

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

MBTA EFFICIENCIES AND COST SAVINGS

June 13, 2011

Introduction

Since the advent of “forward funding” in fiscal year 2001, the Authority has made great strides in enacting efficiencies and cost savings measures. These cost efficiencies, however, have been insufficient to contain the dramatic rise in operating expenses, which have far outpaced inflation. The Authority has experienced many of the cost increases (e.g. healthcare and energy) that all businesses and consumers have but the Authority is unique in that many of its costs are driven by the need to provide high service levels at reasonable fares.

One has only to compare major expense categories at the Authority with inflation. While the Consumer Price Index is not a perfect proxy for MBTA price/cost escalation, it is nonetheless instructive to compare changes over time even though service demands have increased. Between July 2000, the first month of forward funding, and March 2011, inflation in the Boston area increased **33%**.¹ In comparison, total operating expenses increased **65%**-- a \$480.0 million increase from \$736.8 million in FY 2001 to \$1.216 billion in FY 2011. Driving the 65% increase in operating expenses were the following:

- Purchased local service expenses (largely THE RIDE) increased **230.1%** (\$67.7 million) from \$29.0 million in FY 2001 to \$95.7 million in FY 2011. In addition to normal cost inflation for the vendors, ridership doubled from 1,050,635 million trips in FY 2001 to 2,095,997 million trips in FY 2010.

Paratransit services offered through THE RIDE are federally mandated and since the Authority started offering the service in 1977, the number of ADA eligible paratransit customers has increased dramatically to over 70,000 today. The service area is approximately 729 square miles with a service area population in excess of 2.5 million people.

- Employee benefits increased **86.0%** (\$85.5 million) from \$99.4 million in FY 2001 to \$184.9 million in FY 2011. Two of the largest benefits components—pensions and healthcare—accounted for most of the increase. Pension costs rose **115.2%** (\$31.3 million) from \$27.2 million in FY 2001 to \$58.5 million in FY 2011. Healthcare costs rose **87.7%** (\$53.2 million) from \$60.1 million in FY 2001 to \$113.7 million in FY 2011.

Pensions and healthcare were two of the areas addressed by Transportation Reform in 2009 and the Authority is in the process of moving all employees into the Group

¹ Boston CPI-U: July 2000—183.2 and March 2011—242.8

Insurance Commission health care plans. Upon the ratification of a new pension agreement, the Authority will begin to see pension savings over time as new employees will be subject to age (55) and years of service (25) requirements for pensions.

- Purchased commuter rail expenses, including fuel costs, increased **74.2%** (\$128.0 million) from \$172.5 million in FY 2001 to \$300.5 million in FY 2011. In addition to normal business cost inflation, **revenue vehicle miles increased 7.7%** from 21,832,809 miles in 2000 to 23,516,370 in 2010. Commuter rail is procured through a competitive fixed price contract but fuel costs are a variable cost subject to world supply and demand.
- Materials, services, and supplies, which include non-commuter rail fuel and energy costs, rose **69.3%** (\$76.7 million) from \$110.7 million in FY 2001 to \$187.4 million in FY 2011. In addition to fluctuating fuel and energy costs, the procurements from this line item have been greatly affected by the maintenance demands of an aging fleet, which in the case of Orange and Red Line cars, are long overdue for replacement.

The only large expense item which tracked reasonably close to inflation was wages which rose 36.2% (\$105.2 million) from \$291.1 million in FY 2001 to \$396.3 million in FY 2011. Between July 1, 2000 and July 1, 2009, unionized employees received annual increases compounding to 35.6% during a period in which service revenue miles increased.

In addition to the growth in operating expenses, sales tax revenue has performed less than expected at the beginning of “forward funding” requiring higher and more frequent fare increases to partially compensate for this lower revenue. As the chart below indicates, actual sales tax receipts have declined over the last ten years. The Authority does benefit from a guarantee which exceeded actual sales tax by \$130 million in Fiscal 2010. Significant escalation of operating costs has left the Authority increasingly unable to respond to ridership growth and the maintenance demands of an aging fleet without drawing upon reserves, deferring debt payments, and the Commonwealth taking on a larger funding commitment of \$160 million in contract assistance, which is subject to appropriation on an annual basis. The Authority continues to be unable to fund a more pay-go capital program to ease the debt burden and support a higher level of state of good repair capital spending for system modernization.

In two ways, the Authority has been fortunate compared with its peers because it receives dedicated revenues (sales tax and assessments)² and, as a result of Transportation Reform in 2009, now receives contract assistance from the Commonwealth in the amount of \$160 million annually to support vital transportation services. Nonetheless, in constructing a budget for fiscal year 2011, the Authority was faced with a \$74 million deficit and the deficit facing the Authority for fiscal year 2012 grew to \$127 million. Deficits in future years are

² \$917 million in FY 2010 and FY 2011 and \$929 million in the FY 2012 budget

projected to grow from \$192 million in fiscal year 2013 to \$344 million in fiscal year 2016. Even when all of the parts of Transportation Reform are implemented and the Authority is able to move forward with the securitization of its parking assets, the fiscal year 2013 budget will have a projected deficit of \$156 million.

The following lists some of the Authority's management achievements which have served the agency well to this point. However, there are limits on the extent to which achievements like these can continue to compensate for increasing service demands and inflationary pressures outside the Authority's control, the inability to pay down debt as planned, an increasing need for state of good repair investment, and the huge structural deficit facing the Authority. Without new revenue sources or significant debt relief, the future is bleak for public transportation in Massachusetts.

Labor Costs

Overall Headcount at the MBTA

Labor is the largest cost component in the Authority's operating budgets. The Authority has been particularly diligent in minimizing headcount growth as this is critical to cost containment. In the fiscal year 2011 budget, wages, fringe benefits, and payroll taxes account for 50% of total operating expenses.³ As the historical budgeted headcount chart below indicates, the MBTA's operating and capital funded budgeted headcount has been in excess of 6,000 employees but under 7,000 employees over the last 19 years.

Budgeted headcount reached a high point of 6,957 in FY 1994 but has dropped by 668 employees (9.6%) to the 6,289 positions in the FY 2011 budget.⁴ Despite expansions in service over the past 19 years, the budgeted headcount has remained low from historical highs. FY 2011 has the lowest budgeted headcount since FY 2008. The total reduction of 668 positions between FY94 and FY11 is worth approximately \$43 million at an assumed annual salary of \$65,000. Savings in fringe benefits costs and payroll taxes are in addition to that.

Even in the more recent years in which budgeted headcount has crept up to meet greater service needs, the Authority has been cautious about filling vacancies in order to meet budgetary targets. The chart in Tab A—*Historical Headcount Budget vs. Actuals*—shows that the Authority kept significant numbers of positions vacant over the 12 year period depicted. Vacancies in most years have averaged from approximately 200 to 300 positions. The chart below graphically shows the number of unfilled positions by year:

³ In the FY 2011 budget, wages are \$396.3 million, fringe benefits \$184.9 million, and payroll taxes \$31.5 million. Total operating expenses are \$1.2 billion.

⁴ The current FY 2012 budget request carries a 12 position reduction for a combined operating and capital budget headcount of 6,277.

MBTA Headcount by Functional Area: Administrative vs. Operations

In addition to lowering headcount over the 19 year span depicted in the headcount charts, the Authority has reallocated headcount from administrative and support functions to operations. The headcount charts under Tab B—*Total Historical Headcount by Department FY92—FY11*—provide an overview of historical headcount and a breakdown of MBTA departments into functional areas. The MBTA’s budgetary focus in these increasingly difficult financial times has been to reallocate scarce resources from administrative (non-service related) areas to the operations groups providing direct service to our customers. The regrouping of departments into the six functional areas below bears this out. While all functional groups have seen a reduction in headcount, the largest headcount reductions have been sustained by the non-operations groups. Whereas the operations group comprised 78.4% of total Authority headcount in FY92, today they comprise 90.7% of the Authority workforce.

1. Departments with an Employee Focus (Diversity, Human Resources, Labor Relations, and Occupational Health)—these departments comprise 1.2% of the FY11 budgeted headcount with 74 employees.

This cluster of departments has sustained a **28.8% cut** in headcount (30 employees) from their high of 104 employees in FY99 to their current headcount of 74.

2. Departments with a Finance and Procurement Focus (Budget, Compliance and Reporting, Materials, Treasurer/Controller, and Vehicle Procurement)—these departments comprise 3.0% of the FY11 budgeted headcount with 188 employees, of which 103 are in Treasurer/Controller.

This cluster of departments has sustained a 76.7% cut in headcount (618 employees) from their high of 806 employees in FY93 to their current headcount of 188. However, it is important to note that there were reorganizations within these departments over time. In FY 1993 there was a Revenue Department which oversaw all of the Collectors. These positions were transferred to Systemwide Modernization/AFC in FY 2007 and then to Subway in FY 2008. Accounting for these transfers, this cluster of departments has sustained an adjusted **33.6%** cut in their headcount.

3. Departments with an External Communications Focus (Customer Support, Intergovernmental Affairs, Marketing, and Public Affairs)—these departments comprise 0.8% of the FY11 budgeted headcount with 48 employees, of which 34 are in the Customer Support Call Center.

This cluster of departments has sustained a **17.2% cut** in headcount (10 employees) from their high of 58 employees in FY94 to their current headcount of 48.

4. Departments with an Asset Construction, Planning, and Management Focus (Design & Construction, Environmental Affairs, Planning, and Real Estate)—these departments comprise 3.2% of the FY11 budgeted headcount with 199 employees, of which 178 are in Design & Construction.

This cluster of departments has sustained a **52.4% cut** in headcount (219 employees) from their high of 418 employees in FY92 to their current headcount of 199.

