



**Massachusetts Bay
Transportation Authority**

Bus Maintenance Strategy Update

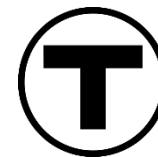
Fiscal and Management Control Board

April 3, 2017



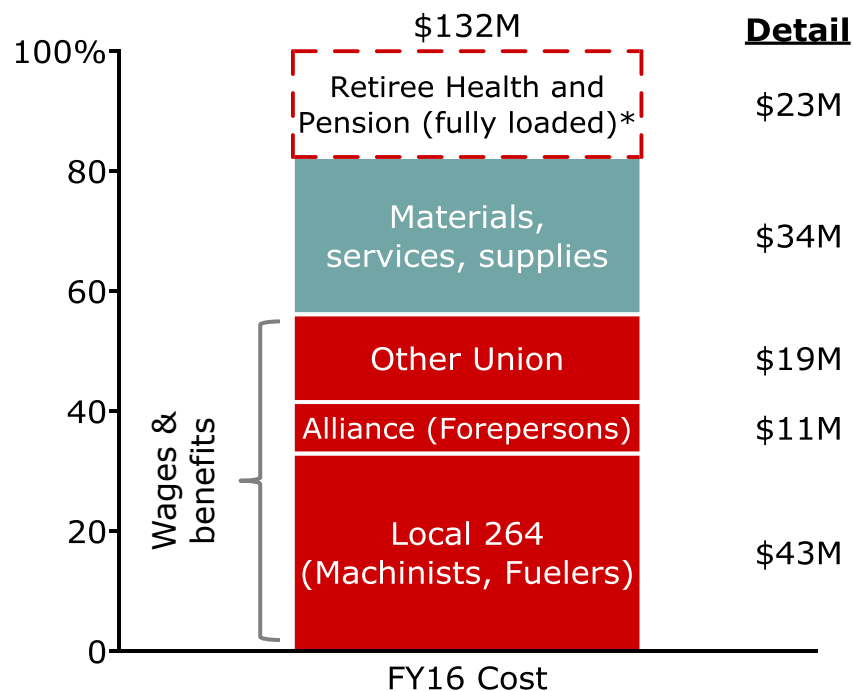
RECAP: Why modernize MBTA bus maintenance operations?

- Provide greater operational flexibility to meet future customer needs
- Introduce modern technology and updated business processes
- Lower operating costs
- More efficient, flexible workforce practices



MBTA's bus maintenance costs were \$132 million in FY2016

MBTA Bus Maintenance Costs (FY16, excluding fuel)



Detail

- Labor costs comprised \$97M (74%) of total costs
- In FY16, bus maintenance department had only 1 non-union executive (\$112K salary)
- Materials, services, and supplies comprised \$34M (26%) of total costs
- Total annual maintenance cost per bus is \$126,000

*Actuarially derived pension fund liability calculations use a 7.75% discount rate. However, average historical pension fund returns have underachieved, increasing MBTA's pension contribution and unfunded liability over time. Given current low return environment and pension profile, a 5.0% discount rate more fully reflects MBTA's expected costs; also includes present value of retiree health costs if fully funded
 Note: MBTA FY16 costs include Everett Bus Shop and exclude Non-Revenue Shops and fuel costs

Source: MBTA Internal Data



Bus Maintenance Strategy: Available approaches

- **RTA Model:** Private sector companies/employees maintain bus fleet. MBTA performs contract management oversight role (consistent with RTA model)
- **Legacy Model:** MBTA continues to perform maintenance with public employees, while enacting critical productivity reforms (work rules / workplace practices / wage-rates / business process / technology)
- **Hybrid model:** Bus maintenance split between a mix of RTA model and modernized public model



RTA Model: Private contractors already operate 15 RTAs across Massachusetts

Scope of Services with Contractor

- All bus transportation and maintenance services **provided by private contractor** that reports to RTA administrator and board

Asset Ownership

- **RTAs typically provide vehicles** due to lower cost of capital and to retain ownership
- Contractors typically **operate within RTA-owned facilities**

Routes / Service Planning

- RTAs **maintain discretion over service planning and routes**

Contract Terms and Oversight

- **Service level agreements (SLAs)** and performance standards typically put in place
- Contract length typically **3-5 years or more**

Labor Practices

- Most private contractors employ **union workforces** with non-union management
- **Lower overall headcount** due to increased productivity and lower absenteeism



