New York City Water Board

Report on the Cost of Supplying Water to Upstate Customers for the 2015 Rate Year

Draft – May 1, 2014

Amawalk
Consulting Group LLC

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Consulting Group LLC

26 Broadway, Suite 950, New York, NY 10004 • Tel: 212.361.0050 • Fax: 212.361.0055

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To the Members of the New York City Water Board:

The Amawalk Consulting Group LLC is pleased to submit its Report on the cost of supplying water to upstate customers of the City of New York's Water System. The Report presents our findings on the cost of service and identifies the unit rate for Fiscal Year 2015 that is necessary to recover the anticipated cost of water supply service.

The Report presents the actual cost of water supply service for Fiscal Years 2011 through 2013. The methodology used to develop the cost of service for these years is consistent with that used in previous years. In addition, the anticipated cost of service is presented for Fiscal Years 2014 through 2018 (the "Projection Period").

The Report shows that the cost of water supply service will increase in each year of the Projection Period. The increases are primarily attributable to rising operating expenses, including the property taxes levied on watershed properties, together with capital investments in water supply infrastructure. Significant investments have been made in the Water System in recent years to protect the quality of the water supply, to enhance the integrity of the System and to achieve other water supply objectives. Additional capital investments will be made during the Projection Period. In addition to the projected increases in the cost of service, the unit rate for water supply service is impacted by historical declines in both upstate and in-City consumption and the expectation that System-wide water consumption will continue to decline over the long-term.

We appreciate the opportunity to be of assistance to the Water Board and would be pleased to answer any questions you may have regarding the study methodology or findings. We also wish to acknowledge the assistance provided by representatives of the Office of Management and Budget, the Department of Environmental Protection, the New York City Law Department, the Water Board, and the New York City Municipal Water Finance Authority in the preparation of this Report.

Should you have any questions or comments, please do not hesitate to contact the undersigned at (212) 361-0050.

Very truly yours,

Edward J. Markus
Amawalk Consulting Group LLC

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1.0 Introduction

1.1 Purpose

The purpose of this Report is to summarize the results of the study performed by the Amawalk Consulting Group LLC ("Amawalk") of the cost of providing water supply service to communities north of New York City (hereinafter, "the City"). The Report presents the proposed regulated rate for Fiscal Year 2015 to recover the cost of service. The Report also presents the calculated cost of service and rates for Fiscal Years 2011 through 2013; the anticipated cost of service and rate for 2014, the current year; and the projected cost of service and rates for 2016 through 2018. The proposed regulated rate for Fiscal Year 2015 is $1,573.61 per million gallons ("MG"), which represents an increase of $76.85 per MG from the current Fiscal Year 2014 unit rate of $1,496.76, or a 5.13% increase.

1.2 Scope

The Report presents the findings of Amawalk regarding the revenue requirements for water supply service as well as water consumption by customers and a unit rate for calculating charges to upstate customers. The revenue requirements take into consideration the operation and maintenance expenses, principal and interest on bonds, and other financial needs related to facilities north of the City. The Fiscal Year 2015 cost of service and unit rate are based, in part, on the calculated cost of service for the current fiscal year and prior years, which is presented herein. All years referred to in the Report reflect the fiscal year of the City that begins July 1 and ends June 30.

Amawalk has reviewed, to the extent practicable, the books, records, financial reports, and statistical data of the City, the New York City Water Board (the "Board") and the New York City Municipal Water Finance Authority (the "Authority"), and it has conducted such other investigations and analyses as deemed necessary to assemble and analyze the cost of water supply service and rates. We have performed various financial tests and analyses necessary to support our findings and conclusions.

In analyzing the projection of future operations summarized in this Report, Amawalk has reviewed certain assumptions with respect to conditions, events and circumstances, which may occur in the future. We believe that these assumptions are reasonable and attainable, although actual results may differ from those in the forecast as influenced by the conditions, events and circumstances, which actually occur.

1.3 Background

The City, through its Department of Environmental Protection ("DEP"), is responsible for operating and maintaining dependable sources of water supply and providing drinking water to certain communities north of the City and to in-City consumers. DEP operates and maintains the water supply system (the "Water System" or the "System") and is responsible for planning,

designing and constructing capital improvements to the System. The Capital Improvement Program (the "CIP") of DEP identifies planned commitments for design, construction and construction-related work for the System by category of project in each year of the planning period of 2014 through 2023.

The information presented in this report is as of April 1, 2014. Additional information, changes in the System or events occurring after this date are not reflected in the report. Section 1.3 of this report is intended to provide background information for the reader.

1.3.1 The Water System

Water for the System is derived from three upstate reservoir systems (Croton, Catskill and Delaware) and a system of wells in Queens that were acquired as part of the City's acquisition of the Jamaica Water Supply Company. The three upstate water collection systems, which benefit customers north of the City, as well as City consumers, include 19 storage reservoirs and three controlled lakes with a total storage capacity of approximately 580 billion gallons. They were designed and built with various interconnections to increase flexibility by permitting the exchange of water from one system to another. This feature mitigates localized droughts and takes advantage of excess water in any of the three watersheds. DEP is continuing to enhance its infrastructure to increase its operational flexibility.

The Water System is currently furnishing water to users in portions of four of the eight eligible Counties north of the City. The Water System provides approximately 85% of the water used in Westchester County and approximately 7.5% of the water used in Putnam, Orange and Ulster Counties.

Figure 1 provides an overview of the Water System.

Figure 1 Map of the Water System

1.3.1.1 The Croton System

The Croton System consists of 12 reservoirs and 3 controlled lakes that are located on the Croton River, its 3 branches and 3 other tributaries. The water in the Croton System flows from upstream reservoirs through natural streams to downstream reservoirs, terminating at the New Croton Reservoir. The watershed that supplies the Croton System has an area of 375 square miles. It lies almost primarily within the State of New York (the "State"), approximately 45 miles north of lower Manhattan. A small portion of the watershed is located in the State of Connecticut. The Croton System, when operating at full capacity, had provided approximately 10% of the City's daily water supply under normal conditions and up to 30% of the daily water supply during drought conditions. The Croton System has been used only on a very limited basis since 2004.

Absent exigent circumstance, the Croton System will not be used until operation of the Croton Filtration Plant (the "Croton Plant") has commenced, which is expected to begin in Fiscal Year 2015. DEP's decision to filter Croton System water, and to limit the use of the Croton System until the treatment plant is on line, was based on water quality issues, including past exceedances of regulations for disinfection by-products (specifically haloacetic acids), turbidity, and color. Long-term use of the Croton System will be determined by DEP's operational needs. The costs of the Croton Plant that have been incurred since the selection of the site within the City limits are not included in calculating the cost of water supply service.

1.3.1.2 The Catskill System

The Catskill System watersheds occupy sparsely populated areas in the central and eastern portions of the Catskill Mountains. The Catskill and Delaware Systems together currently provide the entire daily water supply for the City and customers north of the City. Water in the Catskill System comes from the Esopus and Schoharie Creek watersheds, located approximately 100 miles north of lower Manhattan and 35 miles west of the Hudson River. The Catskill System is comprised of Schoharie Reservoir (formed by the Gilboa Dam across Schoharie Creek) and Ashokan Reservoir (formed by the Olivebridge Dam across Esopus Creek) and the Catskill Aqueduct. Schoharie Reservoir water is delivered to the Esopus Creek via the Shandaken Tunnel, from which it then travels to Ashokan Reservoir.

1.3.1.3 The Delaware System

The Delaware System is located approximately 125 miles north of lower Manhattan. Three Delaware System reservoirs collect water from a sparsely populated region on the branches of the Delaware River: Cannonsville Reservoir (formed by the Cannonsville dam on the West Branch of the Delaware River); Pepacton Reservoir (formed by the Downsville Dam across the East Branch of the Delaware River); and Neversink Reservoir (formed by the Neversink Dam across the Neversink River, a tributary to the Delaware River). Water from these three reservoirs is diverted to Rondout Reservoir, formed by the Merriman Dam across Rondout Creek, a tributary to the Hudson River.

The conditions under which the System's Pepacton, Neversink and Cannonsville Reservoirs may be operated are set forth under the terms of a 1954 decree of the Supreme Court of the United States (the "1954 Decree"). It allows the System to divert 800 million gallons per day ("MGD") of water from the Delaware River Basin for use by the Water System, subject to specified conditions. At the same time, a June 1, 2013 agreement with the parties to the decree requires the System, under certain circumstances, based on the time of year, reservoir storage, anticipated inflow and water supply demand, to release water from the three reservoirs into the tributaries of the Delaware River, in support of enhanced habitat protection and flood mitigation. Enforcement of the 1954 Decree is under the jurisdiction of a River Master appointed by the Supreme Court of the United States.

1.3.1.4 The Catskill Aqueduct

The Catskill Aqueduct, which conveys water by gravity, is 92 miles long and extends from Ashokan Reservoir to Kensico and Hillview Reservoirs. The delivery capacity of the Catskill Aqueduct from Ashokan Reservoir to Kensico Reservoir is about 600 MGD. From Kensico Reservoir to Hillview Reservoir, the Catskill Aqueduct has a capacity of approximately 800 MGD. The Catskill Aqueduct passes under New Croton Reservoir. At this location, it is possible to transfer water from Ashokan Reservoir to New Croton Reservoir.

1.3.1.5 The Delaware Aqueduct

The Delaware Aqueduct is 85 miles long and similarly carries water by gravity from Rondout Reservoir to West Branch Reservoir, in the Croton System, and from West Branch Reservoir to Kensico Reservoir and then on to Hillview Reservoir. Water enters the Delaware Aqueduct via the Rondout Reservoir, which is fed by the Neversink, Pepacton, and Cannonsville Reservoirs. The capacity of the section that delivers water from Rondout Reservoir to West Branch Reservoir is about 890 MGD. The delivery capacity of the Delaware Aqueduct from West Branch Reservoir to Kensico Reservoir is about 1,050 MGD. The Delaware Aqueduct has a capacity of approximately 2,020 MGD from Kensico Reservoir to Hillview Reservoir.

1.3.1.6 The Queens Groundwater Supply

DEP operates a number of groundwater wells in the Borough of Queens. These wells have been offline since 2007 due to the availability of higher quality water from the Catskill and Delaware Systems. When in use, the wells are capable of providing approximately 1% of the City's daily water supply. The wells could be used to provide more of the daily supply if required to meet water supply needs. Unlike the rest of the City's water supply, which is a surface and gravity-supplied system originating in a network of upstate reservoirs, well water is pumped from extensive underground aquifers. DEP is currently planning improvements to the groundwater system which will augment the supply of water from underground aquifers.

1.3.1.7 Long-Term System Capacity

Current demand and flow projections show that if conservation programs, including metering, toilet replacement, hydrant locking, leak detection, and public information campaigns, remain effective, there will be no immediate need for the City to find additional long-term water supply sources to meet normal demand. However, with the construction of the Rondout-West Branch bypass tunnel, there will be a short-term need to find additional water supply sources.

DEP continues to evaluate additional strategies and projects for improving the dependability of water supplies, which could entail the development of additional or interim supplies to meet demand during periods of extended facility outages due to planned or unplanned inspection, repair or rehabilitation, such as during the Rondout-West Branch Tunnel shutdown. DEP has retained various consultants to assist in developing dependability plans.

DEP is moving forward with its Water for the Future program. Water for the Future is designed to address known and suspected leaks in the Rondout-West Branch section of the Delaware

Aqueduct, which can convey up to 890 MGD, and typically delivers an annual average of 600 MGD, more than 50% of the City's daily water supply. The Water for the Future program consists of multiple projects required to address the leaks in the Delaware Aqueduct. These projects include constructing a bypass tunnel around an area of significant leakage in the Roseton area in the Town of Newburgh, NY and water supply augmentation projects necessary to ensure adequate water supply for the City during construction of the connection between the new bypass tunnel and the Delaware Aqueduct. Additional water supply augmentation includes rehabilitation of the City's groundwater system in southeast Queens, rehabilitation of the Catskill Aqueduct, and demand management measures to encourage in-City water conservation, including retrofits on City owned facilities.

1.3.1.8 System Security

In recent years, DEP has taken a number of steps to enhance and augment its security arrangements to protect the System, including water supply structures and facilities. These steps include, among others, increasing the size of the DEP police force to approximately 200 officers and further securing facilities through additional locks, fences and other physical barriers to prevent access by unauthorized persons. Increased security requirements have resulted in additional labor costs and related expenses in the System.

1.3.2 Condition of the Water System

The System has reliably served the City since 1842. Many additions and improvements have been made over the years to develop the System that exists today. On an overall basis, the condition of the water and wastewater system of the City has been rated "Adequate", the highest rating of three categories, by AECOM USA, Inc., the consulting engineer to the Authority. Nonetheless, given the age of the System, circumstances that are specific to certain components of the System, and modern perspectives on reliability, security, and other matters, DEP is pursuing a number of initiatives in the Water System to enhance the long-term integrity of the System. An overview of several of these initiatives is presented in this part of the Report.

1.3.2.1 Rondout-West Branch Tunnel

The Rondout-West Branch Tunnel is a section of the Delaware Aqueduct that carries water 45 miles from the Delaware System under the Hudson River and into West Branch Reservoir. It has the highest pressures and velocities in the Water System. In addition, a portion of the tunnel crosses a fractured rock formation, which is potentially subject to greater stress than the deep rock tunnels located in the City.

DEP regularly assesses the condition and integrity of the System's tunnels and aqueducts to determine the extent and effect of water loss, and since the early 1990s, DEP has monitored the condition of the Rondout-West Branch Tunnel. As a result of DEP's flow tests, visual observations and other analyses, it has been determined that approximately 15 MGD to 36 MGD of water is being lost from the tunnel and is surfacing in the form of springs or seeps in the area. This amounts to a loss of approximately 4% of the daily volume of water provided by the tunnel

under peak flow conditions. The situation in the tunnel and amount of water loss is stable. In the opinion of the professional engineering firm retained by DEP in conjunction with that investigation, there is very little immediate risk of failure of the tunnel.

To address the leak, DEP is undertaking its Water for the Future program, which includes construction of an approximately three-mile-long bypass tunnel. Connection of the bypass to the existing tunnel is expected to require that the tunnel be shut down for one 6- to 10-month period or two or three shut downs of shorter duration starting in 2021, during which periods supply augmentation is expected to be needed. The estimated cost to complete the design and construction of the shafts and tunnel bypass and to implement updated water supply augmentation projects and water demand management measures is estimated to be $1.06 billion, $1 billion of which is included in the CIP.

1.3.2.2 The Gilboa Dam

Gilboa Dam, part of the Catskill Water System, is comprised of an earthen dam and a concrete gravity dam, with the concrete portion also acting as the spillway. The dam impounds the waters of Schoharie Creek, creating Schoharie Reservoir. In 2005, an engineering analysis of the dam showed that the spillway had lost some mass over time and that the dam did not meet New York State Department of Environmental Conservation ("NYSDEC") safety guidelines applicable to the reconstruction of existing dams. In December 2006, DEP completed a series of interim steps to bring the dam into compliance with NYSDEC safety guidelines for the reconstruction of existing dams.

Although there was no evidence that the dam was facing imminent risk of failure, DEP determined that the rehabilitation of the dam should be advanced. Work on the crest gates, which increased DEP's ability to manage the Schoharie Reservoir and maintain it at proper levels, was completed in July 2011. Site preparation work for the full reconstruction of the dam to bring the dam up to compliance with NYSDEC safety guidelines for new dams began in September 2009 and was completed in Fiscal Year 2011. Damage caused by Hurricane Irene in August 2011 destroyed the site preparation work. The site has been restored and progress continues on the dam reconstruction, which is estimated to be completed in Fiscal Year 2014. The estimated cost to complete the rehabilitation of the dam is $220 million, $135 million of which is funded in the CIP.

1.3.2.3 The Dam Safety Program

Engineering reports sponsored by the U.S. Army Corps of Engineers indicated that the dams and reservoirs in service in the Catskill, Croton, and Delaware Systems are safe but in need of rehabilitation and reconstruction. An ongoing dam reconstruction program has been established for rehabilitation of dams within the Catskill, Croton, and Delaware watersheds and the Kensico Dam.

1.3.3 Water Quality and Treatment

Pursuant to the Safe Drinking Water Act (the "SDWA"), the United States Environmental Protection Agency ("USEPA") has promulgated nationwide drinking water regulations, which specify the maximum level of harmful contaminants allowed in drinking water and govern the construction, operation, and maintenance of the System. USEPA has also promulgated filtration treatment regulations, known as the federal Surface Water Treatment Rule ("SWTR"), that prescribe guidelines concerning protection and treatment of surface water for drinking water supplies. Enforcement of many of the related regulations promulgated under the SDWA has been delegated by USEPA to the New York State Department of Health ("NYSDOH").

1.3.3.1 Filtration in the Croton System

Since 1993, DEP has operated the Catskill and Delaware water supplies under a Filtration Avoidance Determination pursuant to which DEP is not required to filter water from those two Systems. However, pursuant to the terms of a 1998 federal court consent decree and as supplemented in 2002 and 2005, DEP is required to filter water from the Croton System (the "Croton Filter Consent Decree").

After an extensive study, DEP identified the Mosholu Golf Course in the Bronx as its preferred site for the treatment facility and began work at the site in late 2004. The Croton Filtration Plant has been undergoing testing and is expected to be fully operational in Fiscal Year 2015.

1.3.3.2 Watershed Protection/Filtration Avoidance in the Catskill and Delaware Systems

With respect to the Catskill and Delaware Systems, the City believes that it will continue to be able to meet the criteria for non-filtered supplies under the SWTR.

Since 1993, USEPA has been issuing Filtration Avoidance Determinations ("FADs") pursuant to which the City is not required to filter water from the Catskill and Delaware Systems. If the City were to have to filter water from the Catskill and Delaware Systems, construction costs to provide such filtration are estimated to be greater than $6 billion. To further the City's ability to comply with the FAD, on January 21, 1997, the City entered into the Watershed Memorandum of Agreement (the "MOA") with the State, watershed communities, USEPA, and several environmental groups. The MOA supplemented the City's existing watershed protection program with approximately $400 million in additional funding for economic-environmental partnership programs with upstate communities.

In July 2007, USEPA issued a new FAD (the "2007 FAD"), which supersedes previous determinations and has a term of 10 years, divided into two five-year periods. The 2007 FAD requires the City to take certain actions to protect the Catskill and Delaware water supplies. These actions include the continuation of certain environmental and economic partnership programs established under the MOA and the creation of new programs. To assist in making decisions and reaching an agreement with NYSDOH and USEPA about which of these programs should be continued into the second five-year period, whether and how any such programs to be continued should be modified, and/or whether additional programs are needed during the

remainder of the 2007 FAD, DEP prepared a Revised Long Term Watershed Protection Plan, which was submitted to USEPA/NYSDOH on December 15, 2011. On August 23, 2013, NYSDOH released a draft of the midterm FAD revision for public comment. As expected, NYSDOH incorporated many elements of DEP's December 2011 plan in the midterm FAD revision. Comments were due by November 15, 2013. NYSDOH has not yet issued the final midterm FAD revision. Additional funding has been added to the CIP for Fiscal Years 2014 through 2017 to support the FAD program for the second five years; it is possible that additional funding could be required as part of the second five year period.

Since 1997, the FAD has required that the City solicit property from owners of land in the watershed and acquire (with certain limited exceptions) title to or conservation easements on any solicited land if the owner accepts the City's purchase price. The 2007 FAD requires the City to allocate a total of $300 million for land acquisition during its ten-year term, including approximately $59 million of unspent funds remaining from moneys set aside for land acquisition under the MOA and the previous FAD and $241 million of new funding. Under the midterm FAD revision, NYSDOH has proposed to require the City to allocate another $50 million for the core land acquisition program and an additional $15 million to be dedicated to flood buy-outs.

Since 2008, there has been increased interest in natural gas drilling using high volume hydraulic fracturing ("HVHF") in southeastern New York State, including the Catskill/Delaware watershed. In connection with this increased interest, NYSDEC initiated an environmental review relating to natural gas drilling, which has provided several opportunities for public comment and which is not yet complete. DEP has been studying the potential impacts that HVHF may have on the System, including any potential impacts on water quality. Since 2009, the City has called for a prohibition on all natural gas drilling in the watershed due to the potential for natural gas drilling as currently practiced to harm water quality and jeopardize the City's FAD and damage the City's water supply infrastructure. In 2011, NYSDEC agreed in the context of its ongoing environmental review to support a ban against high volume hydraulic fracturing in the watershed. Low volume hydraulic fracturing is currently allowed in the watershed, although NYSDEC believes that it is not economically viable and that it will not take place in the watershed in the foreseeable future. DEP has asked NYSDEC to consider whether further environmental review of low volume hydraulic fracturing is required in the event low volume drilling is proposed in the watershed. DEP has also proposed an exclusionary zone for HVHF around certain DEP infrastructure which would extend outside the watershed. In September 2012, NYSDEC requested that NYSDOH review the public health risks of HVHF utilizing a panel of outside experts; there is no timeline for completion of the health review. NYSDEC also began the process to promulgate regulations governing HVHF. Because the environmental review process was not complete in time to meet the deadlines for the rulemaking process, NYSDEC will need to re-release natural gas regulations for another public review period once the environmental review is complete. To date, no permits have been filed to drill for natural gas in the watershed.