5. Departments with a Customer Service Focus Encompassing Transportation, Asset Maintenance, Safety and Security (Bus, Chief Operating Officer, Commuter Rail, Office of Transportation Access, Operations Support, Operations Service Development, Police, Private Transportation, System-wide Maintenance & Improvements, System Safety, System-wide Accessibility, System-wide Modernization, and Subway)—these departments comprise 90.7% of the FY11 budgeted headcount with 5,704 employees, of which 2,379 are in Bus and 1,949 are in Subway.

This cluster of departments has sustained, not surprisingly, the smallest percentage cut of the group with a **4.5% cut** in headcount (270 employees) from their high of 5,974 employees in FY09 to their current headcount of 5,704. What this also shows is the increased emphasis of funding operations at the expense of all other areas during the MBTA’s lean years. This cluster comprised 78.4% of total Authority headcount in FY92 compared with 90.7% today.

6. Departments with a Corporate Focus (General Manager, Interagency, Information Technology, and Law)—these departments comprise 1.2% of the FY11 budgeted headcount with 76 employees, of which 41 are in IT.

This cluster of departments has sustained a **50.6% cut** in headcount (78 employees) from their high of 154 employees in FY93 to their current headcount of 76.

While the reallocation of the workforce from administrative and support staff to operations has been a financial necessity, it is doubtful that the Authority could generate significant savings in the future without compromising many of the critically important administrative and support functions. A recent review by the MBTA Advisory Board of the Federal Transit Administration’s National Transit Database (NTD) information from 2007 found that compared with its peers (the 15 largest transit properties ranked by unlinked trips), the MBTA had the lowest ratio of administrative employees to total employees:

Percentage of Administrative Employees to Total Employees		
City/Property	Rank by Unlinked Trips	Rank by Administrative Employees %
Boston/MBTA	5	5.17%

Washington/Wmata	4	6.61%
New York/NYCTA	1	6.87%
Philadelphia/SEPTA	6	7.19%
San Francisco/MUNI	8	7.19%
Chicago/CTA	2	7.22%
Seattle/King County Metro	10	7.74%
Los Angeles/LACMTA	3	7.96%
Miami/MDT	11	9.12%
Baltimore/MdTA	13	9.12%
San Francisco/BART	12	13.09%
Houston/Harris County Metro	14	13.76%
Oregon/Tri-Met	15	15.01%
New Jersey/NJT	7	15.05%
Atlanta/MARTA	9	15.69%

MBTA Headcount Productivity

While the MBTA has made significant cost structure inroads in its 668 position reduction since FY94, this savings only tells part of the story. The Authority has produced significantly more output with fewer people. The National Transit Database (NTD) reports (see Tab C) provide insight into this achievement in their tracking of four industry standard performance measures for MBTA service below:

<u>NTD Productivity Measure</u>	<u>1995</u>	<u>2009</u>	<u>% Change</u>
Annual passenger miles	1,386,187,235	1,843,855,012	33.0%
Annual unlinked trips	321,885,416	367,247,601	14.1%
Annual vehicle revenue miles	74,447,896	93,994,720	26.3%
Annual vehicle revenue hours	4,410,863	6,441,612	46.0%
MBTA Budgeted Headcount	6,602 (FY95)	6,289 (FY11)	(4.7%)

Despite a 4.7% reduction in budgeted headcount between fiscal years 1995 and 2011, the Authority has made substantial, double digit gains in all four major indices: passenger miles, unlinked trips, vehicle revenue miles, and vehicle revenue hours. Even though the Authority's operating expenses have increased over this 17 year period, the NTD data shows that the Authority has been providing more service. Budget increases have not been driven by headcount increases but rather by normal business and inflationary escalation in costs of all expenditure items in the budget as well as increases in service as the chart below shows:

Note: National Transit Database has not published the 2010 Annual Vehicle Revenue Miles.

Overtime Costs

In addition to reducing headcount, the Authority has monitored the use of overtime and has produced a significant savings in overtime over the last five years. While there is some relationship between overtime use and vacancies, the Authority has balanced the two in order to create the greatest value in total wage dollars. Total operating budget overtime has fallen four out of the past five years from a high of \$36.9 million in FY 2005 as the following chart indicates:

MBTA Annual Operating Budget Overtime		
FY 2005	\$36,888,940	High
FY 2006	34,634,578	
FY 2007	30,229,418	
FY 2008	24,149,535	
FY 2009	20,145,855	Low
FY 2010	29,516,149	
Overall Reduction from 5 Year High: 20% or 4% per year		

The overtime reduction is even more noteworthy given that during this period the unionized workforce received collectively bargained wage increases of 3% in FY 2005, 4% in FY 2006, 3% in both FY 2007 and FY 2008, and 4% in FY 2009. These wage increases, which compound to 18.2%, mask some of the real achievement in controlling overtime as a portion of the overtime cost is attributable to higher wage costs and not necessarily more overtime hours.

The persistent focus on overtime and headcount control resulted in the Authority under spending its wage budget three out of the past 5 years:

MBTA Historical Operating Wages			
FY2005 - FY2010			
	Actual	Budget	Variance
FY 2005	\$337,189,978	\$330,428,857	(\$6,761,121)
FY 2006	347,845,647	343,313,908	(4,531,739)
FY 2007	353,664,245	354,756,887	1,092,642
FY 2008	361,508,443	358,513,203	(2,995,240)
FY 2009	402,881,584	411,542,419	8,660,835
FY 2010	396,739,644	400,613,524	3,873,880

Straight-time versus Overtime Spending

In FY 2005, the Authority’s overtime spending of \$36.9 million represented 10.9% of total wages. The significance of the following reduction of overtime as a percentage of total wages is that the Authority has been able to produce more hours of service by paying straight-time instead of overtime:

MBTA Overtime Cost as a Percentage of Total Wages		
FY 2005	10.9%	High
FY 2006	10.0%	
FY 2007	8.5%	
FY 2008	6.7%	
FY 2009	5.0%	Low
FY 2010	7.4%	
Mean:	8.1%	

While there are seasonal and operational reasons why overtime will fluctuate from year to year, the Authority is trying to replicate the 5% ratio it achieved in FY 2009. As service demands increase, however, and the workforce numbers stay static, it is difficult to do so.

Group Health Insurance

Health insurance is the most costly fringe benefit. Group insurance comprises 9.4% of the Authority’s total operating expenses in the FY 2011 budget.⁵ Beginning in the early 90s, the cost of healthcare rose from 15% of wage expenses (\$36.9m/\$246.3m) in FY 1991 to a high of 30% of wage expenses in FY 2010 (\$118.7m/\$396.7m). Healthcare expenses increased 221% over this period or 11.6% per year.

Until the passage of Transportation Reform legislation in 2009, group health insurance was a benefit negotiated with MBTA labor unions. Both co-insurance contributions and plan design, including deductibles and co-pays, were established by collective bargaining. MBTA employees had the following co-insurance amounts before the legislative change (see chart below). Unionized employees’ co-insurance amounts change to 20% or 25% depending upon date of hire under Transportation Reform only after their expired collective bargaining agreements are renegotiated.

MBTA Employee Co-insurance Amounts Prior to Transportation Reform	
Unionized employees	15%

⁵ The FY 2011 healthcare budget is \$113.7 million; wages are \$396.3 million; total operating expenses are \$1.2 billion.

Non-union employees hired prior to July 1, 2003	20%
Non-union employees hired since July 1, 2003	25%

While unionized employees' co-insurance was equal to Commonwealth employees (15%) in 2003, the Authority imposed higher co-insurance amounts than the Commonwealth on its non-union employees beginning in July 2003 by assessing 20% and 25% co-insurance.

For many years, Authority retirees received free healthcare. The Authority concluded an interest arbitration in 2008 with its largest union, Local 589, and received a historic concession. The arbitrator imposed a 10% co-insurance on Authority retirees after July 7, 2008.

In addition to retiree co-insurance, the arbitrator imposed a number of plan design changes:

- Office visits from \$5 to \$20
- Emergency room visits from \$25 to \$50
- Prescription drugs (34 day supply) from \$3 generic and \$4 brand name to \$5 generic, \$15 preferred brand, and \$20 non-preferred brand
- Prescription drugs by mail (90 day supply) from \$5 generic and brand name to \$10 generic, \$30 preferred brand, and \$40 non-preferred brand

Labor Relations estimated savings to the Authority during the two remaining years of the collective bargaining agreements to be \$5.6 million for FY 2009 and \$6.6 million for FY 2010. Savings in retiree health would continue to rise as the retirees with 100% healthcare are replaced by retirees paying co-insurance.

The healthcare landscape at the Authority changed dramatically with Transportation Reform. Healthcare is no longer a mandatory subject of bargaining and the MBTA workforce and retirees will have its coinsurance amounts, plans, and plan design determined by the Group Insurance Commission (GIC). As collective bargaining agreements expire, the MBTA workforce and retirees formerly affiliated with those workforces will migrate from MBTA plans to GIC plans. The transfer process to date appears below:

MBTA GIC Participation			
Date of Transfer	Employee Group/Union		Number of Employees
January 1, 2010	Non-union employees		235
July 1, 2010	Locals 104	Electrical Workers	74
	Local 600	Inspectors	307
	Lodge 264	Machinists	396
July 1, 2011	Local 105	Technical Engineers	111
	Local 453	Managers	322

Local 651	Blacksmiths	8
Local 717	Electrical Workers	40
	Building and Construction Trades (multiple trade unions)	389
Notes: Retirees affiliated with the employee groups joined or will join the GIC on these dates. Employee count is as of February 15, 2011.		

The GIC savings for the groups of employees listed above are expected to total \$7.1 million in FY 2012. The Authority anticipates \$31 million in savings annually when all the unions and their retirees have transferred to the GIC.

