

NEW ISSUE—Book-Entry Only

Ratings:
S&P: “____”
Moody’s: “____”
(See “RATINGS.”)

In the opinion of Norton Rose Fulbright US LLP, San Francisco, California, and Curls Bartling P.C., Oakland, California, Co-Bond Counsel, interest on the 2016 Series C Bonds is includable in the gross income of the owners of such Bonds for federal income tax purposes. In the further opinion of Co-Bond Counsel, interest on the 2016 Series C Bonds is exempt from personal income taxes imposed by the State of California. Co-Bond Counsel expresses no opinion regarding any other tax consequences related to the ownership or disposition of, or the accrual or receipt of, interest on the 2016 Series C Bonds. See “TAX MATTERS.”



\$[Par]*
Public Utilities Commission
of the City and County of San Francisco
San Francisco Water Revenue Bonds,
2016 Series C
(Federally Taxable)

Dated: Date of Delivery

Due: November 1, as shown on inside front cover

General. This cover page contains certain information for quick reference only. It is not intended to be a summary of the security or terms of the water revenue bonds captioned above (the “2016 Series C Bonds”). Potential investors are instructed to read the entire Official Statement, including the appendices hereto, to obtain information essential to making an informed investment decision.

Authority for Issuance. The Public Utilities Commission of the City and County of San Francisco (the “SFPUC”) is issuing the 2016 Series C Bonds, pursuant to authority granted by the Charter of the City and County of San Francisco (the “City”). The 2016 C Bonds will be issued under a Twenty-Third Supplemental Indenture, dated as of October 1, 2016, by and between the SFPUC and U.S. Bank National Association, as trustee (the “Trustee”), which supplements the Amended and Restated Indenture, dated as of August 1, 2002, by and between the SFPUC and the Trustee (as supplemented and amended to date, the “Indenture”). See “SECURITY FOR THE BONDS.”

Purposes. The 2016 Series C Bonds are being issued to (i) refund Commercial Paper Notes issued to finance and refinance a portion of the design, acquisition and construction of various capital projects in furtherance of the SFPUC’s Water System Improvement Program, (ii) finance and refinance a portion of the design, acquisition and construction of various capital projects in furtherance of the SFPUC’s Water System Improvement Program; (iii) pay interest on the 2016 Series C Bonds through _____ 1, _____, and (iv) pay the costs of issuance of the 2016 Series C Bonds. See “PLAN OF FINANCE.”

Denominations and Interest. The 2016 Series C Bonds will be available in denominations of \$5,000 or any integral multiple thereof and will mature in the years and amounts and accrue interest from their date of delivery at the rates set forth on the inside cover page of this Official Statement. Interest on the 2016 Series C Bonds is payable semiannually on May 1 and November 1 of each year, commencing May 1, 2017. See “THE 2016 SERIES C BONDS.”

Book-Entry Only. The 2016 Series C Bonds will be issued as fully registered bonds, registered in the name of Cede & Co., as nominee of The Depository Trust Company, New York, New York (“DTC”), and will be available to ultimate purchasers (the “Beneficial Owners”) under the book-entry only system maintained by DTC. Beneficial Owners will not receive physical certificates representing their interests in the 2016 Series C Bonds. The principal of, premium, if any, and interest on the 2016 Series C Bonds are payable to DTC by the Trustee, and, so long as DTC is acting as securities depository for the 2016 Series C Bonds, disbursements of such payments to DTC Participants is the responsibility of DTC and disbursements of such payments to the Beneficial Owners is the responsibility of DTC Participants. See “THE 2016 SERIES C BONDS.”

Redemption. The 2016 Series C Bonds are subject to optional and mandatory redemption prior to maturity as described herein.

Security. Under the Indenture, the SFPUC has irrevocably pledged the Revenues of its Water Enterprise and all Refundable Credits received by the SFPUC to the punctual payment of principal of, and premium, if any, and interest on the 2016 Series C Bonds and all outstanding parity revenue bonds issued under the Indenture, subject to the allocation of funds provided in the Indenture. The 2016 Series C Bonds are payable on parity with certain Outstanding Bonds previously issued by the SFPUC under the Indenture. See “SECURITY FOR THE BONDS.”

Limited Obligation. The SFPUC is not obligated to pay the principal of, or premium, if any, or interest on the 2016 Series C Bonds except from Revenues. The SFPUC has no taxing power. The General Fund of the City is not liable for the payment of the principal of, or premium, if any, or interest on the 2016 Series C Bonds, and neither the credit nor the taxing power of the City is pledged to the payment of the principal of, or premium, if any, or interest on the 2016 Series C Bonds. The 2016 Series C Bonds are not secured by a legal or equitable pledge of, or charge, lien or encumbrance upon, any of the property of the City or of the SFPUC or any of its income or receipts, except Revenues. See “SECURITY FOR THE BONDS.”

MATURITY SCHEDULE
(See inside cover)

The 2016 Series C Bonds will be sold through respective competitive sales anticipated to be held on _____, 2016.

The 2016 Series C Bonds are offered when, as and if issued by the SFPUC and received by the successful bidder, subject to the approval of validity by Norton Rose Fulbright US LLP, San Francisco, California, and Curls Bartling P.C., Oakland, California, Co-Bond Counsel to the SFPUC, and to certain other conditions. Certain matters will be passed upon for the SFPUC and the City by Orrick, Herrington & Sutcliffe LLP, San Francisco, California, Disclosure Counsel, and by the City Attorney of the City and County of San Francisco. Backstrom McCarley Berry & Co., LLC, San Francisco, California, and Montague DeRose and Associates, LLC, Walnut Creek, California, Co-Municipal Advisors to the SFPUC, assisted in the structuring of this financing. It is expected that the 2016 Series C Bonds in fully registered form will be available for delivery in book-entry form through the facilities of DTC, on or about _____, 2016.

The date of this Official Statement is _____, 2016.

* Preliminary, subject to change.

MATURITY SCHEDULE*

2016 Series C Bonds

\$ _____ * Serial Bonds

| <u>Maturity (November 1)</u> | <u>Principal Amount</u> | <u>Interest Rate</u> | <u>Yield†</u> | <u>CUSIP‡ Base Number 79765R</u> |
|----------------------------------|-------------------------|----------------------|---------------|--|
|----------------------------------|-------------------------|----------------------|---------------|--|

\$ _____ % Term Bonds due November 1, 20__ Yield† _____% CUSIP‡ _____
\$ _____ % Term Bonds due November 1, 20__ Yield† _____% CUSIP‡ _____

* Preliminary, subject to change.

† Reoffering yields have been provided by the Underwriters. See "UNDERWRITING."

‡ CUSIP is a registered trademark of The American Bankers Association. CUSIP data herein is provided by CUSIP Global Services, managed by Standard & Poor's Financial Services LLC on behalf of The American Bankers Association. This data is not intended to create a database and does not serve in any way as a substitute for the CUSIP services. Neither the SFPUC nor the Underwriters assume any responsibility for the accuracy of the CUSIP data.

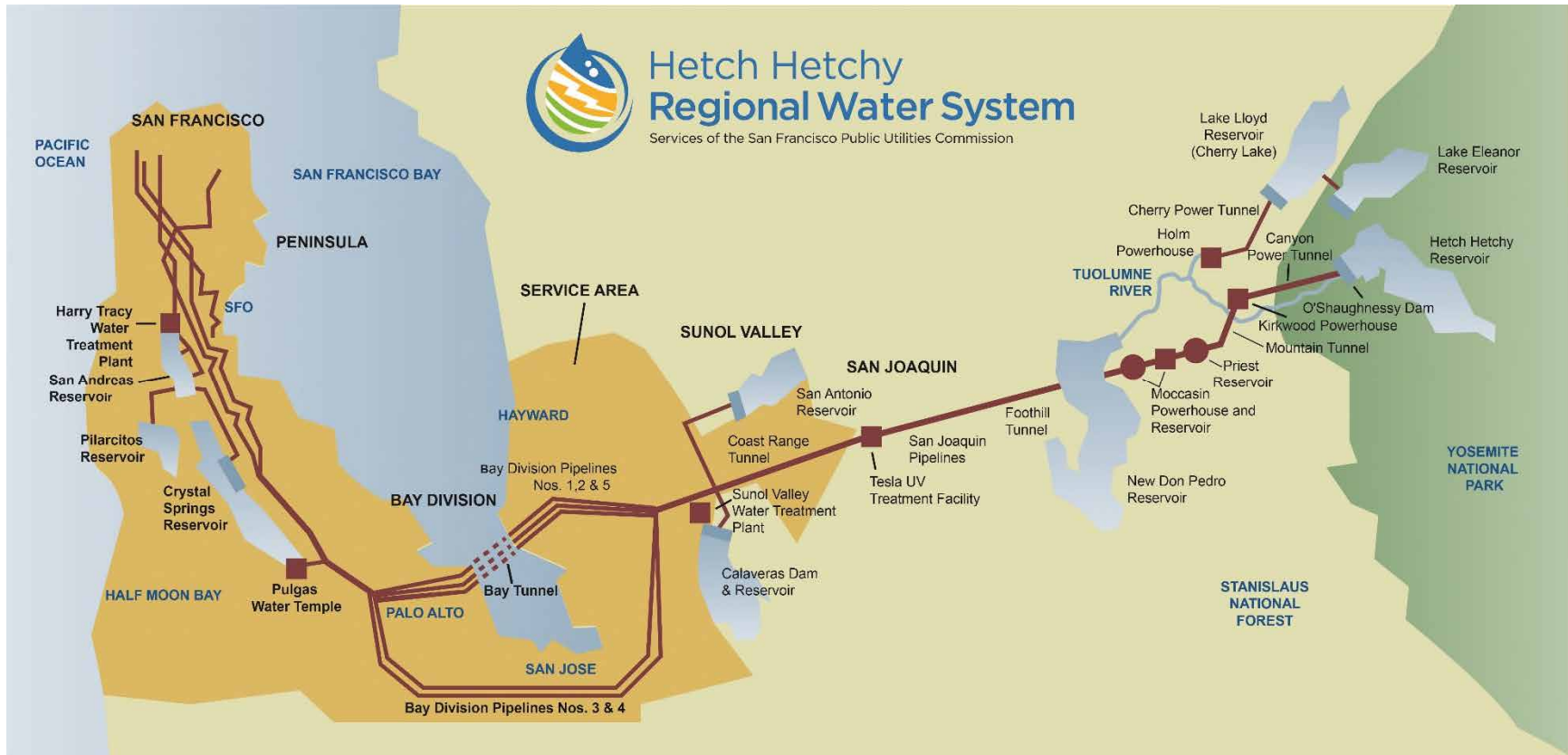


Figure 1-1 (Not to Scale) – The above map depicts the Hetch Hetchy Regional Water System. For further description of the SFPUC’s Water System, see “THE WATER ENTERPRISE.”

The 2016 Series C Bonds are not secured by a legal or equitable pledge of, or charge, lien or encumbrance upon, any of the property of the SFPUC or any of its income or receipts, except Revenues. See “SECURITY FOR THE BONDS.”

Water Enterprise Service Area and Wholesale Customers

- 1. Alameda County Water District
- 2. City of Brisbane
- 3. City of Burlingame
- 4a. CWS - Bear Gulch
- 4b. CWS - Mid-Peninsula
- 4c. CWS - South San Francisco
- 5. Coastside County Water District
- 6. City of Daly City
- 7. City of East Palo Alto
- 8. Estero Municipal Improvement District
- 9. Guadalupe Valley MID
- 10. City of Hayward
- 11. Town of Hillsborough
- 12. City of Menlo Park
- 13. Mid-Peninsula Water District
- 14. City of Millbrae
- 15. City of Milpitas
- 16. City of Mountain View
- 17. North Coast County Water District
- 18. City of Palo Alto
- 19. Purissima Hills Water District
- 20. City of Redwood City
- 21. City of San Bruno
- 22. San Jose Municipal Water System
- 23. City of Santa Clara
- 24. Stanford University
- 25. City of Sunnyvale
- 26. Westborough Water District

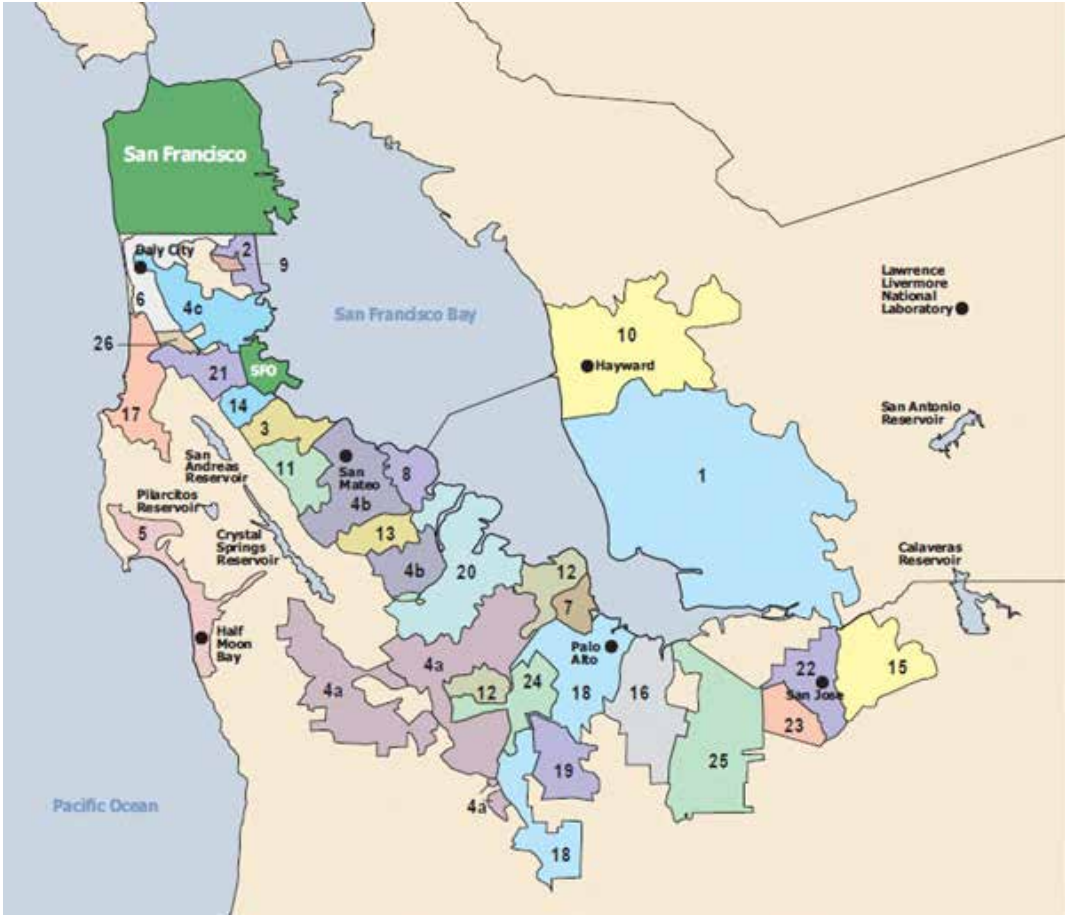


Figure 1-2 (Not to Scale) – The above map depicts the Water Enterprise service area and the locations of the Wholesale Customers (not including Cordilleras Mutual Water Company). For further description of the Wholesale Customers, see “THE WATER ENTERPRISE—Wholesale Deliveries.”

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GENERAL INFORMATION

No dealer, broker, salesperson or other person has been authorized by the SFPUC to give any information or to make any representation other than those contained herein and, if given or made, such other information or representation must not be relied upon as having been authorized by the SFPUC.

This Official Statement does not constitute an offer to sell or the solicitation of an offer to buy, nor shall there be any sale of the 2016 Series C Bonds, by any person in any jurisdiction in which it is unlawful for such person to make such an offer, solicitation or sale. This Official Statement is not to be construed as a contract with the initial purchasers of the 2016 Series C Bonds. Any statement made in this Official Statement involving any forecast or matter of estimates or opinion, whether or not expressly so stated, is intended solely as such and not as a representation of fact.

The information set forth herein other than that provided by the SFPUC, although obtained from sources which are believed to be reliable, is not guaranteed as to accuracy or completeness. The information and expressions of opinion herein are subject to change without notice and neither delivery of this Official Statement nor any sale made hereunder shall, under any circumstances, create any implication that there has been no change in the affairs of the SFPUC or the City since the date hereof.

The City maintains a website at <http://www.sfgov.org> and the SFPUC maintains a website at <http://www.sfwater.org>. In addition, certain information and reports found on other websites, and other information and reports, are referred to in this Official Statement. *The information and reports available on such websites, and the other referenced information and reports, are not incorporated by reference into this Official Statement and should not be relied upon in making an investment in the 2016 Series C Bonds.*

The issuance and sale of the 2016 Series C Bonds have not been registered under the Securities Act of 1933 in reliance upon the exemption provided thereunder by Section 3(a)(2) for the issuance and sale of municipal securities.

IN CONNECTION WITH THE OFFERING OF THE 2016 SERIES C BONDS, THE UNDERWRITERS MAY OVERALLOT OR EFFECT TRANSACTIONS WHICH STABILIZE OR MAINTAIN THE MARKET PRICE OF THE 2016 SERIES C BONDS AT LEVELS ABOVE THAT WHICH MIGHT OTHERWISE PREVAIL IN THE OPEN MARKET. SUCH STABILIZING, IF COMMENCED, MAY BE DISCONTINUED AT ANY TIME. CONSEQUENTLY THE MARKET PRICE PAID BY AN INVESTOR DURING THE STABILIZATION PERIOD MAY BE HIGHER THAN THE PREVAILING MARKET PRICE.

This Official Statement is delivered for use in connection with the issuance, sale and delivery of the 2016 Series C Bonds and may not be reproduced or used, in whole or in part, for any other purpose.

FORWARD-LOOKING STATEMENTS

CERTAIN STATEMENTS CONTAINED IN THIS OFFICIAL STATEMENT REFLECT NOT HISTORICAL FACTS BUT FORECASTS AND "FORWARD-LOOKING STATEMENTS." ALL FORWARD-LOOKING STATEMENTS ARE PREDICTIONS AND ARE SUBJECT TO KNOWN AND UNKNOWN RISKS AND UNCERTAINTIES. NO ASSURANCE CAN BE GIVEN THAT THE FUTURE RESULTS DISCUSSED HEREIN WILL BE ACHIEVED, AND ACTUAL RESULTS MAY DIFFER MATERIALLY FROM THE FORECASTS DESCRIBED HEREIN. IN THIS RESPECT, THE WORDS "ESTIMATE," "PROJECT," "ANTICIPATE," "EXPECT," "INTEND," "BELIEVE" AND SIMILAR EXPRESSIONS ARE INTENDED TO IDENTIFY FORWARD-LOOKING STATEMENTS. ALL PROJECTIONS, FORECASTS, ASSUMPTIONS, EXPRESSIONS OF OPINIONS, ESTIMATES AND OTHER FORWARD-LOOKING STATEMENTS ARE EXPRESSLY QUALIFIED IN THEIR ENTIRETY BY THE CAUTIONARY STATEMENTS SET FORTH IN THIS OFFICIAL STATEMENT. GIVEN THEIR UNCERTAINTY, INVESTORS ARE CAUTIONED NOT TO PLACE UNDUE RELIANCE ON SUCH STATEMENTS.

SAN FRANCISCO PUBLIC UTILITIES COMMISSION

Francesca Vietor, President
Anson Moran, Vice President
Ann Moller Caen, Commissioner
Vince Courtney, Commissioner
Ike Kwon, Commissioner

PUBLIC UTILITIES COMMISSION OFFICIALS

Harlan L. Kelly, Jr., General Manager
Michael Carlin, Deputy General Manager and Chief Operating Officer
Steven R. Ritchie, Assistant General Manager, Water Enterprise
Eric L. Sandler, Assistant General Manager, Business Services and Chief Financial Officer
Juliet Ellis, Assistant General Manager, External Affairs
Barbara Hale, Assistant General Manager, Power Enterprise
Kathy How, Assistant General Manager, Infrastructure Division
Tommy T. Moala, Assistant General Manager, Wastewater Enterprise

CITY AND COUNTY OF SAN FRANCISCO

MAYOR

Edwin M. Lee

BOARD OF SUPERVISORS

London Breed, Board President, District 5
John Avalos, District 11
David Campos, District 9
Malia Cohen, District 10
Mark Farrell, District 2
Jane Kim, District 6
Eric Mar, District 1
Aaron Peskin, District 3
Katy Tang, District 4
Scott Wiener, District 8
Norman Yee, District 7

CITY ATTORNEY

Dennis J. Herrera

CITY TREASURER

José Cisneros

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Benjamin Rosenfield, Controller
Naomi Kelly, City Administrator

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| Disclosure Counsel Orrick, Herrington & Sutcliffe LLP San Francisco, California | Trustee U.S. Bank National Association San Francisco, California |

OFFICIAL STATEMENT

**§[PAR]*
PUBLIC UTILITIES COMMISSION
OF THE CITY AND COUNTY OF SAN FRANCISCO
SAN FRANCISCO WATER REVENUE BONDS,
2016 SERIES C
(FEDERALLY TAXABLE)**

INTRODUCTION

This Introduction is qualified in its entirety by reference to the more detailed information included and referred to elsewhere in this Official Statement. The offering of the 2016 Series C Bonds to potential investors is made only by means of the entire Official Statement. Terms used in this Introduction and not otherwise defined have the respective meanings assigned to them elsewhere in this Official Statement, including “APPENDIX A – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE.”

General

This Official Statement, including the cover page and Appendices hereto, is provided to furnish certain information in connection with the offering by the Public Utilities Commission of the City and County of San Francisco (the “**SFPUC**”) of the water revenue bonds captioned above (the “**2016 Series C Bonds**”).

Authority for Issuance

The SFPUC is issuing the 2016 Series C Bonds under Section 9.109 of the Charter (the “**Charter**”) of the City and County of San Francisco (the “**City**”) and pursuant to authority granted by the Charter through Proposition E, approved by voters of the City on November 5, 2002 (“**Proposition E**”).

The 2016 C Bonds will be issued under a Twenty-Third Supplemental Indenture, dated as of October 1, 2016 (the “**Twenty-Third Supplemental Indenture**”), by and between the SFPUC and U.S. Bank National Association, as trustee (the “**Trustee**”), which supplements the Amended and Restated Indenture, dated as of August 1, 2002, by and between the SFPUC and the Trustee (as supplemented and amended to date, including as supplemented by the Twenty-Second Supplemental Indenture, the “**Indenture**”).

The 2016 Series C Bonds are being issued under a resolution adopted by the SFPUC governing body (the “**Commission**”) on September 13, 2016 and a resolution adopted by the Board of Supervisors of the City (the “**Board of Supervisors**”) on _____, 2016.

See “OBLIGATIONS PAYABLE FROM REVENUES – Authority for Issuance of Revenue Bonds and Other Obligations Payable from Revenues.”

Purposes

The 2016 Series C Bonds are being issued to (i) refund \$_____ * aggregate principal amount of taxable commercial paper notes (the “**Refunded Commercial Paper Notes**”) issued pursuant to the Water Enterprise’s commercial paper program to finance and refinance a portion of the design, acquisition and construction of various capital projects in furtherance of the SFPUC’s Water System Improvement Program (“**WSIP**”), (ii) finance and refinance a portion of the design, acquisition and construction of various capital projects in furtherance of the SFPUC’s WSIP, (iii) pay interest on the 2016 Series C Bonds through _____ 1, _____, and (iv) pay the costs of issuance of the 2016 Series C Bonds. See “PLAN OF FINANCE” and “OBLIGATIONS PAYABLE FROM REVENUES – Outstanding Parity Revenue Bonds.”

* Preliminary, subject to change.

The SFPUC and the Water Enterprise

The SFPUC is a department of the City responsible for the maintenance, operation and development of three utility enterprises. See “THE PUBLIC UTILITIES COMMISSION.”

The SFPUC owns and operates a municipal water supply, storage and distribution system (the “**Water Enterprise**”) that provides drinking water to retail customers in the City and certain retail customers outside of the City (the “**Retail Customers**”) and to wholesale customers in three other San Francisco Bay Area counties (the “**Wholesale Customers**”). The Water Enterprise consists of water treatment and distribution facilities located outside of the City (the “**Regional Water System**”) and water treatment and distribution facilities located inside the City (the “**In-City Distribution System**”). See “WATER FACILITIES.”

Water rates for Retail Customers are set by the SFPUC, subject to rejection by resolution of the Board of Supervisors. Water rates for Wholesale Customers are set pursuant to the Water Supply Agreement, which became effective in July 2009 (the “**Water Supply Agreement**” or “**WSA**”), between the City and the Wholesale Customers. See “FINANCIAL OPERATIONS.”

The other two enterprises of the SFPUC provide wastewater services to customers in the City and to wholesale customers outside of the City, and power, mainly hydroelectric, for City government operations and to other users. The revenues of these other two enterprises are not available for, and do not secure, payment of the principal of, or premium, if any, or interest on the Bonds (as defined herein), including the 2016 Series C Bonds. See “THE PUBLIC UTILITIES COMMISSION.”

Security for the Bonds

Under the Indenture, the SFPUC has irrevocably pledged the Revenues of its Water Enterprise and all Refundable Credits received by the SFPUC to the punctual payment of principal of, and premium, if any, and interest on the 2016 Series C Bonds and all outstanding parity revenue bonds issued under the Indenture (collectively, the “**Bonds**”), subject to the allocation of funds provided in the Indenture. The 2016 Series C Bonds are payable on parity with certain Outstanding Bonds previously issued by the SFPUC under the Indenture.

The SFPUC is not obligated to pay the principal of, or premium, if any, or interest on the 2016 Series C Bonds except from Revenues (as defined in the Indenture). The SFPUC has no taxing power. The General Fund of the City is not liable for the payment of the principal of, or premium, if any, or interest on the 2016 Series C Bonds, and neither the credit nor the taxing power of the City is pledged to the payment of the principal of, or premium, if any, or interest on the 2016 Series C Bonds. The 2016 Series C Bonds are not secured by a legal or equitable pledge of, or charge, lien or encumbrance upon, any of the property of the City or of the SFPUC or any of its income or receipts, except Revenues.

No Bond Reserve Account (as defined herein) will be established for the 2016 Series C Bonds. Bond Reserve Accounts have been established with respect to other series of Bonds. Such Bond Reserve Accounts do not secure the 2016 Series C Bonds.

See “SECURITY FOR THE BONDS.”

Outstanding and Future Parity Bonds and Other Indebtedness

The SFPUC has previously issued revenue bonds, and in the future expects to issue additional bonds, pursuant to the Indenture and secured by Revenues of the Water Enterprise on parity with the 2016 Series C Bonds. See “OBLIGATIONS PAYABLE FROM REVENUES.”

The Indenture provides that additional series of Bonds secured by Revenues on parity with the Outstanding Bonds and the 2016 Series C Bonds (each an “**Additional Series of Bonds**”) may be issued if certain conditions are met. See “SECURITY FOR THE BONDS – Additional Series of Bonds.”

The SFPUC anticipates that it will issue on or about _____, 2016*, its Water Revenue Bonds, 2016 Sub-Series A Bonds (Refunding) and 2016 Sub-Series B Bonds (Refunding) (collectively, the “2016 Series AB Bonds”), to refund Outstanding Bonds, in an aggregate principal amount of approximately \$_____ million. The 2016 Series AB Bonds are not being offered pursuant to this Official Statement.

The SFPUC may also issue refunding bonds in response to market conditions in order to achieve debt service savings and additional bonds from time to time to fund additional capital projects. See “FINANCING OF CAPITAL IMPROVEMENTS.”

Risk Factors

Investment in the 2016 Series C Bonds is subject to material risks. For a general overview of certain risk factors which should be considered, in addition to other matters set forth in this Official Statement, in evaluating an investment in the 2016 Series C Bonds, see “RISK FACTORS.”

Continuing Disclosure

The SFPUC has covenanted for the benefit of the Owners and Beneficial Owners of the 2016 Series C Bonds to provide certain financial information and operating data not later than nine months following the end of its Fiscal Year (presently June 30), beginning on March 31, 2017, with the report for Fiscal Year 2015-16, and to provide notices of the occurrence of certain enumerated events. These covenants have been made in order to assist the Underwriters in complying with Rule 15c2-12(b)(5) of the Securities and Exchange Commission (the “**Rule**”). See “CONTINUING DISCLOSURE” and “APPENDIX F – FORM OF CONTINUING DISCLOSURE CERTIFICATE.” Although the SFPUC filed on Electronic Municipal Market Access (“**EMMA**”) materials describing the effectiveness of certain amendments to the indenture pursuant to which the SFPUC’s wastewater bonds have been issued, it failed to file timely a simultaneous and duplicative notice of material event. The SFPUC has, at least once in the last five years, failed to file in a timely manner notice of a change in the rating of SFPUC bonds resulting from a change in the rating of a bond insurer. As of the date of this Official Statement, the current ratings of the SFPUC’s insured bonds are correct on EMMA.

Other Matters

Brief descriptions of the 2016 Series C Bonds, the security and sources of payment for the 2016 Series C Bonds, the SFPUC, the Water Enterprise, the WSIP and certain non-WSIP capital improvements are provided herein. Such descriptions do not purport to be comprehensive or definitive. Definitions of certain capitalized terms used herein may be found in “APPENDIX A – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE.” All references made to various documents herein are qualified in their entirety by reference to the forms thereof, all of which are available for inspection at the office of the SFPUC at:

San Francisco Public Utilities Commission
525 Golden Gate Avenue, 13th Floor
San Francisco, CA 94102
Attention: Assistant General Manager, Business Services and Chief Financial Officer
(415) 554-3155

THE 2016 SERIES C BONDS

General

The 2016 Series C Bonds will be dated as of their date of delivery and will accrue interest from their date of delivery at the rates per annum set forth on the inside cover page of this Official Statement. Interest on the 2016

* Preliminary, subject to change.

Series C Bonds is payable on May 1 and November 1 of each year, beginning May 1, 2017. Interest on the 2016 Series C Bonds will be calculated on the basis of a 360-day year composed of twelve 30-day months.

The 2016 Series C Bonds will mature on the dates and in the principal amounts set forth on the inside cover page of this Official Statement. The 2016 Series C Bonds will be issued in fully registered form in denominations of \$5,000 or any integral multiple of \$5,000.

Securities Depository and Book-Entry Only System

The 2016 Series C Bonds will be registered in the name of Cede & Co., as nominee for The Depository Trust Company (“DTC”), New York, New York, as the Owner of the 2016 Series C Bonds.

So long as DTC, or its nominee, Cede & Co., is the Owner of the 2016 Series C Bonds, all payments on the 2016 Series C Bonds will be made directly to DTC. Disbursement of such payments to the DTC Participants will be the responsibility of DTC, and disbursement of such payments to the Beneficial Owners of the 2016 Series C Bonds will be the responsibility of the DTC Participants. See “APPENDIX G – SECURITIES DEPOSITORY AND BOOK-ENTRY SYSTEM.”

Redemption*

Optional Redemption. The 2016 Series C Bonds maturing on or after November 1, 20__, are subject to redemption prior to their stated maturity, at the option of the SFPUC, from and to the extent of any source of available funds, as a whole or in part, on any date on or after _____ 1, 20__, and if in part by lot within such maturity, at a redemption price equal to 100% of the principal amount of the 2016 Series C Bonds to be redeemed, plus accrued interest thereon to the date fixed for redemption, without premium.

Mandatory Sinking Fund Redemption. The 2016 Series C Bonds maturing on November 1, 20__ (the “**20__ Series C Term Bonds**”), are further subject to redemption prior to their stated maturity, from 2016 Series C Sinking Fund Account, on any November 1 on or after November 1, 20__, by lot within any such maturity if less than all of the 2016 Series C Bonds of such maturity and tenor be redeemed, upon payment of the principal amount thereof and accrued interest thereon to the date fixed for redemption, without premium.

The 20__ Series C Term Bonds are subject to mandatory redemption as follows:

| Redemption Date (November 1) | Principal Amount |
|---------------------------------|---------------------|
| * | \$ |
| *Maturity. | |

The 2016 Series C Bonds maturing on November 1, 20__ (the “**20__ Series C Term Bonds**”), are further subject to redemption prior to their stated maturity, from 2016 Series C Sinking Fund Account, on any November 1 on or after November 1, 20__, by lot within any such maturity if less than all of the 2016 Series C Bonds of such maturity and tenor be redeemed, upon payment of the principal amount thereof and accrued interest thereon to the date fixed for redemption, without premium.

* Preliminary, subject to change.

The 20__ Series C Term Bonds are subject to mandatory redemption as follows:

| Redemption Date (November 1) | Principal Amount |
|---------------------------------|---------------------|
| * | \$ |

*Maturity.

Mandatory Sinking Fund Redemption. The 2016 Series C Bonds maturing on November 1, 20__ (the “**20__ Series C Term Bonds**”), are further subject to redemption prior to their stated maturity, from 2016 Series C Sinking Fund Account, on any November 1 on or after November 1, 20__, by lot within any such maturity if less than all of the 2016 Series C Bonds of such maturity and tenor be redeemed, upon payment of the principal amount thereof and accrued interest thereon to the date fixed for redemption, without premium.

The 20__ Series C Term Bonds are subject to mandatory redemption as follows:

| Redemption Date (November 1) | Principal Amount |
|---------------------------------|---------------------|
| * | \$ |

*Maturity.

The 2016 Series C Bonds maturing on November 1, 20__ (the “**20__ Series C Term Bonds**”), are further subject to redemption prior to their stated maturity, from 2016 Series C Sinking Fund Account, on any November 1 on or after November 1, 20__, by lot within any such maturity if less than all of the 2016 Series C Bonds of such maturity and tenor be redeemed, upon payment of the principal amount thereof and accrued interest thereon to the date fixed for redemption, without premium.

The 20__ Series C Term Bonds are subject to mandatory redemption as follows:

| Redemption Date (November 1) | Principal Amount |
|---------------------------------|---------------------|
| * | \$ |

*Maturity.

Purchase In Lieu of Redemption. In lieu of optional redemption of the 2016 Series C Bonds, as described above, the SFPUC may purchase such 2016 Series C Bonds, at public or private sale as and when and at such prices (including brokerage and other charges and including accrued interest) as the SFPUC may in its discretion determine. The par amount of any of such 2016 Series C Bonds so purchased by the SFPUC in any twelve-month period ending on September 1 in any year will be credited towards and will reduce the par amount of such 2016 Series C Bonds required to be redeemed as described above on the next succeeding November 1.

Selection of 2016 Series C Bonds for Redemption. Subject to DTC’s procedures relating to the selection of bonds for redemption (see “APPENDIX G – SECURITIES DEPOSITORY AND BOOK-ENTRY SYSTEM”), whenever less than all of the 2016 Series C Bonds, of any one tenor and maturity are called for redemption and those 2016 Series C Bonds are redeemable by lot, the Trustee will select the 2016 Series C Bonds of the tenor and maturity to be redeemed from the Outstanding 2016 Series C Bonds of that tenor and maturity, by lot or by any other manner the Trustee deems fair and equitable. For purposes of such selection, 2016 Series C Bonds will be deemed to be made up of \$5,000 portions of principal, any of which may be redeemed separately.

Notice of Redemption. Notice of redemption will be mailed by the Trustee at least thirty days but not more than sixty days prior to the redemption date, to DTC (so long as DTC’s book-entry system is used). The actual

receipt by the owner of any 2016 Series C Bond of notice of such redemption is not a condition precedent to redemption, and failure to receive a redemption notice or any defect in a redemption notice will not affect the validity of the proceedings for the redemption of such 2016 Series C Bond or the cessation of the accrual of interest on the date fixed for such redemption. See “APPENDIX G – SECURITIES DEPOSITORY AND BOOK-ENTRY SYSTEM.”

Rescission of Notice of Redemption. The SFPUC may, at its option, prior to the date fixed for redemption in any notice of optional redemption, rescind and cancel such notice of redemption by written request to the Trustee and the Trustee will mail notice of such cancellation to the recipients of the notice of redemption being cancelled.

Effect of Redemption. When notice of redemption has been duly given as described above, and moneys for payment of the redemption price are held by the Trustee, the 2016 Series C Bonds called for redemption will, on the redemption date designated in such notice, become due and payable at the redemption price specified in such notice; and from and after the date so designated interest on the 2016 Series C Bonds called for redemption will cease to accrue, and such 2016 Series C Bonds will cease to be entitled to any benefit or security under the Indenture, and the Owners of said 2016 Series C Bonds will have no rights in respect thereof except to receive payment of the redemption price thereof. The Trustee, upon surrender for payment of any of said 2016 Series C Bonds will pay such 2016 Series C Bonds at the redemption price, together with accrued interest thereon. All 2016 Series C Bonds redeemed will be cancelled upon surrender and no 2016 Series C Bonds will be issued in place thereof.

Defeasance

The obligations of the SFPUC and the pledge, lien, covenants and agreements of the SFPUC made or provided for in the Indenture will be fully discharged and satisfied as to any 2016 Series C Bond will no longer be deemed outstanding thereunder if certain conditions set forth in the Indenture are satisfied. See “TAX MATTERS – Defeasance of 2016 Series C Bonds” and “APPENDIX A – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE – Defeasance.”

PLAN OF FINANCE

The proceeds of the 2016 Series C Bonds will be applied to (i) refund the Refunded Commercial Paper Notes, (ii) finance and refinance a portion of the design, acquisition and construction of various capital projects in furtherance of the SFPUC’s WSIP, (iii) pay interest on the 2016 Series C Bonds through _____ 1, _____, and (iv) pay the costs of issuance of the 2016 Series C Bonds. The Refunded Commercial Paper Notes will be paid on or before _____, 2016.

The SFPUC anticipates that it will issue the 2016 Series AB Bonds on _____, 2016*, in an aggregate principal amount of \$_____, to refund all or a portion of the SFPUC’s outstanding San Francisco Water Revenue Bonds, 2006 Refunding Series B, 2006 Refunding Series C, 2009 Series A, 2009 Series B, 2010 Series ABC, Sub-Series A, and 2010 Series FG, Sub-Series F.

* Preliminary, subject to change.

ESTIMATED SOURCES AND USES OF FUNDS

The proceeds of the 2016 Series C Bonds are expected to be applied as follows:

| | |
|--|----|
| <u>Sources of Funds</u> | |
| Par Amount | \$ |
| [Plus Net Original Issue Premium] [Less Net Original Issue Discount] | |
| Total Sources | \$ |
| <u>Uses of Funds</u> | |
| Refunding of Refunded Commercial Paper Notes | \$ |
| Deposit to 2006 Series C Project Fund | |
| Capitalized Interest Account | |
| Underwriter’s Discount | |
| Costs of Issuance ⁽¹⁾ | |
| Total Uses | \$ |

⁽¹⁾ The costs of issuance include amounts for legal fees, Trustee fees, municipal advisor fees, rating agency fees, printing costs, and other issuance costs relating to the issuance of the 2016 Series C Bonds.

SECURITY FOR THE BONDS

Pledge of Revenues

General. Under the Indenture, the SFPUC has irrevocably pledged the Revenues of the Water Enterprise and all Refundable Credits received by the SFPUC to the punctual payment of principal of, and premium, if any, and interest on the Bonds, including the 2016 Series C Bonds, the Outstanding Bonds described below (see “OBLIGATIONS PAYABLE FROM REVENUES – Outstanding Parity Revenue Bonds”), and any Additional Series of Bonds. This pledge is subject to the allocation of funds provided in the Indenture, as described below. See “– Flow of Funds.”