1.3.3.3 Disinfection Requirements

In January, 2006, USEPA issued the Long Term 2 Surface Water Treatment Rule ("LT2"). The purpose of LT2 is to reduce the potential for waterborne disease by mandating certain levels of inactivation and/or the removal of certain microorganisms from the Water System, including the Catskill and Delaware Systems. DEP is complying with such levels through the operation of its ultraviolet treatment facility (the "UV Facility") which provides treatment for Catskill and Delaware water.

LT2 also mandates that uncovered finished water storage facilities, which include Hillview Reservoir, be covered or that water from such facilities be treated. DEP has entered into an Administrative Order with NYSDOH (the "State Hillview Administrative Order") and an Administrative Consent Order with USEPA (the "Federal Hillview Administrative Order") which mandate that the City begin work on a cover by December 31, 2018. In late August 2011, USEPA announced that as part of a periodic review of existing regulations, it would review LT2. This review could include the requirement to cover uncovered finished storage reservoirs such as Hillview Reservoir.

As with the UV Facility, DEP's commitments to cover Hillview Reservoir pre-date LT2. In March 1996, DEP entered into the State Hillview Administrative Order which, as modified in 1997 and 1999, required, among other things, the City to cover Hillview Reservoir by December 31, 2005 to reduce the possibility of E. coli bacteria entering the Water System. Pursuant to the Federal Hillview Administrative Order, the City's deadline to begin constructing the cover has been extended to December 31, 2018, with a construction completion date of May 31, 2028. The State Hillview Administrative Order has been modified to mirror the Federal Hillview Administrative Order schedule. The State and Federal Hillview Administrative Orders allow the City to seek a schedule modification based on DEP's on-going assessment of water supply facility construction priorities, although there is no assurance that any such modification would be granted.

DEP has requested that NYSDOH and USEPA extend the deadline to begin construction of the cover for an additional six years beyond the existing deadline. On February 9, 2011, the City was informed that USEPA referred the Federal Hillview Administrative Order and the City's extension request to the U.S. Department of Justice ("USDOJ"). In light of USEPA's announcement that it is reviewing LT2 and its requirement to cover uncovered finished water storage reservoirs such as Hillview Reservoir, USDOJ and the City have agreed to defer negotiations over revised dates until USEPA completes its review. DEP has notified USEPA and NYSDOH that it has suspended work related to the design and construction of the cover, which will impact DEP's ability to meet future milestones.

Currently, the cost of constructing a concrete cover over Hillview Reservoir, as DEP originally proposed, is expected to be approximately $1.6 billion. Under the schedule set forth in the Federal Hillview Administrative Order, most of the costs related to the cover would be incurred

in the years beyond the current CIP. The CIP does not include funding to construct a cover, but it does include $21 million for design.

1.3.4 Water Quality Monitoring

The System has multiple laboratories employing microbiologists, chemists, hydrologists, limnologists, and other scientists to monitor water quality. In addition to the monitoring program, DEP inspectors maintain surveillance of the watersheds.

To reduce the leaching of metals from internal household plumbing, DEP adds orthophosphate to the water before it enters the distribution system, which promotes the formation of a protective coating inside pipes and plumbing.

The SDWA requires that utilities prepare and distribute to their consumers a brief annual water quality report, referred to as the Consumer Confidence Report (the "CCR"). The CCR covering calendar year 2012, the most recent such report, demonstrates that the quality of the City's drinking water remains high.

1.3.5 Governmental Regulation

The System is subject to federal, State, interstate, and municipal regulation. At the federal level regulatory jurisdiction is vested in USEPA; at the State level in NYSDEC and NYSDOH; at the interstate level in the Delaware River Basin Commission ("DRBC") and the Interstate Environmental Commission and at the municipal level in DEP, the New York City Department of Health and Mental Hygiene ("NYCDOH"), the New York City Department of Buildings ("DOB"), the New York City Department of Small Business Services and, to a limited degree, in municipalities and districts located in eight counties directly north of the City. Water quality protection regulations are enforced within the watershed areas north of the City through a network of overlapping governmental jurisdictions. Participating in that network, among others, are NYSDEC, NYSDOH, DEP, and county, municipal, and district police, engineers, and inspectors. The various jurisdictions maintain physical security, take water samples, monitor construction activities, and wastewater treatment in the watershed, and generally oversee the physical condition of, activity on, and operation of water supply lands and facilities. Portions of the overall legislative and regulatory framework governing the watersheds may be found in the City's Administrative Code, Health Code and Water Supply Regulations. Regulatory enforcement within City limits is almost exclusively accomplished through City personnel. Provisions incorporating and augmenting the substance of the SDWA, related regulations, and the State Sanitary Code, are contained in the Health Code, Water Supply Regulations, and the City's Building and Building Construction Codes. These provisions are enforced by personnel from DEP, NYCDOH, and DOB.

Water Pollution Control Plants

The System includes six City-owned surface discharging water pollution control plants in the watershed, one City-owned subsurface discharging water pollution control plant in the

watershed, and one additional City-owned surface discharging water pollution control plant in the City of Port Jervis.

Shandaken Tunnel SPDES Permit

As a result of federal litigation resulting in a determination that a State Pollution Discharge Elimination System ("SPDES") permit is required for water transfers such as the City's transfer of water through the Shandaken Tunnel, DEP applied for and obtained a SPDES permit for the Shandaken Tunnel. As a result of State court litigation challenging the terms of the SPDES permit, DEP has applied for variances with respect to the permit's temperature and turbidity limits. Depending upon the State's action with respect to the variance application, DEP could be required to undertake costly capital projects. The City continues to believe that, consistent with USEPA's Water Transfers Rule that was adopted after the federal litigation concerning the Shandaken Tunnel was concluded, the Clean Water Act permit program does not apply to transfers of untreated water (such as the Shandaken Tunnel). Accordingly, the City will continue its efforts to defend the Water Transfers Rule and oppose the requirement for obtaining a SPDES permit for this water transfer.

1.3.6 Drought Management

From time to time the Water System experiences drought conditions caused by significantly below-normal precipitation in the watershed areas. The most recent drought was in 2002. As of April 18, 2014, the System's reservoirs were filled to 99.3% of capacity. Normal levels at this time of year are approximately 98.4% of capacity.

Throughout even the most extreme droughts, the Water System has continued to supply sufficient quantities of water to the City and its water supply customers north of the City. To ensure adequate water supply during drought conditions, DEP, in conjunction with other City, State, and interstate agencies, maintains a Drought Management Plan. The Drought Management Plan defines various drought phases that trigger specific management and operational action. Three defined phases are: "Drought Watch", "Drought Warning", and "Drought Emergency". A Drought Emergency is further subdivided in four stages based on the projected severity of the drought and provides increasingly stringent and restrictive measures.

A Drought Watch is declared when there is less than a 50% probability, based on the existing record since 1927, that either the Catskill or Delaware Reservoir System will be filled by the following June 1. This phase initiates the pumping of water from the Croton System. In addition, during this phase, a public awareness program begins, and users, including upstate communities taking water from the System, are requested to initiate conservation measures. NYSDOH, NYSDEC, and the DRBC are advised of the Water System's status, and discussions are held with City agencies concerning their prospective participation in the event of a declaration of a Drought Warning.

A Drought Warning is declared when there is less than a 33% probability that either the Catskill or the Delaware Reservoir System will fill by June 1. All previous efforts are continued or expanded and additional programs are initiated, including the coordination of specific water saving measures by other City agencies.

A Drought Emergency is declared when it becomes necessary to reduce consumption by imposing even more stringent measures. In addition to the imposition of restrictions, DEP may enhance existing System management and public awareness programs, expand its inspection force, and perform additional leak and waste surveys in public and private buildings. DEP may also require communities outside of the City that are served by the System to adopt similar conservation measures.

1.3.7 Pending Litigation

The following paragraphs describe certain legal proceedings and claims against the Water System. No assurances are provided that the following information is complete or identifies all of the potential litigation against the System. The ultimate outcome of these proceedings and other claims is unpredictable and could result in substantial judgments that would have to be borne by all customers of the System.

DEP adds alum to the Catskill aqueduct upstream of Kensico Reservoir when necessary to control turbidity levels. The diversions of water containing alum into Kensico Reservoir are authorized under a SPDES permit for the Catskill Influent Chamber ("Catskill Alum SPDES Permit"). Among other things, the Catskill Alum SPDES permit requires DEP to take measures to reduce the use of alum. One such measure is the use of the Ashokan Release Channel to release water from Ashokan Reservoir through a release channel into the lower Esopus Creek. This release of water from the west basin of Ashokan Reservoir helps prevent the transfer of turbid water to the east basin but can result in an increase in both flow and turbidity in the lower Esopus Creek, which some stakeholders have opposed. NYSDEC served the City with an administrative complaint in February 2011, alleging a number of violations of the Catskill Alum SPDES Permit. DEP and NYSDEC executed an administrative consent order in October 2013, which provides, among other things, that DEP will seek a modification of the Catskill Alum SPDES Permit to incorporate a protocol for operating the Ashokan Release Channel.

In January 2011, Ulster County sent DEP a 60-day notice letter pursuant to the Clean Water Act, notifying DEP, as well as NYSDEC and USEPA, that it intends to sue the City, challenging certain transfers of water out of Ashokan Reservoir without a SPDES permit. The City does not believe a SPDES permit is required for the releases through the release channel because the lower Esopus Creek would receive flows from the upper Esopus Creek had Ashokan Reservoir not been built. To date, no lawsuit has been filed. If the City were required to stop using the release channel, or to reduce the turbidity in the releases, the City could incur substantial costs.

1.3.8 Hurricane Sandy

On Monday, October 29, 2012 Hurricane Sandy hit the Mid-Atlantic East Coast as a tropical storm. The storm caused widespread damage to the coastal and other low lying areas of the City and power failures throughout the City, including most of downtown Manhattan, and at many System facilities, including some of the water supply facilities outside of the City. Extensive flooding also occurred at many System facilities in the City. The City, along with the State and federal governments, is engaged in a major effort to address the health and safety of its residents affected by the storm and the repair and long-term stabilization of its infrastructure and other storm-damaged property. While DEP is still assessing damage and planning for capital repairs to certain elements of its infrastructure, to date, the estimated damage from Sandy is approximately $95 million, which includes approximately $51 million of operating and maintenance expenses and approximately $44 million of capital expenses. The City anticipates that all of its costs relating to the storm will ultimately be paid from non-City sources, primarily the federal government.

1.3.9 Operational Excellence

Since 2011, DEP has undertaken an extensive review of its operations and maintenance ("O&M") through the Operational Excellence or *OpX* program. The dual goal of *OpX* is to maintain and improve DEP's O&M performance and service to its customers, while enhancing operational efficiencies and controlling costs for the System's ratepayers. As background, through a Request for Proposal ("RFP") process, in November 2011, the Water Board retained Veolia Water N.A. to partner with DEP on the *OpX* program. *OpX* has been divided into two phases: a six-month evaluation phase (Phase I) and a four-year implementation phase (Phase II). Veolia issued its report on Phase I findings to the Water Board in June 2012. This report can be found on DEP's website: http://www.nyc.gov/dep/pdf/reports/opx-phase-i-report.pdf.

The Board and DEP committed to proceed to Phase II, which began in July 2012. The *OpX* initiatives implemented in the Bureau of Water Supply ("BWS") include the consolidation of approximately seven East of Hudson reporting locations into two locations, optimization of wastewater treatment plants in the watershed, and a reallocation of labor in BWS's HAZMAT and SCADA functions. Veolia continues to partner with DEP in the implementation of initiatives.

1.4 Water Demand Management

Drought situations have necessitated measures to reduce water use by all customers and, at times, have required the use of the Hudson River as an alternative source of supply. DEP has initiated programs to reduce water use to achieve several goals, including the avoidance of the cost and implementation considerations associated with developing new sources of water supply.

DEP initiated a universal metering program in 1988; presently approximately 95% of customer accounts in the City are billed on a metered basis. Certain other accounts are billed on the basis

of a series of flat rate charges, but water consumption is metered and monitored in most of these accounts. DEP also promotes water audits with the objective of identifying opportunities to reduce water consumption. DEP completed a program in the 1990s to replace older toilets in the City, as part of which over 1.3 million toilets were replaced, and DEP expects to initiate a second program in 2014. Significant long-term reductions in water use have been achieved due to both the metering and toilet retrofit programs.

The Board has retained a demand management consultant to work with the ten largest upstate customers in the development of demand management plans. Upstate customers may be eligible to receive DEP funding for initiatives developed in their plans.

Additional information concerning water demand management initiatives is provided in Section 4.8.2 of this Report.

1.5 The Roles of the Authority, the Board, and the City in the Water System

Through mid-1985, capital improvements to the water and sewer system of the City were financed through general obligation bonds of the City. In 1984, State law authorized the creation of the Authority and the Board. The Authority's function is to issue revenue bonds, the proceeds of which are used to finance capital improvements to the water and sewer system, including the Water System. The Board sets rates and charges to meet the annual revenue requirements of the water and sewer system. The revenue requirements include debt service (principal and interest) on outstanding bonds of the City and the Authority as well as the operation and maintenance expenses of the City. Under an agreement between the Authority, the Board, and the City, the City continues to operate and maintain the water and sewer system and is responsible for implementing capital improvements to the System.

The Authority issued its first revenue bonds in December 1985. As of March 26, 2014, the Authority has approximately $7.3 billion in principal outstanding for its First Resolution revenue bonds and $23.1 billion in principal outstanding for its Second Resolution revenue bonds for the water and sewer system of the City, including $311.7 million in Bond Anticipation Notes issued to the New York State Environmental Facilities Corporation (“NYSEFC”). In addition, the Authority currently has a $600 million commercial paper program. Included within the Second Resolution debt are loans obtained by the Authority at below market interest rates from the state revolving fund (“SRF”). The SRF program is administered by NYSEFC. Tables 5B and 5C in the Appendix to this report show the original amounts of debt issued by the Authority and NYSEFC, which differ from the amounts noted above as being outstanding.

A portion of the proceeds of the Authority's bonds and the SRF loans has been used to finance capital improvements for water supply projects in upstate regions. Section 4.2.2 of the Report provides information concerning previous capital investments in the Water System. Under the CIP, additional capital improvements are ongoing and planned for the future to preserve the Water System for all customers.

1.6 Additional Information on the Water System, the Board, and the Authority

Information on the System and its operations and maintenance is available on DEP's website:

http://www.nyc.gov/dep

Information on the Board and past reports on the cost of service are available on the Board's website:

http://www.nyc.gov/nycwaterboard

Information on the Authority and the outstanding debt of the System can be found in the Authority's Bond Official Statements, which are available on the Authority's website:

http://www.nyc.gov/nyw

2.0 The Sale of Water to Customers North of the City

2.1 Background

The New York State Water Supply Act of 1905 ("The Act") and subsequent amendments granted the City permission to develop the Catskill and Delaware watershed systems. In return for these development rights, the City was required, upon request, to furnish supplies of fresh water to municipalities and water districts in eight counties directly north of the City in which City water supply facilities and watersheds are located. The Act limits the quantity of water that may be taken or received to the quantity calculated by multiplying the number of inhabitants in the municipality or water district as shown by the last United States, State or official municipal census by the daily per capita consumption in the City.

Water is supplied to customers north of the City (hereinafter, "upstate customers") on a wholesale basis, i.e., the City delivers water to one or more central locations, and the customers (typically municipalities or water districts) are responsible for distributing the water to individual users such as residential buildings and commercial properties. For the period of 1985 through 2013 inclusive, the City provided an average of 43,393 MG per year of water to upstate customers, or 118.8 MGD. This represented approximately 8.87% of all water supplied to both in-City and upstate customers. The percentage of the water supply being used by upstate customers increased over the long-term as well as in recent years, increasing from 9.87% in 2009 to 9.91% in 2010 and 10.15% in 2011. In 2012 the decline in consumption of upstate customers was greater than the decline in consumption of in-City users, leading to a decrease in the percentage of the water supply being used by upstate customers to 9.71%. In 2013 the percentage of the water supply being used by upstate customers increased slightly to 9.79%.

Upstate consumption is affected by the continuing expansion of the areas served by City water as well as other changes occurring within the service area.

2.2 Rates and Charges for Upstate Customers

The regulated rate for water service to upstate municipalities and water districts is determined on the basis of the actual total cost of water to the City less the capital and operating costs incurred within the City limits in connection with the distribution and delivery of water within the City. In no event may the regulated rate exceed the rate charged to customers within the City. The historical water rates charged to upstate customers for the period 2004 through 2014 are provided in the table on the following page. The reconciliation of revenues and costs from prior years was used by the Board for the first time in setting the 2010 rate based on the actual revenues and costs for 2008. Section 4.7 of this report provides information concerning the calculation of the reconciliation.

Historical Billing Rates and Computed Actual Costs Per Million Gallons

Fiscal Year	Adopted Rate Billed to Upstate Customers (Includes the effects of reconciliation & the stipulation in 2012)	Computed Actual Cost to the Board (Excludes the effects of reconciliation & the stipulation in 2012)
2004	542.36	529.85
2005	591.21	591.91
2006	617.79	623.47
2007	691.91	691.83
2008	798.62	703.73
2009	900.31	882.91
2010	922.23	973.86
2011	1,149.72	1,121.04
2012	1,213.84	1,283.43
2013	1,332.30	1,389.45
2014 (Current)	1,496.76	N/A

(a) The computed actual cost to the Board as shown above for 2004 does not take into consideration the upstate share of the costs of defeasance of certain Authority bonds. The costs of defeasance were not included in the projected cost of service and regulated rate at the time of rate-setting. Including the effects of the costs of defeasance, the computed actual cost to the Board per MG is $560.58 in 2004. The basis for this cost is explained in Section 4 of the Report.

(b) The computed actual cost to the Board shown above for 2005, 2006, and 2011 through 2013 includes the costs of defeasance in those years. There were no costs for defeasance in 2007 through 2010.

(c) The rate adopted by the Board for 2010 was based on the projected cost and consumption for 2010 and the effects of the reconciliation for 2008. The computed actual cost to the Board in 2010 shown above does not include the effects of the cost reconciliation from 2008. After taking into account the effects of the reconciliation, the computed actual cost to the Board is $869.62 per MG.

(d) The rate adopted by the Board for 2011 was based on the projected cost and consumption for 2011 and the effects of the reconciliation for 2009. The computed actual cost to the Board in 2011 does not include the effects of the cost reconciliation from 2009. After taking into account the effects of the reconciliation, the computed actual cost to the Board is $1,103.65 per MG.

(e) The rate adopted by the Board for 2012 was based on the projected cost and consumption for 2012 and the effects of the reconciliation for 2010. The computed actual cost to the Board in 2012 does not include the effects of the cost reconciliation from 2010 and the stipulation credit of $10 million that is applied only to 2012. After taking into account the effects of the reconciliation and stipulation credit, the computed actual cost to the Board is $1,206.05 per MG. The computed actual cost to the Board both with and without the effects of reconciliation differs slightly from the amounts shown in the prior report.

(f) The rate adopted by the Board for 2013 was based on the projected cost and consumption for 2013 and the effects of the reconciliation for 2011. The computed actual cost to the Board in 2013 does not include the effects of the cost reconciliation from 2011. After taking into account the effects of the reconciliation, the computed actual cost to the Board is $1,342.18 per MG.

Prior to 2000, the rates adopted by the Board were based on historical costs and did not reflect the increasing actual cost of service. However, in order to develop rates that more appropriately reflected the cost of water supply, the rates adopted by the Board since 2000 have been developed based on the anticipated cost of service in the upcoming fiscal years.

The cost to the Board per MG for 2013, using actual cost of service and excluding the reconciliation, is $1,389.45, which is higher than the unit rate that was adopted by the Board effective July 1, 2012 of $1,332.30. After application of the reconciliation credit, the net computed cost to the Board is $1,342.18 per MG. A combination of factors impacted the actual cost per MG:

- Higher than anticipated expenses for other than personnel costs - primarily due to higher expenses for filtration avoidance;
- Cash used for the defeasance of debt, which serves to lower future debt service costs;
- Lower than anticipated personnel expenses; and
- Somewhat higher than projected water consumption, which serves to lower the unit cost per MG.

The reconciliation amount for 2011 of about $19.4 million was applied as a credit to the cost of service for 2013. The effects of the credit lowered the actual unit cost to the Board for 2013. The unit cost net of the reconciliation is still slightly higher than the unit rate that was adopted by the Board.

As of the date of this Report, it is estimated that the 2014 computed cost to the Board may be higher than the unit rate that was adopted by the Board and is currently in effect (again, prior to the effects of reconciliation). The principal factor affecting the estimated costs for 2014 is the cash that is expected to be used in 2014 to defease debt. Debt defeasance is anticipated to result in lower projected debt service payments in 2015 through 2019. The projected lower payments are incorporated in the estimated costs of water supply service in 2015 through 2018 as presented in this Report.

