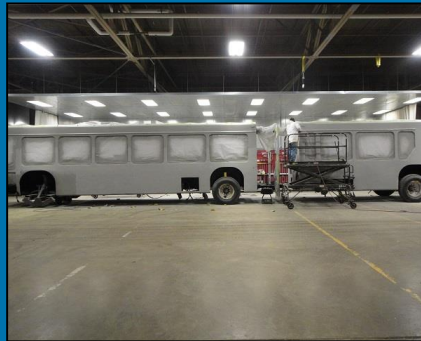


Northeast Diesel Collaborative Partners Meeting



MBTA Fleet Overview, Planning, & Focus October 2015



- *Operations / Fleet Statistics*
- *Fleet Planning & Strategy*
- *Current Vehicle Engineering Programs*
- *VE Procurement Strategy & Best Practices*
- *Strategic Planning & New Technology Evaluation*



Operations / Fleet Statistics

MBTA Operations	Lines / Route Information	Number of Vehicles	Route Miles	FY15 Passenger Trips (Riders per Weekday)	Percentage of all MBTA Ridership
Subway	4 lines (Red, Orange, Green, & Blue)	637 vehicles	64 miles	779,100	60%
Bus	174 routes	991 buses	758 miles	376,100	29%
Railroad	14 routes	81 locomotives 410 coaches 2 ferries	388 miles	122,000 (Rail) 4,800 (Ferry)	10%
RIDE (Paratransit)	North, West, & South	N/A	N/A	6,700	1%



Current Light & Heavy Rail Fleet



Line	Fleet	Qty	In Service	Avg. Age	Planned Replacement
Red	No. 1	72	1969 – 70	45	2019 – 24
Red	No. 2	58	1987 – 89	27	2019 – 24
Red	No. 3	86	1993 – 94	21	2022 – 24
Orange	No. 12	120	1979 – 81	35	2018 – 24
Blue	No. 5	94	2007 – 09	7	2032 – 34
Green	Type 7, 3600	86	1986 – 88	27	2022 – 25
Green	Type 7, 3700	17	1997	18	2022 – 25
Green	Type 8	94	1999 – 2000's	12	2022 – 25
Ashmont-Mattapan	PCC	10	1945 – 46	70	N/A



Current Bus Fleet



Fleet	Qty	Built	Avg. Age	Planned Replacement
New Flyer 40ft CNG	15	1999 – 02	13	2016
NABI 40ft CNG Base	124	2003 – 04	11	2016 – 17
NABI 40ft CNG Option	175	2004	11	2016 – 17
Neoplan 60ft CNG	44	2003 – 04	11	2016 – 17
Neoplan 40ft ETB	28	2004	10	2020
Neoplan ECD	193	2004 – 05	10	2019 - 20
Neoplan 60ft DMA	32	2004 – 06	10	2021
New Flyer ECD Base	155	2006 – 07	8	2019 – 20
New Flyer ECD Option	155	2008 – 09	6	2021 – 22
New Flyer 60ft HEV	25	2010	5	2025
New Flyer 40ft Hybrid	60	2014 – 15	0	2027



Efforts are underway to address current and future fleet needs

Current Fleet Overview

- Average age of the Authority's rail fleet is 25 years
- Average age of the Authority's bus fleet is 8.7 years
- The Authority's Fleet Plan is regularly updated based on current operation requirements and funding resources

Vehicle Programs Underway

- 23 active vehicle programs
 - 11 new vehicle procurements
 - 12 overhaul/state of good repair (SGR) programs
- Planning efforts are required to replace aging fleets
- Ongoing review of new vehicle technologies

