

MWRA ADVISORY BOARD



FY 2009

Comments and Recommendations
on the MWRA's
Capital Improvement Program and Budget

The Community Advisory Board to the
Massachusetts Water Resources Authority

April 2008

The MWRA Advisory Board...

was established by the State Legislature to represent the 60 communities in the MWRA service area. Through annual comments and recommendations on the Authority's proposed capital and current expense budgets and rates, the Advisory Board provides a ratepayer perspective on the MWRA's plans and policies to improve the region's water and sewer systems.

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On the MWRA's Proposed
Fiscal Year 2009
Capital Improvement Program and Budget

April 2008

Joseph Favaloro
Executive Director

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PREFACE

Pursuant to its responsibility under Sections 8 and 23 of Chapter 372 of the Acts of 1984, the MWRA Advisory Board has undertaken a comprehensive review of the Authority's proposed Capital Improvement Program for fiscal year 2009. The Advisory Board's review has produced these *COMMENTS AND RECOMMENDATIONS*, which summarize important features of the budget document, provide highlights of each of the capital projects, and state the Advisory Board's opinions on a number of important projects and policies in the proposed budget document. These *Comments and Recommendations* were approved at the April 17, 2008 meeting of the full Advisory Board.

These *Comments and Recommendations* were prepared by Joseph Favaloro, Cornelia Potter and Matthew Romero of the Advisory Board staff. Overall direction was provided by Vice Chairman for Finance, Bernard Cooper, with the participation of Advisory Board members.

All base information for figures and tables, schematics and photographs contained within the *COMMENTS AND RECOMMENDATIONS* document are provided by MWRA or their consultants, unless otherwise noted.

The Advisory Board extends its appreciation to MWRA staff for their assistance in reviewing the FY09 Capital Improvement Program.

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INTRODUCTION

When looking at the Massachusetts Water Resources Authority's (MWRA's) Proposed FY09 Capital Improvement Program (CIP), it helps to first review the major changes in the Authority's approach to its capital program. For the past two decades, the Advisory Board's guiding principle to its *Comments and Recommendations* on both the capital and current expense budgets has been the pursuit of predictable and sustainable rate increases for its member communities and ratepayers.

Effectively managing capital spending levels is the first step in effective rates management since they correlate to the amount of debt service in the Current Expense Budget (CEB), and thereby the community's rate increases. Toward this end, the Advisory Board championed the idea of a five-year capital spending cap. In June 2003, the MWRA Board of Directors adopted the first five-year cap for the period from FY04-08. Part of the Advisory Board's review of the Proposed FY09 CIP includes a review of the proposed capital spending cap for the period from FY09-13.

A second strategy was the development of the Master Plan, which the Advisory Board had been advocating for many years. After two and one-half years of in-house development, the Authority presented the first draft of its Waterworks and Wastewater Master Plan, identifying \$3.1 billion in capital needs across a forty-two year period.

The third major strategy the Advisory Board proposed to further the goal of creating sustainable and predictable rate increases was the restructuring of the Authority's existing debt to provide additional rate relief in future years. In January 2007, the Authority finalized this restructuring transaction.

It is within this context that the Advisory Board undertakes its review of the Proposed FY09 CIP: the Authority is now benefiting from the successful implementation of these three major recommendations.

ADVISORY BOARD

“SNAPSHOT”

Table 1

Action	Result
Advisory Board proposes \$1 billion in cuts to Authority’s Capital Improvement Program	<ul style="list-style-type: none"> ▪ Eliminated Battery D ▪ Eliminated digester Module 4 ▪ Reduced silos at pellet plant
Advisory Board recommends reassessment of CSO Control Program	<ul style="list-style-type: none"> ▪ Revised Long-Term CSO Control Program (1994) ▪ Set five three-year variances for Charles and Alewife
Advisory Board recommends new approach to setting a capital spending cap	<ul style="list-style-type: none"> ▪ Board of Directors voted to establish five-year cap for FY04-08 (June 2003) ▪ MWRA to set second five-year cap from FY09-13 (June 2008)
Advisory Board recommends development of comprehensive Master Plan	<ul style="list-style-type: none"> ▪ MWRA developed first draft of comprehensive Master Plan (Fall 2006) ▪ Developed MIS Master Plan (Fall 2006)
Advisory Board recommends that rate revenue management strategy include restructuring of Authority’s debt	<ul style="list-style-type: none"> ▪ Authority restructured \$650 million of existing debt (January 2007) ▪ Resulted in \$425 million in future rate relief over next 10 years ▪ Resulted in \$4.9 million in present value savings

OVERVIEW

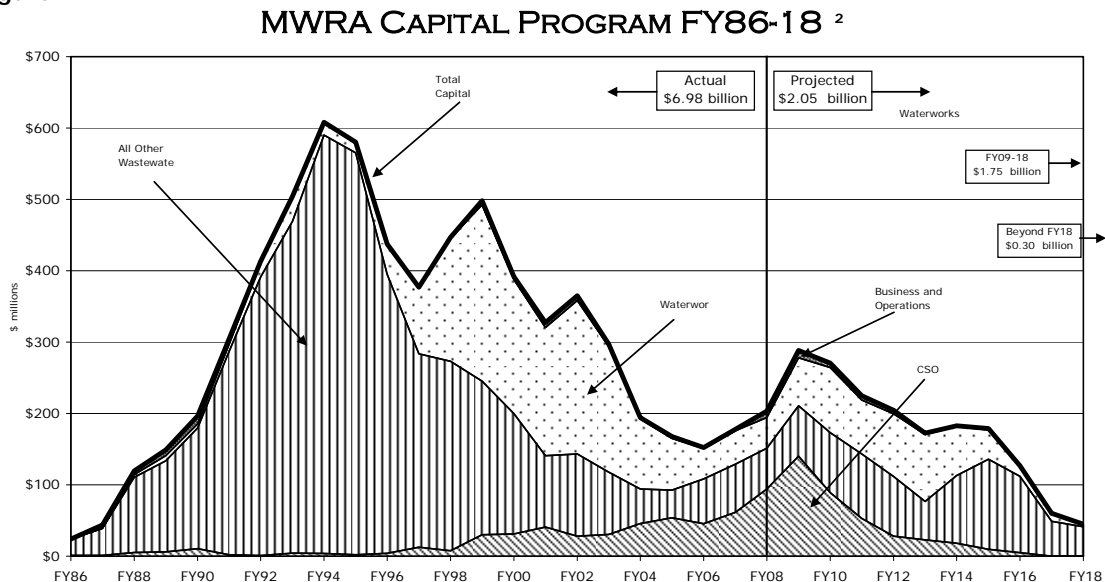
Currently Open Capital Projects Total Nearly \$5 Billion

The Authority states that the total contract value of active (or open) capital projects is \$4.922 billion, of which \$2.870 billion will have been spent through FY08.¹ Future spending, as identified to date, totals \$2.051 billion of which \$1.755 billion (just over 85%) is to be spent in the next ten years (FY09-18). Another \$0.3 billion has been included for the period beyond FY18. Most of this amount is for Deer Island Treatment Plant Asset Protection and the Residuals Processing Facility.

The total contract value increased by \$206.4 million from the Final FY08 CIP and by nearly \$227 million since the Advisory Board's review at this time last year. The increases were driven by updated inflation estimates of \$25.5 million, scope changes and additional components to existing projects of an estimated \$45 million, new projects totaling \$36.7 million, and updated cost estimates of \$95.6 million.

Spending for the next five years is the most fully identified. It can be expected that the Authority will continue to analyze capital spending needs with each future budget and that spending for the years FY14-18 and for the years that follow will expand, based on the Master Plan.

Figure 1



Spending Since the Inception of the MWRA is \$7.25 Billion

Another \$4.38 billion of spending for completed (and closed out) capital projects is identified in Appendix 7 in the Proposed FY09 CIP document. Thus, total spending from inception through FY08 is expected to be \$7.25 billion.

¹ Includes current projections for FY08.

² This graphic is based upon data received from the MWRA Budget Department. Please note that the source data for the text can be found in Appendices 2 and 7 of the Authority's Proposed FY09 CIP. FY08 spending reflects information as of first quarter actual spending.

Spending for the Next Ten Years Is Just Over \$1.75 Billion

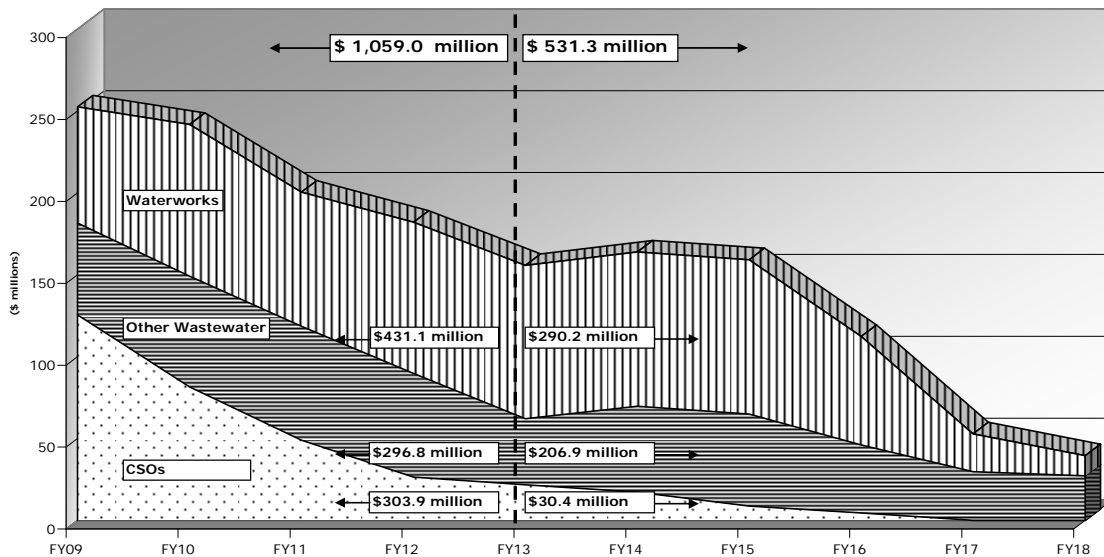
The Authority is proposing a ten-year capital program and budget of \$1,590.2 million plus \$164.4 million in contingency fund allowances for a total of nearly \$1,755 million. Just over half the \$1,590 million budget is for Wastewater projects, or \$838.2 million. Another 45%, or \$721.4 million, is for Waterworks projects and the remaining \$30.6 million (2%) is for Business and Operations Support (including Information Systems).

Forty percent of all Wastewater spending currently budgeted for the next ten years is for the Combined Sewer Overflow (CSO) Control Program (\$334.7 million). The amount represents 21% of all capital spending currently identified for the ten-year period.

As noted previously, the proposed budget for FY09-13, at \$1,161.2 million, is the most complete of the multi-year period of the proposed capital program. Spending for the second five years of the ten-year period, currently identified at \$593.51 million (just under half the amount budgeted for the first five of the next ten years), can be expected to evolve during the development of subsequent capital budgets. For this reason, and because the next capital spending cap is to be set with this budget cycle, the Advisory Board’s review will focus on the next five years (FY09-13).

Figure 2

**WATERWORKS AND WASTEWATER SPENDING FY09-18³
CSO Spending Begins to Decline**



Spending for the Next Five Years Is \$1.16 Billion

The Authority is proposing a budget of \$1,161.2 million for FY09-13. The Authority has identified spending of \$1,059.0 million plus contingency allowances of \$102.1 million. Some \$600.8 million (57%) is for Wastewater projects, while \$431.2 million (41%) is for Waterworks projects. The remaining \$27.0 million is for Business and Operations Support projects.

³ Net of contingency.