Pensions

Much has been written in recent years about the high cost of public employee pensions. These pensions, which are almost always defined benefit plans, have burdened government with almost uncontrollable costs and when added to rising costs of health insurance, have created a crisis in public sector compensation. The Authority does not participate in Chapter 32 funds but rather negotiates two defined benefit plans: the MBTA Retirement Fund and the MBTA Police Association Retirement Plan.⁶

Pension costs at the Authority are driven by changes in compensation (contributions are a percentage of salary), negotiated pension improvements, the actuarial performance of the plan, and pension eligibility requirements. While the pension cost in the FY 2011 budget is \$58.5 million, pension expenses as a percentage of total operating expenses have remained remarkably constant over the past twenty years. Pensions in FY 1991 represented 5.5% of total operating expenses and in FY 2010 represented 4.8%. During this twenty year period they ranged from as low as 3.0% of operating expenses to as high as 5.9%. Pensions experienced an average annual increase of 3.9% vs. 5.9% for operating expenses between FY 1991 and FY 2010.

Nonetheless, pensions expressed as a percentage of wages during this period ranged from a low 7.9% in FY 2003 to a high of 14.7% in FY 2007. Pensions as a percentage of wages in the FY 2011 budget are 14.8%. Their average annual increase (3.9%) has outpaced wages which have grown by 3.2% annually since FY 1991.

The Commonwealth in its Transportation Reform legislation in 2009 established an eligibility requirement for retirement in the Authority's MBTA Retirement Fund. Instead of the existing early retirement eligibility of 23 years of service, the new legislation imposed a 25 years of service and age 55 requirement for new hires. This new requirement is not in force yet because the pension agreement which expired June 30, 2010 has not been renegotiated. When it is, the Authority will, over the next 25 years, begin to see a modest amelioration of its pension costs.

⁶ The Authority also offers a defined contribution plan to certain unionized employees and non-union employees electing not to participate in the MBTA Retirement Fund.

Workers' Compensation

The Authority has experienced dramatic savings in workers' compensation over the past twenty years. Workers' compensation actually cost the Authority slightly less in FY 2010 than in FY 1991 as the chart below indicates:

The relatively flat costs are also evident in relevant budget comparisons over the past twenty years. Workers' compensation represented 1.7% of total operating expenses in FY 1991 and 0.8% in FY 2010. As a percentage of wages, workers' compensation represented 3.9% in FY 1991 and 2.4% in FY 2010.

The Workers' Compensation Department continues to experience the benefits of its cost containment management style, which was introduced over a decade ago, as it improves its investigative techniques both internally and externally. The cumulative effect of the Department's aggressive investigation of workers compensation claims has realized a constant reduction in the number of industrial accident claims as the chart below illustrates over a ten year period:

Workers' Compensation Injuries between FY 2000—FY 2010		
Year	Reported Lost Time Injuries	Reported Medical Only Injuries
FY 2000	559	1,044
FY 2005	442	997
FY 2010	349	919
Percentage Decrease	37.6%	12.0%

Internally, the Department investigates claims in conjunction with the injured employee's area supervisor(s) and witnesses, Safety Department, Human Resources Department, Police Department, Labor Relations and Payroll. The institution of the MBTA's Attendance Policy has also proven to benefit the reduction in lost time from work. In recent years, the ability to have access to the Authority's security videotapes on busses and in stations has also proven to be of great benefit in determining the validity of an employee's injury.

Externally, the Department continues to investigate claims utilizing the resources of experienced private investigators. The Department also continues a working relationship with the Massachusetts Department of Revenue and the MBTA's Retirement Board in pursuing validation of legitimate claims and ensuring that the workers compensation offset, which the Authority received in the Transportation Reform Legislation, is applied.

The Department underwent a major transition in late September and early October 2010 in claims processing. After twenty years utilizing the same software to run the electronic claims system, the Department, in conjunction with Information Technology,

upgraded and designed its own program in PeopleSoft to improve its claims processing and communications within the MBTA.

Materials, Services, and Supplies

Controlling Energy Costs

The Authority is largely held captive by escalating energy costs, which have increased 126.2% (12.6% annually) since FY 2000—from \$41.4 million in FY 2000 to \$93.5 million in FY 2010 (see Tab D—*Fuel and Utilities by Department FY2000—FY2011*). Nonetheless, the Authority has achieved some success in controlling the risk inherent in energy costs.

Fuel Hedges

As a large consumer of fuel and energy, the Authority faces significant price volatility in the fuel and energy markets. In an effort to reduce that risk, the Authority actively hedges fuel costs, primarily diesel and natural gas, in order to create cost certainty and reduce the impact of fuel price volatility on the operating budget. For example, although the Authority was adversely affected by price increases in the commodities markets during FY 2008, partial fuel hedges on diesel mitigated these price increases by over \$8 million. In addition, the Authority locked in prices for natural gas for FY 2008, eliminating the risk of price increases for that fuel. The Authority also hedged 100% of diesel consumption in FY 2009 and was able to secure a fixed price for compressed natural gas for September 2008 through June 2009. In FY 2010, the MBTA hedged 50% of the diesel volume through a financial hedge and 100% of the natural gas supply through a fixed rate contract with the supplier.

For FY 2011, the MBTA hedged 100% of diesel volume through four financial hedges at an average price of \$2.07/gallon insulating the budget from the recent increase in oil and diesel fuel. Natural gas is not hedged for this fiscal year but continues to be priced at historic lows.

There are no hedges in place for FY 2012, although the MBTA continues to monitor the market and may enter into a hedge on diesel and/or natural gas either before or during FY 2012.

Electricity

The Authority is also the largest consumer of electricity in the Commonwealth. In FY 2008, the Authority's fixed price contract, which was below the market rate, expired. A similar contract was not available, so a new contract was entered into pegging the price of electricity to natural gas. The Authority manages this contract by locking in future prices as market conditions warrant.

Compressed Natural Gas Tax Credits

In 2001, Congress passed a tax credit to encourage the use of CNG in fleets. In an effort to increase non-fare revenue and offset rising fuel prices, the Authority successfully applied for and received over \$7.6 million in refunds. That tax credit expired in the end of

2009 but Congress in the Middle Class Tax Relief Act of 2010 extended two key incentives for natural gas vehicles through 2011: (1) the 50 cent per gallon tax credit for compressed and liquefied natural gas when used as a vehicle fuel and (2) the investment tax credit for alternative vehicle refueling property, including natural gas stations.

The natural gas tax credit for vehicle fuel use resulted in \$2 million retroactive to 2010 and \$2 million in 2011. The investment tax credit for alternative vehicle refueling property covers 30% of the cost or \$30,000, whichever is less.

Environmental Compliance

Over the course of the past several years, the Environmental Department has implemented a number of programs that were designed to meet environmental compliance requirements and/or reduce impacts. Many of these programs have the serendipitous effect of reducing the operating costs at facilities. Many of the reductions in operating costs are specifically quantifiable. The majority of these programs were the direct result of the MBTA's Environmental Management System (EMS), where the Environmental Department audited facilities and spent significant time examining how our operating facilities perform their day to day activities so as to find ways to reduce impacts and improve environmental efficiencies. These audits resulted in plans and programs to reduce impacts and correspondingly, reduce costs.

Waste Disposal

One of the cost saving ideas that came out of these audits involved how the Authority disposes of waste. The MBTA typically pays outside vendors to haul away materials, either as solid waste or, when necessary, as hazardous waste (which is typically more expensive). Much of the MBTA's waste, however, has a value to other parties. Because of this value, the Authority found ways to have someone take the material away for free or, in certain cases, pay the MBTA for the waste products. Examples follow:

- a. **Electronic Recycling** (e.g., computers, printers, electronic equipment, etc.)
Electronic waste cannot, by law, go into the trash and so the MBTA typically spent money to pay a disposal firm to take the material away. As an example, the Authority recently paid \$1,400 to have a contractor remove 12 pallets of computers and monitors. Those materials are often resold and reused by the disposal firm. The Authority determined that it could offer this material to an electronics recycling firm to avoid disposal costs and save money. So far in FY 2011, staff has recycled almost 75,000 lbs of nickel cadmium batteries, computers, and appliances that were either generated by the MBTA or picked up along the right of way. Staff estimates that this electronic recycling saved the MBTA \$34,000. The amount disposed of represented a small amount of the MBTA's ongoing electronic disposal needs, so this program is being expanded as much as possible.

b. **Scrap Metal**

The Authority has placed scrap metal dumpsters at facilities so that this material could be segregated from the rest of the trash. When not segregated, the Authority pays for someone to take it away as solid waste (typically at a rate of \$85/ton). With scrap metal recycling in place, someone now takes it away for free due to its value. For example, previously, brake drums, which weigh up to 100 lbs and which the Authority uses hundreds of a year, would be thrown in the trash and taken away as solid waste, which we typically pay by the pound. These drums are now placed in the scrap metal dumpsters and go off as recycled waste.

c. **Rail Cars**

Old Maintenance of Way vehicles (tampers, prime movers, etc.) were sitting on site at facilities in violation of the storm water regulations. After the EMS audits, staff was able to have a company take them away and pay the Authority \$46,000 for the scrap.

d. **Waste Oil**

Previously, the Authority paid a nominal amount to dispose of used waste oil (\$1 per year). As of January 2010, a firm now pays the MBTA \$0.35/gallon for used waste oil. Staff anticipates generating about \$20,000 this calendar year from this change.

e. **Newspaper Recycling**

In 2006, the Authority initiated a newspaper recycling system with Abitibi. Abitibi provides the Authority with large bins for customers as well as cleaning crews for the disposal of newspapers. Abitibi pays the Authority a small amount for placing the bins on the property. More importantly, however, without the recycling, the Authority would have to pay to have these papers taken away as a solid waste—a cost the Authority now avoids. To date, the Authority has avoided the cost of nearly 3,500 tons of newspaper disposal which would normally be sent off site at a rate of \$85 to \$95/ton.