Exterior of new Worcester RTA facility



Interior of new Worcester RTA garage

Source: Worcester RTA



Bus maintenance modernization strategy

Hybrid Model

MBTA moving toward a hybrid model, under which:

- MBTA would continue to internally perform some bus maintenance using a modernized system
- MBTA would partner with private sector for remaining bus maintenance work using the RTA model

A hybrid model would address key goals:

- Best management systems
 - Workplace practices
 - Technology
 - Materials and other logistics
-



Bus maintenance modernization strategy

TECHNOLOGY: Current IT system costly and outdated



MCRS2 SYSTEM (2003-Present)

Work Order Summary

Row #	Task ID	From date	Unit #	Work order ID	Cur hub	Task type	Internal/com
1	18K INS	03/13/2014	2202	455-2014-6832	24245	PM SERVICE	INTERNAL
2	12K INS	12/08/2013	2202	455-2013-33319	17932	PM SERVICE	INTERNAL
3	06K INS	09/21/2013	2202	455-2013-25904	11519	PM SERVICE	INTERNAL
4	72K INS	06/25/2013	2202	455-2013-16370	5530	PM SERVICE	INTERNAL
5	12K INS	03/25/2013	2202	455-2013-8084	62207	PM SERVICE	INTERNAL
6	30K INS	01/04/2013	2202	455-2013-964	56495	PM SERVICE	INTERNAL

Basic Info

Unit #: 2202 2003 68720 040.24 NABI 40FT CNG

Task ID: 18K INS 18K MILE INSPECTION

Work order ID: 455 2014 6832 Maint. Type: Job Title: Warranty: UNKNOWN

Date: 03/13/2014 Comeback: Cur hub: 24245

Task type: REPAIR PM SERVICE INSPECTION

	Estimated	Actual
Labor hours	.00	16.
Labor cost	.00	528.48
Parts cost	.00	343.72
Commercial labor cost	.00	.00
Commercial parts cost	.00	.00
Commercial misc cost	.00	.00
Overhead amount	.00	.00
Total cost	.00	872.20
Warranty recovery	.00	.00

Originally implemented from 2003-2005, with subsequent upgrades over the past 10-15 years; annual maintenance fee of \$250-300K

KEY SHORTCOMINGS

- ✗ Does not integrate/reconcile with MBTA financial and HR systems (e.g., an employee's labor hours do not match across systems)
- ✗ Cumbersome to link maintenance tasks to standard repair times
- ✗ Lacks easy-to-use warranty recovery and inventory management functions
- ✗ No capital replacement or lifecycle management tools
- ✗ Reports are all custom built by IT and difficult for garage staff to configure

A new system (procured by the MBTA or brought over by a private contractor) could drive increased maintenance productivity

Est. Implementation: 1-2 years / \$3-6M



Bus maintenance modernization strategy

WORKPLACE PRACTICES: New operating model could drive productivity

LEGACY MBTA OPERATING MODEL

- No executive non-union managers staffed at the garage level
- Union supervisors (foremen) on the floor
- Work rules and workplace practices specifically prevent foremen and asst. foremen from performing machinist work
- **ARTICLE XXXIV – BARGAINING UNIT WORK:**
"A. It shall be Authority policy not to permit Foremen and Assistant Foremen to do [L264] bargaining unit work, except by way of assistance or instruction."

MODERNIZED OPERATING MODEL

- Executive non-union supervisors on the floor, driving workflow
- All supervisors are "working supervisors"
- Supervisors work alongside machinists to complete tasks / pitch in where needed
- Working supervisors model keeps supervisor skills sharp and helps to balance staffing needs
- Supervisors / machinists cross-trained in all tasks



Bus maintenance modernization strategy

Hybrid bus maintenance: one potential model



RTA Model – 35% of Buses

Legacy Model – 65% of Buses

Garages

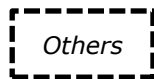
- Initial focus on 4 garages already identified by MassDOT as requiring complete rebuild or replacement
- Footprint of these garages could change in future (PPP / new facilities etc.)
- Flexible model which could be used to test new fleets, ownership models (leasing)

- Continue to run existing internal public model at core garages
- MBTA operations enacts internal reforms to improve productivity and performance, while lowering costs
- Cabot Garage pilot

Heavy Repairs

Small Components
(radiators, alternators, DPFs)

Large Components
(engines, transmissions, etc.)



