



Croton Aqueduct

Public Water and Wastewater Utilities — New York City Water Finance Authority Case Study

New York City Municipal Water Finance Authority

March 9, 2021

Tripartite Operating and Governance Structure Creates an Independent Water and Sewer System

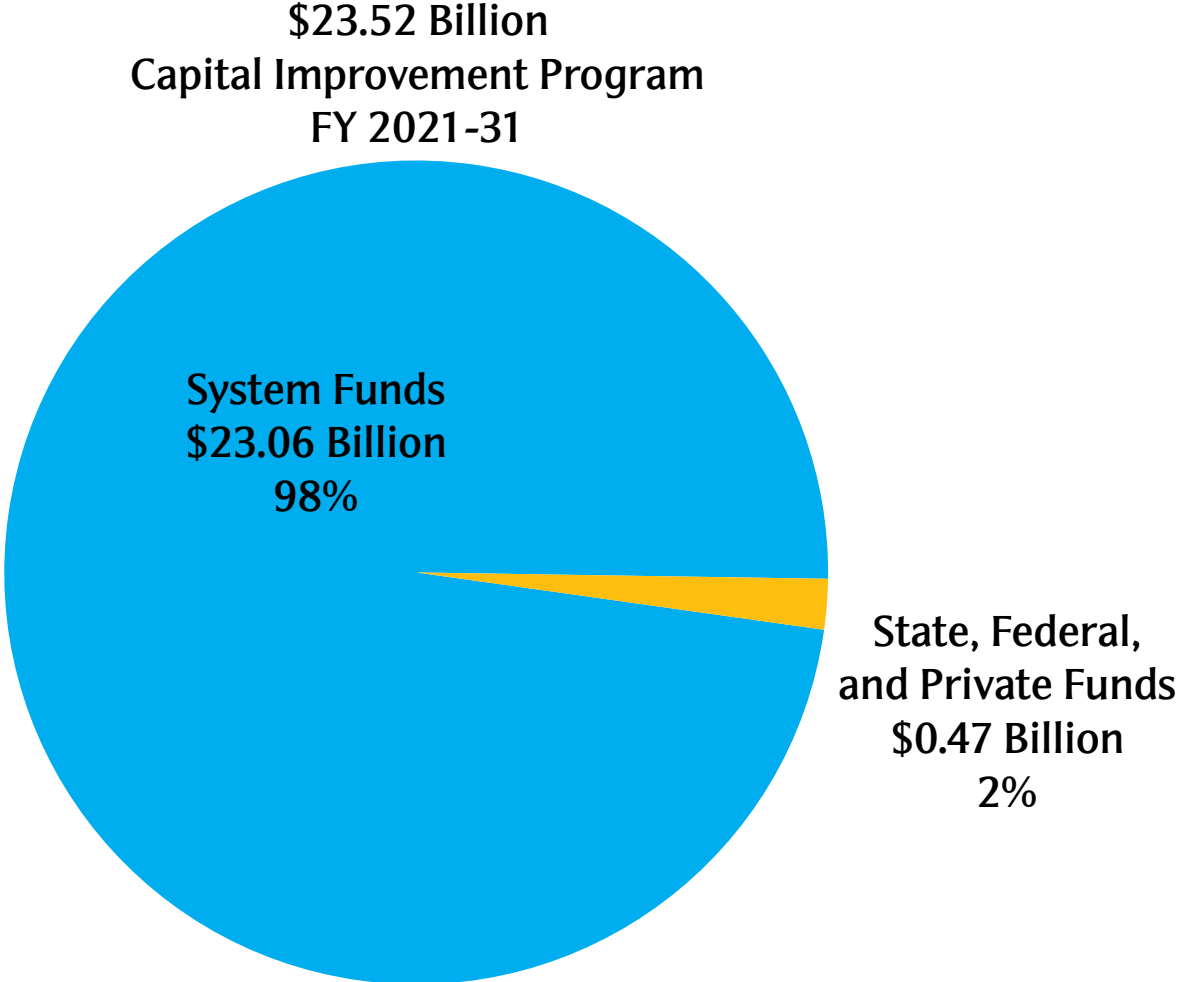
- The NYC Water Board owns System revenues and sets rates as required to fully fund all the debt service and operating costs of the System
- NYW issues bonds for the improvement of the System
- NYC's Department of Environmental Protection (DEP) operates the System. The City is reimbursed for operating and maintenance expenses subordinate to debt service
- The NYC Water Board and NYW are legally separate from the City