Energy Conservation

Greater emphasis is being placed on energy management, where the MBTA focuses on reducing its consumption as well as generating its own electricity where possible.

a. **Utility-Based Energy Conservation Programs**

Utilizing the utility-based energy conservation programs, the MBTA, in CY 2011, performed \$550,000 worth of energy upgrades, 70% of these costs were paid by the local utility. The upgrades (predominantly lighting upgrades) were performed at five facilities (two bus garages, Police Headquarters and two office buildings). The estimated annual energy savings are 1.6 million kilowatt-hours per year of electricity avoided which translates to an annual savings of \$206,000/year.

b. Renewable Energy Systems

Renewable energy systems are going in place at Kingston and Bridgewater (wind turbines). Assuming a modest increase in the cost of electricity (3% per year), a 100 kilowatt turbine at Kingston is anticipated to save the Authority \$800,000 over a 20 year period while the Bridgewater turbine will save \$2 million over a similar timeframe. The turbines are funded 100% by outside sources.

c. Design Standards for Energy and Water Consumption

New design standards for energy and water consumption are implemented in design and construction projects. Wastewater recycling and solar energy are part of the Orient Heights project about to go to bid. A geothermal exchange system for heating is part of the Hingham Intermodal facility about to be bid as well. These environmental design standards focus on building facilities that consume less electricity or water and as such, result in lower operating costs in the new facility.

Hazardous Remediation and Materials Management

During construction, as well as during track and systems maintenance, the MBTA generates large amounts of soil and spoils (debris, ballast, etc.) that is frequently characterized as a hazardous waste and therefore must be handled and disposed of at a premium. The Environmental Department has established standard specs and protocols to minimize the cost of soil and hazardous material disposal, including:

a. Rewriting Construction Specifications

Staff is rewriting contract specification to require contractors to re-use as much material as possible on site, and when offsite disposal is needed, mandate the least costly disposal option. For example, 1,000 tons of soil and debris were left on site at Orient Heights Yard. Instead of paying for offsite disposal of materials at \$50/ton, we reused the material as backfill on construction contracts. This is now a standard specification for Design and Construction and an increased practice of Systemwide Maintenance & Improvements (SMI)—a division of Engineering & Maintenance.

b. Use Limitations

The MBTA has been more aggressive about finding ways to limit the amount of money spent on property cleanup while at the same time meeting compliance requirements. Activities in Use Limitations (AUL), which place a restriction on the future use of the property, have become common. If a parcel is used as a maintenance facility, and is likely to be a maintenance facility for some time, it makes sense to restrict the future use of the site, so that we do not have to clean it up as much. AUL's have been placed on twenty sites, saving hundreds of thousands of dollars in clean up costs as compared to leaving the properties unrestricted.

c. **Cost Recovery**

Much of the Authority's contaminated property was contaminated by the prior owner (typically former railroad companies). We have begun seeking cost recovery from these entities to pay for the costs we expend to clean up contamination caused by them. To date, we have received \$2.35 million from the prior owner of Readville Yard.

Effective Contract Management/Less Reliance on Consultants

Standard practices were put in place to try to find more cost effective ways to perform our compliance responsibilities, using fewer outside consultants, and using consultants more efficiently. For example:

a. **Audits**

The EMS requires that independent third party, outside audits be performed on each of our facilities to ensure compliance once every three years. This would typically be performed by consultants at an estimated cost of \$1.5 to \$2 million per three year audit. Instead, the MBTA is utilizing the EMS Consortium at UMASS/Lowell to perform the work at a cost of \$40,000.

b. **Environmental Inspections**

Training staff to perform environmental inspections as opposed to outside consultants (when in-house inspections are allowable) has been cost effective. Additionally, the Authority has coordinated training with MassDOT Highway Division to combine training that both agencies need (e.g., Environmental Compliance, Hazardous Materials, Underground Storage Tanks, Hazardous Waste Manifests, and Environmental Management, etc.). The MBTA provides training slots to the Highway Division employees and they do the same for us so as to not duplicate the expense of the required training.

c. **Spill Standards**

Establishing new formatting and standards for spill plans and other documents that can be reviewed and updated in house has been cost effective. Previously, all spill plans were developed and updated by consultants. A spill plan is needed for 14 maintenance facilities and 38 Power Substations. An update by a consultant would typically cost \$10,000 to \$15,000 per facility every three years.

Outside Funding Sources for Emissions Remediation

The Environmental Department has been seeking outside grants to support much of the work needed by the Authority to reduce its emissions. To date the Authority has received the following:

- \$1,100,000 from the 2009 EPA Diesel Emission Reduction Assistance Program (DERA) for locomotive upgrades to reduce idling
- \$150,000 from 2008 DERA Funding for improvements to the locomotives

- \$800,000 from 2010 DERA Funding for locomotive upgrades
- \$2.5 million from the Federal Transit Administration (FTA) for renewable energy
- \$300,000 dollars from the Attorney General’s Office (AG) for locomotive improvements. These funds were the result of a multi-state settlement with a power company. These funds are available to come to the MBTA as a result of fines and penalties that the EPA imposed on other parties (typically private parties) due to compliance violations, in lieu of paying a monetary fine. The MBTA works with EPA, the Massachusetts Department of Environmental Protection (DEP), and the AG to be positioned to have our projects funded as a project in lieu of penalties from these private entities.
- FTA EMS Grant – The Environmental Department applied for and received two separate grants from FTA for the EMS training. The grant provided extensive training over the course of three years to 16 employees. Given that the EMS is a requirement of a judicial consent decree, if this training wasn’t paid for by FTA, we would have had to hire consultants to develop an extensive training program for these same employees.

Environmental Recommendations for FY 2012 and the Future

Through the course of the EMS and other programs, the Environmental Department believes there are opportunities to expand these programs or develop other programs. These opportunities include the following:

a. **Scrap Recycling**

Create a more comprehensive scrap recycling program at all of the facilities that includes segregating into material types to maximize values. Currently scrap precious metals (e.g., wheel truing scraps) are thrown in the same dumpster as lower value scraps. If they were segregated, they would have a greater value.

In general, most of the scrap and waste recycling initiatives described above can be expanded. Electronic waste is abundant and is constantly being generated or picked up off the right of way. Old vehicles and other materials described above are stored to some degree at most facilities. Scrap metal is constantly being generated as well. Old or broken windshields from buses currently go in the trash, but we may be able to recycle these through a glass recycling company. There are hundreds of these very heavy windshields every year that we pay to dispose of as solid waste. More comprehensive recycling programs can be developed that could maximize the amount of materials we recycle as scrap. As part of a comprehensive program, better quantification and invoicing of the waste stream by the vendor should be implemented to track cost avoidance.

b. Energy, Water and Fuel Metering

Currently tracking of fuel and utility usage is accomplished through invoicing data (we total up information provided on invoices) there are few if any meters at facilities. If electricity and/or water were metered, we would be able to identify unusual spikes in usage that could then be rectified. We could also identify illegal tie-ins. Additionally, we could review resource intensive operations to find alternatives that require less energy. On a very old, and very energy intensive system like the MBTA, there are certain to be many opportunities to reduce energy costs, but a lack of information on specific usage makes that difficult if not impossible. This holds true for electricity, water, fuel usage as well as steam and natural gas.

c. Fuel Switch

Currently, Bus Operations uses #1 Ultra-Low Sulfur Diesel (ULSD) which is a high grade, very light blend of diesel. The Environmental Department believes that switching to #2 ULSD would result in the same emissions, have the same operating characteristics on the buses, yet cost approximately \$0.15/gallon to \$0.20/gallon less than #1 ULSD (the differential between the two fuels fluctuates across the year but it appears that this is the average range conservatively). Bus Operations currently uses approximately 11 million gallons of fuel annually, so the cost savings would be \$1.65 million to \$2.2 million per year.

In the 1970's and 1980's, diesel engines would have a difficult time starting in cold weather when using #2 diesel. Engines and filters frequently needed additional maintenance as well. Advances and changes in the fuels have resolved these issues and there is now little difference in the operating characteristics when using #2 ULSD. Other large transit agencies, particularly in cold weather cities like New York, Buffalo and Minneapolis, currently use #2 ULSD and have not had issues.

The General Manager authorized a fuel switch pilot program at one garage during the 4th quarter of FY 2011. If the pilot demonstrates that the switch will not affect engine performance and the ability to make pull outs, the Authority will make the switch at all garages.

Engineering and Maintenance

Power and Transit Facilities Past, Current and Future Efficiencies

The following represents cost savings, efficiencies and short term opportunities identified by the Power and Transit Facilities Division of Engineering & Maintenance:

Natural Gas Cost Savings

On April 6, 2006, the MBTA issued a contract to Amerada Hess to supply natural gas to Power and Transit Facilities (PTF) and Bus Operations over a five-year period, at a total

cost of \$57,238,080. Of this total, the amount of \$20,033,328 was allocated to PTF for system-wide building and facility heating. This contract is for a basis price with the price to be settled in the natural gas spot market. At the time of the award this was the preferred alternative of obtaining natural gas through the regional supplier Keyspan. This offered the MBTA an immediate savings of **\$3,000,000**.

Conversion from Oil Heat to Natural Gas at MBTA Facilities

The mechanical maintenance department has been systematically converting MBTA facilities that utilize oil heating systems to ones that use more efficient natural gas heating systems. Over the past 2 ½ years, they have converted Lynn and Quincy Bus Garages as well as the Orient Heights Car House. Executing these conversions is not only more environmentally friendly but it has resulted in significant savings to the MBTA totaling **\$648,482** over that time period.