- All component rebuild work performed in-house at Everett (existing – could change)



Workplace Practices

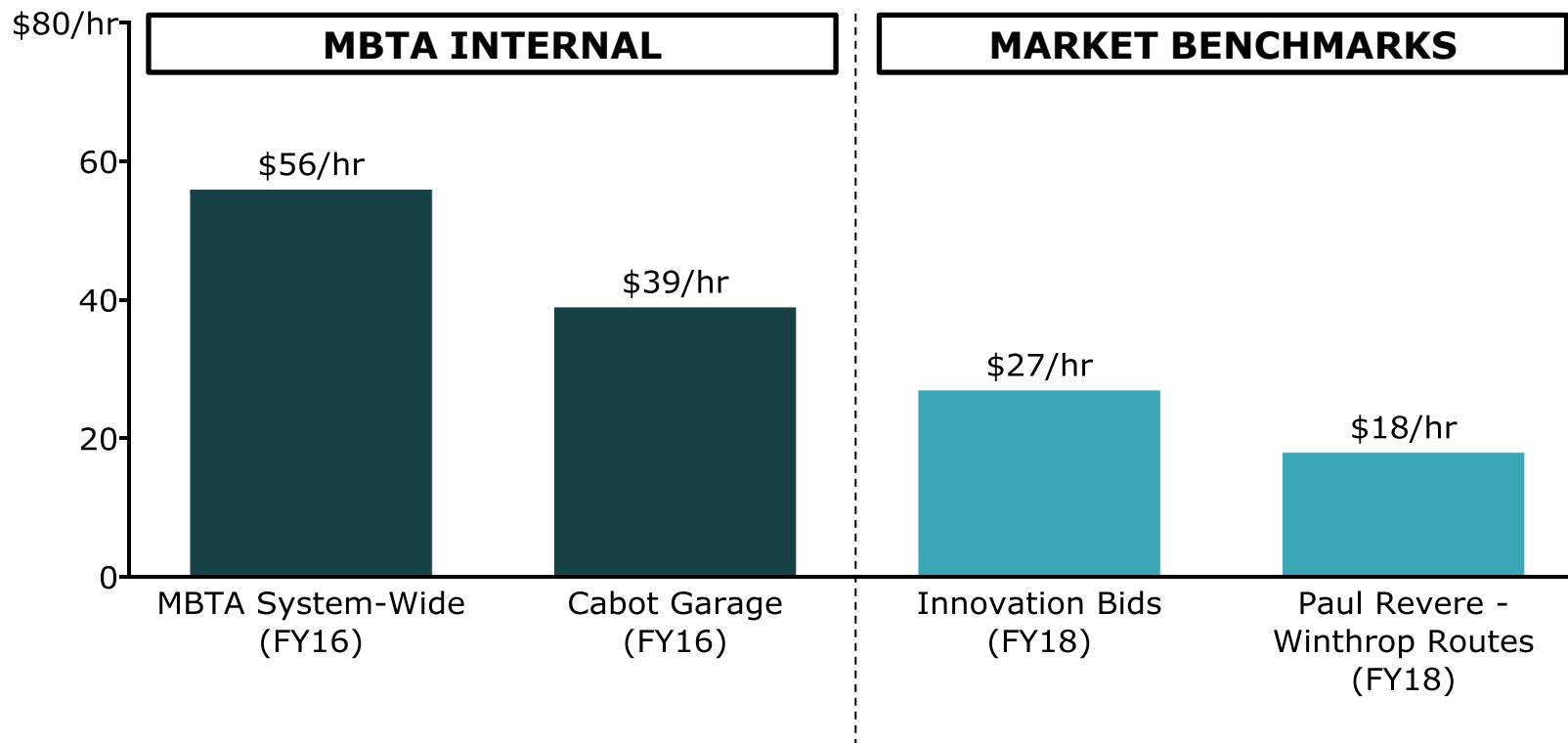
- Modern systems and technology (**paperless shop**)
- Executive management / union mechanics
- Working forepersons and supervisors
- Strict adherence to standard repair times

- Functioning maintenance mgmt. platform needs to be implemented
- Move to working supervisors/forepersons; right-size staffing; strengthen mgmt
- Implement standard repair times

