Proposed FY16 Capital Improvement Program Highlights

Table 1

Currently Active Projects ($ millions)			
Program	**Active Projects Spending thru FY14**	**Future Active Projects Spending**	**TOTAL Active Projects**
Wastewater System Improvements	$1,791.7	$1,183.8	$2,975.5
Waterworks System Improvements	1,915.6	991.0	2,906.7
Business & Operations Support	82.9	44.0	127.0
TOTAL MWRA (w/o Contingency)	**$3,790.3**	**$2,218.9**	**$6,009.2**

- Currently open capital projects total $6.01 billion
- Nearly $3.8 billion has been spent on these projects through FY14
- Another $4.05 billion is treated as completed (and closed out) and removed from the open project list
    - Most notable among these is $3.51 billion for the Boston Harbor Project[4]
- From the inception of the Authority through FY14 spending totals $7.84 billion

Table 2

MWRA Spending Since 1985			
Program	**Completed (and closed out) Projects**	**Active Projects Spending thru FY14**	**TOTAL SPENT 1985-2014**
Wastewater System Improvements	$3,851.8	$1,791.7	$5,643.4
Waterworks System Improvements	$168.3	1,915.6	2,084.0
Business & Operations Support	$32.4	82.9	115.3
TOTAL MWRA (w/o Contingency)	**$4,052.4**	**$3,790.3**	**$7,842.7**

- Future project spending is nearly $2.22 billion

Table 3

MWRA Spending Since 1985 (including future active projects)			
Program	**MWRA Past Spending**	**MWRA Future Spending**	**TOTAL**
Wastewater System Improvements	$5,643.4	$1,183.8	$6,827.3
Waterworks System Improvements	2,084.0	991.0	$3,075.0
Business & Operations Support	115.3	44.0	159.3
TOTAL MWRA (w/o Contingency)	**$7,842.7**	**$2,218.9**	**$10,061.6**

- In addition to spending through FY14, the proposed budget includes both ongoing and future planned spending totaling $10.06 billion

[4] On Deer Island. Including spending on residuals processing facilities, the Boston Harbor Project total is $3.8 billion.

- Each year, the Authority includes new projects, as identified in the Master Plan, although not all projects in the Master Plan are in the annual budget document
- The Master Plan, published first in 2006, identified and prioritized $3.1 billion in water and wastewater projects
    - FY 2007 – 2018 (12 years): nearly $2.034 billion in project needs were identified (66% of the total)
    - FY 2019 – 2048 (30 years): $1.044 billion in future project needs were identified
- The Master Plan was updated in 2012-2013 with a 40-year look at potential capital expenditures to 2053. The updated Plan identifies (approximately):
    - Wastewater needs: $2.5 billion
    - Waterworks system needs: $1.5 billion
    - Updated total: $4.0 billion
        - FY14-33: $2.0 billion
        - For consideration in future capital budgets: $2.0 billion
        - Updated Master Plan is available electronically

Shift from Mandated Spending to Asset Protection

- Nearly 80% of all spending since 1985 has been for court-mandated projects or major new facilities, including:
    - Deer Island Wastewater Treatment Plant/Boston Harbor Project: $3.51 billion
    - Residuals facilities at Fore River/Quincy: $0.18 billion
    - CSO Control Program: $853.3 million through FY 2014
    - MetroWest Water Supply Tunnel: $696.8 million through FY 2014
    - Carroll Water Treatment Plant: $415.5 million through FY 2014
- Going forward, the Authority's focus is on Water and Wastewater Asset Protection and on Water System Redundancy projects

Capital Spending by Initiative

Table 4

	Total Contract	FY09-13	FY14-18	FY19-23	Beyond 23
Asset Protection	$ 2,254.5	$ 248.0	$ 411.9	$ 788.7	$ 170.5
Carroll WTP	437.8	38.5	14.8	11.8	0.0
Water Redundancy	1,893.9	134.7	182.9	495.2	218.5
CSO	873.6	315.5	58.6	2.0	-
Other	549.3	88.4	53.7	(22.6)	(64.8)
Total	**$ 6,009.2**	**$ 825.1**	**$ 721.8**	**$ 1,275.0**	**$ 324.2**
Asset Protection	**37.5%**	**30.1%**	**57.1%**	**61.9%**	**52.6%**
Carroll WTP	7.3%	4.7%	2.0%	0.9%	0.0%
Water Redundancy	**31.5%**	**16.3%**	**25.3%**	**38.8%**	**67.4%**
CSO	14.5%	38.2%	8.1%	0.2%	0.0%
Other	9.1%	10.7%	7.4%	-1.8%	-20.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

- Asset Protection and Water Redundancy spending for the FY14-18 cap period:
    - Projected to be 82.4% of all spending identified (See Table 4)
    - Spending similar to final FY15 CIP levels and distribution
    - Some scheduled spending has shifted beyond the current cap period
- CSO Control Program nears completion (December 2015)
    - Program totals nearly $900 million
    - FY14-18 spending: $59 million
        - Makes up 8% of total FY14-18 spending
    - FY09-13 spending: $317 million
        - Made up nearly 40% of total FY09-13 spending
    - Spending increases over current cap period due to:
        - Cambridge/Alewife project
        - Reserved Channel (South Boston) project
- Negative spending beyond FY18 reflects repayments of the loan portions of the community assistance programs