Light Fixture Retrofits

Power and Transit Facilities embarked on a joint effort pilot program with the MBTA Environmental Affairs department and NStar to take advantage of rebate programs in place for the retrofit of inefficient light fixtures. Locations in the pilot program include Quincy, Cabot, Charlestown, Lynn and 500 Arborway. Measurable consumption information is available for 500 Arborway thus far with savings data to come in the near future for other retrofit locations.

Under this program the MBTA was responsible for 37% of the project cost. Since the completion of the project in August 2010, the electricity cost for 500 Arborway has dropped by an average of 24%, roughly **\$2,700** per month, and **\$32,400** per year. At this rate of savings, the project cost to the MBTA will be paid off in October 2011. Building off of the success of this project, PTF is working closely with the Environmental Department to roll out a full scale system wide initiative to address all MBTA buildings and facilities with anticipated annual savings in the **\$300,000 to \$500,000** range.

Wholesale Electricity Contract “Blend and Extend” Strategy

In FY 2011 wholesale electricity prices have been very advantageous. Currently the MBTA has hedged over 90% of the price allowing just a small portion of the price to benefit from this favorable market. PTF has proposed a “blend and extend” strategy. In this scenario, the new supplier would buy down the price for the last two years of the remaining contract in exchange for a higher price in the last three years of an overall five year contract keeping the average amount over the new five year term less than what the MBTA is currently paying. If this plan is approved and executed it could save the MBTA **\$8.6 million** through December 31, 2012.

Quick Order System for Electrical Component Supplies

To ensure expedient receipt of electrical components to maintain carhouses, garages, stations, and buildings throughout the Authority, the MBTA has employed a Q-Order, or Quick Order, procurement system. This is a purchasing tool that allows authorized employees of designated user departments to order directly from a supplier.

The Materials Management Department awards a single, blanket style contract, with a price ceiling. Pricing and item numbers are firmly established at the onset of the contract as a result of the procurement process. After contract start-up, user departments order individual items as needed from the supplier under separate releases. This feature eliminates the need to issue single requisitions and wait for individual purchase orders. Items routinely ordered include lamps, terminals, conduit, wire, cable, fittings, fuses, circuit breakers, ballasts, electric heaters, and safety switches. Operations Support and Signals and Communications field personnel use these parts during routine maintenance calls.

The low bidder (GEXPRO) on the current electrical component supply contract offers a **63.25%** discount compared to industry standards for wholesale electrical components and supplies. Because of this discount, the Authority is able to buy electrical supplies with an annual book value of \$884,354 on a budget of \$325,000 for electrical supplies, thus saving **\$559,354** annually.

Scrap Metal Revenue Account

In October of 2010 the Engineering and Maintenance Directorate embarked on an initiative to utilize revenue received from scrap metal generated by Power and Transit Facilities and Systemwide Maintenance & Improvements. These revenues have been specifically earmarked to fund high priority vehicles. The first such purchase will support the procurement of two specialized work vehicles for the Bus Stop Sign repair team at a total cost of \$52,752.

There are multiple benefits to this program. First, these vehicle purchases will come at no additional cost to the MBTA in the current or future fiscal years. Secondly, this allows E & M to proactively address the greatest needs in its aging non-revenue vehicle fleet. Finally, E & M employees now have a tangible incentive to ensure every piece of scrap metal is disposed of properly to ensure the greatest possible revenues.

It is anticipated that the annual revenues will be in the range of **\$150,000 to \$200,000** annually. This results in a savings as vehicle and equipment purchases will not be expended against current or future operating budgets.

Lumber and Hardware Supply

PTF supervisory personnel have met with suppliers approved under the state blanket to make the procurement process for lumber and related hardware more efficient and less costly. Working in conjunction with the MBTA Materials Procurement department, PTF has

negotiated a **31% discount** (versus retail) with Curtis-Newton Lumber of Dedham, MA to supply lumber and materials to our Transit Facilities department. With a budgeted annual amount of \$150,000, it equates to an annual book value of \$217,391. The 31% discount results in an annual savings of **\$67,391**.

Total Power and Transit Facilities Savings

A two year savings summary for the initiatives described herein appears below:

2 YEAR SAVINGS SUMMARY FOR POWER AND TRANSIT FACILITIES		
TYPE	DESCRIPTION	AMOUNT
UTILITY	NATURAL GAS COST	\$2,250,457
UTILITY	CONVERSION OF OIL HEAT LOCATIONS	\$648,483
UTILITY	LIGHT FIXTURE RETRO FITS	\$550,000
UTILITY	WHOLESALE ELECTRICITY "BLEND AND EXTEND"	\$8,600,000
MATERIALS	QUICK ORDER SYSTEM FOR ELECTRICAL SUPPLIES	\$1,120,000
EQUIPMENT	NON REVENUE VEHICLES	\$350,000
MATERIALS	LUMBER AND HARDWARE SUPPLY	\$130,000
	TOTAL SAVINGS	\$13,648,940

Engineering and Maintenance Systemwide Maintenance & Improvements Past, Current and Future Efficiencies

Station Cleaning

The scope of cleaning functions for all stations and facilities is being revised to maximize efficiencies by introducing a geographic approach to bidding the cleaning contracts. The new scope will take into account economies of scale when combining stations and facility cleaning areas to better align the responsibilities of cleaning and help monitor compliance in a more efficient manner. The projected savings could be as high as 10% which could yield savings of **\$3 million** annually.

In-House Radio Maintenance

SMI is conducting a pilot program to provide an in-house capability to repair and maintain two-way radios versus contracting with a third party service provider. SMI is in the process of hiring seven technicians and the pilot program is projected to net annual savings of **\$625,000**.

Switch to Internet Protocol (IP) Phones

This 45 High Street pilot program focuses on the potential to substitute 110 ISDN phones at 45 High Street with Internet Protocol (IP) phones for a projected savings annually of **\$59,400**. Should the pilot program prove successful, SMI will investigate expanding it at other MBTA networked locations.

Merging Cell Phone Minutes for MBTA, MASSDOT and MASSPORT

Merging all cell phone minutes affords an opportunity to earn significant savings for both Verizon and Sprint cell phone minute usage allowances. The potential exists for savings in the neighborhood of **8 – 10%** off what each agency is currently paying for cell phone expenditures on an annual basis.

Capital Budget Savings Initiatives

Telecommunication Revamping of Voicemail System

In the near future the MBTA's Communications Division will explore the opportunity to replace the current voicemail system with an internet based system which would afford "independence" from the Verizon and other telecomm companies' expensive usage based voicemail systems. The one-time capital expenditure would free the MBTA from further rapidly increasing operational costs to maintain a leased system from a provider such as Verizon.

Eliminate Metro 4 X 4 Contract Training

The training contractor trained Local 589 equipment operators to properly operate and repair the \$2.2M Metro 4 X 4 tamper machine purchased recently by the MBTA. Savings are projected to be **\$200,000** annually.

Authoritywide Vendor Savings

The MBTA formally started a vendor cost reduction initiative in December 2009. Departments were asked to approach suppliers of materials, supplies and services to ask for a discount in prices and fees. The request was comprehensive and included suppliers of materials, contracted services, and consultants in the areas of engineering, architecture, accounting and financial services, IT services, actuarial support, legal services, risk insurance, health insurance, and property management fees.

The requests were reasonably well received and the response rate was in line with what would be expected from companies and firms doing substantial business with an entity as large as the MBTA. For example, Contract Administration sent out letters to 54 architectural and engineering firms asking for each consultant to voluntarily concede the

typically allowable 4% salary escalation for the duration of calendar year 2010. Of the 54 firms, 43 responded with 37 agreeing to the 4%, 5 agreeing with conditions, and 3 declining to participate.

The MBTA Law Department received a 5% reduction in law firm service agreement fees from 14 firms. The MBTA Real Estate Department received 10% discounts in consulting and legal fees and \$150,000 over three years in management fees. The MBTA Treasurer Controller’s risk management team negotiated over \$600,000 in premium reductions over the last two fiscal years during their annual insurance policy renewals for their major coverages (property, liability, and terrorism). The MBTA Materials Department sent out 120 letters requesting a 4% reduction in prices and has received affirmative responses from 20 so far with reductions ranging from 2% to 6.3%.

In total, the Authority has achieved savings with its vendors in the amount of \$10.5 million through FY 2016 distributed by year as follows:

MBTA Vendor Savings			
FY 2009	\$0.8 million	FY 2013	\$1.1 million
FY 2010	\$2.0 million	FY 2014	\$1.0 million
FY 2011	\$2.2 million	FY 2015	\$1.0 million
FY 2012	\$1.3 million	FY 2016	\$0.9 million

Service Improvements and Operational Efficiencies

Service Improvements

The Authority has made a number of service improvements over the past several years including Greenbush commuter rail service, expansion of trips from Framingham to Worcester, key bus routes, new vehicles (buses, Blue Line cars, and Green Line cars), two car trains on all Green Line service, and adding RADs (run as directed) on both the Green Line and Red Line to cope with the crowding that the recent growth in ridership has produced. While increased fares through higher ridership have paid for a small portion of the increased costs, the service improvements have created budgetary challenges. Operations estimated that the cost of meeting increased ridership demand would be approximately \$16 million higher in FY 2009 (and in subsequent years) than in FY 2008.

The Authority, at the time of the last fare increase, initiated a comprehensive service improvement program for the Key Bus Route network at the beginning of 2007. The Key Bus Route network was designed to complement the MBTA's light and heavy rail system and to ensure that all high-demand corridors had access to frequent transit service seven days a week. The primary goals of the Key Bus Route Improvement Program were to reduce crowding, improve service reliability, and to improve a customer's experience with updated schedules at bus stops and new shelters. The Authority made service enhancements on another group of high ridership bus routes which built upon the substantial improvements to the original Key Bus Routes.

