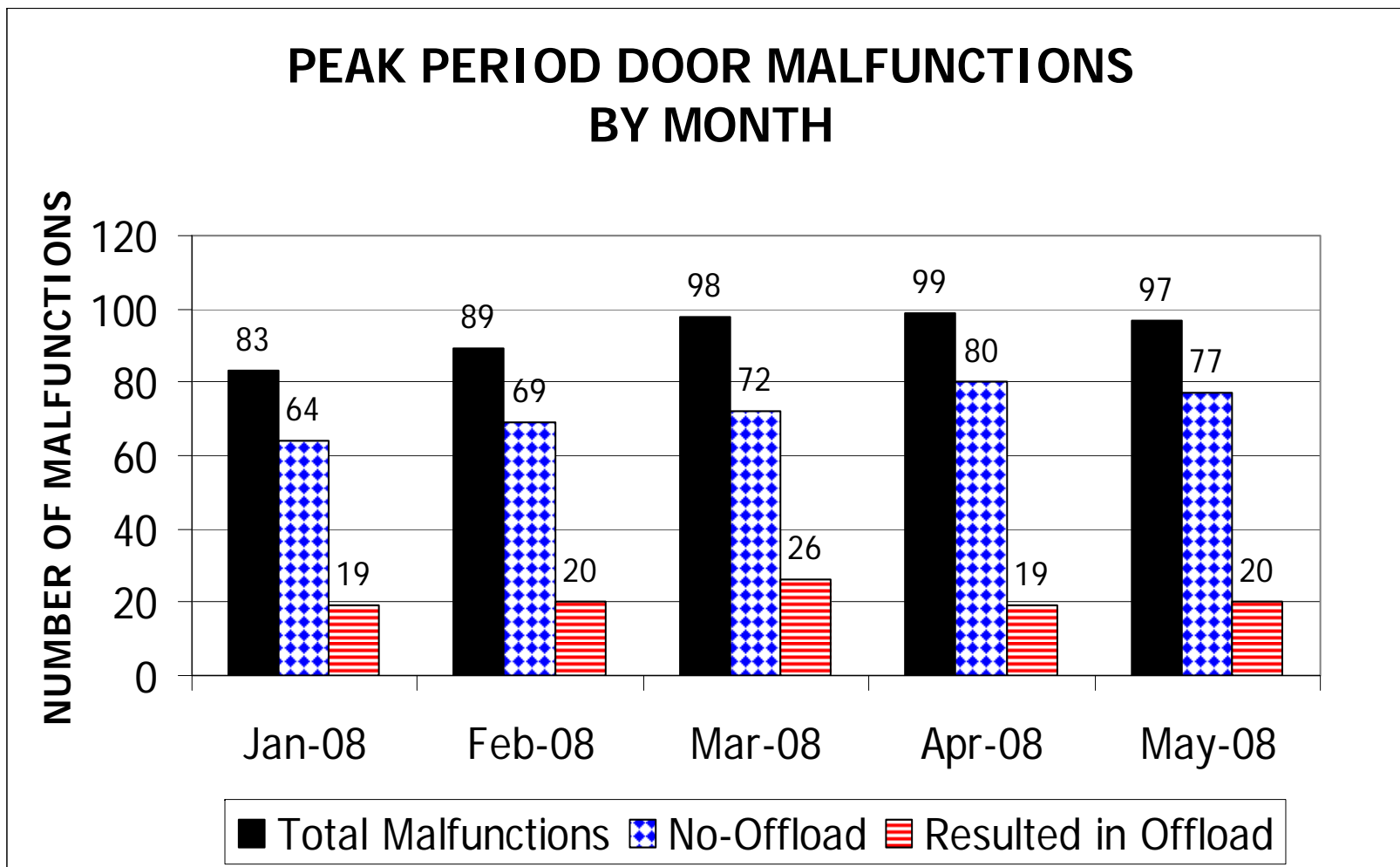
# Major Incidents Affecting Rail Performance