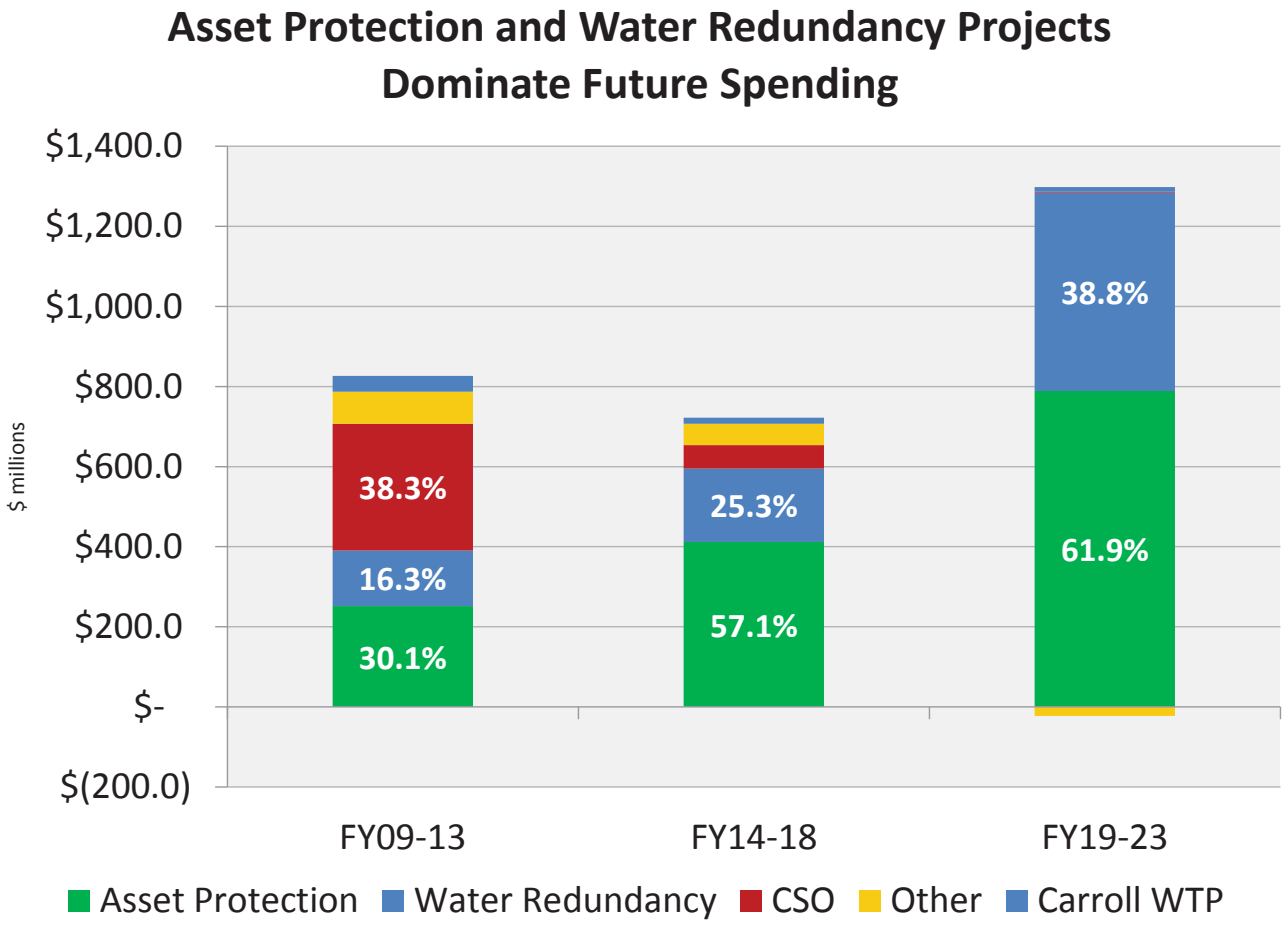

Figure 1

Actual and Proposed Capital Spending FY08-20

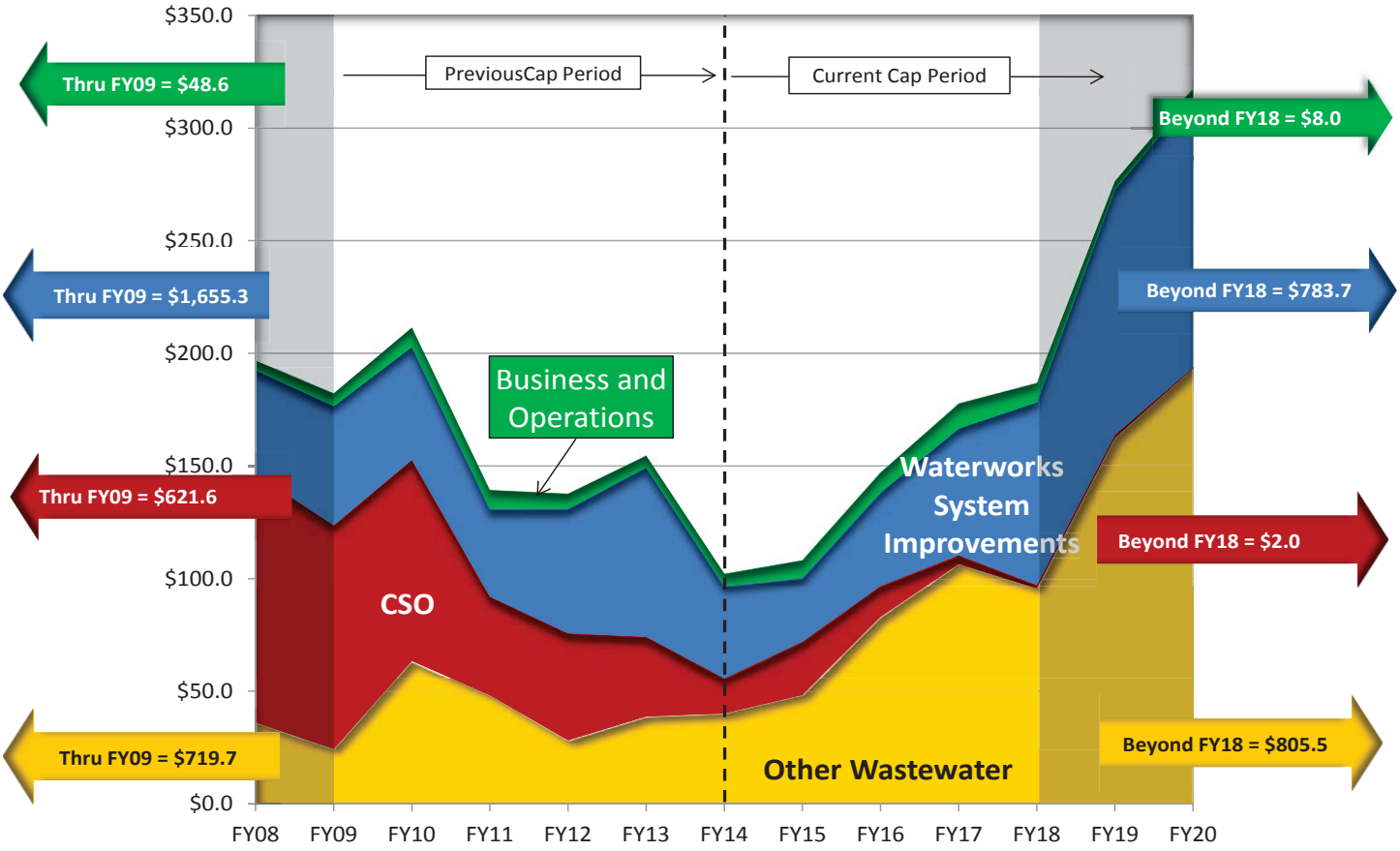

Figure 2

Table 5

Actual FY09-13 Capital Spending by Program

($ millions)

Program	Total Contract	Spending thru FY14	Remaining Balance	FY09 Actual	FY10 Actual	FY11 Actual	FY12 Actual	FY13 Actual	FY09-13
Wastewater System Improvements	**$2,975.5**	**$1,791.7**	**$1,183.8**	**$123.7**	**$152.7**	**$92.0**	**$75.8**	**$74.2**	**$518.3**
Interception & Pumping	890.8	527.4	363.3	6.8	2.5	15.1	6.0	1.9	32.4
Treatment	776.0	213.8	562.1	14.7	56.0	29.8	16.4	16.0	132.9
Residuals	167.6	64.6	103.0	0.0	0.4	0.0	0.0	0.4	0.7
CSO	898.3	853.3	45.0	99.4	89.3	43.8	47.6	35.4	315.5
Other	242.9	132.5	110.3	2.7	4.5	3.3	5.8	20.4	36.8
Waterworks System Improvements	**2,906.7**	**1,915.6**	**991.0**	**52.9**	**50.1**	**38.9**	**55.3**	**75.1**	**272.3**
Drinking Water Quality Improvements	665.5	625.4	40.1	17.8	12.4	2.4	18.4	35.5	86.7
Transmission	1,223.5	759.5	464.0	6.3	15.7	24.6	18.3	17.2	82.2
Distribution and Pumping	948.6	377.5	571.1	19.4	16.5	12.7	14.3	4.4	67.3
Other	69.0	153.2	-84.2	9.3	5.5	-0.9	4.3	18.0	36.2
Business & Operations Support	**127.0**	**82.9**	**44.0**	**5.7**	**8.7**	**8.4**	**6.6**	**5.2**	**34.5**
TOTAL MWRA w/o CONTINGENCY	**$6,009.2**	**$3,790.3**	**$2,218.9**	**$182.2**	**$211.4**	**$139.3**	**$137.6**	**$154.5**	**$825.1**

Table 6

Proposed FY14-18 Capital Spending by Program ($ millions)									
Program	Total Contract	Spending thru FY14	Remaining Balance	FY14 Actual	FY15 Projected	FY16 Proposed	FY17 Projected	FY18 Projected	FY14-18
Wastewater System Improvements	**$2,975.5**	**$1,791.7**	**$1,183.8**	**$55.7**	**$72.0**	**$96.7**	**$110.5**	**$97.1**	**$432.0**
Interception & Pumping	890.8	527.4	363.3	6.9	9.1	17.6	38.4	31.1	103.1
Treatment	776.0	213.8	562.1	29.1	28.0	47.8	47.9	42.8	195.6
Residuals	167.6	64.6	103.0	0.1	0.0	0.7	1.2	3.6	5.5
CSO	898.3	853.3	45.0	15.6	23.7	13.7	4.1	1.5	58.6
Other	242.9	132.5	110.3	4.0	11.2	16.9	18.9	18.1	69.2
Waterworks System Improvements	**2,906.7**	**1,915.6**	**991.0**	**41.0**	**28.4**	**41.6**	**56.2**	**81.1**	**248.3**
Drinking Water Quality Improvements	665.5	625.4	40.1	30.2	17.0	3.9	4.7	2.2	58.1
Transmission	1,223.5	759.5	464.0	4.5	3.9	21.2	24.1	32.5	86.1
Distribution and Pumping	948.6	377.5	571.1	4.8	8.5	15.6	27.2	41.2	97.2
Other	69.0	153.2	-84.2	1.5	-1.0	0.9	0.2	5.2	6.8
Business & Operations Support	**127.0**	**82.9**	**44.0**	**5.5**	**7.8**	**8.8**	**10.9**	**8.5**	**41.5**
TOTAL MWRA w/o CONTINGENCY	**$6,009.2**	**$3,790.3**	**$2,218.9**	**$102.2**	**$108.1**	**$147.1**	**$177.6**	**$186.8**	**$721.8**

Changes in Proposed Spending for FY14-18

- Final FY13 CIP spending for FY14-18: $997.3 million
- Final FY14 CIP revised spending level FY14-18: $717.9 million
  - Reduction: nearly $280 million
  - Purpose of reduction was to bring capital spending cap amount under $800 million per Advisory Board recommendation
  - Much of this spending was shifted beyond FY18 based on levels of actual spending (See Figure 2 and Table 6)

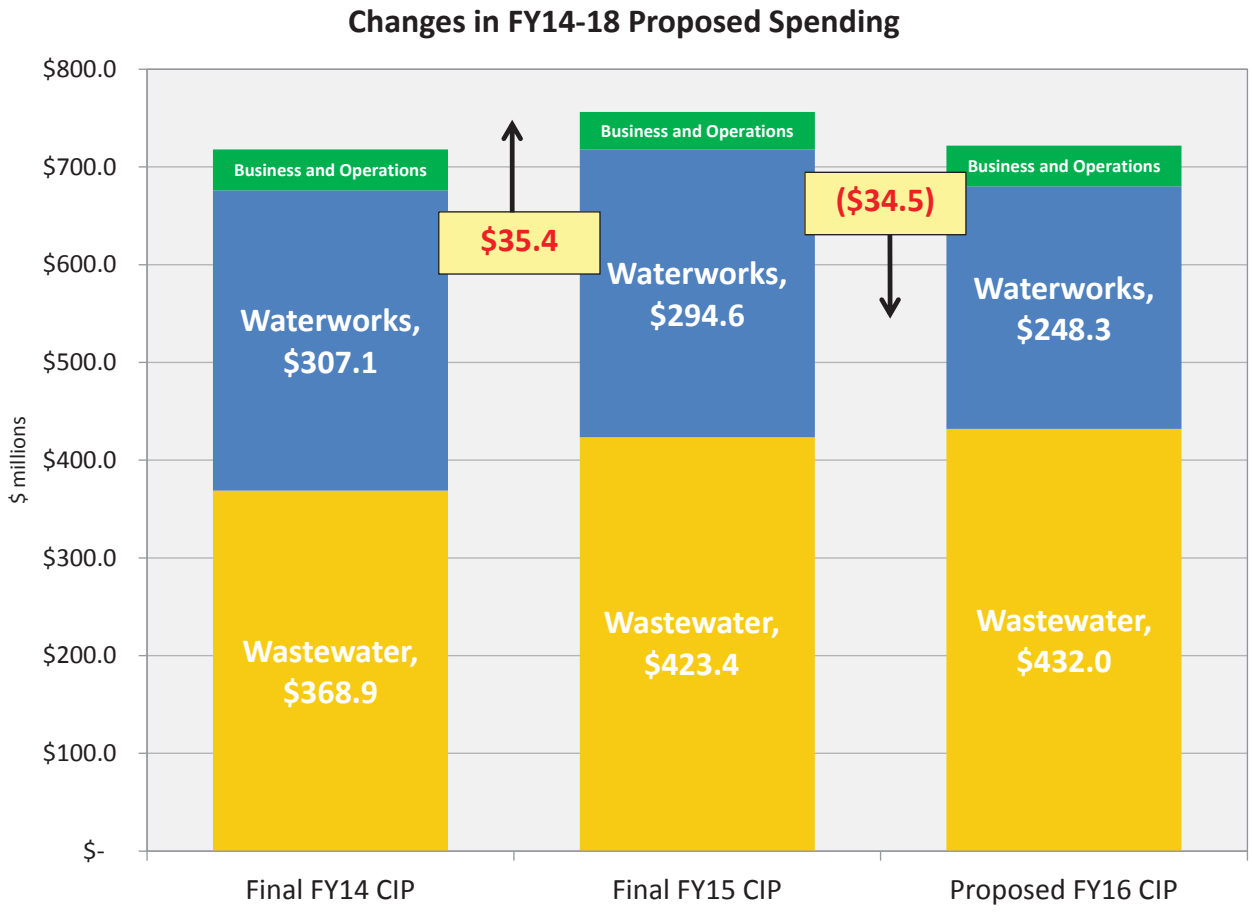

Figure 3

- Final FY15 CIP updated spending for FY14-18 period: $756.3 million
    - Increase of $35.4 million
- Proposed FY16 CIP spending for FY14-18 period: $721.8 million
    - Close to Final FY14 CIP
- FY14-18 wastewater spending: $432 million
    - Represents 60% of total spending
- FY14-18 waterworks spending: $248.3 million
    - $60 million lower than final FY14 CIP
    - Represents 34% of total spending
- FY14 total actual spending: $102 million
- FY15, FY16, FY17 spending reduced, while FY18 increases
- Total spending for FY14-18 reduced by $34.5 million (See Figure 3)
    - Reflects $56.6 million in schedule shifts beyond FY18
    - Partially offset by spending on new and expanded existing projects