Operational Efficiencies

In order to accommodate service improvements within budgetary constraints, the Operations Directorate has made a number of scheduling and assignment changes which have in the aggregate have produced substantial savings (largely wages) to the Authority (see Tab E—*MBTA Operations Directorate Cost Savings Initiatives*). The list begins in FY 2006 and extends through FY 2012. In total, the savings over seven years total \$90.3 million—an average of \$12.9 million a year. Reduction in staff is 155 positions.

In addition to the introduction of single person train operation (SPTO) which the MBTA first introduced on the Blue Line in 1996 and the Orange Line in 2010, Operations will be introducing SPTO on the Red Line in FY 2012. This will save \$1.3 million on an annual basis.

Systemwide Modernization/Automated Fare Collection

The rollout of AFC in January 2007 provided the Authority with a dramatic cost reduction in labor. In the era of tokens as fare media, the MBTA had approximately 400 collectors assigned to subway stations. At current wage rates, this was a cost of \$24 million

annually in wages alone. While the Authority initially retained most of the collectors, assigning them instead as customer service agents (CSAs), the Authority saw a reduction in their ranks through attrition from 2007 to 2011. Whereas there were 379 CSAs in January 2007, the Authority currently employs approximately 200. The wage cost for these CSAs is \$11.7 million—a savings of **\$12.3 million** over the use of collectors.

The Automated Fare Collection (AFC) Department is constantly looking at strategies to save on spending and different business models to realize savings for the Authority. The report in Tab F—*Systemwide Modernization/Automated Fare Collection Cost Reductions/Avoidance, Efficiencies, and Productivity Improvements*—illustrates important advances in the Corporate Pass Program, Retail Sales Program, and Web Programs (e-Commerce site and MyCharlie). The department has also produced savings in consumables and spare parts for AFC equipment, repair services, smartcard procurement, and Bill of Rights claims. The net savings to the AFC Department over this time period is **\$2.1 million**.

Design & Construction Project Analysis Review of Transit Stations

In the past 10 years, the MBTA has been involved in multiple transit accessibility and refurbishment projects, all of which involved work in stations that are 75 + years old. In addition, all of these projects required upgrades and extensions to utilities buried in century old Boston streets with sketchy information on the actual utility locations. Recent projects such as Kenmore, State, Ashmont, Arlington, Copley, and Maverick Station Projects are typical examples of the nature and scope of this effort.

The major emphasis of these projects was to make the stations accessible. Based on available funding at the time, some upgrades to station elements and amenities were included. In some instances, however, Ashmont in particular, project budgets required that project finishes and other station amenities be deferred to a later date, and work performed in phases, with the thought that as funds became available, the upgrades to the station amenities would be added to the project scope.

For this group of station contracts, there were also several significant events during the progress of the work that occurred that could not have been fully anticipated at the time of the original awards. These events—implementation of Automated Fare Collection (AFC) and the MBTA entering into a settlement agreement with the Boston Center for Independent Living (BCIL)—caused significant changes to the project scopes as well as schedule changes.

Of greater impact, all of the construction work was performed while the stations remained open for service throughout the entire construction phase. This required a systematic piecemeal approach to the performance of construction activities to maintain service for MBTA customers. A phased construction approach limits the area available to the contractor to perform construction activities, resulting in a longer overall construction timeframe. When hidden and latent conditions are discovered during the work (e.g. during

demolition), the result is greater impacts to cost and schedule, due to the lack of flexibility to work in other areas while the issue is being resolved.

Cost / Schedule Performance Analysis Metrics

The MBTA Design & Construction department has performed an in-house review of the last 10+ years of transit construction projects. The analysis statistically determined the performance of transit station projects, summarized the risk trends common to transit station construction projects, and formulated risk avoidance strategies to preclude recurrence.

Twenty-two transit station projects were separately analyzed. Performance statistics were developed relative to cost and schedule as well as a summary of the associated risk trends. A summary of the results follows:

Cost Analysis Metrics

The cost analysis identified that transit station projects exhibit the highest amount of increase in construction costs of any project that the MBTA performs. Other types of projects performed by the MBTA include bridges, commuter rail upgrades, maintenance facilities, etc. On average, transit station construction exhibited a 24.67% increase in cost, ranging from a low of 5.09% to a high of 73.45%.

Schedule Analysis Metrics

The schedule analysis identified that transit station projects, on average, exhibit schedule growth impacts of 80.36%, much more than any other type of project performed by the MBTA. Ranging from a low of -0.34% to a high of a 324% increase in planned schedule performance was calculated.

Major Drivers for Cost and Schedule Growth

The major reasons for the increase in project cost and schedule delays resulted from:

1. Budget considerations
2. Additions / Modifications to Project Scope
3. Differing Site Conditions
4. Work in stations open for operations
5. MBTA driven changes

Budget Considerations

Oftentimes, project funding is not available to completely address the total scope of work required to renovate the station. As a result, the station renovation is performed in phases, with work performed by different contractors. Performing work in this manner results in extended construction durations due to having to put out multiple contracts, and higher overall costs due to the time value of money. An example of this is Ashmont Station. Due to

funding issues, the station renovation was segmented with the initial contract providing a basic accessible station, followed by a station finishes contract.

Additions / Modifications to Project Scope

During the execution of the construction contract, additional scope elements are frequently requested and provided. Added scope elements can originate from a number of sources, and usually have an impact on costs and overall schedule duration. Contracts that have had significant additions/modifications to project scope are Kenmore, State, Arlington, Copley, Ashmont, and Maverick.

Differing Site Conditions

Differing site conditions represent a major driver of cost and schedule. Working in 75+ year old stations with unknown conditions behind walls, floors, and ceilings is one source of differing site conditions. It is not practical to demolish areas of the stations in advance of the construction contract to obtain certainty of the existing conditions. Record drawings are relied upon to provide this information. Over the years, modifications to the stations have been made, to maintain operations, which were not recorded on as-built documents. In addition, materials that require special handling such as lead and asbestos are frequently discovered behind covered up areas in greater quantities than expected. Selective demolition during the design phase is not always conclusive and does not always prevent the discovery of differing conditions during the construction phase.

Outside the station, utility locations are often unclear from utility as-built drawings. In many instances, the discovery of undocumented utilities during construction requires a complete utility re-design resulting in significant delays to the schedule and increased costs. Projects that have experienced these types of issues are State Street, Kenmore, Arlington/Copley, and Maverick.

Work in Stations Open for Operations

All of the recent transit station construction projects were performed while maintaining the station open to service MBTA customers. In order to perform work in this manner, severe restrictions are placed on the contractor that limits the work that they can perform. A construction staging plan is developed to advance the work in a piecemeal fashion so as to not impact the normal operations of the station. Work that can't be conducted during normal hours of operations is required to be performed at night on non-revenue time, or on weekends with a bus diversion in place. Planned night work and weekend diversion work is subject to weather conditions, and ongoing operational issues that may prevent the planned weekend diversion from taking place, resulting in construction schedule delays.

MBTA Driven Changes

In the past, there was a lack of close coordination with other MBTA departments. The Design and Construction Project staff and Design Engineers needed to interface with

other departments such as Operations, Safety, and Environmental to identify the needs of each department to ensure that the finished project was efficient and optimal for operations. Issues or concerns were often not picked up in time and had to be addressed with change orders during the construction phase rather than during the design phase. MBTA Design & Construction Senior Management identified this as a problem and has created the Project Development Group (PDG) approach to project development. The PDG is a committee of all MBTA Departments with review and approval authority over the station designs. No project is bid now without approval of all affected Departments. The implementation of PDGs has already proven to be and will continue to play a vital role in improving the Station Modernization program for the MBTA.

Recommendations

1. Continue the use of Project Development Groups.
2. Employ alternate project delivery methods for projects such as Design-Build and Construction Management at Risk, in addition to the standard design-bid-build method currently in use at the MBTA.
3. Consider the temporary closure of stations during the performance of the major construction activities to achieve benefits in cost, and to reduce the extended construction durations required with an open station.
4. Obtain necessary funding to be able to address all of the station elements under a single contract rather than in a phased approach.
5. Pursue a policy of strict adherence to the contract scope and defer added scope elements.
6. Require additional condition assessments including test pits, utility survey and sub surface examinations. Utilize utility specialists to identify conditions that may not be easily identified on as-built drawings that may potentially be seen using other advanced technological methods (i.e. 3-Dimensional Imaging). Place a value on providing more resources up front in design to ensure a cost/schedule return on investment in the construction phase.
7. Continue the expansion of the projects controls initiatives that have been put in place over the last 3 years to better control project costs and schedule.

Current MBTA Project Controls in Place

The following is a summary of the project controls that have been instituted over the last three years at the MBTA to improve oversight of the Design and the Construction Management functions. This oversight has been initiated to better control and monitor contracts with design consultants as well as with construction contractors. In addition, a number of added future Project controls initiatives are being developed to further enhance MBTA oversight and better assure that projects are completed on time and on budget.

The MBTA already has many of the most essential aspects of project controls in place and is actively using these as tools to manage projects. First and foremost, over a year ago, we created an internal MBTA position for a Project Controls Manager. In this role, the Project Controls Manager has direct oversight of our project controls functions and the staff of outside consultants to accomplish the objectives of the MBTA.

The establishment of an internal Project Controls Group was recommended in the February 2010 FTA review of the MBTA Design and Construction Department. The MBTA is in the process of adding two additional staff to support this effort. Discussions with personnel of the MassDOT Accelerated Bridge Program (ABP) indicate that the establishment of an in-house Project Controls Management Group was a requirement of the Accelerated Bridge Program legislation, which stipulates that an internal project controls function be established.