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|--|--|---|
| <ul style="list-style-type: none">• Leases System from the City• Sets rates and charges• Owns System revenues• Revenues deposited in “lock-box” | <ul style="list-style-type: none">• Issues bonds to fund capital improvement program• Holds statutory and contractual first claim on gross revenues• Has no System operating functions | <ul style="list-style-type: none">• DEP manages capital improvement program and operates and maintains the System for the Water Board• Bills and collects revenue from customers for the Water Board |
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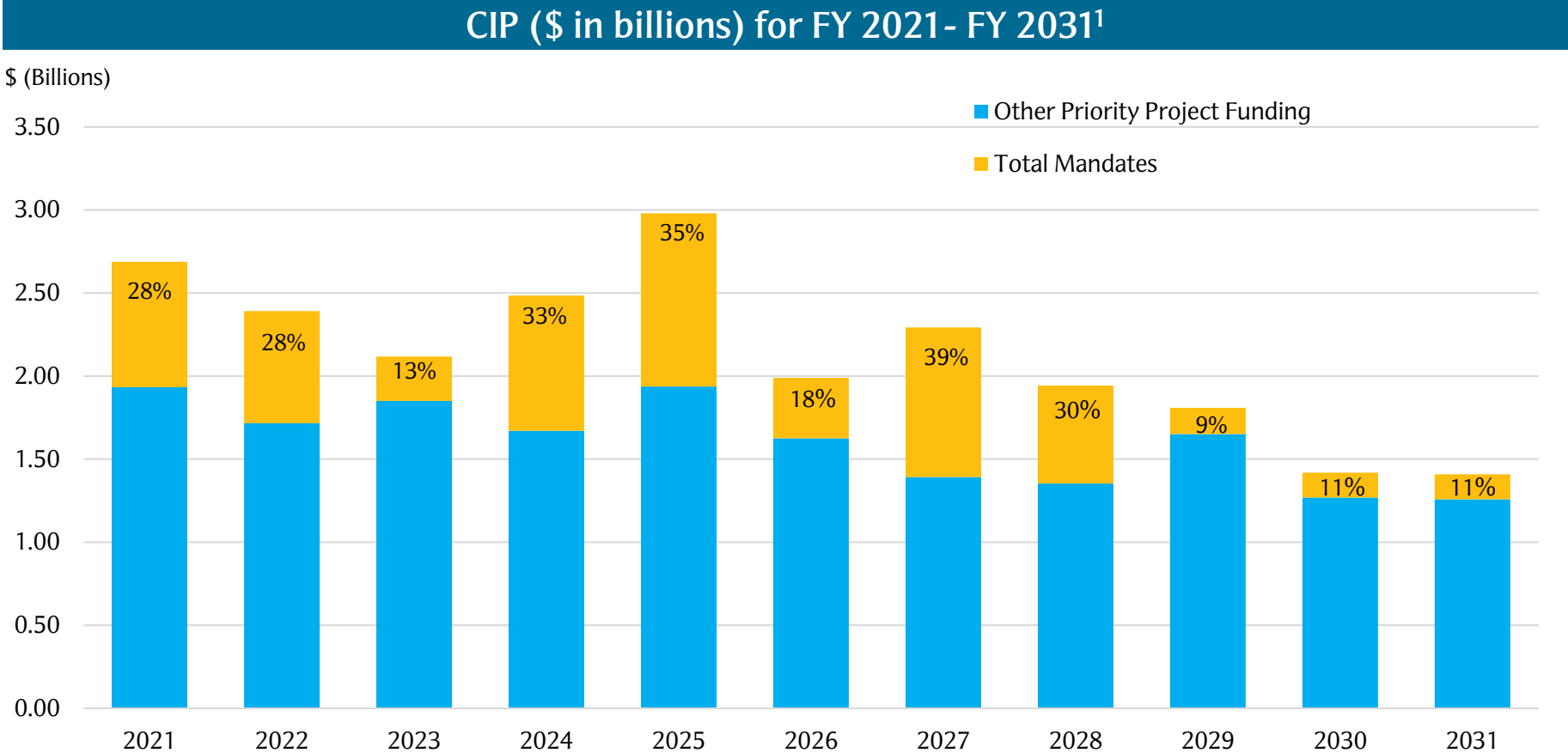
Capital Improvement Program Funding

- Approximately 98% of the System’s capital projects costs are expected to be paid from bond proceeds and System Revenues



Mandated Projects in the Capital Improvement Program

- Approximately 25% of the total program for FYs 2021 through FY 2031 is dedicated to regulatory mandated projects