Delays resulting in four minutes or greater



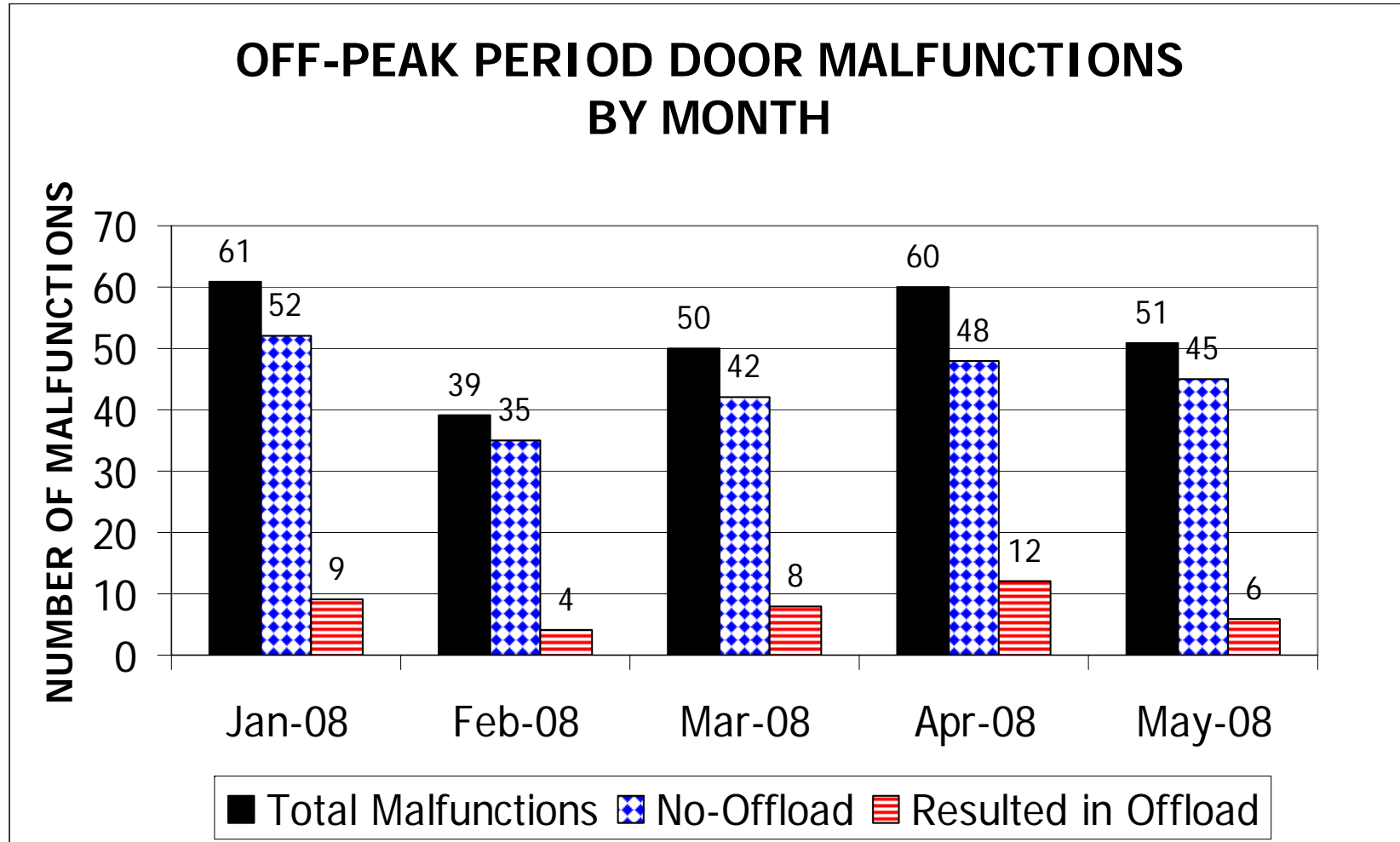
# Rail Car Door Malfunctions - Peak



Average 219,578 door openings per day



## Rail Car Door Malfunctions – Off Peak



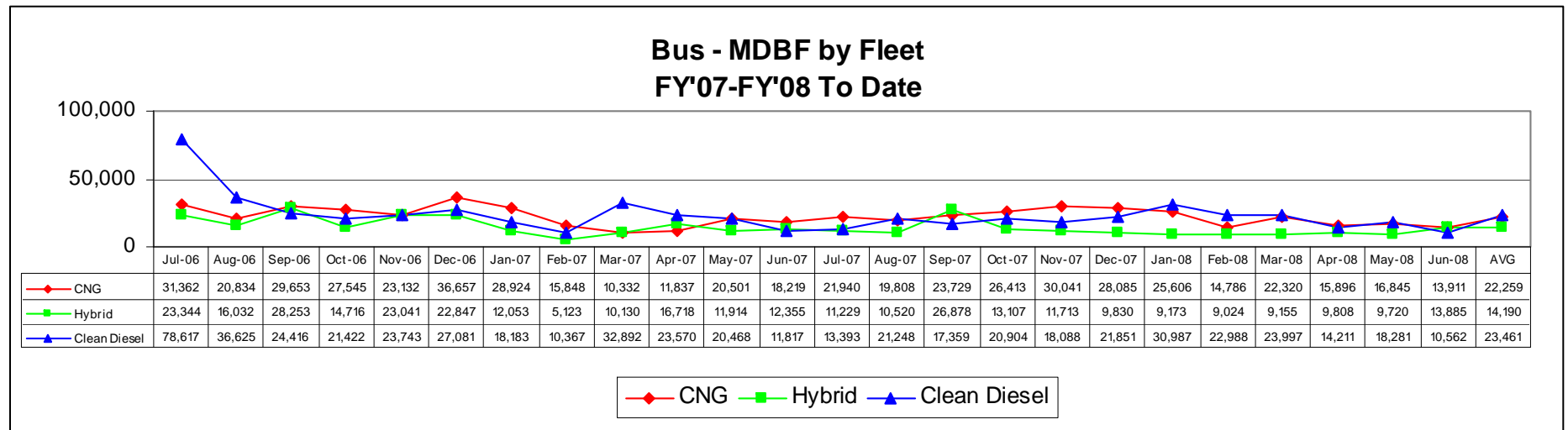
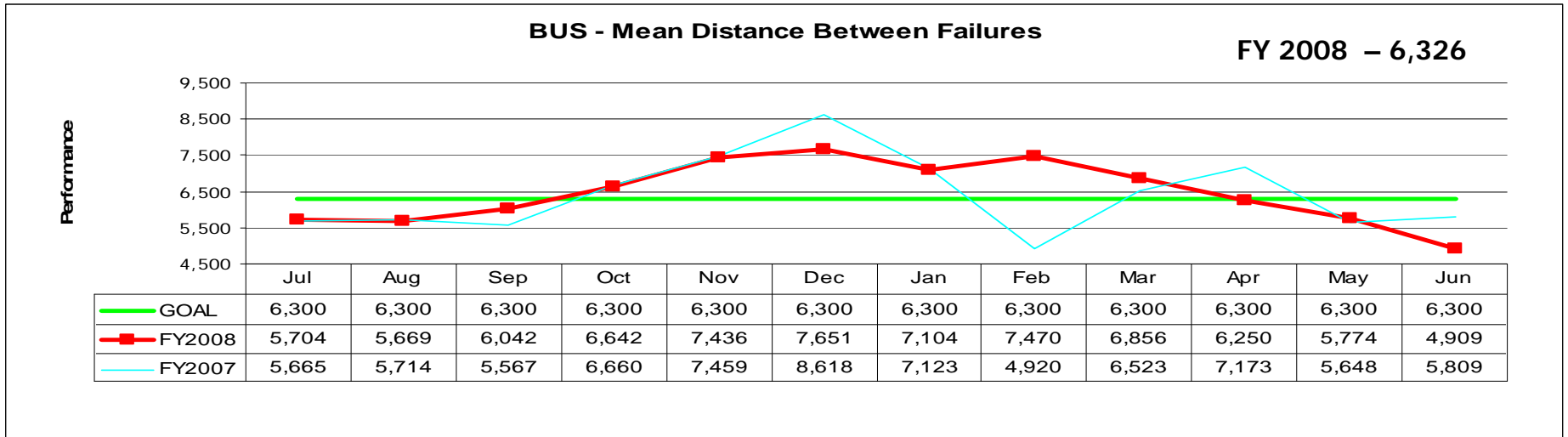