Design Phase Project Controls

The MBTA:

- Requires designers to provide monthly design schedule updates, providing coordination tools between the sub-consultants, stakeholders, and the MBTA departments.
- Requires designers to provide “bottoms up” cost estimates at each design stage.
- Requires that contract time determination studies be provided by the designer using the cost estimates as a basis.
- Has implemented a senior level construction cost estimate review session in which the designer and the estimator present key aspects to the MBTA.
- Has started to implement risk management evaluations on some of the key projects.
- Has implemented a Cost Estimate Reconciliation Workshop comparing two cost estimates.
- Has a program for reporting design project monthly progress, via a monthly update report prepared by the Project Manager, that includes a definition of the project scope, cost and schedule status, design amendment status information, cost exposures, major work completed, major work in progress, and a definition of pending issues.

Construction Phase Project Controls

The MBTA:

- Requires cost and resource loaded Critical Path Method (CPM) schedules as a requirement from the contractor and for these schedules to be submitted monthly. This requirement has existed in the MBTA specifications for over four years now, but has only within the last 2-3 years been supported by monthly reviews from schedule consultants, and coordinated by the MBTA Project Controls Manager.

- Utilizes construction scheduling professionals to assist Resident Engineers and Project Managers in schedule reviews, claims support, and contractor negotiation support.
- Insists that contractors use Primavera (or approved equal) for all schedule submittals, even for the smallest of contracts.
- Utilizes construction scheduling tools to evaluate schedule recovery efforts on many of their key projects.
- Utilizes access restraints and interim contract milestones on projects.
- Has implemented a VECP requirement into their construction specifications.
- Has implemented a requirement for the escrow of bid documents on construction contracts to assist in the resolution of claims.
- Has implemented change order and claims training.
- Documents “lessons learned” from past projects and communicates these lessons to project managers and support staff.
- Has a program for reporting construction project monthly progress, via a monthly update report prepared by the project manager, that includes a definition of the project scope, cost and schedule status, claims and change order status information, cost exposures, a forecast of the potential construction and overall project cost, major work completed, major work in progress, and a definition of pending issues.

Future MBTA Project Controls Initiatives

Future MBTA design phase project control initiatives include:

- A claims avoidance review process on selected projects.
- An enhanced constructability review on selected projects and reach out to other transit related personal to take part in a focused design review for constructability.
- An earned value design development reporting system that monitors and tracks design consultant progress on a monthly basis. This process will also include a configuration management element to document scope modifications made during the design phase.
- Expanding the use of value engineering to require for all projects in excess of \$2 million.
- A risk management process that will factor in multiple risk factors to provide statistically relevant project cost ranges for establishing construction and project budgets.

Future Construction Phase Project Controls Initiatives

Future MBTA Construction phase project control initiatives include:

- Working with MassDOT to develop a standard documentation control and work-flow process.
- Completion of the construction project trend reports that are in process to analyze cost and schedule drivers on projects completed in the last 10 years. This information is being sorted by facility type (e.g. commuter rail projects, station projects, bridge projects, maintenance facilities, etc.) to provide type specific information.
- Receipt copies of applicable studies that the ABP PCU is generating (like the escalation studies, bid result studies, the project labor agreement paper, etc.). MBTA to share copies of their analysis of projects results including bid results, engineer's estimates, project cost and schedule performance and the trending analysis currently being performed of the time and cost factors.
- Evaluating the possibility of utilizing the ABP Quarterly Report to report on overall Capital Plan.
- Evaluating the use of the already prepared MassDOT schedule training manuals to train resident engineers about the important elements of schedule controls. These manuals will be revised to accommodate MBTA specific elements.
- Including controls in the CMS system to prevent the payment of unit price and allowance items when the associated work items exceed the original unit or allowance quantity until authorization is approved by the appropriate level of management.
- Development of an integrated data base reporting system that interfaces with our current CMS system. This system will provide a consistent method for reporting the status of all projects in Design and Construction and allow posting of the current project status on the MBTA website.

MBTA DEBT PROFILE

Introduction

The MBTA's debt burden is approximately \$5.5 billion in outstanding principal (a total of \$8.5 billion in principal and interest), which consumes approximately 30% of its revenues annually. Outstanding principal is comprised of \$1.65 billion of Prior Obligation Debt (debt inherited at the start of Forward Funding), \$1.67 billion in legal transit commitments related to the Central Artery/Tunnel project and \$2.18 billion in MBTA Capital Investment Program Revenue Bonds. As a result of this debt burden, and the lack of revenues available to it, the MBTA has been unable to transition to a capital investment program that relies less upon debt and more upon pay-as-you go funding.

Credit Structure

The MBTA credit structure was designed to provide access to the capital markets even under adverse conditions. Specifically, MBTA's credit structure is based upon a gross pledge of its revenues, meaning it pays debt service (or bondholders) first before any other of its costs. It issues bonds on the basis of two revenue sources; dedicated sales tax receipts and assessments collected from its member communities. Both revenue sources are established by legislation and contain provisions that guarantee a floor below which neither revenue source to the MBTA can legally fall. This structure enables the MBTA to enjoy very strong credit ratings for both of these types of credits. Strong and stable credit ratings have allowed the Authority continued and seamless access to the financial markets, even through times of severe financial distress, for example during the years following the meltdown of the financial markets after the collapse of Lehman Brothers in September 2008. In addition, strong credit ratings allow the MBTA to issue debt at very cost effective interest rates, as well as to have refinanced high interest rate debt at lower rates for interest cost savings. In fact, due to historically low interest rates over the past decade, the MBTA was able to successfully refinance much of its portfolio of high interest rate debt at lower rates, which generated significant interest cost savings for the Authority. However, although the Authority continues to monitor the marketplace, it has availed itself of most if not all of the opportunity to replace higher cost with lower cost debt. Further, while interest rates have been at historically low levels for many years, they are generally anticipated to begin to rise again in the near future.

Capital Investment Program

The MBTA faces significant capital investment costs related to maintaining its existing infrastructure and equipment. The Authority spends \$470 million annually just to maintain a minimum investment in state of good repair, which does not address an existing backlog of approximately \$4.5 billion of state of good repair projects. Without debt relief or a more extensive pay-as-you-go capital funding program, the Authority will not be able to afford to invest funds in many of the projects in its Capital Investment Program, including the backlog of state of good repair projects. Further, if current conditions persist, the MBTA

will continue to face further increases to its backlog of state of good repair projects, and, potentially, an unacceptable deterioration of its infrastructure.

Debt Restructuring

While the Authority has restructured some of its debt in recent years to close annual budget deficits, the size of the MBTA's budget deficits in subsequent years are projected to be increasingly significant. Therefore, in order to preserve current levels of transit services, including maintenance of equipment and infrastructure, the MBTA will have few, if any, other options than to restructure more and more of its debt to balance its budget. Restructuring debt means taking existing debt and issuing new debt that effectively serves to stretch out the maturity of the old debt, reducing annual payments in the nearer term, but clearly adding to the size of the payments necessary over the longer term to pay off the same amount of debt. This is an expensive financial option, and it also increases the Authority's overall debt burden, without contributing at all towards generating funds for additional investment in its system. Restructuring of debt is not to be confused with the refinancing of debt (mentioned above) where, as described, the Authority refunded higher cost debt with lower cost debt for annual interest rate savings, resulting in a reduction of the debt burden, and which did generate additional funds that became available for investment in the system. In the current marketplace, and given that interest rates are expected to rise, restructuring debt will add appreciably to the Authority's already overwhelming debt burden. However, absent new sources of revenue, future fare increases or significant cuts in service, the Authority may have no other choice if it is to preserve current levels of transit services and maintain a state of good repair of its infrastructure.

Future Efficiencies

In addition to the annual ongoing savings described herein, the Authority is studying or planning for future efficiencies:

Single Person Train Operation

Single person train operation on the D Line of the Green Line could yield an annual savings of **\$3.2 million**.

In-house Radio Project

Taking the repair and maintenance of two-way radios in-house is expected to net **\$0.6 million** annually in savings.

Paratransit Services

The Authority's paratransit service THE RIDE has increased 504% since FY 1996 or 33.6% per year. The program cost \$14.8 million in FY 1996 and is \$89.5 million in FY 2011. The MBTA Office of Transportation Access (OTA) is planning several cost reduction strategies of which two follow.

In-Person Assessments

The OTA is preparing to implement in-person functional assessments for ADA paratransit eligibility determination in FY 2012, which would replace the current paper application process and reduce the growth in paratransit costs. The concept is that in-person assessments dissuade ineligible applicants from beginning the interview process, and that interviews, and especially functional assessments, are more effective than paper applications in determining eligibility. Among individuals who become eligible for ADA paratransit service, the interview process is better at determining the full extent of a customer's abilities. This makes it practical to grant conditional eligibility for customers who may only need paratransit sometimes, such as summer/winter, night-time, inaccessible trips, etc. Estimates of savings range from **\$0.7 to \$2.9 million** annually in the first full year of implementation due to reduced service demand. Assuming a January 1, 2012 start, savings may range from **\$0.35 to \$1.45 million** in FY 2012.

Optimization of Run Structures

The OTA is also looking at optimization of run structures, which improves productivity and can reduce operating costs. However, the savings would accrue to the carrier, and would require a negotiated agreement for the MBTA to share in any cost saving. This has the potential to save operators between **\$2.7 and \$5.4 million** annually, and splitting this amount 50/50 or other appropriate split could save the MBTA a sizeable amount.