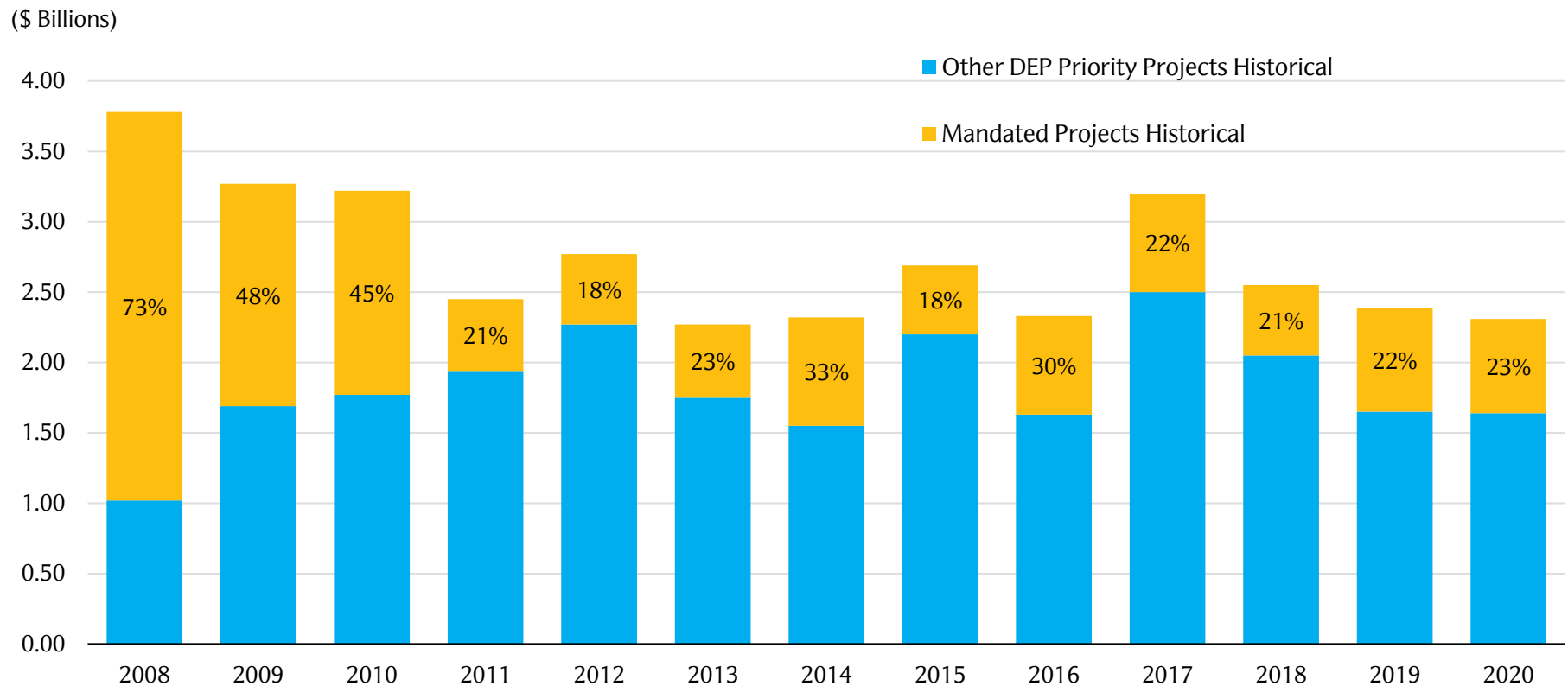


¹ Source: Aecom USA, Inc.

Mandated Projects in the Historical Capital Budgets

- Percentage of regulatory mandated project costs vary from year to year
 - During FYs 2008-2010 regulatory mandated project costs were very high as the System had to fund Croton WFP, UV Facility and Newtown Creek WWTP upgrades

CIP (\$ in billions) for FY 2008- FY 2020¹



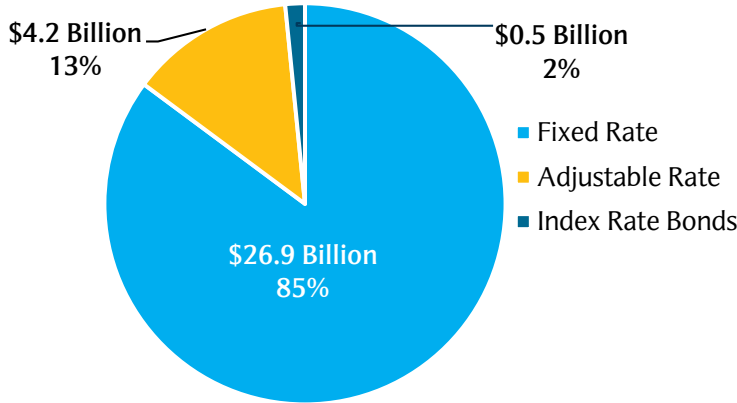
1. Source: Aecom USA, Inc.

\$31.6 Billion Outstanding Debt Portfolio

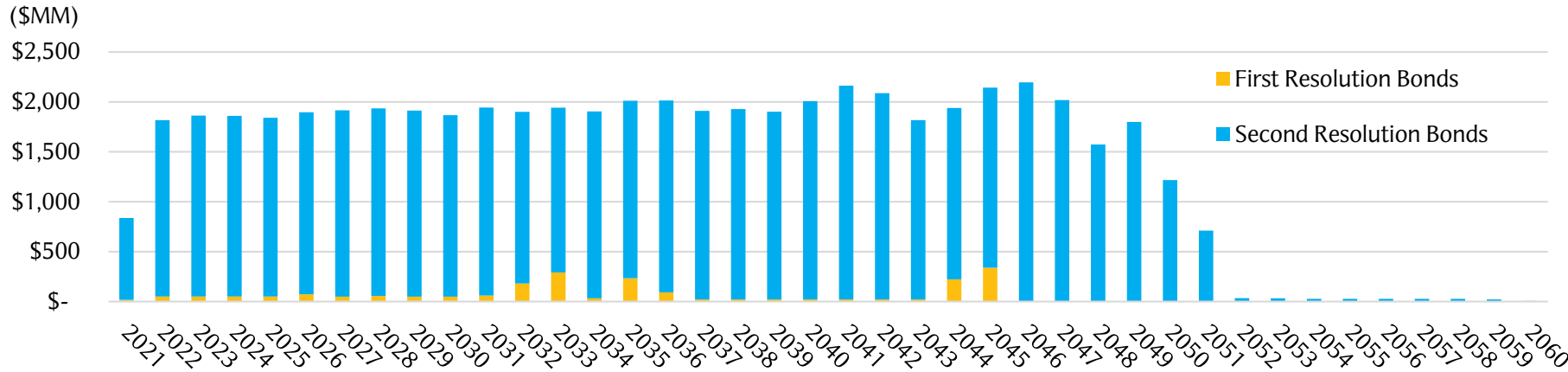
Anticipated Future Bond Issuance¹

Fiscal Year	Issued to the Public	Issued to EFC
2021	\$1,219 ²	\$300
2022	1,495	300
2023	1,429	300
2024	1,501	300
2025	1,704	300
Period Total	\$7,348	\$1,500