Table 7

Proposed FY16 CIP

Largest 10 Projects

Utility	Program	Project	FY16 Spending	% of Total FY16 Spending
Wastewater	Treatment	DI Treatment Plant Asset Protection	$45.2	30.7%
Waterworks	Transmission	Long Term Redundancy	18.3	12.4%
Wastewater	Interception & Pumping	Facility Asset Protection	17.1	11.6%
Wastewater	Other	I/I Local Financial Assistance	16.9	11.5%
Wastewater	CSO Community Managed	Cambridge Sewer Separation	11.9	8.1%
Waterworks	Distribution & Pumping	Weston Aqueduct Supply Mains	6.1	4.1%
Waterworks	Distribution & Pumping	NIH Redundancy & Storage	5.5	3.7%
Business & Operation	Support	Application Improvement Program	2.3	1.6%
Waterworks	Other	Central Monitoring System	2.3	1.6%
Waterworks	Drinking Water Quality Improvements	Carroll Water Treatment Plant	2.0	1.4%
Top 10 Spending in FY16			**$127.6**	**86.7%**
FY16 Total Proposed CIP Spending			**$147.10**	**100.0%**

FY16 Capital Spending

- Total FY16 spending: $147.1 million
    - Represents a 36% increase in proposed spending[5]
- Forty-five contracts budgeted at $166.5 million are projected to be awarded
    - Ten largest projects represent 77% of the value of the expected awards

[5] Compared to revised projections for FY15 spending ($108.1 million)

Wastewater Capital Spending

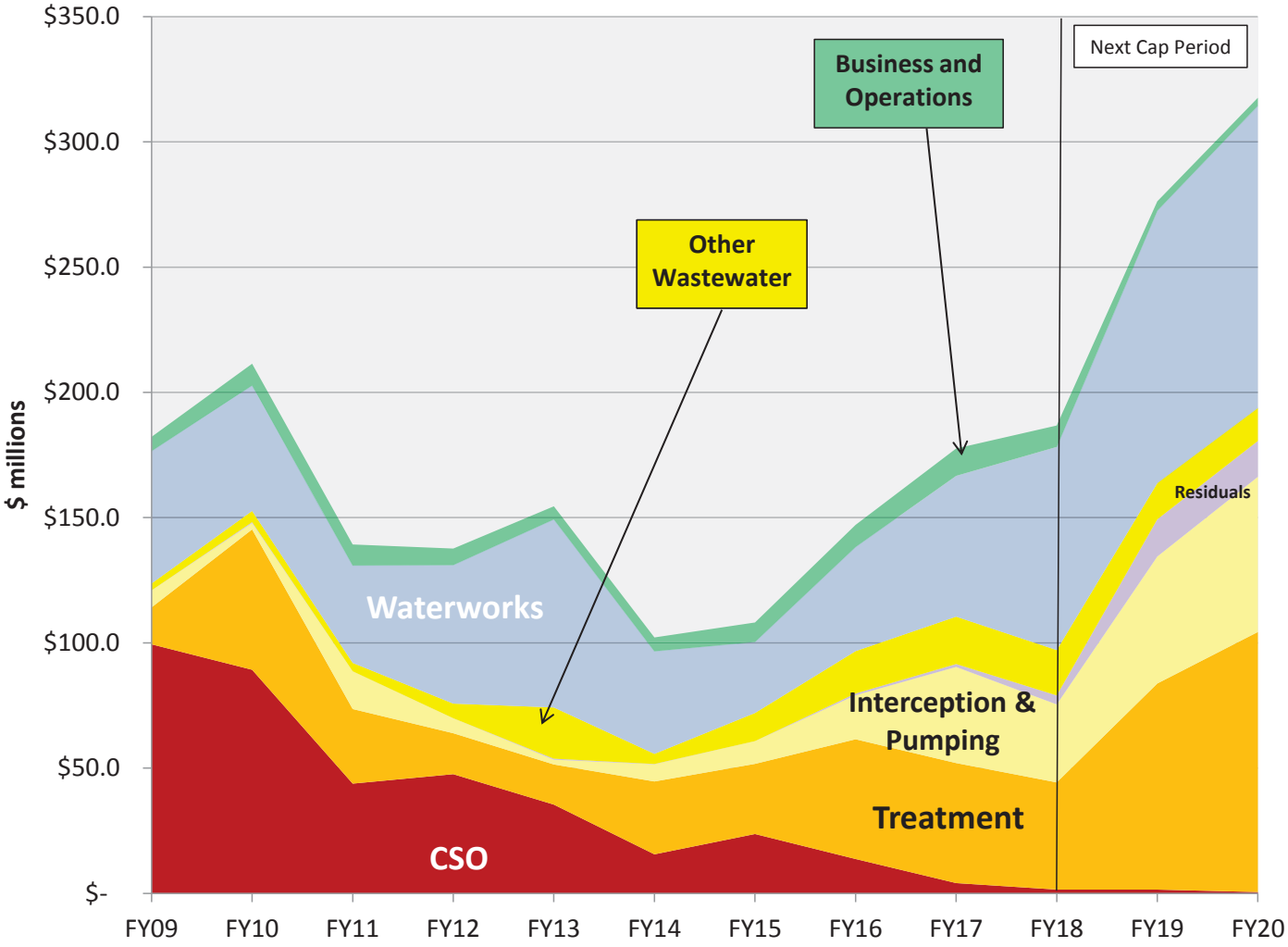

Figure 4

- Wastewater system improvements are divided into five categories: (See Table 6 and Figure 4)
    1. Interception and Pumping
    2. Treatment
    3. Residuals
    4. CSOs
    5. Other

Wastewater Spending Highlights

- FY16 spending budgeted at $96.7 million
- Represents 66% of all proposed spending for FY16

Table 8

Largest Wastewater Projects FY16 ($ millions)		
Project	**FY16 Spending**	**Program**
DI Treatment Plant Asset Protection	$45.25	Treatment
Facility Asset Protection	17.12	Interception and Pumping
I/I Local Financial Assistance	16.91	Other Wastewater
Cambridge Sewer Separation	11.92	CSO (Community Managed)
Clinton Wastewater Treatment Plant	2.55	Treatment
Dorchester Bay Sewer Separation	0.75	CSO (Community Managed)
Reserved Sewer Channel Separation	0.71	CSO (Community Managed)
Residuals Asset Protection	0.69	Residuals
TOTAL	**$95.9**	

Table 9

Largest Wastewater Projects FY14-18 ($ millions)		
Project	**FY14-18 Spending**	**Program**
DI Treatment Plant Asset Protection	$182.01	Treatment
Facility Asset Protection	93.41	Interception and Pumping
I/I Local Financial Assistance	69.18	Other Wastewater
Cambridge Sewer Separation	41.65	CSO (Community Managed)
Clinton Wastewater Treatment Plant	13.58	Treatment
Reserved Sewer Channel Separation	12.57	CSO (Community Managed)
Wastewater Meter Sys. Equip. Replace.	6.44	Interception and Pumping
Residuals Asset Protection	5.54	Residuals
MWR003 Gate & Siphon	3.85	CSO (MWRA Managed)
TOTAL	**$428.2**	

- FY16 Deer Island Treatment Plant (DITP) Asset Protection project spending: $42.25 million
    - Nearly one-third of all FY16 spending
    - Includes multiple design and construction contracts
- Second largest wastewater project: Wastewater Facility Asset Protection
    - Also includes multiple design and construction contracts
    - Includes pump stations, headworks facilities, pipeline rehabilitation
- FY16 CSO spending: $13.7 million
    - FY16 is the last year of CSO spending over $10 million
    - Court-ordered completion date is December 2015
- FY16 Facility Asset Protection project contracts: $17.1 million
    - Includes multiple facility and pipeline contracts
    - Nearly doubles from FY15 projected spending of $8.8 million
    - Increase due to more projects moving from design to construction phases
- The Facility Asset Protection project includes contracts for:
    - The rehabilitation of the Chelsea Creek Headworks

    - Followed by rehabilitation of the Ward Street and Columbus Park headworks facilities
    - Alewife Brook Pump Station rehabilitation
    - Nut Island Headworks improvements
    - Chelsea Screenhouse upgrades
    - Caruso Pump Station improvements
    - Sewer pipeline rehabilitation
- Only one new contract proposed for the FY16 CIP
    - Wastewater SCADA/PLC upgrades at $7.0 million to start in FY17 (See Appendix G)

Interception and Pumping (I&P) Projects

- Includes projects that address the wastewater collection system facilities, sewers and tunnels. Among them are:
    - Four remote headworks
    - Twenty pump stations and CSO facilities
    - More than 250 miles of sewer pipelines
    - Four cross harbor tunnels to the Deer Island plant totaling 18 miles
- Proposed FY14-18 spending: $103.1 million
    - FY15 spending: $9.1 million
    - FY16 spending: $17.6 (nearly doubles)
    - FY17 spending: $38.4 million (nearly doubles again)
- Wastewater Facility Asset Protection is the largest group of contracts in the I&P projects category
    - FY14-18 spending: $93.4 million
    - Total future spending: $290 million
        - $176 million of this total scheduled for FY19-23
    - Upcoming contract awards include:
        - Alewife Brook Pump Station Rehabilitation construction ($10.4 million)
        - Chelsea Creek Headworks Upgrades construction ($54.8 million)
        - Interceptor Renewal 1, Reading Extension ($3.64 million)
        - Caruso Pump Station Improvements construction ($2.9 million)
        - Cottage Farm PCB Abatement ($2.15 million)
        - Chelsea Screenhouse Upgrades ($3.6 million)
- Other I&P projects have measurable future spending after the current cap period and include:
    - Braintree-Weymouth improvements
    - Siphon structure rehabilitation
    - Corrosion and Odor Control
    - Wastewater Central Monitoring
    - Wastewater Process Optimization
    - Wastewater Meter System Equipment Replacement

Wastewater Treatment

- Includes:
    - Deer Island Treatment Plant asset protection
    - Clinton Wastewater Treatment Plant
- FY16 spending : $47.8 million
- FY14-18 spending: $195.6 million
- Deer Island Treatment Plant spending for FY14-18: $182.0 million
    - Largest wastewater project; many separate projects and contracts
    - Largest of all projects for FY16 capital budget
- Clinton Wastewater Treatment Plant FY14-18 spending: $13.6 million
- Laboratory Instrumentation: see Equipment Purchase project under Business and Operations Support