MBTA Integrated Fleet Plan: Subway, Light Rail and Bus – 2015-2024



Prepared by
Massachusetts Bay Transportation Authority

Operations Mechanical Directorate

Rev 0, August 2015



Current Vehicle Engineering Programs



No.	Name	Type	Mode	Qty	Status
1	Red Line No. 1 (SMR)	Overhaul	Heavy Rail	72	Underway
2	Red Line No. 2 (SSRP) in-house	Overhaul	Heavy Rail	58	Nearing Completion
3	Red/Orange Line Procurement	New	Heavy Rail	284	Design Review
4	Orange Line No. 12 (SMR)	Overhaul	Heavy Rail	120	Underway
5	Blue Line No. 5 (RCM)	Maintenance	Heavy Rail	94	Underway
6	Green Line Type 7 SSO	Overhaul	Light Rail	86	Underway
7	Green Line Type 7 SSO Option	Overhaul	Light Rail	17	Underway
8	Green Line Type 8 RIP	Maintenance	Light Rail	94	Pending
9	Green Line Type 9 Procurement	New	Light Rail	24	Underway
10	Green Line Type 9 (option)	New	Light Rail	30	Planning
11	Neoplan ECD Bus 40ft	Overhaul	Bus	192	Nearing Completion
12	Neoplan DMA Bus 60ft	Overhaul	Bus	32	Underway
13	New Flyer ECD Bus Option	Overhaul	Bus	155	Spec Development
14	New Flyer 40ft Hybrids	New	Bus	60	Contract Closeout
15	New Flyer 40ft Bus Procurement	New	Bus	325	Underway
16	Future 60ft Bus Procurement	New	Bus	44	Underway
17	LoNo Zero Emissions Bus Procurement	New	Bus	5	Pending
18	Kawasaki Bi-Level	Overhaul	Commuter Rail	74	Underway
19	Kawasaki Bi-Level Option	Overhaul	Commuter Rail	32	Underway
20	Hyundai Rotem Bi-Level Procurement	New	Commuter Rail	75	Contract Closeout
21	MPI Locomotive Procurement	New	Commuter Rail	40	Underway
22	DMU Procurement	New	Commuter Rail	30	Proposals Due Dec 2015
23	Ferry Procurement	New	Boat	2	Underway



VE Procurement Strategy & Best Practices



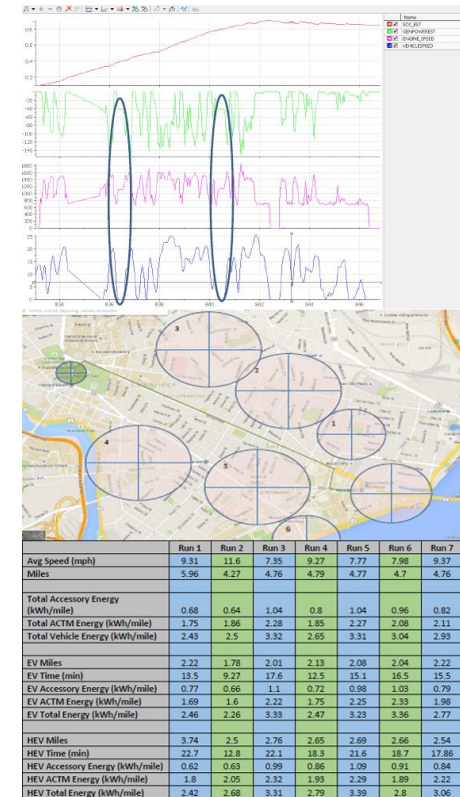
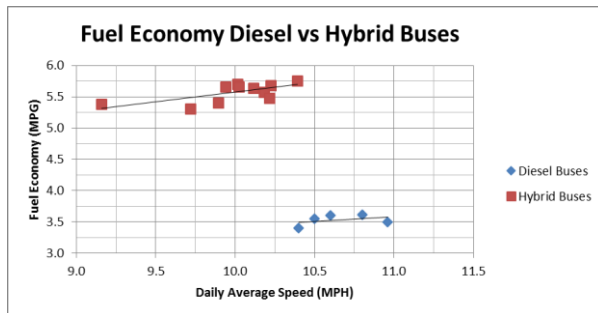
- Early stakeholder involvement (internal/external)
- Clear definition of contract/specification requirements - line by line review
- Systems integration focus
- Supplier involvement and signoff
- Focus contractor on quality issues early
- Schedule and milestone payment management
- Embedded engineering support – (local / foreign)