Outstanding Debt by Interest Rate Mode³



Outstanding Debt Service by Resolution by Fiscal Year⁴

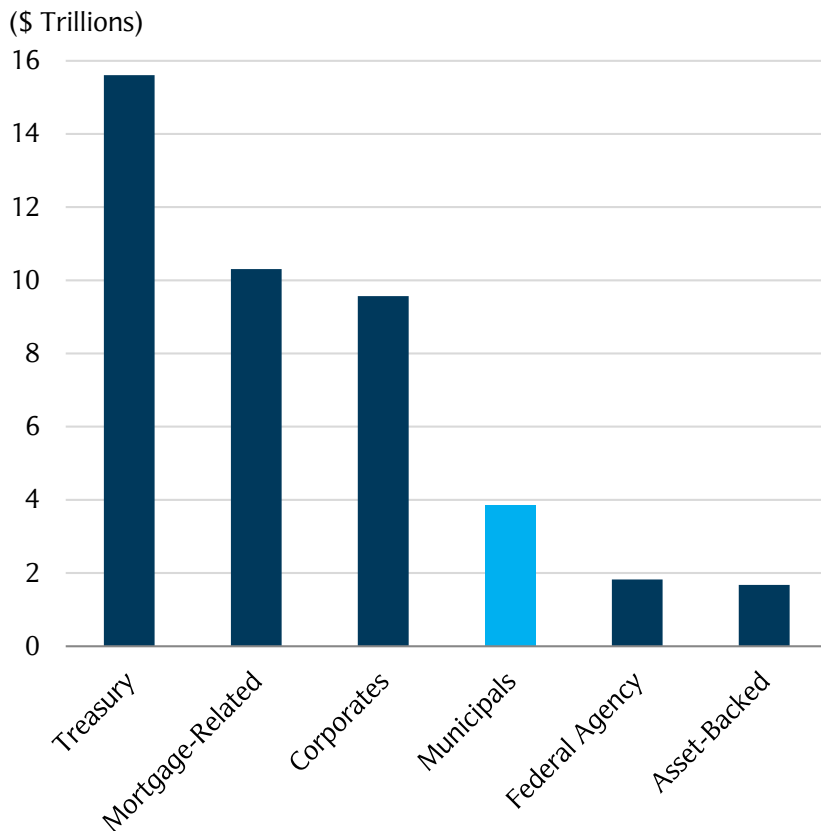


1. As of September 2020, excluding refunding bonds.
 2. To date during Fiscal Year 2021 the Authority has issued \$585.3 million of Second Resolution Bonds, not including refunding bonds.
 3. Includes \$553.26 million of Fiscal 2021 Series CC Bonds expected to be issued on March 18, 2021; excludes bonds expected to be refunded by Fiscal 2021 Series CC Bonds.
 4. FY 2021 includes amounts remaining to be paid by the Authority as of the date of the Fiscal 2021 Series CC Official Statement.

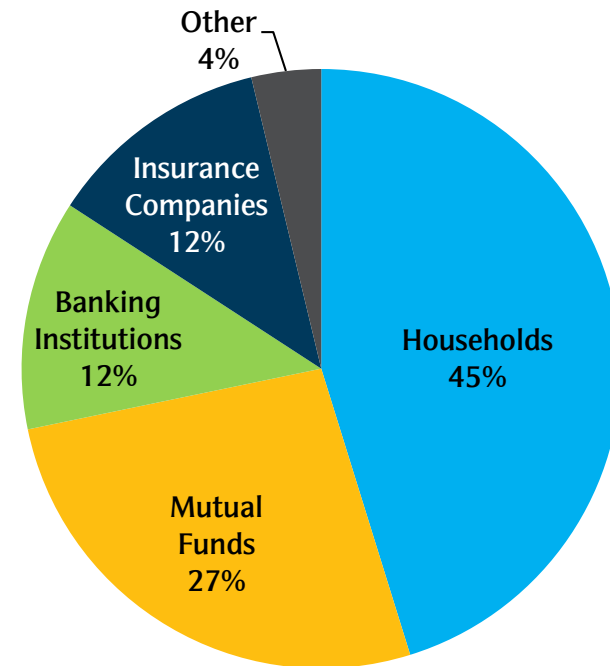
Municipals – One of the Largest Fixed Income Asset Classes

- Muni market is \$3.9 trillion in size and is the fourth largest asset class in the U.S.
- Primary holders of muni bonds are retail investors: “households” which includes money invested through Separately Managed Accounts (“SMAs”) as professional retail, and traditional “mom & pop” retail

Outstanding (\$ Trillion)



Holders of Muni Bonds



Source: SIFMA as of 1/04/21.