Nearly 30% of all five-year spending is to be for the CSO Control Program. The \$303.9 million budgeted is just over half of all Wastewater project spending for the period. (See Figure 2)

Eleven projects with spending of \$25 million or more during the cap period represent two-thirds of all spending for FY09-13 or \$721.3 million.⁴ Four of the 11 projects with spending of \$25 million or more are part of the CSO Control Program.

Table 2

<u>Project</u>	<u>FY09-13 spending</u> \$ millions
◆ DI Treatment Plant Asset Protection	\$177.7
◆ North Dorchester Bay CSO Tunnel	108.6
◆ East Boston Branch Sewer Relief (CSO)	69.4
◆ MetroWest Water Supply Tunnel	65.0
◆ NIH Redundancy & Covered Storage	56.9
◆ Carroll Water Treatment Plant	52.7
◆ New Connecting Mains to WASM 3	49.3
◆ West Roxbury Tunnel	45.9
◆ Reserved Channel Sewer Separation (CSO)	38.3
◆ Cambridge Sewer Separation (CSO)	29.5
◆ I&P Facility Asset Protection	28.0
Subtotal	\$721.3

The Proposed Capital Budget Draws from the Master Plan Needs of \$3.1 Billion

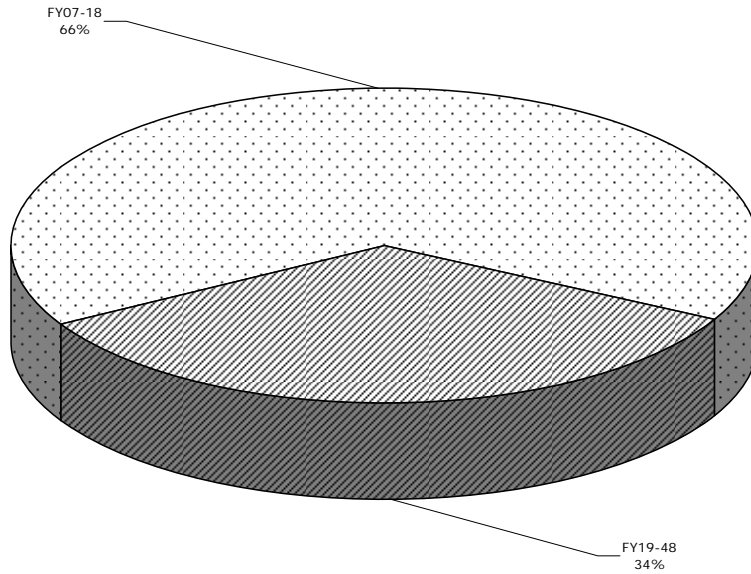
The Authority's Master Plan for Wastewater and Waterworks projects identifies nearly \$3.1 billion in capital spending.⁵ Nearly \$2.034 billion (66%) is identified for the twelve-year period FY 2007 through FY 2018, while another \$1.044 billion of future capital needs is identified for the thirty-year period from FY 2019 through 2048. These figures include disbursements and repayments to the Community Assistance programs. Additional spending needs can be expected to be identified in future updates of the Master Plan, anticipated every five or so years. Also to be added will be Business and Operations Support project needs including Information Systems projects.

⁴ Net of contingency.

⁵ In 2006 dollars.

Figure 3

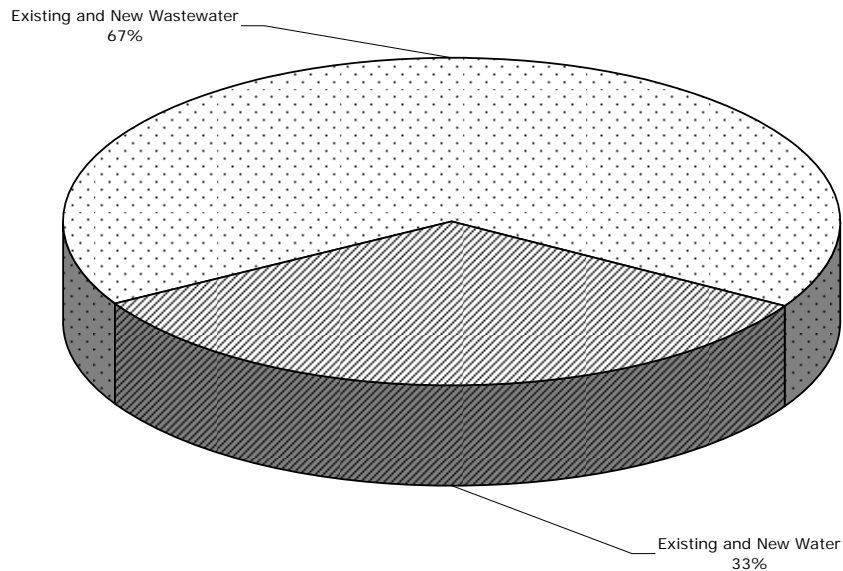
MASTER PLAN PROJECTS BY TIMEFRAME
Two-thirds of Total Recommended Master Plan Spending Occurs Over the Eleven-Year Period from FY07-18 ⁶



Of the \$3.078 billion total, \$2.058 billion is for existing and new Wastewater projects, while \$1.02 billion is for Waterworks projects. All existing Wastewater and Waterworks projects total \$1.015 billion, while all new Wastewater and Waterworks projects total \$2.063 billion.

Figure 4

MASTER PLAN PROJECTS BY PROGRAM
Wastewater Spending Makes Up Two-Thirds of All Master Plan Spending ⁷



⁶ Data from Master Plan. Includes Community Assistance Program.

⁷ Data from Master Plan. Includes Community Assistance Program.

Of the new project spending recommended in the Master Plan, the Authority initially included nearly \$1 billion in the proposed FY08 CIP.⁸ The amount is about half of all new or reintroduced projects in the Master Plan. The Proposed FY09 CIP includes another \$36.74 million for 18 new projects: \$30.95 million for 11 projects that were in the Master Plan plus \$5.8 million for seven projects that were not in the Master Plan (including two Business and Operations projects, a category which, as noted above, will be added to the Master Plan in the future).

With the Proposed FY08 CIP, the Authority began to include projects scheduled during the FY 2018 through FY 2048 timeframe. So far, funding for this period is \$333.1 million, not including remaining repayments for the Community Assistance Programs. Spending for this thirty-year period can be expected to grow as the Authority identifies and includes more capital project needs in updates of the Master Plan and draws from the updated Master Plan in subsequent capital budgets.

A Capital Spending Cap of \$1.161 Billion Is Proposed for FY09-13

The Authority has proposed a capital spending cap of \$1,161.4 million for the next five-year cap period from FY09 through FY13. The number represents capital spending of \$1,059.0 million plus contingency and inflation adjustments less Chicopee Valley Aqueduct projects, the net total of which adds \$102.4 million to the calculation for the total of \$1,161.4 million.

Table 3

Proposed FY09 CIP ⁹ FY09-13 Spending Forecast - Cap Estimate (\$ millions)						
	FY09	FY10	FY11	FY12	FY13	FY09-13
Projected Expenditures	\$262.1	\$247.3	\$205.8	\$186.6	\$157.2	\$1,059.0
Contingency	26.4	23.5	19.3	18.0	15.2	102.4
Inflation on Unawarded Construction	0.0	0.7	3.3	9.2	11.3	24.5
Less: Chicopee Valley Aqueduct Projects	(1.4)	(2.0)	(9.1)	(8.8)	(3.2)	(24.5)
Baseline Cap	\$287.1	\$269.5	\$219.2	\$205.0	\$180.5	\$1,161.4

Compared to the current cap of \$1,134.5 million for the FY04-08 period, the recommendation for the next five-year cap period is just \$27 million higher.¹⁰

Table 4

Baseline Cap - (est. June 2003) ¹¹ FY04-08 (\$ in millions)						
	FY04	FY05	FY06	FY07	FY08	FY04-08
Projected Expenditures	\$237.0	\$190.2	\$195.2	\$217.3	\$183.6	\$1,023.3
Contingency	19.4	14.1	15.5	19.8	18.1	86.9
Inflation on Unawarded Construction	0.0	0.8	5.8	13.0	16.1	35.7
Less: Chicopee Valley Aqueduct Projects	(5.4)	(1.5)	(1.4)	(0.1)	(3.0)	(11.4)
Baseline Cap	\$250.9	\$203.5	\$215.2	\$250.1	\$214.8	\$1,134.5

⁸ Updated for some projects to 2007 dollars.

⁹ Source: Proposed FY09 CIP; note that numbers may not add up due to rounding of original numbers.

¹⁰ In unadjusted dollars.

¹¹ Source: Proposed FY09 CIP; note that numbers may not add up due to rounding of original numbers.

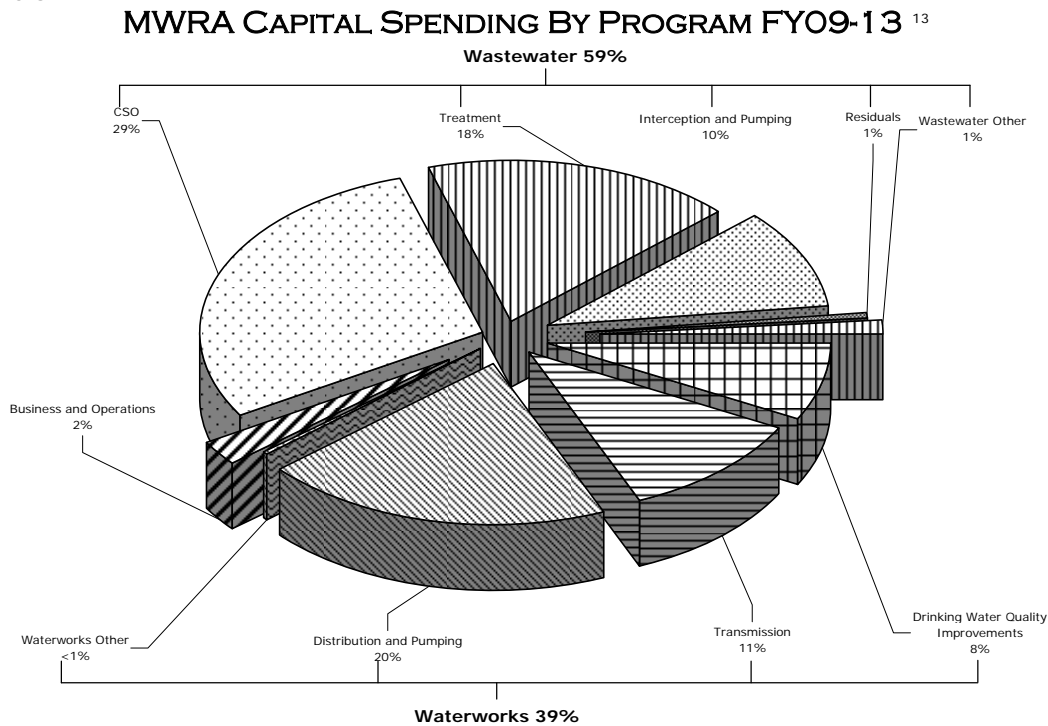
PROPOSED FY09 CAPITAL IMPROVEMENT PROGRAM AND BUDGET

The Authority is proposing a capital improvement program with a total contract value of \$4,921.7 million. Actual spending through FY07 of \$2,666.9 million plus projected spending of \$203.455 million for FY08 brings total spending for the active, or open, projects to \$2,870.3 million (58% of the total). From FY09 forward, spending is currently budgeted at \$2,051.36 million.

A Focus on the Five-Year Period FY09-13

The Authority is proposing a budget of \$1,161.2¹² million for the five-year period FY09-13: \$1,059.0 million for project spending plus contingency allowances of \$102.1 million. Wastewater spending accounts for nearly 57% of the amount (\$600.8 million), Waterworks projects for just under 41% (\$431.2 million) and Business and Operations Support spending for less than 3% (\$27.0 million). Cost updates, new and expanded projects, inflation updates and a number of schedule shifts have resulted in an increase of nearly \$141 million to the FY09-13 timeframe since the estimates of spending for the period in the final FY08 CIP.