Future Strategic Planning & New Technology Evaluation

The Authority is focused on utilizing a blend of new technologies to reduce emissions and improve overall vehicle performance

- Optimizing fuel economy on new Hybrid bus fleets
- Evaluation of new vehicle technologies
 - Battery buses
 - Hybrid buses (with extended range engine off capabilities)
- Other ongoing testing with new technology suppliers
 - BAE Systems
 - Cummins
 - EMP



Questions



Bus Fleet Age



Calendar Year	2010			2011			2012			2013			2014			2015			2016			2017			2018			2019			
Fleet	#	Age	%	#	Age	%	#	Age	%	#	Age	%	#	Age	%	#	Age	%	#	Age	%	#	Age	%	#	Age	%	#	Age	%	
1994/95 "Zeros"	120	15.0	12%	120	16.0	12%	45	17.0	5%	45	18.0	5%	45	18.0	5%																
2001 New Flyer CNG	17	8.0	2%	17	9.0	2%	17	10.0	2%	17	11.0	2%	17	12.0	2%	17	13.0	2%	17	14.0	2%										
2003 Neoplan 60' CNG	44	6.3	4%	44	7.3	4%	44	8.3	5%	44	9.3	5%	44	10.3	5%	44	11.3	5%	44	12.3	5%										
40' NABI CNG	124	6.3	13%	124	7.3	12%	124	8.3	13%	124	9.3	13%	124	10.3	13%	124	11.3	13%	124	12.3	13%										
40' NABI CNG	175	5.5	18%	175	6.5	17%	175	7.5	19%	175	8.5	19%	175	9.5	19%	175	10.5	18%	175	11.5	18%	175	12.5	15%							
40' NeoPlan ECD	84	5.3	9%	84	6.3	8%	84	7.3	9%	84	8.3	9%	84	9.3	9%	84	10.3	9%	84	11.3	9%	84	12.3	7%	84	13.3	9%	84	14.3	9%	
40' NeoPlan ECD	109	4.8	11%	109	5.8	11%	109	6.8	12%	109	7.8	12%	109	8.8	12%	109	9.8	11%	109	10.8	11%	109	11.8	10%	109	12.8	11%	109	13.8	11%	
40' ECD (New Flyer)	22	3.3	2%	22	4.3	2%	22	5.3	2%	22	6.3	2%	22	7.3	2%	22	8.3	2%	22	9.3	2%	22	10.3	2%	22	11.3	2%	22	12.3	2%	
40' ECD (New Flyer)	133	2.8	14%	133	3.8	13%	133	4.8	14%	133	5.8	14%	133	6.8	14%	133	7.8	14%	133	8.8	14%	133	9.8	12%	133	10.8	14%	133	11.8	14%	
40' ECD (New Flyer Option)	155	1.5	16%	155	2.5	15%	155	3.5	17%	155	4.5	17%	155	5.5	17%	155	6.5	16%	155	7.5	16%	155	8.5	14%	155	9.5	16%	155	10.5	16%	
NFI 60' Diesel-Hybrid Buses				25	0.8	2%	25	1.8	3%	25	2.8	3%	25	3.8	3%	25	4.8	3%	25	5.8	3%	25	6.8	2%	25	7.8	3%	25	8.8	3%	
Future bus buy - ConnDOT 40ft Hybrids (Nova "Zeros")																60	0.3	6%	60	1.3	6%	60	2.3	5%	60	3.3	6%	60	4.3	6%	
Future bus buy - 40ft CNG (175 NABI CNG)																						175	0.5	15%	175	1.5	18%	175	2.5	18%	
Future bus buy - 40ft Hybrid (124 NABI CNG)																						150	0.5	13%	150	1.5	16%	150	2.5	16%	
Future bus buy - 60ft Hybrids (44 Neo CNG)																						44	0.2	4%	44	1.2	5%	44	2.2	5%	
Total Active fleet (1)	983		100%	1008		98%	933		100%	933		100%	933		100%	948		100%	948		100%	###		100%	957		100%	957		100%	
Average Fleet Age (January 1st)	5.7			6.5			6.7			7.7			8.7			8.7			9.7			6.9			6.9			7.9			