Types of Municipal Bonds

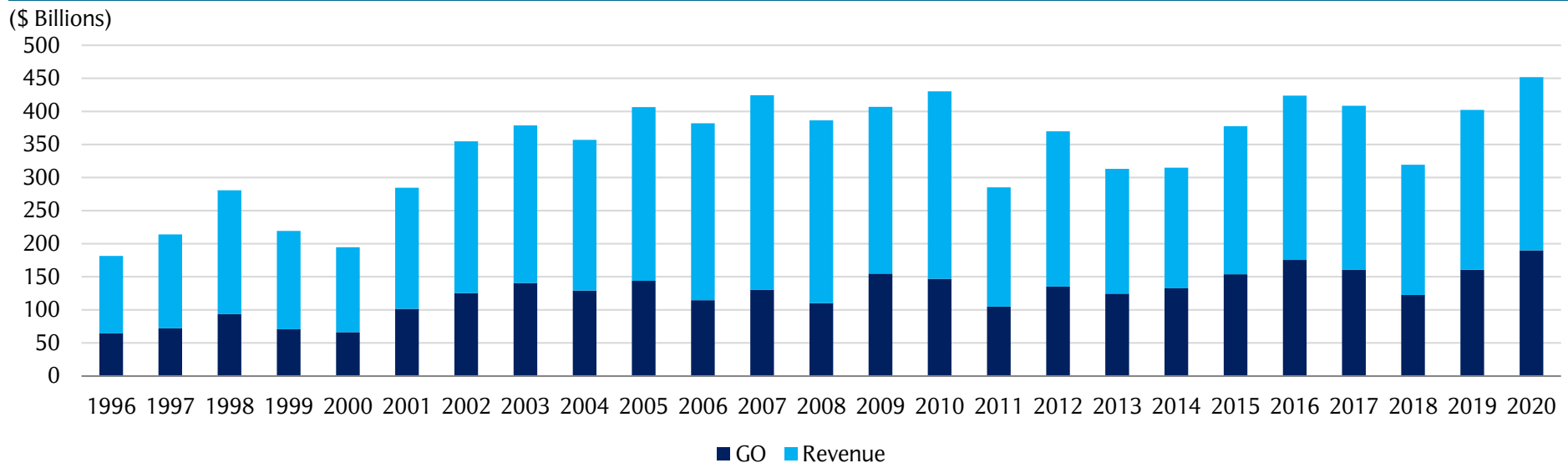
General Obligation (“GO”) Bonds are secured by a pledge of the issuer’s full faith, credit and taxing power. The “full faith and credit” backing of a General Obligation bond implies that all sources of revenue, unless specifically excluded, will be available to pay debt service on the bonds.

Examples: State of California, City of New York

Revenue Bonds are payable from a specific stream of revenues, such as a user fee, loans, or dedicated tax, and are not backed by the full faith and credit of the issuer. They are issued to finance specific enterprises or projects and are usually secured solely by revenues from those projects.

Examples: Port Authority of NY / NJ, Bay Area Toll Authority, [New York City Municipal Water Finance Authority](#)

Revenue and GO Bond Issuance (1996-2020, \$ Billion)



Source: SIFMA as of 1/19/2021.

Credit Considerations

Macro Economy Supporting Repayment

- **Metrics:** Unemployment rate, personal income growth and personal income
- **Diversification of economic base:** Major employers and employment distribution
- **Demand/growth:** Service area, usage trends and competitive pressure

Finance

- **Metrics:** Budget forecasts, reserve balance, revenue and expenditure growth
- **Borrowing for operations?** (Other than short-term notes used for cash flow timing differences)

Legal Covenants

- **Pledged revenues:** Gross vs. net pledge
- **Debt service reserve funds:** e.g. Max annual debt service
- **Additional bonds test:** No new debt unless debt service coverage is sufficient
- **Rate covenant:** Pledge to increase rates if debt service coverage is not at some minimum level

Debt Metrics

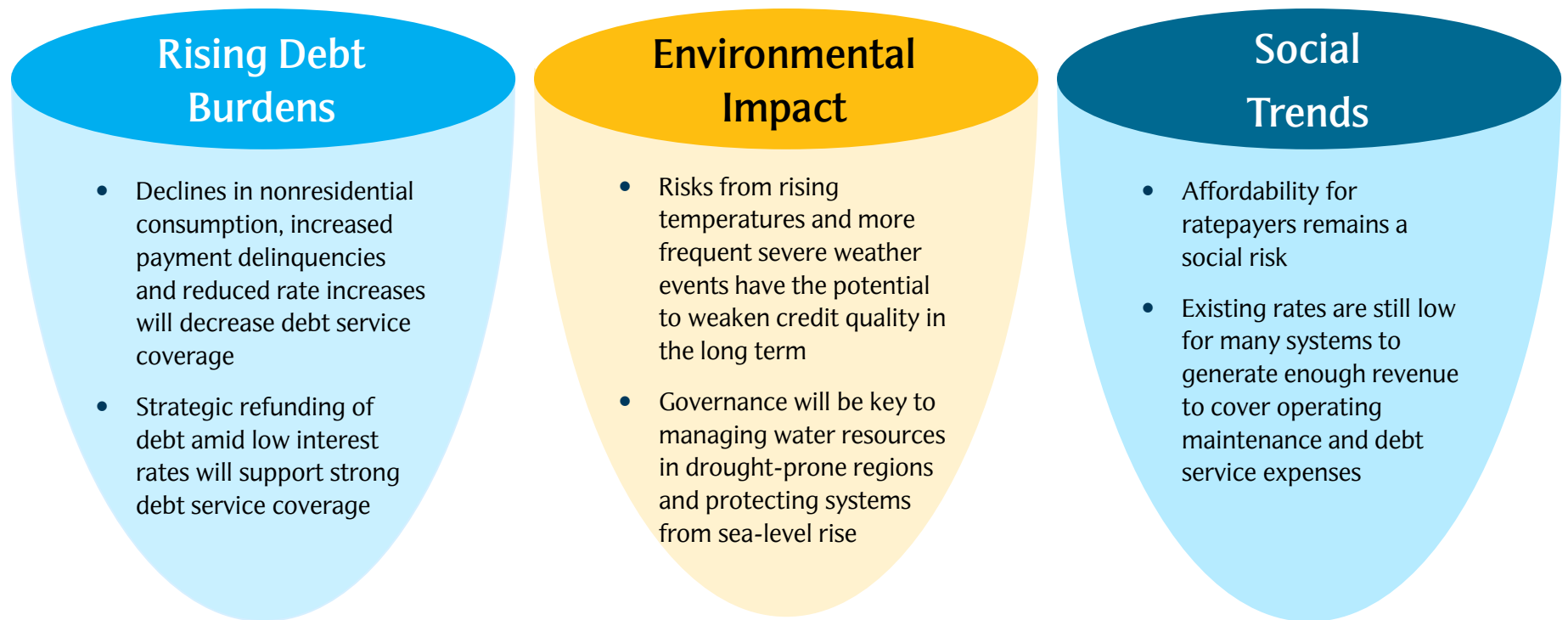
- **GO:** Debt / personal income, debt per capita (tax base) and debt service as share of revenues
- **Revenue Bond:** Debt service coverage ratio (pledged revenues/debt service)
- **Debt structure:** GO vs. revenue, fixed vs. variable rate, maturity schedule and level debt service vs. growing debt service