Average 219,578 door openings per day





# Bus Mean Distance Between Failures

**DEFINITION** – This measure identifies the number of miles traveled before a mechanical breakdown for the entire bus fleet



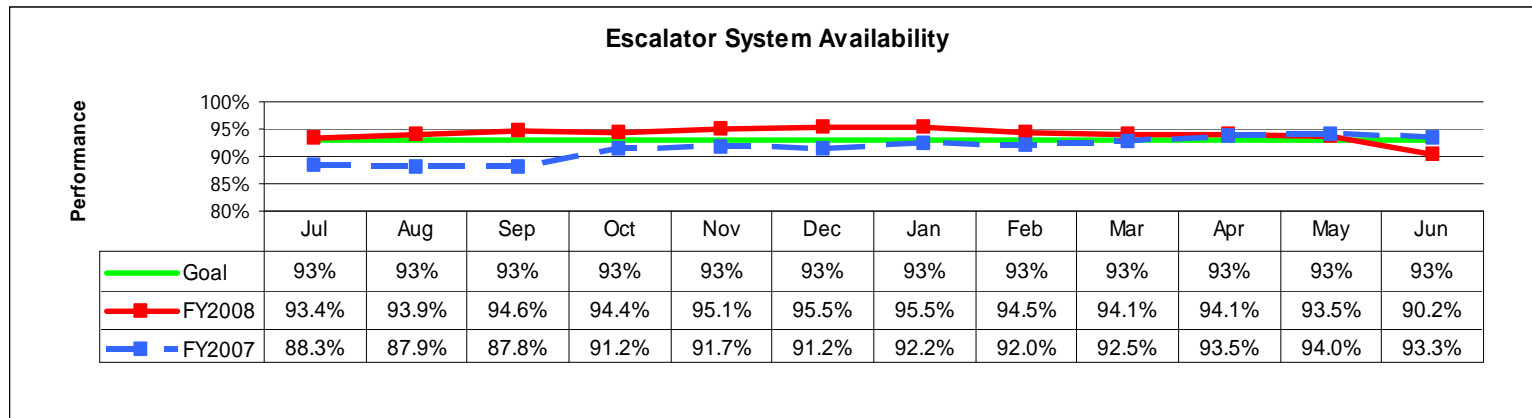
\*\*Data includes FY04 and newer Fleets.