Deer Island Wastewater Treatment Plant

- FY14-18 spending: $182.01 million
- FY16 spending: $45.25 million
    - Largest capital project in FY16
- Dozens of contracts are moving forward or are planned for the five-year cap period (and beyond)
    - 16 contracts involve spending of $3 million or more during the cap period (See Table 10).
    - Another 22 contracts involve spending of between $1 million to $3 million during the cap period.
- The largest contracts with significant spending (over $10 million) during the FY14-18 period are:
    - Scum skimmer replacement ($20.16 million)
    - North Main Pump Station VFD replacement ($17.82 million)
    - Butterfly valve replacement ($16.96 million)
    - Electrical equipment upgrades, phase 4 ($10.91 million)
    - Clarifier rehabilitation Phase 2 ($10.83 million)
- Total increase from final FY15 CIP: +$65.3 million
    - FY14-18 increase: +$3.35 million
    - FY19-23 increase: +$62.0 million
- Co-digestion projects
    - Residuals ($2.3 million)
    - Co-digestion storage, piping, and pumping facilities ($5.0 million)
- Combined heat and power design ($6 million) and construction ($83 million)[6]

[6] During next cap period (FY19-23)

Table 10

Top Deer Island Projects

($ millions)

Projects	FY14-18	FY19-23
Top Deer Island Projects, Over $1 Million		
Ancillary Modifications	$ -	$ 11.64
Ancillary Modifications - Design 4	$ 2.14	$ 2.14
As-needed Design 7-1	$ 1.05	$ -
As-needed Design 7-2	$ 1.20	$ -
As-needed Design 7-3	$ 1.45	$ -
As-needed Technical Design	$ 5.00	$ 10.00
Barge Berth and Facility Replacement	$ 0.75	$ 1.51
Centrifuge Backdrive Replacement	$ 3.65	$ -
Centrifuge Replacements - Construction	$ -	$ 3.47
Chemical Pipe Replacement	$ -	$ 2.07
Clarifier Rehabilitation Phase 2 - Construction	$ 10.83	$ 24.17
Clarifier Rehabilitation Phase 2 - Design	$ 1.69	$ 0.54
Clarifier Rehabilitation Phase 2 - REI	$ 0.46	$ 1.04
Co-Digestion - Design/Build	$ 5.00	$ -
Co-Digestion Temporary Facilities	$ 2.30	$ -
Combined Heat & Power - Construction	$ -	$ 83.00
Combined Heat & Power - Design	$ 3.00	$ 3.00
Cryogenics Chillers Replacement	$ 3.24	$ -
Cryogenics Plant - Equipment Replacement - Construction	$ -	$ 5.30
Cryogenics Plant - Equipment Replacement - Design	$ -	$ 1.60
CTG Rebuilds	$ -	$ 6.00
Digester & Storage Tank Rehab - Construction	$ -	$ 21.70
Digester & Storage Tank Rehab - Design	$ 1.50	$ 1.50
Digester Modules 1 & 2 Pipe Replacement	$ 1.20	$ -
DSL Pump Replacement - Phase 2	$ 4.66	$ -
Dystor Membrane Replacements	$ 1.20	$ -
Eastern Seawall - Construction 1	$ -	$ 3.75
Electrical Equipment Upgrade - Construction 4	$ 10.91	$ -
Electrical Equipment Upgrade - Phase 5	$ 0.80	$ 15.97
Electrical Equipment Upgrade 4 - REI	$ 1.04	$ -
Equipment Replacement Projection	$ -	$ 25.00
Expansion Joint Repair - Construction 2	$ 1.21	$ -
Expansion Joint Repair - Construction 3	$ 1.93	$ -
Fire Alarm System Replacement - Construction	$ 5.78	$ 10.22
Fire Alarm System Replacement - Design	$ 1.43	$ 0.67
Fire System Replacement - REI	$ 0.65	$ 1.15
Future Miscellaneous VFD Replacements - Construction	$ 1.48	$ 3.85
Future NMPS VFD Replacements - Construction	$ -	$ 4.42
Future NMPS VFD Replacements - Design	$ -	$ 2.76
Future Sodium Hypochlorite Tank Rehab	$ -	$ 6.67
Future SPSS VFD Replacements - Construction	$ -	$ 19.20
Future SPSS VFD Replacements - Design	$ 1.80	$ 3.00
Gravity Thickener Rehabilitation	$ 5.79	$ -
HVAC Equipment Replacement - Construction	$ 8.96	$ 8.14
HVAC Equipment Replacement - Design	$ 1.49	$ 0.44
Miscellaneous VFD Replacements	$ 2.25	$ -
NMPS & WTD Butterfly Valve Replacement	$ 16.96	$ -
NMPS Harmonic Filter Replacement	$ -	$ 3.00
NMPS Motor Control Ctr. Phase 2 - Construction	$ -	$ 6.09
NMPS Motor Control Ctr. Phase 2 - Design/REI	$ 1.00	$ 1.00
NMPS VFD Replacement - Construction	$ 17.82	$ -
NMPS VFD Replacement - REI	$ 1.28	$ -
NMPS WTF - REI	$ 2.30	$ -
PICS Distributed Processing Units Replacement	$ -	$ 8.00
PICS Replacement - Construction	$ -	$ 5.40
Power System Improvements - Construction	$ 4.30	$ -
Scum Skimmer Replacement	$ 20.16	$ -
Sodium Bisulfite & Hypochlorite Tanks Rehabilitation	$ 6.58	$ -
Sodium Hypochlorite Pipe Replacement - Construction	$ -	$ 4.00
South System Pump Station Lube System Replacement	$ -	$ 2.90
Switchgear Replacement - Construction	$ -	$ 16.00
Switchgear Replacement - Design	$ 2.25	$ 2.25
Thermal Power Plant Boiler Control Replacement	$ 1.59	$ -
WTF VFD Replacement	$ 4.16	$ -
Subtotal	**$ 174.25**	**$ 332.58**
All Other Active Projects	**$ 7.77**	**$ 7.90**
Total	**$ 182.01**	**$ 340.47**

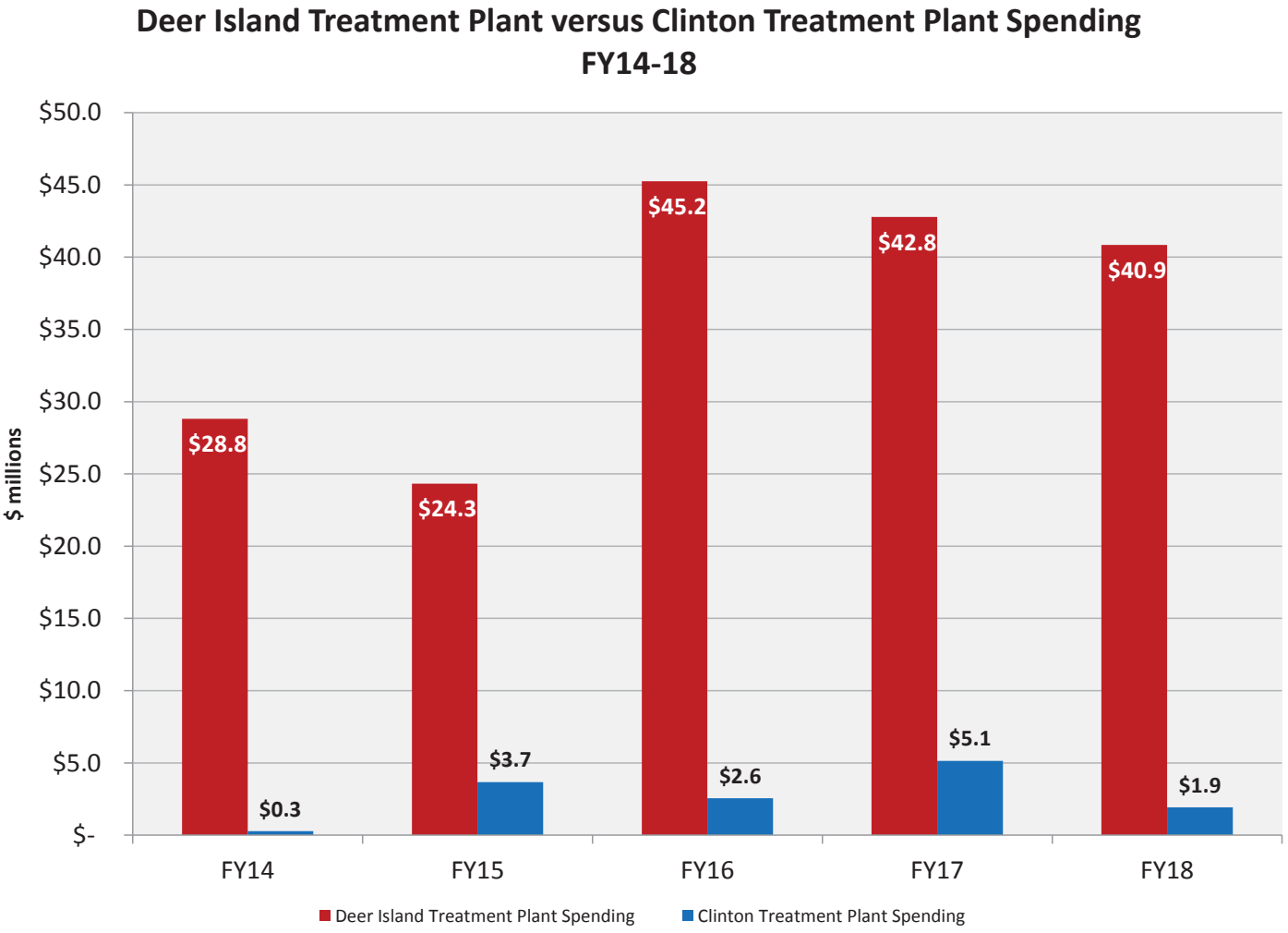

Figure 5

Clinton Wastewater Treatment Plant

- Total costs of projects: $20.4 million
- Projected FY14-18 spending: $13.6 million
- Projected FY19-23 spending: $3.9 million
- Phosphorus Removal construction project: $7.1 million
    - Makes up just over half of all Clinton FY14-18 spending
    - Expected to be required by Clinton's new NPDES permit, still in draft form; EPA reissued the draft permit (originally issued in 2010) in September 2013
    - Notice to proceed: February 2016
    - Design contract awarded in fall 2013 at $1.14 million
        - Construction bid documents are under review
- Digester cleaning and rehabilitation contract: $4.85 million
    - Continues through April 2017
- Facilities rehabilitation: $4.29 million
    - FY 2019 start date and includes:
        - Rehabilitation or replacement of grit removal facilities
        - Two belt filter presses
        - Closure of Cell #1 of landfill

Table 11

Clinton Wastewater Treatment Plant ($ millions)			
Projects	FY 09-13	FY14-18	Beyond 18
Clinton Soda Ash Replacement	$ 0.15		
Clinton Plant-Wide Concrete Repair	$ 0.06		
Clinton Digester Cleaning and Rehab	$ 0.09	$4.77	
Clinton Aeration Efficiency Improvement	$ 1.88	($0.01)	
Phosphorus Removal - Design		$1.20	$0.01
Phosphorus Removal - Construction		$7.09	
Clinton Roof Rehab		$0.54	
Clinton Facilities Rehab		$0.00	$3.93
TOTAL	**$2.18**	**$13.58**	**$3.94**

Policy Point

Clinton Wastewater Treatment Plant

"Déjà vu All Over Again"

Bearing costs associated with the Clinton Wastewater Treatment Plant (CWWTP) has been a longstanding and frustrating topic for the Advisory Board. Over the years there have been lawsuits to recover costs that were not paid requiring legislative intervention and settlement as well as legislation to divest the Authority of the responsibilities of the plant that was ultimately vetoed. In the end, the result was that the Authority was left with responsibility of the plant with only $500 thousand from the Commonwealth to help offset the costs of operating and maintaining the CWWTP. In the Governor's proposed budget, this $500 thousand line item was not included. Given the frustration surrounding this topic, the loss of what little funding the Authority receives toward the plant is unacceptable.

