



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

**Board Information Item III-D**

**March 13, 2008**

**Briefing on Metro Matters Projects**

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

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

To provide the Committee with an overview of the projects within the Metro Matters Program and accomplishments achieved.

**DESCRIPTION**

On August 19, 2004, the Board of Directors approved the Metro Matters Financial Agreement (Resolution 2004-38). WMATA converted from obligation to expenditure basis and used the Metro Matters Funding Agreement for Compact 22 (funds availability). The total 20-year program FY05-FY24 includes \$3.158B in cash disbursements for projects. Debt service assumption is in jurisdictional allocated shares but not in the project amounts.

A description, level of work to be done within program and accomplishments achieved is provided for the projects that comprise the Metro Matters Program.

WMATA reviewed the FY08-FY10 project expenditure forecasts to ensure compliance with the \$2.666B cash disbursements available between FY05-FY10. This resulted in revising project forecasts including deferring some of the projects to the FY11-FY24 portion of the Metro Matters Program.

**FUNDING IMPACT**

Total 20-year program (FY05-FY24) has \$3.158B available for projects; \$2.666B available for FY05-FY10 and \$.492B available FY11-FY24.

**RECOMMENDATION**

None



# Briefing on Metro Matters Projects

*Presented to the Board of Directors:*

**Customer Service, Operations and  
Safety Committee**

March 13, 2008





# I. Purpose

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To provide the Customer Service, Operations and Safety Committee an overview of the Metro Matters projects and their accomplishments.



## II. Background

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Board approved Metro Matters Financial Agreement Fall 2004:

- WMATA converted from obligation to expenditure basis and used the Metro Matters Funding Agreement for Compact 22 (funds availability)
- Total Metro Matters Program 20 years FY05-FY24  
Cash Disbursements for Projects \$3.158B
- Cash Disbursements for Projects six years FY05–FY10 \$2.666B
- Remainder Cash Disbursements for Projects 14 years  
FY11-FY24 \$ .492B
- Debt service assumption is in jurisdictional allocated shares but not in the project amounts



## II. Background

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The Metro Matters Program was initiated in FY05 to provide a multi-year program to:

- Maintain the system in a state of good repair
  - Provide 50% eight car train operation
  - Provide bus service enhancements
- \* Some projects in this presentation contain a mix of work funded with pre-Metro Matters and Metro Matters funds



# III. State of Good Repair

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## Power Projects:

The AC Switchgear, transformers, uninterruptible power systems (UPS) and battery banks support the electrical systems in the passenger stations.

Item	Work Completed	Work in Metro Matters	Total in System
AC Switchgear	0	48	202
UPS	22	98	158
Batteries	16	16	161





# III. State of Good Repair

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## Power Projects:

Replacement of low voltage systems including: voltage regulators, motor control centers, cables, conduits, switches, boxes and lights.

Item	Work Completed	Work in Metro Matters	Total in System
Motor Control Centers (MCC)	17	82	461
Voltage Regulators	39	46	49



Serves Ventilation Fans & Drainage Pumps



Motor Control Center





# III. State of Good Repair

## Power Projects:

Traction Power Substations (TPSS) receive power from the utility companies; equipment within the substations convert the power to provide electrical energy to trains.

Item	Work Completed	Work in Metro Matters	Total in System
Traction Power Substations	40	92	92





## III. State of Good Repair

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### Automatic Train Control Projects:

The train control equipment is located in rooms along the wayside throughout the system. Critical equipment is used to control train movement, speed and protection.

Item	Work Completed	Work in Metro Matters	Total in System
RTU Units in Train Control Rooms	10	45	96
Station Function Non-Vital Relays with Software	0	63	109





# III. State of Good Repair

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## Automatic Train Control Projects:

Item	Work Completed	Work in Metro Matters	Total in System
ATP Track Circuit Modules	194	940	2815
Mainline Switch Machines	20	144	280
GL-1 Interlocking Processors	5	6	10





# III. State of Good Repair

## Communications Projects:

Communications for the entire Authority encompasses all of the Rail, BUS, and Operations, Authority telephone, closed circuit television, alarms and data transmission systems.