# Escalators and Elevators Reliability

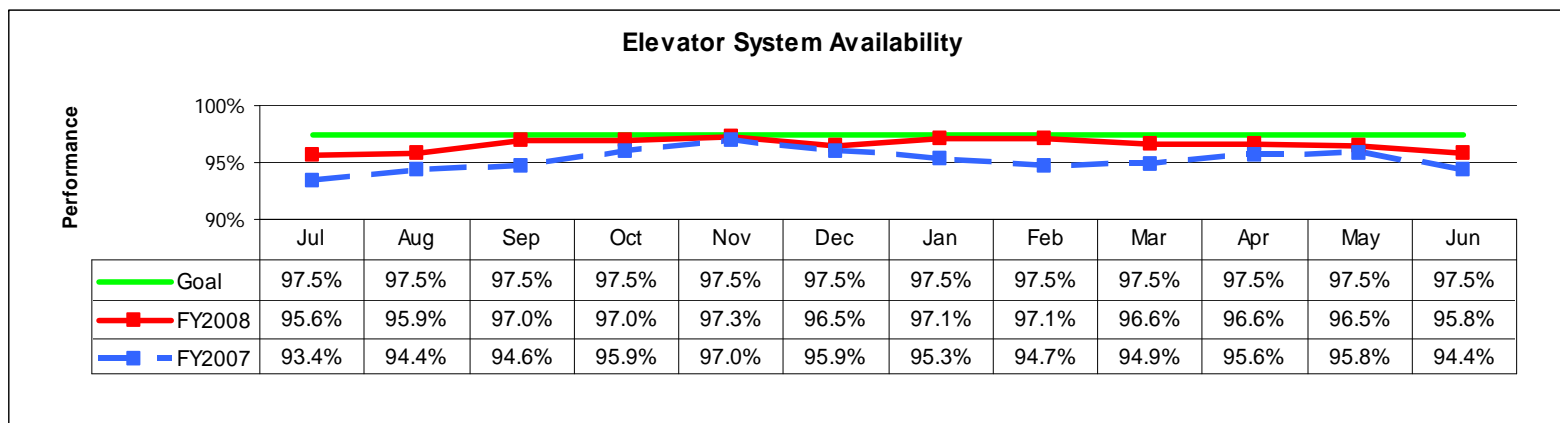
**DEFINITION** – Percentage of time that the escalator or elevator system is available for service.

**CALCULATION** – Hours achieved divided by operating hours. Hours achieved = operating hours - (hours out of service both scheduled and unscheduled). Operating hours = revenue hours \* number of units.



**FY07 - 91.3%**

**FY08 - 94.1%**



**FY07 - 95.2%**

**FY08 - 96.6%**



# Escalators April Top 12

**DEFINITION** – Top 12 Escalators with the most non-scheduled outages for the past 90 days April 2008 thru June 2008.

**CALCULATION** – Rank first by number of failures, second by amount of time.

APRIL 2008			OOS	Hours	
STATION NAME	UNIT	Avail	COUNT	OOS	Comments
ANACOSTIA	#2	82.27%	21	102.50	19 reset of safety switches, 1 accident investigation (45 hrs) & 1 replaced emergency stop cover,
VIENNA	#1	90.59%	21	54.40	18 reset of safety switches, 1 adjusted & tested brake voltage, & 1 reset controller fault (13 hrs)
NAVY YARD	#2	87.20%	19	68.77	13 reset of safety switches, 1 installed new key on handrail drive sprocket, 1 replaced and broken chain drive switch, 1 replaced brake board, 2 adjustments & 1 safety work order
SHAW	#2	91.66%	18	48.21	16 reset of safety switches, 1 repaired handrail delay timer & 1 replaced cable & reconfigured display panel
WATERFRONT	#4	86.38%	17	74.61	15 reset of safety switches, 1 replaced top & bottom comb plates & steps & 1 adjustment
CLEVELAND PARK	#5	92.85%	15	41.31	10 reset of safety switches, 1 replaced auxiliary contact, 1 replaced high speed counter, 2 adjustments
BETHESDA	#4	87.40%	15	62.09	12 reset of safety switches, 1 realigned belt switch & 1 safety work order
NATIONAL AIRPORT	#3	11.29%	1	512.64	Work started on this unit 11-10-07 and was completed 4-27-08. Replaced bull gear, replaced controller, & motherboard, repaired gearbox assembly, replaced step chain & repaired brake solenoid plunger
HUNTINGTON	#1	41.11%	12	139.22	10 reset of safety switches, 1 replaced reverse phase relay & 1 adjusted speed sensor
VIENNA	#3	96.42%	12	20.91	12 reset of safety switches
MEDICAL CENTER	#3	93.53%	13	34.79	8 reset of safety switches, 1 replaced 6 demarcation strips, & 1 relamp lighting
MCPHERSON SQUARE	#2	97.10%	11	16.77	7 reset of safety switches, 5 reset of controller brake distance fault & 1 adjustment