In response, the Advisory Board recommends that the Phosphorus Removal Construction Project be placed on indefinite hold pending receipt of $500 thousand toward the operation of the Clinton Wastewater Treatment Plant.

The Advisory Board's hope is that the legislature will restore this funding. Indeed, at the time of this writing, Representative Naughton has included it in the House version of the budget, for which the Advisory Board's communities are grateful. However, if this funding is not included in the final budget, the Advisory Board expects that the Authority will pursue receipt of these funds from the Town of Clinton. Short of receiving these funds – either from the Legislature, the Town of Clinton, or some other source – the Advisory Board remains opposed to further movement of this project.

Residuals

Residuals Asset Protection

- Total Residuals Asset Protection future spending: $103.0 million
    - $97.5 million scheduled beyond FY18
        - Serve as placeholders for capital projects at Deer Island and/or pellet plant

- Fore River pelletizing plant:
  - Initial work scheduled from January 2017 – December 2019
  - Design contract: $2 million
    - Scheduled start: July 2015
    - No bid documents issued at the time of this writing
  - Construction contract: $10 million
    - Start of contract extended to January 2017 (one year)
  - Condition assessment/technology and regulatory review have been conducted
    - Total budget was $0.83 million
    - Results may point to need for additional feasibility studies on possible process changes
  - Co-digestion pilot study contract shifted to Deer Island Asset Protection project
    - Original cost: $0.5 million
    - Updated cost: $2.3 million
  - Concept plan for future design and construction projects reduced by $43.7 million[7]

Combined Sewer Overflow Control Program

Table 12

CSO Spending
($ millions)

Project	FY09-13	FY14-18	Beyond FY18
North Dorchester Bay	$82.58	($0.02)	
East Boston Branch Sewer Relief	$74.94	($0.01)	
MWR003 Gate & Siphon	$0.65	$3.85	
Dorchester Bay Sewer Separation (Fox Point)	$0.39	$0.47	
Dorchester Bay Sewer Separation (Commercial Point)	$6.26	$2.28	$0.75
Stony Brook Sewer Separation	($0.86)	$0.05	
Union Park Detention Treatment	($0.27)	$0.00	
Cambridge Sewer Separation	$32.03	$41.65	
Cambridge Floatables	$0.16	$0.40	
Fort Point Channel Sewer Separation	$3.72	($0.90)	
Morrissey Boulevard Drain	$17.67	($0.01)	
Reserved Channel Sewer Separation	$57.32	$12.57	
Brookline Sewer Separation	$24.73	($1.11)	
Bulfinch Triangle Sewer Separation	$9.36	($0.80)	
Charles River CSO	$2.53	$0.00	
CSO Support	$4.28	($0.38)	$1.26
TOTAL	**$315.49**	**$58.05**	**$2.01**

[7] During FY14 budget cycle.

- Work on the multi-year CSO Control Program close to completion:
    1. 32 of the 35 projects are complete
    2. Substantial construction progress made in 2014 and early (calendar) 2015 on three remaining projects
    3. Substantial completion is scheduled for December 2015
- Total project costs: $898.3 million
    1. Increase of $5.85 million[8]
    2. Spending through FY14: $853.3 million
    3. Remaining balance: $45.0 million
    4. FY15-16 spending: $37.4 million
    5. Project costs and eligibility for MWRA payments on community-managed projects are audited regularly by the Authority's Internal Audit Department
- Cash flows and spending schedules are tied to dates established in the Court Order
- Much lower levels of spending will continue through FY 2021, when MWRA is to complete a sewer system performance assessment verifying attainment of the goals for long-term CSO control levels
- Remaining three projects:
    1. *Cambridge CAM004 Sewer Separation*
        - Four project contracts in construction or out for bid
        - Substantial completion on schedule for December 2015
        - Total cost: $92.1 million
        - Increased by $1.3 million to ensure December 2015 court-ordered completion date achieved
    2. *Reserved Channel Sewer Separation* (in Boston)
        - Includes nine construction contracts
        - Completion on schedule for December 2015
        - Total cost: $72.6 million
        - Increased by $3.7 million due to:
            - Additional sewer and storm drain installations
            - Greater utility conflicts
            - Contaminated soils
            - Related police detail costs
    3. *Control Gate and Floatables Control at Outfall MWR003 and MWRA Rindge Avenue Siphon Relief* (in Cambridge)
        - Construction started: August 2014
        - Total cost: $4.5 million
        - Increased by $0.78 million due to higher costs for the MWR003 contract
- *Brookline Sewer Separation* project
    - Considered substantially complete
    - Increased by $0.1 million based on eligible portions of final payments for engineering, construction, and police costs
- Last three active CSO projects plus updated final payments for the Brookline project contributed to the $5.85 million in total project cost increases[9]

Other Wastewater Projects

- Includes one major project/program: the Infiltration/Inflow Local Financial Assistance Program

[8] From final FY15 CIP.

[9] Less smaller cost decreases identified in the proposed FY16 CIP.

- Total budget: $460.75 million
    - Grant portion: $242.6 million
    - Loan portion: $218.2 million
- Through FY14 net payment: $132.3 million[10]
- Net balance: $110.3 million[11]
- FY14-18 net budget: nearly $70 million
- Program inception: August 1992
    - Phase 1 and 2: 25% grants/75% loans
    - Phase 3 through Phase 8: 45% grants/55% loans
        - Total each phase: $40 million
        - Repayment period: five years
    - Phase 9 and 10: 75% grants/25% interest-free loans
        - Total each phase: $80 million
        - Repayment period: ten years
- Through February 2015:
    - $283.1 million distributed in grants and interest-free loans
    - Funded 475 local sewer rehabilitation projects in 43 wastewater communities

Policy Point

Inflow/Infiltration Local Financial Assistance Program

"Right Program, Right Time"

Over the course of FY14 the Advisory Board convened its Operations Committee, and with the assistance of Authority staff reviewed various options for expanding the I/I Program. The recommendation was approved not only by the Advisory Board, but subsequently by the MWRA Board of Directors as well, including:

1. Phase 9 and Phase 10 added at $80 million each (prior phases were $40 million each)
2. Changing the grant/loan split to be 75% grant/25% interest-free loan
3. Extending payback period from five years to ten years
4. Allowing communities to withdraw all of their funds from these phases at once, if desired
5. Including an automatic "trigger" that allowed communities to become immediately eligible for Phase 10 funds once 50% of their Phase 9 funds had been expended

In short, the expansion of the program has been a resounding success. Through March 2015, $10.7 million in Phase 9 funds were distributed to nine communities. In fact, having received all of their Phase 9 funds, both the City of Newton and the City of Waltham are eligible to request their Phase 10 funds for distribution by August 2015. At the time of this writing, three communities have submitted requests for an additional $3.6 million in Phase 9 funding distributions before the end of FY15. Beyond the communities who have already taken advantage of the new phases, some additional movement has been seen from other communities on their prior phases. Because communities are required to use all of their prior-phase funds before requesting Phase 9 funds, many are beginning to use up these earlier funds with the aim of accessing Phase 9 more quickly.

[10] Grant and loan distributions less repayments of the loan portions.
[11] Until all loans have been repaid.

Though included in last year's vote by the MWRA Board of Directors, ***the Advisory Board supports the funds included in the proposed FY16 CIP to provide distributions to communities for Phase 9, Phase 10, and earlier phases as well.*** The Advisory Board also thanks the Authority for working with the communities to better forecast their anticipated I/I project needs to provide better information for budgetary purposes.

