

#### WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

# WMATA BUS MID-LIFE OVERHAUL PROGRAM

March 27, 2012



# Purpose / Mission

- Designed to maintain the fleet of 1492 buses in a state of good repair.
- Commitment to good maintenance and maximizes capital investments
- Reduce in-service breakdowns
- Increase customer satisfaction
- Provides for Engineering Modification Improvements
- Yields a safe and reliable fleet



## Mid Life Overview

- Program was developed in 1994
- To date 1584 buses have been through the process
- Each year 100 buses complete the process
- Buses enter the process at approximately 7.5 years of age
- Process involves 107 employees at two locations
- All work is performed in-house
- Average cost per bus \$122,000
- Average cost of a new bus \$495,000



# Life of the Bus

	BUS	LIFE CYCLE (ASS	ET MANAGEMENT)	PROCESS MAPPING			
CONTRACT PHASE	BUILD PHASE	ADMINISTRATION PREPARATION	BUS ACCEPTANCE PHASE	OPERATING AND MAINTENANCE PHASE	RETIREMENT PHASE		
BASED ON FLEET PLAN, DEVELOPMENT OF SPECIFICATIONS, RISK ASSESSMENT, PREPARATION AND ISSUANCE OF REQUEST FOR PROPOSAL (RFP), BID EVALUATION AND AWARD OF CONTRACT  OWNERS BENG, BPLN, PRMT, BMNT	PRODUCTION, ON- SITE INSPECTION, TRAINING ISSUE RESOLUTION, BUS SHIPMENT FROM BUILDER  OWNERS BENG, BMNT	SPARE PARTS IDENTIFICATION ESTABLISH SPARE PARTS STOCK, CREATE EQUIPMENT RECORDS IN MAXIMO, SET UP PM PROGRAMS IN MAXIMO, TAINING OF PERSONNEL, DEVELOP FLEET ASSIGNMENT PLAN  OWNERS DENG, DMNT, PRMT, IRPG, PLNT, BPLN, BTRA	ACCEPTANCE WORK SCOPE DEVELOPED, BUS DELIVERED TO WMATA, SAFETY CONFORMANCE INSPECTION, ADA CONFORMANCE INSPECTION, PRE- SERVICE INSPECTION AND MAINTENANCE, BUS ACCEPTED AND DELIVERED TO HOME DIVISION  OWNERS BENG, SAFE/QA, BMNT, ADAP	BUS PLACED IN REVENUE SERVICE, PREVENTIVE AND CORRECTIVE MAINTENANCE PROGRAMS, UPGRADES AND ENHANCEMENTS PERFORMED, MIDLIFE OVERHAUL  OWNERS BENG, BMNT, BTRA, PLNT, IRPG, SAFE/QA/ ENSV, PRMT, BPLN	DEVELOPMENT OF FLEET RETIREMENT PLAN, BUS REMOVED FROM ACTIVE SERVICE, RESERVE OR CONTINGENCY FLEET, PREPARATION FOR DISPOSAL AND DISPOSAL  OWNERS BENG, PRMT, BMNT		
				Acronyms Used BPLN - Bus Planning BENG - Bus Engineering BMNT - Bus Maintenance BTRA - Bus Transportation PRMT - Procurement II - Information Technology ADAP - American with Disabilities Act Programs SAFE - Safety QA- Quality Assurance ENSY - Environmental Services IRPG - Infrastructure Renewal Program PLNT - Plant Maintenance	Key Performance Indicators (KPI)     Average Fleet Age     7.5 years     Safety     100% safety inspections     MDBF     7.700 miles     PM Compliance     85%     Midlife Overhaul     7 - 7.5 years     Contractual     Parts Availability – 15 years     All Service Contracts Current     Training     100% Operations &     Maintenance     GHG Emissions     Reduce GHG Emissions by     4% over a 5 year period		