Item	Work Completed	Work in Metro Matters	Total in System
Public Address	23	38	86
CCTV	2	27	86
Bus Garages Fire Intrusion Alarm (FIA)	2	4	9
Other Facilities FIA	0	2	8
Intercom	86	86	86







# III. State of Good Repair

## Mechanical Systems Projects:

Fire standpipe systems are used by the fire departments to provide water to the tunnel areas and at Metrorail stations to suppress fires.

Item	Work Completed	Work in Metro Matters	Total in System
Tunnel Dry Standpipe System Replacement	61	78	184
Station Standpipe System Replacement	10	42	91





# III. State of Good Repair

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## Mechanical Systems Projects:

Drainage Pumping stations prevent flooding in underground stations. Sewage ejectors provide means to remove waste from the stations.

Item	Work Completed	Work in Metro Matters	Total in System
Drainage Pumping Stations	14	31	58
Sewage Ejectors	19	19	75





# III. State of Good Repair

## Mechanical Systems Projects:

Chiller systems provide station cooling during the spring and summer months.

Item	Work Completed	Work in Metro Matters	Total in System
Station Air Conditioning Units Replaced	53	201	278
Cooling Towers Replaced	4	6	47
Chillers Replaced / Overhauled	2 / 14	3 / 25	48







# III. State of Good Repair

## Mechanical Systems Projects:

Station and Tunnel Ventilation systems provide emergency egress and control of air pressure by moving trains.

Item	Work Completed	Work in Metro Matters	Total in System
Tunnel Ventilation Shaft Rehab	49	49	184
Damper Replacements	6	49	184
Tunnel Fans Overhauled	211	211	211







## III. State of Good Repair

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### Environmental Projects:

There are 9 bus garages and 8 rail yards that have numerous underground and above ground storage tanks, fueling facilities, stormwater management and wastewater treatment systems that can create a hazardous environment. In order to be in-compliance with EPA code, 4 to 7 tasks are completed each year.

FY 06

- Removed Underground Storage Tanks (USTs) and remediated contaminated soil at Silver Spring PLNT field base.
- Steam cleaned sand filter at Northern Bus Division.

FY 07

- Installed oil water separator (OWS) at Alexandria Rail Yard fueling facility.
- Replaced conduit for leak detection system at Southern Avenue Bus Division.
- Replaced leaking diesel pipe at Bladensburg Bus Division 2251.

FY 08

- Installed discharge pre-treat system at Largo Operations Center.
- Installed solenoid valves in diesel fuel piping at Western, Northern, Southeast and Four Mile Run Bus Divisions.





# III. State of Good Repair

## Automatic Fare Collection (AFC):

Item	Work Completed	Work in Metro Matters	Total in System
\$1 Dollar Coin Acceptance - AFC Machines	918	918	918
Parking Meters	1881	3,384	3384
Credit Card Payment for Parking	14	14	54
Conversion to Express Vendors	98	98	346





# III. State of Good Repair

## Structural Projects:

Item	Work Completed	Work in Metro Matters	Total in System
Parking Garage Structures	5	10	21
Rehabilitation of Park and Rides	8	13	30
Rehabilitation of Kiss and Rides	9	24	64
Bus Loops	11	33	51
Access Roads	2	3	6
Underground Stations	7	14	47
Above Ground Stations	5	8	39
Station Platforms Tiles	3	6	86



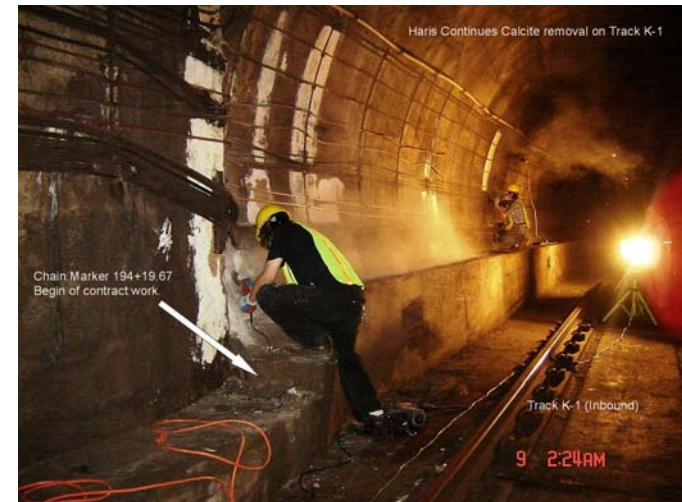




# III. State of Good Repair

## Structural Projects:

Item	Work Completed	Work in Metro Matters	Total in System
Rehab Cut and Cover Concrete Tunnel (in feet)	2,403	3,048	115,464
Rehabilitation of Concrete Tunnel Liner (in feet)	2,100	8,586	233,192
Rehabilitation of Steel Tunnel Liner (in feet)	6,050	6,050	21,017
Retaining Walls (in feet)	1,786	4,296	129,859
Portal Walls (each)	0	2	28