Management/ Governance

- Budget and planning processes
- Legislative requirements to enact budget and raise income, either tax rates or rates and charges

Credit Themes Affecting Water and Sewer Utilities¹

- Outlook for the municipal water and sewer utility sector remains stable despite the effects of the pandemic
 - Utilities will continue to benefit from stable, largely residential customer bases
 - Some utilities are likely to delay capital projects in 2021 in order to manage cash flow issues



1. Source: Moody's Municipal Water and Sewer Utilities Outlook.

Ratings

- There are three major rating agencies for municipal bonds: Moody's, S&P, and Fitch
 - Aaa/AAA/AAA is the highest investment grade ratings from all three rating agencies
 - New York City Municipal Water Finance Authority's Second Resolution Bonds are rated Aa1/AA+/AA+ by Moody's, S&P, and Fitch

Moody's Municipal Utility Scorecard

Factor	Sub-factor	Why it matters
Financial Strength (40%)	<ul style="list-style-type: none"> • Annual Debt Service Coverage (15%) • Days Cash on Hand (15%) • Debt to Operating Revenues (10%) 	<ul style="list-style-type: none"> • Determines its flexibility to respond to contingencies, resilience against potential short-term shocks, and cushion against a long-term unfavorable trend
System Characteristics (30%)	<ul style="list-style-type: none"> • Service Area Wealth (12.5%) • Asset Condition (10%) • System Size (7.5%) 	<ul style="list-style-type: none"> • Measures a utility's capacity to fund its operations and capital needs based on the health of its capital assets, size and diversity of its operations, and the strength and resources of its service base
Management (20%)	<ul style="list-style-type: none"> • Rate Management (10%) • Regulatory Compliance and Capital Planning (10%) 	<ul style="list-style-type: none"> • Refers to the dynamics of setting rates, planning for capital spending, budgeting for annual expenditures, and complying with environmental regulations
Legal Provisions (10%)	<ul style="list-style-type: none"> • Rate Covenant (5%) • Debt Service Reserve Requirement (5%) 	<ul style="list-style-type: none"> • Strong covenants bind the utility to utilize its assets to benefit bondholders by operating with a comfortable financial margin and maintaining adequate cash available to pay debt service

NYW Credit Highlights

Essential Service Provider

- Sole provider of essential services with no competitors
- One billion gallons of quality water is provided every day to 8.3 million NYC residents and one million upstate New York residents, and sewer service is provided to virtually the entire City and certain upstate communities

Proven Rate-Setting Process and Robust Debt Service Coverage

- Independent rate setting mechanism and proven willingness to raise rates as required (True-up)
- Monthly debt service requirement is funded prior to operating and maintenance (“O&M”) expenses (Gross Pledge)
- Debt Service coverage projected to be at or above 2.98x through 5-year projection period

Strong Legal Protections

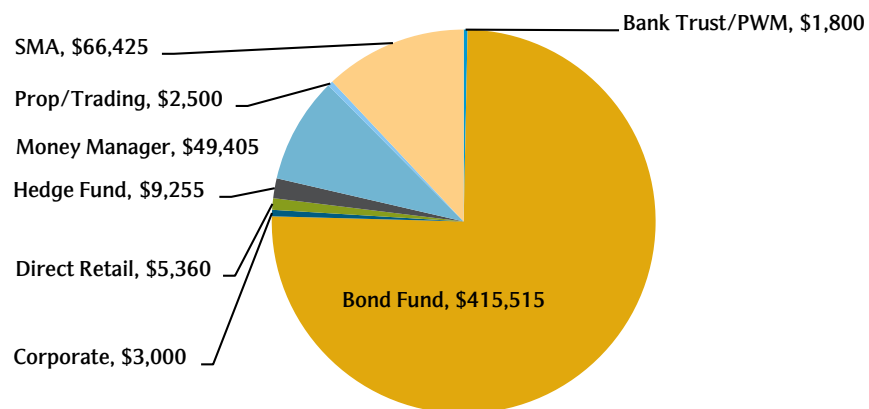
- Tripartite operating and governance structure creates independent System
- Bondholders benefit from the statutorily and contractually valid, binding, and perfected priority lien on System revenues
- Current law does not authorize either NYW or the Water Board to properly be a debtor in a voluntary or involuntary case under the United States bankruptcy code