Repeater



# Escalators May Top 12

MAY 2008		Sys.	OOS	Hours	Comments
STATION NAME	UNIT	Avail.	COUNT	OOS	
VIENNA	#1	84.65%	26	90.98	20 reset of safety switches, 2 resets of controller fault (30 hrs) 1 troubleshooting high failure brake fault, 1 replaced brake & seals (11 hrs), 2 safety inspections
ANACOSTIA	#2	92.79%	18	33.03	15 reset of safety switches (comb impact) & 1 reset of bottom comb impact (8 hrs)
ARCHIVES	#2	67.95%	13	161.34	4 reset of safety switches, 6 replaced brake boards, 2 replaced drive and brake assemblies, 1 replaced step, & 1 adjustment
GEORGIA AVE	#1	91.51%	16	50.75	8 reset of safety switches, 3 replaced demarcation strips, 1 cleaned gearbox seals, 1 replaced steps & 1 safety inspection, 1 adjustment
CRYSTAL CITY	#6	89.48%	18	62.86	16 reset of safety switches & 1 safety inspection
DUPONT CIRCLE	#2	94.55%	16	30.83	13 reset of safety switches, 1 reset comb impact (6 hrs), 1 replaced stub shaft bearing (7 hrs), 1 power failure restoration & 1 adjustment
TENLEYTOWN	#4	90.15%	13	56.95	9 reset of safety switches, 1 replaced plug & 3 adjustments
BETHESDA	#3	78.29%	14	176.38	7 reset of safety switches, 1 replaced transformer (41 hrs), 1 cut bent laminate & reset axle roller, 1 replaced skirt panels, 2 replaced F4 fuses & 2 safety inspections
GALLERY PLACE	#2	91.49%	13	50.89	replaced encoder shaft (18 hrs), 1 replaced step roller, 1 replaced step roller degradation fault & 1 reattached combplates
WHEATON	#3	96.17%	14	22.16	10 reset of safety switches, 1 replaced drive motors, brake, drive chain switch & 2 adjustments
EASTERN MARKET	#3	84.96%	12	86.45	repaired bad power supply, 2 corrected lifted floor plates, 1 replaced speed sensor, 1 replaced steps, & 1 replaced comb impact plates
ANACOSTIA	#3	92.22%	13	16.77	14 reset of safety switches

Repeater



# Escalators June Top 12

JUNE 2008		Sys.	OOS	Hours	Comments
STATION NAME	UNIT	Avail.	COUNT	OOS	
CRYSTAL CITY	#6	83.76%	31	94.02	28 reset of safety switches, 1 replaced combfinger sections, 1 safety inspection, & 1 adjustment
DUPONT CIRCLE	#3	89.82%	21	57.96	15 reset of safety switches, 1 replaced handrail drive chain, 1 repaired drive, 1 replaced brake board & 2 adjustments
ANACOSTIA	#3	86.80%	23	70.60	21 reset of safety switches, 1 replaced brake board, & 1 replaced handrail drive chain & sprocket
MCPHERSON SQUARE	#2	92.91%	20	41.58	18 reset of safety switches, 1 reset controller (7 hrs) & 1 reinstalled handrail
LANDOVER	#2	83.09%	20	81.80	15 reset of safety switches, 2 adjustments & 1 safety inspection
DUPONT CIRCLE	#2	93.86%	17	35.54	13 reset of safety switches, 1 reset comb impact (5 hrs) & 3 adjustments
GALLERY PLACE	#2	89.85%	17	58.10	12 reset of safety switches, 1 reset brake timer (10 hrs), 1 reset emergency stop (11 hrs), 1 replaced axle roller, 1 removed debris from comb plate, 1 safety inspection & 1 adjustment
MCPHERSON SQUARE	#7	95.44%	14	25.77	14 reset of safety switches
FOGGY BOTTOM	#2	90.76%	17	53.52	14 reset of safety switches, 1 replaced step pin & 2 adjustments
NAVY YARD	#3	89.26%	17	62.19	14 reset of safety switches, 1 replaced 30 amp fuse & 1 removed debris from comb plate
UNION STATION	#1	78.44%	12	123.93	2 reset of safety switches, 1 replaced handrail assy & belt, 3 re-installed handrails, 2 replaced H07 belts, 1 weld of C11 fracture & 1 adjustment
BETHESDA	#3	82.84%	13	93.27	6 reset of safety switches, 1 power restoration, 1 replaced brake board, 1 replaced output card in controller (21 hrs), 2 replaced output cards in controller, 1 replaced encoder (25 hrs) & 1 adjustment