# III. State of Good Repair

## Structural Projects:

Item	Work Completed	Work in Metro Matters	Total in System
Rehab Aerial Structures (in feet)	7,792	13,026	75,343
Rehabilitation of Acoustical Barrier Walls (in feet)	0	3,336	39,070
Rehabilitation of Bridges	4	17	47
Rehabilitation of Pedestrian Bridges	4	4	8
ROW Fence (in feet)	2,598	10,274	286,075





# III. State of Good Repair

## Rail Facilities Projects:

Item	Work Completed	Work in Metro Matters	Total in System
Replace Train Wash System	1	4	7
Rehab/Replace Wheel Truing Machines	4	5	6
Facility Rehabilitation	2	4	8







# III. State of Good Repair

## Bus Facilities Projects:

Item	Work Completed	Work in Metro Matters	Total in System
Bus Lift Replacements	72	85	129
Replace Heating Boiler System	2	3	15
Replace/Rehab-Upgrade Bus Wash Systems	2 / 3	5	9
Facility Rehabilitation	1	6	9





# III. State of Good Repair

## ROW Track Projects:

The replacement of track, track fasteners, cross ties and turnouts that supports the track infrastructure.

Item	Work Completed	Work in Metro Matters	Total in System
Running Rail (in feet)	117,660	223,834	1,119,360
Cross Ties	19,142	31,142	102,667
Track Fasteners	56,324	86,324	330,512
Turnouts	74	164	694
Tunnel Leaks repaired	8946	13,400	10,000+/- * * Avg. number of leaks at any one time.





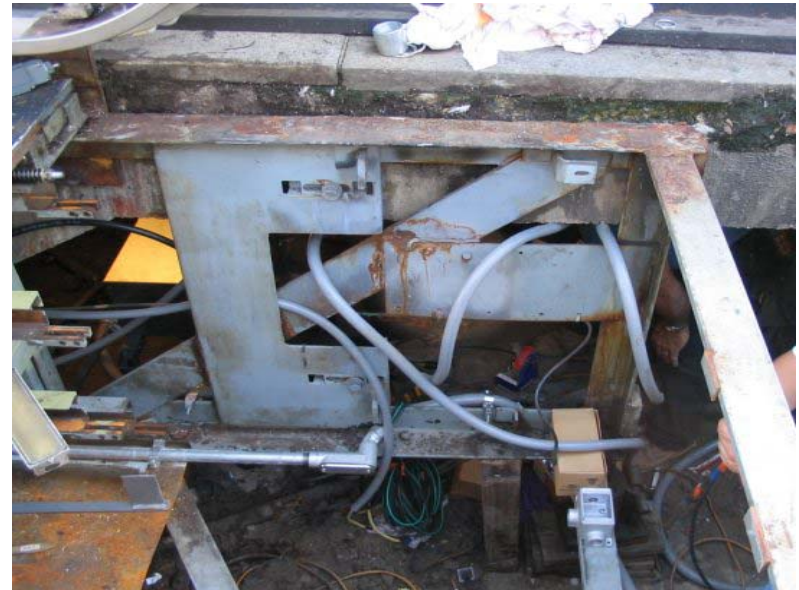


# III. State of Good Repair

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## Escalator Rehab Program:

- **The escalator component of the program includes:**
  - Rehabilitation of over 300 escalators under the CIP through FY10
  - Replace/rehabilitate poor performing/unique brands
  - Perform safety upgrades
- **Recently awarded another 70 Westinghouse MOD 100 platform units with a Spring 2011 completion date**



Item	Work Complete	Work in Metro Matters	Total in System
Westinghouse Mod 100	219	289	433
Montgomery	2	20	20



# III. State of Good Repair

## Elevator Rehab Program:

- **The elevator component of the program includes:**
  - Rehabilitation of over 125 units under the CIP through FY10
  - Upgrade any unit that is out of ADA compliance
  - Perform controller and modernization upgrades
- **Procurement for more modernizations of elevators will be initiated in Spring 2008**



Item	Work Completed	Work in Metro Matters	Total in System
Elevators	83	97	265





# III. State of Good Repair

- **NABI**

- CNG BRT style articulated buses and contract support items.
- The buses are to be delivered April – June 2008.