Authority Debt and Capital Improvement Program

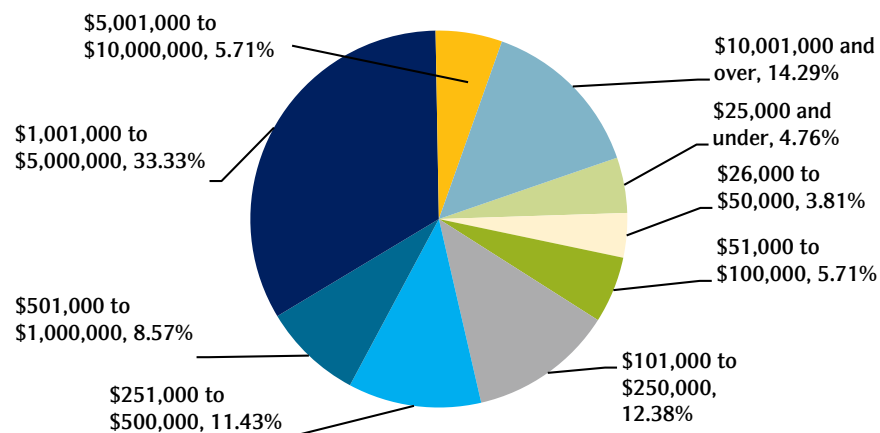
- \$1.2 billion and \$30.1 billion of First and Second Resolution debt outstanding, respectively
- \$23.1 billion System-funded Capital Improvement Program for FY 2021 through FY 2031

Investors in NYW

Distribution by Investor Type (\$MMs)¹



Distribution by Size of Purchase¹



Top Reported NYW Holders (\$MMs)²

	Investor	TE	TE-RPI	Total
1	BlackRock	1,031.7	36.9	1,068.6
2	Vanguard	635.7	22.0	657.7
3	Nuveen	442.2	- -	442.2
4	Franklin Templeton	404.7	- -	404.7
5	Invesco	390.4	0.7	391.1
6	Cap Research & Mgmt.	255.5	- -	255.5
7	Wells Fargo Bank	234.6	0.1	234.7
8	JP Morgan Bank (CIO)	164.7	0.1	164.8
9	Northern Trust	156.7	- -	156.7
10	HIMCO	141.6	- -	141.6
11	Prudential	132.2	0.1	132.3
12	T. Rowe Price	111.6	0.4	112.0
13	State Farm	108.0	- -	108.0
14	State Street	73.9	32.0	106.0
15	Alliance Bernstein	99.5	1.0	100.5
16	Deutsche Bank	91.5	- -	91.5
17	MacKay Shields	84.2	- -	84.2
18	BNY Mellon	81.1	- -	81.1
19	Eaton Vance	80.5	0.4	80.9
20	Fidelity	71.6	0.1	71.8
	Total	4,792.0	93.9	4,885.9

1. Allotments shown from Fiscal 2021 Series CC deal. Total of 553.26 million allotments.

2. Source: Bloomberg publicly reported holdings as of February 18, 2021.

Environmental Regulations and Capital Projects Spending Impact on NYW

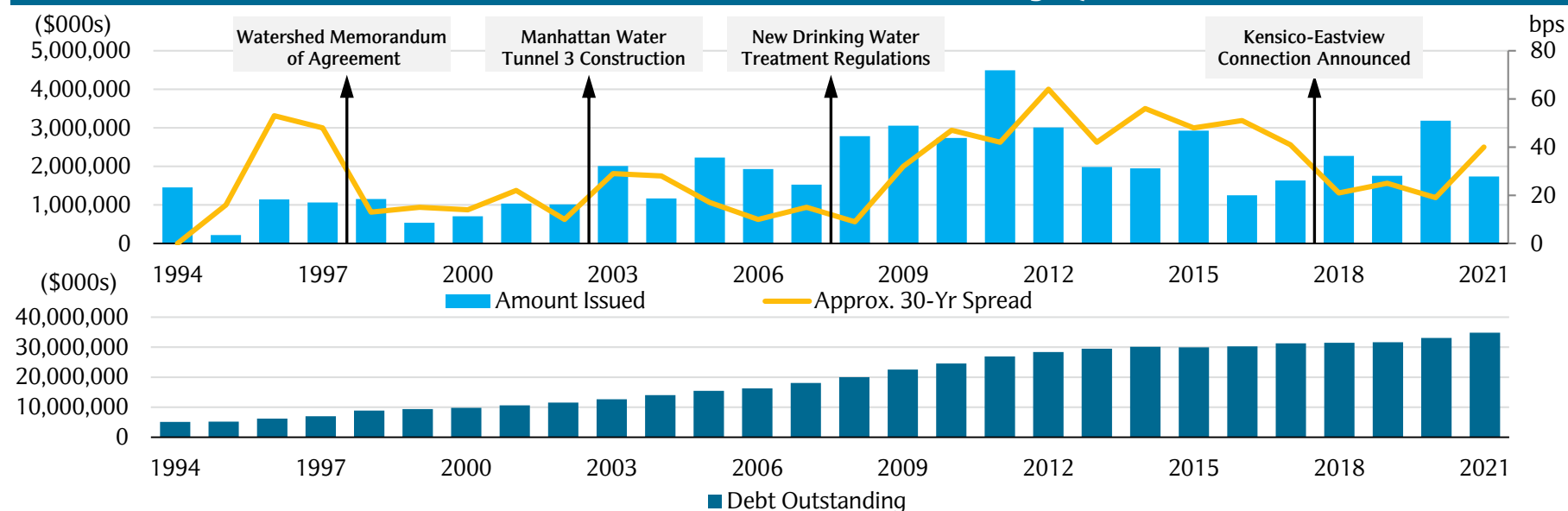
Capital Projects

- NYW currently has multiple capital projects that require substantial funding
 - Hillview Reservoir Improvements
 - Kensico-Eastview Connection
 - Croton Filtration Project
 - Water Tunnel 3
 - ◆ Stage 2 is still under construction, the Manhattan segment was completed in October 2013
 - ◆ Remaining cost of Stage 2 is expected to be \$738mm