Pursuant to Section 5451 of the California Government Code, the pledge of, lien on and security interest in Revenues and certain other funds granted by the Indenture is valid and binding in accordance with the terms thereof from the time of issuance of the 2016 Series C Bonds without any further action by the SFPUC; the Revenues and such other funds shall be immediately subject to such pledge; and such pledge shall constitute a lien and security interest which shall immediately attach to such Revenues and other funds and shall be effective, binding and enforceable against the SFPUC, its successors, creditors, and all others asserting rights therein to the extent set forth and in accordance with the terms of the Indenture irrespective of whether those parties have notice of such pledge and without the need for any physical delivery, recordation, filing or other further act. Such pledge, lien and security interest are not subject to the provisions of Article 9 of the California Uniform Commercial Code.

Limited Obligation. THE SFPUC IS NOT OBLIGATED TO PAY THE PRINCIPAL OF, OR PREMIUM, IF ANY, OR INTEREST ON THE 2016 SERIES C BONDS EXCEPT FROM REVENUES. THE SFPUC HAS NO TAXING POWER. THE GENERAL FUND OF THE CITY IS NOT LIABLE FOR THE PAYMENT OF THE PRINCIPAL OF, OR PREMIUM, IF ANY, OR INTEREST ON THE 2016 SERIES C BONDS, AND NEITHER THE CREDIT NOR THE TAXING POWER OF THE CITY IS PLEDGED TO THE PAYMENT OF THE PRINCIPAL OF, OR PREMIUM, IF ANY, OR INTEREST ON THE 2016 SERIES C BONDS. THE 2016 SERIES C BONDS ARE NOT SECURED BY A LEGAL OR EQUITABLE PLEDGE OF, OR CHARGE, LIEN OR ENCUMBRANCE UPON, ANY OF THE PROPERTY OF THE CITY OR OF THE SFPUC OR ANY OF ITS INCOME OR RECEIPTS, EXCEPT REVENUES.

Water Enterprise. The Indenture defines “Enterprise” (referred to in this Official Statement as the “Water Enterprise”) as the whole and each and every part of the municipal water supply, storage and distribution system of the SFPUC, located partially within and partially outside of the City, including all of the presently existing

municipal water system of the City and all additions, betterments and extensions to that water system. The Water Enterprise is defined to exclude any water supply, storage or distribution facilities under the jurisdiction of the Hetch Hetchy Water and Power Project (“**Hetch Hetchy Water and Power**”), which consists of upcountry water supply and power generating facilities, including the Power Enterprise, all of which are also under the jurisdiction of the SFPUC. See “THE PUBLIC UTILITIES COMMISSION – General” and “– Organization, Purposes and Powers.”

Revenues. The Indenture defines “**Revenues**” as all gross revenues of the Water Enterprise, including all charges received for and all other income and receipts derived by the SFPUC or the City from the operation of the Water Enterprise, or arising from the Water Enterprise, including water connection and installation charges.

The term “**Revenues**” also includes all interest, profits or other income derived from the deposit or investment of any moneys in any fund or account established under the Indenture (excluding any Rebate Fund and any escrow fund pledged for the payment of defeased bonds) or in any fund or account of the Water Enterprise and legally available to pay Debt Service on the Bonds, and any other moneys, proceeds and other amounts (excluding, without limitation, those listed in (1) through (10) below) that the SFPUC determines should be “Revenues” under the Indenture.

However, the term “**Revenues**” excludes the following:

- (1) any money received by or for the account of the City or the SFPUC from the levy or collection of taxes;
- (2) moneys received from the State of California (the “**State**”) and the United States of America and required to be deposited in restricted funds;
- (3) refundable deposits made to establish credit;
- (4) advances and contributions made to the SFPUC or the City to be applied to construction;
- (5) moneys required to be paid to the State and the United States of America pursuant to agreements with the City or the SFPUC;
- (6) moneys received from insurance proceeds or the sale of or upon the taking by or under the threat of eminent domain of all or any part of the Water Enterprise;
- (7) proceeds from Bonds issued by the SFPUC or proceeds from loans obtained by the SFPUC;
- (8) moneys or securities received by the City or the SFPUC as gifts or grants, the use of which is restricted by the donor or grantor;
- (9) sewer service fees or charges; and
- (10) any surcharge imposed by, or upon the direction of any joint powers agency or other governmental entity, other than the SFPUC, the City or any department or agency of the City, whether or not collected by the SFPUC, the City or any department or agency of the City, for the purpose of financing improvements to the facilities comprising the Water Enterprise.

Refundable Credits. The Indenture defines “**Refundable Credits**” as (a) with respect to a Series of Bonds issued as Build America Bonds under Section 54AA of the Code, the amounts which are payable by the Federal government under Section 6431 of the Code, which the SFPUC has elected to receive under Section 54AA(g)(1) of the Code, and (b) with respect to a Series of Bonds issued as Build America Bonds under any other provisions of the Code that creates, in the determination of the SFPUC, a substantially similar direct-pay subsidy program, the amounts which are payable by the Federal government under the applicable provisions of the Code, which the SFPUC has elected to receive under the applicable provisions of the Code. Refundable Credits are not included in the calculation of Revenues for any purpose under the Indenture.

Flow of Funds

Deposits to Revenue Fund and Interest Fund. In accordance with the Charter, but subject to the budget and fiscal provisions of the Charter, the entire gross revenue of the Water Enterprise will be deposited into the Revenue Fund held by the Treasurer of the City (the “**Treasurer**”). The Treasurer will hold the amounts in the Revenue Fund separate from all other City funds.

The SFPUC will transfer to the Trustee for deposit into the Interest Fund all Refundable Credits received by the SFPUC.

Application of Revenue Fund. The Treasurer will pay over to the Trustee all moneys in the Revenue Fund, after paying operation and maintenance expenses and making required deposits into pensions or other funds established with respect to SFPUC employees (as required by the Indenture), to the extent necessary to make the following deposits:

Interest. First, on or before the fifth Business Day preceding each subsequent interest payment date, the Treasurer is required to pay to the Trustee for deposit in the Interest Fund an amount equal to the sum of the following:

- (1) The amount of interest becoming due and payable on the Outstanding Bonds of such Series that are Current Interest Bonds (except for Bonds constituting Variable Rate Indebtedness) on such interest payment date (less any amounts on deposit in such fund, including, but not limited to, Refundable Credits available to pay such interest, but excluding amounts on deposit which are reserved as capitalized interest to pay interest during any subsequent period); and
- (2) 110% of the estimated aggregate amount of interest due on such interest payment date on the Outstanding Variable Rate Indebtedness. However, the amount required to be deposited to the Interest Fund for any period may be reduced by the amount by which the deposit in the prior period for interest estimated to accrue on Outstanding Bonds of such Series that are Variable Rate Indebtedness exceeded the actual amount of interest accrued during that period. Also, the amount required to be deposited into the Interest Fund for any period will be increased by the amount by which the deposit in the prior period for interest estimated to accrue on Outstanding Variable Rate Indebtedness was less than the actual amount of interest accruing during that period. Finally, the amount required to be deposited into the Interest Fund for any period will be reduced by any Refundable Credits on deposit in the Interest Fund and available to pay interest for such period.

No deposit needs to be made into the Interest Fund if the amount contained in that fund is at least equal to the interest to become due and payable on the next interest payment date upon all Bonds that are Outstanding (but excluding any moneys on deposit in the Interest Fund from the proceeds of any Series of Bonds or other source and reserved as capitalized interest to pay interest on any interest payment dates following said next interest payment date). See “APPENDIX A – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE – Revenues and Funds – Establishment and Maintenance of Funds for Revenues; Use and Withdrawal of Revenues – Interest Fund, Refundable Credits.”

Moneys in the Interest Fund will be used and withdrawn by the Trustee solely to pay the interest on the Bonds as it becomes due and payable (including accrued interest on any Bonds purchased or redeemed prior to maturity under the Indenture).

Principal. Second, on or before the fifth Business Day preceding each subsequent principal payment date, the Treasurer is required to pay to the Trustee for deposit in the Principal Fund an amount equal to the sum of the following:

- (1) the aggregate amount of Bond Obligation of such Series (less any amounts on deposit in such fund) becoming due and payable on such principal payment date, plus
- (2) the Minimum Sinking Fund Account Payments required to be made with respect to any Term Bonds of such Series on such principal payment date, plus
- (3) if any Letter of Credit Agreement has been entered into on parity with the Bonds, sufficient amounts to pay the obligations of the SFPUC under the Letter of Credit Agreement due on such principal payment date.

If the amounts on deposit in the Principal Fund are insufficient to make all deposits required to be made with respect to any principal payment date, such amounts will be applied on a Proportionate Basis and in such proportion as the Serial Bonds, the Minimum Sinking Fund Payments for Term Bonds, and the Letter of Credit Agreement obligations shall bear to each other. See “APPENDIX A – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE – Revenues and Funds – Establishment and Maintenance of Funds for Revenues; Use and Withdrawal of Revenues – Principal Fund; Sinking Fund Accounts.”

Bond Reserve Fund. Third, in the event of any withdrawal from any Bond Reserve Account, the Treasurer is required to pay to the Trustee for deposit in such Bond Reserve Account, on a *pari passu* basis with transfers to any Bond Reserve Account, on or before the fifth Business Day preceding each interest payment date following such withdrawal, an amount sufficient to replenish any prior withdrawal from such Bond Reserve Account, either in two semi-annual installments for Bond Reserve Accounts established with respect to fixed rate Bonds only or in equal installments over a 12-month period for Bond Reserve Accounts established with respect to any Variable Rate Bonds, so that the balance in such Bond Reserve Account is equal to the Required Reserve with respect to the applicable Series of Bonds (or such larger balance as may be required by any Supplemental Indenture) at the end of such 12-month period.

If a Bond Reserve Fund Policy satisfies all or a portion of the Required Reserve and a drawing is made on the Bond Reserve Fund Policy, on or before the fifth Business Day prior to each interest payment date following such drawing, the Treasurer must pay, either in two semi-annual installments for Bond Reserve Accounts established with respect to fixed rate Bonds only or in equal installments over a 12-month period for Bond Reserve Accounts established with respect to any Variable Rate Bonds, an amount sufficient to repay the aggregate amount of Policy Costs owing with respect to such drawing by the end of such 12-month period to the Reserve Provider (as defined in the Indenture) or to the Trustee (who will remit the payment to the Reserve Provider). See “APPENDIX A – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE.”

Funds or a Bond Reserve Fund Policy on deposit in a Bond Reserve Account will be applied solely to the payment of the Series of Bonds to which such Bond Reserve Account relates and will not be available for payment for any other Series of Bonds. No Bond Reserve Account has been established with respect to the 2016 Series C Bonds.

Rate Covenants

Sufficiency of Revenues. The SFPUC has covenanted in the Indenture that it will, at all times while any of the Bonds remain Outstanding, establish, fix, prescribe and collect rates, fees and charges in connection with the water, services and facilities furnished by the Water Enterprise so as to yield Revenues at least sufficient, after making reasonable allowances for contingencies and errors in the estimates, to pay the following amounts:

- (1) the interest on and principal of the Bonds as they become due and payable (but not including any interest moneys for the payment of which have been deposited in the Interest Fund from the proceeds of any Series of Bonds or from any other source);
- (2) all other payments required for compliance with the terms of the Indenture and of any Supplemental Indenture providing for the issuance of Additional Series of Bonds pursuant to the Indenture;
- (3) all other payments to meet any other obligations of the SFPUC which are charges, liens or encumbrances upon, or payable from, the Revenues; and
- (4) all current Operation and Maintenance Costs of the Enterprise (but not including such Operation and Maintenance Costs of the Enterprise as are scheduled to be paid by the SFPUC from moneys other than Revenues, such money to be clearly available for such purpose).

Debt Service Coverage. In addition to the requirements set forth above, the Indenture provides that the SFPUC will, at all times while any of the Bonds remain Outstanding, establish, fix, prescribe and collect rates, fees and charges in connection with the water, services and facilities furnished by the Water Enterprise so as to yield Net Revenues for the twelve months following the date of calculation, which (together with any fund balances of the SFPUC or the Water Enterprise legally available for payment of Debt Service and not budgeted to be expended during such twelve months but excluding the Bond Reserve Fund and Rebate Fund) are equal to at least 1.25 times Annual Debt Service for such twelve-month period, but from such Annual Debt Service excluding any funded interest.

For the purpose of calculating Maximum Annual Debt Service, Annual Debt Service, Debt Service, and Average Annual Debt Service, in determining the amount of interest coming due during any twelve-month period ending June 30 on any Series of Bonds that were issued as Build America Bonds, such amount will be reduced by an amount equal to the Refundable Credits the SFPUC is scheduled to receive during each such twelve-month period ending June 30. If the amount of Refundable Credits received by the SFPUC for any Series of Bonds that were issued as Build America Bonds is reduced or not received during any twelve-month period ending June 30, SFPUC will calculate the amount of interest coming due for the subsequent twelve-month period ending June 30 without deducting an amount equal to the Refundable Credits for the purpose of calculating Annual Debt, Annual Debt Service, Debt Service and Average Annual Debt Service until the receipt of such Refundable Credits resumes and all prior deficiencies are cured.

Net Revenues and Operation and Maintenance Costs. “Net Revenues” and “Operation and Maintenance Costs of the Enterprise” are defined as follows:

The term “Net Revenues” is defined in the Indenture as:

- all of the Revenues (but not including interest on investment of funds required to be deposited in said funds or investment earnings required to be deposited in the Improvement Fund) less
- all Operation and Maintenance Costs of the Enterprise (but not including such Operation and Maintenance Costs of the Enterprise as are scheduled to be paid by the SFPUC from moneys other than Revenues, such moneys to be clearly available for such purpose).

The Indenture defines the term “**Operation and Maintenance Costs of the Enterprise**” as the reasonable and necessary costs of operating and maintaining the Water Enterprise, calculated on sound accounting principles, including (among other things) salaries and wages, fees for services, costs of materials, supplies and fuel, reasonable expenses of management, legal fees, accounting fees, repairs and other expenses necessary to maintain and preserve the Water Enterprise in good repair and working order, and reasonable amounts for administration, overhead, insurance, taxes (if any), other similar costs, and the payment of pension charges and proportionate payments to such compensation and other insurance or outside reserve funds as the SFPUC may establish or the Board of Supervisors may require with respect to employees of the SFPUC.

“**Operation and Maintenance Costs of the Enterprise**” exclude in all cases the following:

- (1) depreciation and obsolescence charges or reserves therefor,
- (2) amortization of intangibles or other bookkeeping entries of a similar nature,
- (3) costs of capital additions, replacements, betterments, extensions or improvements to the Water Enterprise, which under generally accepted accounting principles are chargeable to a capital account or to a reserve for depreciation, and
- (4) charges for the payment of principal and interest on any general obligation bonds, revenue bonds or other indebtedness heretofore or hereafter issued for Water Enterprise purposes.

See “APPENDIX A – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE – Definitions.”

Bond Reserve Accounts

No Bond Reserve Account for the 2016 Series C Bonds. The Indenture establishes the Bond Reserve Fund and requires the establishment of a bond reserve account (each, a “**Bond Reserve Account**”) within the Bond Reserve Fund for each Series of Bonds issued under the Indenture, and requires the deposit in each Bond Reserve Account of an amount equal to the Required Reserve for the related Series of Bonds. Each Bond Reserve Account is available only for the payment of debt service on the Series of Bonds for which such Bond Reserve Account was established. For any Additional Series of Bonds, the Required Reserve will be the amount, if any, required to be deposited into the Bond Reserve Account for such Additional Series of Bonds as set forth in the Supplemental Indenture pursuant to which such Additional Series of Bonds is issued. See “APPENDIX A – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE – Definitions – Required Reserve.”

Pursuant to the Indenture, the Required Reserve for any Series of Bonds may be funded through a Bond Reserve Fund Policy, which is a policy of insurance or surety bond issued by a Municipal Bond Insurer, or a letter of credit issued by a Qualified Bank.

However, pursuant to the Twenty-Third Supplemental Indenture, no Bond Reserve Account has been established for the 2016 Series C Bonds. The Bond Reserve Accounts established with respect to other Series of Bonds do not secure, and will not be available for, the 2016 Series C Bonds.

Uses of Bond Reserve Accounts. The Trustee will use and withdraw moneys in a Bond Reserve Account solely to pay the principal of, sinking fund account payments and interest on the related Series of Bonds if no other moneys are available for these purposes, or to pay or redeem all of the Bonds of such Series then Outstanding. Each such Bond Reserve Account will be applied solely to the payment of debt service on the Series of Bonds for which such Bond Reserve Account was established and will not be available for the payment of any other Series of Bonds.

So long as the SFPUC is not in default under the Indenture, and in each Bond Reserve Account there is a balance equal to the Required Reserve for the related Series of Bonds, the Trustee will withdraw any amount in a Bond Reserve Account in excess of the related Required Reserve semiannually, on May 1 and November 1 of each year, and transfer that excess amount to the Treasurer for deposit in the Revenue Fund or, during the period of construction of the Project (as such term is defined in the Indenture) or any portion thereof, the Improvement Fund.

Bond Reserve Account Letters of Credit. On September __, 2016 the SFPUC caused to be issued and delivered by MUFG Union Bank, N.A. (the “**MUFG Union Bank**”), a Qualified Bank, Letters of Credit constituting Bond Reserve Fund Policies (the “**Bond Reserve Account Letters of Credit**”) to fund the respective Required Reserves for its Water Revenue Bonds, 2010 Series D, 2011 Series A, 2011 Series B, 2011 Series C, 2011 Series D, 2012 Series A, 2012 Series B, 2012 Series C and 2012 Series D (the “**Secured Series of Bonds**”). The SFPUC and MUFG Union Bank entered into a credit agreement (a “**Credit Agreement**”) with respect to each Bond Reserve Account Letter of Credit. The delivery of the Bond Reserve Account Letters of Credit allowed the release of \$_____ in aggregate principal amount from the Bond Reserve Accounts. Released amounts will be used by the SFPUC to finance capital costs.

The Bond Reserve Account Letters of Credit will not secure the 2016 Series C Bonds.

The Bond Reserve Account Letters of Credit have a stated term of approximately six years and are subject to earlier termination upon the occurrence of certain events. The SFPUC anticipates that the Secured Series of Bonds will be refunded prior to the termination of the Bond Reserve Account Letters of Credit with Bonds for which no Bond Reserve Account will be required to be funded. Were a Secured Series of Bonds to remain Outstanding upon the termination of the related Bond Reserve Account Letter of Credit and the SFPUC were unable to deliver either a replacement Bond Reserve Fund Policy or cash in the amount of the Required Reserve, the related Bond Reserve Account would be funded with a draw on the related Bond Reserve Account Letter of Credit and the SFPUC would be obligated pursuant to the related Credit Agreement to reimburse MUFG Union Bank for the amount of such draw. The SFPUC’s reimbursement obligation would be payable on a basis subordinate to the payment of principal and interest on the Bonds.

Additional Series of Bonds

Additional Series of Bonds Test in the Indenture. The Indenture provides that Additional Series of Bonds secured by Revenues on parity with the Outstanding Bonds and the 2016 Series C Bonds may be issued if certain conditions are met, including the SFPUC’s delivery to the Trustee of the following documents (among others):

- (1) A certificate of the SFPUC setting forth the following:
 - (a) Net Revenues for any period of twelve consecutive calendar months out of the eighteen calendar months next preceding the authentication and delivery of the Additional Series of Bonds, and
 - (b) the Debt Service for such 12-month period, and demonstrating that for such 12-month period Net Revenues equaled at least 1.25 times the Debt Service.
- (2) If any portion of the proceeds of such Additional Series of Bonds is to be used to finance construction, a certificate of the Consulting Engineers setting forth:
 - (a) the estimated date of completion for the portion of the Project for which such Additional Series of Bonds is being issued and for any other uncompleted portion of the Project, and
 - (b) an estimate of the cost of construction of such portion of the Project and of any other uncompleted portion of the Project.
- (3) A written report of a Qualified Independent Consultant setting forth estimates for each of the next three Fiscal Years of:
 - (a) Revenues,
 - (b) Operation and Maintenance Costs of the Enterprise, and
 - (c) Net Revenues.

If any portion of the proceeds of such Additional Series of Bonds is to be used to finance construction, the estimate will be made for the three Fiscal Years following the Fiscal Year in which the Consulting Engineers estimate such portion of the Project will be completed.

- (4) A certificate of the SFPUC setting forth the following:
 - (a) the estimates of Net Revenues provided by the Qualified Independent Consultant pursuant to paragraph (3) above for each of such three Fiscal Years, and
 - (b) the Annual Debt Service for such three Fiscal Years (including estimated Annual Debt Service for future Additional Series of Bonds, if any), that will be required to complete payment of any uncompleted portion of the Project (based on the estimate of the Consulting Engineers), which certificate demonstrates that the estimated Net Revenues in each of such three Fiscal Years is at least equal to 1.25 times the Annual Debt Service for the corresponding Fiscal Year.

Such certificate may anticipate projected rates not yet enacted and may include with Revenues for any 12-month period any fund balances of the SFPUC or the Water Enterprise legally available for payment of Debt Service and not budgeted to be expended during such twelve months but excluding the Bond Reserve Fund and Rebate Fund.

All certificates and written reports will be based upon the actual interest rate or rates determined at the time the Additional Series of Bonds are sold.

Issuance of Additional Series of Bonds with Consent of Bond Owners and Credit Provider. The Indenture also provides that Additional Series of Bonds may be issued without compliance with any of the requirements described above with the written consent of Owners of a majority of the aggregate Bond Obligations of Bonds Outstanding and any Credit Provider, if applicable. See “APPENDIX A – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE.” Any Additional Series of Bonds issued under this provision would, however, be subject to the requirements for issuing revenue bonds under the Charter. See “OBLIGATIONS PAYABLE FROM REVENUES – Authority for Issuance of Revenue Bonds and Other Obligations Payable from Revenues.”

Refunding Bonds

Indenture Requirements. The Indenture provides that Additional Series of Bonds may be issued to refund any Bonds, including the 2016 Series C Bonds, without meeting the test for the issuance of Additional Series of Bonds described above, if the SFPUC delivers to the Trustee (among other documents) a certificate of an Independent Certified Public Accountant to the effect that the Average Annual Debt Service for the Additional Series of Bonds will be equal to or less than the Average Annual Debt Service on the Bonds to be refunded.

City Charter Requirements. The Charter allows refunding bonds to be issued without voter approval if such refunding results in net debt service savings on a present value basis, calculated as provided by ordinance.

Other Parity Obligations; Subordinate Obligations; Obligations Not Payable from Revenues

The Indenture permits the SFPUC to incur obligations payable from Revenues and Refundable Credits on a parity with the payment of principal of and interest on the Bonds upon satisfaction of the requirements set forth in the Indenture. See “SECURITY FOR THE BONDS – Additional Series of Bonds.”

The Indenture permits the SFPUC to authorize and issue bonds, notes, warrants, certificates or other obligations or evidences of indebtedness, the principal of or interest on which would be payable either (i) from Revenues after and subordinate to the payment from Revenues of the principal of and interest on the Bonds, or (ii) from moneys which are not Revenues. See “OBLIGATIONS PAYABLE FROM REVENUES – Subordinate Debt and Commercial Paper” and “OBLIGATIONS PAYABLE FROM REVENUES – State and Federal Loans”.

Investments

The Indenture provides that moneys in all funds and accounts held by the Trustee under the Indenture shall be invested upon receipt in time or demand deposits (including certificates of deposit) in any bank or trust company (including the Trustee) authorized to accept deposits of public funds, and may be invested in Permitted Investments as directed by the SFPUC, and all accounts funds and accounts held by the Treasurer shall be invested in Legal Investments. “**Legal Investments**” means any bonds, notes, certificates of indebtedness, bills, acceptances or other securities in which the Treasurer may legally invest the SFPUC’s funds. For information regarding the investment of moneys held in the various funds and accounts of the SFPUC, see “FINANCIAL OPERATIONS – Investment of SFPUC Funds.”

OBLIGATIONS PAYABLE FROM REVENUES

Authority for Issuance of Revenue Bonds and Other Obligations Payable from Revenues

City Charter. The Charter authorizes the SFPUC to issue revenue bonds and commercial paper notes and to incur other obligations payable from or secured by a pledge of Revenues. The Charter requires voter approval of revenue bonds issued by the SFPUC unless a specific exception to the voter approval requirement applies. See “– Reconstruction or Replacement of Existing Facilities; Refunding Bonds.”

Proposition A. On November 5, 2002, voters of the City approved Proposition A (“**Proposition A**”), specifically authorizing the issuance of up to \$1.628 billion of revenue bonds for the purpose of funding the SFPUC’s Water Enterprise capital improvement program. The SFPUC has previously issued \$1.348 billion aggregate principal amount of Bonds.

Proposition E. Section 8B.124 of the Charter, enacted by voters of the City on November 5, 2002 as Proposition E, authorizes the SFPUC to issue revenue bonds, including notes, commercial paper or other forms of indebtedness, when authorized by ordinance approved by two-thirds vote of the Board of Supervisors, for purposes of reconstructing, replacing, expanding, repairing or improving water facilities or clean water facilities or combinations of water and clean water facilities under the jurisdiction of the SFPUC.

Proposition E also authorizes the Board of Supervisors to take any and all actions necessary to authorize, issue and repay such revenue bonds, including, but not limited to, modifying schedules of rates and charges to provide for the payment and retirement of such revenue bonds. Issuance of such revenue bonds is subject to the following additional conditions set forth in Proposition E:

(a) Certification by an independent engineer retained by the SFPUC that:

(1) the projects to be financed by the revenue bonds, including the prioritization, cost estimates and scheduling, meet utility standards; and

(2) estimated net revenue after payment of operating and maintenance expenses will be sufficient to meet debt service coverage and other indenture or resolution requirements, including debt service on the revenue bonds to be issued, and estimated repair and replacement costs.

(b) Certification by the San Francisco Planning Department that facilities under the jurisdiction of the SFPUC funded with such bonds will comply with applicable requirements of the California Environmental Quality Act.

Any ordinance approving bonds adopted pursuant to Proposition E will become effective thirty days after its adoption unless it is opposed through the referendum process. Opposition may be made by filing with the Board of Supervisors a petition protesting the passage of that ordinance. Such petition must be signed by voters in a number equal to at least 10% of the votes cast for all candidates for Mayor in the last preceding general municipal election for Mayor. If a referendum passes, the ordinance is suspended from becoming effective. The Board of Supervisors may reconsider the ordinance. If it is not entirely repealed, the Board of Supervisors is required to

submit the ordinance to voters at the next general municipal or statewide election or at a special municipal election and it will not become effective until approved by voters at such an election.

Reconstruction or Replacement of Existing Facilities. Section 9.107(6) of the Charter provides that no voter approval is required for bonds issued for the purpose of the reconstruction or replacement of existing water facilities or electric power facilities or combinations of water and electric power facilities under the jurisdiction of the SFPUC when authorized by resolution adopted by a three-fourths affirmative vote of all members of the Board of Supervisors.

Refunding Bonds. Section 9.109 of the Charter authorizes the Board of Supervisors to provide for the issuance of bonds for the purpose of refunding revenue bonds without voter approval if the issuance and sale of such refunding bonds are expected to result in net debt service savings on a present value basis, calculated as provided by ordinance.

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Outstanding Parity Revenue Bonds

All Bonds in the table below (the “**Outstanding Bonds**”) have been issued pursuant to the Indenture and secured by a pledge of Revenues on parity with the 2016 Series C Bonds.

| Series of Bonds | Purpose | Principal Amount Outstanding as of September 1, 2016 |
|--|--|---|
| Water Revenue Bonds, 1991 Series A | Repair and replacement of water facilities | \$ 7,100,000 ⁽¹⁾ |
| Water Revenue Bonds, 2006 Refunding Series B ⁽²⁾ | Refund previously outstanding Bonds of the SFPUC | 78,635,000 |
| Water Revenue Bonds, 2006 Refunding Series C ⁽²⁾ | Refund previously outstanding Bonds of the SFPUC | 24,630,000 |
| Water Revenue Bonds, 2009 Series A ⁽²⁾ | Water system improvements under Proposition A | 324,780,000 |
| Water Revenue Bonds, 2009 Series B ⁽²⁾ | Water system improvements under Proposition A | 364,655,000 |
| Water Revenue Bonds, 2010 Series ABC ^{(2) (3) (4)} | Water system improvements under Proposition E | 459,685,000 |
| Water Revenue Bonds, 2010 Series DE ⁽³⁾ | Water system improvements under Proposition E | 430,305,000 |
| Water Revenue Bonds, 2010 Series FG ^{(2) (3)} | Water system improvements under Proposition E | 529,135,000 |
| Water Revenue Bonds, 2011 Series ABCD | Water system improvements under Proposition E and refund previously outstanding Bonds of the SFPUC | 708,545,000 |
| Water Revenue Bonds, 2012 Series ABC | Water system improvements under Proposition E and refund previously outstanding Bonds of the SFPUC | 701,880,000 |
| Water Revenue Bonds, 2012 Series D (Refunding) | Refund previously outstanding Bonds of the SFPUC | 24,040,000 |
| Water Revenue Bonds, 2015 Series A (Refunding) | Refund previously outstanding Bonds of the SFPUC | 429,600,000 |
| Total | | \$ 4,082,990,000 |

⁽¹⁾ Issued as capital appreciation bonds. Represents full accreted value at maturity.

⁽²⁾ All or a portion of the 2006 Refunding Series B Bonds, all or a portion of the 2006 Refunding Series C Bonds, all or a portion of the 2009 Series A Bonds, all or a portion of the 2009 Series B Bonds, all or a portion of the 2010 Sub-Series A Bonds, and all or a portion of the 2010 Sub-Series F Bonds are expected to be refunded by the 2016 Series AB Bonds.

⁽³⁾ The 2010 Sub-Series B, Sub-Series E, and Sub-Series G Bonds were issued as Build America Bonds.

⁽⁴⁾ The 2010 Sub-Series C Bonds are no longer outstanding.

Subordinate Debt and Commercial Paper

Commercial Paper Program. The SFPUC has established a commercial paper program to fund construction costs relating to capital projects. See “FINANCING OF CAPITAL IMPROVEMENTS.”

Commercial paper notes (“**Commercial Paper Notes**”) have been authorized to be issued for the Water Enterprise in an aggregate principal amount not to exceed \$500 million.

The Commercial Paper Notes are secured and payable from Revenues on a basis subordinate to the payment of debt service on the Bonds.

The Commercial Paper Notes are secured by a \$200 million letter of credit from The Royal Bank of Canada, which expires on June 30, 2017, a \$100 million liquidity facility from U.S. Bank National Association,

which expires on June 30, 2017, and a \$200 million liquidity facility from The Bank of Tokyo Mitsubishi UFJ, Ltd., which expires on June 29, 2018.

As of September 1, 2016, the SFPUC had \$236 million principal amount of Commercial Paper Notes outstanding, all of which will be refunded by the 2016 Series C Bonds.

State and Federal Loans

The Water Enterprise has no outstanding loan obligations payable to the United States of America or the State from Revenues. The SFPUC expects, however, to enter into an Installment Sale Agreement and Grant (the “**CWSRF Agreement**”) with the State Water Resources Control Board (“**SWRCB**”) in November 2016 to finance a portion of the cost of the SFPUC’s San Francisco Westside Recycled Water Project (the “**Westside Recycled Water Project**”), a recycled water project expected to satisfy the drought mitigation financing criteria and Proposition 1 grant guidelines of the SWRCB’s Water Recycling Funding Program. See “**CAPITAL IMPROVEMENT PROGRAM – Non-WSIP.**” The CWSRF Agreement will be entered into pursuant to the SWRCB’s Clean Water State Revolving Fund Loan Program.

The CWSRF Agreement is expected to provide for a \$15 million grant and a \$171 million loan (the “**CWSRF Loan**”). The CWSRF Loan is expected to be a thirty year, level amortizing fixed interest rate loan bearing interest at a rate of 1% per annum. The SFPUC’s obligation to repay the CWSRF Loan will be payable from and secured by a pledge of the Revenues of the Water Enterprise on a parity with the pledge and lien of the Indenture securing payment of principal of and interest on the Bonds.

Contingent Payment Obligations

The Water Enterprise has no interest rate swaps, caps or hedges or other contingent payment obligations payable from Revenues. The Water Enterprise may in the future, however, incur contingent payment obligations payable from Revenues. Such contingent payment obligations may be payable on parity with the 2016 Series C Bonds if the conditions for the issuance of parity debt under the Indenture are met. See “**SECURITY FOR THE BONDS – Additional Series of Bonds.**”

Other Subordinate Obligations Payable from Revenues

The SFPUC completed the construction of a new, 13-story office building at 525 Golden Gate Avenue in San Francisco to house the administrative offices of the SFPUC’s three utility enterprises and moved into the building in July 2012. Total project costs were approximately \$202 million and were financed with land sale proceeds, fund balances, grants and the proceeds of certificates of participation (the “**2009 Golden Gate COPS**”), representing interests in a City General Fund lease, executed and delivered in two series (one of which constitutes Build America Bonds) on October 7, 2009 in the aggregate principal amount of \$167,670,000. Pursuant to a Memorandum of Understanding between the City and the SFPUC, the SFPUC will reimburse the City General Fund for all debt service in connection with this City financing (net of Refundable Credits received). The SFPUC allocates such payment obligations internally among its three utility enterprises based on percentage usage. The Water Enterprise has been allocated 71.4% of such obligations, payable from Revenues on a basis subordinate to the payment of principal of and interest on the Bonds and any parity State or federal loans.

Revenue Bond Oversight Committee

On November 5, 2002, the voters of the City adopted Proposition P, an ordinance that established the Public Utilities Revenue Bond Oversight Committee (“**RBOC**”) to report publicly to the Mayor, the SFPUC and the Board of Supervisors regarding the expenditure of revenue bond proceeds on the repair, replacement, upgrading and expansion of the Water Enterprise, the Wastewater Enterprise and the Power Enterprise (each as defined herein).

The RBOC has seven members appointed as follows: two by the Mayor, two by the Board of Supervisors, one by the City Controller, one by the Bay Area Water Users Association (“**BAWUA**”) under the auspices of the Bay Area Water Supply and Conservation Agency (“**BAWSCA**”). The seventh member is the City’s Budget

Analyst or his or her representative. The work of the RBOC is funded by 1/20th of 1% of the gross bond proceeds of new money revenue bond issuances or sales to the extent permitted by law.

The RBOC's current term expires on January 1, 2019.

The RBOC may, by majority vote of all its members, prohibit the issuance or sale of authorized SFPUC revenue bonds which have yet to be issued or sold if, after reviewing materials provided by the SFPUC and conducting its own independent audit, and after consultation with the City Attorney, the RBOC determines that revenue bond proceeds have been or are being spent on purposes not authorized by the authorizing bond resolution or otherwise in a manner amounting to an illegal expenditure or illegal waste of such revenue bond proceeds. The SFPUC may appeal such a decision to the Board of Supervisors within thirty days. The Board of Supervisors may overturn such a decision by the RBOC by a two-thirds vote of all members of the Board of Supervisors with evidence from the SFPUC of corrective measures satisfactory to the Board or may remand the decision to the RBOC for further consideration.

Debt Service Requirements

Set forth in the following table are debt service requirements on the Outstanding Bonds, the 2016 Series AB Bonds, and the 2016 Series C Bonds.

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DEBT SERVICE REQUIREMENTS ON OUTSTANDING BONDS

| <u>Fiscal Year (ending June 30)</u> | <u>Outstanding Bonds^{(1) (2) (3)}</u> | <u>2016 Series AB Bonds⁽⁴⁾</u> | <u>2016 Series C Principal</u> | <u>2016 Series C Interest</u> | <u>Total Debt Service^{(2) (3) (5)}</u> |
|---|--|---|------------------------------------|-----------------------------------|---|
| 2017 | | | | | |
| 2018 | | | | | |
| 2019 | | | | | |
| 2020 | | | | | |
| 2021 | | | | | |
| 2022 | | | | | |
| 2023 | | | | | |
| 2024 | | | | | |
| 2025 | | | | | |
| 2026 | | | | | |
| 2027 | | | | | |
| 2028 | | | | | |
| 2029 | | | | | |
| 2030 | | | | | |
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| 2045 | | | | | |
| 2046 | | | | | |
| 2047 | | | | | |
| 2048 | | | | | |
| 2049 | | | | | |
| 2050 | | | | | |
| 2051 | | | | | |
| TOTAL | _____ | _____ | _____ | _____ | _____ |

- (1) Includes the Outstanding Bonds. See "PLAN OF FINANCE."
- (2) Net of capitalized interest payments.
- (3) Calculation of interest due on Bonds shown without an offset for Refundable Credits.
- (4) Expected to be issued on or about _____, 2016.
- (5) Totals may not add due to independent rounding.

THE CITY AND COUNTY OF SAN FRANCISCO

THE FOLLOWING INFORMATION IS PROVIDED FOR CONVENIENCE ONLY. THE GENERAL FUND OF THE CITY IS NOT LIABLE FOR THE PAYMENT OF THE PRINCIPAL OF, PREMIUM, IF ANY, OR INTEREST ON THE 2016 SERIES C BONDS, AND NEITHER THE CREDIT NOR THE TAXING POWER OF THE CITY IS PLEDGED TO THE PAYMENT OF THE PRINCIPAL OF, PREMIUM, IF ANY, OR INTEREST ON THE 2016 SERIES C BONDS. THE 2016 SERIES C BONDS ARE NOT SECURED BY A LEGAL OR EQUITABLE PLEDGE OF, OR CHARGE, LIEN, OR ENCUMBRANCE UPON, ANY OF THE PROPERTY OF THE CITY.

The City is the economic and cultural center of the Bay Area and northern California. The limits of the City encompass over 93 square miles, of which 49 square miles are land, with the balance consisting of tidelands and a portion of the San Francisco Bay (the “**Bay**”). The City is located at the northern tip of the San Francisco Peninsula, bounded by the Pacific Ocean to the west, the Bay and the San Francisco-Oakland Bay Bridge to the east, the entrance to the Bay and the Golden Gate Bridge to the north, and San Mateo County to the south. Silicon Valley is about a 40-minute drive to the south, and the wine country is about an hour’s drive to the north. The City’s population in 2014 was 852,469 according to the United States Census Bureau.

The San Francisco Bay Area consists of the nine counties contiguous to the Bay: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano and Sonoma Counties (collectively, the “**Bay Area**”). The economy of the Bay Area includes a wide range of industries, supplying local needs as well as the needs of national and international markets. Major business sectors in the Bay Area include retail, entertainment and the arts, conventions and tourism, service businesses, banking, professional and financial services, corporate headquarters, international and wholesale trade, multimedia and advertising, biotechnology and higher education.

The City is a major convention and tourist destination. According to the San Francisco Travel Association, a nonprofit membership organization, during the calendar year 2014, approximately 18.01 million people visited the City and spent an estimated \$10.67 billion during their stay. The City is also a leading center for financial activity in the State and is the headquarters of the Twelfth Federal Reserve District, the Eleventh District Federal Home Loan Bank, and the San Francisco Regional Office of Thrift Supervision.

The City benefits from a highly skilled, educated and professional labor force. The City’s per-capita personal income of the City for fiscal year 2014-15 was an estimated \$75,930 according to the City’s comprehensive annual financial report (“**CAFR**”). The San Francisco Unified School District operates 16 transitional kindergarten schools, 72 elementary and K-8 school sites, 12 middle schools, 18 senior high schools (including two continuation schools and an independent study school), and 46 State-funded preschool sites, and sponsors 13 independent charter schools. Higher education institutions located in the City include the University of San Francisco, California State University – San Francisco, University of California – San Francisco (a medical school and health science campus), the University of California Hastings College of the Law, the University of the Pacific’s School of Dentistry, Golden Gate University, City College of San Francisco (a public community college), the Art Institute of California – San Francisco, the San Francisco Conservatory of Music, the California Culinary Academy and the Academy of Art University.