The Authority has successfully sold bonds and commercial paper in recent years and again in 2014 at average interest rates that are lower than those previously assumed, which serves to reduce the projected debt service.

The estimated unit rate is also affected by projections of total water use. The current estimate of the cost per MG for 2014 is based the estimated annual costs divided by the full-year water consumption estimate that is derived from a 10-year regression analysis. Based on year-to-date water consumption in the City through March 31, 2014, it is anticipated that the actual full-year water demand will be similar to or slightly higher than the projected usage based on the 10-year regression. If the water demand for the full year is higher than projected, the unit cost per MG

will be reduced. The actual cost of service and the actual unit rate for the supply of water for 2014 will not be known until after the fall of 2014.

This report proposes that a cost or "true-up" be applied towards the cost of service in 2015 to reflect the calculated difference between the 2013 computed actual cost of service to the Board and the actual costs recovered through the adopted rates of the Board, which are computed by multiplying the unit rate charged by the Board in 2013 times System-wide water consumption. The calculation of this proposed cost is presented in Section 4.7 of the report.

3.0 Cost of Service Methodology

3.1 Overview

This Section of the Report provides a summary of the steps that were followed to calculate the cost of service for water supply. The cost of service is calculated in accordance with the cash basis methodology used and approved by NYSDEC in 1972 and 1995. The methodology is also consistent with that used to calculate the regulated rates, which were adopted for 1993 through 2014. Pursuant to the Act, the cost of service methodology excludes all capital and operating costs incurred for transmission and distribution mains, repair yards, tunnels, shafts, and related facilities within the City in connection with the distribution and delivery of water within the City. The cost of service takes into account offsetting revenues from hydropower and permit fees.

3.2 Procedures for Calculating the Cost of Service

Several steps are required to calculate the total cost of providing water to upstate customers and the regulated rate. These steps account for the many types of costs incurred by the City in establishing and maintaining reliable sources of drinking water. The approach that is used in this Report, as required by the 1905 Act, specifically excludes costs incurred within the City that are associated with the transmission and distribution of water in the City.

The six steps that were followed in developing the cost of service and the proposed regulated rate for upstate water supply are outlined herein. The first five steps relate to the computation of the cost of service and regulated rate for 2011 through 2013. The sixth step includes the development of the projected cost of service and regulated rates for 2014 (the current year) and 2015. In addition, this Report includes a preliminary projection of the regulated rate for water supply service for the years 2016 through 2018. The projections are preliminary and subject to change. Reductions in System-wide water consumption as well as assumptions concerning increased costs for property taxes, watershed protection, required capital improvements and other factors have been taken into consideration in developing the projected cost of service and rates. Nonetheless, rising commodity prices and other factors affecting operating expenses and capital costs as well as changes in consumption may result in a larger increase in the cost of water supply in future years than is currently reflected in the 2014 through 2018 projections. The Water System costs, offsetting revenues and related information corresponding to each of the steps can be found in Section 4.0 and the Appendix of this Report.

3.2.1 Step A

The initial step includes the determination of all direct costs and offsetting revenues that relate solely to facilities located north of the City.

The components of this analysis include the following:

1. Other Than Personal Services ("OTPS")
2. Debt Service
3. Judgments and Claims
4. Miscellaneous Revenue
5. Personal Services ("PS"), which include:
    a. Field Worker Personnel
    b. Executive and Administrative Personnel

3.2.2 Step B

The second step includes the calculation of the allocation percentages to be used in Steps C and D. The allocation percentages are based upon personnel headcount, total salaries, or expenses, depending upon which allocation methodology is most appropriate to the costs being allocated. The methodologies used in the allocation process have previously been accepted by the USEPA and NYSDEC in connection with the federal and State grant program for wastewater treatment facilities. The methodology was also accepted by NYSDEC in its 1995 decision and upheld by the Appellate Division of the Third Department concerning the regulated rates for 1993 and 1994.

3.2.3 Step C

The next step in the cost of service process is to determine the costs of DEP support services and other essential functions that must be allocated to the cost of supplying water. These costs fall into two categories:

1. Personal Services
2. Other Than Personal Services

The cost of support services and related functions of DEP must be shared by all customers who benefit from its services. Therefore, the costs must be allocated to facilities located north of the City using the appropriate allocation percentage calculated in Step B.

3.2.4 Step D

The fourth step involves the identification of the City's Central Service costs that must be allocated to the cost of water supply. The City's Central Service costs are those related to general City services (e.g., accounting, budgeting, personnel, legal) that are provided to the Water System as well as to DEP as a whole and to other City agencies. Therefore, these costs are allocated first among all City departments. The DEP share (calculated using an allocation percentage developed in Step B) is then allocated to facilities located north of the City.

3.2.5 Step E

The total cost of supplying water to both in-City and upstate customers, exclusive of in-City distribution costs, is determined by adding the cost of service elements, which are calculated in Steps A, C, and D. Dividing the total cost of service by total water consumption determines the unit cost per MG related to the supply of water. The upstate water consumption times the unit cost or regulated rate per MG results in the total costs attributable to upstate customers.

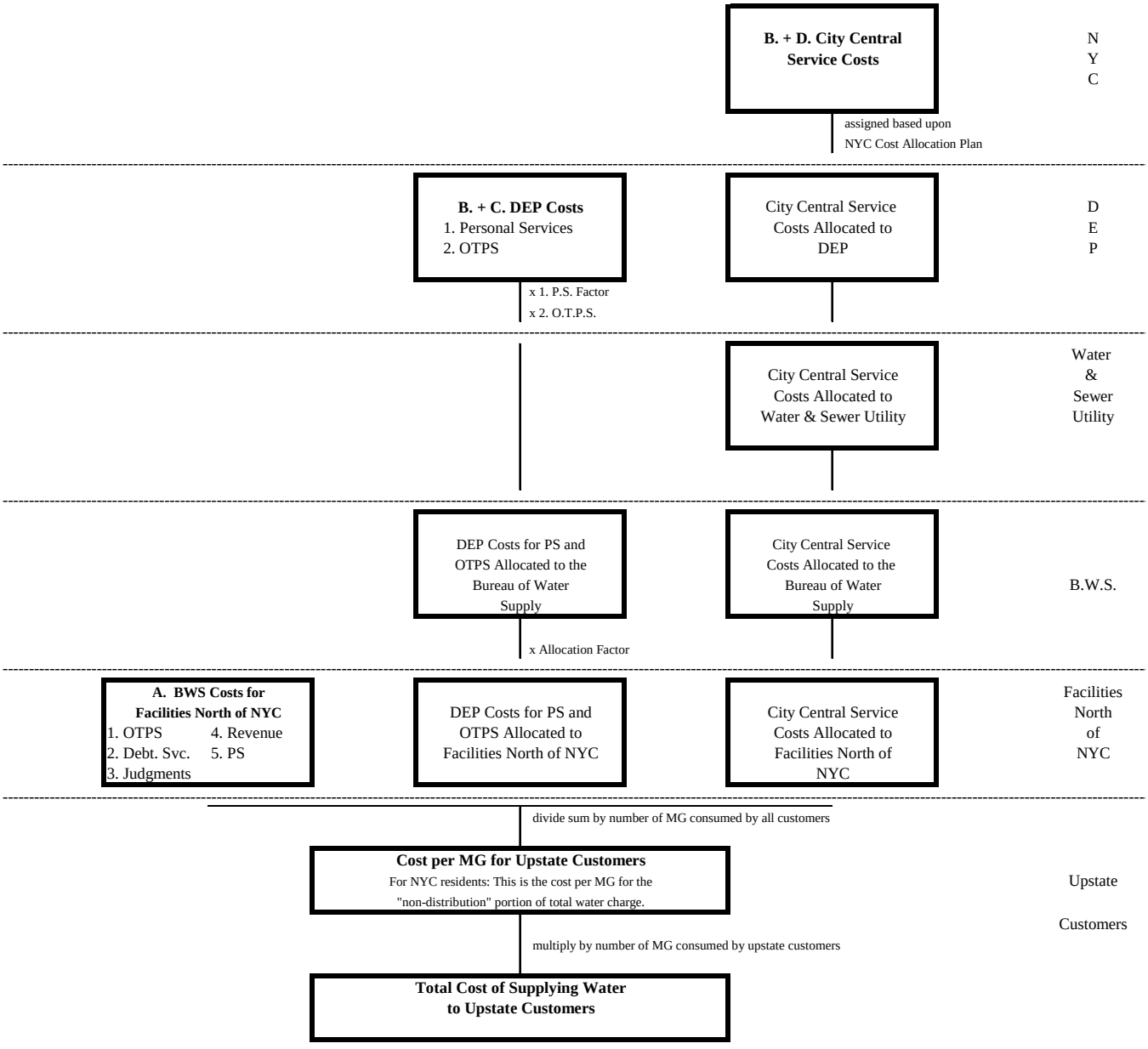
3.2.6 Step F

Steps A through E are primarily used to develop the actual cash basis cost of service for 2011 through 2013. To develop the projected cost of service for 2014 (the current year) and 2015, known debt service costs are added to anticipated future debt service plus anticipated operation and maintenance expenses, less expected offsetting revenues. Projections of future expenses and revenues are based on historical experience as well as known changes in programs and costs that are expected in 2014 and 2015. This is a standard and accepted practice in the industry and is consistent with the methodology used to develop water and sewer rates for in-City customers. The projected cost of service is divided by the estimated water consumption to determine the regulated rate. Step F is carried out simultaneously with the work performed in Steps A through E.

3.2.7 Graphical Overview

Figure 2 on the following page provides a graphical presentation of how various components of the cost of service are allocated in the development of the cost of providing water to upstate customers.

Figure 2 Diagram of Calculation



3.3 Computation of the Regulated Rate

The regulated rate per MG of water use is computed on the basis of the total cost of service divided by the total water consumption:

Total Cost of Service *divided by* Total Water Consumption = Unit Cost of Service or Regulated Rate

The costs, and thus the revenue requirements, attributable to upstate customers are computed on the basis of the total annual quantity of water used by upstate customers multiplied by the unit rate per MG:

Upstate Consumption *multiplied by* Unit Cost of Service or Regulated Rate = Upstate Cost of Service

The total cost of service for water supply, or revenue requirements, is allocated between upstate and in-City customers as follows:

Upstate: **Total Cost of Water Supply Service *multiplied by*:** $\frac{\text{Upstate Consumption}}{\text{Total System Consumption}}$

In-City: **Total Cost of Water Supply Service *multiplied by:*** $\frac{\text{In-City Consumption}}{\text{Total System Consumption}}$

3.4 Sources of Data and Basis of Presentation

Information presented in this report was obtained from records of the City. The City utilizes a modified accrual basis of accounting for its costs. Operation and maintenance expense information, including cost allocation factors, was provided by DEP. Debt service information was obtained from the Authority. Pension and fringe benefit cost factors were provided by the New York City Office of Management and Budget. Water consumption information was provided by DEP.

4.0 Computation of the Cost of Service and the Regulated Rate

4.1 Introduction

This Section of the Report describes the individual elements of the cost of service and presents the computed cost of service and regulated rate for 2011 through 2013. The most recent fiscal year for which complete information is available is 2013. The anticipated cost of service for 2014 and 2015 is presented using the following components of cost: scheduled debt service payments on outstanding bonds for these years, the anticipated debt service from additional bonds of the Authority that are expected to be issued, the expected payments for cash-financed construction or defeasance and projections of operating expenses and all other components of the cost of service. Additional bonds reflect the expected issuance of debt in 2014 and 2015, the proceeds of which will be used, in part, to fund capital improvements in the Water System. The projected debt service reflects the expected portion of the bond proceeds that will be used for the Water System. The findings of each significant step of the analysis are presented in this Section, and the basis for projecting the cost of service for 2014 and 2015 is also provided. Where appropriate, we have normalized the cost of service to take into consideration one-time or recurring increases or decreases in costs.

Supporting tables for each step of the analysis are referenced in this Section and presented in detail in the Appendix to the Report.

4.2 Bureau of Water Supply Costs Related to Facilities Located North of the City - Step A

BWS has the responsibility to operate and maintain the Water System of the City. This responsibility also includes the development and implementation of capital improvements to the System so that a reliable supply of quality water can be maintained for customers both within the City and in upstate communities.

BWS carries out its water supply responsibilities through personnel and equipment located at facilities throughout the watershed. BWS personnel include engineers, laboratory technicians, security personnel, water quality experts, and management and support personnel. The vast majority of BWS's costs relate solely to facilities located north of the City.

4.2.1 Other Than Personal Services Costs

By definition, OTPS costs include all operating expenses other than labor including, but not limited to: supplies, equipment, contracted maintenance and repairs, power, chemicals, real estate taxes paid to upstate communities, and other purchased goods and services. Direct OTPS costs have steadily increased over the years, as illustrated in the table shown below.

OTPS expenses in 2013 include certain costs associated with filtration avoidance and environmental health and safety in the watershed. Additional information concerning these expenses is presented in 4.2.1.6 of this report.

Historical OTPS Expenses

Fiscal Year	OTPS Expense ($)	Annual Increase (%)
2004	104,373,092	-7.1
2005	118,531,353	13.6
2006	133,134,219	12.3
2007	138,068,007	3.7
2008	150,982,178	9.4
2009	171,280,256	13.4
2010	169,955,116	-0.8
2011	191,435,944	12.6
2012	202,687,321	5.9
2013	221,323,950	9.2

The average annual increase from 2004 to 2013 is 8.7%. The expenses include the estimated costs associated with Hillview Reservoir, which were approved by NYSDEC for inclusion in the cost of service in April 1997. The fluctuations in expenses from year to year are primarily driven by increases in property taxes, changes in FAD-related costs, and the volatility of chemical prices.

Property taxes constituted about 67% of total OTPS costs allocable to the cost of water supply and the unit rate in 2013. Annual increases in property tax rates together with property taxes on the UV Facility are the principal cause of increasing property taxes. However, to protect water quality in the watershed, the City is also required to increase significantly the number of acres of land that are either owned by the City or otherwise restricted in terms of land use. Also, it is important to note that property taxes associated with the UV Facility are currently included in a separate line item for UV real estate taxes. Section 4.2.1.7 provides additional information concerning the UV Facility.

Recent expenses and current and ongoing programs were considered in estimating the anticipated 2014 and 2015 OTPS expenses. The findings of the analysis are presented in the following categories:

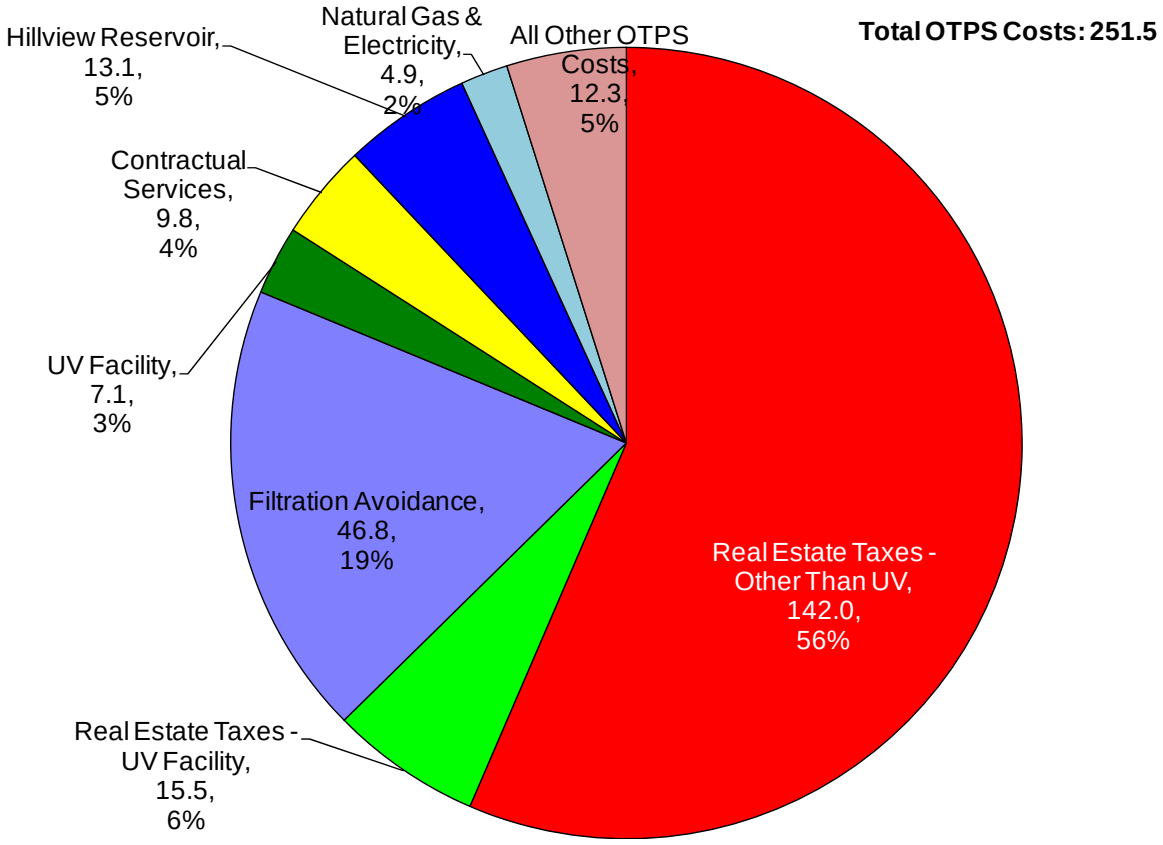
1. Real Estate Taxes
2. Chemicals
3. Hillview Reservoir
4. Contractual Services
5. Rate Studies

6. Other OTPS Expenses
7. UV Facility

The analysis considered the historical experience in each of these categories together with current and expected future changes so that such costs are normalized, where appropriate, to exclude unusual increases or decreases that may have affected recent experience. Overall, OTPS expenses are expected to increase in future years due to rising property taxes and other cost increases. In 2015 and subsequent years, the classification of certain filtration avoidance costs as operating expenses instead of capital costs contributes significantly to the anticipated increases in the cost of service. The expected 2015 components of OTPS costs are summarized in Figure 3. Table 4B provides a detailed listing of OTPS expenses.

The cost of chemicals used at Hillview Reservoir is included in the total costs for Hillview and is not included in the cost category for chemicals used at all other water supply facilities. The category of Other OTPS Expenses covers non-personnel expenses that are not included in categories 1 through 5 above; e.g., costs for filtration avoidance and water supply environmental health and safety programs.

Figure 3 Projected 2015 Other Than Personal Services Costs
(all amounts in $ millions)



4.2.1.1 Real Estate Taxes

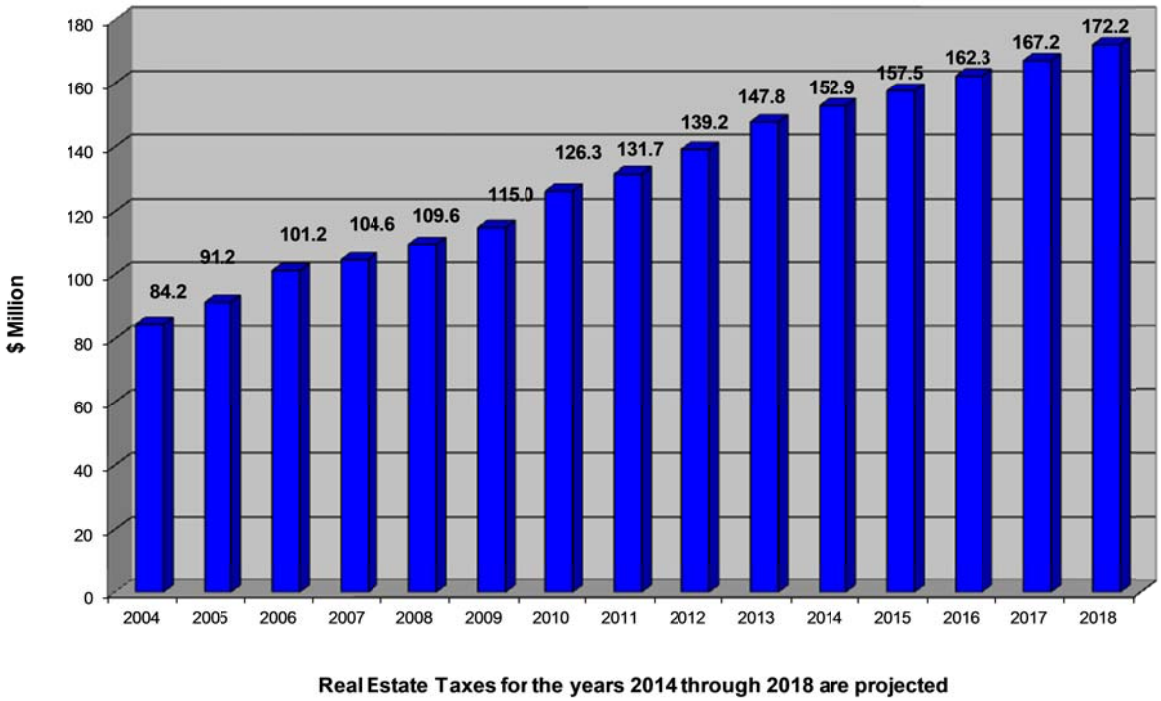
Real estate taxes for all water supply properties, including for the UV Facility, have increased at the average annual rate of about 6.4% from 2004 to 2013. Excluding the taxes on the UV Facility, property taxes have increased at the average annual rate of 3.0% from 2010 through 2013. The increase in recent years reflects a combination of both increases in the local tax rates applied to water supply properties as well as taxes on newly purchased properties in the watershed and the initial taxes on the UV Facility. Historical property tax payments, which include property taxes for the UV Facility beginning in 2010, are shown in the next table.