Waterworks Capital Spending

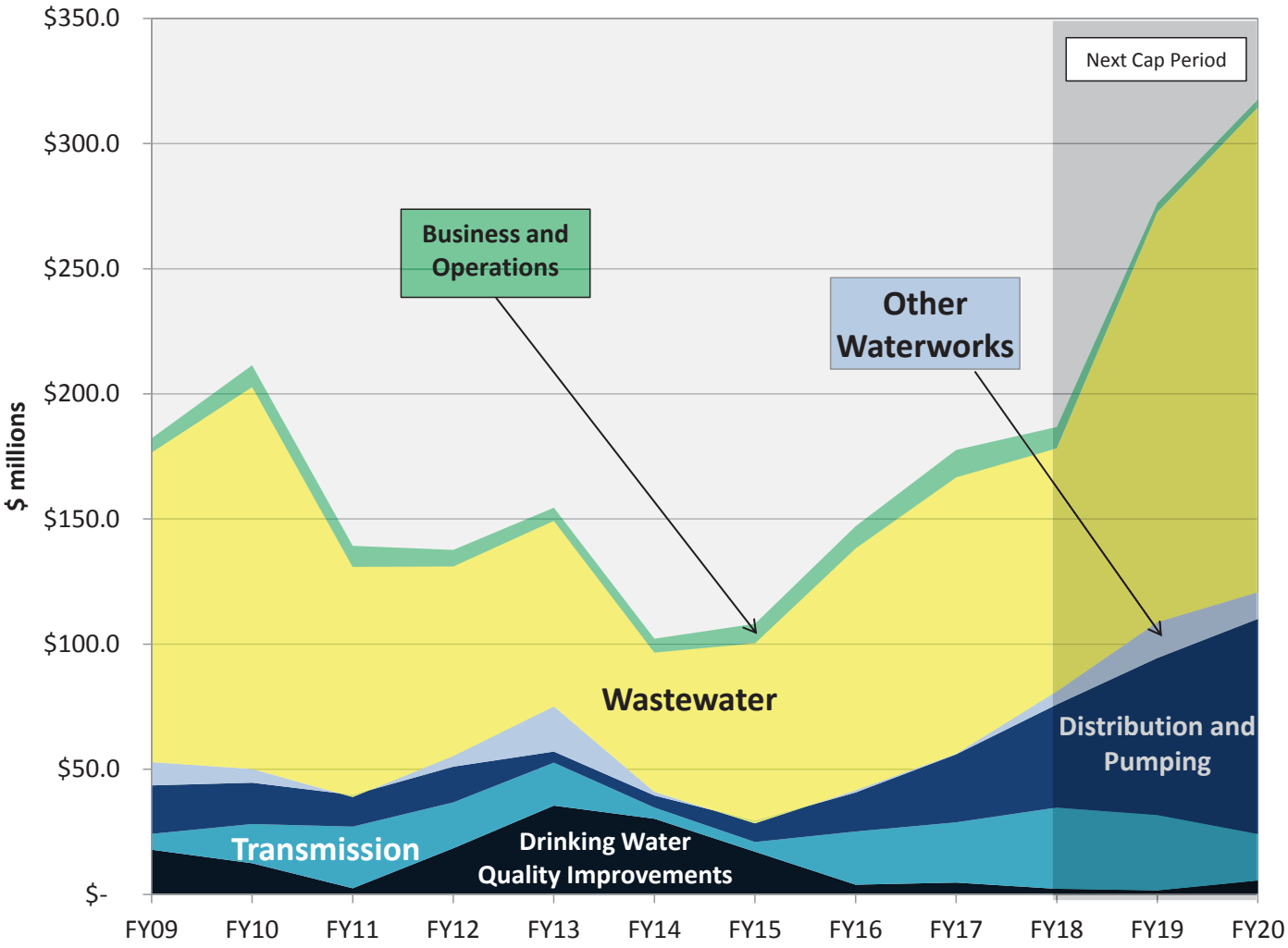

Figure 6

- There are four main categories of Waterworks spending
    1. Drinking Water Quality Improvements
    2. Transmission
    3. Distribution and Pumping
    4. Other projects
- Active waterworks projects in proposed CIP: $2.9 billion
    - Spending through FY14: $1.9 billion
    - Just under $1.0 billion is budgeted for spending in FY15 forward
    - Of that amount 25% or $248.3 million is budgeted for the FY14-18 cap period
    - $2.9 billion total is $63 million greater than the $2.84 billion included in the final FY15 CIP
- Proposed FY14-18 spending: $248.3 million
    - Decrease from final FY15 CIP: $46.4 million
    - Thus, $109.3 million of increased and rescheduled spending is planned for the next cap period and beyond
- Half the reductions in FY14-18 waterworks spending reflect changes in spending for Distribution and Pumping projects
    - Lower bid awards and changed scope for a Weston Aqueduct Supply Mains project contributed to $12.15 million in lower spending
- Waterworks FY16 spending: $41.59 million

- This is less than half of total Wastewater FY16 spending
- The amount is greater than the $28.4 million projected to be spent during FY15 and about the same as actual spending in FY14 of $41.0 million
- Spending is projected to nearly double two years ahead in FY18 at $81.1 million

- Nine projects make up nearly all Waterworks spending for FY16
  - The top four of these are among the top ten of the Authority's largest projects for the year ahead:
    1. Long-Term Redundancy ($18.3 million)
    2. Weston Aqueduct Supply Mains ($6.1 million)
    3. NIH Redundancy and Covered Storage ($5.5 million)
    4. Central Monitoring System ($2.3 million)

Table 13

Largest Waterworks Projects
FY14-18
($ millions)

Project	FY14-18 Spending	Program
Long-Term Redundancy	$62.26	Transmission
NIH Redundancy and Covered Storage	40.53	Distribution and Pumping
Spot Pond Storage Facility	36.19	Drinking Water Quality Improvements
Weston Aqueduct Supply Mains (WASMs)	19.79	Distribution and Pumping
SEH Redundancy and Storage	17.21	Distribution and Pumping
John J. Carroll Water Treatment Plant	14.76	Drinking Water Quality Improvements
NHS Revere & Malden Pipeline Improve.	11.20	Distribution and Pumping
Winsor Station Pipeline	9.34	Transmission
Watershed Land	6.66	Transmission
Central Monitoring System	5.50	Other Waterworks
TOTAL	**$223.4**	

Table 14

Largest Waterworks Projects
FY16
($ millions)

Project	FY16 Spending	Program
Long-Term Redundancy	$18.26	Transmission
Weston Aqueduct Supply Mains (WASMs)	6.06	Distribution and Pumping
NIH Redundancy and Covered Storage	5.48	Distribution and Pumping
Central Monitoring System	2.26	Other Waterworks
John J. Carroll Water Treatment Plant	2.02	Drinking Water Quality Improvements
Spot Pond Storage Facility	1.82	Drinking Water Quality Improvements
Watershed Land	1.50	Transmission
SEH Redundancy and Storage	1.25	Distribution and Pumping
Spot Pond Supply Mains Rehab	1.03	Distribution and Pumping
TOTAL	**$39.7**	

Drinking Water Quality Improvements

- Budgeted FY14-18 spending: $58.1 million
- FY16 spending: $3.9 million
- These projects focus on the treatment and storage of the MWRA's water supplies, including:
    - John J. Carroll Treatment Plant (CWTP) and related contracts
        - FY14-18 spending: $14.8 million
        - FY16 spending: $2.0 million
        - Most of FY16 planned spending is for Existing Facilities Modifications (CP-7) for a projected $1.49 million plus design-related costs
        - Estimates for the storage tank roof drainage system have increased to $7 million and been rescheduled into the next cap period
    - Quabbin Water Treatment Plant
        - FY14-18 spending: $6.9 million
            - All spending on this project is expected to be completed before FY16
        - UV disinfection construction phase has reached substantial completion
    - Blue Hills Covered Storage Reservoir is complete
    - Spot Pond Storage Facility and Pump Station is nearing completion, projected for May 2015. The $51.4 million design/build contract has $1.5 million in remaining spending and close-out costs during FY16
    - The $106.7 million Norumbega Covered Storage project is complete

Transmission

- The water transmission system consists of more than 100 miles of tunnels and aqueducts that transport water daily by gravity from the supply reservoirs to points of distribution within the service area
- FY16 spending: $21.25 million
- FY14-18 spending: $86.14 million
- Most of the spending is scheduled for the FY16-FY18 timeframe
- The largest projects during FY14-18 are:
    - The Wachusett Aqueduct Pump Station[12]: $53.9 million
        - Construction contract total: $49.5 million
            - Scheduled for the fall 2014
    - Winsor Station Pipeline: $9.3 million
        - Includes Winsor Station rehabilitation and improvements
    - Watershed land purchases: $6.7 million
    - MetroWest Tunnel: $5.2 million
        - Spending from several smaller contracts
    - Long-Term [Water Transmission] Redundancy FY16 spending: $18.26 million
        - Includes multiple contracts
        - Wachusett Aqueduct Pump Station updated estimate: $60.5 million[13]
            - FY16 spending: $17.3 million
        - Sudbury Aqueduct contracts include:
            - MEPA review: $3.4 million
                - $1 million spent through FY14

[12] Under the Long-Term Redundancy project.
[13] Plus related design and engineering services expenses

        - Construction: $101.1 million
            - Begins after FY18
        - Design and residential inspection services: $55.3 million
            - Begins in FY18
        - Sudbury Aqueduct Connection construction: $163.7 million
            - Begins after FY18
        - Chestnut Hill Final Connection construction: $11.7 million
            - Begins after FY18
    - Watershed Land Acquisition total cost: $24 million
        - Unchanged from final FY15 CIP
        - FY16 spending: $1.5 million
        - FY16-18 spending: $4.9 million
        - Majority of spending already paid out
    - Sudbury/Weston Aqueduct Repairs total cost: $6.9 million
        - $6.25 million of that amount is scheduled for FY16-18 and the next cap period
    - Other projects are shifting out beyond the current cap period
    - Winsor Station Pipeline contracts:
        - Winsor Station Rehab & Improvement notice to proceed date: July 2017
        - Shaft 2 and 12 construction notice to proceed date: July 2017
    - Hatchery Pipeline Construction:
        - Active dates: July 2017 through January 2020
- Quabbin Transmission System remaining balance: $8.0 million
    - Most spending is proposed for the next cap period

Policy Point

Hatchery Pipeline

"Outright Opposition Leads to Win-Win-Win"

The Advisory Board had, for several years, remained opposed to the Hatchery Pipeline project. The Advisory Board's objections were rooted in the common sense belief that ratepayers should not be funding projects that have no benefits to the MWRA system. As discussed in detail in last year's *Integrated Comments*, (CIP Chapter, page 27), the project benefits only the Commonwealth's trout hatchery, both from an avoidance of capital costs and a savings on electricity.

To parlay this into a "win-win" scenario, the Advisory Board suggested that if the Commonwealth could assist the MWRA in achieving a streamlined review process for system expansion, the Authority could construct the pipeline to assist the Commonwealth. Unfortunately, efforts on this stalled, and a streamlined process was not realized. As a result, the Advisory Board had continued its opposition to continuing the project.

Having been unsuccessful in creating a "win-win" scenario, the Advisory Board then considered options for creating a solution that would at least be cost-neutral for ratepayers. Could a way be found for the Commonwealth to pay back the Authority for the funds it would expend on building the pipeline? The Advisory Board proposed allowing the Commonwealth to pay the Authority the equivalent of the reduced electricity costs it would realize as a result of the pipeline. These annual payments would have been in place for the life of the debt service being paid on the pipeline. Though the then-Secretary of Energy and Environmental Affairs agreed to look into this option further, an agreement was not reached, and this plan similarly stalled. As a result, the Advisory Board continued its opposition.

At the May 2015 MWRA Board of Directors meeting, the Secretary of Energy and Environmental Affairs (EEA) announced that the Commonwealth would be providing $2.5 million to fund this project via EEA, the Division of Fisheries and Wildlife and the Department of Fish and Game. Additionally, the Authority had already secured two grants that completely covered the cost of the hydropower components of the capital project. Between all of these sources, the construction of the Hatchery Pipeline project will be funded at no expense to MWRA ratepayers. Moreover, revenue from the hydropower electricity generation is estimated to be about $53 thousand annually.[14]

The Advisory Board's opposition to this project came directly from adhering to its core mission: to advocate on behalf of and represent its member communities and the ratepayers. However, as was demonstrated over the years, this opposition was not inflexible and intractable. Indeed, twice the Advisory Board provided potential avenues to move this project forward, so long as ratepayers could see some measurable benefit (a streamlined system expansion process) or, at minimum, avoid unnecessary expense (electricity savings toward debt service). In all cases, the Advisory Board's aim was always to find a "pathway to yes" that benefited as many as possible.