San Francisco International Airport (“**SFO**”), located 14 miles south of downtown San Francisco in an unincorporated area of San Mateo County and owned and operated by the City, is the principal commercial service airport for the Bay Area and one of the nation’s principal gateways for Pacific traffic. In fiscal year 2014-15, SFO serviced approximately 48.2 million passengers and handled 441,797 metric tons of cargo. The City is also served by the Bay Area Rapid Transit District (“**BART**”) (electric rail commuter service linking the City with the East Bay and the San Francisco Peninsula, including SFO), Caltrain (a conventional commuter rail line linking the City with the San Francisco Peninsula), and bus and ferry services between the City and residential areas to the north, east and south of the City. San Francisco Municipal Railway (“**Muni**”), operated by the San Francisco Municipal Transportation Agency (the “**SFMTA**”), provides bus and streetcar service within the City. The Port of San Francisco (the “**Port**”), which administers 7.5 miles of Bay waterfront held in “public trust” by the Port on behalf of the people of the State, promotes a balance of maritime-related commerce, fishing, recreational, industrial and commercial activities and natural resource protection.

The City is governed by a Board of Supervisors elected from eleven districts to serve four-year terms, and a Mayor who serves as chief executive officer, elected citywide to a four-year term. Edwin M. Lee is the 43rd and current Mayor of the City, having been elected to his current term by the voters of the City on November 3, 2015. The City's adopted budget for fiscal years 2015-16 and 2016-17 totals \$8.94 billion and \$8.99 billion, respectively. The City's General Fund portion of each year's adopted budget is \$4.59 billion in fiscal year 2015-16 and \$4.68 billion in fiscal year 2016-17, with the balance being allocated to all other funds, including enterprise fund departments, such as the SFMTA, SFO, the Port and the SFPUC. The City's CAFR estimates that the City employed approximately 30,156 full-time-equivalent employees at the end of fiscal year 2014-15. According to the Controller of the City, the fiscal year 2015-16 total net assessed valuation of taxable property in the City is approximately \$194.4 billion.

THE PUBLIC UTILITIES COMMISSION

General

The SFPUC is a department of the City responsible for the maintenance, operation and development of three utility enterprises: the Water Enterprise, the Wastewater Enterprise and the Power Enterprise (which is a component of Hetch Hetchy Water and Power). The SFPUC's enterprises are operated and managed as separate financial entities with separate enterprise funds.

- The Water Enterprise provides drinking water to Retail Customers in the City, to certain Retail Customers outside the City and to Wholesale Customers in three other Bay Area counties.
- The Wastewater Enterprise provides wastewater and stormwater collection, treatment and disposal services for the City (the "**Wastewater Enterprise**").
- Hetch Hetchy Water and Power operates dams (including O'Shaughnessy Dam), reservoirs (including Hetch Hetchy Reservoir), hydroelectric generation and transmission facilities and water transmission facilities from Hetch Hetchy Valley to the connection with the Water Enterprise (collectively, the "**Hetch Hetchy Project**"). In addition, Hetch Hetchy Water and Power provides hydroelectric, solar and other power for municipal and public infrastructure, services and facilities (the "**Power Enterprise**").

The revenues of the Wastewater Enterprise and the Power Enterprise are not available for payment of the principal of, premium, if any, or interest on the Bonds. See "SECURITY FOR THE BONDS – Pledge of Revenues."

Organization, Purposes and Powers

Water Enterprise. The SFPUC serves as the retail water supplier for the City and is responsible for water deliveries to residents and institutions within the City limits, as well as to a number of retail accounts outside of the City limits. In addition, the SFPUC sells water to 27 Wholesale Customer entities in San Mateo, Alameda and Santa Clara Counties under the WSA and related individual contractual agreements. Approximately 67% of the SFPUC's water supply is delivered to the Wholesale Customers and approximately 33% of the SFPUC's remaining water supply is delivered to Retail Customers. See "THE WATER ENTERPRISE."

Wastewater Enterprise. The Wastewater Enterprise's collection and treatment system consists of a combined sewer collection system conveying sewage (sanitary and stormwater flows) within the City to three water pollution control plants, also located within the City. Treated effluent flows are then discharged through deep-water outfalls into San Francisco Bay and the Pacific Ocean. The Wastewater Enterprise also currently provides sewage treatment service on Treasure Island pursuant to contract, and operates an onsite sewage and stormwater reclamation and treatment facility at the SFPUC headquarters at 525 Golden Gate Avenue.

The revenues of the Wastewater Enterprise are not "Revenues" under the Indenture and do not secure the payment of the principal of, premium, if any, or interest on the Bonds. See "SECURITY FOR THE BONDS – Pledge of Revenues."

Hetch Hetchy – Water and Power Operations. Hetch Hetchy Water and Power operates the Hetch Hetchy Project, which provides water for distribution through the Water Enterprise and hydroelectric power to the Power Enterprise. The Power Enterprise, which is a component of the Hetch Hetchy Project, was created in February 2005 as a separate system within Hetch Hetchy Water and Power. The Power Enterprise focuses on providing adequate and reliable supplies of electric power to meet the municipal requirements of the City, including power to operate municipal streetcars and electric buses, street and traffic lights, municipal buildings and other City facilities, including San Francisco International Airport. Additionally, the Power Enterprise provides power to the Modesto and Turlock Irrigation Districts (collectively, the “**Districts**”), located in the central valley of California, and to other commercial customers consistent with prescribed contractual obligations and federal law.

The revenues of the Power Enterprise are not “Revenues” under the Indenture and do not secure the payment of the principal of, premium, if any, or interest on the Bonds. See “SECURITY FOR THE BONDS – Pledge of Revenues.”

Commission Members

Under the Charter, the SFPUC is given exclusive charge of the operation and management of all water, wastewater and municipal customers’ energy supplies and utilities of the City as well as the real, personal and financial assets under the SFPUC’s jurisdiction. The SFPUC is governed by the Commission.

In June 2008, an initiative measure amended the Charter, changing the process for Commission appointments, and establishing qualifications for commissioners, as follows:

- The Commission consists of five members appointed by the Mayor, subject to confirmation by a majority of the Board of Supervisors.
- Seat 1 is designated for a member with experience in environmental policy and an understanding of environmental justice issues.
- Seat 2 is designated for a member with experience in ratepayer or consumer advocacy.
- Seat 3 is designated for a member with experience in project finance.
- Seat 4 is designated for a member with expertise in water systems, power systems, or public utility management.
- Seat 5 is designated for an at-large member.
- Members may be suspended by the Mayor and may be removed by a three-fourths vote of the Board of Supervisors for official misconduct.

The current members of the Commission and the appointment and expiration dates of their terms are:

| <u>Name and Title</u> | <u>Seat</u> | <u>Originally Appointed</u> | <u>Term Expires</u> |
|-----------------------------|-------------|-----------------------------|---------------------|
| Francesca Vietor, President | 1 | September 2008 | August 2016 |
| Anson Moran, Vice President | 4 | July 2009 | August 2018 |
| Ann Moller Caen | 3 | March 1997 | August 2016 |
| Vince Courtney | 5 | January 2011 | August 2016 |
| Ike Kwon | 2 | February 2015 | August 2018 |

Management

Management of the SFPUC is led by the General Manager. The General Manager is appointed by the Mayor from candidates submitted by the Commission. Once appointed by the Mayor, the General Manager serves

at the pleasure of the Commission; however, the Commission also has Charter authority to employ the General Manager under an individual contract.

Brief biographies of the General Manager and principal members of the senior management of the SFPUC are set forth below.

Harlan L. Kelly, Jr. Harlan L. Kelly, Jr. was appointed General Manager of the SFPUC in September 2012. He previously served as the SFPUC's Assistant General Manager, Infrastructure, overseeing \$10 billion in capital programs for water, sewer and power, including the \$4.845 billion Water System Improvement Program, the \$6.9 billion Sewer System Improvement Program, and the \$1.0 billion Hetch Hetchy System Improvement Program. His civil engineering career spanning three decades includes his tenure as the City Engineer of San Francisco. At San Francisco Department of Public Works, he held functional and project management positions, including Interim General Manager, and Deputy Director of Engineering, during which he managed complex capital improvement programs that included the rebuild and seismic retrofit of City Hall, and expansions of convention, hospital, county jail, and public arts facilities. He is a licensed professional engineer, and a graduate of the University of California at Berkeley in Civil Engineering. He is the recipient of numerous awards, including the Silver SPUR Award from the San Francisco Bay Area Planning and Urban Research Association; the Eminent Engineer Award from the National Engineering Honor Society Tau Beta Pi; and the Heroes and Hearts Award from the San Francisco General Hospital Foundation for exceptional community service. He is on the Board of Directors of the National Association of Clean Water Agencies (NACWA), as well as the Bay Area Council. He is a member of the National Society of Black Engineers (NSBE). He co-founded the youth internship program Project Pull, which has been in continuous operation since 1995.

Michael Carlin. Michael Carlin is the SFPUC Deputy General Manager and Chief Operating Officer (“COO”), reporting directly to the General Manager. He was appointed in 2009. As the Deputy General Manager and COO, Mr. Carlin supervises the agency's efforts in capital planning, emergency response, asset management, and other functions across the three business lines—water, power and wastewater. Prior to this position, Mr. Carlin served as the Assistant General Manager for Water where he led the effort to diversify the water supply portfolio. He continues in that role leading many of the environmental initiatives including addressing the impact of climate change on the organization. Mr. Carlin joined the SFPUC in 1996 as the Water Resources Planning Manager where he led the effort to develop comprehensive capital plans. That effort led to the establishment and execution of the Water System Improvement Program. Prior to joining the City, Mr. Carlin worked for more than a decade at the San Francisco Regional Water Board where he was the Planning Chief. Mr. Carlin holds a B.A. in Biology from San Francisco State University and an M.P.A. with an emphasis in Environmental Management from Golden Gate University.

Steven R. Ritchie. Steven Ritchie is the Assistant General Manager of the Water Enterprise, responsible for overseeing water system operations and planning from the Hetch Hetchy Project through the Regional Water System to the City Distribution Division. He is also responsible for the management of the SFPUC's lands and natural resources. Mr. Ritchie was the Manager of Planning at the SFPUC from 1995 to 1998. Prior to his current assignment, he managed the South Bay Salt Pond Restoration Project, a multi-agency effort to restore 15,100 acres of valuable habitat in South San Francisco Bay, while providing for flood risk management and public access. In addition, Mr. Ritchie has worked at management positions at the San Francisco Bay Regional Water Quality Control Board (1987-1995), the CalFed Bay-Delta Program (1998-2000), and URS consultants (2000-2004). He has a B.S. and M.S. in Civil Engineering from Stanford University.

Eric L. Sandler. Eric L. Sandler is Assistant General Manager, Business Services and Chief Financial Officer and is responsible for managing a range of internal and external service functions of the SFPUC including Finance, Customer Service, Information Technology, and Assurance and Internal Controls. Appointed in 2015, he has over 25 years of experience in municipal and infrastructure financing and over 15 years of experience in public utility management. Prior to joining the SFPUC, he served as Director of Finance/Treasurer for the East Bay Municipal Utility District, Director of Finance/Treasurer for the San Diego County Water Authority and Director of Financial Planning for the SFPUC. Before joining public service, Mr. Sandler worked in several infrastructure finance positions including renewable energy project finance and municipal investment banking. Mr. Sandler serves on boards and committees of various industry organizations including the Association of California Water Agencies

and the National Association of Clean Water Agencies. He has a Bachelor's degree in Biology from Stanford University and a Master's degree in Business Administration from the University of California, Berkeley.

Juliet Ellis. Juliet Ellis is the Assistant General Manager for External Affairs at the SFPUC. Prior to joining the SFPUC as an Assistant General Manager, Juliet served as a Commissioner for two years. Juliet now oversees the implementation of Environmental Justice and Community Benefits policies as Assistant General Manager, along with the Policy and Government Affairs, Communications, and Sustainability Planning teams within the SFPUC. Juliet also oversees the SFPUC's national partnerships with other public utilities with the goal of scaling community benefits programs within the public sector. Before joining the SFPUC, Juliet spent nine years as the Executive Director of Urban Habitat, a regional social and environmental justice organization. She also served as the Associate Program Officer for Neighborhood and Community Development at The San Francisco Foundation. Juliet received her Masters of Science in Business Administration at San Francisco State University with an emphasis in Environmental and Urban Studies.

Barbara Hale. Barbara Hale is Assistant General Manager of the Power Enterprise. Ms. Hale oversees the Power Enterprise, including Power Retail Services, Utilities Services, Regulatory Affairs, Infrastructure Development and Power Purchasing and Scheduling. She is responsible for the development of a strategic business plan for the organization, setting out priorities, objectives, schedules and policy issues. Ms. Hale oversees all power-related inter governmental relations, works directly with the Commission on policy and capital matters, and provides direction and leadership to a multi-discipline staff at remote and downtown locations. Ms. Hale provides strategic advice on energy policy matters to the General Manager and manages a staff responsible for developing specific energy efficiency projects and renewable and other advanced sources of electrical generation. Ms. Hale also acts as liaison between the SFPUC and State and federal agencies responsible for energy policy, such as the California Public Utilities Commission, the California Energy Commission, the California Power Authority, the Federal Energy Regulatory Commission, and the United States Department of Energy. Ms. Hale graduated cum laude from San Francisco State University with a B.A. in Economics, receiving special recognition for high achievement with the Department Honors Award. Ms. Hale has pursued extensive graduate coursework in Applied Economics.

Kathy How. Kathy How is Assistant General Manager of Infrastructure, responsible for capital programs and projects implementation for SFPUC facilities, including the Water System Improvement Program, Sewer System Improvement Program and the Hetchy System Improvement Program. Prior to this position, Ms. How was Deputy AGM for Project Delivery, and was responsible for managing engineering design, construction management, and environmental review for all capital projects, whether in-house or consultant designed. Prior to joining the SFPUC in 2003, Ms. How was Assistant City Engineer at the Department of Public Works overseeing project management, architectural and engineering design and construction management for projects in the Seismic Safety bond programs, and Program Director for the Marina Yacht Harbor Renovations at the Recreation and Park Department. She joined the SFPUC to work on initiating program environmental review, development of program goals and objectives for the Water System Improvement Program, and implementation of projects. She is a licensed professional civil engineer in California, and holds a degree in Civil Engineering from the University of California, Berkeley.

Tommy T. Moala. Tommy T. Moala is the Assistant General Manager of the Wastewater Enterprise which protects public health and safety and the environment through the collection and treatment of wastewater and stormwater. Mr. Moala oversees operations, maintenance, facility improvements and regulatory compliance for the City's three wastewater treatment plants, 993-mile long collection system and Treasure Island facilities. A former Naval Propulsion Engineer, Mr. Moala has more than 15 years' experience in managing wastewater systems. He began his 26-year career with the SFPUC as a Stationary Engineer, moving up steadily through the ranks to Senior Engineer, Chief Stationary Engineer and Operations Manager. A team recipient of the National Protection Agency O & M Award and the National Association of Clean Water Agency Award, Mr. Moala has also received then-Mayor Gavin Newsom's Public Managerial Excellence Award and the SFPUC O'Shaughnessy Award for organizing the SFPUC Emergency Response Team dispatched to Hurricane Katrina. He is a member of the Water Environment Federation, the California Water Environment Federation, the National Association of Clean Water Agencies and the American Water Works Association.

Employee Relations

The wages, hours and working conditions of City employees, including employees of the SFPUC, are determined by collective bargaining pursuant to State law (the Meyers-Milias-Brown Act, California Government Code Sections 3500-3511) and the Charter. Except for nurses and a few hundred unrepresented employees, the Charter requires that bargaining impasses be resolved through final and binding arbitration conducted by a panel of three arbitrators. The award of the arbitration panel is final and binding unless legally challenged. Strikes by City employees, including employees of the SFPUC, are prohibited by the Charter. Since 1976, no City employees have participated in a union-authorized strike.

The City's budget for Fiscal Year 2015-16 includes 29,053 budgeted City positions. City workers are represented by 37 different labor unions. The largest unions in the City are the Service Employees International Union, Local 1021; the International Federation of Professional and Technical Engineers, Local 21; and the unions representing police, fire, deputy sheriffs and transit workers. In May 2014, the City negotiated three-year agreements (for Fiscal Years 2014-15 through 2016-17) with most of its labor unions. In general, the parties agreed to: (1) an annual wage increase schedule of 3% (October 11, 2014), 3.25% (October 10, 2015), and between 2.25% and 3.25% depending on inflation (July 1, 2016); and (2) some structural reforms of the City's healthcare benefit and cost-sharing structures to rebalance required premiums between the two main health plans offered by the City. These changes to health contributions built on reforms agreed to by most unions during earlier negotiations.

The SFPUC employs approximately 2,400 of the City's workers. The Charter governs the SFPUC's employment policies and authorizes the San Francisco Civil Service Commission to establish rules and procedures to implement those policies. Of the 37 labor unions representing City workers more broadly, 14 presently represent SFPUC employees. Most SFPUC employees collectively bargain every three years.

Over the next five years, nearly half of the SFPUC workforce will be eligible for retirement. A new generation of jobs will require workers with specialized training, skills and experience, while local hiring requirements will need to be observed. The SFPUC's Strategic Sustainability Plan includes indicators for employee training and development. The SFPUC also provides ethics training, diversity training, management training, environmental management system training, as well as fraud prevention and awareness training.

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The following table summarizes the number of SFPUC and Water Enterprise employees covered by collective bargaining agreements as of July 1, 2016, each of which expire on June 30, 2017.

**TABLE 1
COLLECTIVE BARGAINING AGREEMENTS**

| Employee Bargaining Unit | SFPUC Full-Time Equivalent Employment⁽¹⁾ | Water Enterprise Full-Time Equivalent Employment⁽¹⁾ |
|--|--|---|
| International Association of Machinists, Lodge 1414 | 47 | 30 |
| Carpenters, Local 22 | 20 | 13 |
| International Brotherhood of Electrical Workers, Local 6 | 127 | 30 |
| Laborers, Local 261 | 152 | 85 |
| San Francisco Association of Personnel Professionals, Local 21 | 38 | 4 |
| Municipal Executives Association | 157 | 33 |
| Operating Engineers, Local 3 | 22 | 17 |
| Plumbers, Local 38 | 224 | 157 |
| International Federation of Professional and Technical Engineers, Local 21 | 925 | 186.27 ⁽²⁾ |
| Service Employees International Union, Local 1021 | 327 | 85 |
| San Francisco City Workers United | 14 | 5 |
| Stationary Engineers, Local 39 | 317 | 91 |
| Teamsters, Local 856 | 1 | 0 |
| Teamsters, Local 853 | 39 | 19 |
| Transport Workers Union Local 250-A, Automotive Service Workers | 6 | 4 |
| Unrepresented Employees ⁽³⁾ | 1 | 0 |
| Total | 2,417 | 759.27 |

⁽¹⁾ Represents budgeted numbers as of July 1, 2016. Actual full-time equivalent employment totals will differ from the number of positions budgeted by the SFPUC for a variety of reasons, including certain requirements in the respective collective bargaining agreements.

⁽³⁾ Includes partial positions.

⁽²⁾ Not covered by a collective bargaining agreement.

Source: SFPUC.

Employee Benefit Plans

Retirement System Plan Description. The SFPUC participates in the City’s single employer defined benefit retirement plan (the “**Plan**”) which is administered by the San Francisco City and County Employees’ Retirement System (the “**Retirement System**” or “**SFERS**”). The Plan covers substantially all full time employees of the SFPUC along with other employees of the City. The Plan provides basic service retirement, disability, and death benefits based on specified percentages of final average salary and provides cost-of-living adjustments after retirement. The Plan also provides pension continuation benefits to qualified survivors. The Charter and City Administrative Code are the authorities that establish and amend the benefit provisions and employer obligations of the Plan. Funding requirements relating to the SFPUC are described below in “– Retirement System Funding Policy.”

The Retirement System is administered by a Retirement Board (the “**Retirement Board**”) consisting of seven members, three appointed by the Mayor, three elected from among the members of the Retirement System, at least two of whom must be actively employed, and a member of the Board of Supervisors appointed by the President of the Board of Supervisors. To aid in the administration of the Retirement System, the Retirement Board appoints an Executive Director and an Actuary. The Executive Director serves as chief executive officer, with responsibility extending to all divisions of the Retirement System. The Actuary’s responsibilities include the production of data and a summary of plan provisions for the independent consulting actuarial firm retained by the Retirement Board to prepare an annual valuation report and other analyses as described below. The independent consulting actuarial firm

is currently Cheiron, Inc., a nationally recognized firm selected by the Retirement Board pursuant to a competitive process.

In response to an application filed by the Retirement System, the Internal Revenue Service (“IRS”) issued a favorable Determination Letter for SFERS in March 2012. Issuance of a Determination Letter constitutes a finding by the IRS that operation of the defined benefit plan in accordance with the plan provisions and documents disclosed in the application qualifies the plan for federal tax exempt status. The favorable Determination Letter included IRS review of all SFERS provisions, including Proposition C. See “– Pension and Healthcare Costs Reforms – Proposition C.”

Plan Financial Reports and Funded Status. The Retirement System issues a publicly available financial report that includes financial statements and required supplementary information for the Plan. That report may be obtained by writing to the San Francisco City and County Employees’ Retirement System, 30 Van Ness Avenue, Suite 3000, San Francisco, CA 94102, or by calling (415) 487-7020.

The funded status of the Plan as of July 1, 2015 (the most recent date for which information is available) was as follows:

**TABLE 2
RETIREMENT PLAN FUNDED STATUS
(AS OF JULY 1, 2015)**

| | (\$000,000s) |
|------------------------------------|--------------|
| Actuarial Liability | \$22,970.9 |
| Actuarial Value of Assets | 19,653.3 |
| Unfunded Actuarial Liability | 3,317.6 |
| Funded Status (assets/liabilities) | 85.6% |

Source: SFERS.

The Retirement System discloses accounting and financial reporting information under GASB Statement No. 67 (first implemented by the Retirement System in Fiscal Year 2013-14) and the City reports accounting and financial information about the Retirement System under GASB Statement No. 68 (first implemented by the City in Fiscal Year 2014-15). The accounting statements separated retirement system financial reporting from retirement system funding and required certain additional information in the notes to the City’s financial statements. In general, the City’s funding of its pension obligations is not affected by the changes to its reporting requirements under GASB Statement No. 68, though such changes did result in changes to the SFPUC’s reported salary and working capital costs. See “HISTORICAL OPERATING RESULTS – Summary of Historical Operating Results and Debt Service Coverage.”

Retirement System Funding Policy. Contributions to the basic Plan are made by both the SFPUC and its employees. Employee contributions are mandatory. Employee contribution rates are approved through collective bargaining and vary by union and employment category. For Fiscal Years 2013-14 and 2014-15, the SFPUC’s employee contribution rates varied from 7.5% to 13.0% as a percentage of gross covered salary. For Fiscal Year 2014-15, most employee groups agreed through collective bargaining that employees would contribute the full amount of the employee contribution on a pretax basis.

The SFPUC is required to contribute at an actuarially determined rate and allocates the applicable portions of such contribution to the separate enterprises, including the Water Enterprise. For the prior three Fiscal Years, the Water Enterprise has paid 100% of its required contributions. The contributions by the Water Enterprise required for Fiscal Years 2012-13 through 2016-17 are summarized in the following table.

TABLE 3
WATER ENTERPRISE RETIREMENT PLAN CONTRIBUTIONS

| Fiscal Year | Actuarially Determined Rate as a Percentage of Covered Payroll | Contribution (000s) | Percent of Required Contribution |
|------------------------|---|--------------------------------|---|
| 2012-13 | 20.7% | \$21,606 | 100% |
| 2013-14 | 24.8 | 25,406 | 100 |
| 2014-15 | 26.8 | 27,506 | 100 |
| 2015-16 | 22.8 | 23,594 | 100 |
| 2016-17 ⁽¹⁾ | 21.4 | 21,574 | 100 |

⁽¹⁾ Based on Budget for Fiscal Year 2016-17.

Source: SFERS July 1, 2015 Actuarial Valuation Report (produced by Cheiron February 6, 2016); SFPUC.

The annual actuarial valuation of the Retirement System is a joint effort of the Retirement System and its independent consulting actuarial firm. The Charter prescribes certain actuarial methods and amortization periods to be used by the Retirement System in preparing the actuarial valuation. The Retirement Board adopts the economic and demographic assumptions used in the annual valuations. Demographic assumptions such as retirement, termination and disability rates are based upon periodic demographic studies performed by the consulting actuarial firm approximately every five years. Economic assumptions are reviewed each year by the Retirement Board after receiving an economic experience analysis from the consulting actuarial firm.

At the January 2015 Retirement Board meeting, the consulting actuarial firm recommended that the Retirement Board adopt the following economic assumptions for the July 1, 2014 actuarial valuation: long-term investment earnings assumption of 7.50%, long-term wage inflation assumption of 3.75% and long-term consumer price index assumption of 3.25%. After consideration of the analysis and recommendation, the Retirement Board voted to adopt these recommended assumptions. At the November 2015 Retirement Board meeting, the Retirement Board voted to continue these economic assumptions with no changes for the July 1, 2015 actuarial valuation following the recommendation of the consulting actuarial firm. The Retirement Board also voted to update demographic assumptions, including mortality, after review of a new demographic assumptions study by the consulting actuarial firm.

Upon receipt of the consulting actuarial firm’s valuation report, Retirement System staff provides a recommendation to the Retirement Board for their acceptance of the consulting actuary’s valuation report. In connection with such acceptance, the Retirement Board acts to set the annual employer contribution rates required by the Retirement System as determined by the consulting actuarial firm and approved by the Retirement Board. This process is mandated by the Charter.

Pursuant to the Charter, the consulting actuarial firm and the Retirement Board set the actuarially required employer contribution rate using three related calculations:

First, the normal cost is established for the Retirement System. The normal cost of the Retirement System represents the portion of the actuarial present value of benefits that SFERS will be expected to fund that is attributable to a current year’s employment. The Retirement System uses the entry age normal cost method, which is an actuarial method of calculating the anticipated cost of pension liabilities, designed to fund promised benefits over the working careers of the Retirement System members.

Second, the contribution calculation takes account of the amortization of a portion of the amount by which the actuarial accrued liability of the Retirement System exceeds the actuarial value of Retirement System assets, such amount being known as an “unfunded actuarial accrued liability” or “UAAL.” The UAAL can be thought of as a snapshot of the funding of benefits as of the valuation date. There are a number of assumptions and calculation methods that bear on each side of this asset-liability comparison. On the asset side, the actuarial value of Retirement System assets is calculated using a five-year smoothing technique, so that gains or losses in asset value are recognized over that longer period rather than in the immediate time period such gain or loss is identified. On the liability side, assumptions must be made

regarding future costs of pension benefits in addition to demographic assumptions regarding the Retirement System members including rates of disability, retirement, and death. When the actual experience of the Retirement System differs from the expected experience, the impacts on UAAL are called actuarial gains or losses. Under the Retirement Board's updated Actuarial Funding Methods Policy any such gain or loss is amortized over a closed 20-year period. Similarly, if the estimated liabilities change due to an update in any of the assumptions, the impact on UAAL is also amortized over a closed 20-year period. Prior to the updated Policy which became effective with the July 1, 2014 actuarial valuation, the amortization period for gains, losses and assumption changes was 15 years at the valuation date.

Third, supplemental costs associated with the various SFERS benefit plans are amortized. Supplemental costs are additional costs resulting from the past service component of SFERS benefit increases. In other words, when the Charter is amended to increase benefits to some or all beneficiaries of the Retirement System, the Retirement System's liability is correspondingly increased in proportion to the amount of the new benefit associated with service time already accrued by the then-current beneficiaries. These supplemental costs are required to be amortized over no more than 20 years according to the Charter. The Retirement Board has adopted a 15-year closed period for changes to active member benefits and a 5-year closed period for changes to inactive or retired members effective for all changes on or after July 1, 2014. The prior Board Retirement Policy specified closed 20-year periods for all benefit changes.

The consulting actuarial firm combines the three calculations described above to arrive at a total contribution requirement for funding the Retirement System in the next Fiscal Year. This total contribution amount is satisfied from a combination of employer and employee contributions. Employee contribution rates are mandated by the Charter. Sources of payment of employee contributions (i.e. in the case of the SFPUC, the SFPUC, or its employee) are the subject of collective bargaining agreements with each bargaining unit. As described above, most of the SFPUC's employee groups have agreed through collective bargaining that employees would contribute the full amount of the employee contribution on a pretax basis. The employer contribution rate is established by Retirement Board action each year and is expressed as a percentage of salary applied to all wages covered under the Retirement System.

The assumptions and calculations described above were made as of their respective dates and are subject to change thereafter, including, for example, as a result of a subsequent Retirement Board action to revise the actuarial assumptions applied in the calculations. There is a risk that actual results will differ significantly from such assumptions and calculations.

Projected Future Contributions and Pension Costs. The new funding policies described above, favorable investment returns and the recognition of deferred investment gains following the large investment losses in Fiscal Year 2008-09, which is now fully reflected in the actuarial value of assets after a five-year smoothing period, resulted in a 3.96% decrease in the employer contribution rate for Fiscal Year 2015-16, from 26.76% to 22.80%. The City projects that SFERS employer contribution rates will increase beginning in Fiscal Year 2016-17, however.

Health Care Benefits. Health care benefits of the SFPUC employees, retired employees and surviving spouses are financed by beneficiaries and by the City through the City and County of San Francisco Health Service System (the "**Health Service System**"). The Water Enterprise's annual contribution for both active and retired employees amounted to approximately \$23,986,000 and \$22,531,000 in Fiscal Years 2013-14 and 2014-15, respectively. Included in these amounts are \$8,113,000 and \$7,641,000 for 2014 and 2015, respectively, to provide post-retirement benefits for Water Enterprise retired employees, on a pay-as-you-go basis.

The City has determined a Citywide Annual Required Contribution ("**ARC**"), interest on net other post-employment benefits other than pensions ("**OPEB**") obligation, ARC adjustment, and OPEB cost based upon an actuarial valuation performed in accordance with Governmental Accounting Standards Board Statement ("**GASB**") No. 45, by the City's actuaries. The ARC represents a level of funding that, if paid on an ongoing basis, is projected to cover the normal cost of each year and any unfunded actuarial liabilities (or funding excess) amortized over 30 years. The City's allocation of the OPEB related costs to the SFPUC for the year ended June 30, 2015 based upon its percentage of Citywide payroll costs is presented below.

The following table shows the components of the City’s annual OPEB allocations for the Water Enterprise for the Fiscal Years 2013-14 and 2014-15, for the amount contributed to the plan, and changes in the City’s net OPEB obligation:

**TABLE 4
ANNUAL OPEB OBLIGATION
FOR FISCAL YEARS 2013-14 AND 2014-15
(IN THOUSANDS)**

| | 2014 | 2015 |
|---|-------------|-------------|
| Annual required contribution | \$16,473 | \$16,517 |
| Interest on net OPEB obligation | 3,448 | 3,759 |
| Adjustment to ARC | (2,875) | (3,134) |
| Annual OPEB cost (expense) | 17,046 | 17,142 |
| Contribution made | (8,113) | (7,641) |
| Increase in net OPEB obligation | 8,933 | 9,501 |
| Net OPEB obligation – beginning of year | 85,829 | 94,762 |
| Net OPEB obligation – end of year | \$94,762 | \$104,426 |

Source: SFPUC, Financial Services.

The City issues a publicly available financial report on a City-wide level that includes the complete note disclosures and required supplementary information related to the City’s post-retirement health care obligations. The report may be obtained by writing to the City and County of San Francisco, Office of the Controller, 1 Dr. Carlton B. Goodlett Place, Room 316, San Francisco, CA 94102, or by calling (415) 554-7500.

The City’s OPEB Unfunded Actuarial Accrued Liability (“UAAL”) was \$3.9 billion for Fiscal Year 2014-15. The amount allocable to the SFPUC Water Enterprise, as of June 30, 2015, was \$188.295 million.

Pension and Health Care Costs Reforms

Voters implemented City employee pension and health care cost reforms in recent years to help mitigate future cost increases. These include the following propositions:

Proposition B. Proposition B was a Charter amendment approved by voters in June 2008 that increased the years of service required to qualify for employer-funded retiree health benefits for City employees who retire under SFERS and were hired on or after January 10, 2009. Previously, employees became eligible to participate in the retirement health care system after 5 years of service and the employer paid 100% of the contribution. Beginning with employees hired on or after January 10, 2009, employees remain eligible to participate in the retirement health care system after 5 years of service, however, no employer contributions are required until 10 years of service. From 10 to 15 years of service, employers pay 50% of the contribution, from 15 to 20 years of service 75%, and for employees with 20 years or more of service, 100%.

Proposition B also established a health care trust fund to pay for future costs relating to retiree health care. Employees hired on or after January 10, 2009 contribute up to 2% of their pre-tax pay, with employers contributing an additional 1%, to the health care trust fund. Proposition B also increased maximum pension benefits for employees retiring at and after age 60 and enhances cost of living increases for pensions.

Proposition C. Proposition C was a Charter amendment approved by voters in November 2011 that changed the way the City and current and future employees share in funding SFERS pension and health benefits.

With regard to pension benefits, the base employee contribution rate remains at 7.5% for most employees when the City contribution rate is between 11% and 12% of City payroll. Employees making at least \$50,000 will pay an additional amount up to 6% of compensation when the City contribution rate is over 12% of City payroll. When the City contribution rate falls below 11%, employee contributions will be decreased proportionately.

Proposition C creates new retirement plans for employees hired on or after January 7, 2012 that: (1) for miscellaneous employees, increased the minimum retirement age to 53 with 20 years of service or 65 with 10 years; (2) for safety employees, kept the minimum retirement age at 50 with five years of service, but increased the age for maximum benefits to 58; (3) for all employees, limited covered compensation, calculated final compensation from a three-year average, and changed the multipliers used to calculate pension benefits; and (4) for miscellaneous employees, raised the age of eligibility to receive vesting allowance to 53 and reduced by half the City's contribution to vesting allowances.

With regard to health benefits, elected officials and employees hired on or before January 9, 2009, contribute up to 1% of compensation toward their retiree health care, with matching contribution by the City. For employees or elected officials who left the City workforce before June 30, 2001, and retire after January 6, 2012, Proposition C requires that the City contributions toward retiree health benefits remain at the same levels they were when the employee left the City workforce.

Proposition C also limits cost-of-living adjustments for SFERS retirees; however, in 2015, the Court of Appeals held in a suit against the City brought by a retiree organization, *Protect Our Benefits v. San Francisco* (1st DCA Case No. A140095), that certain changes to payment of supplemental cost of living allowances imposed by Proposition C could not be applied to current City employees and those who retired after November 1996 when the supplemental cost of living allowance provisions were originally adopted, but could be applied to SFERS members who retired before November 1996. On June 17, 2015, the California Supreme Court denied review of the Court of Appeals decision. The actuarial liabilities of the Plan increased by approximately \$388 million, or 1.8%, for back payment of supplemental cost of living allowances payable for 2013 and 2014.

THE WATER ENTERPRISE

General

The SFPUC operates the facilities of its Water Enterprise to optimize the reliability and quality of its water deliveries. The SFPUC has made and will continue to make significant capital investments in the facilities of the Water Enterprise, designed to maximize the Water Enterprise's ability to deliver water sufficient to meet the needs of its customers following the occurrence of a major seismic event or during an extended period of drought.

The SFPUC serves as the retail water supplier for the City and is responsible for water deliveries to residents and institutions within the City limits, as well as to a number of retail accounts outside of the City limits. In addition, the SFPUC sells water to 27 Wholesale Customer entities in San Mateo, Alameda and Santa Clara Counties under the WSA and related individual contractual agreements. Collectively, with the exception of the Cordilleras Mutual Water Company, the Wholesale Customers are members of BAWSCA, which is a public agency separate and apart from the 27 Wholesale Customers. Altogether, nearly 2.6 million people rely on water supplied by the Water Enterprise.

The Water Enterprise consists of over 389 miles of pipeline, over 74 miles of tunnels, 11 reservoirs, five pump stations, and three water treatment plants located outside of the City and over 1,235 miles of pipeline, 11 reservoirs, eight storage tanks, 24 pump stations, eight hydropneumatic stations and 17 chlorination stations located within the City limit.

The Regional Water System draws approximately 85% of its water from the Upper Tuolumne River Watershed, collected in Hetch Hetchy Reservoir in Yosemite National Park, feeding a single aqueduct system, delivering water 120 miles by gravity to Bay Area reservoirs and users. The remaining water supply is drawn from local surface waters in the Alameda and Peninsula watersheds.

Water Rights and Related Proceedings

Prior to the Gold Rush in 1849, local water supplies were largely adequate to meet the needs of what is now San Francisco. The Spring Valley Water Company, purchased by the City in 1930, developed much of the local

water supplies now available to the Water Enterprise. The City's population grew rapidly after the Gold Rush to nearly 400,000 by the time of the Great Earthquake of 1906.

As early as the 1880s, the City began looking to the Sierra Nevada and the Tuolumne River in what is now Yosemite National Park as a possible source of abundant, clean water for the City and the Bay Area. Hetch Hetchy Valley, which is located on the Tuolumne River in Yosemite National Park, was first recommended as a reservoir site at the turn of the 20th century in a United States Geological Survey Study. Then San Francisco Mayor James D. Phelan made the first filings for water rights and reservoir rights-of-way in the Tuolumne River watershed as a private citizen, transferring those filings to the City in 1903.

Following the 1906 earthquake, the City again sought water rights and reservoir rights-of-way in the Tuolumne River watershed and began to develop a preliminary design for the Hetch Hetchy System (as defined herein). It also entered into negotiations with the Districts to protect the Districts' existing water rights and to provide them a share of the hydroelectric power to be produced by Hetch Hetchy facilities, at cost-based rates.

The federal Raker Act, enacted on December 19, 1913 (the "**Raker Act**"), grants to the City rights-of-way and public land use on United States government property in the Sierra Nevada to construct, operate and maintain reservoirs, dams, conduits and other structures necessary or incidental to developing and using water and power. It also imposes restrictions on the City's use of Hetch Hetchy Reservoir, including (among others) the requirement that the City recognize the prior rights of the Districts to receive water, up to specified amounts of natural daily flow, for direct use and storage. After twenty years of construction of dams and aqueducts, water from the Hetch Hetchy System was first delivered to the Bay Area on October 24, 1934.

The City holds rights of way under the Raker Act and releases water from its facilities under stipulations with the United States Department of the Interior, which administers the Raker Act. The SFPUC diverts water under its water rights acquired under State water law, which entitle the SFPUC to appropriate in excess of 400 million gallons per day ("**mgd**") from the Tuolumne River and its tributaries.

See "- Current Water Supply Sources" and "FUTURE WATER DEMAND AND SUPPLY - Proposals to Restore Hetch Hetchy Valley."

Current Water Supply Sources

The Regional Water System. The Regional Water System is a complex system which supplies water from two primary sources: the Tuolumne River through Hetch Hetchy Reservoir and local runoff into Bay Area reservoirs in the Alameda and Peninsula watersheds. Water developed via Hetch Hetchy Reservoir through Hetch Hetchy facilities represents the majority of the water supply available to the SFPUC. On average, Hetch Hetchy Reservoir provides approximately 85% of the water delivered, and Bay Area reservoirs provide approximately 15% of the water delivered. The local watershed facilities are operated to capture local runoff for delivery. Local area water production is dependent on precipitation and the ability of the SFPUC to regulate watershed runoff.