Figure 5



Wastewater spending peaks in the early years of the period as CSO projects and several large utility and clarifier rehabilitation projects at Deer Island move forward.

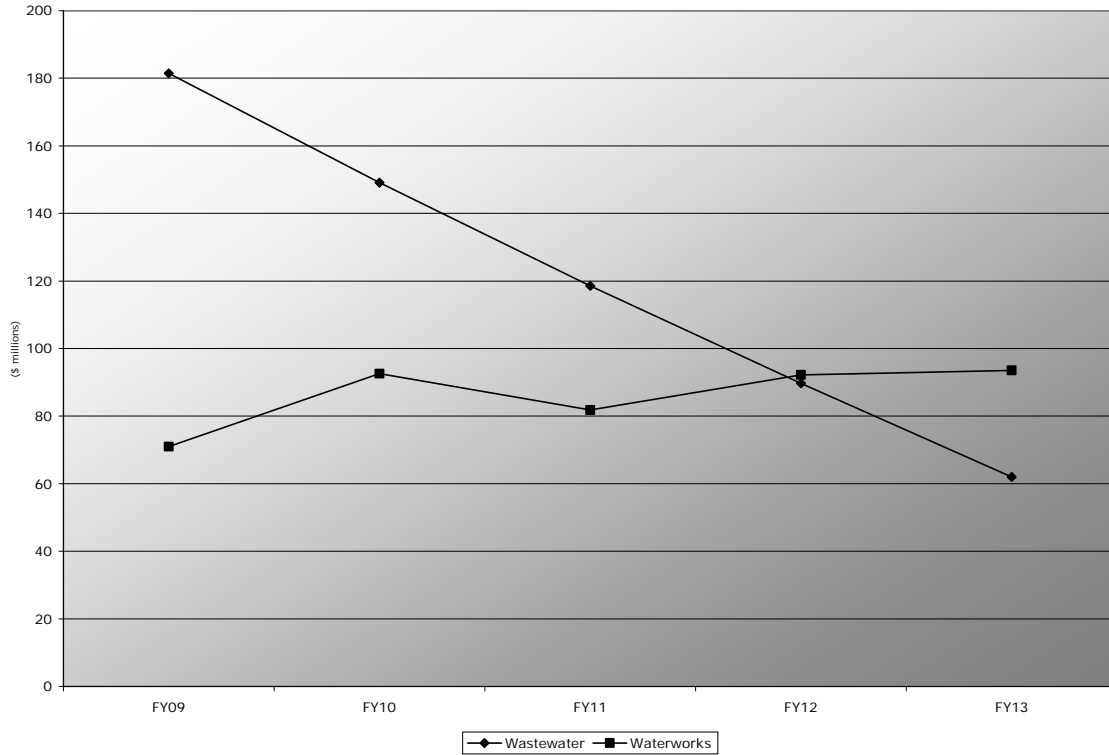
¹² The text in this section uses numbers that include the net repayment of the loan portions of the I/I Local Financial Assistance Program and the Local Water Pipeline Assistance Program. The illustrations in this section do not include these net repayments (see Footnote 13), and as such, the percentages may vary from the text.

¹³ Net of contingency. Not including loan portion of Community Assistance Program.

By the fourth and fifth years of the five-year period, Wastewater spending falls below the relatively level pace of Waterworks spending.

Figure 6

WASTEWATER AND WATERWORKS SPENDING FY09-13¹⁴



The proposed budget for FY09 is the largest of the next ten years of proposed capital spending. The Authority plans to spend \$262.1 million in FY09; with a contingency allowance of \$26.5 million, the proposed budget totals \$288.5 million. Wastewater project spending is budgeted at \$181.5 million, nearly 70% of total spending. Waterworks project spending is proposed at \$71.0 million or 27% of the year's budget. Business and Operations Support is budgeted at \$9.6 million.

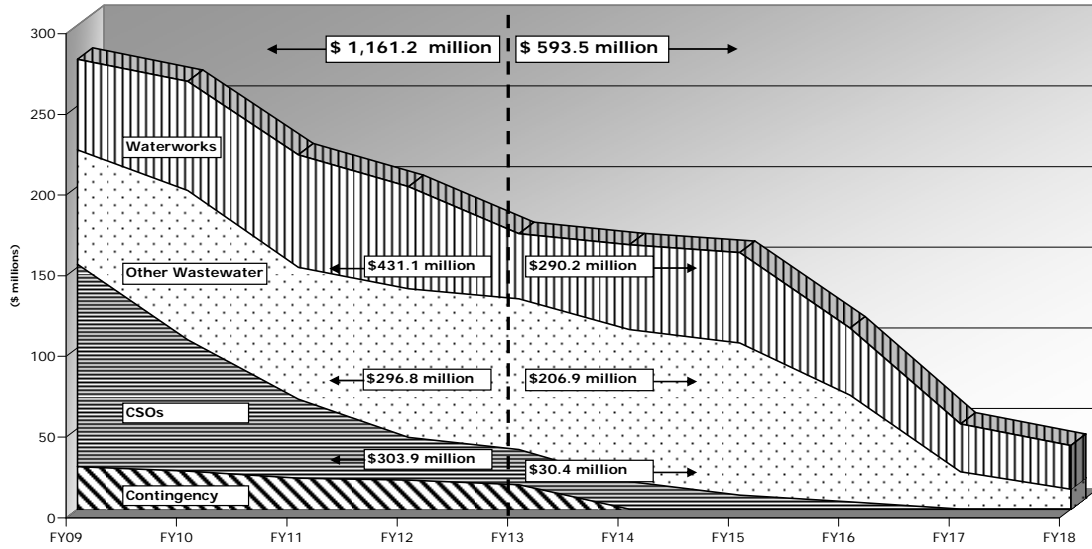
CSO Control Program spending is budgeted at \$125.4 million or nearly half of all capital spending for FY09. The amount is nearly 70% of all Wastewater project spending for the year. Two construction projects account for \$90 million of the year's spending: the North Dorchester Bay and East Boston projects.

Because the proposed budget for FY09-13 is the most complete of the multi-year period of the proposed capital program and because the Authority is setting the next five-year cap for that period, the Advisory Board's review will focus on the next five years. Spending for the second five years of the ten-year period and for the three decades beyond will evolve based on periodic updates of the Master Plan and the development of subsequent capital budgets.

¹⁴ Net of contingency.

Figure 7

WATERWORKS AND WASTEWATER SPENDING WITH CONTINGENCY FY09-18

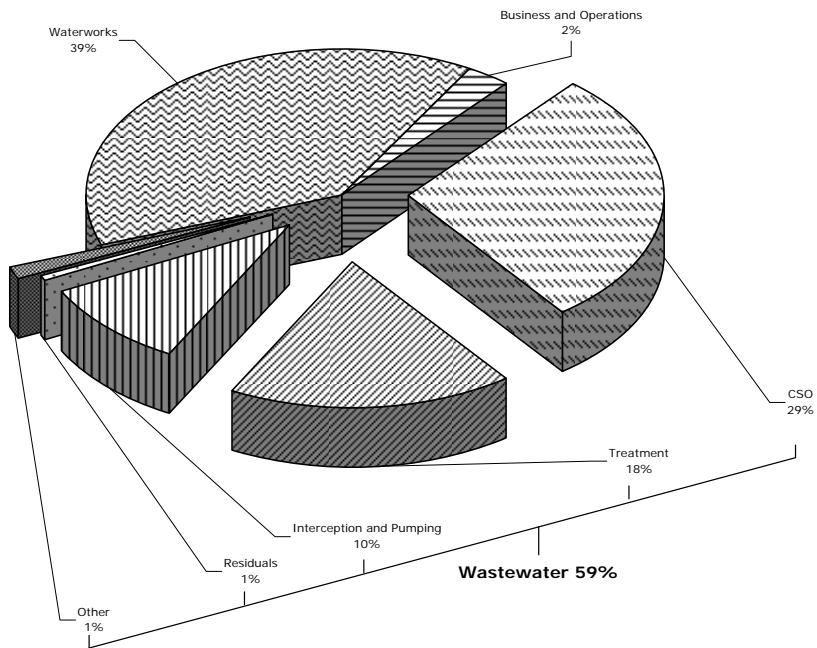


Wastewater System Improvements

Wastewater project spending for the FY09-13 period is budgeted at \$600.8 million or 57% of planned spending.¹⁵ Wastewater system improvements are divided into five categories: Interception and Pumping, Treatment, Residuals, the Combined Sewer Overflow Control Program and Other.

Figure 8

WASTEWATER SPENDING BY PROGRAM FY09-13¹⁶



¹⁵ Net of contingency.

¹⁶ Net of contingency. Not including loan portion of Community Assistance Program.

Interception and Pumping projects focus on collection system facilities, sewers, and tunnels. The facilities include the four remote headworks and twenty pump stations and CSO facilities. The Authority has noted that three of the headworks facilities are now over 40 years old and only in fair condition. Recommended in the Master Plan are a comprehensive facility plan and subsequent upgrades. The average age of the pump stations and CSO facilities is now approaching 20 years old (although some facilities are newer and others are much older). The Master Plan has recommended small-scale equipment rehabilitation and replacement projects. There are more than 250 miles of sewer pipelines, of which 18 miles are severely damaged (and ranked "C-rated"). The Master Plan has recommended thirteen projects for interceptor repair. Four cross harbor tunnels to the Deer Island plant total 18 miles. While the Authority states that the tunnels are presumed to still be in good condition, based on the industry benchmark of 100-plus years of useful life, there has been some deterioration in the shafts and the actual tunnel condition is unknown.

The Authority is proposing a budget of \$211.5 million for *Interception and Pumping* projects from the period FY09 forward. Of this amount, \$103.7 million is to be spent during the FY09-13 period. The largest project during the period is the West Roxbury Tunnel project, with spending budgeted at \$45.9 million. Spending of \$16.2 million is also budgeted for the Braintree-Weymouth Relief Facilities project.

The Authority is also budgeting \$28.0 million for a series of smaller projects under the heading *Interceptor and Pumping Facility Asset Protection* during FY09-13. Funding of \$4.2 million is included for three of the 13 interceptor repair projects identified in the Master Plan. Another \$23.8 million is budgeted for a number of headworks and pump station projects plus a condition assessment project for the pump stations and CSO facilities that remain under Authority management.

Treatment projects address the needs of the *Deer Island Wastewater Treatment Plant* and the *Clinton Wastewater Treatment Plant*. The Proposed CIP includes \$404.0 million for all future spending from FY09 forward, of which \$189.25 million is for ongoing and new project spending during the five-year period (or 31% of all Wastewater spending in the next five years). Funding is included for Equipment Replacement (\$30.1 million), Utilities projects (\$90.6 million) and Specialties projects (\$53.2 million, most notably \$45.9 million for Primary and Secondary Clarifier Rehabilitation). Funding also includes \$3.3 million for *Laboratory Services*.

Residuals project spending is budgeted at \$6.5 million during the next five years. To date, the Authority has included funding totaling \$148.5 million for FY09 forward, with much of the spending to pick up starting in FY14. The Authority plans a Condition Assessment/Facilities Plan to move forward during the summer 2008 followed by a Pellet Plant Upgrade Design project to start two years later. The Condition Assessment is expected to include a review of the condition and needs of the existing equipment and facility at Fore River, plus a review of new technology options and regulatory developments, and to recommend a long-term plan for residuals processing. The assessment is expected to be combined with the proposed reliability study, which had earlier been planned for a fall 2007 start.

Currently a contract operator runs and maintains the pelletizing plant at Fore River. Maintenance includes all capital projects through the term of the contract, which ends in December 2015. Funding of \$142 million beyond the FY13 timeframe would support dryer, air scrubber, and centrifuge replacements, and upgrades to the pumping and utility systems, among other potential projects.