In light of these new developments, the Advisory Board is delighted to point to this as an example of when its outright opposition to funding a project with no ratepayer benefit at ratepayer expense, and its consistent determination to hold to this position have ultimately led to a "win-win-win" situation, where all parties contributed and all parties benefited. The Commonwealth is providing the funds for the capital project, the Authority is constructing and managing the capital project, and the Advisory Board is providing permission to join the MWRA Waterworks System. The Commonwealth benefits by avoiding electricity costs; reducing chemical, overtime, and maintenance costs; reducing greenhouse emissions; and securing a consistently optimal water source for its facility. The Authority benefits by avoiding any capital costs and realizing additional revenue via the hydropower component of the project. Finally, the ratepayers benefit because the hydropower revenues immediately reduce the rate revenue requirement of the waterworks utility.

The Advisory Board thanks Authority staff, especially MWRA Executive Director Fred Laskey, and Policy and Planning Manager Pam Heidell for all of their time and efforts over the years exploring all possible pathways to making this project cost-neutral to ratepayers. Additionally, the Advisory Board thanks the current Secretary of Energy and Environmental Affairs Matthew Beaton for helping to secure the state funds needed to move this project forward. **Therefore, the Advisory Board grants approval under Section 8 (d) of the MWRA's Enabling Act for the MWRA to provide water to the Commonwealth at its McLaughlin Fish Hatchery subject to the execution of a legally binding agreement between the Authority and the Commonwealth guaranteeing no less than $2.5 million, as well as confirmation of the grant funding necessary to construct the hydropower turbine. It is with great pleasure that under these conditions, the Advisory Board reverses its prior recommendation to remove the Hatchery Pipeline Project from the MWRA's Capital Improvement Program.**

Distribution and Pumping

- Includes projects that focus on the metropolitan system, which is divided into seven pressure zones and includes:
    - 284 miles of distribution pipeline east of Shaft 5
    - 11 storage tanks
    - 11 pump stations
    - 9 tunnel shafts
    - approximately 4,700 valves
- FY16 Distribution and Pumping spending: $15.6 million

[14] Includes both purchase price of power sold to the grid and Renewable Energy Certificates, based on current values.

- FY14-18 Distribution and Pumping spending: $97.2 million
    - $26.4 million reduction[15]
- Notable projects include:
    - Weston Aqueduct Supply Mains
        - FY16 spending: $6.1 million
        - FY14-18 spending: $19.8 million
            - $11.09 million (36%) reduction[16]
    - Northern Intermediate High Redundancy and Covered Storage
        - FY16 spending: $5.5 million
        - FY14-18 spending: $40.5 million
    - Southern Extra High Redundancy and Storage
        - FY16 spending: $1.25 million
        - FY14-18 spending: $17.2 million
- Completed projects include:
    - Boston Low Service – Pipe and Valve Rehabilitation
    - Heath Hill Road Pipe Replacement
    - James L. Gillis Pump Station
    - Northern High Service Connecting Mains from Section 91
    - Southern Extra High – Sections 41 & 42
    - Warren Cottage Line Rehabilitation
    - Hydraulic Model Update
    - Walnut Street & Fisher Hill Pipeline Rehabilitation

Other Waterworks Projects

- FY16 net spending: +$0.87 million
- FY14-18 net spending: $6.79 million
- Spending for projects in FY14-18 includes:
    - Central Monitoring System: $5.5 million
        - Quabbin Power Communications and Security design and construction: $2.8 million
        - Waterworks SCADA/PLC Upgrades: $1.59 million
    - Local Water System Assistance program: -$4.7 million[17]
        - Distributions: +$105.1 million
        - Loan repayments: -$109.8 million
    - Water Facility Asset Protection: $5.06 million
        - This is less than half the amount for this same period in the Proposed FY15 CIP
        - Several projects including elevated water storage tank repainting (See Table 13)

[15] From proposed FY15 CIP.
[16] From proposed FY15 CIP
[17] Net distribution and repayments

Business and Operations Spending

- FY16 Business and Operations spending: $8.8 million
    - Two projects in this category of spending are among the top ten projects for spending in FY16:
        - Application Improvement Program: $2.3 million
        - IT Infrastructure Program: $1.7 million

Table 15

Largest Business & Ops Projects FY16 ($ millions)	
Project	**FY16 Spending**
Application Improvement Program	$2.3
IT Infrastructure Program	1.7
Alternative Energy Initiatives	1.4
Equipment Purchase	1.4
TOTAL	**$6.8**

- FY14-18 Business and Operations spending: $41.5 million
    - Increase from final FY15 CIP: $3.2 million

Table 16

Largest Business & Ops Projects FY14-18 ($ millions)	
Project	**FY14-18 Spending**
Application Improvement Program	$9.1
Equipment Purchase	8.7
IT Infrastructure Program	8.6
Capital Maint. Planning & Develop.	6.6
Alternative Energy Initiatives	5.0
TOTAL	**$37.9**

- MIS-related FY14-18 spending: $20.2 million
    - Business Systems Plan: $0.1 million
        - A 6-phase plan to replace aging systems and network architecture, improve disaster recovery, enhance data integration, consolidate server resources, and implement best practices
    - Application Improvement Program: $9.1 million
        - To improve efficiencies of business processes associated with managing operations and support divisions
    - Information Security Program: $1.6 million
        - To increase resiliency and sustainability of data security practices
    - Information Technology Management: $0.9 million
        - To improve oversight process for procurement of IT solutions throughout the Authority
    - IT Infrastructure Program: $8.6 million
        - To implement consolidated and optimized versions of equipment and databases

- Alternative Energy Initiatives FY14-18 spending: $5.0 million including
    - Deer Island Wind Phase II Construction: $2.5 million
    - Deer Island Wind Construction (Battery D Location): $1.0 million
    - Fish Hatchery Pipeline Hydro: $0.7 million
- Capital Maintenance Planning and Development FY14-18 spending: $6.7 million
    - Includes spending on six contracts for as-needed design services
- Capital Equipment purchases in FY14-18: $8.7 million
    - Security Equipment & Installation: $2.8 million
    - Vehicle Purchases (FY14-18 specific): $5.4 million
    - Major Lab Instrumentation (FY14-18 specific): $0.5 million
- Technical Assistance Contract FY14-18 spending: $1.1 million
    - Supports such services as land appraisal, surveying and hazardous materials assessment

Future Risk Factors

- The Authority continues to note future risk factors for the capital program. This year, the Authority identifies projects that may change in the budget put forth for FY16 as the preferred option has not been decided at this time. They include:
    - Sudbury Aqueduct – tunnel versus surface pipeline
    - Residual Processing/Asset management
    - New regulatory mandates
- The Authority notes that due to the nature of the capital improvement program, there will be changes to projects over time due to schedule shifts, revisions to project scopes, cost increases or decreases, environmental mandates, etc.

Policy Point

HEEC – Cross Harbor Electric Cable

"Ratepayers Won't Be 'Zapped' into Paying Twice"

Though not included in this year's list, last year the Authority identified the Cross Harbor Cable relocation as a potential risk factor. In last year's document, a brief section was included with regard to the Cross-Harbor Cable relocation. At the time, federal funding had been announced for part of the proposed relocation, and the Authority was planning to discuss the remaining costs with NSTAR. Because these events occurred after the Advisory Board's official vote on the *Integrated Comments*, but prior to publication, we instead mentioned that the Advisory Board would be making a formal recommendation at its meeting on June 19, 2014.

At this meeting, the Advisory Board voted unanimously to approve a resolution related to this topic. The resolution can be viewed at http://mwraadvisoryboard.com/wp-content/uploads/2015/05/BARTLETT_CBL_RES.pdf. Basically, the Advisory Board's perspective remains that the Authority and the ratepayers have already paid for the installation of the cable once for a total of $104 million – under no circumstances should the cable be paid for a second time, especially when the primary reason for relocation has nothing to do with MWRA's core mission; ratepayers should not be funding such an expense.

Capital Spending Cap

Background for Setting a Five-Year Cap on Capital Spending

- The Authority first adopted a capital spending cap in 2001, setting a ten-year cap each year as part of the approval of the final CIP and annual caps for the first three years of the budget period. In each succeeding year, a new ten-year cap was calculated by removing the completed year, adding any unspent funds from the just completed year and adding a new tenth year in the amount of $100 million.[18]
- In June 2003, the Board of Directors adopted a revised capital spending cap policy with a calculation that reflected projected expenditures for a five-year period, plus contingency allowances and inflation adjustments[19], less Chicopee Valley Aqueduct projects.
- A second provision of the cap allows annual spending within the five-year period to vary within plus or minus 20% of the initial amounts calculated for each of the five years, as long as the five-year total is not exceeded. In the event that an annual cap limit is exceeded, the Authority may request approval by the Board of Directors to exceed the limit for an individual fiscal year.

The First Five-Year Cap: FY04-08

- Approved in June 2003 as part of the approval of the final FY04 CIP
- Baseline FY04-08 capital spending cap: $1.1345 billion (See Appendix E)
    - Based on projected capital spending of $1.0233 billion
- Actual spending: $888.5 million
- Spending according to the cap equation: $880.1 million
    - Underspending from the “baseline” cap: $254.4 million (22.4%)
- The Authority did not exceed the overall five-year cap or the allowance of 20% over the individual base year caps

The Second Five-Year Cap: FY09-13

- Approved in June 2008 as part of the approval process for the final FY09 CIP (See Appendix F)
- Baseline FY09-13 capital spending cap: $1.1438 billion
    - Based on projected capital spending of: $1.0814 billion
- Actual spending: $825.1 million
    - Lower than the first cap period
- Spending according to the cap equation: $821.0 million
    - Underspending from the “baseline” cap: $322.8 million (28.2%)

The Third Five-Year Cap: FY14-18

- During the review of the proposed FY13 CIP, the Advisory Board, noting the lower than budgeted spending of the first two periods and observing the progress toward completing the court-ordered CSO Control Program, challenged the Authority to limit the FY14-18 cap to no more than $800 million.
- The Authority reshaped its proposed capital program and reconsidered the scheduling for a number of projects, and recommended a new five-year cap below the $800 million challenge.

[18] Adjusted for inflation.
[19] On unawarded construction contracts.