Local Groundwater. The City overlies all or part of seven groundwater basins: the Westside, Lobos, Marina, Downtown, Islais Valley, South and Visitacion Valley basins. The Lobos, Marina, Downtown and South basins are located wholly within the City limits, while the remaining three extend south into San Mateo County. The portion of the Westside Basin aquifer located within the City is commonly referred to as the North Westside Basin. With the exception of the Westside and Lobos basins, all of the basins are generally inadequate to supply a significant amount of groundwater for municipal supply due to low yield.

Early in its history, the City made significant use of local groundwater, springs, and spring-fed surface water. However, after the development of surface water supplies in the Peninsula and Alameda watersheds by Spring Valley Water Company and the subsequent completion of Hetch Hetchy Reservoir and aqueduct in the 1930's, the municipal water supply system has relied almost exclusively on surface water from local runoff, the Alameda and Peninsula watersheds, and the Tuolumne River watershed. Local groundwater use, however, has continued in the City primarily for irrigation purposes. The San Francisco Zoo and Golden Gate Park use groundwater for non-potable purposes.

Approximately 0.4 mgd of groundwater is delivered to Castlewood Country Club from well fields operated by the SFPUC in Pleasanton and drawn from the Central Groundwater Sub Basin in the Livermore/Amador Valley. These wells are metered and have been in operation for several decades. There is no physical connection between the Castlewood wells and the Regional Water System. For purposes of water accounting and billing, these deliveries to Castlewood are accounted for as part of the SFPUC's Retail Customer base.

Local Recycled Water. Current use of recycled water for these purposes in the City is less than one mgd and does not materially contribute to overall retail demands. The Sharp Park Recycled Water Project (0.1 mgd) and the Harding Park Recycled Water Project (0.2 mgd) provide recycled water for irrigating golf courses. The City also uses disinfected secondary-treated recycled water from the SFPUC's Southeast Water Pollution Control Plant on a limited basis for wash-down operations and provides it to construction contractors, City departments, and other interested parties for use within the City via truck-fill station. Permitted uses include soil compaction, dust control, landscape irrigation, street cleaning, and sewer flushing.

Local Water Conservation. The SFPUC is committed to demand-side management programs; the City's per capita water use has dropped by about one-third since 1977 in part due to these programs. The first substantial decrease came following the 1976-77 drought in which gross per capita water use dropped from 160 to 130 gallons per capita per day ("gpcd"). Despite nearly continuous growth in the City since then, water demands have remained lower than pre-drought levels.

A second substantial decrease in water use within the City occurred as a result of the 1987-92 drought, when a new level of conservation activities resulted in further water use savings. In the current drought, gross per capita water use within the City decreased to 77 gpcd in Fiscal Year 2014-15, with residential water use calculated to be approximately 44 gpcd in Fiscal Year 2014-15, one of the lowest per-capita rates of any major urban area in the State, and approximately one-half of the statewide average. It is anticipated that through the continuation and expansion of these programs, per capita water use will continue to decrease into the future.

The SFPUC's water conservation program offers financial incentives, services and educational assistance, all aimed at promoting efficient water use. The conservation program implemented by the SFPUC is based on, among other things, the WSIP, the California Urban Water Conservation Council's Memorandum of Understanding Regarding Urban Water Conservation, and the Water Conservation Act of 2009 (Senate Bill X7-7). In addition, the conservation programs take into consideration local legislation requirements, such as the San Francisco water-efficient irrigation ordinance and residential and commercial conservation ordinances regarding indoor water use, as well as building code requirements, such as water efficiency requirements for municipal buildings.

Water Supply Storage

The amount of water available to the SFPUC's Retail Customers and Wholesale Customers is constrained by hydrology, physical facilities, and the institutional parameters that allocate the water supply of the Tuolumne River. While in most years the SFPUC receives adequate water supply to meet its demands, due to these constraints, the SFPUC is dependent on reservoir storage to firm up its water supplies. More importantly, reservoir storage provides the Regional Water System with year-to-year water supply carry-over capability. During dry years, the SFPUC has a small share of Tuolumne River runoff available and the local Bay Area watersheds produce little water. Reservoir storage is critical to the SFPUC during drought cycles since it enables the SFPUC to carry-over water supply from wet years to dry years. See "WATER FACILITIES – Water Storage."

Projected Demand

Retail Demand. Prior to 2015, the SFPUC had projected its retail demands and conservation potential using an end-use model that was initially developed in 2004. Projections from this model have been used in the 2005 and 2010 updates to the SFPUC's Urban Water Management Plan ("UWMP"). For the 2015 update to the UWMP, the SFPUC developed a new set of models that, in addition to other factors, incorporate socioeconomic factors to project demands through 2040. By including socioeconomic factors, the models are able to capture a more complete demand picture. The new set of models relies on household and employment forecasts provided by the San Francisco Planning Department's Land Use Allocation ("LUA 2012"). The LUA 2012 forecasts are a City-specific refinement of growth forecasts from the Association of Bay Area Governments ("ABAG"), ABAG

Projections 2013, which reflect the growth that is assumed in ABAG’s Plan Bay Area and Sustainable Communities Strategy Jobs-Housing Connections Scenario.

The water demand projections show that single family and multi-family residential water use throughout the retail service area is projected to increase by 45% and 18%, respectively, between 2015 and 2040. In comparison, the total number of San Francisco households is projected to increase by 23% during the same period. In the non-residential sector, non-residential water use throughout the retail service area is projected to increase 30%, while the total number of jobs in San Francisco is projected to increase by 23%.

**TABLE 5
PROJECTED RETAIL WATER DEMAND
(IN MGD)**

| | 2020 | 2025 | 2030 | 2035 | 2040 |
|---|-------------|-------------|-------------|-------------|-------------|
| In-City Residential Demand (Single and Multiple Family) | 37.6 | 39.1 | 41.8 | 44.5 | 47.3 |
| In-City Non-residential (Business/Industrial/Municipal Demands) ⁽¹⁾ | 28.9 | 28.9 | 29.5 | 30.4 | 31.6 |
| Subtotal – In-City Retail | 66.5 | 68.0 | 71.3 | 74.9 | 78.9 |
| In-City Water Loss ⁽²⁾ | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Subtotal – In-City Losses | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Suburban Residential | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| Suburban Non-residential ⁽³⁾ | 4.4 | 4.4 | 4.4 | 4.4 | 4.4 |
| Groveland CSD | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| Subtotal – Suburban Retail⁽⁴⁾ | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Total – Retail Demand | 77.5 | 79.0 | 82.3 | 85.9 | 89.9 |
| Local Water Supplies | 7.0 | 7.1 | 7.1 | 7.2 | 7.3 |
| Net Retail Demand from Regional Water System | 70.5 | 71.9 | 75.2 | 78.7 | 82.6 |

⁽¹⁾ Includes Builders & Contractors, Docks & Shipping, and all dedicated irrigation.

⁽²⁾ Water losses include both apparent and real losses.

⁽³⁾ Includes the San Francisco County Jail, San Francisco International Airport, Lawrence Livermore National Laboratory, Castlewood, Sunol Valley Golf Course, and other non-residential suburban or municipal accounts.

⁽⁴⁾ Suburban retail water losses are considered to be negligible.

Note: Amounts set forth in this table are projections. Actual results may differ materially from these projections. See “FORWARD-LOOKING STATEMENTS” above.

Source: 2015 Urban Water Management Plan, released June 2016.

Wholesale Demand. As part of the development of its Long-Term Reliable Water Supply Strategy, BAWSCA has updated demand projections for each of the Wholesale Customers, which BAWSCA published in its Final report entitled “Regional Water Demand and Conservation Projections Final Report,” released in September 2014. While some Wholesale Customers have used the Strategy projections for their individual UWMP updates for 2015, others are opting to use more recent projections. The most recent set of projections across all Wholesale Customers are provided in the SFPUC’s WaterMAP, which aims to establish a water supply planning framework for the planning period of 2019 through 2040. The WaterMAP provides necessary information to address key water supply decisions.

Water supplied by the SFPUC to the Wholesale Customers is metered. The total projected water demands of the Wholesale Customers, as provided in WaterMAP, are shown in Table 6.

In Fiscal Year 2014-15, Wholesale Customers collectively received approximately 65% of their water supply from the Regional Water System. Future projections indicate that between 2015 and 2040 this figure will be in the range of 59% to 66%. For the year 2040, water demands of the Wholesale Customers (regardless of water source) are projected to increase to approximately 292.3 mgd. Other water supplies available and developed by the Wholesale Customers, which include increased water conservation and recycling, show a net projected increase of about 50 mgd between 2015 and 2040.

**TABLE 6
PROJECTED WHOLESALE CUSTOMER WATER DEMAND AND SUPPLIES
(IN MGD)**

| | <u>2020</u> | <u>2025</u> | <u>2030</u> | <u>2035</u> | <u>2040</u> |
|--|-------------|-------------|-------------|-------------|-------------|
| Wholesale Customer Purchases from the Regional Water System ⁽¹⁾ | 162.2 | 168.0 | 172.0 | 176.7 | 179.8 |
| Other Supplies ⁽²⁾ | 88.2 | 99.3 | 105.8 | 109.5 | 112.5 |
| Total Wholesale Customer Demand | 250.4 | 267.3 | 277.8 | 286.2 | 292.3 |

⁽¹⁾ This projected demand includes increased deliveries to interruptible customers San Jose and Santa Clara, as well as to permanent customer East Palo Alto consistent with WaterMAP.

⁽²⁾ Estimated as the difference between the Total Wholesale Customer Demand and the Wholesale Customer Purchases from the Regional Water System.

Note: Amounts set forth in the table are projections. Actual results may differ materially from these projections. See "FORWARD-LOOKING STATEMENTS" above.

Source: SFPUC 2040 Water Management Action Plan, draft released May 2016; BAWSCA Annual Survey Fiscal Year 2014-15, released April 2016.

Projected Water Demands. The following table shows projected total Regional Water System demand based on the information presented in Tables 5 and 6 above. The SFPUC plans to meet its contractual obligation of serving the Wholesale Customers Supply Assurance (as defined herein) of 184 mgd and providing 81 mgd to the City. In addition to the Supply Assurance, the SFPUC provides 9 mgd to San Jose and Santa Clara as interruptible customers. However, as presented in the WaterMAP, San Jose and Santa Clara are requesting up to a total of 14.5 mgd in future years, and East Palo Alto, a permanent customer, is requesting an additional 1.5 mgd above its Individual Supply Guarantee.

**TABLE 7
PROJECTED TOTAL WATER DEMAND
(IN MGD)**

| | <u>2020</u> | <u>2025</u> | <u>2030</u> | <u>2035</u> | <u>2040</u> |
|------------------------------------|-------------|-------------|-------------|-------------|-------------|
| Retail Customers ⁽¹⁾ | 70.5 | 71.9 | 75.2 | 78.7 | 82.6 |
| Wholesale Customers ⁽²⁾ | 162.2 | 168.0 | 172.0 | 176.7 | 179.8 |
| Total System | 232.6 | 239.9 | 247.2 | 255.4 | 262.4 |

⁽¹⁾ Reflects updated projections from the 2015 Urban Water Management Plan, released June 2016, and includes demands for local supplies in addition to Regional Water System.

⁽²⁾ Based on SFPUC 2040 Water Management Action Plan, draft released May 2016; and BAWSCA Annual Survey Fiscal Year 2014-15, released April 2016. This projected demand reflects Regional Water System demands only and includes increased deliveries to interruptible customers San Jose and Santa Clara, as well as to permanent customer East Palo Alto.

Note: Amounts set forth in the table are projections. Actual results may differ materially from these projections. See "FORWARD-LOOKING STATEMENTS" above.

Source: SFPUC.

Water Supply Reliability and Drought Planning

The SFPUC water supply system reliability is expressed in terms of its ability to deliver water during droughts. Reliability is defined by the amount and frequency of water delivery reductions required to balance

customer demands with available supplies in droughts. The total amount of water the SFPUC has available to deliver to its Retail and Wholesale Customers during a defined period is dependent on several factors that include the amount of water that is available to SFPUC from natural runoff, the amount of water in reservoir storage, groundwater and the amount of water that must be released from the SFPUC's system for commitments for purposes other than customer deliveries (such as releases below Hetch Hetchy reservoir to meet Raker Act and fishery purposes).

The SFPUC operates its system to optimize the reliability and quality of its water deliveries. Hetch Hetchy Reservoir operations are guided by two principal objectives: collection of Tuolumne River water runoff for diversion to the Bay Area; and fulfillment of the SFPUC's downstream release obligations. To ensure water supply, Hetch Hetchy Project reservoirs remain high through the early winter, until sufficient snowmelt runoff is forecasted at 90% certainty to fill all Tuolumne reservoirs. When the forecasted snowmelt is certain to be in excess of the fill volume, the reservoirs may be drawn down through power operations to increase revenue without risking water supply.

Similarly, the Regional Water System Bay Area reservoirs are operated to conserve watershed runoff. As such, reservoirs are drawn down early in the winter period to capture storms and reduce the potential for spilling water out of the reservoirs. In the spring, Hetch Hetchy water (snowmelt) is often transferred to three of the Bay Area reservoirs that are capable of receiving the water so that any unused local reservoir storage is filled prior to July 1.

Prior to 1976, droughts had not seriously affected the ability of the SFPUC to sustain full deliveries to its customers. During a subsequent drought in 1987-92, as reservoir storage continued to decline it became apparent that continued full deliveries could not be sustained without the risk of running out of water before the drought ended. As a result of these experiences, to provide some level of assurance that water could be delivered continuously throughout a drought (although at reduced levels), the SFPUC adopted a drought planning sequence, incorporating an 8.5 year drought scenario for planning purposes (based on combined number of actual drought years from 1976-1977 and 1986-92), and associated operating procedures that trigger different levels of water delivery reduction rationing relative to the volume of water actually stored in SFPUC reservoirs. Each year, during the snowmelt period, the SFPUC evaluates the amount of total water storage expected to occur throughout the Regional Water System. If this evaluation finds the projected total water storage to be less than an identified level sufficient to provide sustained deliveries during the drought scenario, the SFPUC may impose delivery reductions or rationing.

Rationing. At current contractual obligations to deliver 184 mgd to the SFPUC's Wholesale Customers and 81 mgd to its Retail Customers combined with current water supplies and reservoir storages, the Regional Water System can be expected to experience up to a 25% shortage from 15% to 20% of the time, over multiple-year drought sequences. During a drought, Retail and Wholesale Customers could experience a reduction in the amount of water received from the Regional Water System. The amount of the reduction would be dictated by existing contractual agreements between the SFPUC and the Wholesale Customers, as detailed in the existing Water Shortage Allocation Plan ("WSAP"). The WSAP provides specific allocations of available water between the Retail and Wholesale Customers collectively associated with different levels of systemwide shortage. Under the WSAP, specific rationing amounts applied to the Retail and Wholesale Customers will be determined by their subsequent shortage plans as required to remain with their share of the systemwide allocation.

The WSAP has been carried forward in the WSA for systemwide shortages of up to 20%. For shortages in excess of this amount, the WSA provides that the SFPUC may allocate water in its discretion, subject to legal challenge by Wholesale Customers, if agreement cannot be reached regarding treatment of shortages in excess of 20%. The WSA also includes provisions for drought and emergency pricing. See "FINANCIAL OPERATIONS."

System Delivery Capability. System delivery capability is defined as the water delivery the Regional Water System is able to sustain over historical hydrologic conditions including multiple-year drought sequences. Under existing SFPUC operations policies and procedures, the SFPUC has a system delivery capability of 258 mgd. That is, the Regional Water System is capable of sustaining a 258 mgd annual average delivery over a hydrologic period equivalent to that experienced from 1921 to 2002 with shortages due to drought. After completion of the

WSIP and development of dry-year supplies, the system delivery capability is anticipated to increase to 262 mgd. During non-drought years, the Regional Water System is capable of sustainably delivering 265 mgd.

Water Supply Initiatives

To ensure that the future water needs and contractual obligations of its Retail and Wholesale Customers will be met in a more reliable and sustainable manner, the SFPUC has undertaken water supply projects in the WSIP to improve dry-year supplies, and is looking to diversify the City's water supply portfolio through the development of local water supplies such as recycled water, groundwater, and water conservation. Projects related to these efforts are described briefly below. The SFPUC is also continuing its efforts to advance the use of greywater and stormwater recapture in San Francisco, and continues to research opportunities in areas including non-potable supply, direct potable reuse (purified water) and desalination.

New Drought Supplies. The WSIP water supply program includes development of dry-year supplies for the Regional Water System. The WSIP Program Environmental Impact Report included an analysis of dry-year water supply transfers from the senior water right holders on the Tuolumne River, the Districts; a groundwater conjunctive use project; and a regional desalination project. The latter two projects are described below. The SFPUC has had continued discussions for a 2 mgd dry-year water transfer with Modesto and Oakdale Irrigation Districts and is exploring opportunities throughout the San Joaquin Valley.

Groundwater Conjunctive Use. The SFPUC, in conjunction with the City of Daly City ("**Daly City**"), California Water Service Company (South San Francisco District) ("**Cal Water**"), and the City of San Bruno ("**San Bruno**") approved the Groundwater Storage and Recovery Project in August 2014. The Groundwater Storage and Recovery Project, located in the southern portion of the Westside Groundwater Basin in northern San Mateo County, is designed to create a new dry-year groundwater supply that can be utilized at a rate of 8,100 acre feet per year over the course of the SFPUC "design drought," which is a combination of the last two most severe historic droughts on record – 1987-91 and 1976-77 – with an additional 18 month dry sequence. During normal and wet years, the SFPUC will deliver supplemental surface water to Daly City, San Bruno, and Cal Water in place of groundwater pumping. Reducing such pumping in normal and wet years thereby creates "in lieu" storage that can be pumped in dry years. The SFPUC adopted the project following CEQA certification in August 2014. The project is expected to be online in Fiscal Year 2016-17.

Desalination. The SFPUC and several other Bay Area water supply agencies are participating in a Bay Area Regional Reliability Partnership and Drought Contingency Planning effort, which includes the exploration of desalination as a means of meeting regional water needs. The Bay Area Brackish Water Treatment (Regional Desalination) Project could provide up to 9 mgd through a shared facility with a capacity of up to 20 mgd. Review of this project is ongoing alongside other potential drought supply options.

Local Groundwater and Recycled Water Projects. The water supply projects being funded as a part of the WSIP include groundwater and recycled water projects that will result in water supply for the Retail customers. The SFPUC approved the local groundwater project, the "San Francisco Groundwater Supply Project," in January 2012. The project includes installation of new groundwater wells to serve San Francisco retail customers with up to an additional 4 mgd of groundwater from the northern portion of the Westside Basin in San Francisco. The Westside Recycled Water Project will provide approximately 1.6 mgd of recycled water for major irrigation users on the west side of the City, including Golden Gate Park, Lincoln Park and the Presidio of San Francisco. The SFPUC is conducting preliminary design and environmental review for the Daly City Expansion Project and evaluating the feasibility of the San Francisco Eastside Recycled Water Project, South San Francisco Recycled Water Project, and Menlo Country Club Recycled Water Project.

Local Water Conservation. The SFPUC has also increased its water conservation programs in an effort to achieve additional water savings by 2018. New conservation programs include high efficiency toilet replacement in low-income communities and water efficient irrigation installation in municipal parks.

In September 2012, the City adopted Ordinance No. 109-15 (the "**Non-potable Water Ordinance**"). The Non-potable Water Ordinance added Article 12C to the City's Health Code ("**Article 12C**"), which allows the collection, treatment, and use of alternate water sources for non-potable applications. In October 2013, Article 12C

was amended to allow district-scale water systems consisting of two or more buildings sharing non-potable water. In July 2015, Article 12C was further amended to require that, beginning November 1, 2015, all new development projects of 250,000 square feet or more of gross floor area located within the boundaries of the City's designated recycled water use areas install onsite water systems to treat and reuse available alternate water sources for toilet flushing and irrigation. This requirement expands to the entire City on November 1, 2016. Article 12C details the steps that must be taken to collect, treat, and use non-potable water in commercial, mixed-use, and multi-family residential developments. Article 12C also outlines the oversight of the SFPUC and the City's Departments of Public Health and Building Inspection during the review process. To date, the SFPUC has received water budget applications for 48 projects, plus the 4 non-potable projects that were implemented prior to the Non-potable Water Ordinance. In total, the 52 projects will offset approximately 54 million gallons of potable water per year.

Wholesale Deliveries

Wholesale Service Area and Customer Base. The Water Enterprise provides wholesale water service to 27 Wholesale Customers, which consist of 25 public agencies, one private utility and one private non-profit university. All of the Wholesale Customers are located within the County of Alameda, the County of Santa Clara and the County of San Mateo.

- Alameda County is located on the east side of San Francisco Bay and extends from the Cities of Berkeley and Albany in the north to the City of Fremont in the south. Alameda County contains 14 incorporated cities. The California Department of Finance Demographic Research Unit estimated Alameda County's population at 1,627,865 as of January 1, 2016. Most of its population is concentrated in a highly urbanized area between the San Francisco Bay and the East Bay Hills.
- Santa Clara County lies immediately south of San Mateo County and encompasses an area of approximately 1,316 square miles. Santa Clara County contains 15 incorporated cities, including the City of San Jose, the third largest city in the State. The California Department of Finance Demographic Research Unit estimated Santa Clara County's population at 1,927,888 as of January 1, 2016. Most of its population is concentrated in the extensively urbanized and heavily industrialized northern portion of the county.
- San Mateo County is located on the San Francisco Peninsula, west of the San Francisco Bay. San Mateo County covers 446 square miles and contains 20 incorporated cities. Coastal mountains run north and south, dividing the lightly populated western part of the county from the heavily populated eastern corridor between San Francisco and Santa Clara/Silicon Valley. The California Department of Finance Demographic Research Unit estimated San Mateo County's population at 766,041 as of January 1, 2016.
- Alameda County, Santa Clara County and San Mateo County all have diversified economies and median household incomes higher than State and national averages.

Collectively, the Wholesale Customers provide retail water service to approximately 1.77 million people in their respective service areas, with the balance of the respective population being serviced by other providers. Of the 27 Wholesale Customers, 15 derive close to 100% of their water from the SFPUC. All Wholesale Customers are billed monthly on the basis of metered water use and in accordance with the WSA.

The following is a list of the 27 Wholesale Customers:

Wholesale Customers

| Municipalities | Water Purveying Districts | Private Entities |
|------------------------------------|---|---|
| City of Brisbane | Alameda County Water District | California Water Service Company ⁽¹⁾ |
| City of Burlingame | Coastside County Water District | Stanford University |
| City of Daly City | Cordilleras Mutual Water Company ⁽³⁾ | |
| City of East Palo Alto | Estero Municipal Improvement District | |
| City of Hayward | Guadalupe Valley Municipal Improvement District | |
| City of Menlo Park | Mid-Peninsula Water District | |
| City of Millbrae | North Coast County Water District | |
| City of Milpitas | Purissima Hills Water District | |
| City of Mountain View | Westborough County Water District | |
| City of Palo Alto | | |
| City of Redwood City | | |
| City of San Bruno | | |
| City of San Jose ⁽²⁾ | | |
| City of Santa Clara ⁽²⁾ | | |
| City of Sunnyvale | | |
| Town of Hillsborough | | |

- (1) California Water Service Company, an investor-owned utility, provides water service to three separate districts: Bear Gulch (Atherton/Woodside vicinity and including the former Skyline County Water District), Mid-Peninsula (San Carlos/San Mateo vicinity), and South San Francisco. California Water Service Company purchases approximately 15% of the water delivered annually by the SFPUC. Such purchases account for approximately 10% of the SFPUC’s yearly revenues.
- (2) The SFPUC provides water on an interruptible basis to fixed service areas in the northern portions of the Cities of San Jose and Santa Clara. See “– Status of San Jose and Santa Clara” below.
- (3) Cordilleras Mutual Water Company is the only Wholesale Customer that is not a member of BAWSCA.

The Bay Area Water Supply and Conservation Agency. BAWSCA is the successor agency to BAWUA. BAWUA was originally formed as a non-profit mutual benefit corporation to represent the Wholesale Customers’ collective interests in their interactions with the SFPUC. Concerned that their needs and interests were not properly represented by the SFPUC, BAWUA lobbied for the creation of an entity with authority to plan for and acquire supplemental water supplies, encourage water conservation and use of recycled water on a regional basis, and assist in the financing of essential repairs and improvements to the Regional Water System.

BAWSCA is governed by a 26-member Board of Directors which is composed of community leaders representing the 26 of the 27 Wholesale Customers who are members of BAWSCA.

BAWSCA has the authority to coordinate water conservation, supply and recycling activities for its agencies; acquire water and make it available to other agencies on a wholesale basis; finance projects, including improvements to the Regional Water System; and build facilities jointly with other local public agencies or on its own to carry out its purposes.

BAWSCA has not, to date, acquired water or built facilities. In February 2013, BAWSCA financed an early repayment of certain capital charges under the WSA. See “FINANCIAL OPERATIONS – Wholesale Water Sales Revenue – Capital Cost Recovery Prepayment.”

Regional Water System Financing Authority. The Wholesale Customers, together with the SFPUC, formed the San Francisco Bay Area Regional Water System Financing Authority (“**RFA**”). While BAWSCA focuses on planning and water management and may engage in public works projects, the RFA exists solely to help fund capital improvements to the Regional Water System. The RFA has the power to issue revenue bonds to fund projects to improve the reliability of the Regional Water System; provide proceeds of revenue bonds to the City

under specified conditions to improve reliability of the system; and apply for and receive State and federal grants, loans and other financial assistance.

Debt service on any bonds issued by RFA in the future would be secured by, and paid from, a surcharge imposed by the SFPUC upon Wholesale Customers and, under specific conditions, upon Retail Customers. This surcharge would be imposed in an amount sufficient to pay debt service on the RFA's bonds and its operating expenses. Proceeds of the surcharge would not constitute Revenues under the Indenture, and debt service on these bonds, if issued, would not be a debt or liability of the SFPUC or the City.

The RFA has not, to date, issued any revenue bonds, and the SFPUC is not now aware of any current plans by the RFA to do so. The ability of the RFA to issue bonds expires in December 2020.

Prior Master Water Sales Contract. Between 1984 and 2009, Wholesale Customer rates were set pursuant to a Settlement Agreement and Master Water Sales Contract (the "**Prior Master Water Sales Contract**"). The Prior Master Water Sales Contract put in place a comprehensive method for allocating the costs of the water system between the SFPUC's Retail Customers and the Wholesale Customers. Capital costs and most operations and maintenance expenses of the Regional Water System were distributed between the SFPUC and its Retail Customers and the Wholesale Customers on proportional water usage: approximately one-third to the City and two-thirds to the Wholesale Customers.

The Prior Master Water Sales Contract resolved litigation over certain rate-setting practices. Both sides dismissed, with prejudice, the claims related to water sales overcharges and undercharges with the signing of the Prior Master Water Sales Contract. However, the litigation left open certain questions, such as whether the Wholesale Customers are "Co-Grantees" under the Raker Act and, if so, what rights, benefits and privileges accrue to them by reason of such status, including the right to receive water at cost, and the extent to which the City may be legally obligated to provide water to meet growth demands in Wholesale Customer service areas.

Water Supply Agreement. In 2009, the SFPUC and the Wholesale Customers entered into the Water Supply Agreement, with an effective date of July 1, 2009, which replaced the Prior Master Water Sales Contract. The WSA has a 25-year term (with provisions for two conditional five-year extensions).

The WSA provides for the separation of asset and expense categories among wholesale only, regional, and retail only. Annual operations and maintenance expenses are recovered on the basis of proportional annual use of the Regional Water System in most cases. Costs and revenues of the Hetch Hetchy Project are also separated—the Wholesale Customers do not pay for power-related costs, which are borne by the Power Enterprise, and do not share in power revenues.

The WSA includes a "Supply Assurance" of 184 mgd (measured on an annual average basis), in favor of 23 of the Wholesale Customers (the "**Supply Assurance**"). The Cities of San Jose and Santa Clara are served wholesale water on an interruptible basis and such sales are not deemed to be within the Supply Assurance. The City of Hayward does not have an individual supply guarantee as it had previously negotiated an individual contract that did not limit its water use. The City of Hayward continues to receive water under a contract entered into in 1960 with no expiration date or limitation in supply. If the demand of the 23 Wholesale Customers with individual supply guarantees exceeds the 184 mgd Supply Assurance, the 23 Wholesale Customers with individual supply guarantees would be required to reduce their allocation to accommodate the needs of the City of Hayward. For Fiscal Year 2015-16, total water purchases by the Wholesale Customers with individual supply guarantees were approximately 63.6% of the combined Supply Assurance.

The following table shows the Individual Supply Guarantee and actual Fiscal Year 2014-15 purchases for the Wholesale Customers.

**TABLE 8
WHOLESALE CONTRACTUAL OBLIGATIONS
(IN MGD)**

| | Individual Supply Guarantee ⁽¹⁾ | Actual 2014-15 Purchases ⁽²⁾ |
|---|---|--|
| Alameda County Water District | 13.76 | 7.96 |
| City of Brisbane / Guadalupe Valley Municipal Improvement District ⁽³⁾ | 0.98 | 0.60 |
| City of Burlingame | 5.23 | 3.67 |
| California Water Service Company | 35.68 | 29.05 |
| Coastside County Water District | 2.18 | 1.53 |
| City of Daly City | 4.29 | 3.32 |
| City of East Palo Alto | 1.96 | 1.57 |
| Estero Municipal Improvement District | 5.90 | 3.98 |
| City of Hayward | 22.08 | 13.60 |
| Town of Hillsborough | 4.09 | 2.63 |
| City of Menlo Park | 4.46 | 2.63 |
| Mid-Peninsula Water District | 3.89 | 2.53 |
| City of Millbrae | 3.15 | 1.91 |
| City of Milpitas | 9.23 | 5.24 |
| City of Mountain View | 13.46 | 7.61 |
| North Coast County Water District | 3.84 | 2.92 |
| City of Palo Alto | 17.08 | 9.68 ⁽⁴⁾ |
| Purissima Hills Water District | 1.63 | 1.65 |
| City of Redwood City | 10.93 | 8.01 |
| City of San Bruno | 3.25 | 1.31 |
| City of San Jose ⁽⁵⁾ | -- | 4.49 |
| City of Santa Clara ⁽⁵⁾ | -- | 1.77 |
| Stanford University | 3.03 | 1.89 ⁽⁴⁾ |
| City of Sunnyvale | 12.58 | 7.79 |
| Westborough County Water District | 1.32 | 0.68 |
| Subtotal BAWSCA Demand | 184.00 | 128.00 |
| Cordilleras Mutual Water Company ⁽⁶⁾ | -- | 0.01 |
| Total Wholesale Demand ^{(7) (8)} | -- | 128.00 |

(1) "Individual Supply Guarantee" refers to each Wholesale Customer's share of the Supply Assurance as defined in the Prior Master Water Sales Contract. The Supply Assurance is the 184 mgd maximum annual average metered supply of water dedicated by San Francisco to public use in the wholesale service area (not including the Cities of San Jose and Santa Clara). The City of Hayward's Individual Supply Guarantee is calculated as 184 mgd less the total of permanent customer Individual Supply Guarantees (161.92 mgd).

(2) Actual demands are equivalent to purchases as reported in customer billing data.

(3) The City of Brisbane and Guadalupe Valley Municipal Improvement District are two Wholesale Customers that are jointly operated.

(4) Actual 2015 purchases by the City of Palo Alto include an annual average of approximately 0.11 mgd of deliveries to the Stanford Hospital, located in the City of Palo Alto service area, from Stanford University via an emergency intertie.

(5) Projected purchase requests for San Jose and Santa Clara are shown as they currently do not have an allocated share of the Supply Assurance due to their temporary, interruptible status under the WSA.

(6) Cordilleras Mutual Water Company is not a member of BAWSCA, and therefore does not have an Individual Supply Guarantee.

(7) Groveland CSD is not accounted for as a wholesale customer for the purpose of this table and subsequent wholesale supply and demand comparisons.

(8) Total may not add due to rounding.

Source: 2015 Urban Water Management Plan, released June 2016.

The basic framework of the Prior Master Water Sales Contract regarding coordination of wholesale rates with the annual SFPUC budget process, annual compliance audits, resolution of disputes concerning the SFPUC's determination of the annual Wholesale Revenue Requirement (as defined herein) via binding arbitration and the annual true up of costs using a balancing account continue, but the WSA effected significant changes in the arrangement between the SFPUC and the Wholesale Customers. The WSA included the following significant changes:

Allocation of Capital Costs. Instead of continuing with the utility method, the WSA more timely recovers capital costs as follows:

- The costs of existing assets placed in service prior to June 30, 2009, approximately \$367 million in 2009 dollars, were to be repaid based on audited actual costs in monthly installments by Wholesale Customers at an annual interest rate of 5.13% over a 25-year period, in lieu of depreciation and a weighted return on these assets. In February 2013, the Wholesale Customers, through BAWSCA, made an early repayment of the entire cost recovery payment balance. See "FINANCIAL OPERATIONS – Wholesale Water Sales Revenue – Capital Cost Recovery Prepayment."
- The costs of new regional assets are to be paid for using the cash method. Annual wholesale rates are set to recover the Wholesale Customers' share of regional asset costs from current revenues for cash-funded assets. Wholesale contributions for debt-financed assets include appropriate contributions towards debt service and coverage based on the Wholesale Customers' proportionate annual use of the Regional Water System.
- For the portion of capital projects costs that were appropriated but not expended as of June 30, 2009, a 10-year repayment schedule including 4.00% interest has been calculated, based on audited actual costs.

For more information regarding the wholesale rate setting mechanism, see "FINANCIAL OPERATIONS – Wholesale Water Sales Revenue."

Treatment of Water Supply Issues. The 184 mgd Supply Assurance continues in existence in the WSA. The WSA includes an "Interim Supply Limitation" which limits the amount of water delivered to the Retail Customers and Wholesale Customers from the SFPUC watersheds to 265 mgd through 2018. See "FUTURE WATER DEMAND AND SUPPLY." Under the Interim Supply Limitation, Retail Customers will receive up to 81 mgd and the Wholesale Customers will receive up to 184 mgd from the Regional Water System.

Status of San Jose and Santa Clara. The Cities of San Jose and Santa Clara retain their temporary, interruptible status. The SFPUC agrees to supply a combined annual average of nine mgd to the two cities through 2018. The nine mgd allocated to San Jose and Santa Clara is not a part of the Supply Assurance, but is included within the wholesale portion of the Interim Supply Limitation of 184 mgd.

The WSA requires the SFPUC to prepare and consider "Water Supply Development Reports" in the years 2010 through 2017. The annual Water Supply Development Reports are to be based on water projections and work plans for achieving the Interim Supply Limitation in retail and wholesale service areas. If the Water Supply Development Reports show that the Interim Supply Limitation will not be met by June 30, 2018 as a result of Wholesale Customer use in excess of 184 mgd, the SFPUC may issue a 5-year conditional notice of interruption or reduction in supply of water to San Jose and Santa Clara, at which point the SFPUC will prepare a new analysis of water supply that will be used by the Department of City Planning in preparing any necessary documentation under the California Environmental Quality Act ("CEQA") on the impacts of interrupting or reducing service to San Jose and Santa Clara. The notice of interruption or reduction in supply would be rescinded if subsequent Water Supply Development Reports show that sufficient progress has been made toward meeting the Interim Supply Limitation by June 30, 2018. The 2015 Water Supply Development Report recommended against issuing a conditional 5-year notice of interruption or reduction in supply of water to San Jose and Santa Clara, as projections show that there will be adequate supplies to meet these customers' needs through 2018 and beyond.

To establish a water supply planning framework for the planning period of 2019 through 2040, the SFPUC developed the 2040 Water Management Action Plan (“**WaterMAP**”). The WaterMAP provides necessary information to address key water supply decisions, including the options the SFPUC should consider in making San Jose and Santa Clara permanent customers of the Regional Water System. See “—2018 Water Supply Decisions” below.

Creation of Transfer Market. The WSA contemplates the creation of a water transfer market that enhances the Wholesale Customers’ ability to keep purchases within the amounts of their respective Interim Supply Allocations (as defined in the Indenture). These transfers would remain in effect until rescinded by the transferring parties, and otherwise continue in force until December 31, 2018. In addition, Wholesale Customers may agree to the permanent transfer of portions of their Individual Supply Guarantees, their share of the 184 mgd Supply Assurance. All such transfers are subject to SFPUC approval regarding operational and Raker Act concerns.

Enforcement of Interim Supply Limitation. Commencing in Fiscal Year 2011-12, the SFPUC established a volume-based “Environmental Enhancement Surcharge” to enforce the Interim Supply Limitation. The Environmental Enhancement Surcharge would apply only if combined retail and wholesale water deliveries from the Regional Water System watersheds exceed 265 mgd. Environmental Enhancement Surcharge proceeds will be placed in a restricted reserve fund to be used only for specific environmental restoration and enhancement measures in the SFPUC’s Sierra and local watersheds, such as those identified in the Watershed Environmental Improvement Program. Specific restoration and enhancement projects would be selected by the SFPUC and BAWSCA, following input from environmental stakeholders and other interested members of the public. No surcharges have been imposed, and as discussed above, it appears unlikely that any surcharges will be imposed through 2018.

Other Significant Provisions. The WSA also contains the following provisions:

- The SFPUC agrees to operate system reservoirs in a manner that assigns higher priority to the delivery of water to the Bay Area and the environment than to generation of hydroelectric power.
- The “Shortage Allocation Plan,” which establishes an allocation of water between the Retail Customers and Wholesale Customers to be applied during droughts, and governs drought shortages of up to 20%.
- Drought pricing and emergency rate increases are allowed.

2018 Water Supply Decisions. Subject to completion of necessary CEQA review and the exercise of retained discretion by the SFPUC to reject or modify proposed projects, the WSA requires the SFPUC to make several decisions by December 31, 2018 as follows:

- Whether to make San Jose and Santa Clara permanent customers to the extent that the SFPUC determines that long-term Regional Water System supplies are available.
- Whether to provide water in excess of the Supply Assurance to meet the Wholesale Customers’ projected future water demands until the year 2030, and whether to offer a corresponding increase in the Supply Assurance.

Through the WaterMAP, the SFPUC addresses how to meet new demands that may occur should San Jose and Santa Clara become permanent customers.

Converting San Jose and Santa Clara to permanent, non-interruptible customers would require the SFPUC to secure 9 to 14.5 mgd of additional water supply, reflecting historic and projected demand estimates. As noted above, San Jose and Santa Clara are currently temporary customers with an interruptible status. The SFPUC will continue to meet the two cities’ demands up to 9 mgd through 2018, but may issue a conditional five-year notice of termination or reduction in supply to San Jose and Santa Clara if water use by the Wholesale Customers is projected

to exceed 184 mgd before June 30, 2018. Development of additional supplies would be necessary to offer San Jose and Santa Clara permanent status.

Cumulatively, Wholesale Customer purchase request projections through 2040 are expected to be lower than the existing 184 mgd Supply Assurance. However, there are some individual Wholesale Customers whose future purchase requests are projected to exceed their respective Individual Supply Guarantees, including East Palo Alto, Purissima Hills Water District, and Burlingame. By 2040, an additional supply of up to 1.78 mgd could be needed to meet the projected purchase requests, above the amount of their combined Individual Supply Guarantees. At this time, however, only East Palo Alto has requested that the SFPUC consider additional supply options to meet their projected demand increase in the planning horizon. Therefore, an additional supply request of up to 1.5 mgd is being considered at this time. However the SFPUC will continue dialogue with each of these Wholesale Customers as planning progresses. In addition, as noted above, interruptible customers San Jose and Santa Clara anticipate an additional demand of 5.5 mgd by 2040, over their prior purchases of 9 mgd from the Regional Water System. Inclusive of these anticipated demands, on a cumulative basis, the Wholesale Customer purchase requests through 2040 are expected to be 179.9 mgd by 2040, lower than the 184 mgd Supply Assurance.