Historical Property Tax Payments

Fiscal Year	Property Tax Expense ($)	Annual Increase (%)
2004	84,239,835	8.4
2005	91,223,381	8.3
2006	101,209,162	10.9
2007	104,630,050	3.4
2008	109,627,241	4.8
2009	114,958,441	4.9
2010	126,320,846	9.9
2011	131,663,054	4.2
2012	139,186,474	5.7
2013	147,798,234	6.2

The projected real estate taxes for 2014 and 2015 are $152.9 million and $157.5 million, respectively. Both estimates reflect an allowance for the expected increases in property tax rates, the taxes on newly-purchased land as well as taxes on the UV Facility. A 3.0% annual rate of increase in the property taxes is assumed for 2015 through 2018 for all taxes except those for the UV Facility. This assumption reflects a decrease from three years ago when it was assumed that taxes would increase at the rate of 6.0% annually. Based on analyses performed by DEP, property taxes related to the UV Facility are assumed to be $15.0 million in 2014, $15.5 million in 2015, and $16.1 million in 2016. It is assumed that property taxes on the UV Facility will then increase at the rate of 3% per year in 2017 and 2018. While the current rate adoption by the Board will only address 2015, projections for 2016 through 2018 are shown for illustrative purposes. The actual and estimated real estate taxes payable to upstate communities for watershed properties from 2004 through 2018, including the UV Facility, are summarized in Figure 4.

Figure 4 Real Estate Taxes for the Water System
(all amounts in $ millions)



4.2.1.2 Chemicals

Several chemicals are used by the City to treat the water supply, including chlorine that is used for disinfection and other purposes. This part of the Report addresses the chemicals used in the watershed, except for those used at Hillview Reservoir, which are presented separately in Section 4.2.1.3. As illustrated by the following table, the total cost of chemicals varies from year to year.

Historical Chemical Costs

Fiscal Year	Chemical Costs ($)	Annual Rate of Change (%)	Chemical Costs as a % of Total OTPS
2004	2,047,475	19.3	2.0
2005	2,220,258	8.4	1.9
2006	3,290,291	48.2	2.5
2007	3,462,379	5.2	2.5
2008	5,344,146	54.3	3.5
2009	8,035,776	50.4	4.7
2010	7,813,168	-2.8	4.6
2011	6,744,998	-13.7	3.5
2012	6,008,103	-10.9	3.0
2013	3,033,060	-49.5	1.4

The cost of chemicals for water supply in a given year is dependent upon both the quantities of chemicals that must be used as well as the unit price per ton. There were significant increases in prices for fluoride and other chemicals for the System, excluding Hillview Reservoir, starting in 2008. For 2013, chemical deliveries to the System were slowed due to System repairs. It is uncertain how long the lower quantity of chemical deliveries will continue. The quantities of chemicals used and the applicable unit prices in recent years are summarized in the following tables.

Historical Chemical Use

Fiscal Year	Chlorine (Lbs)	Fluoride (Tons)
2004	3,109	1,451
2005	2,777	1,892
2006	2,854	1,731
2007	3,149	1,392
2008	3,141	1,940
2009	2,859	2,203
2010	3,170	1,691
2011	3,036	1,393
2012	3,177	1,512
2013	2,058	787

Historical Unit Prices for Chemicals

Fiscal Year	Chlorine ($)/Lb	Fluoride ($)/Ton (1)
2004	428.07	493.71
2005	448.07	515.81
2006	695.05	796.16, 934.78
2007	686.30	934.78
2008	667.55	1,673.92
2009	620.05	2,934.78
2010	456.68	3,800.00
2011	474.98	3,797.88
2012	504.84	2,944.14
2013	480.00	2,600.00

(1) Fluoride prices for 2006 reflect two different delivery zones within the water supply system.

The assumed rate of increase in chemical costs in 2014 through 2018 is 3% per year, recognizing that the actual expenses in 2013 were much lower than in recent years and such expenses could increase beyond the allowance for inflation. As noted previously, certain chemical costs increased significantly in the northeast U.S. in recent years compared to the costs incurred in 2008 and earlier years. It is not certain at this time whether prices will stay the same, increase or decline in future periods. Chemical addition that solely benefits in-City customers is excluded from this cost of service analysis.

4.2.1.3 Operating Expenses Associated with Hillview Reservoir

The principal expenses incurred in the operation of Hillview Reservoir are associated with chemical addition and security. Caustic soda is added for water quality purposes to adjust the pH of the water entering Hillview. Orthophosphate is added for lead and copper control. In 2013, the costs for caustic soda and orthophosphate were $4.9 million and $5.4 million, respectively. These costs fluctuate due to market prices. The competitively bid unit price for orthophosphate in the recent two years effective June 1st for 2011 and 2012 has been constant at $3.10 per gallon. The unit bid price for orthophosphate effective June 1, 2013 is $3.06 per gallon. The projected unit bid price for orthophosphate effective June 1, 2014 is same at $3.06 per gallon.

All OTPS expenses, including chemical costs at Hillview, are assumed to increase at the rate of 3% per year from 2013 to 2014 and from 2015 through 2018. Market conditions and upcoming bid prices will dictate the actual prices for chemical costs. Future increases in expenses at Hillview could be significantly affected by fluctuations in the price of chemicals and other factors.

The non-labor expenses attributable to Hillview Reservoir in Tables 4A and 4B are exclusive of property taxes, which are included in the Real Estate Taxes – Existing Properties line item (line 18). Labor costs for Hillview are included in 4.2.5 of this report.

4.2.1.4 Contractual Services

The City was required by the MOA to fund a number of capital projects and operating programs to support the protection of the watershed. Programs to be paid from operating funds began in 1997, and most of the operating expenses were classified under the Contractual Services line item. Beginning in 2004, the expenses related to the MOA declined as the programs it called for ended or were scaled down. The future expenses for MOA-related programs are reflected in the Contractual Services line item of the projected OTPS expenses. Contractual Services expenses are assumed to increase at the rate of 3% annually. Other expenses related to filtration avoidance are addressed in Section 4.2.1.6 of this report.

4.2.1.5 Rate Studies

The annual costs associated with performing rate studies and related work for establishing the regulated rate for upstate customers, including, but not limited to, the distribution of documents, posting of notices, and the rate hearing, are estimated at $61,000 per year from 2014 to 2018. The actual payments for rate studies and related work for 2013 were $54,165.

4.2.1.6 Other OTPS Expenses

OTPS expenses in 2011 through 2013 and future years include DEP costs associated with filtration avoidance and environmental health and safety programs in the watershed. These are shown in lines 29 through 31 of Tables 4A and 4B. Included within the costs of filtration avoidance are payments for the operation and maintenance of certain wastewater treatment facilities that are not owned by DEP. The operation and maintenance of such facilities is intended to protect the water quality in the watershed. Payments from DEP to watershed communities under the MOA and the cost of other initiatives that help support the avoidance of filtration are also included within the filtration avoidance line items. In recent years, DEP has undertaken a comprehensive program of environmental health and safety; the water supply-related costs of this program are included in line 31 of Tables 4A and 4B.

Some program costs for filtration avoidance included in line 30 of Table 4B were historically funded through the proceeds of debt and then paid back through debt service on the bonds that were issued. As a result of a decision by the New York City Office of the Comptroller, such costs are assumed to be funded as operating expenses in 2014 and future years. It is assumed that the percentage of debt attributable to the Water System will be affected slightly in future years as a result of this policy; an adjustment is described in Section 4.2.2.2 of this report. In 2015 through 2018, the expenses associated with O&M and program funding of filtration avoidance and environmental health and safety programs in the watershed and the costs of other categories of expense are assumed to increase at the rate of 3% per year.

As noted in Section 1.3.9 of this report, since 2011, DEP has undertaken an extensive review of its O&M processes and costs through the Operational Excellence or *OpX* program. Estimated annual savings of $5 million for the Water System have been allocated and applied as a recurring reduction in expenses starting in 2014 and are assumed to increase at the rate of 3% per year for future years. This is shown in line 32 of Table 4B.

4.2.1.7 UV Facility

The UV Facility is fully operational and provides treatment for Catskill and Delaware water. Operating expenses other than labor associated with the UV Facility are shown on line 28 of Table 4B with the exception of property taxes (line 19) and natural gas and electricity (line 24 includes such costs for the UV Facility)

DEP began to pay property taxes for the UV Facility in 2010. OTPS expenses other than property taxes were incurred beginning in 2012. The operational expenses associated with the UV Facility except for property taxes in 2015 are assumed to increase at the rate of 3% per year in 2015 through 2018.

4.2.2 Debt Service/Capital Improvement Financing

Capital improvements to the System are financed principally through proceeds from the sale of bonds. A portion of the capital improvements are financed on a cash basis using funds from revenues of the System. This part of the Report describes the methodology that is used to develop the annual debt service requirements (i.e., the principal and interest payments on bonds) of the Water System as well as the annual revenues raised for use in the CIP. Table 5A provides a summary of the debt service/cash-financed construction payments for 2011 through 2013, as well as the projected amounts for 2014 through 2018. The debt service/cash-financed construction amounts are then reflected in Line 2 of Tables 1A and 1B, which summarize the annual cost of water supply service and the regulated rate. Line 3 of Tables 1A and 1B presents the water supply portion of the amounts used (if any) to defease Authority bonds. The costs and benefits of defeasance are described herein.

4.2.2.1 Historical Investments in the Water System

Prior to the formation of the Authority, the development, expansion, and upgrading of the Water System was carried out by the City with funds that were typically provided by the proceeds of General Obligation (G.O.) bonds issued by the City. Since the formation of the Authority, significant investments have been made throughout the Water System principally through the proceeds of bonds issued by the Authority. These capital costs, which are reflected in debt service on bonds of the Authority issued both to the public ("Authority Bonds") and NYSEFC ("NYSEFC Bonds") (collectively the "Bonds"), are a component of the cost of service and regulated rate.

Investments that are either complete or in progress include improvements to: dams, reservoirs, reservoir roads and bridges, City-owned and non-City wastewater treatment plants, agricultural

programs (i.e., pollution prevention for watershed protection), security, the UV Facility, and other capital needs including the Rondout-West Branch Tunnel investigations. Costs for the Croton Plant prior to the approval of the in-City site are included in the water supply cost of service and are allocated to all water supply customers; costs incurred following the approval of the site are not included.

Land purchases, improvements to wastewater treatment plants, and other investments have been instrumental in maintaining the quality and reliability of the System including the avoidance of filtration for the Catskill and Delaware Systems.

4.2.2.2 Debt Service Related to the Water System

Debt service on the Bonds is computed based on the total net debt service payable for the water and wastewater system of the City in each year times the percentage attributable to the water supply portion of the capital improvements that have been financed with the proceeds of the Bonds. This approach incorporates the savings resulting from refundings of previously-issued bonds. It also includes the impacts of the defeasance of certain future debt service obligations of the Authority. The current methodology for computing debt service on outstanding Bonds was first applied in 2005.

The methodology for allocating debt service to the System begins with the calculation of the percentage of the capital investments beginning in 1986 that are attributable to the System versus other components of the water and sewer system of the City. Since improvements have been financed with the proceeds of Authority Bonds and NYSEFC Bonds, Tables 5B and 5C were prepared to illustrate the proceeds of each bond issue and the upstate portion of such proceeds for Authority Bonds and NYSEFC Bonds, respectively. Since the percentage share for the Water System will change from year to year, a cumulative percentage (beginning with the first bonds issued in 1986) is computed in each year through the current year-to-date (i.e., 2014). For example, the cumulative percentage to be used in 2013 for Authority debt reflects the sum of all Authority bond proceeds used for water supply projects from 1986 through 2012 divided by the sum of all proceeds from bonds issued from 1986 through 2012. The calculated percentage for Authority bond proceeds through 2013 are applied in Table 5D to the appropriate debt service, interest earnings, etc. in 2014.

The debt service allocated to water supply in 2012 differs somewhat from the amount presented in the prior report. This change reflects the inclusion of certain capital costs attributable to water supply that were not included in the proceeds used for water supply as presented in the prior report.

The water supply share of debt service and net offsets are computed by multiplying the System-wide totals for each category times the applicable percentage in each year. The three percentages that are shown reflect: 1) line 29 shows water supply capital costs funded through Authority Bond proceeds as a percentage of total capital costs funded through Authority Bond proceeds; 2) line 30 shows water supply capital costs funded through both Authority Bond proceeds and

NYSEFC Bond proceeds as a percentage of total capital costs funded through both Authority Bond proceeds and NYSEFC Bond proceeds; and 3) line 31 shows water supply capital costs funded through NYSEFC Bond proceeds as a percentage of total capital costs funded through NYSEFC Bond proceeds. In previous reports, the current year percentages were also applied to debt service in future years. Starting in the rate report for Fiscal Year 2014, Amawalk modified the percentage for future years; instead of using the 2014 percentage, we used the average of the calculated percentages for 2012 and 2013. The resulting percentage for 2015 through 2018 is less than if the current year (i.e., 2014) percentage is used, resulting in a lower debt service amount being included in the cost of water supply service for those years. The reasons for the change include: 1) a major capital project, the UV Facility, is in operation, so the annual amount of bond proceeds applied to this project will decline over time and then end; and 2) the classification of certain filtration avoidance programs as operating expenses instead of capital projects results in an increase in operating expenses but also a reduction in the amount of bond proceeds that will be needed for filtration avoidance expenses in the Water System beginning in 2014. The computed percentages for 2014 through 2018 are preliminary and subject to change.

Table 5D illustrates the current projections of debt service on outstanding bonds and anticipated future Bonds for the Projection Period as of April 1, 2014. The amounts shown are net of all refundings and defeasance of debt that have previously been undertaken by the Authority. The amounts also reflect the anticipated effects of additional defeasance of debt that the Authority expects to complete in 2014. Authority debt service is shown as First Resolution and Second Resolution. The Second Resolution debt is subordinate to the First Resolution debt. Table 5D also presents the estimated interest on Commercial Paper shown as Interest on Short-Term Debt. The Authority initially finances capital improvements through the proceeds of short-term Commercial Paper sales and then redeems the Commercial Paper with the proceeds of long-term bonds. Interest rates on Commercial Paper and the variable rate debt of the Authority have been low in recent periods compared to historical conditions, resulting in actual interest costs that are lower than projections. There is no assurance that such market conditions will continue in future years. As a result, projections of future debt service payments assume that interest rates on Commercial Paper, variable rate debt and future fixed rate debt will be higher than current market rates. Cash-financed construction is discussed in Section 4.2.2.3 of this report.

The debt service on Build America Bonds (“BABs”) is net of the interest subsidy payments from the U.S. Treasury for those bonds. The bonds were issued on a taxable basis, and beginning in 2010, the U.S. Treasury has generally provided interest subsidy payments in each year equal to 35% of the interest payable. The figures shown for Authority Debt Service – Second Resolution (line 3) and NYSEFC Outstanding Debt Service (line 6) in Table 5D of this report reflect the application of the BABs subsidy payments. At the time of this report, federal sequestration is continuing to reduce somewhat the actual payment of BABs subsidies by the federal government. It is not known at this time how long the sequestration will last, whether reductions in BABs payments will continue or whether any reductions will be made up through payments at a later date. The projected debt service in 2014 and subsequent years assumes that BABs subsidy

payments are reduced by $5.4 million from the previously expected amount during the entire Projection Period.

Interest earnings on available funds (the Debt Service Fund, the Debt Service Reserve Fund, the Construction Fund, and the Subordinate Debt Service Fund), together with Authority expenses related to debt, collectively form a net offset to a portion of the debt service. Interest earnings have generally declined in recent years due to conditions in the financial markets that have resulted in relatively low rates of interest earnings on secure investments. Authority expenses related to debt include administrative expenses charged by NYSEFC for the low-interest loan program, liquidity fees, and other expenses related to variable rate debt, swap payments, arbitrage rebate payments, and other expenses.

4.2.2.3 Cash-Financed Construction

Portions of the capital improvements to the Water System may be financed through available cash in lieu of the proceeds of Bonds. The Authority spent $20 million for cash-financed construction needs in 2007. No cash-financed construction deposits were made in 2010 through 2013. It is anticipated that $225 million of cash-financed construction deposits will be made in 2014. The annual deposits for cash-financed construction in future years are currently assumed to remain at $225 million in 2015 through 2018. Line 8 of Table 5D reflects the cash-financed capital assumptions identified above. The projected amounts for each year may increase or decrease in the future. Line 21 of Table 5D shows the upstate water supply share of such costs. The upstate share is based on the total cash-financed construction amount in each year times the Water System capital costs as a percentage of total capital costs funded through the proceeds of both Authority Bonds and NYSEFC Bonds, shown on line 30 of Table 5D. The Board and the Authority may also decide to modify the amount of the cash-financed capital contribution or instead use the cash-financed allowance for the defeasance of outstanding bonds with a resulting reduction in future debt service based on the effects of the defeasance. Other System revenues could also be used to defease outstanding debt.

4.2.2.4 Cash Used for the Defeasance of Bonds

In 2003, 2004, 2006, and 2011 through 2013, cash from the System was used to defease Authority Bonds by paying future debt service in advance of the years in which such debt service was payable. The debt service on outstanding bonds of the Authority as illustrated in Table 5E is net of any prepayment amounts. Since all water supply customers share in the benefit of lower future debt service due to the defeasance, the costs of the defeasance are apportioned to all water supply customers. The amounts used for defeasance in 2011, 2012, and 2013 were $260.00 million, $239.60 million, and $299.99 million, respectively. The allocated amount for 2012 is revised somewhat from the amount presented in the prior report based on the updated debt service attributable to water supply. At the time of this Report, it is estimated that $400.00 million will be used in 2014 to defease debt that is due in future years. It is currently anticipated that certain bonds that are payable in 2015 through 2019 will be defeased with the proceeds of the 2014 defeasance, recognizing that this is subject to change. The projected debt service of the

Authority reflects the impacts of the defeasance of debt that has taken place in prior years as well as the planned defeasance in 2014.

There are no plans as of the date of this report for the defeasance of additional debt during the period of 2015 through 2018. However, as noted in Section 4.2.2.3, the Board and Authority may decide in the future to use part or all of the planned cash-financed construction amounts for the defeasance of debt.

4.2.2.5 Ongoing and Future Capital Improvements

Ongoing capital improvements in the System to be funded through the proceeds of bonds in 2014 through 2018 include: rehabilitation of the Gilboa Dam, Hillview cover-related work, purchases of land, upgrades to wastewater treatment plants in the watershed, reconstruction of other water supply infrastructure, engineering work, and the development of alternative water supplies to prepare for the Rondout-West Branch Tunnel shutdown, filtration avoidance measures north of the City, and other projects and programs.

4.2.2.6 Capital Cost Summary

Favorable market conditions in 2013 and year-to-date in 2014 have resulted in actual debt service on bonds issued and interest on variable rate debt and commercial paper that is much lower than anticipated. Based on year-to-date experience in the financial markets, preliminary changes for 2014 have been taken into consideration in the projected debt service for this year and subsequent years. There is no assurance that such conditions will continue in the future.

There will be an overall net increase in debt service/capital costs in the upcoming years to reflect the debt service for capital improvements being funded through the proceeds of Authority bonds and cash-financed construction. Table 5A summarizes the historical and expected future annual costs attributable to debt service and cash-financed construction.

4.2.3 Judgments and Claims

Judgments and claims represent the amount of judgments rendered against the System or claims paid by the City for water supply-related matters in upstate areas. Actual and projected judgments and claims are illustrated in Table 6. There are years in which no judgments or claims were paid for the Water System. Except for 2007, payments made in other years have ranged from $1,834 in 1999 to $916,350 in 2011. A payment of about $5.5 million was made in 2007 to settle litigation relating to the Shandaken Tunnel. There may be additional expenses related to this matter. The payment amount in 2013 was $526,166. The cost of service analysis assumes that the fifteen-year (1999 through 2013) average of $539,099 will provide an allowance for judgments and claims in future years.

4.2.4 Miscellaneous Revenue

Miscellaneous revenues received from upstate sources are used to offset the total cost of supplying water to both in-City and upstate customers. As indicated in Table 7, miscellaneous revenues are derived from hydropower generated at upstate dams and from miscellaneous charges for permit use and related services provided in the Water System. In addition, miscellaneous revenues can include tax refunds when such refunds are made. Miscellaneous revenues have been inconsistent over the years, declining in some years and increasing in others.