Regulatory Impacts on NYW

- 1989 – EPA implements surface water treatment rule
- 1998 – Signing of Watershed Memorandum of Agreement
- 2005 – New stricter regulations on surface water treatment
- 2008 – Enhanced drinking water treatment regulations
- Future Considerations
 - 2021 – Proposed reform of the Lead and Copper Rule

Historical Debt Issuance and Debt Outstanding by Fiscal Year^{1,2}

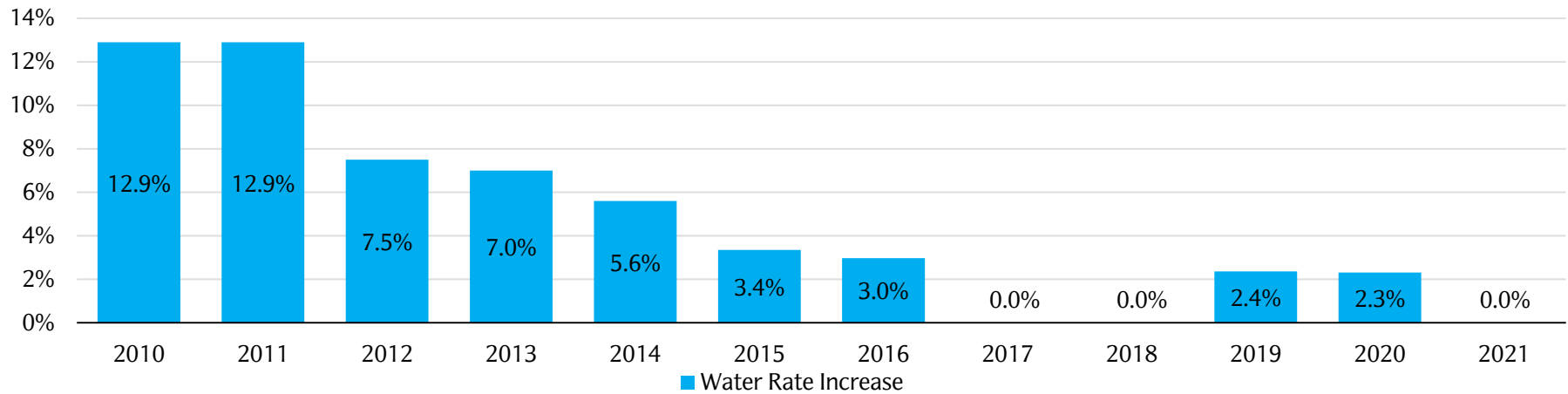


1. Source: New York City Municipal Water Finance Authority Official Statements from FY 1994-2021.

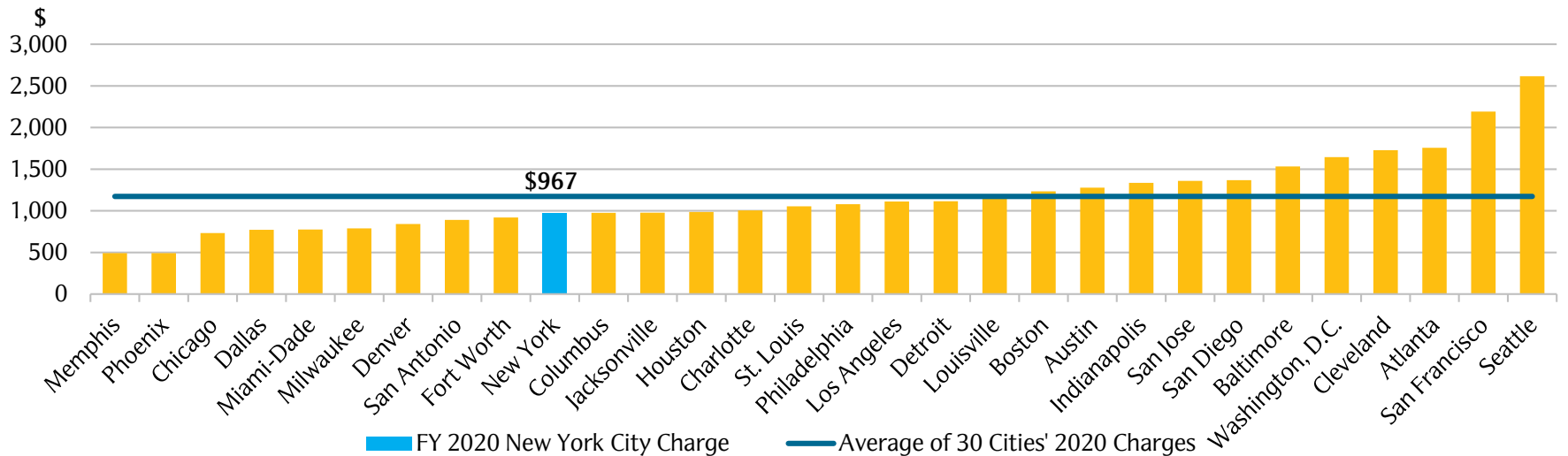
2. Approximate spread is calculated spread on 30 year, 5% coupon term bond issued in respective fiscal year. Prior to FY 2001 30 year, 5.5% coupons term bonds were used for approximate spread.

Water Rate Increases Moderated in Recent Years

Flat-Rate/Metered Water Rate Increases in NYC by Fiscal Year



Comparative Annual Water and Sewer User Charges for Single Family Residential Customers¹



1. Source: Amawalk Consulting. All estimates based on consumption of 70,000 gallons per year. Based on rate schedules in effect on February 2020.

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