Although demands are expected to be low enough to accommodate individual increases in demand and the demands of San Jose and Santa Clara through 2040, East Palo Alto's projected increase of 1.5 mgd in demand and San Jose and Santa Clara's combined demand of up to 14.5 mgd by 2040 are not reflected in the Individual Supply Guarantees allocated to the existing Wholesale Customers. Therefore, the SFPUC plans to develop a water supply program that will enable it to continue to meet its commitments and responsibilities to the Wholesale Customers and Retail Customers, consistent with the WSA and SFPUC's priorities. This program will be outlined later in 2016 and evaluated further for decision by the SFPUC.

For a more detailed summary of the WSA, see "APPENDIX B – SUMMARY OF CERTAIN PROVISIONS OF THE WATER SUPPLY AGREEMENT."

Individual Water Supply Contracts. While the WSA establishes the rate-setting mechanism and the overall supply assurance level for Wholesale Customers, each Wholesale Customer has an individual water supply contract with the City that defines the terms and conditions (including, among others, the point of delivery and service area) by which water is supplied to each such Wholesale Customer.

Retail Deliveries

Retail Service Area and Customer Base. The SFPUC's retail water customers include the residents, businesses and industries located within the corporate boundaries of the City. In addition to these customers, retail water service is also provided to other customers located outside of the City, such as the Town of Sunol, San Francisco International Airport, Lawrence Livermore Laboratory, Castlewood Country Club and Groveland Community Services District. All of the SFPUC's Retail Customers have been metered since 1916.

Residential Water Use. Due to the moderate climate and the high density housing in the City, much of the water use within the City is indoors. For multi-family units, the average outdoor water use is considerably lower than the statewide residential outdoor average water use of 50% to 60%. Residential per capita water usage has been less than 50 gallons per person per day since 2011.

Non-Residential Water Use. Non-residential water use includes all sectors of water users not designated as residential, such as manufacturing, transportation, trade, finance, and government employment sectors, and the large services sector.

Historic Water Sales and Top Customers

Water Sales. The following table shows water sales to Retail Customers and Wholesale Customers for the five Fiscal Years 2011-12 through 2015-16.

TABLE 9
HISTORIC WHOLESALE AND RETAIL WATER SALES
FISCAL YEARS ENDED JUNE 30
(IN MGD)

| | <u>2012</u> | <u>2013</u> | <u>2014</u> | <u>2015</u> | <u>2016</u> | <i>2016 % of Total</i> |
|--|--------------|--------------|---------------------------|---------------------------|---------------------------|----------------------------|
| <u>Retail Customers</u> | | | | | | |
| Residential ⁽¹⁾ | 40.9 | 41.5 | 39.7 | 36.8 | 35.2 | 20.6% |
| Commercial ⁽¹⁾ | 18.6 | 19.6 | 18.5 | 18.1 | 17.4 | 10.2 |
| Suburban Retail ⁽¹⁾ | 4.2 | 4.4 | 4.2 | 3.8 | 3.3 | 2.0 |
| Municipal ⁽¹⁾ | 3.2 | 3.7 | 3.6 | 2.8 | 3.0 | 1.8 |
| Industrial | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 |
| Docks & Shipping | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 |
| Retail water sales[†] | <u>67.1</u> | <u>69.4</u> | <u>66.2⁽²⁾</u> | <u>61.8⁽²⁾</u> | <u>59.2⁽²⁾</u> | <u>34.7%</u> |
| <u>Wholesale Customers</u> | | | | | | |
| California Water Service | 32.9 | 33.0 | 33.8 | 29.1 | 23.5 | 13.8% |
| Hayward Municipal Water | 15.6 | 15.5 | 15.2 | 13.6 | 12.2 | 7.2 |
| City of Palo Alto | 11.4 | 11.3 | 11.3 | 9.6 | 8.2 | 4.8 |
| City of Sunnyvale | 9.0 | 9.5 | 8.5 | 7.8 | 7.8 | 4.6 |
| City of Redwood City | 9.0 | 9.3 | 9.1 | 8.0 | 7.1 | 4.2 |
| City of Mountain View | 8.7 | 9.1 | 9.0 | 7.6 | 6.7 | 3.9 |
| Alameda County Water District | 8.1 | 9.1 | 12.0 | 8.0 | 6.0 | 3.5 |
| City of Milpitas | 6.2 | 6.4 | 6.6 | 5.2 | 4.5 | 2.6 |
| City of Daly City | 3.6 | 4.1 | 3.5 | 3.3 | 4.5 | 2.6 |
| City of San Jose | 4.4 | 4.5 | 4.6 | 4.5 | 4.1 | 2.4 |
| All Other Wholesale Customers | 31.5 | 32.0 | 31.9 | 27.4 | 23.3 | 13.6 |
| Wholesale water sales[†] | <u>144.4</u> | <u>147.9</u> | <u>149.7</u> | <u>128.0</u> | <u>111.4</u> | <u>65.3%</u> |
| Total water sales[†] | <u>211.4</u> | <u>217.4</u> | <u>215.9</u> | <u>189.8</u> | <u>170.5</u> | <u>100.0%</u> |
| % Change from prior year | -1.1% | 2.8% | -0.7% | -12.1% | -10.2% | -- |

[†] Totals may not add due to independent rounding.

⁽¹⁾ The Municipal category includes the San Bruno Jail, a City department located outside San Francisco. San Francisco International Airport was historically included as Municipal customer, but has been restated as a Suburban Retail customer because water sales represent resale to its tenants and not for its own consumption. Treasure Island consumption was historically included as "Commercial," but has been restated as "Suburban Retail" because its water sales include both commercial and residential usage.

⁽²⁾ Reflects decline in water sales due to declaration of emergency by California Governor Jerry Brown in January 2014.

Source: SFPUC Comprehensive Annual Financial Report as of June 30, 2015 for Fiscal Years 2011-12 through 2014-15. SFPUC for Fiscal Year 2015-16.

Wholesale and retail sales figures do not include "unaccounted for water". Unaccounted for water includes water delivery system leaks and water not billed or tracked in the system (i.e., water used for firefighting or flushing water system pipes). Unaccounted for water has averaged approximately 8% of retail sales per year over the last 15 years.

As shown in the table above, water sales remained relatively flat from Fiscal Year 2010-11 through Fiscal Year 2013-14, as moderate conservation practices compensated for a growing population and strong local economy.

Following the Governor’s drought declaration in January 2014, water sales dropped by over 12% from Fiscal Year 2013-14 through Fiscal Year 2014-15, and by approximately 10% from Fiscal Year 2014-15 through Fiscal Year 2015-16. See also “THE WATER ENTERPRISE - Current California Drought”.

Top Five Retail and Top Ten Wholesale Customers. The following table sets forth the top five Retail Customers and top ten Wholesale Customers based on water sales revenues for Fiscal Year 2014-15.

**TABLE 10
TOP FIVE RETAIL CUSTOMERS
AND TOP TEN WHOLESALE CUSTOMERS
FISCAL YEAR 2014-15**

| | Water Sales Revenue (In Thousands) | Percent of all Water Revenues | Percent of Wholesale Customer Revenues⁽¹⁾ | Percent of Retail Customer Revenues⁽¹⁾ |
|--|---|--|---|--|
| <u>Retail Customers</u> | | | | |
| San Francisco International Airport ⁽²⁾ | \$ 3,095 | 0.8% | N/A | 1.6% |
| NASA Shared Services Center, LLC | 1,484 | 0.4 | N/A | 0.8 |
| Parkmerced Investors Properties, LLC | 1,393 | 0.3 | N/A | 0.7 |
| University of California San Francisco | 1,100 | 0.3 | N/A | 0.6 |
| Recreation and Parks Department | 878 | 0.2 | N/A | 0.5 |
| Total: | \$ 7,950 | 2.0% | N/A | 4.1% |
| <u>Wholesale Customers</u> | | | | |
| Calif. Water Service Company | \$ 46,911 | 11.6% | 22.4% | N/A |
| Hayward Muni Water System | 21,475 | 5.3 | 10.3 | N/A |
| Alameda County Water District | 15,743 | 3.9 | 7.5 | N/A |
| City of Palo Alto | 15,743 | 3.9 | 7.5 | N/A |
| City of Redwood City | 13,213 | 3.3 | 6.3 | N/A |
| City of Sunnyvale | 12,885 | 3.2 | 6.2 | N/A |
| City of Mountain View | 12,407 | 3.1 | 5.9 | N/A |
| City of Milpitas | 8,612 | 2.1 | 4.1 | N/A |
| ESD/San Jose Muni Water System | 7,185 | 1.8 | 3.4 | N/A |
| Estero Municipal Improvement District | 6,384 | 1.6 | 3.1 | N/A |
| Total: | \$160,558 | 39.7% | 76.7% | N/A |

⁽¹⁾ Percentages based on total Wholesale Revenues of \$209,251 and total Retail Revenues of \$195,089.

⁽²⁾ Represents water sales to customers through the City enterprise fund for San Francisco International Airport, which is paid through the City’s inter-departmental billing system.

Source: SFPUC Customer Care & Billing System.

Current California Drought

The recent drought of 2012-2015 represents the driest sequence in the hydrologic record. The SFPUC and its customers have been conserving for the last three years.

On January 17, 2014, California Governor Jerry Brown issued a State of Declaration of Emergency for California due to drought and severe water supply conditions in various parts of the State. On January 31, 2014, the SFPUC issued a press release asking all customers of its Hetch Hetchy Regional Water System, including its residential, commercial, industrial and municipal Retail Customers, as well as the Wholesale Customers, to voluntarily reduce water consumption by at least 10%. In June 2015, the SWRCB imposed restrictions to achieve a statewide reduction of 25% from 2013 water demand. All water utilities within the SFPUC service area were assigned a water use reduction requirement ranging from 8% to 36%. In June 2016, the SWRCB replaced the water use reduction requirement with a self-certification process that allows for water utilities to implement water use restrictions based on their ability to meet average annual 2013-14 demand with a repeat of Water Year 2014-15

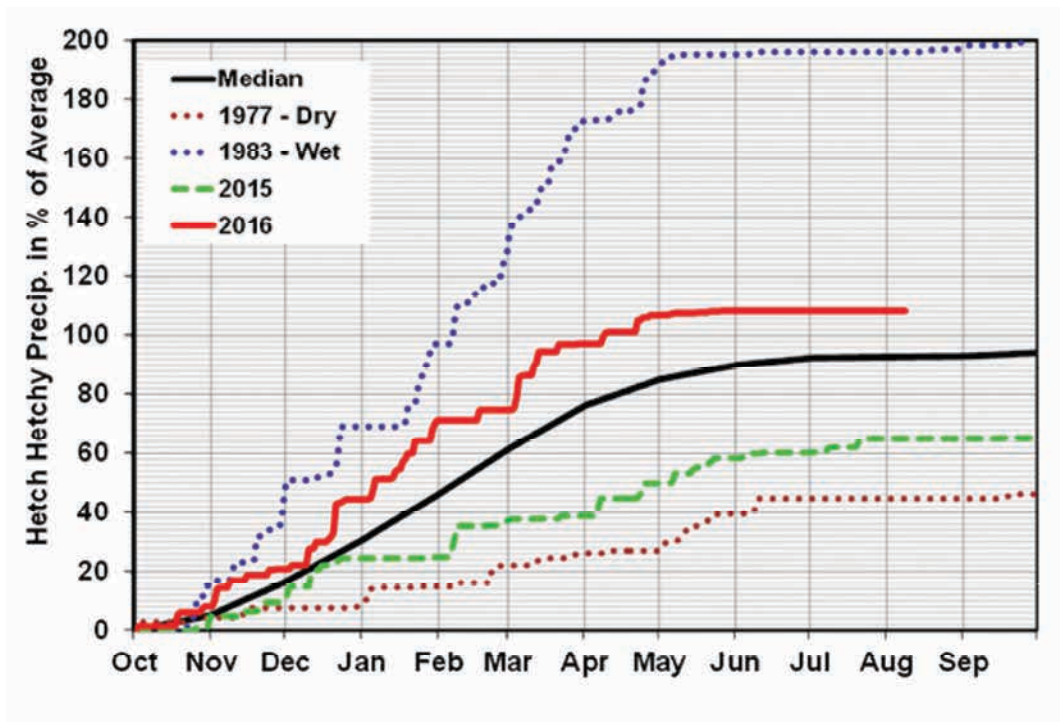
hydrology. In June 2016, the SFPUC certified that it had the requisite supplies to serve all of its Retail and Wholesale Customers without any additional reductions. However, as a precaution, the SFPUC has continued to ask for a voluntary 10% reduction from average annual 2013 water demand in its service area in order to maintain carryover storage in its reservoir in the event next year is dry.

A combination of Water Bank (as defined herein) drawdowns in New Don Pedro Reservoir, managing storage and reduced customer demand contributed towards the SFPUC effectively managing Water Year 2016 (a Water Year is the period of October 1 of the prior year through September 30 of the year in question). Hetch Hetchy Reservoir was filled to up to 100% of capacity toward the end of the Water Year 2016 snowmelt runoff period (the end of the run off occurred on mid-June 2016). See “WATER FACILITIES – Water Storage.”

Table 12 herein shows storage levels as of August 7, 2016. Total Water System storage levels would normally be at approximately 89.1% of Total Water System storage capacity as of this date. The level as of August 7, 2016 was approximately 81.9% of Total Water System storage capacity. The drawdown of the Water Bank during Water Year 2015 primarily accounts for this lower than normal storage level. In addition, the current storage level of Calaveras Reservoir, the largest of the local storage facilities, is about one-third of its capacity due to the construction underway as part of the Calaveras Dam Replacement Project. See “WATER FACILITIES – Water Storage – System Storage Capacity” and “CAPITAL IMPROVEMENT PROGRAM – Water System Improvement Program.”

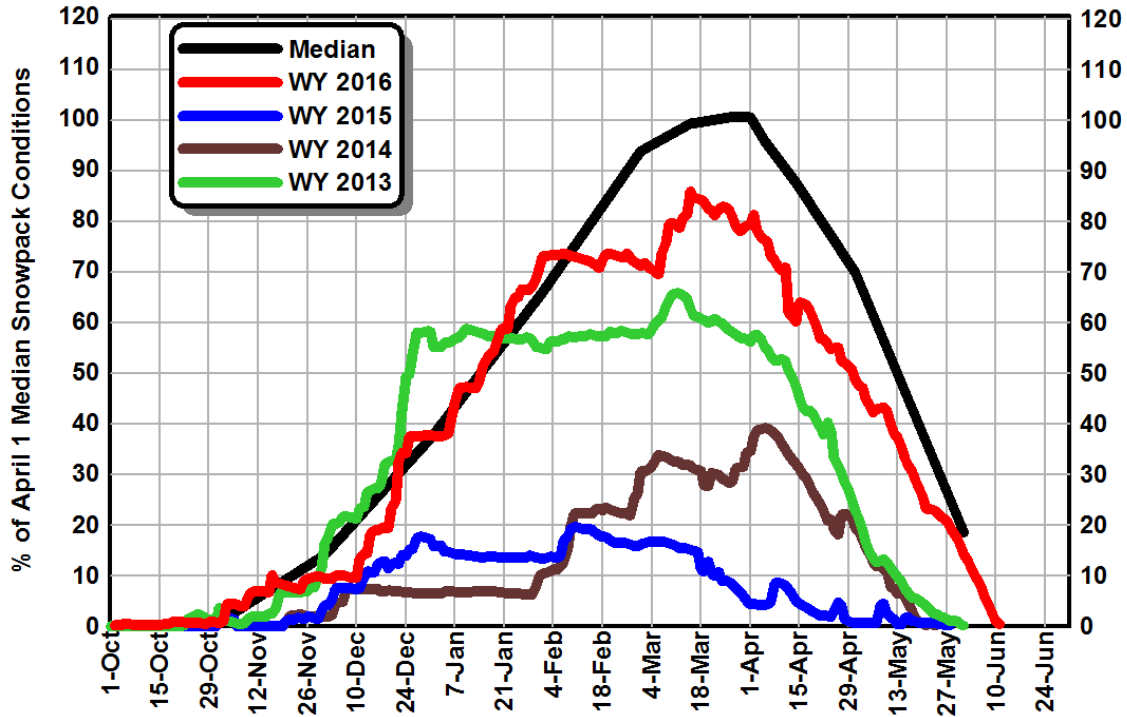
As compared to the same period in Water Year 2015, precipitation conditions have improved in Water Year 2016 through June 2016. As shown in the following graph, precipitation is now above the median.

**GRAPH 1
PRECIPITATION AT HETCH HETCHY – WATER YEAR 2016**



Source: SFPUC.

**GRAPH 2
PERCENTAGE OF MEDIAN APRIL 1 SNOWPACK CONDITIONS**



Source: SFPUC.

Curtailment Actions by the State Water Resources Control Board

The SWRCB sought to curtail the exercise of water rights in 2014 and 2015 in response to the drought. In 2014, the SWRCB enacted emergency regulations for the purpose of curtailing the exercise of junior, post-1914 water rights. The City was not impacted as it relies on senior, pre-1914 water rights to divert water from the Tuolumne River. In 2015, the SWRCB again sought to curtail the exercise of water rights, but without the authority provided by emergency regulations. Instead, the SWRCB issued curtailment notices to thousands of water right holders across the State, including senior, pre-1914 water right holders, and subsequently prosecuted several enforcement proceedings. The City’s water rights were never curtailed. The City did, however, participate in one of the enforcement proceedings – the Administrative Civil Liability complaint against Byron-Bethany Irrigation District (“**BBID**”) – in order to challenge the SWRCB’s assertion of jurisdiction over pre-1914 water rights. The SWRCB ultimately concluded the prosecution team had failed to carry its burden, and thus, dismissed the enforcement proceeding against BBID on the merits. However, the SWRCB reached the jurisdictional issue and concluded that it may exercise its enforcement authority against a pre-1914 water right holder if water is unavailable under the diverter’s priority of right. The San Joaquin Tributaries Authority (“**SJTA**”), a joint powers authority comprised of five member agencies, including the City, plans to seek writ relief of the SWRCB’s order. The City believes that the SWRCB’s order in the BBID enforcement proceeding is inconsistent with established appellate case law. The SFPUC is unable to predict whether future SWRCB initiatives to curtail the exercise of pre-1914 water rights might affect water supplies available to the SFPUC.

Potential Impact of Climatic Change

The issue of climate change has become an important factor in water resources planning in the State, and is being considered during planning for the Water Enterprise. There is evidence that increasing concentrations of greenhouse gases have caused and will continue to cause a rise in temperatures around the world, which will result in a wide range of changes in climate patterns. Moreover, there is evidence that a warming trend occurred during

the latter part of the 20th century and will likely continue through the 21st century. These changes will have a direct effect on water resources in the State, and numerous studies on climate and water in the State have been conducted to determine the potential impacts. Based on these studies, global warming could result in the following types of water resources impacts in the State, including impacts on the Water Enterprise and associated watersheds:

- Reductions in the average annual snowpack due to a rise in the snowline and a shallower snowpack in the low- and medium-elevation zones, such as in the Tuolumne River basin, and a shift in snowmelt runoff to earlier in the year;
- Changes in the timing, intensity, and annual variability of precipitation, and an increased amount of precipitation falling as rain instead of as snow;
- Long-term changes in watershed vegetation and increased incidence of wildfires that could affect water quality;
- Sea level rise and an increase in saltwater intrusion into groundwater basins;
- Increased water temperatures with accompanying adverse effects on some fisheries and water quality;
- Increases in evaporation and concomitant increased irrigation needs; and
- Changes in urban water demand.

However, other than the general trends listed above, there is no clear scientific consensus on exactly how global warming will quantitatively affect SFPUC or State water supplies.

The SFPUC staff performed an initial evaluation of the effect on the Regional Water System of a 1.5-degree Celsius (°C) temperature rise between 2000 and 2025. The temperature rise of 1.5°C is based on a consensus among many climatologists that this level of warming is likely to occur by 2025. The evaluation predicts that an increase in temperature of 1.5°C will raise the snowline approximately 500 feet. The elevation of the watershed draining into Hetch Hetchy Reservoir ranges from 3,800 to 12,000 feet above mean sea level, with about 87% of the watershed area above 6,000 feet. In 2000 (a normal hydrologic year in the 82-year period of historical record), the average snowline in this watershed was approximately 6,000 feet during the winter months. Therefore, the SFPUC evaluation indicates that a rise in temperature of 1.5°C between 2000 and 2025 will result in less or no snowpack between 6,000 and 6,500 feet and faster melting of the snowpack above 6,500 feet. Similarly, a temperature rise of 1.5°C between 2025 and 2050 will result in less or no snowpack between 6,500 and 7,000 feet and faster melting of the snowpack above 7,000 feet. The SFPUC projects that the impact of such temperature rise on the water supply would be within the natural variability experienced by the Regional Water System.

The SFPUC climate change modeling indicates that, on average, about 7% of the runoff currently draining into Hetch Hetchy Reservoir will shift from the spring and summer seasons to the fall and winter seasons in the Hetch Hetchy basin by 2025. This percentage is within the current interannual variation in runoff and is within the range accounted for during normal runoff forecasting and existing reservoir management practices. The additional change between 2025 and 2030 is not expected to be detectible. The predicted shift in runoff timing is similar to the results found by other researchers modeling water resource impacts in the Sierra Nevada due to warming trends associated with climate change.

Based on these preliminary studies and the results of literature reviews, the potential impacts of global warming on the Water Enterprise are not expected to materially affect water system operations through 2030. SFPUC hydrologists are involved in ongoing monitoring and research regarding climate change trends and will continue to monitor the changes and predictions, particularly as these changes relate to water system operations and management of the Water Enterprise. The SFPUC has developed a workplan to further advance its research on the effects of climate change on the Water Enterprise.

Proposals to Restore Hetch Hetchy Valley

Some environmental organizations advocate for the removal of Hetch Hetchy Reservoir and the restoration of Hetch Hetchy Valley. For example, an initiative ordinance entitled the “Water Sustainability and Environmental Restoration Planning Act of 2012” qualified for the November 2012 City ballot with support from an organization called “Restore Hetch Hetchy” and would have required the City to identify alternative sources of water and, subject to certain additional conditions, end its use of Hetch Hetchy Reservoir. This initiative was rejected by San Francisco voters.

There have been previous studies that examined prior proposals to remove Hetch Hetchy Reservoir. For example, the California Department of Water Resources and the California Department of Parks and Recreation issued a comprehensive report and concluded that it does appear technically feasible to restore Hetch Hetchy valley, but expressed caution about the financial feasibility. The study estimated that the total cost for such a project would range from nearly \$3 billion to \$10 billion. The planning effort alone, they concluded, would take up to ten years to complete and would cost an additional \$65 million dollars.

On April 21, 2015, Restore Hetch Hetchy filed a complaint against the City in Tuolumne County Superior Court. The complaint was served on the City on April 29, 2015. Under California Constitution Article X, Section 2 (“Section 2”), which dates back to 1928, the right to water from any natural water course is limited to such water as is reasonably required for the beneficial use to be served, and does not extend to the waste or unreasonable use, method of use or method of diversion of such water. The complaint alleged that the SFPUC’s operation of Hetch Hetchy Reservoir is an “unreasonable method of diversion of water” because of the O’Shaughnessy Dam’s location within a national park. The complaint sought a declaratory judgment on that point, and an order requiring the City to prepare “a written plan detailing alternative reasonable methods of diversion” of its Tuolumne River water rights, including “a component for modifying or removing the O’Shaughnessy Dam” (with the effects described above).

The City prevailed in a motion to dismiss the complaint for failure to state a cause of action. The Superior Court’s April 28, 2016 order of dismissal held that the suit is preempted under federal law (the 1913 Raker Act), and further that the statute of limitations had passed for challenges to the reasonableness of the City’s method of diversion of water at Hetch Hetchy under Section 2. Restore Hetch Hetchy intends to file a notice of appeal at the 5th District Court of Appeal in Fresno, California. The City believes the legal assertions and claims in the complaint are without merit and unprecedented under Section 2 and will continue to defend the suit.

The SFPUC is unable to predict whether any similar initiatives, or similar federal or state legislation, might be approved by the voters or adopted by legislative bodies in the future, or the potential impact of such efforts on the SFPUC or the Water Enterprise.

WATER FACILITIES

General

The facilities of the Water Enterprise consist of Regional Water System facilities and In-City Distribution System facilities. The Regional Water System evolved through the development of two separate water systems: the Spring Valley Water Company and the Hetch Hetchy Project.

- The Spring Valley Water Company was established in 1858, developing a spring and several creeks into a local water system. It expanded over the years with the construction of Pilarcitos Reservoir, followed by San Andreas Reservoir, Upper Crystal Springs Reservoir and Lower Crystal Springs Dam, all on the Peninsula in San Mateo County. Later the company extended its system to additional sources on Alameda Creek in Alameda County and expanded its service area to include additional Peninsula and South Bay customers. The City acquired the local supplies and retail distribution system of the Spring Valley Water Company in 1930.
- Following enactment of the Raker Act in 1913, the City was able to proceed with plans to develop its own water supply system. The construction of the Hetch Hetchy Project began in earnest in 1914, and

after almost twenty years of construction, including building of O’Shaughnessy Dam and required transmission system, Sierra Nevada water began flowing into the local distribution system in 1934. The Hetch Hetchy Project is operated as a combined water storage and conveyance and electric generation and transmission system. The Water Enterprise and the Power Enterprise coordinate operation of the Hetch Hetchy Project to ensure reliable utility services are provided by the combined system. Pursuant to State statute, the Charter and the terms of the WSA, the SFPUC operates the Hetch Hetchy Project pursuant to a “water first” policy to optimize the reliability and quality of its water deliveries and ensure that hydroelectric generation does not cause any reasonably anticipated adverse impact on water service. Power is generated when water is delivered to meet water system operational requirements.

See “THE WATER ENTERPRISE – Water Rights and Related Proceedings.”

Since the 1930s, the major additions to the SFPUC’s water system have included the raising of O’Shaughnessy Dam at Hetch Hetchy Reservoir and the development of Lake Lloyd Reservoir, the construction of additional pipelines across the San Joaquin Valley, and the local construction of San Antonio Reservoir in Alameda County and the Bay Division Pipelines 2, 3 and 4. Other local projects included Crystal Springs Pipeline No. 3, Sunol Valley and San Andreas Filtration Plants, and the Crystal Springs Bypass Tunnel and Balancing Reservoir. The SFPUC has completed several WSIP projects including the Irvington Tunnels 1 and 2, Bay Division Pipeline 5, and a new tunnel under San Francisco Bay between Newark in Alameda County and East Palo Alto in San Mateo County that replaced the transbay portion of Bay Division Pipelines 1 and 2.

The Regional Water System is geographically delineated between the Hetch Hetchy Project and the Bay Area water system facilities.

- The Hetch Hetchy Project is generally comprised of the reservoirs, hydroelectric generation and transmission facilities, and water transmission facilities from Hetch Hetchy Reservoir west to the Alameda East Portal of the Coast Range Tunnel in Sunol Valley.
- The Bay Area water system is generally comprised of the facilities west of Alameda East Portal and includes the Alameda and Peninsula watershed reservoirs, two water treatment plants and the conveyance system that delivers water to the SFPUC’s Retail Customers and Wholesale Customers.

Water Conveyance and Distribution

Regional Water System. The Regional Water System comprises three regional water supply and conveyance systems: the Hetch Hetchy System; the Alameda System; and the Peninsula System (as herein defined).

Hetch Hetchy System. In the Hetch Hetchy System, water is diverted from Hetch Hetchy Reservoir into a series of tunnels and aqueducts from the Sierra Nevada to the San Joaquin Pipelines that cross the San Joaquin Valley to the Coast Range Tunnel (collectively, the “**Hetch Hetchy System**”) which connects to the Alameda system at the Alameda East Portal.

Alameda System. The “Alameda System” includes two reservoirs, San Antonio Reservoir and Calaveras Reservoir, which collect water from the upper Alameda and San Antonio Creek watersheds in Alameda County plus conveyance facilities connecting the Hetch Hetchy System and Alameda water sources to the Peninsula System. These conveyance facilities include pipelines known as the Alameda Siphons that connect the Coast Range Tunnel to Irvington Tunnels 1 and 2.

Irvington Tunnels 1 and 2 supply the five Bay Division Pipelines that cross the South Bay Area to the Peninsula System. Bay Division Pipelines 1, 2 and 5 connect with the recently completed Bay Tunnel on opposite sides of the San Francisco Bay near the Dumbarton Bridge. The Bay Tunnel itself runs beneath the floor of the San Francisco Bay. Bay Division Pipelines 3 and 4 traverse the southerly edge of the San Francisco Bay delivering water to SFPUC customers along the way. All five pipelines reconnect near the inlet to the Pulgas Tunnel on the Peninsula.

The Sunol Valley Water Treatment Plant filters and disinfects water supplied from San Antonio and Calaveras Reservoirs, and, when necessary, water from the Sierra Nevada.

A turnout from the South Bay Aqueduct of the California State Water Project (the “**State Water Project**”) can supply limited supplemental water to San Antonio Reservoir. However, the SFPUC currently possesses no entitlements to water from the State Water Project.

Peninsula System. Two reservoirs, Crystal Springs and San Andreas, collect runoff from the San Mateo Creek watershed. Water from Pilarcitos Reservoir, on Pilarcitos Creek, serves one of the Wholesale Customers, the Coastside County Water District (which includes the City of Half Moon Bay), directly and can also deliver water to Crystal Springs and San Andreas Reservoirs. Water delivered from the Bay Division Pipelines in excess of Peninsula System and in-City demands spills into Crystal Springs and San Andreas Reservoirs. The Harry Tracy Water Treatment Plant filters and disinfects water supplied from Crystal Springs and San Andreas Reservoirs before it is delivered to Peninsula customers and the In-City Distribution System. The “Peninsula System” includes conveyance facilities connecting the Bay Division Pipelines to the In-City Distribution System and to other SFPUC customers on the Peninsula.

In-City Distribution System. The City’s retail water supply is delivered to the City in several major pipelines. Water to the east side of the In-City Distribution System is fed by two pipelines that terminate at University Mound. Water to the west side of the In-City Distribution System is fed by two pipelines that terminate at Sunset Reservoir and one that terminates at Merced Manor Reservoir. The In-City Distribution System to homes and businesses in the City is comprised of 1,235 miles of pipeline.

Summary of System Facilities. The Regional Water System and the In-City Distribution System facilities are summarized below.

**TABLE 11
SUMMARY OF SYSTEM FACILITIES**

| | <u>Regional Water System</u> | <u>In-City Distribution System</u> |
|-------------------------------|-------------------------------------|---|
| Pipelines | 389 miles | 1,235 miles |
| Tunnels | 74.5 miles | None |
| Pump Stations | 5 | 24 |
| Reservoirs and/or Water Tanks | 11 reservoirs | 11 reservoirs/8 water tanks |
| Treatment Plants | 3 | None |

Source: SFPUC, Water Enterprise.

Water Treatment

Hetch Hetchy Water. Hetch Hetchy Reservoir is the largest unfiltered water supply on the West Coast and one of only a few large unfiltered municipal water supplies in the nation. The water originates from spring snowmelt flowing down the Tuolumne River to Hetch Hetchy Reservoir, where it is stored.

This water source is located in the well-protected Yosemite National Park and the High Sierra region. This area meets or exceeds all federal and State criteria for watershed protection. The water originating from Hetch Hetchy Reservoir is protected in pipes and tunnels as it is conveyed to the Bay Area, and requires pH adjustment to control pipeline corrosion and disinfection for bacteria control. Based on the SFPUC’s disinfection treatment practice, extensive bacteriological-quality monitoring, and high-operational standards, the United States Environmental Protection Agency (the “**EPA**”) and the State of California Department of Health Services have determined that the Hetch Hetchy water source meets federal and State drinking water quality requirements without filtration, and thus the SFPUC is not required to filter water from Hetch Hetchy Reservoir. For further discussion of the State and federal regulatory requirements affecting the Water Enterprise, see “REGULATORY MATTERS.”

The Tesla Treatment Facility, a key component of the WSIP, enhances high water quality through ultraviolet (“UV”) treatment. The Tesla Treatment Facility was officially dedicated in July 2011, following two years of construction. The facility uses UV light to disinfect Hetch Hetchy water to meet new federal requirements to control the waterborne parasite *Cryptosporidium*, and is among the largest drinking-water UV disinfection facilities in North America. In the same location, a new chlorine disinfection station constructed to meet current fire and earthquake safety standards replaced the old station, which was built in 1937. See “CAPITAL IMPROVEMENT PROGRAM – Water System Improvement Program” and “APPENDIX C – WATER SYSTEM IMPROVEMENT PROGRAM.”

Local Water. All water derived from sources other than Hetch Hetchy Reservoir requires filtration and is currently treated at one of two treatment plants: the Sunol Valley Water Treatment Plant (“SVWTP”) and the Harry Tracy Water Treatment Plant (“HTWTP”). Major upgrades of these two facilities have been completed as part of the WSIP. See “CAPITAL IMPROVEMENT PROGRAM – Water System Improvement Program” and “APPENDIX C – WATER SYSTEM IMPROVEMENT PROGRAM.”

Sunol Valley Water Treatment Plant. The Sunol Valley Water Treatment Plant treats all water from the two reservoirs in the Alameda System, Calaveras and San Antonio. SVWTP has a capacity of 160 mgd. Treatment processes at SVWTP include coagulation, flocculation, sedimentation, filtration, and disinfection. Fluoridation, chloramination and corrosion control treatment are provided for the combined Hetch Hetchy Project and SVWTP water at the chloramination and fluoridation facilities in Sunol. SVWTP also filters Hetch Hetchy water on the occasions when the Sierra supply does not meet required drinking water standards.

The Sunol Valley Water Treatment Plant Expansion and Treated Water Reservoir Project added a fifth sedimentation basin to increase reliable capacity, retrofitted existing filters, and created a 17.5 million gallon circular treated water reservoir as it leaves the plant. The project included other new connections and facilities that enable the plant to treat enough water to meet basic customer demands alone for up to 60 days after a major earthquake in conjunction with other facilities. These improvements helped increase delivery reliability and water quality.

Harry Tracy Water Treatment Plant. The Harry Tracy Water Treatment Plant primarily treats water from the Peninsula System reservoirs and has a peak capacity of 140 mgd and a sustainable capacity of 120 mgd. Treatment processes at the HTWTP include ozonation, coagulation, flocculation, filtration, disinfection, fluoridation, corrosion control treatment and chloramination.

Updates to the HTWTP included the addition of filters, upgrades to various systems, construction of a new treated water reservoir, and seismic retrofits of critical process units. As a result of the upgrades, the HTWTP has improved its delivery reliability and can now achieve a sustained capacity of 140 mgd for at least 60 days and provide 140 mgd within 24 hours following a seismic event on the San Andreas Fault.

Water Storage

Up-Country Storage. The majority of the water delivered by the SFPUC is supplied by runoff from the upper Tuolumne River watershed on the western slope of the central Sierra Nevada. Three major reservoirs collect runoff: Hetch Hetchy Reservoir, Lake Lloyd Reservoir, and Lake Eleanor Reservoir.

Water stored in Hetch Hetchy Reservoir is also used for hydroelectric generation and released downstream to satisfy instream flow requirements. Normally, only Hetch Hetchy Reservoir supplies water exported to the Bay Area for municipal and industrial uses. Releases from Lake Eleanor Reservoir and Lake Lloyd Reservoir are used to satisfy instream flow requirements, satisfy the Districts’ Raker Act entitlements and produce hydroelectric power.

Downstream of the Hetch Hetchy System on the Tuolumne River is the New Don Pedro Project, owned and operated by the Districts. The New Don Pedro Project includes a dam that impounds the Tuolumne River, creating the New Don Pedro Reservoir, also owned by the Districts. The City helped fund the original construction of the New Don Pedro Project in exchange for eliminating the City’s flood control responsibility and establishing a water bank account (the “**Water Bank**”) allowing the SFPUC to receive water credits for advanced releases from

the Hetch Hetchy Project to the New Don Pedro Reservoir to meet the Districts’ downstream requirements. Water Bank storage space in New Don Pedro Reservoir is integrated into Water System operations.

Certain water stored in New Don Pedro Reservoir is credited to the City’s Water Bank, which allows the City to meet its Raker Act water obligations to the Districts and divert water supply from Hetch Hetchy Reservoir to the Bay Area.

Local Storage. On the San Francisco Peninsula, the SFPUC uses Crystal Springs Reservoir, San Andreas Reservoir and Pilarcitos Reservoir located in San Mateo County to capture local watershed runoff. In the Alameda Creek watershed (Alameda County), the SFPUC manages Calaveras Reservoir and San Antonio Reservoir. In addition to using these facilities to capture runoff, San Andreas, San Antonio and Crystal Springs reservoirs also provide storage for Hetch Hetchy Project diversions, and, along with Calaveras Reservoir, serve as a water supply delivery facility in the event of an interruption to Hetch Hetchy Project deliveries.

Dam Supervision. Eighteen dams under the jurisdiction of the SFPUC are presently licensed and regulated by the California Department of Water Resources’ Division of Safety of Dams (“**DSOD**”). The SFPUC’s Calaveras Dam is currently operating under DSOD-imposed restrictions. See “REGULATORY MATTERS – Dam Licensing and Safety Issues.”

System Storage Capacity. The following table summarizes the regional water system reservoirs within the Water Enterprise.

**TABLE 12
REGIONAL WATER SYSTEM STORAGE CAPACITY
(AS OF JULY 1, 2016)**

| Reservoir | Current Storage (Acre-Feet) | Maximum Storage (Acre-Feet) | Available Capacity (Acre-Feet) | Percent of Maximum Storage |
|------------------------------------|--|--|---|-----------------------------------|
| <u>Tuolumne Storage</u> | | | | |
| Hetch Hetchy | 360,558 | 360,360 | Full | 100.0% |
| Cherry | 271,531 | 273,340 | 1,809 | 99.3 |
| Lake Eleanor | 26,630 | 27,100 | 470 | 98.3 |
| Water Bank | 418,204 | 570,000 | 151,796 | 73.4 |
| Tuolumne Storage | 1,076,923 | 1,230,800 | 154,075 | 87.5% |
| <u>Local Storage</u> | | | | |
| Calaveras | 35,932 | 96,824 ⁽¹⁾ | 60,892 | 37.1% |
| San Antonio | 42,323 | 50,496 | 8,173 | 83.8 |
| Crystal Springs | 54,130 | 58,377 | 4,247 | 92.7 |
| San Andreas | 17,913 | 18,996 | 1,803 | 94.3 |
| Pilarcitos | 2,657 | 2,995 | 338 | 88.7 |
| Total Local Storage | 152,955 | 227,688 | 74,733 | 67.2% |
| Total Regional Water System | 1,229,878 | 1,458,488 | 228,808 | 84.3% |

⁽¹⁾ As of July 1, 2016, the restricted water storage volume for Calaveras Reservoir is 96,670 acre-feet, for a Total Local Storage of 227,534 acre-feet and a Total Regional Water System storage of 1,458,334 acre-feet.
Source: SFPUC.