Combined Sewer Overflow Control Program project spending is proposed at \$303.95 million for the next five years, just over half of all Wastewater spending for the period. Cash flows and spending schedules are tied to dates established in the Court Order, which drives the CSO Control Program. The Authority is budgeting another \$30.7 million beyond the five year period.

Since the proposed FY09 CIP was drafted, the Authority is reporting that updated cost estimates for four CSO projects – Brookline, the Cambridge/Alewife project, the Bulfinch Triangle project, and especially the Reserved Channel project, both in Boston – may increase the total program budget by an additional \$80 million. The Authority also notes that the recommended approach and cost share for the Alewife Brook CSO design and construction projects are still in negotiation. The total CSO Control Program costs have already increased from \$803.55 million in the Proposed FY08 CIP to \$811.4 million in the Final FY08 CIP to \$840.3 million in the Proposed FY09 CIP. Thus, the Final FY09 CIP could be \$920 million or greater.

With the publication in March of the calendar year 2007 CSO Annual Report, the Authority points to considerable progress in implementing its Long-Term CSO Control Plan. Completed are 21 of the 35 projects that now make up the program and substantial progress has been reported on 11 projects in design or construction. The Authority notes that average annual volume of CSO discharges has been reduced from 3.3 billion gallons in 1988 to 630 million gallons as of the end of 2007, a reduction of 81%. In addition, 73% of the remaining overflow receives treatment at MWRA's four CSO treatment facilities. The goal is to reduce CSO discharge volume to 400 million gallons when the plan is fully implemented in 2015, with 93% of the remaining discharge volume receiving treatment.

At the same time, substantial spending is still ahead for the Authority and the participating communities. Through December 31, 2007, the Authority reports that spending reached \$455 million since the program's inception, less than half the \$920 million the Authority reports the revised budget could be. Thus, the Authority could be spending \$465 million to eliminate 230 million gallons of CSO discharges per year.

Net spending on Other Wastewater projects totals -\$2.55 million for the upcoming five-year period and represents increasing repayments of the loan portion of the Infiltration/Inflow Local Financial Assistance Program even as new grants and loans are disbursed.

The Wastewater contracts with the largest amounts of spending during the next year are listed in Table 5.

Table 5

<u>Project</u>	<u>Subphase</u>	<u>FY09</u> <u>spending</u> \$ millions
◆ North Dorchester Bay (CSO)	Tunnel Construction (Ch30)	\$55.9
◆ East Boston Branch Sewer Relief (CSO)	East Boston Branch Relief Sewer	\$22.6
◆ Morrissey Boulevard Drain (CSO)	Construction	\$17.9
◆ Braintree-Weymouth Relief Facilities	Land Acquisition	\$10.0
◆ DI Treatment Plant Asset Protection	Primary & Secondary Clarifier Rehabilitation Construction	\$7.1
◆ DI Treatment Plant Asset Protection	Electrical Equipment Upgrade Construction 3	\$4.9
◆ DI Treatment Plant Asset Protection	Digester Mod 1 & 2 Pipe Replacement	\$4.0
◆ DI Treatment Plant Asset Protection	Power System Improvements Construction	\$3.6
◆ Wastewater Central Monitoring	Construction 2 (CP2)	\$3.5
◆ North Dorchester Bay (CSO)	Tunnel & Facilities CM Services	\$2.9
◆ East Boston Branch Sewer Relief (CSO)	Sections 38 & 207 Replacement	\$2.8
◆ DI Treatment Plant Asset Protection	Heat Loop pipe Replacement - Construction 3	\$2.6
◆ DI Treatment Plant Asset Protection	Hypochlorite Tanks 2 & 4 Reline	\$2.4

The Wastewater contracts with the largest amounts of spending over the next five years are listed in Table 6.

Table 6

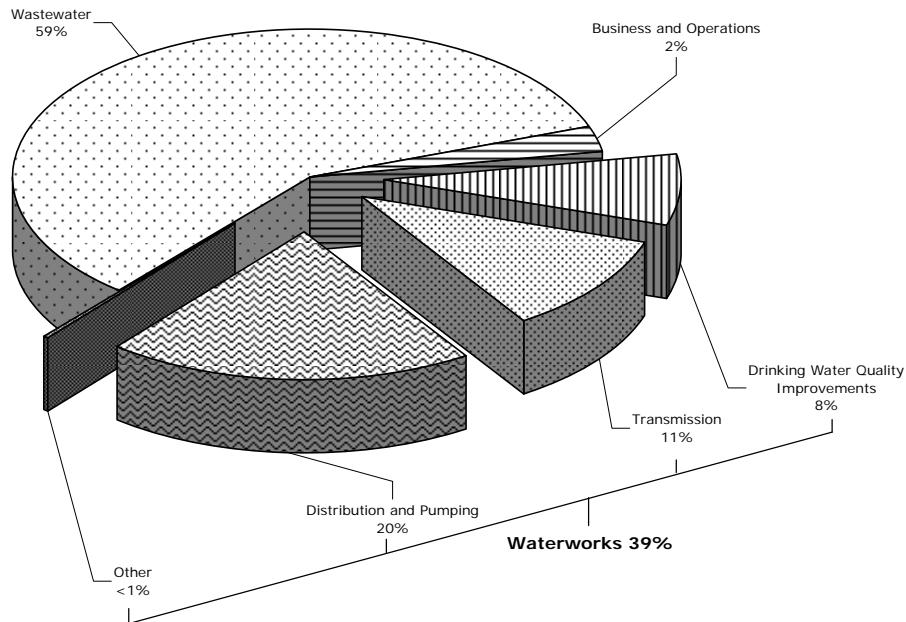
<u>Project</u>	<u>Subphase</u>	<u>FY09-13</u> <u>spending</u> \$ millions
◆ North Dorchester Bay (CSO)	Tunnel Construction (Ch30)	\$61.2
◆ East Boston Branch Sewer Relief (CSO)	East Boston Branch Relief Sewer	\$55.1
◆ DI Treatment Plant Asset Protection	Primary & Secondary Clarifier Rehabilitation Construction	\$42.9
◆ West Roxbury Tunnel	Tunnel Construction	\$35.6
◆ North Dorchester Bay (CSO)	Dewater/Odor Control Construction	\$34.9
◆ Reserved Channel Sewer Separation (CSO)	Construction	\$31.8
◆ Cambridge Sewer Separation (CSO)	Construction	\$21.3
◆ Morrissey Boulevard Drain (CSO)	Construction	\$19.5
◆ DI Treatment Plant Asset Protection	NMPS VFD Replace Construction	\$17.2
◆ DI Treatment Plant Asset Protection	Electrical Equipment Upgrade Construction 3	\$12.7
◆ West Roxbury Tunnel	Tunnel Design	\$10.3
◆ Braintree-Weymouth Relief Facilities	Land Acquisition	\$10.0

Waterworks System Improvements

Waterworks project spending for the FY09-13 period is budgeted at \$431.2 million or 41% of planned spending.¹⁷ MWRA divides Waterworks projects into four categories: Drinking Water Quality Improvements, Transmission, Distribution and Pumping and Other. Drinking Water Quality Improvement projects total just under 10% of all ten-year spending while Transmission projects represent 15% of spending for the period. Distribution and Pumping projects are nearly one-quarter of all planned spending for the decade and 55% of all Waterworks spending for the period.

Figure 9

WATERWORKS SPENDING BY PROGRAM FY09-13 ¹⁸



Drinking Water Quality Improvements projects focus on the treatment and storage of the MWRA's water supply. Most notably, the projects in this category include the new John J. Carroll Water Treatment Plant (CWTP), Quabbin Water Treatment Plant, Norumbega Covered Storage, Blue Hills Covered Storage, and Low Service Storage near Spot Pond.

Spending for the five-year period is budgeted at \$83.5 million. Included at \$37.4 million is the design and construction of the ultraviolet (UV) light disinfection treatment process at the CWTP plus \$6.4 million for evaluation and implementation of UV technology at the Quabbin Disinfection Facility, and \$21.9 million to complete the Blue Hills Covered Storage project.

The MWRA's Transmission system consists of more than 100 miles of tunnels and aqueducts in daily use that transport water by gravity from the supply reservoirs to points of distribution within the service area. Many system improvements over the years have allowed for older facilities, no longer in daily use, to remain as critical emergency standby facilities as long as the facilities are maintained and linked to

¹⁷ Net of contingency

¹⁸ Net of contingency. Not including loan portion of Community Assistance Program.

new facilities where necessary. While many of these emergency facilities provide redundancy in the event of a failure of a section of the transmission system, there remain some shortfalls in the system's overall redundancy. The Master Plan and the Proposed FY09 CIP focus largely on the major goal of providing system-wide redundancy to ensure no interruption of service to any of the MWRA's water communities. Notable portions of the transmission system include the MetroWest Tunnel, Chicopee Valley Aqueduct, Wachusett Aqueduct, and the Quabbin Transmission System. Watershed land acquisition and dam repairs projects also fall under this category of Waterworks projects.

For the five-year period from FY09-13, *Transmission* projects total \$115.6 million. Included are \$53.4 million for design and construction of the Lower Hultman rehabilitation project plus \$7.6 million for the Upper Hultman rehabilitation project, \$15.4 million for several contracts under the Winsor Dam hydroelectric project, \$10.5 million for long-term redundancy and \$7.9 million for watershed land acquisition.

Distribution and Pumping projects focus on the MWRA's Metropolitan system, which is divided into seven pressure zones and contains 284 miles of distribution pipeline east of Shaft 5, eleven storage tanks, eleven pump stations, nine tunnel shafts, and approximately 4,700 valves. Notable *Distribution and Pumping* projects include the Weston Aqueduct Supply Mains (WASMs), Southern Spine Distribution Mains, Northern Intermediate High (NIH) Redundancy and Covered Storage and Southern Extra High (SEH) Redundancy and Storage.

For the five-year period FY09-13 spending on *Distribution and Pumping* projects is budgeted at \$208.6 million. Key project spending includes: \$56.9 million for NIH redundancy, \$49.3 million for New Connecting Mains, \$24.3 million for Southern Spine distribution mains, \$17.9 million for SEH redundancy, \$15.2 million for WASM projects and \$14.5 million for the completion of the rehabilitation of other pumping stations.

Other Waterworks Projects include the Central Monitoring System project, Distribution System Facilities Mapping, and Waterworks Facility Asset Protection, as well as the Local Water Pipeline Improvement Loan Program. Spending for the five-year period FY09-13 totals \$23,509. The largest area of spending is for the Local Water Pipeline Improvement Loan Program, with loan distributions of \$109.85 million partially offset by repayments budgeted at \$90.6 million, for a net budget impact of \$19.3 million.

The Waterworks contracts with the largest amounts of spending during the next year are listed in Table 7.

Table 7

<u>Project</u>	<u>Subphase</u>	<u>FY09 spending</u> \$ millions
◆ Blue Hills Covered Storage	Design/Build	\$10.6
◆ MetroWest Tunnel	CP6A Lower Hultman Rehabilitation	\$10.2
◆ Rehabilitation of Other Pumping Stations	Rehab of 5 Pump Stations	\$5.4
◆ New Connecting Mains - Shaft 7 to WASM 3	Northeast Segment (CP5)	\$3.5
◆ NHS - Revere & Malden Pipeline Improvement	Const-Revere Sect 53	\$2.7
◆ New Connecting Mains - Shaft 7 to WASM	South Segment (CP3)	\$2.5

The Waterworks contracts with the largest amounts of spending over the next five years are listed in Table 8.