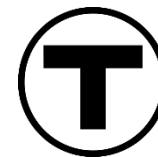


Cabot Garage Pilot – execute internal reforms to legacy model

Bus Maintenance Cost per Revenue Hour

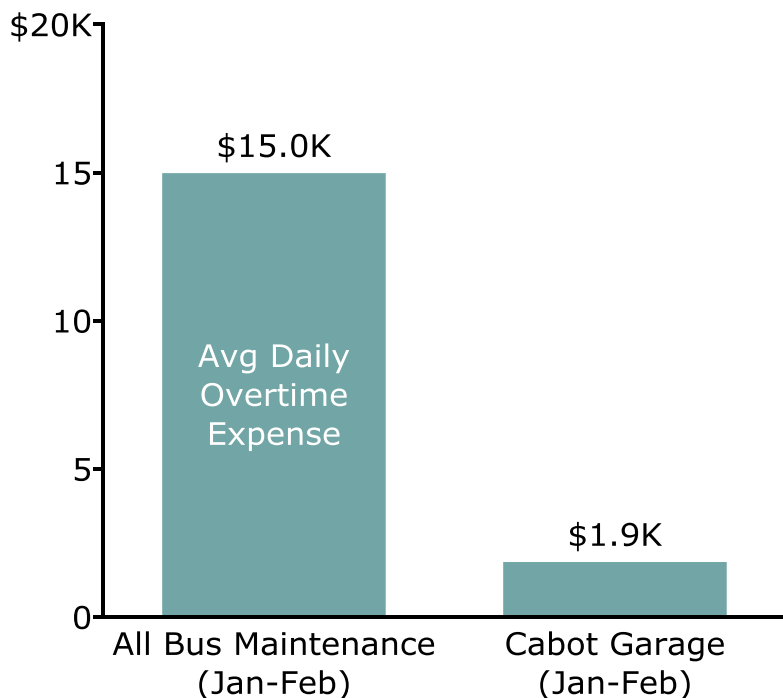


Note: MBTA FY16 costs include present value of fully funded pension and retiree health costs, include Everett Bus Shop, and exclude Non-Revenue Shops and fuel costs; Everett Bus Shop costs allocated to individual garages based upon proportion of total annual vehicle hours
Source: MBTA Internal Data; Company Proposals

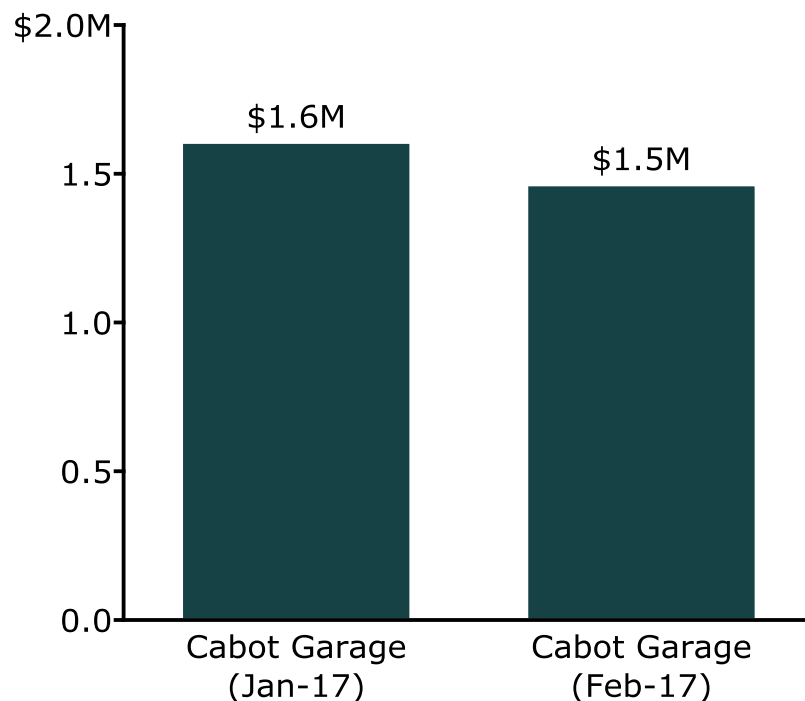


YTD 2017 financial metrics: Cabot Garage

Calendar YTD Daily Overtime Average (Operating Budget)



Monthly Cost

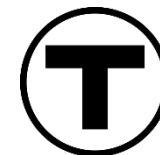


Note: Bus maintenance overtime figures include Everett Bus Shop and exclude Non-Revenue Shops; Cost of Everett Bus Shop allocated to Cabot garage based upon Cabot's proportion of total system-wide vehicle hours; Monthly costs incorporate additional costs associated with fully accruing for employee retiree health costs and funding pension at 5.00% instead of 7.75% discount rate