In-City Storage. The Water Enterprise’s in-City reservoirs and storage tanks have the capacity to hold approximately 412.8 million gallons, or 1,267 acre-feet. The Water Enterprise estimates this capacity to be an approximate five-day supply at the current average rate of consumption for the City. In-City reservoirs that are also terminal reservoirs for the Regional Water System moderate flow peaking for the Regional Water System, and water stored in them can be conveyed back to the San Francisco Peninsula.

The following table summarizes the in-City reservoirs and storage tanks maintained by the Water Enterprise.

**TABLE 13
IN-CITY DISTRIBUTION SYSTEM POTABLE WATER STORAGE CAPACITY**

| Reservoir | Millions of Gallons |
|---------------------------------|----------------------------|
| Sunset ⁽¹⁾ | 176.7 |
| University Mound ⁽¹⁾ | 140.9 |
| Sutro | 31.4 |
| Summit | 14.0 |
| College Hill | 13.5 |
| Stanford Heights | 12.9 |
| Merced Manor ⁽¹⁾ | 9.5 |
| Lombard | 2.7 |
| Potrero | 1.0 |
| Storage Tanks | 10.2 |
| Total | 412.8 |

⁽¹⁾ Terminal reservoirs for the Regional Water System.
Source: SFPUC, Water Enterprise

In addition, there is an emergency supply of existing non-potable water immediately available within the City at Lake Merced. Lake Merced currently holds approximately 1.5 billion gallons or 4,603.3 acre-feet.

Physical Condition of Certain Facilities

Certain of the Water Enterprise’s facilities are near the end of their useful life. Long-lived facilities result in decreased reliability due to unplanned outages and place a greater maintenance burden on SFPUC operations. In addition, the vulnerabilities of the Regional Water System are increased by its linear nature and lack of or limited redundancy. Outages at critical points could disrupt delivery to large portions of the Regional Water System. See “RISK FACTORS – Risks Related to Water Enterprise Facilities and Operations.”

Built between 1917 and 1925, Mountain Tunnel extends 19.2 miles from Early Intake Dam to Priest Reservoir. The lower 12 miles are lined. The lining shows signs of deterioration which will likely increase over time. The risk of failure of Mountain Tunnel, defined as a loss of 25% carrying capacity, is currently low but will increase over time. Failure could cause up to six or more months of water supply disruption and would have a significant impact on the Hetch Hetchy water system (“**Hetch Hetchy Water**”) operations. See “CAPITAL IMPROVEMENT PROGRAM – Mountain Tunnel.”

The Coast Range Tunnel is a 26-mile long tunnel running from Tesla Portal to the Alameda East Portal and was put into operation in 1934. It was inspected in January 2015 after having been last inspected in 1995. The recent inspection revealed that the tunnel is still in good condition, with little change noted since the 1995 inspection. The original Irvington Tunnel was also inspected in winter 2015 and was also found to be in good condition.

The WSIP was designed in part to reduce vulnerability of the Regional Water System and increase reliability of the system to deliver water by improving redundancy needed to accommodate planned outages for maintenance and unplanned outages resulting from facility failure. The WSIP was not designed to replace or upgrade the entire water system. Repair or replacement of Mountain Tunnel as well as the replacement, rehabilitation and repair of water transmission pipelines and other Regional Water System and in-City facilities are included in the SFPUC’s Ten-Year Capital Plan. See “CAPITAL IMPROVEMENT PROGRAM” and “APPENDIX C – WATER SYSTEM IMPROVEMENT PROGRAM.”

Seismic Hazards

The Hetch Hetchy Project is located largely in Yosemite National Park, one of the most stable seismic zones in the State, and there are no known major faults in the area. The Water Enterprise's distribution and transmission systems and its customers are, however, located in seismically active regions of the State. The San Andreas Fault lies immediately west of the City, and the Hayward fault is approximately 15 miles to the east. A third major fault, the Calaveras Fault, is a branch of the Hayward Fault and lies east of the Hayward Fault.

During the past 150 years, the San Francisco Bay Area has experienced several major and numerous minor earthquakes. The largest was the 1906 San Francisco earthquake along the San Andreas Fault with an estimated magnitude of 8.2 on the Richter scale. The 1868 Hayward earthquake along the Hayward Fault had an estimated magnitude of between 6.8 and 7.0 on the Richter scale. The 1989 Loma Prieta earthquake along the San Andreas Fault had an estimated magnitude of 7.1 on the Richter scale. The most recent significant earthquake was the August 2014 South Napa earthquake on the West Napa Fault, the northern extension of the Calaveras Fault, which had a magnitude of 6.0 on the Richter scale and an epicenter near the city of Napa, approximately 50 miles north of San Francisco. According to United States Geological Survey findings, a significant earthquake along these or other faults is probable during the period the 2016 Series C Bonds will be outstanding.

The Regional Water System crosses several active and potentially active faults, including major strike-slip faults within the San Francisco Bay region. Major fault crossings along the pipeline delivery system include the Orestimba fault at Tesla Portal, the Greenville fault in the Coast Range Tunnel, the Calaveras fault at the Alameda Siphons, and the southern Hayward fault at the Bay Division Pipelines numbers 1, 2, 3, 4 and 5. In addition, other lower slip rate but potentially active faults cross the water system. These faults potentially move by secondary or triggered slip during large earthquakes on the San Andreas fault. Furthermore, three main transmission pipelines from HTWTP – San Andreas Pipeline No. 2, San Andreas Pipeline No. 3 and Sunset Supply Branch Pipeline – cross the Serra fault, a secondary fault located along the peninsula in San Mateo County.

The Greenville, Calaveras, Hayward and San Andreas faults have a high likelihood of producing a major (magnitude ≥ 6.7) earthquake in the San Francisco Bay region in the next 30 years. A large earthquake on these faults has the potential for generating surface-fault rupture that is hazardous to specific SFPUC facilities. A major goal of the WSIP is to rehabilitate and strengthen the tunnels, pipelines and other Water Enterprise facilities that cross or are situated near known active faults.

If a major seismic event or other emergency occurs, the SFPUC is authorized under the WSA to adopt emergency rate surcharges outside of the normal budget development process. Such rate surcharges will be applicable to both Retail Customers and Wholesale Customers and incorporate the same percentage increase for all customers. See "FINANCIAL OPERATIONS – Wholesale Water Sales Revenue." Any emergency rate surcharge adopted by the SFPUC will remain in effect only until the next budget-coordinated rate-setting cycle, at which time it can be reviewed for continuance and modification.

If a significant earthquake occurs that affects the Water Enterprise's tunnels, pipelines or other facilities, the SFPUC would attempt to repair any damage as quickly as possible, but the amount of time required to return the facilities to service would depend on the nature and extent of damage incurred. A prolonged reduction in the Water Enterprise's water supply resulting from a major earthquake could have a material adverse effect on Revenues. See also "APPENDIX C – WATER SYSTEM IMPROVEMENT PROGRAM – Levels of Service Goals – Seismic Reliability."

A major seismic event affecting critical locations prior to completion of WSIP improvements could result in service interruptions of 60 days or longer. The SFPUC has established intertie connections with the East Bay Municipal Utility District and the Santa Clara Valley Water District to diversify water supply options in case of a major seismic event. Should the Irvington Tunnels or the five major pipelines branching from the Irvington Tunnels become inoperable, the SFPUC would attempt to negotiate additional water sharing agreements with these and other regional water utilities which interconnect with Water Enterprise facilities, but there is no assurance that such negotiations would be successful.

If damage to the Irvington Tunnels or the pipelines that connect to the tunnels resulted in the loss of water transported through the tunnel, the remaining water supply would be limited to storage in three reservoirs in San Mateo County (the Crystal Springs, San Andreas and Pilarcitos Reservoirs) and three terminal reservoirs located in San Francisco as well as existing intertie connections. The combined capacity of the three San Mateo County reservoirs is approximately 29.8 billion gallons. The SFPUC has historically kept these reservoirs filled to a combined capacity of approximately 18 billion gallons, or an estimated two and one-half month water supply based on historical average daily water demand of both the Retail Customers and Wholesale Customers. It is anticipated that in-City storage alone would last approximately four to seven days.

Separate from the SFPUC system, individual Wholesale Customers have storage ranging from zero to seven days.

System Level of Service Criteria after Seismic Events. The SFPUC has established basic “Level of Service” criteria for the design of new facilities and upgrade of existing facilities, including projects within the WSIP: to deliver winter day demand (“**WDD**”) of 215 mgd (projected February 2030 demand) within 24 hours after a major earthquake. This embodies the following primary criteria and assumptions to be used in examining system reliability with system retrofit projects in place:

- Deliver WDD to at least 70% of the Wholesale Customers’ turnouts within each of the three customer groups (Santa Clara/Alameda/South San Mateo County, Northern San Mateo County, and City of San Francisco).
- Achieve a 90% confidence level of meeting the above goal, given the occurrence of a major earthquake. The earthquakes considered are treated independently and with equal weighting, without regard to their return period.
- To achieve the basic level of service, the SFPUC will rely on the Wholesale Customers’ own water systems and supply or other regional water purveyors’ systems. The SFPUC will work with the Wholesale Customers to assess their ability to contribute to their own system reliability.
- The SFPUC will consider a facility to have failed if it cannot be brought back to its intended purpose within twenty-four hours without secondary damage resulting.
- To achieve the basic level of service, the SFPUC will assume that power supplies are available, whether from the grid or from standby sources.

No particular item in the Regional Water System is required to be seismically upgraded or retrofitted as long as the system-wide performance goals established by the SFPUC can be satisfied. Earthquake damage to selected components and systems is acceptable, as long as the system-wide performance remains acceptable. See “APPENDIX C – WATER SYSTEM IMPROVEMENT PROGRAM – Levels of Service Goals – Seismic Reliability.”

Wildfire Considerations

The Hetch Hetchy Project is primarily located in the Sierra Nevada and surrounding foothills, where wildfire is a risk, particularly in the Stanislaus National Forest surrounding Cherry Reservoir and the Holm and Kirkwood Powerhouses. Wildfires can disrupt the operation of or cause damage to water storage and conveyance facilities and can impact water quality. For example, the Rim Fire, a wildfire in 2013, substantially burned the forest around the Holm and Kirkwood Powerhouses and reached the edges of all three Sierra Nevada reservoirs. The Rim Fire has reduced the near term risk of wildfire in the region.

Safety and Security

The safety of the facilities of the Water Enterprise is maintained via a combination of regular inspections by SFPUC employees, electronic monitoring, and analysis of unusual incident reports. Most above-ground facilities

operated and maintained by the SFPUC are controlled-access facilities with fencing, gates, closed circuit television systems and security officers at certain points. Smaller, above-ground and subterranean pumping stations operated and maintained by the SFPUC are locked with padlock or internal locking mechanisms, and most are monitored via access/intrusion alarms. Security improvements are evaluated on an ongoing basis. The electronic operations and controls have been evaluated and designed to reduce exposure using a series of technology systems enhancements and integration.

CAPITAL IMPROVEMENT PROGRAM

Capital and Financial Planning Process

The SFPUC's long-term capital and financial planning is performed on an annual rolling ten-year forward looking basis. The SFPUC prepares a ten-year capital plan for each of its enterprises, as required by the Charter. The ten-year capital plan serves as the basis for the development of the annual ten-year financial plan. Proposed long-term capital programs, projects and investments, and related costs are included in the ten-year financial plan. Consistent with the Charter, updates to the ten-year capital plan and ten-year financial plan are annually reviewed and adopted by the Commission each February. The ten-year capital plan provides estimated rate impacts of projected capital and operating spending and assures compliance with debt service coverage and fund balance reserve policy requirements.

The ten-year capital plan is not a budget and is not "appropriated" like a budget. The annual capital programs can be revised during the development of the budget and final projects, costs and totals for specific capital improvements to be financed can change. Consequently, even though the annual budgets passed are based on the ten-year capital plan, they may occasionally differ from it.

The Water Enterprise Ten-Year Capital Plan ("**Ten Year Capital Plan**") for Fiscal Year 2016-17 to Fiscal Year 2025-26, which includes the Water Enterprise-related components of the Hetch Hetchy Water and Power Ten-Year Capital Plan, adopted by the Commission in February 2016, totals approximately \$1.85 billion. The Ten-Year Capital Plan includes projects in five major categories: (i) Regional Water; (ii) Local Water; (iii) WSIP; (iv) Non-WSIP (v) Hetch Hetchy Water; and (vi) Auxiliary Water Supply System. The Regional Water, Local Water, WSIP, Non-WSIP and Hetch Hetchy Water categories of the Water Enterprise's CIP are expected to be financed by a combination of revenue bonds, commercial paper, a Parity State Loan, revenues (pay-as-you-go) and capacity charges. For more information regarding the Ten-Year Capital Plan programs, see "- Water System Improvement (WSIP)," "- Regional Water Program," "- Local Water Program," "- Other Non-WSIP Projects," and "- Hetch Hetchy Water" below. See also "FINANCING OF CAPITAL IMPROVEMENTS."

The Auxiliary Water Supply System ("**AWSS**") is a capital program administered by the SFPUC, but funded with general obligations bonds issued by the City pursuant to voter authorization. AWSS is designed to improve fire, earthquake and emergency response and ensure firefighters a reliable water supply for fires and disasters through projects, including improving deteriorating pipes, hydrants, reservoirs, water cisterns and pumps built after the 1906 earthquake in San Francisco. AWSS comprises approximately \$110 million of the Ten-Year Capital Plan.

The following table sets forth the first five years of the Water Enterprise's capital improvement program as set forth in the Ten-Year Capital Plan.

TABLE 14
WATER ENTERPRISE CAPITAL IMPROVEMENT PROGRAM
FOR FISCAL YEARS ENDED JUNE 30
(IN THOUSANDS)⁽¹⁾

| | 2017⁽²⁾ | 2018⁽²⁾ | 2019 | 2020 | 2021 |
|-----------------------------|---------------------------|---------------------------|------------------|------------------|------------------|
| Regional Water | \$55,269 | \$41,639 | \$96,252 | \$121,312 | \$52,479 |
| Local Water | 61,850 | 60,600 | 82,625 | 65,100 | 58,600 |
| WSIP | 44,744 | 27,000 | 20,000 | 0 | 0 |
| Non-WSIP | 26,305 | 6,500 | 6,500 | 272 | 0 |
| Hetch Hetchy Water | 16,712 | 22,783 | 24,741 | 275,875 | 13,995 |
| Total Appropriations | \$204,880 | \$158,522 | \$230,118 | \$462,559 | \$125,074 |

⁽¹⁾ Amounts are based on anticipated appropriations and are projections from the Water Enterprise Ten-Year Capital Plan. Actual results may differ materially from these projections. See “FORWARD-LOOKING STATEMENTS” above.

⁽²⁾ Budgeted.

Source: SFPUC, Financial Services

Water System Improvement Program (WSIP)

The WSIP is a \$4.845 billion program consisting of 87 capital projects to repair, replace, and upgrade critical portions of the Regional Water System and the Local Water System to meet specific level of service goals and objectives for seismic reliability, delivery reliability, water quality and water supply in an environmentally sustainable manner. For more information regarding the WSIP level of service goals and objectives, see “APPENDIX C – WATER SYSTEM IMPROVEMENT PROGRAM.” The WSIP category of the Ten-Year Capital Plan, projected to comprise approximately \$91.7 million, consists of the WSIP costs needed to supplement the WSIP funding that makes up the total \$4.845 billion through the estimated final completion of WSIP in Fiscal Year 2018-19.

As of June 30, 2016, WSIP was approximately 92% complete. The most significant WSIP project remaining is the Calaveras Dam Replacement Project (“**CDRP**”), which includes a main dam project and a sub-project to the CDRP, the Fish Passage Facilities at Alameda Creek Diversion Dam (“**ACDD**”). Although the overall WSIP has only increased 12% since 2005, the CDRP and the ACDD will be completed significantly later and at significantly higher costs than originally anticipated. Budget increases for the CDRP were primarily due to complex geologic site conditions encountered during construction that were different than conditions understood during the design phase, resulting in construction change orders, including significant additional excavation quantities for the dam abutments and foundation, disposal of excavation materials and other unusable spoil materials from borrow areas, import of rockfill materials to replace unusable spoil materials, and acceleration of the project construction schedule. Budget increases for the ACDD were primarily due to necessary changes in the design of the fish ladder and appurtenances to accommodate existing site conditions and operational requirements.

Regional Water Program

The Regional Water Program, projected to comprise approximately \$553.6 million of the Ten-Year Capital Plan, finances capital improvements to the Regional Water System (not including WSIP). Regional Water Program capital investments include, but are not limited to, water treatment, water conveyance, water supply and storage, watersheds and land management, facilities maintenance and security.

Local Water Program

The Local Water Program, projected to comprise approximately \$619.2 million of the Ten-Year Capital Plan, finances capital improvements to the In-City Distribution System. The primary component of the Local Water Program, projected to comprise approximately \$559.4 million, is for in-City pipe repair and replacement. To address concerns regarding an aging in-City potable water conveyance/distribution system, the SFPUC has accelerated the pipe repair and replacement rate to 15 miles per year, from a previous rate of 5 miles per year.

Other Non-WSIP Projects

Previously a part of the WSIP, the Non-WSIP category of the Ten-Year Capital Plan is projected to cost approximately \$39.5 million. This category consists of supplemental funds for two water supply projects – the San Francisco Groundwater Supply Project and the Westside Recycled Water Project. The SFPUC expects to enter into the CWSRF Agreement with the SWRCB in November 2016 to finance a portion of the cost of the Westside Recycled Water Project. See “OBLIGATIONS PAYABLE FROM REVENUES – State and Federal Loans”.

Hetch Hetchy Water

Upgrades to the aging facilities of Hetch Hetchy Water and Power are being planned to ensure reliability and preparedness for the future. The Hetch Hetchy Water category of the Ten-Year Capital Plan is projected to cost approximately \$443.9 million. Upcountry water and power facilities being assessed and rehabilitated, where needed, include three impounding reservoirs, three regulating reservoirs, three large powerhouses, one small powerhouse, two switchyards, three substations, 170 miles of pipeline and tunnels, almost 100 miles of paved road, over 160 miles of transmission lines, watershed land and rights-of-way property. The Water Enterprise will fund all assets relating to Hetch Hetchy Water (consisting of approximately \$104 million of Hetch Hetchy Water costs) and the Hetch Hetchy Water portion of jointly-owned assets of Hetch Hetchy Water and the Power Enterprise in the Hetch Hetchy Water and Power System (consisting of approximately \$339.8 million of Hetch Hetchy Water costs). See “the PUBLIC UTILITIES COMMISSION – Organization, Purposes and Powers – Hetch Hetchy – Water and Power Operations”. A significant project among the Hetch Hetchy Water category is the repair of the existing Mountain Tunnel which conveys all Tuolumne River supplies through a single conduit. See “– Mountain Tunnel”.

Mountain Tunnel

As part of the Hetch Hetchy Regional Water System, Mountain Tunnel is a critical water conveyance facility. Built between 1917 and 1925, Mountain Tunnel extends 19.2 miles from the Early Intake Dam to Priest Reservoir. The lower 12 miles are lined. Recent inspections have shown signs of deterioration in the lining which will likely increase over time. The risk of failure of Mountain Tunnel, defined as a loss of 25% carrying capacity, is currently low but will increase over time. Failure of Mountain Tunnel would have a significant impact on Hetch Hetchy Water operations, and could cause up to six months of water supply disruption. Options currently under study to remedy the problem include repairs to the existing tunnel and construction of a bypass tunnel. The SFPUC has engaged an expert Technical Advisory Panel to review alternatives.

The SFPUC is currently active on three parallel tracks regarding Mountain Tunnel: (1) the Mountain Tunnel Inspection and Repairs project, (2) the Mountain Tunnel Adits and Access Improvement Project, and (3) the Mountain Tunnel Long Term Improvements project.

The Mountain Tunnel Inspection and Repairs project provides for a tunnel inspection in January-February 2017 to update the Condition Assessment conducted in 2008, as well as interim repairs in 2017 and in November 2018 to reduce the risk of failures in the concrete lining.

The Mountain Tunnel Adits and Access Improvement Project is intended to meet water delivery goals and address the critical nature of the potential impact of lining failure on water delivery obligations. The Mountain Tunnel must be returned to service within three months in the event of a water service interruption. In order to accommodate quick entry of construction crews and equipment into Mountain Tunnel, improvements at Adit 5/6 and 8/9, access roads and adits will be constructed to minimize the time required to return the tunnel to service. An Emergency Restoration Plan (“ERP”) has been prepared to establish an outline for basic service restoration plans and procedures. The monitoring system to assess changed conditions in the tunnel will be enhanced to complement the existing system. The emergency implementation component will be produced at the completion of the access and adit improvements.

The Mountain Tunnel Long Term Improvements project provides for evaluation of alternatives for the Mountain Tunnel facility, and eventually, the design and construction of the preferred engineering alternative that will keep this vital component of the Hetch Hetchy Water and Power System in reliable service. The decision

regarding the Long-Term Improvements Project is anticipated to be made in mid-2017 after completion of the 2017 projects including inspection and interim repairs.

Were a total collapse of Mountain Tunnel ever to occur prior to implementation of the Long-Term Improvements Project, it is the SFPUC's best estimate that it might take up to six months to restore water deliveries, depending on the exact extent of the failure. Upon completion of the adits and access improvements to Mountain Tunnel set forth above, the amount of time needed to restore deliveries would be reduced to three months. The SFPUC has also developed contingency emergency plans for supplying water in the event of a loss of Mountain Tunnel. Initially, it would rely on its local resources, just as it would rely upon for any outage of the regional water transmission system. These resources include the SFPUC's local Bay Area storage as well as its emergency interties with the East Bay Municipal Utility District and the Santa Clara Valley Water District. More extreme measures would include requesting emergency support from the Modesto, Turlock and/or Oakdale Irrigation Districts and potentially the State Water Project. An additional measure would also be to request its customers to reduce their consumption by conservation or shifting to other available water sources.

Improvements to Mountain Tunnel, a jointly-owned asset with the Power Enterprise, is projected to cost approximately \$640.2 million over the Ten-Year Capital Plan period, of which approximately \$573.5 million is expected to be funded in Fiscal Year 2019-20 pursuant to existing cost-sharing agreements with Wholesale Customers. The Water Enterprise's 45% share of funding of the Mountain Tunnel projects is projected to be approximately \$288 million. The remaining 55% share of funding of the Mountain Tunnel projects is expected to be funded by the Power Enterprise. See "FINANCIAL OPERATIONS – General – Allocation of Hetch Hetchy Project Costs."

Environmental Considerations

Projects undertaken by the SFPUC are generally subject to CEQA and certain projects involving the participation of federal agencies, including projects on federal land, are also subject to the National Environmental Policy Act of 1969, as amended (42 U.S.C. Section 4321) ("NEPA"). The San Francisco Planning Department, acting as lead agency under Chapter 31 of the City's Administrative Code, generally coordinates environmental review of SFPUC projects. Federal agencies which issued permits for WSIP projects completed the necessary reviews under NEPA prior to issuance of the requested permits or other regulatory approvals.

Under CEQA, a project that may have a significant effect on the environment and is to be carried out or approved by a public agency must comply with a comprehensive environmental review process, including the preparation of an Environmental Impact Report ("EIR"). The EIR reflects not only an independent technical analysis of the project's potential impacts, but also the comments of other agencies with some form of jurisdiction over the project and the comments of interested members of the public. Contents of the EIR include a detailed statement of the project's significant environmental effects; any such effects that cannot be avoided if the project is implemented; mitigation measures proposed to minimize such effects; alternatives to the proposed project; the relationship between local and short-term uses and long-term productivity; any significant irreversible environmental changes that would result from the project; the project's growth-inducing impacts; and a brief statement setting forth the agency's reasons for determining that certain effects are not significant and hence do not require discussion in the EIR. Before approving a project the SFPUC must make findings on whether or how it can mitigate the significant environmental effects of the project. If the project requires mitigation, the SFPUC must adopt a mitigation monitoring plan to determine whether the mitigation is carried out during project implementation. If the SFPUC determines that the project itself will not have a significant effect on the environment, it may adopt a written statement (called a negative declaration) to that effect and need not prepare an EIR. After deciding to approve or carry out a project, either following the EIR process or after adopting a negative declaration, the SFPUC must file notice of such determination.

Prior to the sale of bonds, the San Francisco Planning Department Environmental Review Officer will issue a "Planning Certificate" required under Proposition E. The Planning Certificate will identify the status of environmental review for each capital project to be funded under the proposed bond sale and the type of CEQA document either completed or to be completed for each project. CEQA compliance must be completed for each project prior to project approval or approval to award a construction contract to implement any project to be funded by the proposed bond sale.

Any action or proceeding challenging the SFPUC's determination must be brought within 30 days following the filing of such notice. Actions have been, and in the future may be, filed against the SFPUC challenging a project's compliance with CEQA, including the adequacy of the EIR and other environmental documents, for particular projects. If an action challenging the SFPUC's compliance with CEQA is successful, the particular project could be delayed, revised, suspended or canceled. CEQA also contains a number of exemptions, which the SFPUC uses for its projects when appropriate.

As part of its regular planning and budgetary process, the San Francisco Planning Department gives careful attention to environmental considerations. All projects are evaluated under the SFPUC's environmental evaluation procedures, developed in compliance with federal and State laws and regulations, and City Ordinances and Administrative Code procedures.

FINANCING OF CAPITAL IMPROVEMENTS

Long Term Financing of Capital Program

Pursuant to the Water Enterprise's Ten-Year Financial Plan for Fiscal Year 2016-17 to Fiscal Year 2025-26, adopted by the Commission in February 2016, long-term debt financing is projected to fund approximately \$1.33 billion of the Ten-Year Capital Plan. Revenue (pay-as-you-go) funding is expected to provide approximately \$512.9 million of funds for a portion of the remaining funding of the Ten-Year Capital Plan. Long-term debt financing is expected to be comprised primarily of Additional Series of Bonds and the CWSRF Loan for the Westside Recycled Water Project. See "OBLIGATIONS PAYABLE FROM REVENUES – State and Federal Loans."

Interim Funding of Capital Program

The SFPUC utilizes the Water Enterprise's commercial paper program (the "**Water Commercial Paper Notes**") to meet the expenditure and encumbrance needs of capital projects on an interim basis through design and into the early project construction phase. Commercial paper is then refunded and consolidated into either long-term revenue bond issues or a Parity State Loan when the outstanding and encumbered amount of commercial paper approaches authorized limits. This approach allows the SFPUC to take advantage of lower short-term interest rates, and to size and closely time long-term financings with projected need.

The SFPUC has authorized the issuance of up to \$500 million in Water Commercial Paper Notes. As of September 1, 2016, \$236 million aggregate principal amount of Taxable Water Commercial Paper Notes were outstanding. The SFPUC anticipates issuing additional Water Commercial Paper Notes to provide interim financing for Water Enterprise capital projects. See "OBLIGATIONS PAYABLE FROM REVENUES – Subordinate Debt and Commercial Paper."

Sources of Funding the Capital Improvement Program

The following table sets forth the projected sources of funds for the first five years of the Water Enterprise's capital improvement program as set forth in the Ten-Year Capital Plan. The repayment of projected principal and interest on these future debt issues was incorporated into the development of the SFPUC's approved retail water rates through Fiscal Year 2017-18, and has also been reflected in the remaining projection period set forth in the Ten-Year Financial Plan for Fiscal Year 2018-19 to Fiscal Year 2025-26. Pursuant to the WSA, a share of debt service associated with improvements to the Regional Water System is the responsibility of the Wholesale Customers.

The SFPUC projects that retail water rates will increase annually by an average of approximately 7.75% from Fiscal Year 2018-19 to Fiscal Year 2025-26, after the current adopted rate period ends in Fiscal Year 2017-18. However, no rate increases beyond June 30, 2018 have been proposed to, or adopted by, the Commission or submitted to the Board of Supervisors, and any future retail water rate increases are subject to future approval by the Commission, subject to the Board of Supervisors' ability to reject rate increases. See "FINANCIAL OPERATIONS."

TABLE 15
WATER ENTERPRISE CAPITAL IMPROVEMENT PROGRAM
FUNDING SOURCES
FOR FISCAL YEARS ENDED JUNE 30
(IN THOUSANDS)⁽¹⁾

| | <u>2017</u> | <u>2018</u> | <u>2019</u> | <u>2020</u> | <u>2021</u> |
|-----------------------------------|---------------------------------|---------------------------------|------------------|------------------|------------------|
| Appropriations | \$204,880 ⁽²⁾ | \$158,522 ⁽²⁾ | \$230,118 | \$462,559 | \$125,074 |
| Revenue Bonds / Parity State Loan | \$182,238 | \$129,692 | \$177,314 | \$409,755 | \$85,103 |
| Water Revenues | 18,341 | 27,830 | 51,804 | 51,804 | 38,971 |
| Capacity Charge Revenues | 4,300 | 1,000 | 1,000 | 1,000 | 1,000 |
| Total Sources | \$204,880 | \$158,522 | \$230,118 | \$462,559 | \$125,074 |

⁽¹⁾ Amounts are based on anticipated appropriations and are projections from the Water Enterprise Ten-Year Capital Plan. Actual results may differ materially from these projections. See "FORWARD-LOOKING STATEMENTS" above.

⁽²⁾ Budgeted.

Source: SFPUC, Financial Services

FINANCIAL OPERATIONS

General

The SFPUC is a department of the City and, as such, the financial operations of its three enterprises are included in the Comprehensive Annual Financial Report of the City and shown as enterprise funds.

The following information is provided with respect to the Water Enterprise only and does not purport to reflect the financial position of the SFPUC or the City as a whole.

Basis of Accounting. The accounts of the Water Enterprise are organized on the basis of a proprietary fund type, specifically an enterprise fund. The financial activities of the Water Enterprise are accounted for on a flow of economic resources measurement focus, using the accrual basis of accounting. Under this method, all assets and liabilities associated with its operations are included on the statement of net assets; revenues are recorded when earned, and expenses are recorded when liabilities are incurred.

The Water Enterprise applies all applicable GASB pronouncements.

City Budget Process. The SFPUC's operating and capital budget preparation and approval is a part of a City-wide process. The SFPUC is one of several departments that prepare biannual budgets. The Commission reviews and approves the SFPUC's two-year budget, which is then submitted to the Mayor's Office for review. The Mayor then incorporates the proposed budget, with amendments, into the City-wide budget that is submitted to the Board of Supervisors for approval. Under the Charter, the Board of Supervisors may increase or decrease any proposed expenditure in the Mayor's budget so long as the aggregate changes do not cause the expenditures to exceed the total amount of expenditures proposed by the Mayor. The Charter further provides that the Mayor may reduce or reject any expenditure authorized by the Board of Supervisors except appropriations for bond interest, redemption or other fixed charges, subject to reinstatement of any such expenditure by a two-thirds vote of the Board of Supervisors.

City Services Auditor. On November 4, 2003, voters in the City adopted Proposition C, an ordinance that established the City Services Auditor ("CSA"), an audit function within the Office of the City Controller. Pursuant to the provisions of this ordinance, which have been incorporated into the Charter, the CSA has broad oversight authority and responsibilities including, but not limited to, (i) to reporting upon level of effectiveness for City public services, (ii) auditing financial and management performance of City departments and functions, (iii) ensuring the financial integrity and improving the overall performance and efficiency of City government, and (iv) maintaining a whistleblower hotline to investigate upon reports of fraud, waste and abuse.

Sources of Revenue. The Water Enterprise’s principal source of revenue is the sale of water to its Retail Customers and Wholesale Customers, as shown below for Fiscal Year 2014-15.

TABLE 16
FISCAL YEAR 2014-15 WATER ENTERPRISE REVENUES
(IN THOUSANDS)

| | |
|-----------------------|-----------|
| Retail water sales | \$189,413 |
| Wholesale water sales | 210,610 |
| Other Revenue | 31,813 |
| Total | \$431,831 |

Source: SFPUC, Financial Services

Other Revenue shown above includes rental income, interest earnings, capacity fees, charges for services to City departments and other non-operating revenues.

The setting of water rates by the City is not subject to any State or federal regulatory approval. The SFPUC’s ability to generate revenue may be limited by certain provisions of the State Constitution and the Charter of the City. See “CONSTITUTIONAL, STATUTORY AND CHARTER LIMITATIONS.”

Allocation of Hetch Hetchy Project Costs. A number of the facilities of the Hetch Hetchy Project are joint assets and are used for both water transmission and power generation and transmission, benefitting both Hetch Hetchy Water and the Power Enterprise. All power sales revenues are allocated to the Power Enterprise. Per negotiation with Wholesale Customers, operating and capital costs benefitting the Power Enterprise and 55% of operating and capital costs that jointly benefit both Hetch Hetchy Water and the Power Enterprise are allocated to the Power Enterprise. Operating and capital costs benefitting Hetch Hetchy Water and 45% of operating capital costs jointly benefitting both Hetch Hetchy Water and the Power Enterprise are allocated to the Water Enterprise. Costs allocated to the Water Enterprise are paid through an inter enterprise transfer from the Water Enterprise to Hetch Hetchy Water and Power. Such transfers constitute “Operation and Maintenance Costs of the Enterprise.” See “– Operating and Maintenance Expenses” and “– Inter Enterprise Transfers.”

Wholesale Water Sales Revenue

Wholesale Rate-Setting Process. Wholesale Customer rates are determined annually based upon the Wholesale Customers’ collective share of the Water Enterprise’s total revenue requirements, known as the “**Wholesale Revenue Requirement**” in the WSA. The Wholesale Revenue Requirement under the WSA consists of the sum of the Wholesale Customers’ allocated shares of the following costs of the Water Enterprise in providing water to the Wholesale Customers: operating and maintenance expenses, administrative and general expenses, property taxes, and the “Suburban Hetch Hetchy Assessment,” the costs of operating the Hetch Hetchy Project allocated exclusively to the Water Enterprise or jointly to the Water Enterprise and the Power Enterprise.

The cost of service for Wholesale Customers includes a pro-rata share of Operation and Maintenance Costs of the Enterprise. Capital costs are recovered under the cash method as needed to cover revenue-funded capital improvements of the Regional Water System and debt service associated with bond-funded capital projects. The operating costs and plant investment for Hetch Hetchy Water and Power are first classified as power-specific, water-specific or joint. The water related costs and water’s share of joint costs are reflected in the Wholesale Revenue Requirement.

In addition to a pro-rata share of Operation and Maintenance Costs of the Enterprise, debt service and revenue funded capital, the Wholesale Customers agreed to pay a fixed annual charge to reimburse the Water Enterprise for a pro rata share of undepreciated investment in facilities capitalized prior to July 1, 2009. The WSA allowed the Wholesale Customers to repay the undepreciated value of existing assets as well as construction work in progress as of June 30, 2009, in equal annual payments over the 25 years of the WSA at an annual interest rate of 5.13%. On January 1, 2013, State legislation authorizing BAWSCA to prepay the remaining value on existing regional assets to achieve cost savings became effective. On February 27, 2013, the Wholesale Customers through

BAWSCA made an early repayment of \$356 million to the outstanding balance owed to the Water Enterprise. See “FINANCIAL OPERATIONS – Wholesale Water Sales Revenue – Capital Cost Recovery Prepayment.”

The WSA allowed the Wholesale Customers to reimburse the Water Enterprise for any revenue funded project expenditures made in Fiscal Year 2009-10 through Fiscal Year 2011-12 using funds appropriated, but unspent, prior to July 1, 2009 over 10 years with repayment beginning in Fiscal Year 2014-15 at an annual interest rate of 4.00%. The annual payment of \$1.2 million has been incorporated into wholesale rates.

Finally, the WSA contains a rate device known as the balancing account. Any difference between the revenues received and the actual earned revenues associated with the allocated cost of wholesale service is placed in the balancing account and used to adjust the following year’s rate recovery up or down depending on whether there is a shortfall or surplus in the balancing account. The projected year-end amount in the balancing account for Fiscal Year 2015-16 is \$21.5 million owed by the Retail Customers to the Wholesale Customers.

Statutory and Contractual Limits on Wholesale Water Rates. The sale and delivery of water to the Wholesale Customers under the WSA are subject to the “Rules and Regulations Governing Water Service to Customers” of the Water Enterprise adopted by the Commission, and as they may from time to time be amended, that are (1) applicable to the sale and delivery of water to the Wholesale Customers, (2) reasonable, and (3) not inconsistent with either the WSA or with an Individual Contract.

Wholesale Water Rate Adjustments. Under the WSA, adjustments to the Wholesale Customers’ rate schedules, other than emergency rate adjustments and drought pricing, discussed below, are coordinated with the budget development process. If the SFPUC desires to increase Wholesale Customer rates, it is required to provide certain yearly budget information to the Wholesale Customers prior to adoption of any such rate increases. Failure to do so will not prohibit the SFPUC from adoption of such rates, but, in the event of such failure, the Wholesale Customers may either invoke arbitration, or seek injunctive relief to compel the SFPUC to remedy the failure as soon as reasonably practical.

The SFPUC may increase the water rates applicable to the Wholesale Customers without compliance with the above described procedures in the event a drought, earthquake, other act of God, malfunctioning of the Regional Water System or other emergency which requires an increase in rates. Rates may be increased on an emergency basis to cover operating expenses and capital costs. Any such emergency rate increase must be accompanied by a rate increase for Retail Customers of an equal percentage.

Any emergency rate surcharge adopted by the Commission will remain in effect only until the next budget coordinated rate-setting cycle.

Drought pricing for Wholesale Customers, if required, could also be changed under similar terms and conditions set forth for emergency rate increases. Any drought-related pricing or surcharge adopted by the Commission would also remain in effect only until the next budget coordinated rate-setting cycle. See “– Impact of Current California Drought on Revenues and Rates.”

Historical Wholesale Water Rate Adjustments. The following table lists wholesale water rate adjustments since Fiscal Year 2006-07 for the Wholesale Customers.

TABLE 17
HISTORICAL PERCENTAGE INCREASES (DECREASES)
IN WHOLESALE WATER RATES

| Date | Change in Wholesale Rates ⁽¹⁾ |
|-----------|---|
| July 2007 | 6.3% |
| July 2008 | 10.0 |
| July 2009 | 15.7 |
| July 2010 | 15.2 |
| July 2011 | 38.4 |
| July 2012 | 11.4 |
| July 2013 | (16.4) |
| July 2014 | 19.6 |
| July 2015 | 28.0 |
| July 2016 | 9.3 |

⁽¹⁾ Wholesale rates are set prospectively based on an estimate of the Wholesale Revenue Requirement. As such, rates may increase or decrease significantly from year to year.

Source: SFPUC, Audited Financial Statements, and SFPUC Financial Services

Arbitration for Disputes. The Prior Master Water Sales Contract had a binding arbitration provision for disputes related to wholesale rate setting by the SFPUC. The SFPUC and its Wholesale Customers arbitrated one dispute over the 25-year term of the Prior Master Water Sales Contract. The WSA continues the practice of binding arbitration and the SFPUC and its Wholesale Customers have settled other disputes, without invoking arbitration, as part of the true up process for determining the actual Wholesale Revenue Requirement following the close of each fiscal year.