Table 8

<u>Project</u>	<u>Subphase</u>	<u>FY09-13 spending</u> \$ millions
◆ Local Water Pipeline Improvement Loan Program	Community Loans	\$109.9
◆ MetroWest Tunnel	Lower Hultman Rehabilitation	\$51.0
◆ John J. Carroll Water Treatment Plant	Ultra Violet Disinfection Construction	\$29.3
◆ New Connecting Mains - Shaft 7 to WASM	Revised N. Segment (CP1A) New 48"	\$28.3
◆ NIH Redundancy & Covered Storage	Section 89 & 29 Redundancy Construction	\$26.5

Business and Operations Support

Spending on Business and Operations Support projects for the FY09-13 period totals \$27.0 million and includes \$6.9 million for MWRA Facilities Management and Planning, \$5.2 million for the Business Systems Plan (MIS), \$5.1 million for Equipment Purchases and \$4.5 million for Alternative Energy Initiatives.

MASTER PLAN

In January 2007 the Authority transmitted the final draft of its Master Plan – the culmination of two and one half years of in-house development. The Master Plan identified nearly \$3.1 billion in Wastewater and Waterworks capital spending needs over forty-two years. Due to the timeframe in which it was developed, the Master Plan was instrumental in the development of the Proposed FY08 CIP.

One of the key elements of the Master Planning process was the development and implementation of five levels of prioritization from Priority One (critical/emergency) to Priority Five (desirable). Using this scale, the Authority evaluated projects already included in the Final FY07 CIP and newly identified capital projects. Using a standardized scale for all projects – wastewater/water, existing/new – made it easier to compare projects with very different purposes and scopes. Despite the adoption of the Master Plan in the middle of the budget cycle, the adoption of the Master Plan helped to improve and streamline the CIP process for FY08.

For the first time, the entire capital budgeting process will benefit from the approved Master Plan for the FY09 CIP. The Authority has included information related to the Master Plan rankings of all new projects, including new projects identified through the CIP process and not included in the Master Plan. This consistent use of the Master Plan prioritization rubric greatly aids in understanding and evaluating the Proposed FY09 CIP.

In 1984 the Authority inherited an aging and poorly maintained infrastructure largely responsible for making Boston Harbor the so-called “dirtiest harbor in America,” and a drinking water system that required significant rehabilitation. In the intervening 24 years, the Authority undertook a massive capital program designed to overhaul and rejuvenate the system’s wastewater and drinking water services. Included in this program were the Deer Island Wastewater Treatment Plant, the CSO Control Program, MetroWest Tunnel, and the John J. Carroll Water Treatment Plant at Walnut Hill. As a result, the MWRA service area has seen significant positive gains in both the wastewater and waterworks programs.

The Authority notes in its most recent Annual Report on the CSO Program that

since 1987, when MWRA assumed responsibility for developing and implementing a regional CSO control plan... improvements to MWRA’s wastewater transport and treatment systems have produced huge reductions in CSO discharges and dramatic improvement in water quality in many areas. These wastewater system improvements include the \$3.8 billion investment MWRA has made in the new Deer Island Treatment Plant and associated conveyance systems ... and the 21 CSO projects completed to date [with spending through December 2007 of \$446 million].

Together, they have reduced average annual volume of CSO discharge in a typical rainfall year from 3.3 billion gallons in 1988 to 630 million gallons today, an 81% reduction. In addition, 73% of the remaining overflow now receives treatment...

Significant improvements have been seen at Boston Harbor beaches, decreases in wet weather bacteria counts harbor-wide have been measured, and “tremendous improvement” has been achieved in the Charles River Basin.

Completion of the 17.6-mile-long deep-rock MetroWest Water Supply Tunnel and the new Carroll Water Treatment Plant at Walnut Hill have been major developments for the Waterworks System. Spending through FY07 on these two projects totaled more

than \$1.0 billion and has resulted in significantly improved redundancy and drinking water quality for the system.

The Authority notes in the Master Plan that the CWTP

has generally performed as expected... reaching the site-specific inactivation targets of 99 percent inactivation of *Cryptosporidium*, as well as greatly increasing the inactivation of viruses and *Giardia* beyond those required by regulation.

Moreover, after 1997 the Norumbega disinfection improvements were completed, ramped up the disinfection at Cosgrove, and the open reservoirs were taken off-line; as a result, Community Total Coliform Rule (TCR) of less than 5% has been met.

The Authority further reports that increased testing frequency and the ongoing improvements to the treatment process allow MWRA to meet current and tougher future state and federal water quality standards.

There is no doubt the Authority's progress has been exemplary, particularly with regard to court-mandated projects. Consistently, the Authority has met or exceeded expectations wherever possible when meeting these goals, largely through a significant investment in monetary and operational resources directed toward these projects.

Having invested so greatly in these projects, it is now incumbent upon the Authority to consider the next stage of its existence: namely, the maintenance of its infrastructure.

Toward this end, in the Proposed FY09 CIP the Authority has begun including a greater number of Priority Three (Necessary) projects. This indicates a trend toward a preventative maintenance focused capital program. It should be pointed out, however, that the Authority indicated in its response to the Advisory Board's FY08 *Comments and Recommendations* that the focus of the FY09-13 cap period would be on Priority 1s and 2s.

For example, the Master Plan includes 13 new interceptor asset protection projects, seven of which were ranked 2 but only three of them were scheduled for the FY09-13 period despite the fact that all thirteen projects were ranked as C-rated pipe based on the risk and consequence of failure methodology, in the poorest, most severely damaged condition. The other six C-rated interceptor projects are ranked as priority 3, but are scheduled for the FY19-28 period and later.

The Master Plan has two major components, the Wastewater System Master Plan and the Water System Master Plan. Still to come is the Master Plan for Business and Operations Support functions, including Management Information Systems. A draft of the MIS Master Plan was developed in December 2006. **The Advisory Board recommends that the Authority develop a section on Business and Operations Support for inclusion in the Master Plan, including an updated version of the plan for Management Information Systems and its Energy Management/Alternative Energy program.**

• 1 •

SPENDING CAP

The Advisory Board's advocacy for an effective spending cap was born of the desire to achieve sustainable and predictable levels of capital spending and rates for the member communities without compromising needs for maintaining the system's infrastructure.

Prior to the five-year cap, the MWRA had employed a ten-year spending cap; however, at that time the Authority stayed within the ten-year cap by assuming that the funds allocated in later years of the cap would be available to "cover" spending scheduled in earlier years. The Advisory Board's argument to revisit the capital spending cap centered on the argument that this practice defeated the spirit and intent of the cap.

The Authority took the Advisory Board's recommendations under advisement, and explored various options for revising the structure and policies governing the capital spending cap. In June 2003 the MWRA Board of Directors approved the first five-year capital spending cap for FY04-08 of \$1.1 billion.

As part of the policy changes, spending caps were applied to both the overall five-year period and each individual year within the cap. However, the Authority was also given the flexibility to vary spending in individual years within +/- 20% of the base year estimate for the year.

Many benefits have been seen as a result of the new capital spending cap policy. During the first five-year spending cap, the Authority has exceeded neither the overall five-year cap nor the allowance of 20% over the individual base year estimates. The average spending for each year has been about \$179 million¹⁹ and has helped the Authority define its annual target for agency-wide capital spending to be about \$200 million. This control of capital spending costs, and increased level of predictability will undoubtedly help in the pursuit of sustainable and predictable rate increases in future years.

More importantly, the Authority has embraced the spirit and intent of the five-year cap. Indeed, as part of the Proposed FY09 CIP, the Authority is making a proposal to set the next five-year cap for the period FY09-13. Having successfully navigated the first cap period now gives the Authority some factual data to use in formulating the next cap, as well as refining the policies and procedures surrounding the five-year capital spending cap. Having this historical perspective will allow the Authority not only to realize the benefits of the successful implementation of the five-year spending cap, but also to take the next steps toward further improving the use of the cap as a management tool.

Indeed, analysis of this new historical data has demonstrated that the Authority underspent by a margin greater than -20% in FY04, F06, and FY07. Even if contingency was removed from the analysis, the Authority underspent by almost -25% in both FY06 and FY07. Regardless, overall the Authority underspent for the first cap period by 13.4%.²⁰ (See Figure 10)

¹⁹ Includes actual spending for FY04-07 and projections for FY08 spending not including contingency.

²⁰ Without contingency.

Figure 10

PLANNED AND ACTUAL CAPITAL SPENDING FY04-08²¹

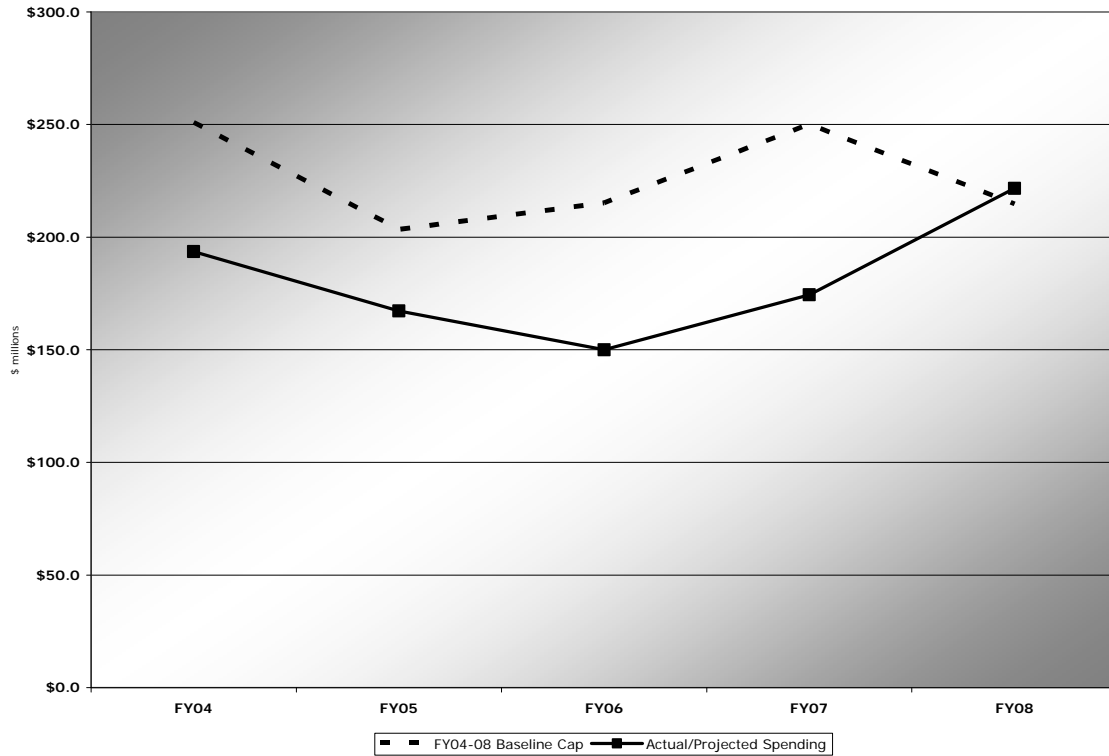


Table 9

Proposed FY09 CIP ²²						
FY09-13 Spending Forecast - Cap Estimate						
(\$ millions)						
	FY09	FY10	FY11	FY12	FY13	FY09-13
Projected Expenditures	\$262.1	\$247.3	\$205.8	\$186.6	\$157.2	\$1,059.0
Contingency	26.4	23.5	19.3	18.0	15.2	102.4
Inflation on Unawarded Construction	0.0	0.7	3.3	9.2	11.3	24.5
Less: Chicopee Valley Aqueduct Projects	(1.4)	(2.0)	(9.1)	(8.8)	(3.2)	(24.5)
Baseline Cap	\$287.1	\$269.5	\$219.2	\$205.0	\$180.5	\$1,161.4

Compared to the current cap of \$1,134.5 million for the FY04-08 period, the recommendation for the next five-year cap period is just \$27 million higher.²³

Table 10

Baseline Cap - (est. June 2003) ²⁴						
FY04-08						
(\$ in millions)						
	FY04	FY05	FY06	FY07	FY08	FY04-08
Projected Expenditures	\$237.0	\$190.2	\$195.2	\$217.3	\$183.6	\$1,023.3
Contingency	19.4	14.1	15.5	19.8	18.1	86.9
Inflation on Unawarded Construction	0.0	0.8	5.8	13.0	16.1	35.7
Less: Chicopee Valley Aqueduct Projects	(5.4)	(1.5)	(1.4)	(0.1)	(3.0)	(11.4)
Baseline Cap	\$250.9	\$203.5	\$215.2	\$250.1	\$214.8	\$1,134.5

²¹ Actual spending through FY07, projected spending for FY08.