Hydropower revenues are shown for 2004 through 2013. Hydropower revenues in future years may differ from the historical experience. The City took ownership of the Grahamsville and Neversink hydroelectric facilities in October 2006, which resulted in an overall increase in annual revenues (compared to historical experience) as well as increased costs for capital improvements and operation and maintenance expenses, including property taxes. The City also receives a relatively small amount of revenue from the operator of the West Delaware hydroelectric facility. No revenues are considered in the calculations for the Ashokan and Kensico facilities because no revenues are actually expected to be received by the City.

Hydropower revenues as illustrated in Table 7 represent gross revenues prior to the application of offsetting expenses, which are included in the historical and projected OTPS and personal services expenses shown in the tables of this report. Table 14 shows the anticipated gross hydropower revenues by source. In 2014 and 2015, it is expected that such revenues will be approximately $5.6 million and $5.7 million, respectively, which, together with other miscellaneous revenues, will be applied as a credit towards the cost of water supply service.

For purposes of estimating future miscellaneous revenues during the Projection Period, the fifteen-year average (1999 through 2013) of permit/services revenues has been used. DEP received tax refunds in 2009 but no refunds were received in the previous four years or in 2010 through 2012 as illustrated in Table 7. In 2013, DEP paid the tax bill in full prior to settlement, resulting in a $209,232 tax refund. At this time, the projections assume no refunds in future years. In lieu of tax refunds, DEP has advised that it may instead receive credits against property taxes due in future years.

4.2.5 Personal Service Costs

Personal services expenses directly allocable to water supply services are shown in Tables 8A, 8B, 9A, and 9B. These expenses represent salary, pension, and fringe benefit costs associated with all BWS field personnel working in water supply facilities located north of the City as well as support and administrative personnel. Field personnel, for purposes of this report, are defined as DEP personnel with non-supervisory or non-management titles, working directly with the Water System. Field personnel thus do not include personnel classified as management and/or administrative support. Irrespective of the “field” or “administrative support” designation, these costs are all entirely related to water supply. The methodology for classifying personnel between field personnel and support/administrative categories of cost is consistent with the City's indirect

cost plan for federal and State grant programs. Prior indirect cost plans of the City that use this methodology have been approved by the federal government. Personal Services costs in Tables 8A, 8B, 9A and 9B are categorized based on location. The categories can vary somewhat from previous year reports as locations have been consolidated or eliminated from a budgetary perspective. This does not necessarily indicate a physical change in location of the associated salaries.

Labor expenses for Hillview Reservoir include day-to-day operations, maintenance, and security. Security costs, in terms of both labor and non-labor expenses, have risen significantly in recent years as initiatives to protect the Water System have been implemented. Pension and fringe benefit rates that are applied to salaries and wages are expected to change in each year as summarized herein.

The source documents for the above referenced costs are DEP records, which identify salary and related costs by employee name and work location. Pension and fringe benefit factors reflect City-wide percentages and were computed at 46% in 2012 and 2013 and 51% in 2014 of direct salary and wages. Based on recent analyses prepared by the City, the pension and fringe benefit rate for 2015 is expected to be 51%. The assumed rate for 2016 through 2018 is also 51% of direct salary and wages. Pension and fringe benefit rates, which are applied to salary and wage expenses, are summarized below.

Pension/Fringe Benefit Rates (as a % of Salary & Wage $)

Year	Rate (%)
2012	46
2013	46
2014	51
2015-2018	51

The preceding pension and fringe benefit rates are applied to all projected labor costs related to the supply of water. The projected labor costs for 2014 through 2018 incorporate the projected and assumed changes in the pension and fringe benefit rate and a 3% per year increase from the current base personal salary and wage costs.

There are currently outstanding collective bargaining agreements between DEP and personnel providing direct and indirect upstate services. When the settlement is reached, there may be retroactive payments for salaries and wages plus pension and fringe benefits that will likely be made in the year in which the settlement occurs and an increase in annual salaries and wages beginning in the year of the settlement. No allowance has been included in the projected cost of service for either retroactive payments or an increase in base personal service expenses.

4.3 Calculation of Allocation Percentages - Step B

The remaining elements of the cost of service, i.e., those not directly or fully allocable to facilities north of the City, must undergo one or a series of allocations before an appropriate assignment of costs can be made. Accordingly, allocation percentages are developed for the purpose of apportioning a fair share of costs incurred by one bureau, unit or location to the benefiting entity. For example, DEP incurs many costs in support of BWS. The DEP cost burden must then be shared by BWS through the use of an allocation percentage. The computation of the allocation percentages used in this report is based on data provided by DEP as presented in Table 10. The allocation factors presented in Table 10 specifically exclude employees working within the City in the wastewater system or the water distribution system.

4.4 Allocation of Department of Environmental Protection Costs - Step C

Expenses of DEP that are covered by Step C represent personnel and other expenditures of DEP that are allocable to management, administration and support services needed to operate and maintain the water supply facilities located north of the City. Again, City water distribution system costs are specifically excluded.

Tables 11A and 11B illustrate allocated personal services costs, while Tables 12A and 12B present the allocation of a portion of DEP OTPS costs to facilities north of the City. Examples of the services provided include motor vehicles, garage facilities, data processing, and personnel recruiting and management. The total costs to be allocated are multiplied by headcount allocation percentages to obtain the amount that may be attributed to BWS. The amounts attributable to water supply are then subject to an allocation percentage to relate the costs to facilities located north of the City.

Allocated DEP personal services costs in 2014 through 2018 reflect the same assumptions identified in Section 4.2.5. OTPS costs are assumed to increase at an annual rate of 3%.

The costs assigned to Management and Budget in 2012 in Table 12A are restated from the prior report resulting in a reduction in the total amount attributable to water supply in 2012.

4.5 Allocation of City Central Service Costs - Step D

The City incurs costs that must be distributed among all of its operating entities. Such costs include planning, budgeting, accounting, purchasing, legal services, and other related activities. A cost allocation plan is developed to distribute the City-wide costs. The plan is subject to review by the federal government in connection with federal aid received by the City. After the City-wide allocation process, the DEP portion of the City's costs is divided further between non-utility and water and sewer utility components. The water and sewer utility-related costs are then distributed among the various DEP water and sewer functions using headcount allocation percentages. BWS is one of the functions to which costs are allocated. This cost is then further allocated to relate to facilities located north of the City. The allocated Central Service costs were

$1,262,185 in 2013. Overall City support service costs to DEP are expected to be relatively stable in future years. Thus, such costs attributable to water supply are assumed to be $1,262,185 in 2014 and each year thereafter.

4.6 Cost of Service - Step E

The calculations of the total cost of water supply and the cost of water supply attributable to upstate customers are presented for 2011 through 2013 in Table 1A and for 2014 through 2018 in Table 1B. Additional tables are referenced to support the various categories of costs and offsetting revenues. These additional tables provide a detailed breakdown of the components of each step of the cost of service analysis.

The total cost of service is estimated to be $663,575,505 in 2014 and $622,503,254 in 2015. Of these amounts, $553,374,919 in 2014 and $508,946,205 in 2015, or about 83% and 82% (excluding the effects of the reconciliation), respectively, is for debt service/capital costs, defeasance, and direct out-of-pocket expenses (OTPS costs) associated with operating and maintaining the water supply facilities located north of the City. As illustrated in Table 4B, the largest item of OTPS expense for the supply of water is real estate taxes paid to upstate communities for watershed properties. Excluding the reconciliations, upstate taxes (included with OTPS expenses) will represent approximately 23% of all water supply costs in 2014 and 25% in 2015.

Direct salary, pension costs and fringe benefits for personnel directly and indirectly related to the water supply facilities located north of the City account for about another 16% and 18% of all costs excluding the effects of the reconciliation credits, in 2014 and in 2015, respectively.

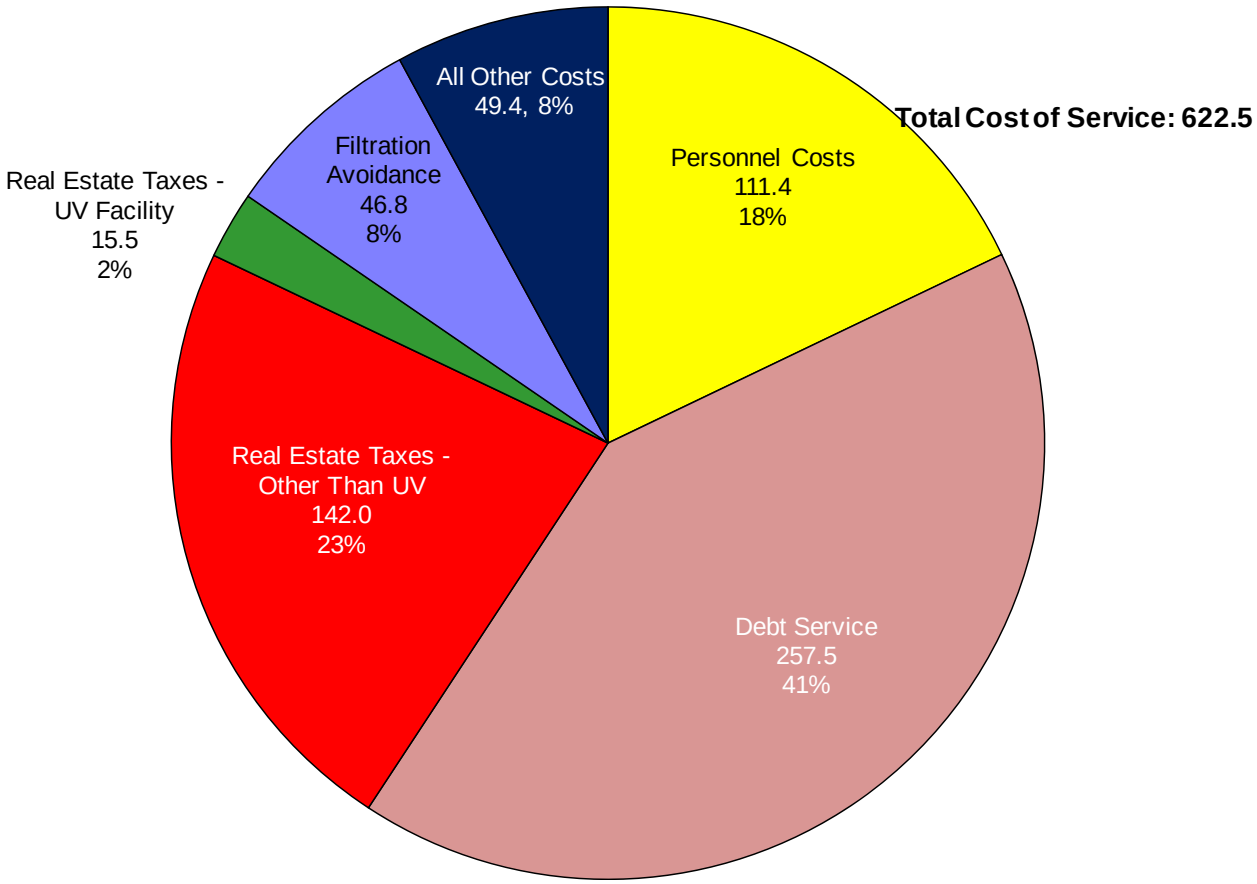
After accounting for the reconciliation credit/cost, the net total cost of water supply as presented in Table 1B (line 19) is $660,387,981 for 2014 and $626,555,491 for 2015. These amounts include the effects of the reconciliation for 2012 of $3,187,525 that is credited to 2014 and the proposed reconciliation cost of $4,052,236 for 2013 that is added to 2015.

The major factor influencing the projected decrease in the cost of service between 2014 and 2015 is the assumption that there will be no cash used for defeasance in 2015. This assumption is subject to change.

The cost of water supply service as presented herein does not take into consideration the need to maintain an operation and maintenance reserve fund, to provide working capital to pay construction costs before being reimbursed through the proceeds of commercial paper, or to ensure liquidity in operating funds. It also assumes that all upstate customers pay their bills for water service on a timely basis, thus avoiding the need to include an allowance in the cost of service for late payments.

The chart below illustrates the breakdown of the total cost of service for the 2015 rate year excluding the effects of the reconciliation of prior year costs.

Figure 5 Projected 2015 Cost of Service Components
(all amounts in $ millions)



4.7 Calculation of the Regulated Rate - Step F

At the direction of the Board, the calculation of the 2013 cost of service included a credit, which reflected the difference between the cost of service recovered in 2011 (based on the adopted 2011 rate and the actual quantity of water consumed) and the actual 2011 cost of service (based on computed actual costs to the Board). Table 1A presents both a net cost of service (line 20) and a unit rate net of the reconciliation (line 22).

For 2014, the calculation of the projected 2014 cost of service includes a credit, which reflected the difference between the cost of service recovered in 2012 (based on the adopted rate and the actual quantity of water consumed) and the actual 2012 cost of service based on computed actual costs to the Board.

For 2013, the cost of service recovered in 2013 (based on adopted 2013 rate and the actual quantity of water consumed) is less than the actual 2013 cost of service (based on computed actual cost to the Board). Therefore, a reconciliation of a prior year's projected and actual costs of service, consumption and rates is proposed for 2013 with the resulting cost being applied towards the cost of service for the upcoming rate year of 2015.

Given the recent variations in financing and commodities costs as well as changes in water consumption, this "true-up" approach is intended to ensure that both upstate and in-City customers pay their appropriate shares of the cost of water supply service.

Table 1B summarizes the calculation of the projected 2015 regulated rate and upstate cost of service. The regulated rate per MG of water use is computed by first calculating the total cost of service in Line 13 and then dividing by the total water consumption shown on Line 14. An excerpt from Table 1B is provided below to show the calculation of the proposed rate.

Summary of the Calculation of the Proposed 2015 Rate

13	Total Costs Related to Facilities North of the City	$	622,503,254
14	System Usage	MG	398,163
15	Unit Rate to Recover the Total Costs (line 13 divided by 14)	$/MG	1,563.44
18	Cost Reconciliation for Prior Years	$	4,052,236
19	Net Total Costs for Facilities North of the City (line 13+18)	$	626,555,491
21	Unit Rate Net of Reconciliation (line 19 / line 14)	$/MG	1,573.61
22	Upstate New York Usage	MG	39,488
23	Total Upstate Cost Excluding Reconciliation	$	61,736,843

After taking into account the reconciliation, the resulting unit rate, shown on Line 21, is $1,573.61 per MG in 2015.

The cost of service attributable to upstate customers (excluding the cost reconciliation) is calculated by multiplying the unit rate of $1,563.44 shown on Line 15 of Table 1B by the annual upstate water consumption shown on Line 22 of Table 1B. The resulting upstate cost is approximately $61.7 million for 2015. The remaining cost of water supply, approximately $560.8 million would be recoverable from in-City water customers through rates and charges.

The water consumption used in calculating the regulated rate reflects a calculated decline in demand based on the results of a regression analysis. Water consumption data is presented in Table 13. The table presents water consumption data beginning in 1985. However, given the many changes that have occurred due to metering within the City, the availability of water conserving fixtures, and other factors, a 10-year regression analysis is used in estimating future water demand by both in-City and upstate customers. The results of the regression analysis show a gradually declining annual consumption by both in-City and upstate customers. The projected System-wide demand is used in developing the projected unit rate.

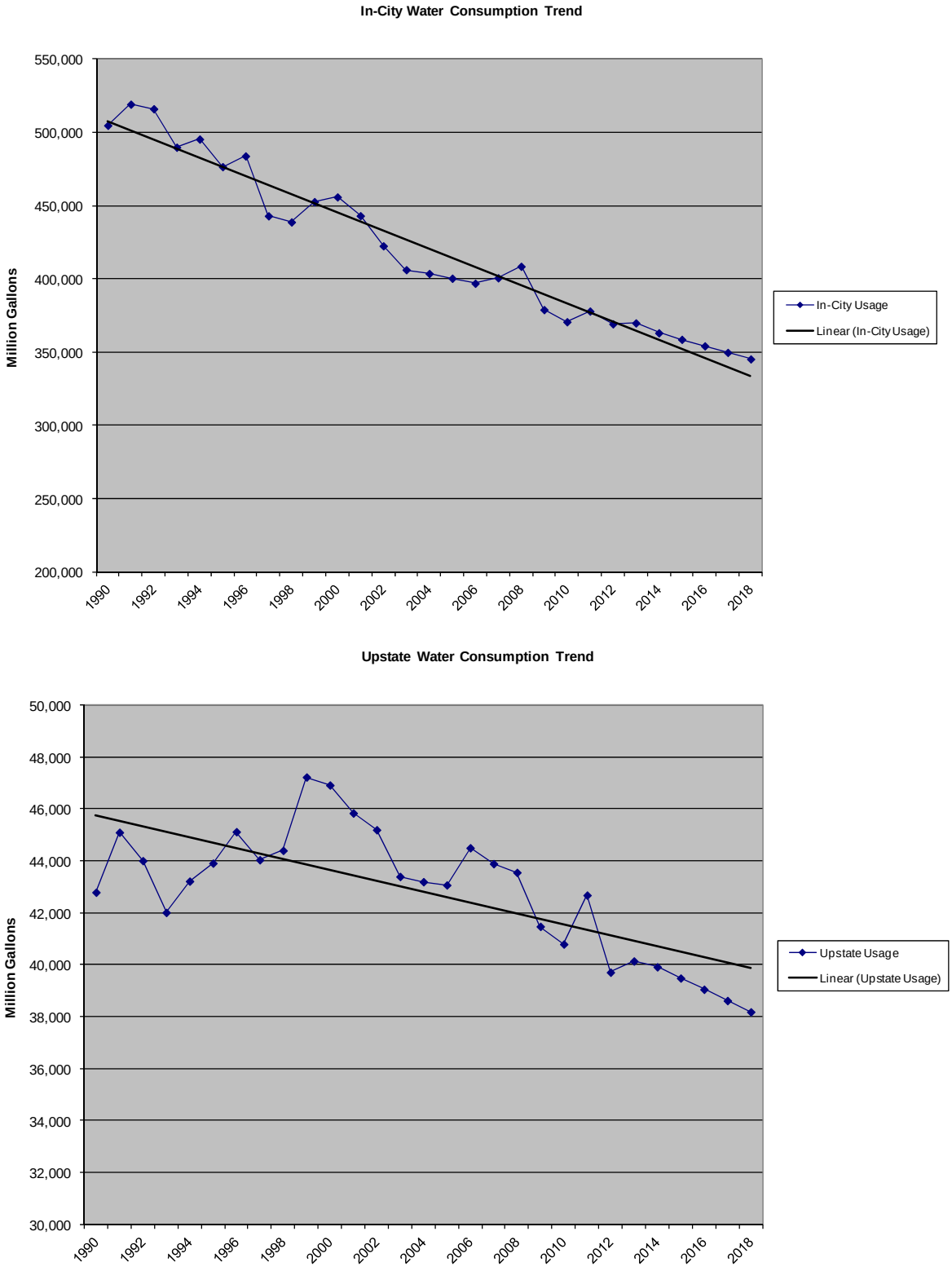
The results of the analyses provide an anticipated water consumption of 403,059 MG in 2014 and 398,163 MG in 2015. The upstate share of total water consumption using the regression analysis is estimated to be 39,921 MG in 2014 and 39,488 MG in 2015. In Figure 6, a line graph illustrates the projected consumption for both in-City and upstate customers. Only the total System consumption is used in computing the unit rate.

Water consumption was higher than expected in 2013. The 2014 year-to-date consumption is about 0.5% lower in-City through March 31, 2014 compared to the prior year and about 0.6% higher upstate through January 31, 2014 from the usage for the same time period in 2013. Thus,

the actual rate for 2014 may change from the preliminary computation in part because of the changes in water consumption.

The use of the regression analysis was previously agreed-to by the City and representatives of upstate customers as a means to estimate future consumption. The regression analysis that is used in computing the projected unit rates for purposes of this report produces somewhat different projections of a decline in consumption than the assumptions currently used for in-City usage and rate projections. The regression results show an annual pace of decline that ranges from 1.7% in 2014 to 1.3% in 2018. Current in-City assumptions are a 1.5% per year rate of decline from 2015 through 2018.

Figure 6 Comparison of Water System Consumption



4.8 Additional Issues Relating to the Cost of Service and the Regulated Rate

There are other issues relevant to the Board's deliberations on the establishment of a regulated rate for 2015. These issues are summarized herein.

4.8.1 Operating Risks

The cost of service computations are presented on the cash basis methodology as required by NYSDEC. The cost of service analysis and regulated rate proposed for 2015 reflect no allowance for the risks being borne by the City as the owner and operator of the Water System. Other large water systems are permitted to earn a premium over the cost of service to provide an allowance for such risks. The cost of service also does not consider the factors presented in Section 4.6 of this report.