Capital Cost Recovery Prepayment. Under the WSA, the Wholesale Customers had been making total annual capital cost recovery payments to the SFPUC of approximately \$28.2 million, with such annual payments due through the expiration of the WSA in 2034. In February 2013, the Wholesale Customers, acting through BAWSCA, exercised a right to prepay the outstanding balance of the capital cost recovery obligation, in the amount of \$356,139,000, to the SFPUC, thereby discharging the obligation in its entirety. Since the Wholesale Customers' obligation was to the Retail Customers of the SFPUC for funding the existing capital assets of the Hetch Hetchy Regional Water System, the SFPUC developed a plan to use the proceeds to pay costs of certain regional and local capital projects allocated to Retail Customers, to refund certain then outstanding Water Revenue Bonds and to fund unrestricted available fund balance reserves. The SFPUC realized the proceeds as Revenues of the Water Enterprise from the Wholesale Customers in Fiscal Year 2012-13. As a result, water sales for Wholesale Customers in Fiscal Year 2012-13 and debt service coverage in Fiscal Year 2012-13 and Fiscal Year 2013-14 increased significantly. See "HISTORICAL OPERATING RESULTS – Summary of Historical Operating Results and Debt Service Coverage – Table 25" herein.

Retail Water Sales Revenue

Retail Rate Structure. Retail Customers pay a flat monthly service charge based on the size of the meter plus a volumetric charge for all water delivered based on one-month meter readings. Volumetric charges for single- and multi-family residential customers are based on a two-tiered rate structure, where the first tier is applicable to the first 4 CCF (centum cubic feet) of use per month (single-family) or 3 CCF of use per month (multi-family), and the second tier is applicable to all additional use. Volumetric charges for non-residential customers are based on a uniform rate. The table below details retail water rates for Fiscal Year 2015-16.

**TABLE 18
RATES FOR RETAIL WATER SERVICE IN SAN FRANCISCO
AS OF JULY 1, 2016**

| | Single-Family Residential (\$/CCF)⁽¹⁾ | Multi-Family Residential (\$/CCF) | Non-Residential (\$/CCF) |
|--|---|--|-------------------------------------|
| Uniform ⁽²⁾ | - | - | 7.14 |
| Tier 1 ⁽³⁾ (0-4 or 0-3 CCF) | 6.00 | 6.14 | - |
| Tier 2 (All other usage) | 8.05 | 8.23 | - |

(1) One "CCF" equals one hundred cubic feet of water (equal to 748 gallons).

(2) Different rates applying to builders and contractors, irrigation, municipal, interruptible and docks and ships apply to a small percentage of Non-Residential use.

(3) Tier 1 for single-family residential is from 0-4 CCF; tier 1 for multi-family residential is from 0-3 CCF.

Source: SFPUC, Financial Services

The following table shows a comparison of typical monthly charges for representative Retail Customer classes based on average use.

**TABLE 19
MONTHLY CHARGES FOR RETAIL WATER SERVICE IN SAN FRANCISCO
AS OF JULY 1, 2016**

| Customer Type | Average Use (CCF) | Meter Size | Fixed Charge | Volume Charge | Total Monthly Charges (Volume + Fixed) |
|---------------------------------|------------------------------|-----------------------|-------------------------|--------------------------|---|
| Average Single Family Residence | 5.1 | 5/8" | \$ 10.86 | \$ 32.86 | \$ 43.72 |
| Larger Single Family Residence | 15 | 3/4" | 13.68 | 112.55 | 126.23 |
| Large Apartment Building | 525 | 4" | 145.95 | 3,750.18 | 3,896.13 |
| Large Office | 983 | 4" | 145.95 | 7,018.62 | 7,164.57 |
| Department Store | 2,199 | 4" | 145.95 | 15,700.86 | 15,846.81 |
| Hotel | 7,811 | 8" | 455.56 | 55,770.54 | 56,226.10 |

Source: SFPUC, Financial Services

Retail Rate-Setting Process. The SFPUC is authorized and required under the Charter and Proposition E to set rates, fees and other charges in connection with providing the utility services under its jurisdiction, subject to rejection – within 30 days of submission – by resolution of the Board of Supervisors. If the Board of Supervisors fails to act within 30 days, the rates will become effective without further action.

Under the Charter, in setting retail rates, fees and charges (for water and for the sewer and power utility services it provides) the SFPUC is required to take the following actions:

- (1) Establish rates, fees and charges at levels sufficient to improve or maintain financial condition and bond ratings at or above levels equivalent to highly rated utilities of each enterprise under its jurisdiction, meet requirements and covenants under all bond resolutions and indentures (including, without limitation, increases necessary to pay for the retail customers' share of the debt service on bonds and operating expenses of any State financing authority), and provide sufficient resources for the continued financial health (including appropriate reserves), operation, maintenance and repair of each enterprise, consistent with good utility practice.

- (2) Retain an independent rate consultant to conduct rate and cost of service studies for each utility at least every five years.
- (3) Set retail rates, fees and charges based on the cost of service.
- (4) Conduct all studies mandated by applicable State and federal law to consider implementing connection fees for water and clean water facilities servicing new development.
- (5) Conduct studies of rate-based conservation incentives and/or lifeline rates and similar rate structures to provide assistance to low income users, and take the results of such studies into account when establishing rates, fees and charges, in accordance with applicable State and federal laws.
- (6) Adopt annually a rolling 5-year forecast of rates, fees and other charges.
- (7) Establish a Rate Fairness Board consisting of seven members: the City Administrator or his or her designee; the Controller or his or her designee; the Director of the Mayor's Office of Public Finance or his or her designee; two residential retail customers, consisting of one appointed by the Mayor and one by the Board of Supervisors; and two business retail customers, consisting of a large business customer appointed by the Mayor and a small business customer appointed by the Board of Supervisors. Specific duties for the Rate Fairness Board include:
 - (a) annual review of a five-year rate forecast;
 - (b) hold one or more public hearings on annual rate recommendations before the SFPUC adopts rates;
 - (c) provide a report and recommendations to the SFPUC on the rate proposal; and,
 - (d) in connection with periodic rate studies, submit to the SFPUC rate policy recommendations for the SFPUC's consideration, including recommendations to reallocate costs among various retail utility customer classifications, subject to any outstanding bond requirements.

Retail rates and the retail rate-setting process must also comply with the requirements of the State Constitution, including notice, protest and public hearing requirements. See "CONSTITUTIONAL, STATUTORY AND CHARTER LIMITATIONS – State Law Limitations."

Retail Water Rate Adjustments. The SFPUC's retail rates and charges for delivered water are set to equal the cost of operation, maintenance, replacement, debt service and other costs incurred in gathering, treating and delivering water for consumptive and other uses in the City and other areas receiving retail service from the Water Enterprise. The SFPUC has regularly reviewed and often increased its retail water rates to fund operating and capital costs. In May 2014, the Commission approved retail water rates and charges for the four-year period effective July 1, 2014 through June 30, 2018.

The following table lists retail water rate adjustments since Fiscal Year 2006-07, as well as approved future rate increases through Fiscal Year 2017-18.

TABLE 20
HISTORICAL AND APPROVED FUTURE PERCENTAGE INCREASES (DECREASES)
IN RETAIL WATER RATES

| Date | Retail Rates |
|-----------|---------------------|
| July 2007 | 15.0 ⁽¹⁾ |
| July 2008 | 15.0 |
| July 2009 | 15.0 |
| July 2010 | 15.0 |
| July 2011 | 12.5 |
| July 2012 | 12.5 |
| July 2013 | 6.5 |
| July 2014 | 12.0 |
| July 2015 | 12.0 |
| July 2016 | 10.0 |
| July 2017 | 7.0 ⁽²⁾ |

⁽¹⁾ Adjustment effective July 14, 2007.

⁽²⁾ Based on the four-year rate schedule covering July 1, 2014 to June 30, 2018, approved in May 2014.

Source: SFPUC, Financial Services.

The SFPUC may make adjustments from time to time in such rates, fees and charges and may make such classification of rates, fees and charges as it deems necessary, but will not reduce such rates, fees and charges below those then in effect unless the Revenues resulting after such reduced rates, fees and charges are put into effect will at all times be sufficient to meet the rate covenants set forth in the Indenture. See “SECURITY FOR THE BONDS – Rate Covenants.”

The SFPUC recently retained an independent rate consultant to conduct rate and cost of service studies for rates effective July 1, 2018.

Billing and Collection Procedures. All Retail Customers are billed monthly on the basis of metered water use. In the event of non-payment, the SFPUC has authority and power to discontinue service and, in owner-occupied buildings and master metered apartment buildings, to record liens on property.

Delinquencies. The table below shows the delinquency in collection of water charges from Retail Customers as of June 30, 2016. The SFPUC considers its rates of payment delinquency, service discontinuance for non-payment, and write-offs for uncollectible accounts to be low by water industry standards for urban areas.

**TABLE 21
ACCOUNTS RECEIVABLES AGING REPORT
AS OF JUNE 30, 2016**

| Period | Amount ⁽¹⁾ | Percent of Total | Percent of Total Projected 2015-16 Revenues |
|--|------------------------------|-------------------------|--|
| 0 - 30 Days | \$19,402,774.42 | 92.23% | 4.41% |
| 31 - 60 Days | 828,085.24 | 3.94 | 0.19 |
| 61 - 90 Days | 275,989.66 | 1.31 | 0.06 |
| Over 90 Days | 530,518.38 | 2.52 | 0.12 |
| Total | \$21,037,367.70 | 100.00% | 4.78% |
| Credit Balances | \$(533,412.89) | | |
| Total Aged Receivables | \$20,503,954.81 | | |
| Less Allowance For Doubtful Accounts | \$(2,019,242.99) | | |
| Accounts Receivable, Net of Allowance | \$18,484,711.82 | | |

⁽¹⁾ Excludes receivables from municipal customers.
Source: SFPUC, Financial Services.

The following table shows a five-year history of write-offs for uncollectible accounts.

**TABLE 22
WRITE-OFFS FOR UNCOLLECTIBLE ACCOUNTS**

| Fiscal Year (ended June 30) | Amount | % of Total Revenues |
|--|---------------|--------------------------------|
| 2011 | \$ 17,274 | 0.006% |
| 2012 | 14,920 | 0.004 |
| 2013 | 4,081 | 0.001 |
| 2014 ⁽¹⁾ | 472,784 | 0.121 |
| 2015 ⁽¹⁾ | 617,734 | 0.143 |
| 2016 | 3,528 | 0.001 |

⁽¹⁾ Write-offs for Fiscal Years 2013-14 and 2014-15 include amounts from Fiscal Years 1999-2000 to 2012-13 initially reported to the SFPUC as uncollectable by the Bureau of Delinquent Revenues in Fiscal Years 2013-14 and 2014-15. The SFPUC expects that the Bureau of Delinquent Revenues will report such uncollectable amounts to the SFPUC on an annual basis moving forward.

Source: SFPUC, Financial Services.

Comparative Retail Water Rates. The following table shows a comparison of monthly charges by selected local water purveyors for a typical residential account with a 5/8-inch meter using 6 CCF (600 cubic feet) of water per month, which is the historical average monthly use for SFPUC single-family residential customers.

**TABLE 23
COMPARATIVE MONTHLY RESIDENTIAL WATER CHARGES
AS OF JULY 1, 2016**

| Water Purveyor | Monthly Charge ⁽¹⁾ |
|--|-------------------------------|
| City of Palo Alto | \$57.15 ⁽²⁾ |
| San Francisco Public Utilities Commission | 50.96⁽³⁾ |
| City of Hayward | 46.52 |
| Alameda County Water District | 41.01 ⁽²⁾ |
| Contra Costa County Water District | 40.54 ⁽⁴⁾ |
| East Bay Municipal Utility District | 39.65 ⁽⁴⁾ |
| City of Santa Clara | 29.70 |

⁽¹⁾ Based on monthly usage of 6 CCF.

⁽²⁾ Includes drought surcharge.

⁽³⁾ Monthly charge for Fiscal Year 2016-17.

⁽⁴⁾ Contra Costa County Water District and East Bay Municipal Utility District have elevation surcharges. Amounts listed above assume the lowest elevation.

Source: SFPUC, Financial Services

Impact of Current California Drought on Revenues and Rates

The current California drought has not altered the four-year retail rate package adopted by the Commission on May 13, 2014 that took effect on July 1, 2014. However, in response to regulations adopted by SWRCB, on August 26, 2014 the Commission imposed mandatory restrictions, consistent with the SWRCB's Emergency Regulations, on outdoor irrigation by reducing all outdoor irrigation of ornamental landscapes or turf with potable water by Retail Customers by at least 10%, for the period October 1, 2014 through June 30, 2015. In response to continued drought conditions, the Commission increased the mandatory outdoor irrigation reduction to 25%, effective July 1, 2015. To regulate mandatory restrictions, the Commission adopted Excess Water Use charges applicable to retail potable water irrigation accounts that do not meet the required reduction level. For each customer account, an excess use charge for water use above the 90% cumulative allocation for the entire restriction period was assessed at either two times the applicable water rate for that account or three times the applicable water rate for customers paying the lower interruptible irrigation rate.

On May 18, 2016, the SWRCB adopted new standards for drought emergency water conservation regulation that allow utilities to self-certify that they have sufficient available water to meet demand for another three years of drought. The SFPUC determined that it does meet this standard and lifted the mandatory 25% outdoor irrigation reduction, effective July 1, 2016. Accounts receiving the lower interruptible irrigation rate are still subject to a 10% mandatory reduction for the remainder of Fiscal Year 2016-17 and the SFPUC has requested that all customers continue with a 10% voluntary reduction in usage.

Water rates for Retail Customers were established in May 2014 for the four year period from Fiscal Year 2014-15 through Fiscal Year 2017-18. Because actual water sales have been less than water sales forecasted at the time water rates were adopted, retail water sales revenues have been significantly less than forecasted water sales revenues. However, the SFPUC was able to offset lower revenues to some extent with reductions to expenditures.

Capacity Charges

The SFPUC imposes a capacity charge on any Retail Customer requesting a new connection to the water distribution system, or requiring additional capacity as a result of any addition, improvement, modification or change in use of an existing connection to the water distribution system. As of July 1, 2016, the capacity charge is

\$1,302 per equivalent 5/8 inch meter. The capacity charge is adjusted on July 1 of each year by the annual change in the 20 City Average Construction Cost Index published by ENR Magazine.

Operating and Maintenance Expenses

“Operating and Maintenance Expenses” cover the general operations expenses of the Water Enterprise. These expenses include labor and fringe benefits, contractual services, materials and supplies, depreciation, general and administrative, services from other departments and other miscellaneous costs. See “HISTORICAL OPERATING RESULTS.” Services from other departments include payment for services from other City departments, such as the City Attorney’s Office, and the General Services Agency. Operating and Maintenance Expenses include payments to Hetch Hetchy Water and Power for services related to water storage and delivery. See “– Inter-Enterprise Transfers” and “SECURITY FOR THE BONDS – Rate Covenants.”

Allocation of Costs. The SFPUC allocates various common costs it incurs among the Water Enterprise, Hetch Hetchy Water and Power and the Wastewater Enterprise. Allocations are based on the SFPUC management’s best estimate and may change from year to year depending on activities undertaken by each enterprise and information available. The most recent cost allocation review was done in 2014. For Fiscal Year 2016-17, the SFPUC has allocated \$44.8 million in administrative costs to the Water Enterprise. For Fiscal Year 2015-16, the SFPUC allocated \$43.2 million in administrative costs to the Water Enterprise, which is included in the financial statements under various expense categories.

Inter-Enterprise Transfers. An annual transfer occurs from the Water Enterprise to Hetch Hetchy Water and Power to pay for services related to water storage and delivery. The budgeted transfer amount is \$34.6 million for Fiscal Year 2016-17 and was \$36.6 million for Fiscal Year 2015-16. An additional transfer related to power purchases is budgeted at \$10.1 million for Fiscal Year 2015-16 and was \$8.7 million in Fiscal Year 2014-15. Should Hetch Hetchy Water and Power incur higher capital costs or higher operating costs in the future, the amount of these transfers could increase.

Payments to/from the City.

Payments to City for Interdepartmental Services. A variety of City departments provide services such as engineering, purchasing, legal, data processing, telecommunications, and human resources to the Water Enterprise and charge amounts designed to recover those costs. The budgeted charge amount is \$20.9 million for Fiscal Year 2016-17 and was \$21.5 million for Fiscal Year 2015-16.

Lease Certificate of Participation Financing. On October 7, 2009, the City issued \$167.67 million in fixed-rate Certificates of Participation, Series 2009 C and D, to fund the headquarters of the SFPUC at 525 Golden Gate Avenue. Pursuant to a Memorandum of Understanding between the City and the SFPUC, the SFPUC agreed to reimburse the City General Fund for all costs in connection with this City financing. This obligation is subordinate to debt service on the Bonds and payments related thereto are allocated among the three SFPUC Enterprises. See “OBLIGATIONS PAYABLE FROM REVENUES – Other Obligations Payable from Revenues.”

Water Payments from Other Agencies. The SFPUC receives payments from other agencies of the City for their share of the proportionate cost of the service provided to them. In prior fiscal years, the Water Enterprise delivered water without charge to certain City departments. In Fiscal Year 2007-08, the Water Enterprise began charging all City departments for water (with the exception of itself and Fire Department for water dispensed from fire hydrants). The Water Enterprise collected payments from other City agencies totaling approximately \$6.7 million in Fiscal Year 2014-15 and \$7.0 million in Fiscal Year 2013-14.

Debt Management and Fund Balance Reserve Policies

The SFPUC has established “Debt Management Policies and Procedures” for debt financing under its jurisdiction. The SFPUC has also established separate “Bond Disclosure Compliance Policies and Procedures”.

These policies that apply to all SFPUC enterprises, including the Water Enterprise, and are intended to enable the SFPUC to effectively manage its debt issuance and administration practices. The “Debt Management Policies and Procedures” are reviewed bi-annually and revised, as necessary, with Commission approval. The most recent revisions were approved on March 24, 2015.

The SFPUC also established a “Fund Balance Reserve Policy” in 2010. This policy is applied to the long-term financial planning of all SFPUC enterprises, including the Water Enterprise. The Fund Balance Reserve Policy states that operating and capital plans, budgets and rates will be projected and proposed for adoption such that all bond indenture requirements are met or exceeded and that Operating Fund Balance Reserves meet one or more of the following: total at least 15% of annual revenues; total at least 15% of annual expenditures; or result in Debt Service Coverage, on a bond indenture basis, including fund balance reserves available to pay debt service, of at least 1.25 times.

The SFPUC makes no representation that these policies will not be revised or amended and, except to the extent required for compliance with the terms of the Indenture, and makes no representation that these policies will be followed by the SFPUC.

Investment of SFPUC Funds

The SFPUC’s pooled deposits and investments are invested pursuant to State law and the investment policy established from time to time by the City Treasurer and overseen by the Treasury Oversight Committee. The current policy seeks the preservation of capital, liquidity and yield, in that order of priority. Under the City Treasurer’s current investment procedures, the SFPUC’s pooled deposits and investments are invested in the City’s larger pooled investment fund (the “**City Pool**”). Among other purposes, the City Pool serves in effect as a disbursement account for expenditures from the City’s various segregated and pooled funds. Investments are generally made so that securities can be held to maturity. The City Treasurer calculated the weighted average maturity of these investments as of July 31, 2016 to be 391 days.

The following table sets forth the approximate book values of the investments held in the City Pool reported by the City Treasurer as of July 31, 2016. The Water Enterprise’s pooled deposits and investments accounted for approximately \$441.45 million, or approximately 6.21%, of such amounts.

TABLE 24
CITY POOLED INVESTMENT FUND
(AS OF JULY 31, 2016)

| Investments | Book Value (millions) |
|---|----------------------------------|
| U.S. Treasuries | \$ 498.2 |
| Federal Agencies | 3,684.9 |
| State & Local Government Agency Obligations | 231.9 |
| Public Time Deposits | 1.4 |
| Negotiable CDs | 1,265.1 |
| Commercial Paper | 537.8 |
| Medium Term Notes | 323.4 |
| Money Market Funds | 435.5 |
| Supranationals | 124.9 |
| Total | \$7,103.1 |

Source: Office of the Treasurer & Tax Collector of the City and County of San Francisco.

The SFPUC’s non-pooled deposits and investments consist primarily of funds related to the SFPUC’s Outstanding Bonds, which are invested pursuant to policy established by the SFPUC, subject to the restrictions contained in the applicable bond documentation.

Risk Management and Insurance

The SFPUC’s risk management program encompasses both self-insured and insured coverage. Risk assessments and coverage are coordinated by the SFPUC Enterprise Risk Manager through the City Office of Risk Management. With certain exceptions, the City and SFPUC’s general approach is to first evaluate self-insurance for the risk of loss to which it is exposed. Based on this analysis, the SFPUC has determined that mitigating risk through a “self-retention” mechanism is more economical as it manages risks internally and administers, adjusts, settles, defends, and pays claims from budgeted resources (i.e., pay-as-you-go). When economically more viable or when required by debt financing covenants, the SFPUC obtains commercial insurance.

At least annually, the City reviews and actuarially determines general liability and workers’ compensation liabilities, which are recorded as “Damages and Claims” and “Accrued Worker’s Compensation” in the financial statements.

The SFPUC does not maintain commercial earthquake coverage for the Water Enterprise, with certain minor exceptions, such as a sub-limit for fire-sprinkler leakage due to earthquake under the Property Insurance program.

The following is a summary of the SFPUC’s coverage approach to risk:

| Primary Risks | Typical Coverage Approach |
|----------------------------|--|
| General Liability | Self-Insured |
| Property | Purchased Insurance & Self-Insured |
| Workers’ Compensation | Self-Insured through City-Wide Pool |
| Other Risks | Typical Coverage Approach |
| Surety Bonds | Purchased and Contractually Transferred |
| Professional Liability | Combination of Self-Insured, Purchased Insurance and Contractual Risk Transfer |
| Errors & Omissions | Combination of Self-Insured, Purchased Insurance and Contractual Risk Transfer |
| Builders Risk | Purchased Insurance & Contractual Risk Transfer |
| Public Officials Liability | Purchased Insurance |

The SFPUC’s property risk management approach varies depending on whether the facility is currently under construction, or if the property is part of revenue-generating operations. The majority of purchased insurance is for revenue-generating facilities, debt-financed facilities, and mandated coverage to meet statutory or contractual requirements.

Additionally, the SFPUC acknowledges the importance of aligning strategic planning to the risk management process and has implemented an Enterprise Risk Management (“**ERM**”) program to meet this need. The framework provides a strategic approach to managing operational risks. The ERM program has been implemented thus far at the SFPUC Business & Financial Services Bureau and Power Enterprises and plans are in place to continue implementation across the remainder of the SFPUC.

Capital Project Risk Management. For capital construction projects, the SFPUC has utilized traditional contractual risk transfer, owner-controlled insurance programs or other alternative insurance programs. Under the latter two approaches, the insurance program usually provides coverage for the entire construction project, along with multiple risk coverages, such as general liability and workers compensation. When a contractual risk transfer is used for capital construction risks, the SFPUC requires each contractor to provide its own insurance, while ensuring that the full scope of work be covered with satisfactory levels to limit the SFPUC’s risk exposure balanced by that which is commercially available.

Performance bonds are required, and Builder’s Risk insurance must be purchased, in most phases of the construction contracting process for such phases, as bid, performance, and payment or maintenance. Additionally, bonds may be required in other contracts where goods or services are provided to ensure compliance with applicable terms and conditions such as warranty.

Professional liability policies are either directly purchased insurance on behalf of the SFPUC, transferred through contract to the contracted professional, or retained through self-insurance on a case by case basis depending on the size, complexity or scope of construction or professional service contracts. Professional liability policies are typically purchased for services provided by engineers, architects, design professionals and other licensed or certified professional service providers.

Builder's Risk policies of insurance are required to be provided either through an owner-controlled insurance program or the contractor on all construction projects for the full value of the construction.

HISTORICAL OPERATING RESULTS

Summary of Historical Operating Results and Debt Service Coverage

The historical results of operations reflected in the following table are based on the tables contained in the Financial Statements entitled "Statements of Revenues, Expenses and Changes in Net Position" and "Statements of Cash Flows" for the Fiscal Years listed. This table presents "Debt Service Coverage" as defined under the Indenture and excludes certain non-operating revenue and expenses included in the "Statements of Revenues, Expenses and Changes in Net Position" table. Consequently, "Operating and Investment Income" presented in this table differs from "Change in net position" in the "Statements of Revenues, Expenses and Changes in Net Position" table. The calculation of debt service coverage includes net operating income and funds not budgeted to be spent in the next twelve months and legally available to pay debt service, as permitted under the Indenture. The audited financial statements of the Water Enterprise for Fiscal Years 2013-14 and 2014-15, prepared by the SFPUC and audited by KPMG LLP, independent certified public accountants, are attached as APPENDIX D to this Official Statement. The following table should be read in conjunction with such financial statements. KPMG LLP has not reviewed the following table. See "APPENDIX D – SFPUC WATER ENTERPRISE FINANCIAL STATEMENTS."

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TABLE 25
HISTORICAL REVENUES, OPERATING & MAINTENANCE EXPENSES
AND DEBT SERVICE COVERAGE FOR FISCAL YEARS ENDED JUNE 30
(IN THOUSANDS) ⁽¹⁾

| | <u>2011</u> | <u>2012</u> | <u>2013</u> | <u>2014</u> | <u>2015</u> |
|---|------------------|------------------|------------------|------------------|------------------|
| OPERATING & INVESTMENT REVENUE | | | | | |
| Charges for Services ⁽²⁾ | | | | | |
| Retail Water Sales | \$129,186 | \$159,888 | \$156,454 | \$183,140 | \$189,413 |
| Wholesale Water Sales | 142,201 | 164,281 | 544,059 | 171,687 | 210,610 |
| Subtotal – Water Sales | <u>\$271,387</u> | <u>\$324,169</u> | <u>\$700,513</u> | <u>\$354,828</u> | <u>\$400,023</u> |
| Rental Income ⁽³⁾ | 9,388 | 9,398 | 9,599 | 10,675 | 12,284 |
| Other Revenues | 6,751 | 7,161 | 9,271 | 12,007 | 11,908 |
| Capacity Fees ⁽⁴⁾ | 869 | 1,373 | 2,087 | 2,373 | 1,832 |
| Investing Activities ⁽⁵⁾ | 17,283 | 33,450 | (281) | 10,907 | 5,789 |
| Total Revenues | <u>\$305,678</u> | <u>\$375,551</u> | <u>\$721,189</u> | <u>\$390,789</u> | <u>\$431,836</u> |
| OPERATING & MAINTENANCE EXPENSE | | | | | |
| Personnel Services ⁽⁶⁾ | \$111,363 | \$114,337 | \$119,151 | \$119,849 | \$99,192 |
| Contractual Services | 15,586 | 14,838 | 12,819 | 10,921 | 12,729 |
| Materials and Supplies | 13,839 | 12,140 | 13,074 | 12,154 | 12,667 |
| Depreciation ⁽⁷⁾ | 58,752 | 64,595 | 75,448 | 89,026 | 95,384 |
| Services of Other Departments | 46,308 | 49,395 | 57,684 | 54,856 | 60,365 |
| General/Administrative & Other ⁽⁸⁾ | 16,079 | 49,257 | 25,563 | 46,749 | 16,613 |
| Total Operating Expenses | <u>\$261,927</u> | <u>\$304,562</u> | <u>\$303,739</u> | <u>\$333,555</u> | <u>\$296,950</u> |
| OPERATING AND INVESTMENT INCOME | \$43,751 | \$70,989 | \$417,450 | \$57,234 | \$134,886 |
| COVERAGE CALCULATION ⁽⁹⁾ | | | | | |
| Operating and Investment Income | \$43,751 | \$70,989 | \$417,450 | \$57,234 | \$134,886 |
| +Adjustment to Investing Activities ⁽¹⁰⁾ | 325 | (784) | 258 | (2,438) | 732 |
| +Depreciation & Non-Cash Expenses | 60,619 | 72,264 | 78,323 | 95,355 | 98,192 |
| +Changes in Working Capital ⁽¹¹⁾ | 21,052 | 16,714 | 52,193 | 46,088 | (37,175) |
| = “Net Revenue” per Indenture | \$125,747 | \$159,183 | \$548,224 | \$196,239 | \$196,635 |
| +Other Available Funds ⁽¹²⁾ | 44,130 | 27,473 | 26,744 | 287,522 | 248,390 |
| Funds Available for Debt Service | \$169,877 | \$186,656 | \$574,968 | \$483,761 | \$445,025 |
| Bond Debt Service | \$86,554 | \$122,289 | \$248,530 | \$141,325 | \$192,312 |
| Debt Service Coverage⁽¹³⁾ | | | | | |
| Indenture Basis ⁽¹⁴⁾ | 1.96x | 1.53x | 2.31x | 3.42x | 2.31x |
| Current Basis ⁽¹⁵⁾ | 1.45x | 1.30x | 2.21x | 1.39x | 1.02x |

- (1) Operating and Investment Income presented in this table differs from the Change in Net Assets presented in the Statement of Revenues, Expenses and Changes in Net Assets in the Audited Financial Statements. See “APPENDIX D – SFPUC WATER ENTERPRISE FINANCIAL STATEMENTS.” This table presents Debt Service Coverage as defined under the Indenture and excludes certain elements of non-operating revenue and expenses included in the Statements of Revenues, Expenses and Changes in Net Position. Examples of excluded elements are Grant Revenue, Interest Expense and Gains from Sale of Assets.
- (2) Increase in Fiscal Year 2014-15 resulting from adopted rate increase of 19.6% for Wholesale Customers and 12% for Retail Customers beginning July 1, 2014.
- (3) Increase in Fiscal Year 2014-15 due to rent increases on two SFPUC properties in Millbrae, California.
- (4) Decrease in Fiscal Year 2014-15 due to rate structure changes effective July 2014.
- (5) Interest and investment income decrease in Fiscal Year 2014-15 due to lower average cash balance with City Treasury and fiscal agent.
- (6) Decrease in Fiscal Year 2014-15 due to pension cost reduction resulting from implementation of GASB Statement No. 68.
- (7) Increase due to increase in capitalized assets.
- (8) Decrease in Fiscal Year 2014-15 due to lower project spending and damage claims.
- (9) Indenture defines “Net Revenue” on a cash basis. See “SECURITY FOR THE BONDS” and “APPENDIX A – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE.”
- (10) Represents adjustments to show investing activities on a cash basis.
- (11) Fiscal Year 2014-15 decrease in working capital primarily driven by \$27.1 million decrease in Wholesale Balancing Account, \$9.7 million decrease in pollution remediation liability for Lake Merced site, \$23.4 million in deferred pension obligations in accordance with GASB Statement No. 68, and \$6.3 million decrease in accrued payroll, vacation, and sick leave.
- (12) Per Indenture, in addition to current year cash flow, “Indenture Basis” coverage calculation permits inclusion of certain “Other Available Funds,” which are not budgeted to be spent in such twelve months and legally available to pay debt service. See “SECURITY FOR THE BONDS” and “APPENDIX A – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE.” See also “FINANCIAL OPERATIONS—Capital Cost Recovery Prepayment.”

- (13) Coverage does not include debt service on subordinate obligations, including the Water Enterprise's share of lease payments associated with the 2009 Golden Gate COPs and debt service on Commercial Paper Notes. In addition, as a result of the prepayment of annual capital cost recovery payments to the SFPUC being treated as Revenues from the Wholesale Customers in Fiscal Year 2012-13, "Wholesale Water Sales" increased in Fiscal Year 2012-13 to approximately \$531 million from \$131 million in Fiscal Year 2011-12. This also contributed towards "Debt Service Coverage" increasing to 2.31 times in Fiscal Year 2012-13 from 1.53 times in Fiscal Year 2011-12. In Fiscal Year 2013 14, the Water Enterprise realized "Debt Service Coverage" of 3.42 times as a result of the considerably higher "Funds Available for Debt Service," the decreased debt service resulting from the defeasance of the certain Water Revenue Bonds, while also factoring in the foregone "Wholesale Water Sales" of approximately \$28.2 million due to the discharge of the Wholesale Customers' annual capital cost recovery obligation. See "FINANCIAL OPERATIONS – Wholesale Water Sales Revenue – Capital Cost Recovery Prepayment" herein.
- (14) Calculated as the sum of Net Revenues and certain available fund balances of the SFPUC or Water Enterprise, divided by Annual Debt Service. The Indenture includes a rate covenant of 1.25 times coverage. See "SECURITY FOR THE BONDS – Rate Covenants – Debt Service Coverage."
- (15) Unaudited. Calculated as ratio between Net Revenues over debt service on all senior lien obligations; excludes "Other Available Funds."
- Source: SFPUC, Financial Services

PROJECTED OPERATING RESULTS

The following table presents projected operating results for the Water Enterprise. These projections are based on an analysis of historic trends, adjusted where appropriate for known or anticipated changes in operations. The projections are also based on the assumption that all retail water rate increases necessary to finance the WSIP and the Water Enterprise's non-WSIP capital improvement program will be approved and implemented.

THESE PROJECTIONS, ALL OR SOME OF WHICH MAY OR MAY NOT BE REALIZED, ARE BASED ON THE ISSUANCE OF ADDITIONAL SERIES OF BONDS FOR THE REMAINDER OF WSIP, AS WELL AS NON-WSIP. CAPITAL PROJECTS AS CURRENTLY PROPOSED. CHANGES IN THE CIRCUMSTANCES THAT FORM THE BASES FOR THE ASSUMPTIONS USED IN DEVELOPING THESE PROJECTIONS, AS WELL AS UNANTICIPATED EVENTS, MAY OCCUR SUBSEQUENT TO THE DATE OF THE OFFICIAL STATEMENT. THEREFORE, ACTUAL RESULTS MAY DIFFER MATERIALLY FROM THE PROJECTIONS SHOWN.

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TABLE 26
PROJECTED REVENUES, OPERATING & MAINTENANCE EXPENSES
AND DEBT SERVICE COVERAGE
FOR FISCAL YEAR ENDING JUNE 30
(IN THOUSANDS)*

| | Pre-Audit** | Five-Year Forecast | | | | |
|--|-------------|--------------------|-----------|-----------|-----------|-----------|
| | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
| REVENUE | | | | | | |
| Retail Revenues ⁽¹⁾ | \$186,814 | \$209,564 | \$230,520 | \$246,656 | \$273,789 | \$303,905 |
| Retail Water Sales Rate Adjustments ⁽²⁾ | 22,418 | 20,956 | 16,136 | 27,132 | 30,117 | 33,430 |
| Wholesale Revenues ⁽³⁾ | 159,611 | 204,276 | 218,443 | 230,427 | 248,662 | 266,502 |
| Wholesale Water Sales Rate Adjustments ⁽⁴⁾ | 44,669 | 14,163 | 11,984 | 18,235 | 17,840 | 30,553 |
| Other Miscellaneous Income ⁽⁵⁾ | 29,252 | 27,824 | 28,621 | 29,540 | 30,366 | 31,292 |
| Total Revenues † | \$442,764 | \$476,784 | \$505,705 | \$551,991 | \$600,774 | \$665,682 |
| OPERATING AND MAINTENANCE EXPENSE⁽⁶⁾ | \$238,721 | \$245,113 | \$241,632 | \$249,661 | \$254,581 | \$259,532 |
| NET OPERATING REVENUE | \$204,043 | \$231,671 | \$264,073 | \$302,329 | \$346,193 | \$406,151 |
| plus AVAILABLE FUND BALANCE | 142,722 | 132,700 | 117,568 | 113,820 | 101,524 | 83,572 |
| FUNDS AVAILABLE FOR DEBT SERVICE⁽⁷⁾ | \$346,765 | \$364,371 | \$381,641 | \$416,149 | \$447,716 | \$489,722 |
| DEBT SERVICE⁽⁸⁾ | \$219,195 | \$228,632 | \$232,268 | \$254,677 | \$295,303 | \$341,089 |
| DEBT SERVICE COVERAGE⁽⁹⁾ | | | | | | |
| Indenture Basis (minimum 1.25) ⁽¹⁰⁾ | 1.58x | 1.59x | 1.64x | 1.63x | 1.52x | 1.44x |
| Current Basis (minimum 1.00) ⁽¹¹⁾⁽¹²⁾ | 1.04x | 1.06x | 1.14x | 1.19x | 1.17x | 1.19x |

* Preliminary, subject to change.

** Represents estimated financial results for Fiscal Year 2015-16. Audited financial statements for Fiscal Year 2015-16 will be incorporated when available.

† Totals may not add due to independent rounding.

(1) Assumes projected average daily billed consumption of 58.9 mgd for Fiscal Years 2016-17 through 2020-21. Fiscal Year 2015-16 actuals were 58.9 mgd. See "THE WATER ENTERPRISE – Historic Water Sales and Top Customers."

(2) Includes average annual rate increases of 12.0%, 10.0%, 7.0% and 11% approved for Fiscal Years 2015-16 through 2018-19, and assumes a projected increase of 11% for Fiscal Years 2019-20 and Fiscal Years 2020-21. See "FINANCIAL OPERATIONS – Retail Water Sales Revenue."

(3) Assumes projected average daily billed consumption of 110.0 mgd for Fiscal Years 2016-17 through 2020-21. Fiscal Year 2015-16 actuals were 110.8 mgd. See "THE WATER ENTERPRISE – Historic Water Sales and Top Customers."

(4) Includes approved rate increase of 28.0% in Fiscal Year 2015-16, and assumes projected rate increases of 7% in Fiscal Year 2016-17, 5.0% in Fiscal Year 2017-18, 8.0% in Fiscal Year 2018-19, 7.0% in Fiscal Year 2019-20, and 11% in Fiscal Year 2020-21. See "FINANCIAL OPERATIONS – Wholesale Water Sales Revenue."

(5) Includes, among other amounts, projected interest income, property rentals, recoveries and service installation charges.

(6) Represents Operating and Maintenance Expense net of depreciation and other non-cash items per Indenture. See "SECURITY FOR THE BONDS" and "APPENDIX A – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE."

(7) Represents Net Revenues under the Indenture. See "SECURITY FOR THE BONDS."

(8) Debt Service on Outstanding Bonds, net of capitalized interest and anticipated Build America Bonds interest subsidy payments. Assumes future issuance of Additional Series of Bonds of approximately \$250 million in Fiscal Year 2016-17, \$658 million in Fiscal Year 2017-18, \$130 million in Fiscal Year 2018-19, \$377 million in Fiscal Year 2019-20, and \$410 million in Fiscal Year 2020-21. Does not include savings from issuance of 2016 Series AB Bonds and refunding of Refunded Bonds.

(9) Coverage does not include debt service on subordinate obligations, including the Water Enterprise's share of lease payments associated with the 2009 Golden Gate COPs and debt service on Commercial Paper Notes.

(10) Calculated as the sum of Net Revenues and certain available fund balances of the Water Enterprise, divided by Annual Debt Service. The Indenture includes a rate covenant of 1.25 times coverage. See "SECURITY FOR THE BONDS – Rate Covenants – Debt Service Coverage."

(11) The Water Enterprise budgeted and appropriated \$24.0 million, \$10.8 million, and \$1.6 million of available fund balances to be used as a source of funds in Fiscal Years 2015-16, 2016-17, and 2017-18, respectively. Such amounts offset Operating and Maintenance Expenses in sufficiency of Revenues calculations. See "– Management Discussion of Projections."

(12) Calculated as ratio between Net Revenues over debt service on all senior lien obligations; excludes "Other Available Funds."

Note: Amounts set forth in the table are projections. Actual results may differ materially from these projections. See "FORWARD LOOKING STATEMENTS" above.

Source: SFPUC, Financial Services.

In the preparation of the projections set forth in the table above, the SFPUC has made certain assumptions with respect to conditions that may occur in the future. While the SFPUC believes these assumptions are reasonable for the purpose of the projections, they are dependent on future events, and actual conditions are likely to differ, perhaps materially, from those assumed. To the extent actual future conditions differ from those assumed by the SFPUC or provided to the SFPUC by others, actual results will vary from those projected. This projected information has not been compiled, reviewed or examined by the SFPUC's independent accountants.