²² Source: Proposed FY09 CIP; note that numbers may not add up due to rounding of original numbers.

²³ In unadjusted dollars.

²⁴ Source: Proposed FY09 CIP; note that numbers may not add up due to rounding of original numbers.

Table 11

Capital Spending Caps By Program ²⁵ (\$ thousands)				
	FY04-08 Baseline Cap	FY04-08 Actual	Difference	FY09-13 Proposed
Wastewater System Improvements	545,041	540,988	(4,053)	600,804
Boston Harbor Project	248		(248)	
Interception and Pumping	157,722	149,297	(8,425)	103,681
Treatment	63,319	42,891	(20,428)	189,249
Residuals	1,528	7,289	5,761	6,473
CSO	303,704	300,331	(3,373)	303,948
Other	18,520	41,180	22,660	(2,547)
Waterworks System Improvements	459,126	341,484	(117,642)	431,184
Drinking Water Quality Improvements	120,004	125,714	5,710	83,495
Transmission	46,290	59,619	13,329	115,615
Distribution and Pumping	220,908	105,001	(115,907)	208,565
Other	71,924	51,150	(20,774)	23,509
Business and Operations Support	19,083	17,257	(1,826)	27,043
SUB-TOTAL	1,023,250	899,729	(123,521)	1,059,031
Contingency	86,943	-	(86,943)	102,147
Total MWRA w/ Contingency	1,110,193	899,729	(210,464)	1,161,178

The FY 2007 Year-End Project Performance Review (PPR) report and updated analysis incorporated in the staff summary transmitting the Proposed FY09 CIP note that projected spending for the FY04-08 cap period totals \$906.9 million²⁶ as compared to the spending cap or \$1,134.5 million, or \$227.7 million or 20.1% below the original cap amount. The Authority reports that

this has occurred mainly due to slippage in project spending (both unplanned and planned), adjustments to spending forecasts, lower than budgeted awards, and some project deletion.

Use of the contingency fund allowances was at lower levels than budgeted and was more than offset by lower or later spending on the projects over the five-year period.

Staff noted that

of the approximately 102 projects identified in FY03 for the FY04-08 period, about half ended up being underspent and half were overspent. The major components for the underspending include \$128.0 million net underspending on projects and shifting schedules and lower than projected contract awards.

The Authority highlighted underspending of nearly \$220 million on 11 projects due to major project reassessment, changes in scope, project delays or deferrals following significant reductions to debt service assistance receipts, litigation and related

²⁵ Sources: Final FY04-06 CIP and Proposed FY09 CIP; note that numbers may not add up due to rounding of original numbers. FY04-08 actuals include projected numbers for FY08.

²⁶ According to the cap calculation.

adjustments and impacts. Five other projects experienced nearly \$100 million in increased costs during the period, including higher construction awards, additional change orders, and additional projects or project phases. It also appears that inflation and contingency fund allowances based on standard budget assumptions were more conservative than actual contract costs as projects moved forward.

These experiences also reinforce the point that the capital spending cap is not a spending goal but a ceiling on spending, which serves as a check with each year's budget during the cap period, as well as the total cap period.

The staff also note that the

project mix in the CIP can deviate significantly from year to year depending upon the various stages of projects. As projects approach the construction phase the probability of 'on time execution' increases and spending levels become more predictable.

There are eleven projects in construction during the next five years, all with spending greater than \$25 million. (See Table 6)

This trend toward underspending prompted the Advisory Board's recommendation to create a CIP Committee in its *Comments and Recommendations* for the Proposed FY08 CIP. The Authority agreed with this recommendation and established a committee to evaluate reasons for capital program underspending. The hope was that the findings of the committee would help the Authority determine any next steps in development and management of not only the next five-year cap, but also any changes to the policies and procedures surrounding the cap.

At the time of the Advisory Board's review, the CIP Committee had met but had not yet made its formal report. This was unfortunate because the Advisory Board's recommendation centered on having the results of the CIP Committee available to influence the development of the FY09 CIP. Having this information also had particular relevance to the setting of the next cap for the period from FY09-13. Despite assurances to the new Board members in December that the CIP Committee's conclusions would be available by February 2008, these formal conclusions were not available for the Advisory Board's review. Regardless, forming the CIP Committee is an important step toward evaluating the Authority's experience during the first five-year cap and will hopefully provide a useful tool for the Authority in developing future capital spending caps and CIPs.

The Advisory Board has also observed in the past that there is a relationship between operating resources, particularly staffing, and management of capital projects. Authority staff overall has asserted that it possesses the resources necessary to manage the capital program. This, therefore, suggests that the trend toward underspending may continue, though perhaps at a reduced level due to the prevalence of construction projects in the next cap period. Presumably the CIP Committee's report will analyze and explain this in greater detail, and hopefully play a role in any changes made in the Final FY09 CIP.

The Authority's budget policies call for the preparation of the PPR on a biannual basis, one report focusing on the first six months and one reporting on the entire fiscal year. These reports on the performance of capital projects form a useful record of capital project performance over time. While the PPR provides for reporting of actual expenditures compared to budget, another level of analysis could prove useful in the management and setting of future capital spending caps.

Specifically, the PPR should report capital spending as compared to the parameters of the baseline capital spending cap by comparing actual project performance to the original projections and assumptions included in the baseline cap. This would provide an additional source of historical data related to the capital spending cap. Undeniably, this analysis would be a useful tool for developing and managing future capital spending caps. Therefore, **the Advisory Board recommends that the Authority include an analysis of spending as compared to the baseline capital spending cap for the current cap period in the final FY08 PPR and in all future PPRs.** This spring's report should provide an analysis of the entire FY04-08 period, and in so doing, can provide a useful perspective on the experience of actual spending as compared to the expectations for spending needs at the outset of the cap. Moreover, biannual reporting during the FY09-13 period of actual spending to the baseline cap for FY09-13 could be a valuable tool when the Authority sets its next five-year cap for FY14-18.

• 2 •

In addition to including a section analyzing spending as compared to the capital spending cap in both the mid-year and the year-end PPRs, **the Advisory Board recommends that the mid-year report should include a section re-projecting spending for the remainder of the current fiscal year. Recommended schedules for the reports are September for the final PPR and February for the mid-year PPR.**

• 3 •

The issue of underspending for the first cap period clearly impacts the second cap period as proposed. While some of the underspending can be attributed to lower than projected contract awards, a large portion is related to the shifting of project schedules. When project schedules shift, for whatever reason, the spending for the projects also shifts; in effect, some spending from one cap period moves into the subsequent cap period. For the past four years, the Authority has underspent its capital program by an average of \$41 million per year.²⁷ If this same amount of underspending were to shift into next fiscal year, total spending for FY09 would exceed \$300 million. More likely, some of the spending currently projected in FY09 would move to FY10, and so forth. This reminds us of the impact spending during each cap period has on subsequent cap periods, and further underscores the importance of understanding, managing, and anticipating spending patterns in the out-years.

Beyond the effect of cost shifts upon subsequent caps, there exists a practical element to preparation for out-years as well. One example can be found in the Residuals Facility at Fore River. The Authority has budgeted \$148.6 million in design and construction spending for upgrades and replacement projects for the pelletizing plant. In the next five years, spending of \$6.5 million is planned for a condition assessment/facility plan and for plant upgrade design (among other, smaller contracts). In the following five years, the Authority plans several larger replacement and upgrade projects for which concept and detailed design will need to have been completed or well underway by the end of the upcoming five years (FY09-13).

²⁷ Compared to the FY04 baseline cap without contingency.

CSOs

The 2007 CSO Annual Progress Report notes that through December 2007 the Authority has spent \$446.4 million in capital expenditures or a projected \$840.3 million.²⁸ Of the 35 CSO projects, the MWRA has completed 21; as a result, the average annual volume of CSO discharges has been reduced by 81% from 3.3 billion gallons to 630 million gallons. Moreover, 73% of the remaining overflow receives treatment at MWRA's four CSO treatment facilities.

While the Authority's progress has been excellent to date there remain many challenges ahead to achieve the long-term goals outlined in the CSO Control Plan. One of the biggest challenges to date has been the ever-changing scope for the projects.

The Final CSO Conceptual Plan listed a total cost of \$398 million in 1994. By 1997 this cost had risen to \$487 million when EPA and DEP approved the Final CSO Facilities Plan and Environmental Impact Report. The Proposed FY09 CIP estimates total CSO spending of \$840.3 million. The MWRA projects the cost to complete the plan at \$893.4 million.²⁹

In short, projected CSO spending has more than doubled since the original estimates were made and 14 projects remain to be completed. This begs the question of how much future costs will escalate as they move into construction.

In fact, the Proposed FY09 CIP figure does not include updated cost information received from Brookline and Boston Water and Sewer Commission (BWSC) for community-managed sewer separation projects. Revised cost estimates more than double the existing project cost from the Authority's budgeted figure of \$9.7 to Brookline's estimates of \$21.6 million. BWSC's estimates for Reserved Channel are now \$57 million more than the Authority's budgeted figure of \$63.1 million. Boston also reports measurable increases for the Bulfinch Triangle project. BWSC's revised estimate is approximately \$6.76 million, \$2 million more than MWRA's proposed FY09 budget of \$4.9 million. Together, all these cost increases are said to be as much as \$80 million. In addition, cost increases are also anticipated for the Cambridge sewer separation project.

More recently, the Authority staff reported that they

are reviewing the new cost estimates and collecting additional information from the communities to assess the reasonableness of the costs and eligibility for MWRA funding and to determine if a reassessment of the cost effectiveness of these recommended projects is warranted... and whether they... should continue to be recommended by MWRA.

- **4 • The Advisory Board, therefore, recommends that the Authority reassess the cost-effectiveness of the Cambridge Sewer Separation, Brookline, Bulfinch Triangle and Reserved Channel CSO control projects and report to the Board of Directors regarding options for these projects.**

Nonetheless, the undeniable truth is that the Authority is working with a finite amount of resources when addressing its capital needs. Especially within the context

²⁸ In December 2008 dollars.

²⁹ Source: 2007 CSO Annual Progress Report.

of the five-year spending cap, the amount of money available for the capital program is limited. The Advisory Board applauds the Authority's commitment to the five-year spending cap, particularly within the context of maintaining predictable and sustainable rate increases. Effectively managing capital expenses is a critical component to controlling the resulting debt service on the current expense side.

Other current expenses also impact this management of capital expenses including staffing levels and materials, which are also finite. Given these restrictions, it follows that the Authority has a limit to the amount of work on capital projects it can manage and undertake. The Authority's history demonstrates that even when the scope and cost of CSO projects increases, few changes, if any, are made to the project schedule. If the Authority expects that CSOs will increase in scope and capital dollars after the setting of the next five-year cap and follows its pattern of maintaining CSO project schedules, the concern becomes what other capital projects are sacrificed to complete the increased capital needs of the CSO program.

While the CSO Program is clearly an important element of the capital program, as demonstrated by the Authority's progress to date, it is only one element of the capital program. Its needs should be balanced with the other system needs, including the maintenance and optimization of recently constructed facilities and infrastructure. The CSO projects should progress, regardless of increased scope, but not at the expense of the other capital needs. **Therefore, the Advisory Board**

• 5. recommends that the Authority establish a "cap within a cap" for the CSO Control Program.