4.8.2 Water Demand Management Initiatives

DEP has invested and continues to invest substantial amounts of money in water demand management initiatives. Since May 4, 2012, DEP transitioned approximately 28,000 Tax Class 2 accounts from the in-City "frontage" system of billing to a modified Multiple-family Conservation Program ("MCP"). DEP is also continuing its universal metering program and has been installing an automated meter reading ("AMR") system that will provide DEP and all metered customers with access to information on daily water use; over 431,000 new water meters of less than 2 inches in diameter and over 14,000 meters of 2 inches or more in diameter have been installed or replaced. Approximately 16,000 additional large meters are targeted for replacement by the first quarter of Fiscal Year 2016. In addition, over 820,000 AMR devices have been installed in conjunction with this program. These initiatives will likely provide a significant long-term reduction in water use.

Examples of other programs being used by DEP include the following:

- Sonar Leak Detection Program
- Meter Slippage Testing
- Hydrant Locking Devices
- Residential Water Survey Program
- School Programs on Water Conservation

The cost of service and regulated rate, as presented herein, do not include the costs of the funds invested in metering in-City customers or any of the other programs listed above.

The demand management investments by the City and any investments resulting from the demand management plans upstate will help to reduce the need to develop new supplies of water in the future. (See the Rondout-West Branch Tunnel discussion in Section 1.3.2.1.)

4.8.3 Upstate Wastewater Treatment Plants

In addition to non-City owned plants, the City owns and operates wastewater treatment plants in the watershed and is responsible for capital improvements in those facilities. Given the absence of a mechanism to recover the operating and capital costs of these facilities directly from the users of these systems, such costs are included within the cost of water supply service and the calculation of the regulated rate.

5.0 Impacts on Customers of the Proposed Regulated Rate

The proposed regulated rate for 2015 is $1,573.61 per MG. The proposed regulated rate represents an increase of $76.85 per MG from the current 2014 unit rate of $1,496.76, or a 5.13% increase. (Without the effect of the reconciliation from 2013, the unit rate for the cost of service would be $1,563.44 per MG, representing a 4.45% increase in the current rate.) The impact on a typical single family homeowner of the proposed increase in the unit rate would be modest. The increase in charges attributable to a single family residence using 80,000 gallons of water per year would be $6.15 for the entire year or about one to two cents per day.

The current estimate of the unit cost of service for 2014 is $1,646.35 per MG, which is higher than the projected unit cost of $1,503.54 per MG that was calculated approximately one year ago based on information available at that time. Each of these figures is prior to the effects of the reconciliation. After the effect of the reconciliation is taken into consideration, the calculated net unit cost of service for 2014 at the time of this report is $1,638.44 per MG which is higher than the rate in effect of $1,496.76 per MG. The current estimate of the unit cost of service for 2014 will change by the end of the fiscal year based on actual costs incurred and actual water consumption by customers.

For 2016 through 2018, Figure 7 outlines the anticipated percentage change in the unit cost of water supply and the portions of the change attributable to increases or decreases in the cost of service and water consumption. If consumption declines at a pace that is faster than expected, the unit rate for water supply will increase in order to recover the estimated cost of service. As noted above, the unit cost of service in 2014 may be higher than the unit rate being charged by the Board. If the final results for 2014 confirm this expectation, the percentage change in the unit rate due to the cost of service and the percentage change in the calculated unit rate for water supply in 2016 may increase from the amounts shown in Figure 7 due to the effects of the reconciliation for 2014.

Figure 7 Impact of Cost of Service and Consumption on Unit Rate

New York City Water Board	*Projected*		
Cost of Supplying Water to Upstate Customers	2016	2017	2018
Percentage Change in the Unit Rate due to Increase in Cost of Service	7.0%	2.3%	3.6%
Percentage Change in the Unit Rate due to Fluctuations in Consumption	1.3%	1.3%	1.3%
Percentage Change in the Calculated Unit Rate for Water Supply	8.4%	3.6%	4.9%

* Includes the effects of cost reconciliation for FY 2013 that are added in FY 2015.
** Totals may not add due to rounding.

The potential impact of the proposed revisions to the regulated rate on the actual rate schedules for upstate customers will depend to a large extent on the upstate suppliers' cost of purchased water in relation to the total cost of service experienced by these suppliers. To illustrate the potential effects on the overall charges to customers, Tables 2A and 2B present the rate structures of several upstate communities that purchase water from the City. The annual single family residential water charge is computed for each community using the 80,000 gallon per year allowance. Table 3 illustrates the computed single family charge and the estimated percentage increase in that charge that would occur with the proposed regulated rate for 2015.

Additional rate increases are anticipated in future years based on the need to protect the water supply for all customers and to avoid the costly possibility of having to filter Catskill and Delaware water. Future changes in rates are dependent upon whether or not the overall declining trend in consumption continues as well as changes in debt service for capital improvements and the costs of watershed protection.

Prior to 2008, the rates and charges of the Board that were assessed to upstate customers for water supply service were generally less than the actual cost to the City. Table 15 illustrates the charges to upstate customers versus the computed cost to the City of serving those customers. The figures shown in Table 15 do not consider the effects of the reconciliation of the cost of service from prior years.

Report on the Cost of Supplying Water to Upstate Customers for the 2015 Rate Year

Appendices

Supporting Calculations for the Cost of Service and the Regulated Rate

Table 1A Historical Cost of Service

TABLE 1A
New York City Water Board
Cost of Supplying Water to Upstate Customers
Historical Cost of Service

No.	Description		FY 2011	FY 2012	FY 2013
	Bureau of Water Supply Direct				
	Costs for Facilities North of the City				
1	Other Than Personal Services	$	191,435,944	202,687,321	221,323,950
2	Debt Service / Capital Costs	$	161,892,525	186,928,086	202,044,996
3	Cash Used for the Defeasance of Debt	$	34,091,414	33,899,783	44,885,380
4	Judgment and Claims	$	916,350	240,320	526,166
5	Less Miscellaneous Revenue	$	(9,868,057)	(6,410,297)	(9,150,873)
	Personal Services				
6	Field Personnel	$	60,933,763	72,705,413	76,835,277
7	Support and Administrative Personnel	$	16,560,136	18,169,023	17,047,891
8	Total Costs Directly Related to Facilities North of the City	$	455,962,075	508,219,649	553,512,787
	Upstate Share of NYC DEP Costs				
9	Personal Services	$	7,213,436	7,616,886	7,640,158
10	Other Than Personal Services	$	6,587,143	7,263,199	7,268,211
11	Total NYC DEP Costs Allocated to Facilities North of the City	$	13,800,579	14,880,085	14,908,369
12	***Upstate Share of City Central Service Costs*** [(1)]	$	1,786,731	1,765,496	1,262,185
13	Total Costs Related to Facilities North of the City	$	471,549,385	524,865,230	569,683,341
14	System Usage	MG	420,635	408,954	410,006
15	***Unit Rate to Recover the Total Costs (line 13 divided by 14)***	$/MG	1,121.04	1,283.43	1,389.45
16	Unit Rate Charged	$	1,149.72	1,213.84	1,332.30
17	Revenue Raised (line 14 times 16)	$	483,612,685	496,405,035	546,251,339
18	Cost Reconciliation for Prior Years	$	(7,316,465)	(21,647,720)	(19,379,766)
19	Stipulation Credit	$		(10,000,000)	
20	Net Total Costs for Facilities North of the City (line 13+18+19)	$	464,232,919	493,217,510	550,303,575
21	Difference in Revenue Less Net Total Costs (line 17 minus 20)	$	19,379,766	3,187,525	(4,052,236)
22	***Unit Rate Net of Reconciliation & Stipulation (line 20 / line 14)***	$	1,103.65	1,206.05	1,342.18
23	Upstate New York Usage	MG	42,682	39,713	40,143
24	Total Upstate Cost Excluding Reconciliations (line 15 x line 23)	$	47,848,489	50,969,289	55,777,065

Notes:
(1) Based on factors allocating a portion of central city service costs.

Table 1B Cost of Service Projections

TABLE 1B
New York City Water Board
Cost of Supplying Water to Upstate Customers
Cost of Service Projections

Line No.	Description		FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
					Projected Years		
	Bureau of Water Supply Direct						
	Costs for Facilities North of the City						
1	Other Than Personal Services	$	244,086,642	251,478,796	259,107,850	266,879,255	274,883,803
2	Debt Service/Capital Costs	$	249,179,932	257,467,409	294,467,684	298,720,431	311,482,170
3	Cash Used for the Defeasance of Debt	$	60,108,345	0	0	0	0
4	Judgment and Claims	$	539,099	539,099	539,099	539,099	539,099
5	Less Miscellaneous Revenue	$	(7,237,111)	(7,349,740)	(7,464,623)	(7,581,803)	(7,701,327)
	Personal Services						
6	Field Personnel	$	81,850,620	84,306,139	86,835,323	89,440,383	92,123,594
7	Support and Administrative Personnel	$	18,160,674	18,705,495	19,266,660	19,844,659	20,439,999
8	Total Costs Directly Related to Facilities North of the City	$	646,688,202	605,147,197	652,751,992	667,842,025	691,767,339
	Upstate Share of NYC DEP Costs						
9	Personal Services	$	8,138,861	8,383,027	8,634,518	8,893,554	9,160,360
10	Other Than Personal Services	$	7,486,258	7,710,845	7,942,171	8,180,436	8,425,849
11	Total NYC DEP Costs Allocated to Facilities North of the City	$	15,625,119	16,093,873	16,576,689	17,073,990	17,586,209
12	***Upstate Share of City Central Service Costs***	$	1,262,185	1,262,185	1,262,185	1,262,185	1,262,185
13	Total Costs Related to Facilities North of the City	$	663,575,505	622,503,254	670,590,866	686,178,199	710,615,733
14	System Usage	MG	403,059	398,163	393,267	388,372	383,476
15	***Unit Rate to Recover the Total Costs (line 13 divided by 14)***	$/MG	1,646.35	1,563.44	1,705.18	1,766.81	1,853.09
16	Unit Rate Charged	$/MG	1,496.76				
17	Revenue Raised (line 14 times 16)	$					
18	Cost Reconciliation for Prior Years	$	(3,187,525)	4,052,236			
19	Net Total Costs for Facilities North of the City (line 13+18)	$	660,387,981	626,555,491			
20	Difference in Revenue Less Net Total Costs (line 17 minus 19)	$					
21	***Unit Rate Net of Reconciliation (line 19 / line 14)***	$/MG	1,638.44	1,573.61			
22	Upstate New York Usage	MG	39,921	39,488	39,055	38,621	38,188
23	Total Upstate Cost Excluding Reconciliation (line 15 x line 22)	$	65,724,109	61,736,843	66,595,094	68,236,570	70,766,077

Notes:

* The rate adopted by the Board for FY 2014 is $1,496.76 per million gallons including the effects of the reconciliation from FY 2012.

Table 2A Current Water Rates for Upstate New York Communities

TABLE 2A
New York City Water Board
Cost of Supplying Water to Upstate Customers
Current Water Rates for Upstate New York Communities

	City of White Plains	Village of Scarsdale
Current Water Rates	$1.87/Ccf - 1st 50 Ccf $2.08/Ccf - Next 100 Ccf $2.35/Ccf - Next 200 Ccf (Rates are semi-annual; additional blocks for greater consumption) Plus fixed charge of $24.32 for residential meters 1" or less, per 6 mths	$2.05/Ccf - 1st 50 Ccf (qtrly accts) or 500 Ccf (monthly accts); $7.18 for consumption greater than those amounts. Plus service charge based on meter size: $6.00/qtr for 5/8"; $9.00/qtr for 3/4"; etc.
Avg. Annual Residential Use (Gal.)	80,000	80,000
Avg. Annual Residential Use (Ccf)	106.95	106.95
Avg. Residential Water Bill	$250	$249

	Village of Mamaroneck	Town of Harrison
Current Water Rates	$4.38/Ccf - 1st 66 Ccf per Qtr $4.93/Ccf - Next 150 Ccf per Qtr Plus service charge based on meter size: $24.39/qtr for 5/8"; $29.10/qtr for 3/4"; etc.	$4.00/Ccf - 1st 66 Ccf per Qtr $4.82/Ccf - Next 150 Ccf per Qtr Plus service charge based on meter size: $38.32/qtr for 5/8"; $41.71/qtr for 3/4"; etc.
Avg. Annual Residential Use (Gal.)	80,000	80,000
Avg. Annual Residential Use (Ccf)	106.95	106.95
Avg. Residential Water Bill	$575	$588

	New Rochelle United Water Company	City of Mount Vernon
Current Water Rates	$5.508 / Ccf Minimum based on usage of 1,200 cf/qtr for 1/2" or 5/8" meter; 1,500 cf/qtr for 3/4" meter; 2,700 cf/qtr for 1" and 1 1/4" meter, etc.	$2.70/Ccf - per quarter Minimum charge based on usage of 15 Ccf/qtr at $40.50
Avg. Annual Residential Use (Gal.)	80,000	80,000
Avg. Annual Residential Use (Ccf)	106.95	106.95
Avg. Residential Water Bill	$589	$310

Notes:
The above rates and charges reflect the rate schedules of each community in March 2014.
Village of Mamaroneck instituted a 16% service charge and water rate decrease effective October 1, 2013.

Table 2B Current Water Rates for Upstate New York Communities

TABLE 2B
New York City Water Board
Cost of Supplying Water to Upstate Customers
Current Water Rates for Upstate New York Communities

	Town of Carmel	**City of Yonkers**
Current Water Rates	$60.00 per 1,000 cf (Water District #1) $24.38 per 1,000 cf (Water District #2)	$2.55 / Ccf
Avg. Annual Residential Use (Gal.)	80,000	80,000
Avg. Annual Residential Use (Ccf)	106.95	106.95
Avg. Residential Water Bill	$261 - $642	$273

	City of Newburgh	**Village of Cornwall**
Current Water Rates	$6.13 per 1,000 Gal Water Facility Fee of $8.31 Per Quarter Minimum charge based on meter size: $36.78/qtr for 5/8" Minimum Charge up to 6,000 gals	$8.56 per 1,000 Gal
Avg. Annual Residential Use (Gal.)	80,000	80,000
Avg. Annual Residential Use (Ccf)	106.95	106.95
Avg. Residential Water Bill	$524	$685

Notes:
The above rates and charges reflect the rate schedules of each community in March 2014.

Table 3 Summary of Impacts on Upstate Customers

TABLE 3
New York City Water Board
Cost of Supplying Water to Upstate Customers
Summary of Impacts on Upstate Customers

Water System Customer	Typical Single Family Charges	Increase Attributable to Proposed 2015 Regulated Rate	% Change to a Homeowner
City of White Plains	$250	$6.15	2.5%
Village of Scarsdale	$249	$6.15	2.5%
City of New Rochelle	$589	$6.15	1.0%
City of Yonkers	$273	$6.15	2.3%
Village of Mamaroneck	$575	$6.15	1.1%
Town of Harrison	$588	$6.15	1.0%
City of Mount Vernon	$310	$6.15	2.0%
Town of Carmel	$261 - $642	$6.15	2.4% to 1.0%
City of Newburgh	$524	$6.15	1.2%
Village of Cornwall	$685	$6.15	0.9%
New York City	$383	$6.15	1.6%

Notes:
(1) The Typical Single Family Charge for selected communities are based on 80,000 gallons of annual water use and the rate schedules of each community in March 2014.
(2) The increase in annual water charges for New York City in FY 2015 as proposed to the New York City Water Board is 3.35%. The change within the City reflects increases in the cost of water supply and increases in water costs within the City.

Table 4A Historical Upstate Other Than Personal Services Costs

TABLE 4A
New York City Water Board
Historical Cost of Supplying Water to Upstate Customers
Upstate New York Other Than Personal Services Costs

Line No.	Description	FY 2011 $	FY 2012 $	FY 2013 $
	Budget			
1	Supplies and Materials - General	3,232,900	2,827,269	2,690,238
2	Automotive Supplies and Materials	54,538	19,474	119,979
3	Fuel Oil	2,863,365	2,654,645	2,547,405
4	Equipment - General	435,813	607,066	776,101
5	Telecommunications Equipment	18,866	40,763	26,511
6	Office Equipment	40,618	50,682	56,782
7	Contractual Services - General	5,194,255	6,150,564	9,252,942
8	Telephone and Other Communications	526,331	311,541	293,495
9	Office Services	313,985	253,694	178,861
10	Maintenance and Repairs - Motor Vehicles	91,140	140,609	196,467
11	Maintenance and Repairs - General	1,167,028	830,140	962,240
12	Rentals - Miscellaneous Equipment	1,853,681	1,856,959	1,913,255
13	Advertising	2,205	5,047	86,878
14	Security Services	0	0	0
15	Cleaning Services	597,860	411,124	647,099
16	Licenses (1)	0	0	0
17	Chemicals	6,744,998	6,008,103	3,033,060
18	Real Estate Taxes - Existing Properties	124,941,240	129,367,391	133,866,464
19	Real Estate Taxes - UV Facility (3)	6,721,814	9,819,083	13,931,769
20	NYS DEC Permits (1)	0	0	0
21	Motor Maintenance Supplies (1)	78,502	29,431	0
22	Gasoline (1)	0	0	0
23	Lab and Limnology	53,342	94,939	208,962
24	Natural Gas & Electricity	1,912,319	1,990,946	4,599,875
25	Watershed Regulations Consulting	0	0	0
26	Upstate Cost of Service/Rate Studies	52,107	46,603	54,165
27	Hillview Reservoir (2)	12,380,818	14,150,836	12,362,948
28	UV Facility	0	341,363	829,463
29	Filtration Avoidance - O&M Payments	10,427,716	10,757,589	10,281,831
30	Filtration Avoidance - Program Funding	9,776,944	12,045,037	19,764,817
31	Water Supply Environmental Health & Safety	1,953,558	1,876,423	2,642,343
32	OpX Savings			
33	Totals	191,435,944	202,687,321	221,323,950

Notes:

(1) Actual costs were not available at the publishing of this report. The City reserves the right to include such expenses at a future date.

(2) Actual costs are shown for 2011 through 2013.

(3) Costs for 2011 and 2012 may differ from prior published reports as actual cost data becomes available.

Table 4B Projected Upstate Other Than Personal Services Costs

TABLE 4B
New York City Water Board
Projected Cost of Supplying Water to Upstate Customers
Upstate New York Other Than Personal Services Costs

Line No.	Description	*Projected Years* FY 2014 $	FY 2015 $	FY 2016 $	FY 2017 $	FY 2018 $
1	Supplies and Materials - General	2,770,945	2,854,073	2,939,695	3,027,886	3,118,723
2	Automotive Supplies and Materials	123,578	127,285	131,104	135,037	139,088
3	Fuel Oil	2,623,827	2,702,542	2,783,618	2,867,127	2,953,140
4	Equipment - General	799,384	823,366	848,067	873,509	899,714
5	Telecommunications Equipment	27,307	28,126	28,970	29,839	30,734
6	Office Equipment	58,485	60,240	62,047	63,908	65,826
7	Contractual Services - General	9,530,530	9,816,446	10,110,939	10,414,268	10,726,696
8	Telephone and Other Communications	302,299	311,368	320,709	330,331	340,241
9	Office Services	184,227	189,753	195,446	201,309	207,349
10	Maintenance and Repairs - Motor Vehicles	202,361	208,432	214,685	221,126	227,759
11	Maintenance and Repairs - General	991,108	1,020,841	1,051,466	1,083,010	1,115,500
12	Rentals - Miscellaneous Equipment	1,970,653	2,029,772	2,090,665	2,153,385	2,217,987
13	Advertising	89,484	92,169	94,934	97,782	100,715
14	Security Services	0	0	0	0	0
15	Cleaning Services	666,512	686,508	707,103	728,316	750,165
16	Licenses (1)	0	0	0	0	0
17	Chemicals	3,124,051	3,217,773	3,314,306	3,413,735	3,516,147
18	Real Estate Taxes - Existing Properties	137,882,458	142,018,932	146,279,500	150,667,885	155,187,922
19	Real Estate Taxes - UV Facility	14,994,772	15,516,000	16,068,000	16,550,040	17,046,541
20	NYS DEC Permits (1)	0	0	0	0	0
21	Motor Maintenance Supplies (1)	0	0	0	0	0
22	Gasoline (1)	0	0	0	0	0
23	Lab and Limnology	215,231	221,688	228,339	235,189	242,245
24	Natural Gas & Electricity	4,737,871	4,880,008	5,026,408	5,177,200	5,332,516
26	Upstate Cost of Service/Rate Studies	61,000	61,000	61,000	61,000	61,000
27	Hillview Reservoir	12,733,836	13,115,851	13,509,327	13,914,606	14,332,045
28	UV Facility	6,883,521	7,090,027	7,302,727	7,521,809	7,747,464
29	Filtration Avoidance - O&M Payments	13,610,095	14,018,398	14,438,950	14,872,118	15,318,282
30	Filtration Avoidance - Program Funding	31,781,492	32,734,937	33,716,985	34,728,494	35,770,349
31	Water Supply Environmental Health & Safety	2,721,613	2,803,261	2,887,359	2,973,980	3,063,199
32	OpX Savings	(5,000,000)	(5,150,000)	(5,304,500)	(5,463,635)	(5,627,544)
33	Totals	244,086,642	251,478,796	259,107,850	266,879,255	274,883,803

Notes:
(1) Actual costs were not available at the publishing of this report. The City reserves the right to include such expenses at a future date.