Table 17

FY14-18 Baseline Cap Calculation Versus Updated Spending Projections
($ millions)

	FY14	FY15	FY16	FY17	FY18	Total FY14-18
Projected Expenditures	$142.5	$147.6	$149.3	$141.8	$136.8	$718.0
Contingency	7.6	9.5	10.1	9.8	9.3	46.1
Inflation on Unawarded Construction	0.8	4.2	8.4	11.1	13.5	37.9
Less: Chicopee Valley Aqueduct Projects	(5.0)	(2.2)	(1.4)	(1.3)	0.4	(10.3)
FY14-18 Baseline Cap	**$145.8**	**$159.1**	**$166.4**	**$161.3**	**$159.1**	**$791.7**
Projected Expenditures	$102.2	$108.1	$147.1	$177.6	$186.8	$721.8
Contingency	0.0	5.3	8.2	10.8	11.6	35.9
Inflation on Unawarded Construction	0.0	0.0	1.4	5.5	9.2	16.1
Less: I/I Program	0.0	(11.2)	(16.9)	(18.9)	(18.1)	(65.1)
Less: Water Loan Program	0.0	1.6	2.2	2.5	(0.1)	6.1
Less: Chicopee Valley Aqueduct Projects	(5.6)	(1.5)	(0.0)	(0.1)	(0.2)	(7.3)
FY16 Proposed Subtotal	**$96.6**	**$102.3**	**$149.9**	**$177.5**	**$189.2**	**$707.5**
Change ($)	(49.2)	(56.7)	(24.5)	16.1	30.1	(84.2)
Change (%)	-33.8%	-35.7%	-14.7%	10.0%	18.9%	-10.6%

- Approved in June 2013 as part of the approval process for the final FY14 CIP
- Baseline FY14-18 capital spending cap: $791.7 million
  - Based on projected capital spending of: $718.0 million
- Updated FY14-18 spending: $721.8 million[20]
  - This is $103.3 million less than the $825.1 million in actual spending for the previous cap period
  - If spending on the CSO Control Program is netted out, non-CSO spending of $663.2 million, as compared to the $510 million of non-CSO spending during the FY09-13 cap period, is $153.2 million more for the current cap period
- The Authority has further revised its projections for spending during FY14-18, reducing spending for the first three years of the period by a total of $82 million. This amount, plus another $3.8 million has been shifted to the last two years, FY17-18 (See Table 17)
- Calculation of the FY14-18 cap using numbers from the proposed FY16 CEB also nets out I/I Program and Water Loan Program distributions (net of repayments) as recommended in the Advisory Board's *Comments* on the proposed FY15 CEB

Policy Point

Capital Underspending

"What's the Right Number?"

The five-year capital spending cap was born out of an Advisory Board initiative. At the time, the aim was to find ways of curtailing what was, at the time, exceptionally high levels of capital spending. While recognizing the need to perform critical and in many cases court-mandated work, the question was the correct level of capital spending to be targeted, and how could that number be managed to?

The first two capital spending caps were set at over $1 billion, but spending was significantly below this level. In fact, both periods were more than 20% underspent. This generated discussion about whether the capital spending cap should be viewed as a ceiling or a target. While the cap was originally intended to place an upper limit on the Authority's capital

[20] Actual for FY14, projected for FY15, proposed for FY16-18.

spending, the Advisory Board argued that actual spending should at least be closer to the baseline cap. As the Authority's spending shifted from mandatory projects to asset protection projects, the Advisory Board believed the most recent capital spending cap provided the opportunity to generate more realistic forecasts with a corresponding capital spending cap.

The Authority, for its part, met the Advisory Board's challenge to set the FY14-18 capital spending cap at no greater than $800 million. The biggest change to proposed spending was to make project schedules less ambitious and more in line with historical experience; in short, to make a more realistic forecast of how quickly work could be completed and dollars spent. The Advisory Board applauded the Authority for meeting the $800 million challenge and expected that capital spending would begin tracking closer to this lowered baseline cap particularly since spending for both of the prior cap periods were over $800 million. This does not, however, seem to be the case so far.

FY14 capital spending was $40.3 million (28.3%) below projected spending for the year, and FY15 is similarly projected to be underspent ($39.5 million, or 26.7%).[21] While admittedly the extraordinary winter conditions this past winter caused some understandable delays, the mid-year capital Project Performance Report reported adjusted underspending of $8.3 million (21.5%) indicating that significant underspending was already occurring prior to winter conditions.[22] Last year, the Advisory Board recommended bringing a number of standalone projects to near-full design to create a "pipeline" of projects that could be substituted when other projects "slipped" out due to unforeseen circumstances. The Authority believed that where it was able to do so they were identifying projects that could be "swapped," but that there were inherent limits to this process.

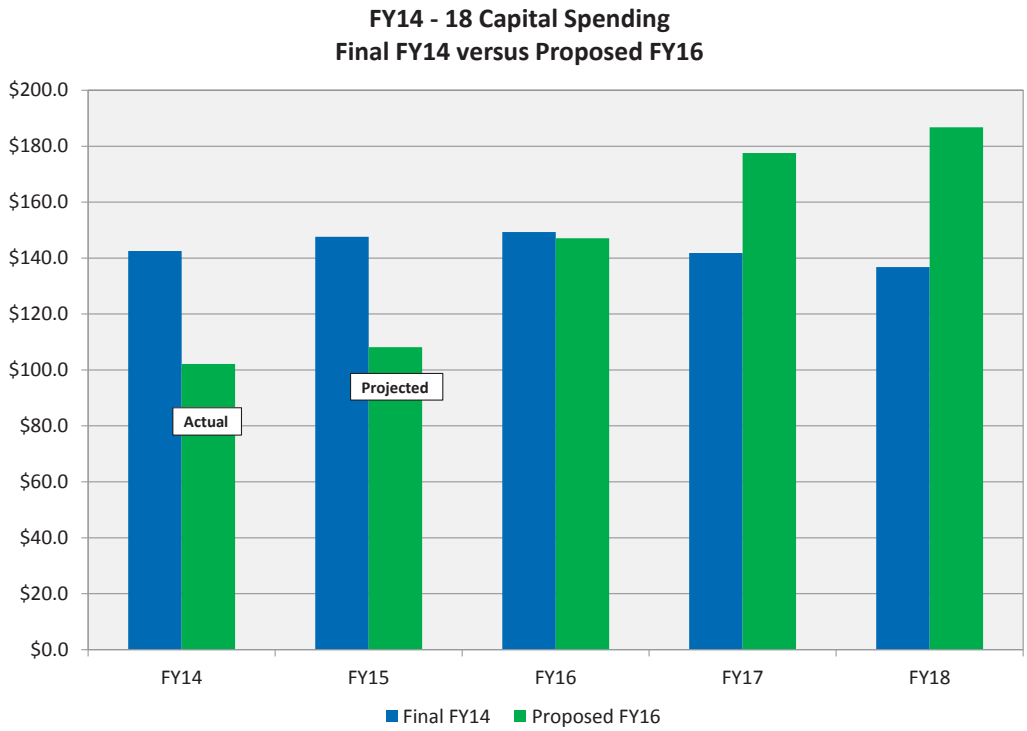

Figure 7

The "project pipeline" recommendation was born out of the Advisory Board's concerns about maintaining capital spending at an appropriate level:

> Because the MWRA was created with the charge to make capital improvements and investments in an arguably neglected infrastructure, the ever-present concern is to make sure the Authority is maintaining the capital

[21] This includes spending from projects/programs outside of the Authority's direct control (e.g. community-managed CSO work and Community Assistance Programs). Adjusting for this capital spending, the Authority was $39.9 million (28.1%) below projected spending for FY14.

[22] Adjusted capital spending removes the projects/programs outside of the Authority's direct control (e.g. community-managed CSO work and Community Assistance Programs). Due to significantly higher I/I distributions than budgeted, unadjusted capital spending through December 2014 was below budget by $3.1 million (5.9%).

investment moving forward. In response to these questions, the Authority asserted that this revised spending was at an appropriate level to continue its core mission.

If the Authority's assertion that the spending levels set in the FY14-18 capital spending cap are the "right" level to avoid running the system to failure, the current trends beg the question of what needs to be done to ensure the capital work gets accomplished.

The Advisory Board understands that "slippage" – when a project's schedule and spending become delayed from original budget projections – often happens, and can have many legitimate causes. Actual conditions are frequently different than originally expected when undergoing construction or a community may have a particular concern or request that may necessitate negotiations that delay consensus on a project's path or scope. However, the concern is that if all of the projects in the CIP are important, and the current year's projects slip out, the result is that the future years' projects also "slip" further out causing increased delays.[23]

The aim of the Advisory Board's initial recommendation to lower the current capital spending cap to $800 million was to "tighten" actual capital spending, bringing it closer to the so-called ceiling of the baseline cap. Regardless of the feasibility of the "pipeline" approach, the fact remains that the Authority's spending under the new, lower capital spending cap has continued to be significantly below budgeted/projected levels.

To clarify, the question the Advisory Board has asked over the years is "What is the correct level of spending for the Authority to be making to make necessary improvements to or maintain its capital infrastructure?" The question was not "What percentage level under the capital spending cap should the Authority be spending?" In short, the Advisory Board's perspective is identifying the correct spending level in absolute dollars that should be spent each year, not in terms of what percentage of the cap is being spent. Either the baseline cap reflects the "correct" level of capital spending needed to fulfill the Authority's core mission of maintaining its capital infrastructure[24] or it remains higher than it should be. If the baseline cap is "correct" and funds are being spent at a level significantly below the optimal level, the reasons for this underspending need to be thoroughly analyzed and methods found to bring capital spending closer to this level. Is it an issue of workflow – being able to move quickly while still thoroughly through the administrative process? Is it a question of not having sufficient staff or resources in certain areas that are slowing down this process? Whatever the reasons, **the Advisory Board recommends that the Authority identify the causes for continued capital underspending and takes the steps necessary to bring capital spending closer to the baseline cap levels.**

With current concerns in the Commonwealth about underinvestment in critical infrastructure and the resulting impacts and potential additional costs associated with "catching up" in future years, the Advisory Board continues to voice its concern that the Authority identifies and then spends at the appropriate level to maintain the water and wastewater capital infrastructure.

[23] Source: *FY 2015 Integrated Comments and Recommendations on the MWRA's Proposed Capital Improvement Program and Current Expense Budget*

[24] Note: the Authority has a sizeable and thorough infrastructure maintenance program funded through the CEB (See Maintenance Expenses, page 70); however, capital projects also reflect an investment in maintaining or expanding necessary infrastructure and is, arguably, critical work that must get completed in a timely fashion.