This secondary cap would be an attempt to balance rising CSO costs with the remainder of the Authority's capital program by limiting the number of dollars allocated for CSO projects during the five-year period of the overall cap. This would likely mean redefining and extending the schedule of the CSO projects affected, but this is certainly justifiable.

As noted before, the Authority has financial and operational limits to its ability to implement capital projects. The Authority believes its proposed level of capital spending to be appropriate and manageable and the operational resources sufficient to meet the capital program as proposed. The Authority has also identified what it considers to be the appropriate schedule and balance of system-wide capital needs through its Master Plan. Therefore, if increased capital costs are identified for CSOs, it's rational to suggest that the schedules for these projects be modified to complete these projects without sacrificing the improvement and maintenance of the other parts of the MWRA infrastructure.

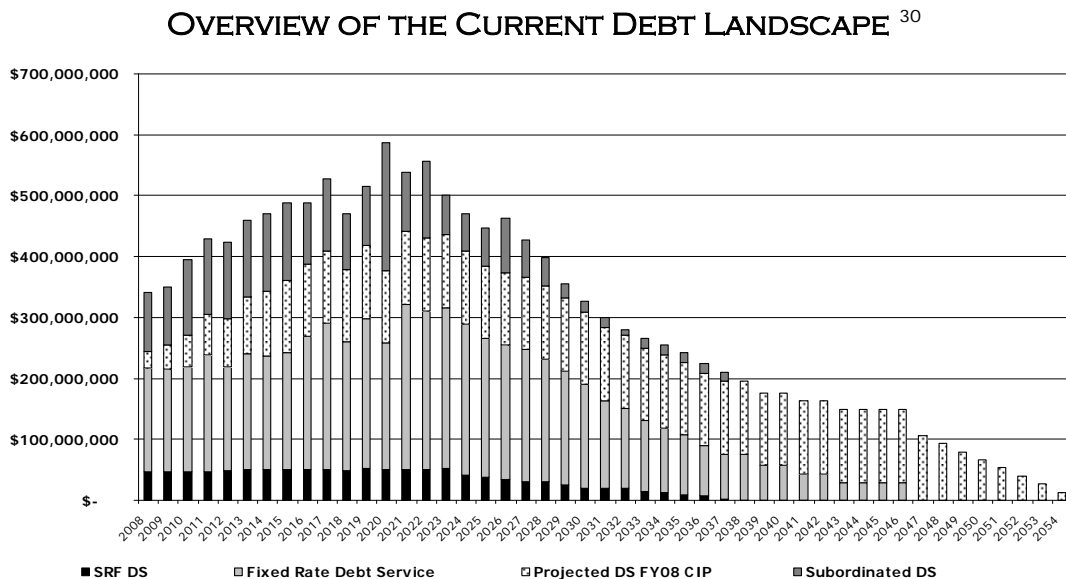
Much of the discussion heretofore has centered on the Authority's accomplishments since its establishment in 1984. Authority staff has estimated that the MWRA is in the top 10% of comparable wastewater service providers nationwide, many of whom have either not completed or just completed their CSO Control Plan. After almost 25 years of considerable and consistent leadership with regard to its environmental mandates, the Authority should certainly be awarded some latitude with the completion of its CSO Control Program.

CEB

It is important to remember that capital dollars are related to current expenses when translated into costs associated with debt service. Debt service comprises almost 57% of the Proposed FY09 Current Expense Budget (CEB) and, therefore, the rate revenue requirement. As a result, the shape and scope of the capital program has and will continue to greatly impact rate increases.

In fact, debt service as currently structured will peak in FY21 at almost \$600 million, won't move below \$500 million until FY25, and won't move below \$400 million until FY29. This is largely the result of the capital investment the agency made in its early years undertaking the Boston Harbor Project and Integrated Water Supply Improvement Program. (See Figure 11)

Figure 11



It should also be noted that at the time these capital expenses peaked at over \$600 million in FY94 the Commonwealth was providing \$20 million in Debt Service Assistance (DSA) to the Authority. DSA levels continued to increase until FY02, and were projected to increase in subsequent years providing upwards of \$60 million by FY07. In FY03 DSA was eliminated and has averaged \$10 million for the past seven years.³¹

The future of DSA is uncertain at best at a time when the Authority's debt service is projected to increase at a dramatic rate. In fact, even the future cost of debt service as projected is unclear. The nation's overall economic outlook is turbulent, which impacts the Authority's interest rate on not only debt service expenses, but also on investment income revenue.

The Authority is caught between this uncertain financial climate and the limitations it has in operating and financial resources to maintain its operations. One certainty

³⁰ Chart provided by MWRA on April 2, 2008.

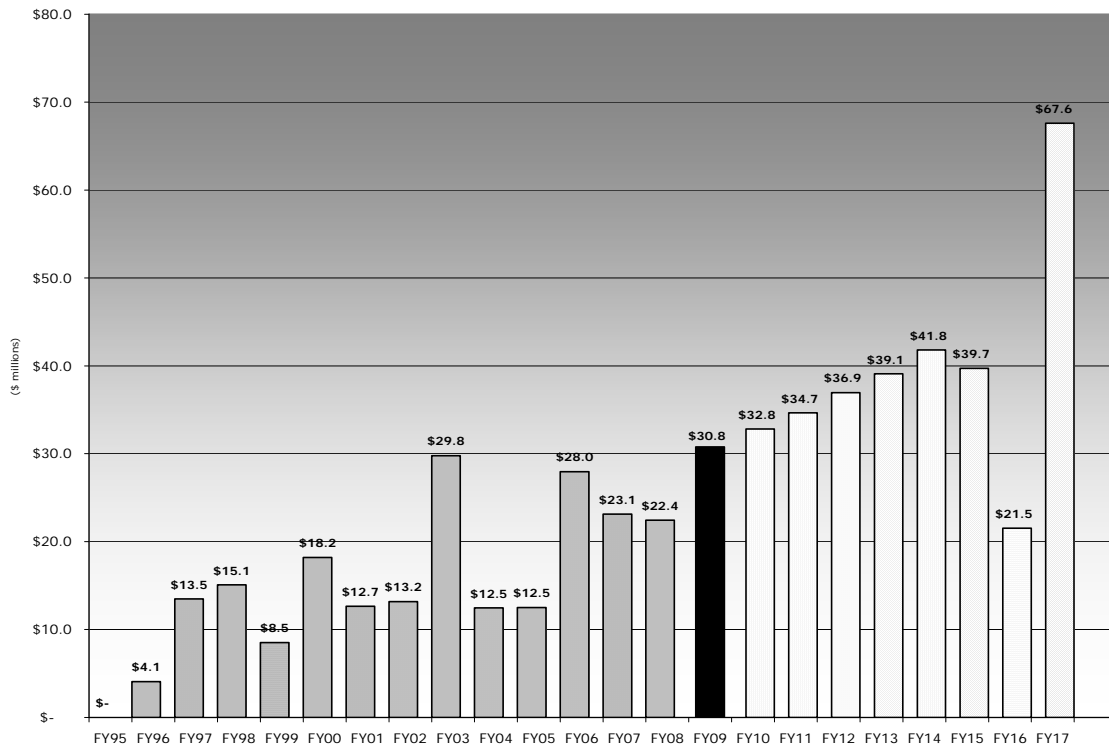
³¹ Includes actual DSA receipts for FY03-07 and projections for FY08-09.

remains: the rate revenue requirement will have to offset any further reductions in DSA and the negative impacts of any economic downturns. The end result is that the communities and the ratepayers will ultimately bear the brunt of the difficult times ahead.

In just three years, the Authority projects that rates will increase by more than \$100 million. In two more years, rates are projected to increase another \$80 million. And within four more years, rates will rise by \$100 million again. Between FY08 and FY18 rates are currently projected to rise more than \$300 million. (See Figure 12)

Figure 12

ANNUAL RATE REVENUE REQUIREMENT INCREASES ³²



The Advisory Board's primary role is to represent the MWRA's member communities and provide a ratepayer perspective on the MWRA's budgets and policies. It's helpful to remember that the member communities are facing many of the same uncertainties and challenges facing the Authority as public entities: union contract increases, health care cost increases, the provisions of reporting and managing Other Post-employment Benefits (OPEB), increased costs for materials and utilities. These issues impact the communities twice – first, for the Authority's increased costs passed on in the form of increased assessments; and second, for their own cost increases at the municipal level. Moreover, state aid has been unable to keep pace with escalating costs of the municipalities leading many cities and towns to face overrides or difficult cuts in services and personnel. This pressure upon the member communities cannot be forgotten as the Authority finalizes both its CIP and CEB for FY09.

³² Figures based upon Proposed FY09 CEB Planning Projections.

It is also important to remember that from the ratepayers' point of view the biggest impact the MWRA has on them is the effect of increasing rates on their water and sewer bills. Similar to the communities, the ratepayers see the effects of the challenging times facing public entities; in fact, they not only see the increases on their water and sewer bills, but also in the form of increasing property taxes including any overrides, increased fees for municipal services, and their own cost of living increases. Controlling rate increases must be balanced, however, with the necessity of improving and maintaining the MWRA's infrastructure to ensure safe and reliable service for the ratepayers.

The Advisory Board has striven to ensure that this balance is met by controlling costs through a variety of methods. As discussed before, the three large initiatives proposed by the Advisory Board in managing capital expenses were the capital spending cap, the Master Plan and restructuring of the Authority's existing debt. However, the ultimate aim of these measures is to move toward sustainable and predictable rate increases for the ratepayers.

As the future becomes clearer, the Authority will have some difficult decisions to make in maintaining this balance between its responsibility to maintain effective operations and its accountability to the ratepayers who will ultimately bear the financial burden. The Advisory Board encourages the Authority to look for new tools and methods of controlling costs as it moves forward, and commits to helping ensure the ratepayers are provided with increases that are not only sustainable and predictable, but also reasonable and responsible.

COMMENTS AND RECOMMENDATIONS MASTER LIST

1. Develop a section on Business and Operations Support for inclusion in the Master Plan, including an updated version of the plan for Management Information Systems and the Energy Management/Alternative Energy program. (Page 18)
2. Include an analysis of spending as compared to the baseline capital spending cap for the current cap period in the final FY08 PPR and in all future PPRs. (Page 23)
3. Include a section in the mid-year PPR report re-projecting spending for the remainder of the current fiscal year. Recommended schedules for the reports are September for the final PPR and February for the mid-year PPR. (Page 23)
4. Reassess the cost effectiveness of the Cambridge Sewer Separation, Brookline, Bulfinch Triangle and Reserved Channel CSO control projects and report to the Board of Directors regarding options for these projects. (Page 24)
5. Establish a "cap within a cap" for the CSO Control Program. (Page 25)

APPENDIX A

Sources of Funds

The Authority uses a number of sources to fund the capital program, most notably bonds (and rate revenue to repay the principal and interest on those bonds).

Borrowings. The principal source of funds for the Authority's capital program is debt issuance. As of April 1, 2008, the Authority had \$5.7 billion in outstanding principal: \$3.1 billion of senior general revenue bonds, \$1.43 billion of subordinate general revenue bonds, \$995.9 million of SRF borrowings and \$166 million of tax-exempt commercial paper notes.

Federal and State Grants. In the early years of the Authority's operation, federal and state grants were available to support the capital program. The Authority received an estimated \$1.1 billion in grants, before these sources of funds were phased out. Included in this figure is \$882 million in federal grants, of which \$810 million were for the Boston Harbor Project.