Repeater



# Elevators April Top 12

**DEFINITION** – Top 12 Elevators with the most non-scheduled outages for the past 90 days April 2008 thru June 2008.

**CALCULATION** – Rank first by number of failures, second by amount of time.

APRIL 2008		Sys.	OOS	Hours	Comments
STATION NAME	UNIT	Avail.	COUNT	OOS	
BALLSTON	#2	83.58%	10	94.89	1 re-programmed controller, 1 cleaned photo eye, 1 repaired bent door clutch, 1 repaired call button, 1 cleaned door sills, 1 repaired door lock jumper, 1 replaced door operator board, 1 adjustment & 2 safety inspections
NAVY YARD	#2	92.03%	8	46.09	3 reset of safety switches, 1 replaced door operator, 3 adjustments & 1 safety inspection
COLLEGE PARK	#4	75.63%	6	140.88	4 entrapments, 1 welded rail bracket & 1 adjustment
VAN NESS	#1	96.76%	7	17.72	1 reset of safety switch, 1 entrapment, 1 replaced LU relay, 1 cleaned level door lock & 3 adjustments
FOREST GLEN	#1	90.03%	6	57.72	5 reset of safety switches & 1 adjustment
CAPITOL HEIGHTS	#2	97.42%	7	15.03	6 reset of safety switches & 1 entrapment
MORGAN BLVD	#2	95.71%	8	24.80	4 reset of safety switches, 1 changed zone station, 2 safety inspections & 1 adjustment
BALLSTON	#4	98.43%	6	9.07	1 reset of safety switch, 3 re-programmed controllers, 1 repaired jammed door & 1 removed debris from hatch door sill
NAVY YARD	#1	97.45%	4	14.72	2 reset of safety switches, 1 replaced pit lights & 1 replaced pickup roller assembly
PRINCE GEORGE PLAZA	#3	81.12%	6	109.12	1 reset of safety switch, 1 cleaned selector tape, 1 replaced LED selector, 2 safety inspections & 1 adjustment
ROSSLYN	#1	96.08%	5	22.26	1 reset safety switch, 3 entrapments & replaced amp fuse, & 1 adjustment
FRIENDSHIP HEIGHTS	#1	95.72%	5	24.75	1 cleaned car sills, 1 replaced car door & 3 adjustments

 Repeater



# Elevators May Top 12

MAY 2008		Sys.	OOS	Hours	Comments
STATION NAME	UNIT	Avail.	COUNT	OOS	
CONGRESSIONAL HEIGHTS	#2	97.24%	15	19.60	15 reset of safety switches, 1 smoke testing & 1 safety inspection
CONGRESSIONAL HEIGHTS	#1	96.37%	15	21.73	14 reset of safety switches & 1 cleaned photo eye
CAPITOL HEIGHTS	#2	90.63%	11	56.77	5 reset of safety switches, 3 entrapments, 1 replaced F2 fuse which repeatedly blew & replaced reverse phase relay (22 hrs), 1 cleaned photo eye & 1 cleaned door sill
ARCHIVES	#1	90.16%	8	58.83	4 entrapments, 1 replaced 12 pole relay clutch assembly & 3 adjustments
PENTAGON	#1	84.96%	9	90.17	5 reset of safety switches, 1 entrapment, 2 cleaned door sill & 1 cleaned photo eye
SHAW	#1	94.97%	9	30.28	1 reset of safety switch, 1 replaced photo eye, cable and power supply, 2 cleaned door sills, 2 cleaned photo eyes & 3 adjustments
COURTHOUSE	#1	95.78%	6	25.22	1 entrapment, 1 cleaned photo eye, 1 removed debris & 3 adjustments
MINNESOTA AVE.	#2	97.01%	8	17.89	3 reset of safety switches, 1 entrapment, 1 re-programmed & 2 adjustments
GALLERY PLACE	#1	93.62%	6	38.17	2 reset of safety switches, 1 entrapment, 1 removed brake coil & cleaned & lubed brake pins (17 hrs) & 2 adjustments
HUNTINGTON	#1	98.82%	4	7.05	1 replaced site guard on hoistway doors, 1 repaired slow down switch & 1 lubrication
ROSSLYN	#1	90.03%	5	59.65	2 reset of safety switches, 1 entrapment, 1 repaired hall call button & reset controller fault (49 hrs) & 1 power restoration
JUDICIARY SQUARE	#1	98.64%	4	8.12	3 reset of safety switches & 1 adjustment