- **New Flyer**

- 203 Base order for FY08 and FY09.
- 452 Hybrid/Electric buses over 5 year period with options for up to 500 additional buses.
- The buses are to be delivered between August 2008 and June 2009.

Item	Work Completed	Work in Metro Matters	Total in System
Compressed Natural Gas (CNG) Buses BRT Style NABI	22 (ordered for delivery June 2008)	22	461 CNG Buses in System (incl. 22 NABI)
Hybrid/Electric BRT Style Buses (42', 37' & 62') New Flyer	203 (ordered for delivery August 2008 – June 2009)	452 (with 500 additional option buses)	253 Hybrid/Electric buses in system (incl. 203 New Flyer)



# III. State of Good Repair

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## Rehabilitation Program of 2000/3000 Series Rail Cars:

- Safety certification achieved
- Improved reliability/quality
- Accelerated on-site modifications to improve reliability
- 61,187 Mean Distance Between Delay (MDBD) YTD 2008
- Final car Delivery Date: August 2008

Item	Work Completed	Work in Metro Matters	Total in System
Rehabilitation Program of 2000/3000 Series Rail Cars	316 Delivered (308 conditionally accepted)	364	364







## IV. 50% Eight Car Train Operation

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### Metro Matters Yards:

This program expands yard rail car storage capacity by 220 and increases shop capacity by 28 cars.

- **Brentwood Yard**
  - Construction is complete for the new floor that will support three new tracks and for the track work on the south side of the building.
  - Ongoing work includes installation of rail car lifts and installation of track work for the new north yard. Work will be completed by May 2008.





## IV. 50% Eight Car Train Operation

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### Metro Matters Yards:

- **Greenbelt Yard**
  - Substantial Completion Inspection held on December 6, 2007 for all contract work within the existing S&I Shop.
  
- **Shady Grove Yard**
  - Substantial Completion Inspection held on December 21, 2007 for the new S&I building and related track and site work.





## IV. 50% Eight Car Train Operation

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### New 6000 Series Railcar Program: (184 Railcars)

- 170 Delivered with 158 railcars conditionally accepted
- Safety certification achieved
- 184th railcar has started into final assembly
- 7,519 Mean Distance Between Failures (MDBF) over initial 5M miles
- 75,186 MBD attained YTD 2008
- Final rail car delivery expected April 2008







## IV. 50% Eight Car Train Operation

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### Upgrade of Traction Power:

- Upgrade to allow 20% eight car train operation - TPSS completed is 18 of 18.
- Upgrade to allow 33% eight car train operation - TPSS completed is 15 of 17.
- Final upgrade for 50% eight car train operation - TPSS completed is 1 of 10.







## IV. 50% Eight Car Train Operation

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Modification of existing ATC systems for railcar fleet to upgrade the 1000, 2000, 3000, 5000 and 6000 Series rail cars.

- Installation of new software for 1000 and 5000 series fleet ongoing
- Testing completed for the 2/3k and 6000 series fleet
- Expected program completion early summer