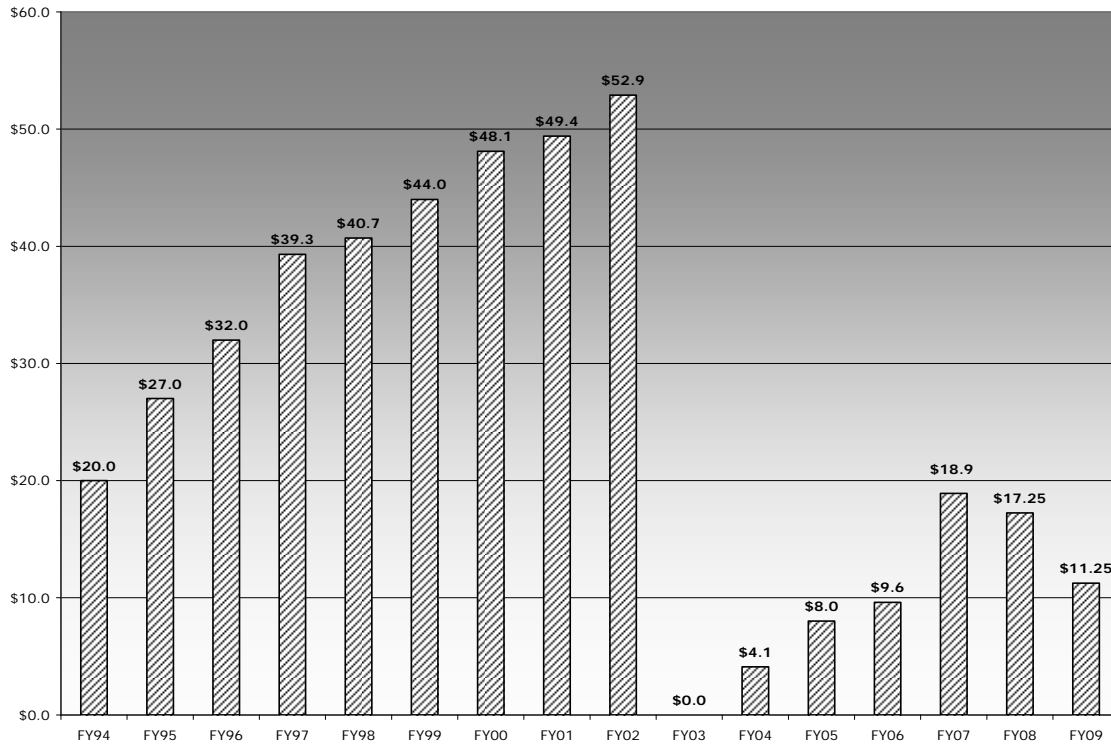
Current Revenue. The Authority also budgets funds from the Current Expense Budget to support the capital program. In FY08, this amount was \$4.5 million. The proposed FY09 CEB also includes \$4.5 million for this category of expense.

Current revenue to fund ongoing capital expenditures is not earmarked for specific projects. Funds are transferred to the Construction Fund and reduce borrowing requirements (slightly) for the year, thereby avoiding (some) interest costs. MWRA's planning estimates assume a gradual increase in CEB funding of some capital costs.

Debt Service Assistance. With the exception of FY03, the Authority has received funding through the Commonwealth's Water and Sewer Rate Relief Fund since FY94 to mitigate the impact on rates of ever-increasing debt service on borrowings to support the multi-billion dollar capital program. The Authority received \$46.5 million in FY00, \$51.3 million in FY01, and \$50.2 million in FY02. Due to state budget constraints, funding was eliminated in FY03. Just over \$4 million was received in FY04, \$8.02 million in FY05 and \$9.63 million in FY06. Receipts in FY07 totaled \$18.934 million and, recently, in FY08 were \$16.98 million. For the Proposed FY09 Current Expense Budget, the Authority is assuming \$11.25 million in debt service assistance based on receiving an estimated 75% of the \$15 million appropriation included in the Governor's budget proposal. The number is \$6 million, or 40%, lower than the \$17.25 million budgeted in FY08.

Figure 13

DEBT SERVICE ASSISTANCE

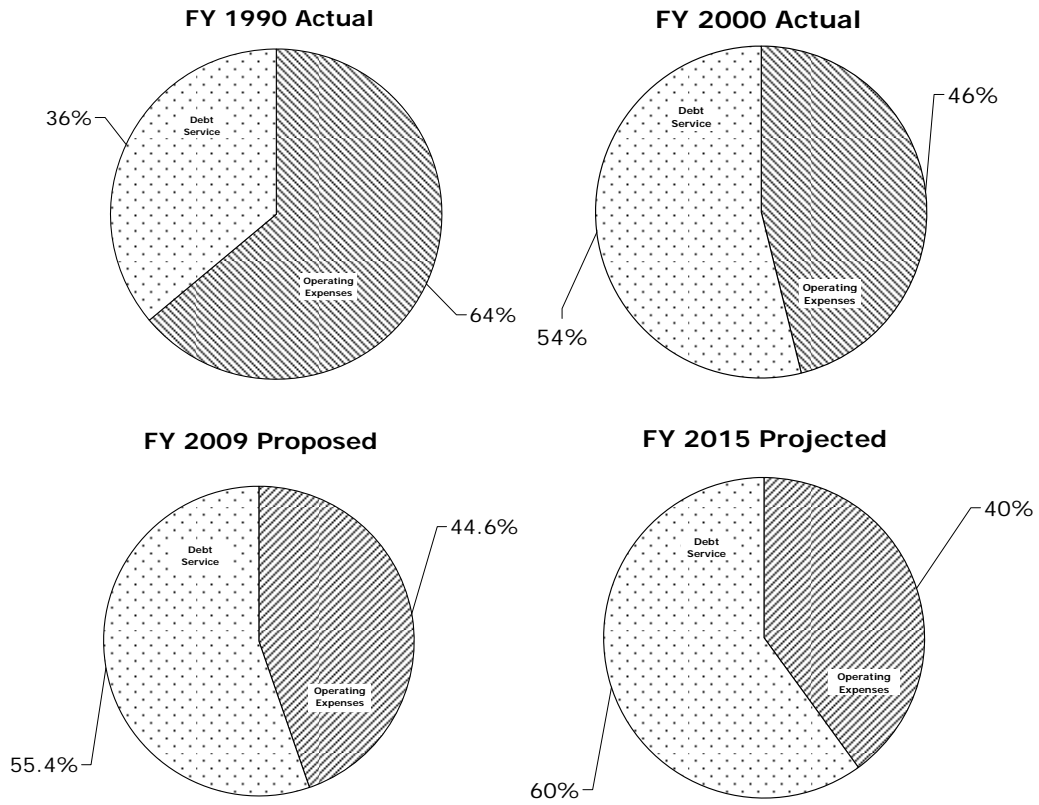


Rate Revenue. The Authority raises rate revenue to pay the debt service on the borrowings issued to support the capital program. Debt service is the largest single driver of rate increases. Capital finance expense is now 55% of the entire current expense budget and is projected to increase to 60% in future years. The proposed FY09 Current Expense Budget includes expenses of just under \$600 million. Assuming debt service assistance receipts of \$11.25 million and other, non-rate revenues totaling nearly \$40 million, the proposed rate revenue requirement is \$548.6 million.

Capital financing expense is \$336 million or 56% of total expenses. It is 61% of the rate revenue requirement.

Figure 14

DEBT SERVICE AS A PERCENTAGE



ADVISORY BOARD MEMBERS

CITY/TOWN

ARLINGTON
ASHLAND
BEDFORD
BELMONT
BOSTON
BRAintree
BROOKLINE
BURLINGTON
CAMBRIDGE
CANTON
CHELSEA
CHICOPEE
CLINTON
DEDHAM
EVERETT
FRAMINGHAM
HINGHAM
HOLBROOK
LEOMINSTER
LEXINGTON
LYNN
LYNNFIELD
MALDEN
MARBLEHEAD
MARLBOROUGH
MEDFORD
MELROSE
MILTON
NAHANT
NATICK
NEEDHAM
NEWTON
NORTHBOROUGH
NORWOOD
PEABODY
QUINCY
RANDOLPH
READING
REVERE
SAUGUS
SOMERVILLE
SOUTH HADLEY
SOUTHBOROUGH
STONEHAM
STOUGHTON
SWAMPSCOTT
WAKEFIELD
WALPOLE
WALTHAM
WATERTOWN
WELLESLEY
WESTON
WESTWOOD
WEYMOUTH
WILBRAHAM
WILMINGTON
WINCHESTER
WINTHROP
WOBURN
WORCESTER

CEO

Annie Lacourt
John Petrin
Angelo Colao
Angelo Firenze
Hon. Thomas Menino
Hon. Joseph C. Sullivan
Gilbert Hoy
Albert L. Fay, Jr.
Hon. E. Denise Simmons
Robert E. Burr, Jr.
Jay Ash
Hon. Michael Bissonnette
Joseph Notaro
Carmen Dellolacono
Hon. Carlo DeMaria
Charles J. Sisitsky
Melissa A. Tully
Robert S. Austin
Hon. Dean Mazzarella
Jeanne Krieger
Hon. Edward J. Clancy, Jr.
Arthur Bourque III
Hon. Richard C. Howard
Harry C. Christensen, Jr.
Hon. Nancy Stevens
Hon. Michael J. McGlynn
Hon. Robert J. Dolan
Marion McEttrick
Mark Cullinan
John Ciccariello
James G. Healy
Hon. David B. Cohen
Bill Pantazis
Michael J. Lyons
Hon. Michael J. Bonfanti
Hon. Thomas P. Koch
Paul J. Connors
James E. Bonazoli
Hon. Thomas G. Ambrosino
Donald Wong
Hon. Joseph A. Curtatone
John R. Hine
Bonnie J. Phaneuf
George E. Seibold
John J. Kowalczyk
Adam P. Forman
James E. Good
Albert A. DeNapoli
Hon. Jeannette A. McCarthy
Clyde L. Younger
Owen H. Dugan
Steven L. Charlip
Nancy C. Hyde
Hon. David Madden
James E. Thompson
Michael Newhouse
James Johnson
Thomas E. Reilly
Hon. Thomas McLaughlin
Hon. Konstantina B. Lukes

DESIGNEE

John F. Bean
Edward Maguire
Richard Warrington
Peter Castanino
John Sullivan, Jr.*
Greg Riley
Charles Barry
John Sanchez*
Timothy MacDonald*
Edward Sullivan*
Andrew DeSantis *
Allen Ryczek/Walter Ruzala

William G. Keegan, Jr.
Jon E. Norton
Peter Sellers
Edmund Demko/Michael Salerno
Thomas Cummings

William Hadley*
Jay Fink*
Bruce Kenerson
John Russell
Dana Snow
Doran Crouse
Cassandra Koutalidis
Ben Lagman/Ron Seaboyer*
Katherine Haynes Dunphy**

Timothy Dooling
John Cosgrove/Robert Lewis
Lou Taverna*
Kara Buzanoski/John L. Meader
Bernard Cooper*
Peter Smyrniotis
Brian Carlisle*
Paul J. Connors
Edward McIntire, Jr.*
Sam MacDonald/Donald Goodwin
Joseph Attubato
Carol Antonelli*
John Mikuszewski
Karen Galligan
Jeffrey Oxman
Lawrence J. Barrett*/Mark Stankiewicz
Gino A. Cresta, Jr.
Richard Stinson
Patrick Fasanello

Gerald Mee
Walter Woods*
Earl J. Forman
Robert Angelo/J. Timothy Walsh
Michael L.J. Chiasson
Zigmund A. Peret
Michael Woods/Robert Antico
Stephen Swymer

Anthony Blazejowski
Robert Moylan, Jr.

Gubernatorial Appointees:

Quabbin and Ware Watershed - J.R. Greene
Wachusett Watershed - Barbara Wyatt
Environmental Protection - Vacant
Boston Harbor - Vacant
Boston Harbor - Vacant
Connecticut River Basin - Vacant

MAPC Appointee:

Edward G. Bates

*Member of Executive Committee

**Chairman of Executive Committee

Advisory Board Designees to the MWRA Board of Directors:

John Carroll – Norwood
Andrew Pappastergion – Brookline
Joseph Foti – Chelsea