Table 5A Debt Service Summary

TABLE 5A
New York City Water Board
Cost of Supplying Water to Upstate Customers
Debt Service/Capital Cost Summary

Line No.	Fiscal Year	Authority/NYSEFC Debt Service/Cash-Financed
1	2011	161,892,525
2	2012	186,928,086
3	2013	202,044,996
Projection Years:		
4	2014	249,179,932
5	2015	257,467,409
6	2016	294,467,684
7	2017	298,720,431
8	2018	311,482,170

Notes:

(A) The Upstate allocation of debt service shown in Table 5B of this report is slightly different than what was shown in May 2013, reflecting updated information from the Authority.

Table 5B Authority Bond Proceeds

Table 5B
New York City Water Board
Cost of Supplying Water to Upstate Customers
Proceeds of Authority Bonds Used for Upstate Projects

Line	Bond Issue	Total Principal ($)	Total Upstate Allocation	Upstate Principal ($)
1	1986 through 2006	12,843,047,298	11.25%	1,444,960,163
2	FY 2007 Series AA	199,910,000	25.51%	51,006,584
3	FY 2007 Series CC	210,500,000	15.89%	33,450,077
4	FY 2007 Series A	310,475,000	13.73%	42,629,128
5	FY 2007 Series DD	395,000,000	8.43%	33,314,037
6	**2008 Total**	13,958,932,298	11.50%	1,605,359,990
7	FY 2008 Series AA	400,000,000	27.49%	109,951,398
8	FY 2008 Series BB	401,000,000	15.39%	61,708,489
9	FY 2008 Series A	446,245,000	14.91%	66,527,108
10	FY 2008 Series DD	504,905,000	12.90%	65,126,012
11	**2009 Total**	15,711,082,298	12.15%	1,908,672,996
12	FY 2009 Series BB	200,870,000	63.93%	128,419,355
13	FY 2009 Series CC	150,100,000	9.17%	13,762,275
14	FY 2009 Series A	536,030,000	21.14%	113,326,719
15	FY 2009 Series DD	325,580,000	13.36%	43,512,270
16	FY 2009 Series EE	645,455,000	31.32%	202,147,362
17	FY 2009 Series FF	270,035,000	0.44%	1,185,596
18	FY 2009 Series GG	500,000,000	32.79%	163,938,186
19	**2010 Total**	18,339,152,298	14.04%	2,574,964,758
20	FY 2010 Series AA	504,240,000	17.49%	88,192,237
21	FY 2010 Series BB	218,820,000	0.00%	-
22	FY 2010 Series CC	200,000,000	0.53%	1,060,388
23	FY 2010 Series DD	400,000,000	22.50%	89,999,107
24	FY 2010 Series EE	500,000,000	19.32%	96,596,999
25	FY 2010 Series FF	359,110,000	0.00%	-
26	FY 2010 Series GG	554,045,000	29.31%	162,377,029
27	**2011 Total**	21,075,367,298	14.30%	3,013,190,518
28	FY 2011 Series AA	750,000,000	19.20%	143,981,546
29	FY 2011 Series CC	750,000,000	16.00%	119,991,903
30	FY 2011 Series DD	275,000,000	37.80%	103,963,716
31	FY 2011 Series EE	450,000,000	28.28%	127,257,732
32	FY 2011 Series FF	200,000,000	31.20%	62,392,534
33	FY 2011 Series GG	250,000,000	33.69%	84,237,054
34	**2012 Total**	23,750,367,298	15.39%	3,655,015,003
35	FY 2012 Series A-1, A-2	200,000,000	24.25%	48,499,041
36	FY 2012 Series AA	250,000,000	22.34%	55,858,298
37	FY 2012 Series BB	450,000,000	16.56%	74,520,000
38	FY 2012 Series CC&DD	400,000,000	23.01%	92,024,345
39	FY 2012 Series EE	77,725,000	26.57%	20,650,174
40	FY 2012 Series B1-B4	325,000,000	34.13%	110,924,326
41	FY 2012 Series FF&GG	450,000,000	37.68%	169,568,242
42	**2013 Total**	25,903,092,298	16.32%	4,227,059,429
43	FY 2013 Series AA-1, AA-2	200,000,000	23.69%	47,373,605
44	FY 2013 Series BB	440,510,000	18.22%	80,256,919
45	FY 2013 Series CC	455,955,000	10.68%	48,707,107
46	FY 2013 Series EE	292,925,000	18.35%	53,742,595
47	**2014 Total**	27,292,482,298	16.33%	4,457,139,655
48	FY 2014 Series AA	650,870,000	26.13%	170,098,562
49	FY 2014 Series BB	397,085,000	13.09%	51,984,538
		28,340,437,298		4,679,222,756
50	**2015-2018 Total**		15.85%	

Notes:
(A) The 1991 C Bonds were not included in the calculations used in the report. The total principal was $4,650,000.
(B) Figures for recent bond issues are preliminary; the upstate portion may change after all bond proceeds are spent.

Table 5C NYSEFC Bond Proceeds

Table 5C
New York City Water Board
Cost of Supplying Water to Upstate Customers
Proceeds of NYSEFC Bonds Used for Upstate Projects

Line No.	Bond Issue	Total Principal ($)	Upstate Allocation	Upstate Principal ($)
	FY 1995 Series 1	112,733,019	1.26%	1,420,436
	FY 1996 Series 1	113,085,000	1.28%	1,447,488
	FY 1996 Series 2	28,775,000	39.38%	11,331,595
	FY 1996 Series 3	40,285,000	8.93%	3,597,451
	FY 1998 Series 1	44,635,000	28.51%	12,725,439
	FY 1998 Series 2	113,784,841	9.71%	11,048,508
	FY 1998 Series 4	15,749,040	12.22%	1,924,533
	FY 1998 Series 5	87,872,535	15.02%	13,198,455
	FY 1999 Series 1	121,435,485	7.88%	9,569,116
	FY 1999 Series 2	269,985,000	0.54%	1,462,597
	FY 2000 Series 1	285,855,884	18.10%	51,746,780
	FY 2002 Series 1	204,131,705	1.70%	3,478,818
	FY 2002 Series 2	72,082,983	2.77%	1,999,381
	FY 2002 Series 3	519,405,711	3.01%	15,624,990
	FY 2002 Series 5	371,757,628	2.85%	10,609,799
	FY 2003 Series 1	148,040,809	1.65%	2,438,893
	FY 2003 Series 5	295,157,120	1.70%	5,003,460
	FY 2004 Series 1	301,008,574	0.07%	208,972
	FY 2004 Series 2	257,400,299	1.09%	2,806,140
	FY 2005 Series 1	230,408,946	4.02%	9,264,567
	FY 2005 Series 2	390,624,553	0.61%	2,369,434
	FY 2006 Series 1	229,018,261	3.83%	8,773,410
	FY 2006 Series 2,3	457,828,498	13.50%	61,821,784
1	1986 through 2006	4,711,060,891	5.18%	243,872,044
2	FY 2007 Series 1,2	518,427,784	9.58%	49,677,805
3	**2008 Total**	5,229,488,675	5.61%	293,549,848
4	FY 2008 Series 1,2	399,690,401	19.01%	75,989,525
5	**2009 Total**	5,629,179,076	6.56%	369,539,373
6	FY 2009 Series 1,2	448,435,268	27.23%	122,116,226
7	**2010 Total**	6,077,614,344	8.09%	491,655,599
8	FY 2010 Series 2,3,4	406,684,607	26.75%	108,800,028
9	**2011 Total**	6,484,298,951	9.26%	600,455,626
10	FY 2011 Series 1	478,881,733	18.80%	90,032,698
11	**2012-2014 Total**	6,963,180,684	9.92%	690,488,324
12	FY 2014 Series 2	209,380,000	16.20%	33,914,464
		7,172,560,684		724,402,788
13	**2015-2018 Total**		9.92%	

Notes:
(A) Figures for recent bond issues are preliminary; the upstate portion may change after all bond proceeds are spent.

Table 5D Debt Service/Capital Costs

Table 5D
New York City Water Board
Cost of Supplying Water to Upstate Customers
Debt Service

Line No.	Description		*Actual* FY 2013	FY 2014 $	FY 2015 $	*Projected* FY 2016 $	FY 2017 $	FY 2018 $
	System Totals - Capital-Related Costs							
1	Authority Debt Service - First Resolution	A	340,514,165	297,020,901	292,146,442	313,633,892	333,787,647	324,533,585
2	Anticipated Debt Service - First Resolution	B	-	-	10,000,000	30,000,000	47,000,000	64,000,000
3	Authority Debt Service - Second Resolution	C	655,955,042	769,290,320	813,880,137	933,917,137	862,698,137	880,467,437
4	Anticipated Debt Service - Second Resolution	D	-	-	28,000,000	81,000,000	130,000,000	175,000,000
5	Interest on Short-Term Debt	E	1,122,391	1,500,000	18,000,000	25,500,000	25,500,000	25,500,000
6	NYS EFC Outstanding Debt Service	F	391,424,174	393,152,031	383,236,000	384,062,000	384,376,000	376,963,000
7	NYS EFC Projected Debt Service	G	-	-	5,000,000	21,000,000	37,000,000	55,000,000
8	Cash-Financed Construction	H	-	225,000,000	225,000,000	225,000,000	225,000,000	225,000,000
	System Totals - Interest Earnings & Expenses							
9	Debt Service Fund	I	(742,300)	-	-	-	(1,000,000)	(1,000,000)
10	Debt Service Reserve Fund	J	(29,376,847)	(29,000,000)	(29,000,000)	(27,000,000)	(23,000,000)	(22,000,000)
11	Construction Fund	K	(381,928)	-	-	(1,000,000)	(2,000,000)	(2,000,000)
12	Subordinated Debt Service Fund	L	(1,327,717)	-	-	(2,000,000)	(5,000,000)	(5,000,000)
13	Miscellaneous Income & Expenses	M	(64,574)	-	-	-	-	-
14	Less: Authority Debt-Related Expenses	N	37,542,328	44,946,000	46,874,000	49,217,000	51,678,000	54,262,000
	Water Supply - Capital-Related Costs							
15	Authority Debt Service - First Resolution	A x O	55,567,636	48,506,531	46,316,960	49,723,585	52,918,766	51,451,625
16	Anticipated Debt Service - First Resolution	B x O	-	-	1,585,402	4,756,206	7,451,390	10,146,574
17	Authority Debt Service - Second Resolution	C x O	107,043,627	125,632,925	129,032,733	148,063,425	136,772,349	139,589,498
18	Anticipated Debt Service - Second Resolution	D x O	-	-	4,439,126	12,841,758	20,610,228	27,744,538
19	Interest on Short-Term Debt	E x P	167,935	225,406	2,619,970	3,711,625	3,711,625	3,711,625
20	NYS EFC Debt Service	(F+G)xQ	38,814,708	38,986,047	38,498,559	40,167,072	41,784,814	42,834,650
21	Cash-Financed Construction	H x P	-	33,810,944	32,749,630	32,749,630	32,749,630	32,749,630
	Water Supply - Interest Earnings							
22	Debt Service Fund	I x O	(121,134)	-	-	-	(158,540)	(158,540)
23	Debt Service Reserve Fund	J x O	(4,793,933)	(4,735,995)	(4,597,666)	(4,280,586)	(3,646,425)	(3,487,885)
24	Construction Fund	K x P	(57,145)	-	-	(145,554)	(291,108)	(291,108)
25	Subordinated Debt Service Fund	LxOxQ	(184,898)	-	-	(283,205)	(704,232)	(706,482)
26	Miscellaneous Income & Expenses	MxOxQ	(8,993)	-	-	-	-	-
27	Less: Authority Debt-Related Expenses	N x P	5,617,193	6,754,074	6,822,694	7,163,727	7,521,935	7,898,046
28	Net Water Supply Capital-Related Costs		202,044,996	249,179,932	257,467,409	294,467,684	298,720,431	311,482,170
			2013	**2014**	**2015-2018**			
29	Upstate Authority $ as a % of Total Authority CIP $	O	16.32%	16.33%	15.85%			
30	Upstate Total CIP $ as a % of Total CIP $	P	14.96%	15.03%	14.56%			
31	Upstate NYS EFC $ as a % of Total NYS EFC CIP $	Q	9.92%	9.92%	9.92%			

Table 5E Cash Used for Defeasance of Debt

TABLE 5E
New York City Water Board
Cost of Supplying Water to Upstate Customers
Cash Used for Defeasance of Debt
All Amounts in $

	FY 2011	FY 2012	FY 2013	FY 2014
Cash Used for the Defeasance of Bonds	260,000,000	239,600,000	299,990,000	400,000,000
Upstate CIP $ as a % of Total Water/Sewer CIP $	13.11%	14.15%	14.96%	15.03%
Upstate Portion of Defeasance Cash	34,091,414	33,899,783	44,885,380	60,108,345

The amount shown in FY 2014 is preliminary and subject to change.

Table 6 Judgments and Claims

TABLE 6
New York City Water Board
Cost of Supplying Water to Upstate Customers
Judgments and Claims

Year	Historical Costs ($)
1999	1,834
2000	109,969
2001	75,160
2002	4,480
2003	0
2004	0
2005	0
2006	0
2007	5,513,361
2008	3,695
2009	26,925
2010	668,221
2011	916,350
2012	240,320
2013	526,166
Average (1999-2013)	539,099
Projection Years (2014-2018)	539,099

Table 7 Miscellaneous Revenue

TABLE 7
New York City Water Board
Cost of Supplying Water to Upstate Customers
Miscellaneous Revenue
All Amounts in $

Year	Hydropower	Rents (Permits)	Tax Refunds	Total
1999		1,208,738	354,942	1,563,680
2000		944,043	283,436	1,227,479
2001		795,290	189,518	984,808
2002		935,023	50,686	985,709
2003		723,939	0	723,939
2004	1,105,639	1,348,358	50,686	2,504,683
2005	1,396,145	1,788,012	0	3,184,157
2006	1,321,881	2,379,307	0	3,701,188
2007	4,987,041	2,300,515	0	7,287,556
2008	7,239,859	995,209	0	10,017,035
2009	6,086,074	1,800,000	248,145	8,134,219
2010	5,117,222	1,855,183	0	6,972,405
2011	8,299,784	1,568,273	0	9,868,057
2012	4,388,471	2,021,826	0	6,410,297
2013	5,521,070	3,420,571	209,232	9,150,873
Average		1,605,619		
Projection Years (2014-2018)				
2014	5,631,491	1,605,619	0	7,237,111
2015	5,744,121	1,605,619	0	7,349,740
2016	5,859,004	1,605,619	0	7,464,623
2017	5,976,184	1,605,619	0	7,581,803
2018	6,095,707	1,605,619	0	7,701,327

Notes:
(1) Certain historical revenues for hydropower and rents have changed from prior reports based on updated information from the City.

Table 8A Historical Upstate Direct Personal Services Costs

TABLE 8A
New York City Water Board
Historical Cost of Supplying Water to Upstate Customers
Upstate New York Field Personnel Costs

Line No.	Description	FY 2011 $	FY 2012 $	FY 2013 $
	Divisional and Sectional Offices			
1	Katonah Resource Protection	94,245	107,012	135,541
2	Carmel Section	3,709,433	4,645,416	5,052,739
3	Prattsville/Schoharie	2,727,998	3,096,196	2,181,738
4	Ashokan	4,052,819	4,325,596	7,481,827
5	Grahamsville	4,867,786	5,399,752	5,305,359
6	Port Jervis	476,442	671,734	570,322
7	E. Division Hudson River P/S	248,992	619,570	710,849
	Laboratories			
8	Kensico	1,892,911	1,629,160	1,711,554
9	Brewster	0	641,612	543,607
10	Grahamsville	1,096,719	1,153,429	1,247,113
	Other Services			
11	Downsville	3,396,284	3,669,811	3,576,821
12	Sutton Park (1)	6,537,506	7,695,683	7,787,847
13	Kingston	8,005,514	9,332,006	9,412,845
14	Watershed Security (2)	9,733,711	12,026,243	13,617,410
15	Watershed-East of Hudson	5,538,107	5,577,629	5,661,851
16	Downsville/Water Plan and Protect	293,669	251,155	254,139
17	Mahopac	836,300	861,958	740,052
18	Environmental Health & Safety	0	0	215,590
19	Hillview Reservoir (3)	4,201,692	4,612,797	4,235,366
20	UV Facility	1,207,057	3,410,433	4,244,876
21	Direct Personnel Overtime Costs	2,016,580	2,978,220	2,147,832
22	**Total Personal Services Costs**	**60,933,763**	**72,705,413**	**76,835,277**

Notes:
(1) Sutton Park expenses include costs for laboratories.
(2) Hillview, Croton, Ashokan, Schoharie, Kingston, Downsville, Neversink, Beerston & other watershed locations.
(3) Hillview Reservoir costs include overtime expenses, which are not included in Line 21.
(4) Personal service costs include salary and a fringe benefit rate of 30.0% in FY 2011, 46.0% in FY 2012, and 46.0% in FY 2013.
(5) Upward or downward changes from year to year in a particular category of costs may reflect shifts in classifications for accounting purposes as opposed to changes in personal functions or responsibilities.

Table 8B Projected Upstate Direct Personal Services Costs

TABLE 8B
New York City Water Board
Cost of Supplying Water to Upstate Customers
Upstate New York Field Personnel Costs

Line No.	Description	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
				Projected Years		
		$	$	$	$	$
	Divisional and Sectional Offices					
1	Katonah Resource Protection	144,388	148,720	153,181	157,777	162,510
2	Carmel Section	5,382,552	5,544,028	5,710,349	5,881,660	6,058,109
3	Prattsville/Schoharie	2,324,149	2,393,873	2,465,689	2,539,660	2,615,850
4	Ashokan	7,970,196	8,209,302	8,455,581	8,709,248	8,970,526
5	Grahamsville	5,651,661	5,821,210	5,995,847	6,175,722	6,360,994
6	Port Jervis	607,549	625,776	644,549	663,885	683,802
7	E. Division Hudson River P/S	757,249	779,966	803,365	827,466	852,290
	Laboratories					
8	Kensico	1,823,274	1,877,972	1,934,312	1,992,341	2,052,111
9	Brewster	579,091	596,464	614,357	632,788	651,772
10	Grahamsville	1,328,517	1,368,373	1,409,424	1,451,707	1,495,258
	Other Services					
11	Downsville	3,810,294	3,924,603	4,042,341	4,163,612	4,288,520
12	Sutton Park (1)	8,296,190	8,545,076	8,801,428	9,065,471	9,337,435
13	Kingston	10,027,258	10,328,076	10,637,919	10,957,056	11,285,768
14	Watershed Security (2)	14,506,272	14,941,460	15,389,704	15,851,395	16,326,937
15	Watershed-East of Hudson	6,031,422	6,212,365	6,398,736	6,590,698	6,788,419
16	Water Plan and Protect	270,728	278,849	287,215	295,831	304,706
17	Mahopac	788,358	812,009	836,369	861,460	887,304
18	Environmental Health & Safety	229,662	236,552	243,648	250,958	258,487
19	Hillview Reservoir	4,511,825	4,647,180	4,786,595	4,930,193	5,078,099
20	UV Facility	4,521,956	4,657,615	4,797,343	4,941,263	5,089,501
21	Direct Personnel Overtime Costs	2,288,029	2,356,670	2,427,370	2,500,192	2,575,197
22	**Total Personal Services Costs**	**81,850,620**	**84,306,139**	**86,835,323**	**89,440,383**	**92,123,594**

Notes:

(1) Sutton Park expenses include costs for laboratories.
(2) Hillview, Croton, Ashokan, Schoharie, Kingston, Downsville, Neversink, Beerston & other watershed police locations.
(3) Personal service costs include a fringe benefit rate of 51% in FY 2014 - 2018.
(4) Costs for the UV Facility in FY 2014 are based on DEP estimates. Costs in subsequent years assume a 3.0% annual increase.
(5) It is assumed that personal services costs will increase 3.0% per year in FY 2014 - 2018, exclusive of the fringe benefit rate.
(6) Upward or downward changes from year to year in a particular category of costs may reflect shifts in classifications for accounting purposes as opposed to changes in personal functions or responsibilities.