 Repeater



# Elevators June Top 12

JUNE 2008		Sys.	OOS	Hours	Comments
STATION NAME	UNIT	Avail.	COUNT	OOS	
CLARENDON	#3	89.54%	6	60.57	2 reset of safety switches, 1 replaced wiring, 1 repaired gate wiring & 1 replaced operator board
EAST FALLS CHURCH	#1	94.99%	11	28.03	9 reset of safety switches & 2 safety inspection
BALLSTON	#2	89.55%	5	60.52	3 reset of safety switches, 1 cleaned debris, 1 safety work order (19 hrs) & 1 adjustment
MINNESOTA AVE.	#1	95.69%	7	24.96	4 pumped out pits, 1 cleaned debris & 2 adjustments
FRIENDSHIP HEIGHTS	#4	90.25%	8	56.45	1 reset of safety switch, 3 entrapments, 1 cleaned car sills, 1 repaired per safety order, 1 safety inspection & 1 adjustment
TWINBROOK	#1	96.47%	7	20.42	6 reset of safety switches, 1 power restoration
GALLERY PLACE	#1	91.85%	6	47.16	1 entrapment & repaired controller (17 hrs), 1 replaced motherboard, 1 replaced governor ropes, 1 safety inspection & 1 adjustment
VAN DORN	#1	95.01%	4	28.91	2 reset of safety switches, 1 repaired oil leak & 1 adjustment
FRANCONIA SPRINGFIELD	#4	38.46%	2	356.29	1 power restoration & 1 replaced hoist motor
CAPITOL HEIGHTS	#2	87.55%	3	72.07	2 entrapments & 1 replaced fuse and module in door controller (50 hrs)
CAPITOL HEIGHTS	#1	94.76%	5	30.34	1 reset of safety switch, 2 pumped pits, 1 adjustment & 1 safety inspection
FOREST GLEN	#6	88.01%	4	69.42	2 reset of safety switches, 1 replaced encoder & contractor & 1 replaced gauge tachometer

 Repeater





# Escalators/Elevators Not Functioning

Elevators					
Asset	Location	Start Date	CIP	Major Repair	Description of Repair / Repair Details
#2	POTOMAC AVE	15-May-08	X		Rehabilitation/Modernization - Projected 19-Sep-08
#1	ANACOSTIA	11-Jun-08	X		Rehabilitation/Modernization - Completed 29-Aug-08
#1	SHAW	22-Jul-08	X		Rehabilitation/Modernization - Projected 17-Oct-08

Escalators					
Asset	Location	Start Date	CIP	Major Repair	Description of Repair / Repair Details
#3	CLARENDON	28-Apr-08	X		Rehabilitation/Modernization - Completed 14-Aug-08
#4	CLARENDON	28-Aug-08	X		Rehabilitation/Modernization - Projected 28-Nov-08
#5	COURTHOUSE	24-Jul-08	X		Rehabilitation/Modernization - Projected 27-Nov-08
#8	GALLERY PLACE	5-May-08	X		Rehabilitation/Modernization - Completed 19-Aug-08
#4	GALLERY PLACE	12-May-08	X		Rehabilitation/Modernization - Completed 29-Aug-08
#9	GALLERY PLACE	19-Aug-08	X		Rehabilitation/Modernization - Projected 31-Oct-08
#4	CAPITOL HEIGHTS	21-May-08	X		Rehabilitation/Modernization - Completed 25-Aug-08
#5	CAPITOL HEIGHTS	25-Aug-08	X		Rehabilitation/Modernization - Projected Completion 17-Nov-
#4	CONGRESS HEIGHTS	7-Aug-08		X	Major Repair - Projected 29-Sep-08
#5	BALLSTON	16-Jul-08	X		Rehabilitation/Modernization - Projected 22-Oct-08
#11	BALLSTON	17-Jul-08	X		Rehabilitation/Modernization - Projected 23-Oct-08
#1	DUPONT CIRCLE	26-Jun-08		X	Replace hydraulic brake line, replace hydraulic brake caliper - Completed 29-Jun-08
#7	ROSSLYN	5-Jul-08		X	Rack and axle replacement - Completed 05-Aug-08
#1	FOGGY BOTTOM	19-Jul-08		X	Drive motor, brake lines - Completed 29-Aug-08
#2	FOGGY BOTTOM	20-Aug-08		X	Drive motor replacement, brake lines - Projected 15-Sep-08
#3	FOGGY BOTTOM	25-Aug-08		X	Drive motor replacement - temporarily repairs done to put back into service 28-Aug-08 so there would be a running unit while #1 was being completed and #2 was repaired - remaining repairs to be completed by 30-Sep-08
#2	MCPHERSON SQUARE	22-Jul-08		X	Replace proximity switch, replace belt, belt switch arm, and switch at DU2, replaced missing step switch, needs replacement steps - Completed 04-Aug-08
#4	CAPITOL SOUTH	29-Jul-08		X	Rack and axle replacement