Other Paratransit Considerations for the Future

The MBTA is evaluating a number of cost reduction strategies for THE RIDE paratransit program. Potential strategies include program changes to divert customers off of high-priced paratransit trips onto lower-priced alternatives, revenue increases, and larger changes to the procurement process and to how the paratransit service is managed. Potential concepts include:

- Expansion of free fares on fixed-route services for THE RIDE customers
- Travel training
- Implementing a taxi subsidy program
- Increasing THE RIDE fares consistent with ADA paratransit limits
- Revising the procurement process
- Revising contractual provisions
- Exploring net cost reduction of a centralized call center
- Coordinating human services transportation in a way that permits Medicaid reimbursement of paratransit costs

Daily Operations Resource Management (DORM) Project

The Daily Operations Resource Management (DORM) project will modernize the way transportation district offices are operated at the MBTA, moving from manual, decentralized processes to standardized, technology-supported processes designed to improve accountability and efficiency. It is expected to save **\$1.4 million** annually.

DORM will be implemented in phases. Phase 1 will automate the “daily operations” of the district offices. Today, district offices manage the workforce and the daily duties mainly on paper. Many of the tasks involve repetitiously preparing the same lists in different places for reporting. Having to manually transfer information in this fashion can lead to errors and causes transportation supervisors to spend less time managing transportation and more time dealing with paperwork. The process is complicated by the need to carefully comply with intricate work rules (contractual, safety, and operational) when assigning work to employees. The DORM system will ensure that these rules are applied consistently and that work (overtime or otherwise) is always assigned in the most cost-effective way possible.

Phase 2 will upgrade the current work selection (“pick”) system. The current system is obsolete, making simple programming changes cumbersome and costly. Another benefit to updating the pick system is that it will enable the development of a fully automated, self-service pick, which is the goal of phase 3. Depending on the implementation details, operators will be able to select their work from a kiosk or from home, reducing staffing requirements associated with the pick process significantly.

DORM Anticipated Costs and Savings (in FY11 dollars)

	FY12	FY13	FY14	FY15	Annually	Through FY20
Phase 1 - Daily Operations						
Bus	\$ 670,707	\$ 670,707				
Subway		\$ 775,707	\$ 775,707			
Phase 2 - Work Selection/Bidding/Pick		\$ 298,357	\$ 596,713	\$ 298,357		
Phase 3 - Self-Service Pick			\$ 425,000	\$ 1,275,000		
Total Procurement Costs	\$ 670,707	\$ 1,744,770	\$ 1,797,420	\$ 1,573,357	\$ -	\$ 5,786,252
Direct pick-related cost reduction through automation				\$ (557,500)	\$ (1,115,000)	\$ (6,132,500)
Potential reduction in overtime (conservative estimate based on peer agency experience)		\$ (332,830)	\$ (597,014)	\$ (597,014)	\$ (597,014)	\$ (4,511,928)
Additional costs to operate and maintain centralized pick system				\$ 346,450	\$ 346,450	\$ 2,078,700
Net (Savings)/Cost					\$ (1,365,564)	\$ (2,779,476)

Status: A request for proposals has been developed for phases 1 and 2. A federal grant application has been submitted for the Bus Operations implementation of phase 1. If funds are secured by the end of Q3 of FY11, a contract will be awarded by Q3 of FY12.

MBTA/MassDOT Collaboration on Efficiencies

With the passage of Transportation Reform, Secretary and Chief Executive Officer Jeffrey Mullan created a Committee on Budget and Efficiencies in January 2011 to identify and realize programmatic efficiencies and cost savings wherever possible at MassDOT and the MBTA. The primary purpose of the Committee is to ensure that MassDOT and the MBTA are utilizing resources and personnel in the most productive and cost-effective manner possible.

The Secretary created number of program specific focus teams which are charged with proposing concrete recommendations. These focus teams include MBTA members in the following areas:

- IT, Telecommunications, and Radio Services and Systems
- Human Resources and Labor Relations
- Procurement
- Construction and Design
- Real Estate and Right of Way
- Environmental
- Facilities and Buildings
- MBTA, MassDOT, and RTA Operations
- Legal
- Finance
- Police

- Workforce Resizing
- Electronic Signature and Discounts
- Interoperability

The focus groups will be finalizing proposals in the 3rd and 4th quarter of FY 2011 in order to execute costs savings in FY 2012. The following contains some examples of areas explored by this Committee through one focus team:

Real Estate and Right of Way Budget and Efficiencies Group

The Real Estate and Right of Way Budget and Efficiencies Group has recommended the following areas where increased efficiencies and budget savings could be realized:

Legal Costs

The MBTA currently spends hundreds of thousands of dollars annually on outside legal counsel for representation on its complicated real estate transactions. MassDOT has adopted the former Turnpike Authority's practice of requiring the designated developer to pay for the third party costs incurred by MassDOT, though it can be argued that these costs are factored into bids and are not completely transferred to the developers. The MBTA has adopted this practice in some instances, but both MassDOT and the MBTA could realize additional savings by hiring more in-house legal counsel to handle real estate development transactions. MassDOT currently employs one full time lawyer devoted solely to this work, and has displaced significant outside legal expenses. The MBTA does not have any in-house real estate attorneys.

Consultants

MassDOT and the MBTA could benefit by using a common list of outside counsel and other consultants (appraisers, surveyors, financial, etc.) both in terms of the easier coordination between agencies that would result, and also by realizing reduced bids through the expected volume of the combined agencies' work.

Utility Rents

Both the former Turnpike Authority and the MBTA charge market rates for utility easements. The charges should be coordinated and equalized. MassDOT should charge the same rates, as this was not done in the past, and the transactions should be centrally administered. The MBTA utilizes the "Bank's Report" which has established rates for utility occupancies. This saves time and resources with not having to conduct an appraisal for each project. The MBTA can make the Report available to other MassDOT divisions.

Right of Way (ROW) Database

The MBTA has a sophisticated ROW database system. The Turnpike Authority's system is as comprehensive, if not as user-friendly. MassDOT's system is not currently as up to date as the MBTA's system. The MBTA can make available its

ROW database system “LandTracker” for use by other MassDOT divisions, enabling MassDOT to more efficiently identify assets for potential development.

As other focus groups report on activities and MassDOT develops an efficiencies inventory, all agencies in the MassDOT family should benefit from cost savings in the future.

Legislative Assistance for Tort Reform

The Authority has tried unsuccessfully over the years to obtain legislative limitations on compensatory damages awards on claims against the Authority. This situation remains the same today for all claims of “serious bodily injury” against the MBTA.

In 2009, the MBTA did receive limited relief for tort claims. In the Transportation Reform Act of 2009, the MBTA was placed within the statutory protection of Chapter 258. This offered protection for claims of a non-serious nature (\$100,000 cap), the elimination of pre and post judgment interest, the elimination of punitive damages claims, and certain procedural protections. Unfortunately, the legislation did not accord full protection of Chapter 258 as received by every other governmental entity covered by the statute. Instead the legislation specifically stated that claims of “serious bodily injury” (a broadly inclusive term) are not subject to any cap on compensable damages whatsoever. The result has been that the number of multi-million dollar judgments against the MBTA has remained intact and all such future claims are possible.

Legislation treating the MBTA in the same fashion as all other Chapter 258 defendants is warranted and critical both in terms of a need for similar treatment and for budgetary planning and cost control. While the additional protections accorded to the MBTA under the new legislation offer limited protection, the loophole for “serious bodily injury” claims will continue to cause significant budgetary uncertainty in the future.

Over the 16 year period between FY 1995 and FY 2010, the Authority has spent an average of \$9.0 million a year for tort claims. Because of the daunting fiscal times the Authority faces, legislative relief providing full Chapter 258 tort reform would facilitate much needed assistance to the MBTA’s operating budget.

Conclusion

Notwithstanding the many achievements to control costs and the ability to implement some of the future efficiencies noted above, the Authority will not be able to balance its budget in the near future given its debt situation and pressing operating and maintenance needs. The ongoing requirement to pay for service and to fund state of good repair spending to support such service cannot be maintained solely through cost controls and additional efficiencies.

As stated in the introduction, deficits in future years are projected to grow from \$192 million in FY 2013 to \$344 million in FY 2016 (see Tab G—*MBTA Pro Forma FY12—FY16*). This situation was well documented in the November 1, 2009 *MBTA Review* by David D'Alessandro et al, in which he provided a “frank assessment of the MBTA’s condition.” He concluded that there were no quick fixes as the report excerpts from p. 31 show:

There is no question that the MBTA is an expensive and complex system. It requires large expenditures just to continue operating. Any thought that these problems can be addressed primarily through expense reductions is misguided.

It makes little sense to continue expanding the system when the MBTA cannot maintain the existing one.

*If there is any chance for the MBTA to begin to close its deficit gap, there is little question that **secure** new revenue sources will have to be developed over time.*

The D'Alessandro report also concluded that the MBTA had done much to help alleviate its financial situation as the report excerpt from p. 29 shows:

Contrary to not trying, we found evidence that the MBTA did make some hard expense choices. Across-the-board cuts were routinely made to departmental budgets. Periodic layoffs and hiring freezes restrained headcount. Individual managers took pride in eliminating inefficiencies and redundancies, while embracing a new organizational ethic of customer service. Yet in the end, they could not pare staff below the number needed to move hundreds or thousands of riders across hundreds of routes each workday. Add the complexity and cost of sustaining the system’s aging infrastructure, and it became evident that the cost inflation and savings assumptions in the Finance Plan were never tested against the daily grind.

Without new revenue sources or significant debt relief, the future is uncertain for public transportation in Massachusetts. The MBTA is too valuable an economic asset to permit any further deterioration of its quality or condition.

Common\Efficiencies Report June 2011\MBTA Efficiencies and Cost Savings June 2011 Final
June 13, 2011