Table 9A Historical Upstate Indirect Personal Services Costs

TABLE 9A
New York City Water Board
Historical Cost of Supplying Water to Upstate Customers
Upstate New York Support & Administrative Personnel Costs

Line No.	Description	FY 2011 $	FY 2012 $	FY 2013 $
	Divisional and Sectional Offices			
1	Katonah Resource Protection	536,565	602,640	571,501
2	Carmel Section	350,266	418,681	301,118
3	Prattsville/Schoharie	130,828	0	0
4	Ashokan	239,438	285,580	523,126
5	Grahamsville	1,132,728	1,195,248	1,459,296
	Laboratories			
6	Kensico	357,826	333,638	348,666
7	Brewster	0	68,697	75,877
8	Grahamsville	251,204	285,573	156,631
	Other Services			
9	Downsville	116,650	131,101	141,655
10	Sutton Park (1)	4,190,610	4,748,469	4,459,896
11	Kingston Office	5,454,159	5,901,905	5,686,340
12	Watershed Security (2)	1,771,648	1,949,017	1,436,377
13	Mobile Task Force	281,366	317,076	0
14	East of Hudson Fleet	273,039	306,644	325,606
15	Shokan Fleet Admin.	350,636	393,791	259,384
16	Downsville Fleet Admin.	91,013	102,215	104,600
17	Grahmsville Fleet Admin.	182,026	204,429	215,626
18	Watershed-East of Hudson	263,808	143,525	151,431
19	Other	0	81,820	107,622
20	UV Facility	370,365	424,270	470,189
21	Indirect Personnel Overtime Costs	215,962	274,704	252,948
22	**Total Personal Services Costs**	**16,560,136**	**18,169,023**	**17,047,891**

Notes:
(1) Sutton Park expenses include costs for laboratories.
(2) Hillview, Croton, Ashokan, Schoharie, Kingston, Downsville, Neversink, Beerston & other watershed locations.
(3) Personal service costs include salary and a fringe benefit rate of 30.0% in FY 2011, 46.0% in FY 2012, and 46.0% in FY 2013.
(4) Upward or downward changes from year to year in a particular category of costs may reflect shifts in classifications for accounting purposes as opposed to changes in personal functions or responsibilities.

Table 9B Projected Upstate Indirect Personal Services Costs

TABLE 9B
New York City Water Board
Cost of Supplying Water to Upstate Customers
Upstate New York Support & Administrative Personnel Costs

Line No.	Description	FY 2014 $	FY 2015 $	Projected Years FY 2016 $	FY 2017 $	FY 2018 $
	Divisional and Sectional Offices					
1	Katonah Resource Protection	608,805	627,069	645,881	665,258	685,215
2	Carmel Section	320,773	330,397	340,308	350,518	361,033
3	Prattsville/Schoharie	0	0	0	0	0
4	Ashokan	557,273	573,991	591,211	608,947	627,216
5	Grahamsville	1,554,550	1,601,187	1,649,222	1,698,699	1,749,660
	Laboratories					
6	Kensico	371,425	382,568	394,045	405,866	418,042
7	Brewster	80,830	83,255	85,753	88,325	90,975
8	Grahamsville	166,855	171,861	177,017	182,327	187,797
	Other Services					
9	Downsville	150,902	155,429	160,092	164,894	169,841
10	Sutton Park (1)	4,751,011	4,893,541	5,040,347	5,191,558	5,347,304
11	Kingston Office	6,057,510	6,239,235	6,426,412	6,619,205	6,817,781
12	Watershed Security (2)	1,530,135	1,576,039	1,623,320	1,672,020	1,722,181
13	Mobile Task Force	0	0	0	0	0
14	East of Hudson Fleet	346,860	357,266	367,984	379,023	390,394
15	Ashokan Fleet Admin.	276,315	284,605	293,143	301,937	310,995
16	Downsville Fleet Admin.	111,427	114,770	118,213	121,760	125,412
17	Grahmsville Fleet Admin.	229,701	236,592	243,690	251,000	258,530
18	Watershed-East of Hudson	161,315	166,155	171,139	176,273	181,562
19	Other	114,647	118,087	121,629	125,278	129,037
20	UV Facility	500,880	515,907	531,384	547,325	563,745
21	Indirect Personnel Overtime Costs	269,459	277,543	285,869	294,445	303,278
22	**Total Personal Services Costs**	**18,160,674**	**18,705,495**	**19,266,660**	**19,844,659**	**20,439,999**

Notes:
(1) Sutton Park expenses include costs for laboratories.
(2) Hillview, Croton, Ashokan, Schoharie, Kingston, Downsville, Neversink, Beerston & other watershed locations.
(3) Personal service costs include a fringe benefit rate of 51% in FY 2014 - 2018.
(4) It is assumed that personal services costs will increase 3.0% per year in FY 2014 - 2018, exclusive of the fringe benefit rate.
(5) Upward or downward changes from year to year in a particular category of costs may reflect shifts in classifications for accounting purposes as opposed to changes in personal functions or responsibilities.

Table 10 Development of Allocation Factors

TABLE 10
New York City Water Board
Cost of Supplying Water to Upstate Customers
Development of Allocation Factors

Line No.	Description	2011		2012		2013		Projection Years
1	Total Salaries - Employees North of the City	79,665,743		83,008,714		87,247,022		
2		---------- =	55.76%	---------- =	52.08%	---------- =	54.63%	54.63%
3	Total Salaries - All Water Supply Employees	142,862,078		159,381,159		159,698,085		
4	Head Count - Water Supply Employees	1,676		1,653		1,623.44		
5		---------- =	33.83%	---------- =	33.94%	---------- =	32.22%	32.22%
6	Head Count - All NYC DEP Employees	4,954		4,870		5,038.00		
7	Number of Vehicles - Water Supply	804		753		743		
8		---------- =	38.60%	---------- =	36.25%	---------- =	36.95%	36.95%
9	Number of Vehicles - All NYC DEP	2,084		2,078		2,011		

Table 11A Historical Allocation of DEP Personal Services Costs

TABLE 11A
New York City Water Board
Cost of Supplying Water to Upstate Customers
Historical Allocation of DEP Personal Services
Costs to Facilities North of the City

Line No.	Description	FY 2011 $	FY 2012 $	FY 2013 $
1	Executive	6,833,531	7,962,243	8,430,796
2	General Counsel	2,330,625	3,957,425	3,251,340
3	Public Affairs	1,912,122	1,690,502	2,899,288
4	Env. Health & Safety	2,615,141	3,267,576	3,677,515
5	Environ. Planning	3,774,610	4,360,093	4,849,879
6	Budget Office	2,352,155	2,625,271	2,563,433
7	Facilities Mgt & Constr	4,575,188	5,497,867	5,776,921
8	Human Res & Labor Rel	11,593,766	11,645,232	9,400,367
9	Chief Contract Office	1,937,929	1,743,208	1,798,178
10	Addt'l Exec & Support	310,675	337,641	750,757
11	Total DEP Executive and Support Personal Services Costs	38,235,742	43,087,057	43,398,473
12	Allocation to Water Supply	33.83%	33.94%	32.22%
13	Personal Services Costs Related to Water Supply	12,935,629	14,624,827	13,984,645
14	Allocation to Facilities North of NYC	55.76%	52.08%	54.63%
15	**Personal Services Costs Related to Facilities North of the City**	**7,213,436**	**7,616,886**	**7,640,158**

Notes:
(1) Personal service costs include salary and a fringe benefit rate of 30.0% in FY 2011, 46.0% in FY 2012, and 46.0% in FY 2013.

Table 11B Projected Allocation of DEP Personal Services Costs

TABLE 11B
New York City Water Board
Cost of Supplying Water to Upstate Customers
Projected Allocation of DEP Personal Services
Costs to Facilities North of the City

Line No.	Description	*Projected Years* FY 2014 $	FY 2015 $	FY 2016 $	FY 2017 $	FY 2018 $
1	Executive	8,981,107	9,250,540	9,528,057	9,813,898	10,108,315
2	General Counsel	3,463,568	3,567,475	3,674,499	3,784,734	3,898,276
3	Public Affairs	3,088,536	3,181,192	3,276,628	3,374,926	3,476,174
4	Env. Health & Safety	3,917,561	4,035,088	4,156,141	4,280,825	4,409,250
5	Environ. Planning	5,166,450	5,321,443	5,481,086	5,645,519	5,814,884
6	Budget Office	2,730,759	2,812,682	2,897,062	2,983,974	3,073,493
7	Facilities Mgt & Constr	6,154,004	6,338,624	6,528,782	6,724,646	6,926,385
8	Human Res & Labor Rel	10,013,966	10,314,385	10,623,817	10,942,531	11,270,807
9	Chief Contract Office	1,915,552	1,973,019	2,032,210	2,093,176	2,155,971
10	Addt'l Exec & Support	799,761	823,754	848,467	873,921	900,139
11	Total DEP Personal Services Costs	46,231,264	47,618,202	49,046,748	50,518,151	52,033,695
12	Allocation to Water Supply	32.22%	32.22%	32.22%	32.22%	32.22%
13	Personal Services Costs Related to Water Supply	14,897,478	15,344,402	15,804,734	16,278,876	16,767,243
14	Allocation to Facilities North of NYC	54.63%	54.63%	54.63%	54.63%	54.63%
15	**Personal Services Costs - Facilities North of the City**	**8,138,861**	**8,383,027**	**8,634,518**	**8,893,554**	**9,160,360**

Notes:
(1) Personal service costs include a fringe benefit rate of 51% in FY 2014 - 2018.
(2) It is assumed that personal services costs will increase 3.0% per year in FY 2014 - 2018, exclusive of the fringe benefit rate.
(3) Upward or downward changes from year to year in a particular category of costs may reflect shifts in classifications for accounting purposes as opposed to changes in personal functions or responsibilities.

Table 12A Historical Allocation of DEP Other Than Personal Services Costs

TABLE 12A
New York City Water Board
Historical Cost of Supplying Water to Upstate Customers
Allocation of DEP Other Than Personal Services
Costs to Facilities North of the City

Line No.	Description	FY 2011 $	FY 2012 $	FY 2013 $
1	Accounting	117,991	103,665	73,057
2	Executive and Support	24,878	11,132	55,177
3	Fleet Administration	5,631,030	7,282,248	4,902,353
4	Public Affairs	543,616	203,689	205,837
5	Facilities Management and Construction	1,645,292	704,365	885,959
6	Management and Budget	1,628,697	1,383,705	1,223,819
7	Management Information Systems	4,068,221	7,173,382	8,734,013
8	Chief Engineer	42,571	54,697	26,626
9	Legal	50,580	44,932	37,159
10	Environmental Assessment	207,759	793,105	898,111
11	Telephone	5,108,537	5,211,912	6,637,828
12	Lefrak Administration Rents	4,437,394	5,345,023	4,716,903
13	Facility Management Rents	374,440	363,220	352,000
14	Management and Budget Environmental Health/Safety	234,705	417,913	217,736
15	Security Services	1,078,269	1,688,671	1,677,259
16	Contractual Services	70,314	63,653	0
17	Obesity Task Force	0	0	40,565
18	Total OTPS to be Allocated	25,264,292	30,845,311	30,684,402
19	Allocation	33.83%	33.94%	32.22%
20	OTPS Allocation (line 18 X line 19)	8,547,225	10,469,671	9,887,686
21	Rents Other Than Lefrak	1,503,210	1,508,422	1,683,012
22	Lefrak Water Supply Rents	1,269,981	1,507,365	1,486,880
23	Total Rents (line 21 + line 22)	2,773,191	3,015,787	3,169,892
24	Motor Vehicle Operating Rents	1,110,653	1,110,653	513,528
25	Allocation	38.60%	36.25%	36.95%
26	Total Motor Vehicle Operating Rents (line 24 X line 25)	428,731	402,642	189,732
27	Motor Vehicle Parking	345,000	345,000	345,000
28	Allocation	18.37%	16.70%	16.38%
29	Total Motor Vehicle Parking (line 27 X line 28)	63,369	57,630	56,519
30	Total OTPS Costs Allocated to Water Supply at DEP (1)	11,812,516	13,945,730	13,303,829
31	Allocation to Facilities North of NYC	55.76%	52.08%	54.63%
32	OTPS Costs Related to Facilities North of the City	6,587,143	7,263,199	7,268,211

Notes:
(1) Total OTPS costs allocated to Water Supply is equal to the sum of lines 20, 23, 26, and 29.

Table 12B Projected Allocation of DEP Other Than Personal Services Costs

TABLE 12B
New York City Water Board
Cost of Supplying Water to Upstate Customers
Allocation of DEP Other Than Personal Services
Costs to Facilities North of the City

Line No.	Description	FY 2014 $	FY 2015 $	Projected Years FY 2016 $	FY 2017 $	FY 2018 $
1	Accounting	75,248	77,506	79,831	82,226	84,693
2	Executive and Support	56,832	58,537	60,293	62,102	63,965
3	Fleet Administration	5,049,424	5,200,906	5,356,934	5,517,642	5,683,171
4	Public Affairs	212,012	218,373	224,924	231,671	238,622
5	Facilities Management and Construction	912,537	939,913	968,111	997,154	1,027,069
6	Management and Budget	1,260,534	1,298,350	1,337,300	1,377,419	1,418,742
7	Management Information Systems	8,996,033	9,265,914	9,543,892	9,830,208	10,125,115
8	Chief Engineer	27,425	28,247	29,095	29,968	30,867
9	Legal	38,273	39,422	40,604	41,822	43,077
10	Environmental Assessment	925,055	952,806	981,390	1,010,832	1,041,157
11	Telephone	6,836,963	7,042,072	7,253,334	7,470,934	7,695,062
12	Lefrak Administration Rents	4,858,410	5,004,163	5,154,287	5,308,916	5,468,184
13	Facility Management Rents	362,560	373,437	384,640	396,179	408,064
14	Management and Budget Environmental Health/Safety	224,269	230,997	237,927	245,064	252,416
15	Security Services	1,727,577	1,779,404	1,832,787	1,887,770	1,944,403
16	Contractual Services	0	0	0	0	0
17	Obesity Task Force	41,782	43,036	44,327	45,656	47,026
18	Total OTPS to be Allocated	31,604,934	32,553,082	33,529,675	34,535,565	35,571,632
19	Allocation	32.22%	32.22%	32.22%	32.22%	32.22%
20	OTPS Allocation (line 18 X line 19)	10,184,316	10,489,846	10,804,541	11,128,677	11,462,538
21	Rents Other Than Lefrak	1,733,502	1,785,507	1,839,072	1,894,245	1,951,072
22	Lefrak Water Supply Rents	1,531,487	1,577,431	1,624,754	1,673,497	1,723,702
23	Total Rents (line 21 + line 22)	3,264,989	3,362,939	3,463,827	3,567,742	3,674,774
24	Motor Vehicle Operating Rents	528,934	544,802	561,146	577,980	595,320
25	Allocation	36.95%	36.95%	36.95%	36.95%	36.95%
26	Total Motor Vehicle Operating Rents (line 24 X line 25)	195,424	201,287	207,325	213,545	219,952
27	Motor Vehicle Parking	355,350	366,011	376,991	388,301	399,950
28	Allocation	16.38%	16.38%	16.38%	16.38%	16.38%
29	Total Motor Vehicle Parking (line 27 X line 28)	58,214	59,961	61,760	63,612	65,521
30	Total OTPS Costs Allocated to Water Supply at DEP (2)	13,702,944	14,114,032	14,537,453	14,973,576	15,422,784
31	Allocation to Facilities North of NYC	54.63%	54.63%	54.63%	54.63%	54.63%
32	**OTPS Costs Related to Facilities North of the City**	**7,486,258**	**7,710,845**	**7,942,171**	**8,180,436**	**8,425,849**

Notes:
(1) Total OTPS costs allocated to Water Supply is equal to the sum of lines 20, 23, 26, and 29.
(2) It is assumed that OTPS costs will increase 3% per annum.

Table 13 Annual Water Consumption

TABLE 13
New York City Water Board
Cost of Supplying Water to Upstate Customers
Annual Water Consumption

Line No.	Fiscal Year	(A) System-Wide Consumption mg	(B) Upstate Consumption mg	Upstate as a % of Total [B]/[A]
1	1985	544,025	41,661	7.66%
2	1986	501,019	39,397	7.86%
3	1987	542,870	42,853	7.89%
4	1988	573,679	44,956	7.84%
5	1989	559,669	43,255	7.73%
6	1990	547,522	42,795	7.82%
7	1991	564,234	45,103	7.99%
8	1992	560,014	44,010	7.86%
9	1993	531,796	42,015	7.90%
10	1994	538,558	43,221	8.03%
11	1995	520,410	43,915	8.44%
12	1996	528,938	45,125	8.53%
13	1997	487,012	44,044	9.04%
14	1998	483,182	44,404	9.19%
15	1999	499,849	47,230	9.45%
16	2000	502,758	46,922	9.33%
17	2001	488,909	45,845	9.38%
18	2002	467,705	45,200	9.66%
19	2003	449,606	43,400	9.65%
20	2004	446,822	43,198	9.67%
21	2005	443,445	43,072	9.71%
22	2006	441,477	44,504	10.08%
23	2007	444,553	43,895	9.87%
24	2008	452,048	43,559	9.64%
25	2009	420,438	41,477	9.87%
26	2010	411,482	40,797	9.91%
27	2011	420,635	42,682	10.15%
28	2012	408,954	39,713	9.71%
29	2013	410,006	40,143	9.79%
Projections:				
30	2014	403,059	39,921	9.90%
31	2015	398,163	39,488	9.92%
32	2016	393,267	39,055	9.93%
33	2017	388,372	38,621	9.94%
34	2018	383,476	38,188	9.96%

Notes:

(1) Consumption projections are based on a regression analysis beginning in 2004.

(2) Equation used to calculate System-wide Consumption:
y=m(t)+b. Where (t) is a given year.
m= -4895.836481
b= 10263274

(3) Equation used to calculate Upstate Consumption:
y=m(t)+b. Where (t) is a given year.
m= -433.26
b= 912,507.03

Table 14 Projected Revenues From Hydroelectric Facilities

Table 14

NYC Department of Environmental Protection
Gross Revenue Estimates for Upstate Hydro-Electric Facilities
All Amounts in $

Revenues	Year 2014	2015	2016	2017	2018
Ashokan & Kensico	-	-	-	-	-
Neversink	1,879,458	1,917,047	1,955,388	1,994,496	2,034,386
West Delaware	48,418	49,387	50,375	51,382	52,410
East Delaware	3,703,615	3,777,687	3,853,241	3,930,306	4,008,912
Summary	5,631,491	5,744,121	5,859,004	5,976,184	6,095,707

Notes:

(1) All figures for Neversink and East Delaware are based on 2013 results reported by the New York City Office of the Comptroller, adjusted for inflation in subsequent years at the rate of 2% per year.

(2) Calendar year revenue data is used to estimate the fiscal year revenue when the fiscal year data is not available at the time of this Report.

Table 15 Comparison of Upstate Customer Billings vs. Cost of Service

TABLE 15
New York City Water Board
Cost of Supplying Water to Upstate Customers
Cost-of-Service Reconciliation

Fiscal Year	Rate ($) per Million Gallons (MG) Billed to Upstate Customers	Computed Cost to the Board	Upstate Consumption (MG)	Total Billed ($)	Actual Cost ($)	Underpayment ($)
1994 (a)	165.23	211.6	43,221	7,141,373	9,145,521	2,004,148
1995 (a)	174.18	229.87	43,915	7,649,115	10,094,741	2,445,626
1996 (a)	174.18	247.28	45,125	7,859,907	11,158,559	3,298,652
1997	227.95	309.55	44,044	10,039,830	13,633,820	3,593,990
1998	274.93	338.79	44,404	12,208,047	15,043,699	2,835,652
1999	342.97	348.31	47,230	16,198,439	16,450,646	252,208
2000	383.78	385.25	46,922	18,007,764	18,076,739	68,975
2001	414.37	414.88	45,845	18,996,834	19,020,215	23,381
2002	448.83	462.24	45,200	20,287,116	20,893,248	606,132
2003 (b)	485.71	522.99	43,400	21,079,814	22,697,766	1,617,952
2004 (b)	542.36	529.85	43,198	23,428,650	22,888,248	-540,402
2005	591.21	591.91	43,072	25,464,774	25,494,925	30,151
2006	617.79	623.47	44,504	27,494,064	27,746,847	252,782
2007	691.91	691.83	43,895	30,371,597	30,368,104	-3,493
2008	798.62	703.73	43,559	34,786,978	30,653,783	-4,133,195
2009	900.31	882.91	41,477	37,342,472	36,620,683	-721,789
2010	922.23	973.86	40,797	37,624,046	39,730,509	2,106,464
2011	1,149.72	1,121.04	42,682	49,072,562	47,848,489	-1,224,073
2012	1,213.84	1,283.43	39,713	48,205,540	50,969,289	2,763,749
2013	1,332.30	1,389.45	40,143	53,482,864	55,777,065	2,294,201
				Total Underpayment 1994-2013		17,571,113
				Total Underpayment 2004-2013		824,395

(a)The rates approved by NYSDEC were: $158.31 for 1994 and $175.69 for both 1995 and 1996.
(b)The computed cost to the Board as shown above for 2003 and 2004 does not take into consideration the upstate share of the costs of defeasance of certain Authority bonds. Including the effects of the cost of defeasance, the rate per million gallons is $549.32 in 2003 and $560.58 in 2004.
(c)The rates shown above include the costs of defeasance, where applicable.
(d) The table above does not take into account the application of credits to the cost of service based on prior year reconciliations.