## Current Fleet Profile

FLEET	PROF	ILE F	Y12 a	as of	2/22/	12			DIES	BEL	CNG	HYB	RID	HYI	BRID	) WI	TH D	EF F	FLUI	D								
YEAR	1997	1997	1997	2000	2000	2001	2002	2003	2005	2005	2005	2006	2006	2006	2007	2007	2008	2008	2009	2009	2009	2009	2010	2010	2011	2012	ACTUAL	AVG
		нв								нв				нв			BRT	BRT	BRT	BRT	BRT	BRT		STIMUL				
LENGTH	40'	40'	30°	40'	40'	40"	40'	60'	40°	40'	30°	40'	40'	40'	26'	40'	60'	42"	42'	42'	62'	37'	42'	42'	40'	40*		
# OF SEATS	42	42	30	43	38	40	40	66	41	41	29	39	39	38	20	40	61	39	39	39	62	29	39	39	40	40		
MODEL	ORION	ORION	ORION	ORION	ORION	NF	NF	NEO	ORION	ORION	ORION	NF	NF	NF	TAG	NF	NABI	NF	NF	NF/EXP	NF	NF	NF	NF	NF	NF	TOTALS	AGE
	v	V	v	v					VII	VII	VII																	
					VI	CNG	CNG		CNG	CNG	CNG	нүв	CD	CD		CNG	CNG	HYB	HYB	НҮВ	НҮВ	HYB	НҮВ	нүв	HYB	нүв		
LNMT	16		9		31							24		6				23	14				45				168	6.85
MOMT	3			16	30							25	27	5				23		8	19		17		31		204	5.77
SAMT			26										77												27		130	6.76
MD	19	0	35	16	61	0	0	0	0	0	0	49	104	11	0	0	0	46	14	8	19	0	62	0	58	0	502	6.64
					_																							
BLMT				18		99	64				17					25	22								40		285	8.13
NOMT	22			28				20										29		14	3	10		48			174	6.55
WEMT			16	17																16			33			47	129	4.33
DC	22	0	16	63	0	99	64	20	0	0	17	0	0	0	0	25	22	29	0	30	3	10	33	48	40	47	588	6.51
								-											_		-							
FMMT					-				185	30	18				6						-						239	6.95
WEST OX	18				30													28	6			10	5				97	8.25
ROMT	10	13		53																							76	12.91
VA	28	13	0	53	30	0	0	0	185	30	18	0	0	0	6	0	0	28	6	0	0	10	5	0	0	0	412	8.35
															_								-					
SYSTEM	00	40		420	04	00	CA	20	105	20	25	49	104	44		25	22	102	20	20	22	20	400	40			4500	
TOTAL	69	13	51	132	91	99	64	20	185	30	35	49	104	11	6	25	22	103	20	38	22	20	100	48	98	47	1502	7.17



# Mid Life Reliability

- The MDBF of the 2001/02 New Flyer CNG fleet prior to entrance in the mid life overhaul was trending downward. Trending this degradation to August 2011 without midlife overhaul it was predicted the MDBF would have been 6,759.
- Midlife overhaul on this fleet of 164 buses began in April 2009 and took 20 months to complete. Halfway thru the rehab process (February 2010) BMNT began to see an improved MDBF and by August 2011, a full eight months after the last bus was completed, and 28 months after the first buses entered the process, the actual MDBF was 8,976. This number represents a 25% improvement in reliability over projections of no midlife overhaul.
- BMNT current FY12 target MDBF for all fleets is 7,700 miles with this fleet of buses exceeding that target.



# Station 1 Chassis Area

#### Removal and Installation of:

- Power Train
- Suspension System
- Front Axle
- Rear Axle (as required)
- Structural Rehab (as required)
- Pneumatic System (wheelchair lift installed)
- Electrical System





# Station 2 Body Disassembly Area

#### Removal of:

- Destination Signs
- Panels and handholds
- Window Assemblies
- Communication System
- Seat Frames
- Farebox
- Door System





# Station 3 Paint and Graphic Area Interior and Exterior

- Complete Repainting
- Replacement of all signage
- Upgrade to new paint scheme







# Station 4 Body Reassembly Area

### Reassembly and/or installation of:

- Destination Signs
- Panels and handholds
- Window Assemblies
- Communication System
- Seat Frames
- Farebox
- Door System





# Station 5 Final Test and Inspection

- Power train
- Door System
- Environmental
- Instrumentation
- Lighting/Farebox
- Communication System
- State Safety Inspection
- Road Test