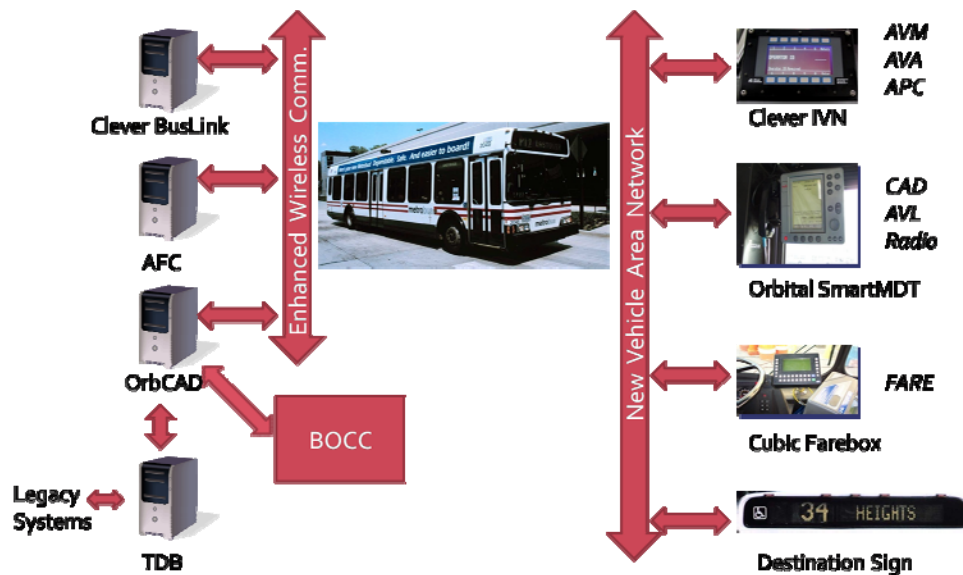
**8 - CAR PRECISION  
STOPPING PROGRAM**



# V. Bus Service Enhancements

## Bus Upgrades:

- West Ox Road October 2008 building completion, operation commencing January 2009.



## Bus Systems Integration:

- Completed on-board systems integration on all 1600 buses
- Implemented Orbital AVL System
- Installed enhanced vehicle area network at all 9 bus garages
- Wireless communications on all buses and garages



# Summary

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- Continue to aggressively pursue completion of projects
- Reviewed FY08-FY10 projects to ensure compliance with \$2.666B expenditures per agreement
- Revised project expenditure forecasts including deferring some projects to FY11-FY24 portion of Metro Matters (Reference Appendix for listing)



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# APPENDIX



# Deferred Projects

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- **Mid-life Rehab AC/TPSS/TBS**
  - Replacement of AC switchgear at 48 locations
  - Rehab of Traction Power Sub-station (TPSS)/Tie Breaker Station (TBS) at 12 facilities
- **Mid-life Rehab ATC**
  - Replacement of train control processor and wiring at Alexandria Yard
  - Replacement of Silver Spring train control room
- **Traction Power (TP) Switchgear**
  - Replacement at 40 locations and 92 TBS
  - Replacement of TP cabling
- **Un-Interruptable Power Supply (UPS)**
  - Replacement of UPS at 76 locations
  - Replacement of batteries at 16 locations



# Deferred Projects

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- **Right-of-Way (ROW) Structural Rehabilitation**
  - Rehab of D&G aerial structure including replacement of 52 deteriorated bearing pads
  - Rehab of 10 underground stations and 23 concrete tunnel segments on six routes.
  - Rehab of five underground station vaults
- **Drainage Pumping/Sewer Rehabilitation**
  - Replacement of sewage ejector systems at 38 stations
  - Replacement of drainage pumping stations at 12 locations
- **Station Chiller**
  - Replacement of air handling units in 56 stations
  - Replacement of under platform duct work in 14 stations



# Deferred Projects

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- **Bus Support Equipment**
  - Replacement of test equipment, radios, shop equipment and miscellaneous work equipment
- **Bus Washer Rehabilitation**
  - Enhancement of wheel washers
  - Replacement of aged and worn nozzles
  - Replacement of detergent injection system
- **Parking Lot Rehabilitation**
  - Rehab of Kiss and Ride parking at 8 stations
  - Rehab of Bus Loop parking at 11 stations



# Deferred Projects

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- **Bus Work Equipment/Bus Lift**
  - HVAC replacement/upgrade at four bus maintenance facilities
- **Non-Revenue Vehicles**
  - In FY08, only 17 of 85 vehicles will be replaced (20%)
- **Repairables**
  - Deferring 30% of the FY08 proposed funding will result in processing only 90 of the 130 line items
- **Emergency Construction**
  - All funding removed from FY09 and FY10
  - Provides no flexibility with funding authority to respond to emergency situations





# Deferred Projects

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- **Rail/Bus Structures, Field Offices and Yards**
  - FY08 deferred Montgomery Bus Garage “mini-rehab” and Bladensburg “major rehab”
  - FY09 deferred Northern Bus Garage “mini-rehab” and Royal Street Bus Garage “major rehab”
  - FY10 deferred Brentwood “mini-rehab” and Greenbelt refurbish rail car painting facility