Source: MBTA Internal Data



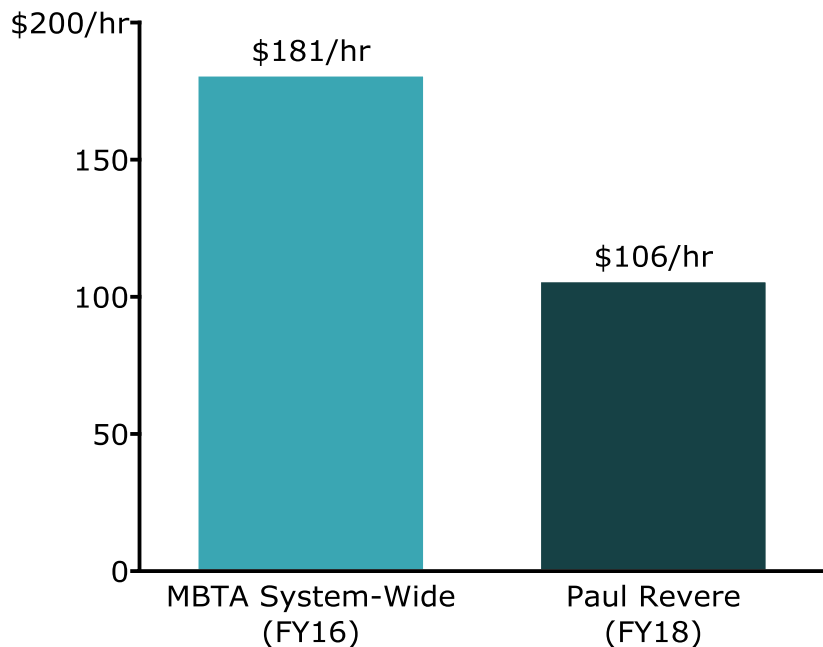
Backup



Winthrop Routes 712/713: Contract recently awarded to Paul Revere achieves significant savings

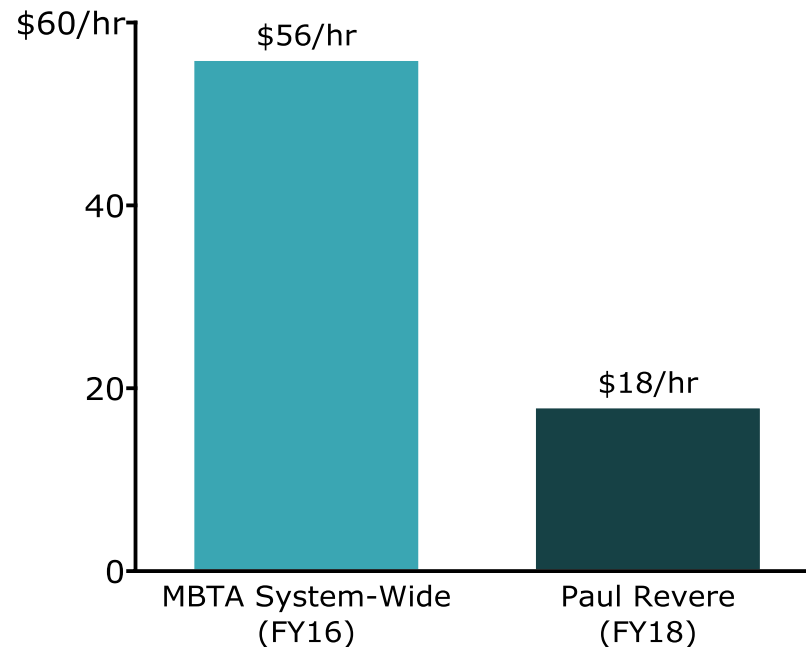
COMPARISON: TOTAL OPERATING COSTS

Total Cost per Revenue Hour



COMPARISON: MAINTENANCE COSTS

Maintenance Cost per Revenue Hour



Note: MBTA FY16 costs include present value of fully funded pension and retiree health costs, include Everett Bus Shop, and exclude Non-Revenue Shops; fuel costs included in total bus costs but excluded from bus maintenance costs

Source: MBTA Internal Data; Paul Revere Transportation