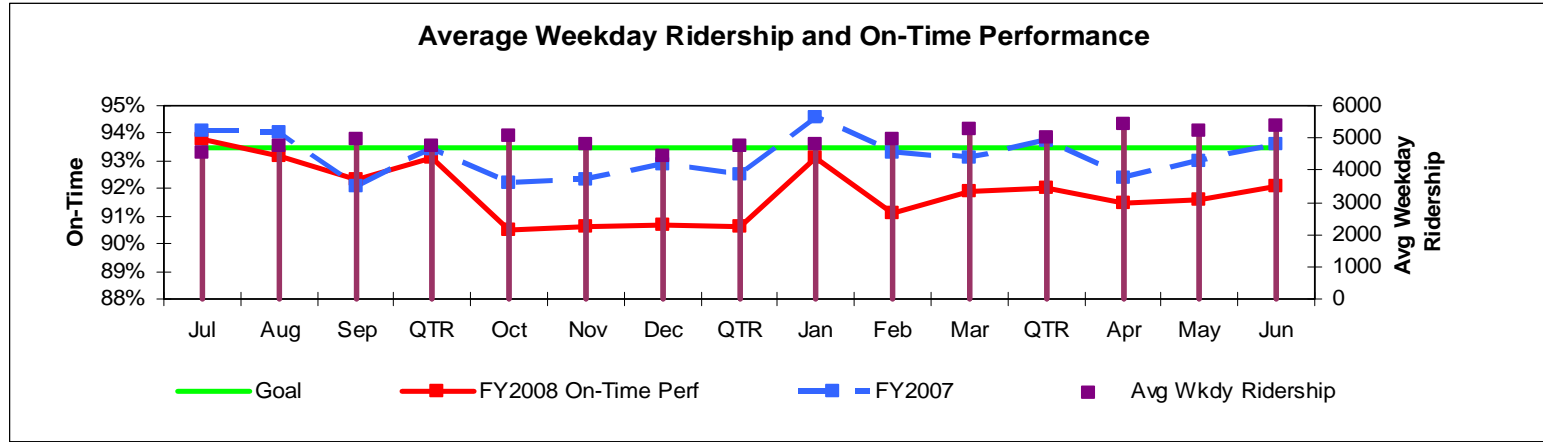
Completed



# MetroAccess

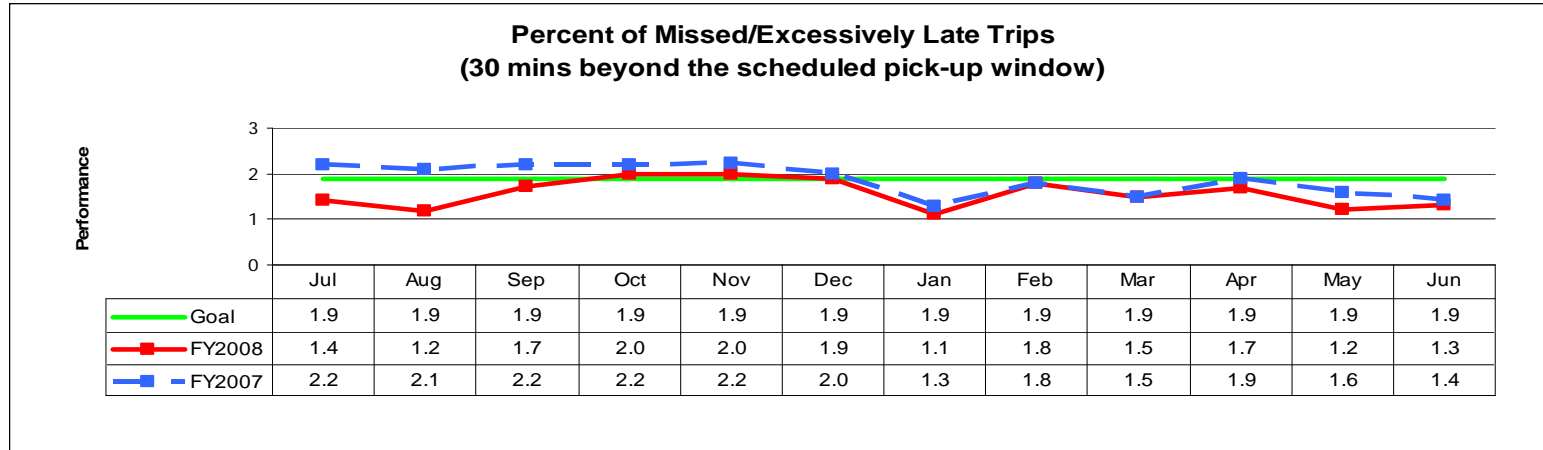
**DEFINITION** – Percentage of on-time pickup within a 30-minute window (15 minutes before or after scheduled pickup time).

**CALCULATION** – (Total on-time trips including “no shows” to which were initially on-time /sum of total completed trips (including “no shows” to which we were initially late) and missed trips = MetroAccess On Time Performance.



FY07 - 93.2%

FY08 - 91.9%



**DEFINITION** - Percentage of missed/excessively late trips (beyond 30 minutes).

**CALCULATION** - Number of completed trips with a >30 minute deviation from the scheduled arrival time/Completed trips = MetroAccess Percentage of Missed/Excessively Late Trips.