The assumptions used in the table above are as follows:

Projected Revenue Assumptions. For purposes of projecting revenues, water sales volumes declined in Fiscal Year 2015-16 as compared to Fiscal Year 2014-15 and are projected to be flat at these lower levels during the forecast period. The projected revenues are based on projected water sales and the schedules of rates to be effective in each year. In May 2014, the SFPUC adopted schedules of water rates for Retail Customers to be effective in each of the Fiscal Years 2014-15 through 2017-18. The adopted schedules provide for 12.0% rate increases in Fiscal Year 2015-16, an 11.0% rate increase in Fiscal Year 2016-17 and a 7.0% rate increase in Fiscal Year 2017-18. See "FINANCIAL OPERATIONS – Retail Water Sales Revenue." The projections assume a further retail rate increase of 11.0% annually for Fiscal Year 2018-19 through Fiscal Year 2020-21.

Revenues from sales of water to the Wholesale Customers are calculated in accordance with the WSA. The adopted rate schedule included a 28.0% rate increase in Fiscal Year 2015-16 and a 9.3% rate increase in Fiscal Year 2016-17. Projections assume further annual wholesale rate increases of 5%, 8%, 7% and 11% for Fiscal Year 2017-18, Fiscal Year 2018-19, Fiscal Year 2019-20 and Fiscal Year 2020-21, respectively.

Water volume sales to the Wholesale Customers and Retail Customers are projected to be flat from Fiscal Years 2015-16 through 2020-21. These levels are 12.8% and 4.5% lower, respectively, than those in Fiscal Year 2014-15 and used to formulate the budget for Fiscal Years 2016-17 and 2017-18.

Interest earnings assume annual yields of 1.00% in Fiscal Year 2015-16, 1.25% in Fiscal Year 2016-17, 1.5% in Fiscal Year 2017-18 and 2.0% thereafter.

Projected Operating Expense Assumptions. The SFPUC has adopted an operating budget through Fiscal Year 2017-18. For the remaining years in the projection, Operating and Maintenance Expenses are projected to grow at 3% per year for Fiscal Year 2018-19, Fiscal Year 2019-20 and Fiscal Year 2020-21.

Projected Debt Service Assumptions. Projected debt service reflects projected Annual Debt Service on Outstanding Bonds and anticipated Additional Series of Bonds (net of capitalized interest and debt service reserve fund earnings). Assumptions include no reserve account and up to three years of capitalized interest for all future issuances of Additional Series of Bonds.

Projected debt service reflects an offset for Refundable Credits to reduce the amount of interest used in calculating Annual Debt Service. See "SECURITY FOR THE BONDS" and "APPENDIX A – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE".

Issuances of Additional Series of Bonds are at an assumed 5% borrowing rate. Actual issuance dates, borrowing rates and capitalized interest periods for Additional Series of Bonds may vary.

The SFPUC may issue additional refunding bonds from time to time in response to market conditions in order to achieve debt service savings. See "FINANCING OF CAPITAL IMPROVEMENTS."

Management Discussion of Projections

The SFPUC's water customers have responded to the current California drought with conservation efforts that have exceeded the call for 10% voluntary demand reductions. See "THE WATER ENTERPRISE – Current California Drought." Fiscal Year 2015-16 combined Retail and Wholesale Customer water sale revenues were lower than budgeted by \$59.8 million (\$16.6 million for Retail Customers and \$43.2 million for Wholesale

Customers). The Wholesale Customer revenue variance will be recaptured in Fiscal Year 2016-17 through the Wholesale Revenue Requirement recovery mechanism set forth in the 2009 Water Supply Agreement. See “FINANCIAL OPERATIONS – Wholesale Water Sales Revenues.” In addition, retail water rates increased by 10% on July 1, 2016 for Fiscal Year 2016-17 as part of the four-year annual rate increase package that has already been approved through Fiscal Year 2017-18. See “FINANCIAL OPERATIONS – Retail Water Rate Adjustments.”

Should the drought persist, resulting in lower than forecast demand and sales, the SFPUC will manage revenues and expenditures so as to comply with Indenture based rate covenants, as well as meet its “Fund Balance Reserve Policy” targets. See “SECURITY FOR THE BONDS – Rate Covenants” and “FINANCIAL OPERATIONS – Debt Management and Fund Balance Reserve Policies.”

RISK FACTORS

This section provides a general overview of certain risk factors which should be considered, in addition to the other matters set forth in this Official Statement, in evaluating an investment in the 2016 Series C Bonds. This section is provided for convenience and is not meant to be a comprehensive or definitive discussion of all of the risks associated with an investment in the 2016 Series C Bonds. The order in which this information is presented does not necessarily reflect the relative importance of various risks or the probability of their occurrence.

Potential investors in the 2016 Series C Bonds are advised to consider the following factors, among others, and to review this entire Official Statement to obtain information essential to the making of an informed investment decision. Any one or more of the risk factors discussed below, among others, could lead to a decrease in the market price and/or in the marketability of the 2016 Series C Bonds or adversely affect the ability of the SFPUC to make timely payments of principal of or interest on the 2016 Series C Bonds. There can be no assurance that other risk factors not discussed herein will not become material and the SFPUC has not undertaken to update investors about the emergence of the risk factors in the future.

General

The ability of the SFPUC to comply with its covenants under the Indenture and to generate Revenues sufficient to pay principal of and interest on the 2016 Series C Bonds may be adversely affected by actions and events outside of the control of the SFPUC and may be adversely affected by actions taken (or not taken) by voters, property owners, taxpayers or persons obligated to pay fees and charges. Among other matters, drought, general and local economic conditions and changes in law and government regulations could adversely affect the amount of Revenues realized by the SFPUC or significantly raise the cost of operating the Water Enterprise.

In addition, the realization of future Revenues is subject to, among other things, the capabilities of management of the SFPUC, the ability of the SFPUC to provide service to its Retail Customers and the Wholesale Customers, the ability of the SFPUC to establish, maintain and collect charges from its Retail Customers and the Wholesale Customers and the ability of the SFPUC to establish, maintain and collect rates and charges sufficient to pay for Operation and Maintenance Costs of the Enterprise, the 2016 Series C Bonds and other obligations payable from Revenues. See “FINANCIAL OPERATIONS” and “OBLIGATIONS PAYABLE FROM REVENUES.”

Limited Obligation

If the SFPUC defaults on its obligations to make debt service payments on the Bonds, the Trustee has the right under the Indenture to accelerate the total unpaid principal amount of the Bonds. However, in the event of a default and such acceleration, there can be no assurance that the SFPUC, and correspondingly the Trustee, will have sufficient moneys available for payment of the 2016 Series C Bonds.

The SFPUC is not obligated to pay the principal of, or premium, if any, or interest on the 2016 Series C Bonds except from Revenues of the Water Enterprise. The SFPUC has no taxing power. The General Fund of the City is not liable for the payment of the principal of, or premium, if any, or interest on the 2016 Series C Bonds, and neither the credit nor the taxing power of the City is pledged to the payment of the principal of, or premium, if any, or interest on the 2016 Series C Bonds. The 2016 Series C Bonds are not

secured by a legal or equitable pledge of, or charge, lien or encumbrance upon, any property of the City or of the SFPUC or any of its income or receipts, except Revenues.

No Bond Reserve Account

No Bond Reserve Account has been established for the 2016 Series C Bonds. The Bond Reserve Accounts established with respect to other Series of Bonds do not secure the 2016 Series C Bonds. Therefore, the only security pledged to the holders of the 2016 Series C Bonds are the Revenues pledged under the Indenture and the covenant of the SFPUC to impose rates and charges necessary to pay debt service on the 2016 Series C Bonds.

Risks Related to Water Enterprise Facilities and Operations

The operation of the Water Enterprise, and the physical condition of the Water Enterprise facilities, are subject to a number of risk factors that could adversely affect the reliability of the SFPUC's water supply, or increase the operating expenses of the Water Enterprise. Prolonged damage to the Water Enterprise could interrupt the ability of the SFPUC to realize Revenues sufficient to pay principal of and interest on the 2016 Series C Bonds, or require the SFPUC to increase expenditures for repairs significantly enough to adversely impact the SFPUC's ability to pay the principal of or interest on the 2016 Series C Bonds. These factors could include, among others, the following.

Failure of Water Facilities. Many of the Water Enterprise's facilities have been in service for an extended period and may have reached the end of their useful lives. See "WATER FACILITIES – Physical Condition of Facilities", "CAPITAL IMPROVEMENT PROGRAM" and "APPENDIX C – WATER SYSTEM IMPROVEMENT PROGRAM."

Seismic Hazards. The Water Enterprise's distribution, treatment and transmission systems and some of the facilities of the Hetch Hetchy Project are located in seismically active regions of the State, and cross three major known active fault zones (the San Andreas Fault, the Hayward fault and the Calaveras Fault). See "WATER FACILITIES – Seismic Hazards."

Other Natural and Man-Made Disasters. Other natural disasters, including without limitation, wildfires, flooding, landslides, or man-made disasters or accidents, including without limitation natural gas pipeline failures or explosions, could interrupt operation of the Hetch Hetchy Project or the Regional Water System, result in liability claims against the Water Enterprise, or otherwise adversely impact the Water Enterprise's ability to provide services or collect Revenues. See "WATER FACILITIES – Wildfire Considerations".

Casualty Losses. The SFPUC's risk management program includes both self-insured and insured coverages; however, the program does not provide coverage for every conceivable risk of loss. Damage attributable to seismic events and environmental pollution are excluded. In situations where the SFPUC has not purchased commercial coverage, the Water Enterprise has a 'self-retention' program that it administers and retains budgeted resources internally to provide coverage for loss liabilities. See also "FINANCIAL OPERATIONS – Risk Management and Insurance." The SFPUC is not required to either insure against or self-insure against every potential risk of loss, and there is a risk that damage or destruction of property and equipment comprising the Water Enterprise could occur for which no insurance or self-insurance funds will be available. There can be no assurance that insurance providers will pay claims under any policies promptly, or at all, should a claim be made under such policies in connection with property loss or damage. It is possible that an insurance provider will refuse to pay a claim, especially if it is substantial, and force the SFPUC to sue to collect on or settle the insurance claim. Further, there can be no assurances that any insurance proceeds will be sufficient to rebuild or replace any damaged property. The SFPUC is authorized under the WSA to adopt emergency rate increases which helps to mitigate this risk.

Drought. The State is located in a semi-arid region and is subject to periodic drought. An extended drought could adversely affect the ability of the SFPUC to deliver water sufficient to satisfy all of the demands of its customers. If the SFPUC were to deliver less water to its customers, the SFPUC would need to increase the rates payable by customers or Revenues would decline. The SFPUC may also seek to acquire, and would be obligated to pay the cost of, additional water to deliver to its customers. The SFPUC has adopted a drought planning sequence

and associated operating procedures respecting the delivery of water during a drought. The SFPUC is authorized under the WSA to adopt drought surcharges if needed. See “THE WATER ENTERPRISE – Water Supply Reliability and Drought Planning.” For a discussion of the current California drought, see “THE WATER ENTERPRISE – Current California Drought”.

Safety and Security. The occurrence of military conflicts and terrorist activities could adversely impact the operations of the Water System or the finances of the SFPUC. The SFPUC continually plans and prepares for emergency situations. See “WATER FACILITIES – Safety and Security.” However, there can be no assurance that any existing or additional safety and security measures will prove adequate in the event that military conflicts or terrorist activities are directed against the assets of the Water Enterprise. The costs of security measures could be greater than presently anticipated.

Cybersecurity. The SFPUC has adopted information security policies and maintains an active information security program, which has been reviewed by independent third-party consultants engaged by the SFPUC. The SFPUC has appointed a Chief Information Security Officer who is responsible for annual updates to the SFPUC’s information security policies and is charged with identifying and monitoring threats which are typically addressed by the SFPUC’s information technology services team, and educating staff concerning vulnerabilities. The SFPUC’s information security policies include policies intended to support network, computer and mobile device security (both digital and physical), e-mail security, anti-virus requirements, operating system and application patching, encryption requirements and secure computing asset disposal. The SFPUC’s information security policies further include a guideline that, at least every two years, the SFPUC will engage external consultants to audit and assess the internal controls of the SFPUC’s information security program.

The SFPUC does not purchase liability insurance covering cyber-losses. The SFPUC does require its vendors to purchase Technology Errors & Omissions coverage.

Statutory and Regulatory Compliance. The operation of the Water Enterprise is subject to a variety of federal and State statutory and regulatory requirements concerning matters such as water quality, dam safety, instream fishery flows and endangered species. SFPUC’s failure to comply with applicable laws and regulations could result in significant fines and penalties. In addition to claims by private parties, changes in the scope and standards for public agency water systems such as the Water Enterprise may also lead to administrative orders issued by federal or State regulators. Future compliance with such orders could also impose substantial additional operating expenses on the Water Enterprise. See “REGULATORY MATTERS.”

Endangered Species. Various aquatic species (including native fishes) present in the Tuolumne River and Bay Area streams (e.g., Alameda, San Mateo and Pilarcitos Creeks) are either listed or candidates for listing under the State or federal endangered species acts. New listings and future enforcement actions under the acts, or conditions placed in permits to undertake construction for certain projects, could potentially directly affect water flow and/or water supplies available to the Water Enterprise. See “REGULATORY MATTERS – Endangered Species”.

Labor Actions. The Charter prohibits SFPUC and other City employees from engaging in certain labor actions (e.g. strikes). Nonetheless, a labor action could limit the SFPUC’s ability to operate the Water Facilities and adversely impact Revenues.

Proposals to Dismantle Hetch Hetchy Reservoir. Various environmental advocates have from time to time proposed the dismantling of O’Shaughnessy Dam with the aim of draining Hetch Hetchy reservoir and restoring the Hetch Hetchy Valley, most recently through a lawsuit filed in April 2015 in Tuolumne County Superior Court. Any such litigation, if successful, could impose substantial additional operating and capital expenses on the Water Enterprise. See “FUTURE DEMAND AND SUPPLY – Proposals to Restore Hetch Hetchy Valley.”

Construction Related Risks

Construction projects for the Water Enterprise are subject to ordinary construction risks and delays applicable to projects of their kind, including but not limited to (i) inclement weather affecting contractor performance and timeliness of completion, which could affect the costs and availability of, or delivery schedule for, equipment, components, materials, labor or subcontractors; (ii) contractor claims or nonperformance; (iii) failure of contractors to execute within contract price; (iv) work stoppages or slowdowns; (v) failure of contractors to meet schedule terms; (vi) errors or omissions in contract documents requiring change orders; (vii) the occurrence of a major seismic event; or (viii) unanticipated project site conditions, including the discovery of hazardous materials on the site or other issues regarding compliance with applicable environmental standards, and other natural hazards or seismic events encountered during construction. In addition, Water Enterprise construction projects may require scheduling system shutdowns to avoid impacting water deliveries and many shutdown windows are inflexible. Increased construction costs or delays could impact the Water Enterprise's financial condition in general and the implementation of its capital programs in particular.

Limitations on Rate-Setting

The generation of Revenues sufficient to satisfy the requirements of the Indenture and to pay the principal of and interest on the 2016 Series C Bonds will require the SFPUC to raise the water rates payable by its customers. The increase or maintenance of retail water rates is subject to various substantive and procedural requirements and limitations. See "FINANCIAL OPERATIONS – Retail Water Sales Revenue" and "CONSTITUTIONAL, STATUTORY AND CHARTER LIMITATIONS."

Water rates payable by the Wholesale Customers are established under the WSA, which will help reduce the risk that Revenues will be insufficient for the purposes described in this section. Rates established pursuant to the WSA are subject to the substantive requirements and the procedures, including procedures for resolving disputes, of applicable law and as set forth in the WSA. The WSA also provides for rate adjustments for drought and non-drought emergencies if needed. See "FINANCIAL OPERATIONS – Wholesale Water Sales Revenue" and "APPENDIX B – SUMMARY OF CERTAIN PROVISIONS OF THE WATER SUPPLY AGREEMENT."

Initiative, Referendum, Charter Amendments and Future Legislation

Under the State Constitution, the voters of the State have the ability to initiate legislation and require a public vote on legislation passed by the State Legislature through the powers of initiative and referendum, respectively. The SFPUC is unable to predict whether any such initiatives might be submitted to or approved by the voters, the nature of such initiatives, or their potential impact on the SFPUC or the Water Enterprise. See "CONSTITUTIONAL, STATUTORY AND CHARTER LIMITATIONS."

Under the Charter, the voters of the City can restrict or revise the powers of the SFPUC through the approval of a Charter amendment or other initiative. For example, in June 1998, the electorate of the City approved Proposition H which, subject to certain exceptions, including a limited exception to raise rates to pay debt service on voter-approved debt, and froze the SFPUC's water and sewer rates through July 1, 2006. The SFPUC can give no assurance that the electorate will not seek in the future to freeze or limit rate increases. See "CONSTITUTIONAL, STATUTORY AND CHARTER LIMITATIONS – Charter Limitations."

In addition, the SFPUC is subject to various laws, rules and regulations adopted by the local, State and federal governments and their agencies. The SFPUC is unable to predict the adoption or amendment of any such laws, rules or regulations, or their effect on the operations or financial condition of the SFPUC.

Increased Operating and Maintenance Expenses

There can be no assurance that the Operating and Maintenance expenses of the SFPUC, such as wages and salaries, pension and other benefits, and purchased power costs, will not increase, perhaps substantially. See "FINANCIAL OPERATIONS – Operating and Maintenance Expenses."

Commercial Paper Credit Facilities

The bank credit facilities supporting the Water Commercial Paper Notes are subject to early termination upon the occurrence of certain events, including the failure of the Water Enterprise to make certain payments, the occurrence of certain bankruptcy or insolvency-related events or the reduction below specified levels or the withdrawal or suspension of ratings on certain obligations of the Water Enterprise payable from Net Revenues. Upon the occurrence of such termination, one or more of the following would likely occur: (a) the SFPUC would be prohibited from issuing additional notes supported by such credit facilities; (b) any principal of or interest on Water Commercial Paper Notes paid from a draw on a credit support facility would become a reimbursement obligation of the Water Enterprise to the bank providing such facility, and such reimbursement obligation could bear interest at rates higher than the rates borne by the Water Commercial Paper Notes; and (c) amortization of such reimbursement obligation would be required. The Water Commercial Paper Notes and any reimbursement obligations are payable from Net Revenues on a basis subordinate to the Bonds. See “OBLIGATIONS PAYABLE FROM REVENUES – Subordinate Debt and Commercial Paper”.

Potential Impacts of Climatic Change

Climate change could result in adverse impacts on the Regional Water System and associated watersheds. See “THE WATER ENTERPRISE – Potential Impact of Climatic Change.”

Economic, Political, Social and Environmental Conditions

Changes in economic political, social, or environmental conditions on a local, state, federal, and/or international level may adversely affect investment risk generally. Such conditional changes may include (but are not limited to) fluctuations in business production, consumer prices, or financial markets, unemployment rates, availability of skilled labor, technological advancements, shortages or surpluses in natural resources or energy supplies, changes in law, social unrest, fluctuations in the crime rate, political conflict, acts of war or terrorism, environmental damage, and natural disasters.

Bankruptcy or Financial Failure of Wholesale Customers

The financial failure or bankruptcy of a Wholesale Customer could adversely affect the ability of such Wholesale Customer to honor its obligation under the WSA (including its obligation to pay the purchase price of water delivered by the SFPUC to such Wholesale Customer).

The SFPUC is not aware of the existing or impending financial failure or bankruptcy of any Wholesale Customer, but there can be no assurance that a financial failure or bankruptcy of a Wholesale Customer will not occur. If a Wholesale Customer were to become bankrupt, the SFPUC may be unable to enforce the terms of the WSA against such Wholesale Customer and the SFPUC’s right to receive payment for water delivered prior to bankruptcy but not invoiced or invoiced but not paid may be limited to the rights of an unsecured creditor of the bankrupt entity. Further, there can be no assurance that the SFPUC will be physically able or legally permitted to cease or interrupt deliveries of water to a non-paying Wholesale Customer.

Although no assurance can be provided, the SFPUC believes that any reduction in Revenues as a result of the inability to collect payment for water delivered to a bankrupt Wholesale Customer or as a result of any temporary interruption or reduction of water deliveries will not be material. The SFPUC further believes that, following such bankruptcy, the amount of water delivered for the service area currently served by such Wholesale Customer will not be reduced and that the SFPUC will be able to obtain payment for such water on terms comparable to the terms of the WSA.

Bankruptcy of the City

The SFPUC, being an enterprise department of the City, likely cannot itself file for bankruptcy. While an involuntary bankruptcy petition cannot be filed against the City, the City is authorized to file for bankruptcy under

certain circumstances. Should the City file for bankruptcy, there could be adverse effects on the holders of the 2016 Series C Bonds.

To the extent that the Revenues are “special revenues” under the United States Bankruptcy Code (the “**Bankruptcy Code**”), then Revenues collected after the date of the bankruptcy filing should be subject to the lien of the Indenture. If any or all of the Revenues are determined not to be “special revenues,” then any such amounts collected after the commencement of the bankruptcy case will likely not be subject to the lien of the Indenture. The holders of the 2016 Series C Bonds may not be able to assert a claim against any property of the City other than the Revenues, and if any or all of the Revenues are no longer subject to the lien of the Indenture, then there may be limited, if any, funds from which the holders of the 2016 Series C Bonds are entitled to be paid.

The Bankruptcy Code provides that “special revenues” can be applied to necessary operating expenses of the project or system, before they are applied to other obligations. This rule applies regardless of the provisions of the transaction documents. It is not clear precisely which expenses would constitute necessary operating expenses and any definition in the transaction documents may not be applicable.

If the City is in bankruptcy, the parties (including the Trustee and the holders of the 2016 Series C Bonds) may be prohibited from taking any action to collect any amount from the City or to enforce any obligation of the City, unless the permission of the bankruptcy court is obtained. These restrictions may also prevent the Trustee from making payments to the holders of the 2016 Series C Bonds from funds in the Trustee’s possession. The rate covenants (see “SECURITY FOR THE BONDS – Rate Covenants”) may not be enforceable in bankruptcy by the Trustee or the holders of the 2016 Series C Bonds.

Revenues are deposited with and held by the Treasurer and may be commingled with other City funds. See “SECURITY FOR THE BONDS – Revenue Fund.” If the City goes into bankruptcy, the City may not be required to turn over to the Trustee any Revenues that are in its possession at the time of the bankruptcy filing. In addition, if the City has possession of Revenues (whether collected before or after commencement of the bankruptcy) and if the City does not voluntarily turn over such Revenues to the Trustee, it is not entirely clear what procedures the Trustee and the holders of the 2016 Series C Bonds would have to follow to attempt to obtain possession of such Revenues, how much time it would take for such procedures to be completed, or whether such procedures would ultimately be successful.

The City may be able to borrow additional money that is secured by a lien on any of its property (including the Revenues), which lien could have priority over the lien of the Indenture, or to cause some of the Revenues to be released to it, free and clear of lien of the Indenture, in each case as long as the bankruptcy court determines that the rights of the Trustee and the holders of the 2016 Series C Bonds will be adequately protected.

If the City is in bankruptcy it may be able, without the consent and over the objection of the Trustee and the holders of the 2016 Series C Bonds, to alter the priority, interest rate, principal amount, payment terms, collateral, maturity dates, payment sources, covenants (including tax-related covenants), and other terms or provisions of the Indenture and the 2016 Series C Bonds, as long as the bankruptcy court determines that the alterations are fair and equitable.

There may be delays in payments on the 2016 Series C Bonds while the court considers any of these issues. There may be other possible effects of a bankruptcy of the City that could result in delays or reductions in payments on the 2016 Series C Bonds, or result in losses to the holders of the 2016 Series C Bonds. Regardless of any specific adverse determinations in a City bankruptcy proceeding, the fact of a City bankruptcy proceeding could have an adverse effect on the liquidity and value of the 2016 Series C Bonds.

The City may invest the Revenues in the City’s Pooled Investment Fund. See “FINANCIAL OPERATIONS – Investment of SFPUC Funds.” Should those investments suffer any losses, Revenues may be lower than expected, and there may be delays or reductions in payments on the 2016 Series C Bonds.

Limitations on Remedies

The remedies available to the Owners of the 2016 Series C Bonds upon the occurrence of an event of default under the Indenture in many respects depend upon judicial actions which are themselves often subject to discretion and delay and could prove both expensive and time consuming to obtain. In addition to the limitations on remedies contained in the Indenture, the rights and obligations under the 2016 Series C Bonds and the Indenture may be subject to bankruptcy, insolvency, reorganization, arrangement, fraudulent conveyance, moratorium and other laws relating to or affecting creditors' rights, to the application of equitable principles, to the exercise of judicial discretion in appropriate cases and to limitations on legal remedies against charter cities and counties in the State.

The opinions to be delivered by Co-Bond Counsel, concurrently with the issuance of the 2016 Series C Bonds, that the 2016 Series C Bonds constitute valid and binding limited obligations of the SFPUC and the Indenture constitutes a valid and binding obligation of the SFPUC will also be subject to such limitations and the various other legal opinions to be delivered concurrently with the issuance of the 2016 Series C Bonds will be similarly qualified. See "APPENDIX E – PROPOSED FORM OF OPINION OF CO-BOND COUNSEL."

If the SFPUC fails to comply with its covenants under the Indenture or to pay principal of or interest on the 2016 Series C Bonds, there can be no assurance that the available legal remedies will be adequate to protect the interests of the holders of the 2016 Series C Bonds.

Failure to Maintain Credit Ratings

Certain rating agencies have assigned ratings to the 2016 Series C Bonds. The ratings issued reflect only the views of such rating agencies. Any explanation of the significance of these ratings should be obtained from the respective rating agencies. See "RATINGS." There is no assurance current ratings will continue for any given period or that such ratings will not be revised downward or withdrawn entirely by the rating agencies if, in the respective judgment of such rating agencies, circumstances so warrant. Any such downward revision or withdrawal of such ratings could be expected to have an adverse effect on the market price or the marketing of the 2016 Series C Bonds. The SFPUC undertakes no obligation to maintain its current credit ratings on the 2016 Series C Bonds or to oppose any such downward revision, suspension or withdrawal.

Secondary Market

There can be no guarantee that there will be a secondary market for the 2016 Series C Bonds or, if a secondary market exists, that the 2016 Series C Bonds can be sold for any particular price. Occasionally, because of general market conditions or because of adverse history or economic prospects connected with a particular issue, secondary marketing practices in connection with a particular issue are suspended or terminated. Additionally, prices of issues for which a market is being made will depend upon then prevailing circumstances. Such prices could be substantially different from the original purchase price.

Uncertainties of Projections, Forecasts and Assumptions

Certain information contained in this Official Statement is based upon assumptions and projections. Projections and assumptions are inherently subject to significant uncertainties. Inevitably, some assumptions will not be realized and unanticipated events and circumstances may occur and actual results are likely to differ, perhaps materially, from those projected. Accordingly, such projections are not necessarily indicative of future performance, and the SFPUC assumes no responsibility for the accuracy of such projections. See "FORWARD-LOOKING STATEMENTS" on the inside front cover of this Official Statement.

Other Risks

The discussion in this section, "RISK FACTORS", is not meant to be a comprehensive or definitive list of the risks associated with an investment in the 2016 Series C Bonds. There may be other risks inherent in ownership

of the 2016 Series C Bonds in addition to those described in this section. Investors are advised to read the entire Official Statement in order to obtain information necessary to make an investment in the 2016 Series C Bonds.

REGULATORY MATTERS

General

Public water supply systems in the State, such as the Regional Water System and In-City Distribution System operated by the Water Enterprise, are primarily regulated by the SWRCB Division of Drinking Water (“DDW”), formerly under the California Department of Public Health (“CDPH”) and, in some limited instances, by the EPA and California Regional Water Quality Control Boards (“RWQCBs”).

Drinking water delivered to customers must comply with statutory and regulatory water quality standards designed to protect public health and safety that are now administered by DDW. The CDPH reissued a drinking water supply permit in 2004 prescribing conditions and requirements for the Water Enterprise to operate the Regional Water System. The CDPH also issued drinking water supply permits to the In-City Distribution System, the Wholesale Customer public water supply systems, and several small water systems owned and operated by the Water Enterprise. In accordance with the drinking water standards and permit requirements, the Water Enterprise operates and maintains water storage, treatment and conveyance facilities, implements watershed management and protection activities, performs inspections, monitors drinking water quality, conducts applied research, and submits monthly and annual compliance reports. The Water Enterprise is currently operating in compliance with all State and federal drinking water regulations and permit requirements. The Regional Water System and the City of San Francisco drinking water supply permits will be updated around 2020 to reflect new facilities and operations.

In addition, public water system discharges to State and federal waters are regulated under general National Pollutant Discharge Elimination System (“NPDES”) permits. The SWRCB, San Francisco Bay and Central Valley RWQCBs issued these NPDES permits to the SFPUC which contain numerical effluent limitations, monitoring, reporting, and notification requirements for water discharges from the facilities and pipelines of the Regional Water System. The SFPUC is generally operating and maintaining the water treatment and transmission facilities in compliance with the NPDES permit requirements.

A number of water resource management and regulatory initiatives may affect the availability of water to the Regional Water System in the future. Also, alternate water supplies used by Wholesale Customers of the Water Enterprise may be reduced, increasing the customers’ reliance on the Regional Water System. In addition to those raised below, these initiatives include the Sacramento-San Joaquin Delta Reform Act of 2009, the federal or California Endangered Species Acts, the SWRCB Bay Delta Proceedings, the Federal Energy Regulatory Commission (“FERC”) proceeding to relicense the Districts’ New Don Pedro Dam and Reservoir and others. The effects of any of these activities, or of these activities cumulatively, are unknown.

Drinking Water Requirements

Division of Drinking Water. The Water Enterprise currently operates its systems in compliance with public water supply permits issued by the CDPH under the California Health and Safety Code. The Water Enterprise has received compliance orders from the CDPH and DDW for noncompliance with some standards and such orders have been or are being addressed.

Surface Water Treatment. The EPA Surface Water Treatment Rule (“SWTR”) requires filtration of all surface water supplies unless the water supply can meet very stringent requirements. As discussed under “WATER FACILITIES – Water Treatment,” the high quality of water provided from Hetch Hetchy Reservoir has been sufficient to meet SWTR drinking water requirements without installation and operation of filtration facilities. In 1998, the CDPH adopted its own version of the SWTR and determined that the Hetch Hetchy Reservoir complies with all state drinking water criteria, without installation and operation of filtration facilities. New filtration facilities could be required in the future if SWTR criteria are not consistently met.

Local water from the Alameda and Peninsula Watersheds and upcountry non-Hetch Hetchy Reservoir sources requires filtration to meet drinking water quality requirements. The filtered and treated water from local sources may be blended with disinfected Hetch Hetchy water, and most customers receive water from a blended source. System water quality, including both raw water and treated water, is continuously monitored and tested to assure that water delivered to customers meets or exceeds federal and State drinking water/public health requirements.

Long Term 2 Enhanced Surface Water Treatment Rule. The EPA Long Term 2 Enhanced Surface Water Treatment Rule specifies *Cryptosporidium* reduction requirements for filtered and unfiltered water systems to improve public health protection through the control of this microbial contaminant. Published in January 2006, the EPA Long Term 2 Enhanced Surface Water Treatment Rule (“**LT2ESWTR**”) requires large water systems such as the Water Enterprise’s Regional Water System to provide *Cryptosporidium* inactivation treatment by April 1, 2012. The CDPH incorporated its version of LT2ESWTR by reference to the EPA’s version of LT2ESWTR on April 15, 2013, effective date July 1, 2013.

In response to this regulation and consistent with the overall goals of the WSIP, the Water Enterprise planned, designed and constructed a new advanced disinfection facility that uses ultraviolet light technology to inactivate target organisms in the Hetch Hetchy water supply. This project began operation more than 9 months prior to the compliance date. See “WATER FACILITIES – Water Treatment.”

LT2ESWTR sets treatment levels based on the source water quality, with poorer source water quality requiring more treatment. Initial monitoring conducted several years ago placed SFPUC’s sources in the best water quality ‘bin’. The mandated second round of source water quality monitoring started in January 2015. No changes in source water quality bins are anticipated.

Stage 2 Disinfectants and Disinfection Byproduct Rule. The EPA promulgated the Stage 2 Disinfectants and Disinfection Byproducts Rule (“**Stage 2 DBPR**”) to reduce public health risk associated with disinfection byproducts (“**DBPs**”). Published in January 2006, the Stage 2 DBPR requires water utilities including the Regional Water System and In-City Distribution System to conduct a special study known as Initial Distribution System Evaluation (“**IDSE**”) to identify potentially high DBP locations in their distribution systems. The Stage 2 DBPR also specifies future DBP monitoring requirements based on the IDSE results, and revises the compliance determination method. The monitoring compliance date is April 1, 2012. The Water Enterprise completed the IDSE studies and submitted the reports to CDPH and has demonstrated compliance with the Stage 2 DBPR by the continued use of the chloramination treatment process. The CDPH adopted its version of the Stage 2 DBPR which became effective June 21, 2012.

Groundwater Rule. The EPA promulgated the Groundwater Rule to address waterborne disease and microbial contamination related to groundwater. Published in November 2006, the Groundwater Rule requires that a system putting new groundwater sources in service after November 30, 2009 should conduct assessment source water monitoring if directed by the State. The Groundwater Rule also requires a groundwater system to conduct triggered source water monitoring if it does not provide 4-log virus treatment and the results of bacteriological monitoring are fecal-coliform positive. This rule may affect the treatment and operation of the groundwater projects in the Regional Water System and the In-City Distribution System, depending on the operational management and water quality of these alternate water supplies. New disinfection facilities may be required if blending of these alternate water supplies with the existing treated waters is recommended. New treatment facilities may also be required to reduce certain mineral content of the groundwater to comply with the corresponding drinking water standards.

Total Coliform Rule. The EPA has revised the Total Coliform Rule, and may consider the adoption of a new Distribution System Rule in the future to more closely regulate distribution system operations and related facilities. The Revised Total Coliform Rule went into effect in April 2016, with minimal operational impact to the SFPUC. It is too early at this time to identify what new treatment facilities or operational activities will be required to meet any future federal drinking water standards.

DDW has not yet adopted its own version of the Revised Total Coliform Rule and has stated that all public water systems, including the Water Enterprise’s Regional Water System and SFPUC-owned small water systems,

must comply with both the federal Revised Total Coliform Rule and the State Total Coliform Rule until the State adopts its own version of the Revised Total Coliform Rule.

Lead and Copper Rule. The EPA is developing long-term revisions to the existing Lead and Copper Rule (“**LCR**”), which specifies monitoring, reporting, public education, notification, and treatment requirements for public water systems. DDW has similar regulatory requirements codified in Chapter 17.5 of Title 22, California Code of Regulations. In February 2016, in response to the recent water quality events in Flint, Michigan, and other parts of the country, EPA published new guidelines for the states and public water systems to assist in complying with the existing LCR monitoring corrosion treatment optimization, and notification requirements.

The SFPUC has proactively addressed lead concerns for several decades, well before the EPA published the LCR in June 1991. In the 1980’s, the SFPUC removed all known lead service lines from the In-City Distribution System. In the late 1990’s, the SFPUC started distributing non-lead faucets to daycare centers and schools. The distribution program for non-lead faucets was then expanded to the general public. In the 2000’s, the SFPUC initiated a program to replace service meters with non-lead versions in the In-City Distribution System and eliminated large, leaded, compound meters. As of 2016, approximately 97% of the large, leaded, compound meters have been replaced. In 2006, the SFPUC submitted a report to the CDPH documenting that its existing corrosion control treatment using pH adjustment was optimized. The SFPUC also piloted use of other non-lead plumbing components and sponsored the lead-free law, Assembly Bill 1953 (“**AB 1953**”), that was enacted by the California Legislature in 2006. AB 1953, which requires new lead-free plumbing components containing no more than 0.25% lead, has been in effect since January 1, 2010. In January 2014, EPA began enforcing the new lead-free mandate, the Reduction of Lead in Drinking Water Act, enacted by Congress on January 4, 2011. The EPA’s definition of “lead-free” is the same as AB 1953’s definition of “lead-free.” The SFPUC’s latest LCR monitoring results in 2015 demonstrate continued compliance with the existing LCR.

Fluoridation. Assembly Bill 733, signed into law in October 1995, authorizes the DDW to require large water systems to fluoridate their public water supply. It also directs the DDW to seek funding for fluoridation.

The CDPH adopted its fluoridation regulations in April 1998. These regulations, as codified in Section 64433 through 64434 of Title 22, California Code of Regulations, apply to large water systems with at least 10,000 service connections. The regulations require that:

- Large systems with existing fluoridation practices continue fluoridating under more stringent regulatory requirements (i.e., concentration, control, monitoring, reporting and notification requirements)
- Large non-fluoridated systems start fluoridating when funding is made available.

The Water Enterprise has been fluoridating its water supply since the early 1950s, and meets all the requirements of these regulations. The optimal levels and associated control ranges specified in the fluoridation regulations were historically based on the annual average of maximum daily air temperatures recorded during the previous five years. However, in April 2015, the United States Department of Health and Human Services Agency recommended that water systems practicing fluoridation adjust their fluoride content to 0.7 mg/L, as opposed to the previous temperature-dependent optimal levels ranging from 0.7 mg/L to 1.2 mg/L. The Center for Disease Control and Prevention (“**CDC**”) also provided detailed information on the basis for this change. To reflect CDC’s recommendation, DDW consulted with public water systems practicing fluoridation regarding amendments to their individual public water supply permits to reference the CDC’s recommended optimal level of 0.7 mg/L. The recommended optimal level of 0.7 mg/L currently corresponds with the existing California Water Fluoridation Standards control range of 0.6 mg/L to 1.2 mg/L. In May 2016, the DDW confirmed that the fluoride control range for the Regional Water System is 0.6 mg/L to 1.2 mg/L. The SFPUC is in compliance with the operational and monitoring requirements of the State fluoridation regulations.

Chloramination. Chloramine is a disinfectant added to water for public health protection. It is a combination of chlorine and ammonia that is currently considered the best technology for controlling the formation of certain regulated disinfectant by-products (“**DBPs**”). Chloramine was used as a disinfectant in the entire

Regional Water System for ten years between 1935 and 1944 when the Hetch Hetchy water supply was first brought to San Francisco from the Sierra Nevada. Many utilities used chloramination at that time, including 34 other drinking water supplies in the State. Chloramination was discontinued in 1944 by the Water Enterprise and many other utilities due to shortages of ammonia during World War II.

The SFPUC started using chloramine as a distribution system disinfectant again in February 2004 to better comply with the Stage 2 DBPR, which requires more stringent control of chlorination DBPs. There is a significant amount of on-going research by many agencies worldwide regarding best disinfection practices for control of microorganisms in drinking water and simultaneous minimization of DBPs. The SFPUC continually monitors that research and the latest information on water disinfection practices.

Since 2004, chloramine has been very effective as a distribution system disinfectant in the Regional Water and the In-City Distribution Systems. It has lowered microbial densities (including coliform bacteria, heterotrophic bacteria, *Legionella* bacteria), at the same time minimizing the formation of regulated DBPs. Adjustments (up or down) of the target chloramine level may occur when operational conditions warrant. A small group of individuals believe that various health problems have been caused by chloramine but the SFPUC believes that no scientific proof exists to support these assertions. The SFPUC has worked with local health departments, regulatory agencies, research organizations, professional associations, water quality and health experts, other utilities, and elected officials to address these concerns.

Public Water System Discharges

As part of routine operations and maintenance activities, the SFPUC transfers treated water between storage facilities and discharges water to the environment. These transfers and discharges are regulated under the federal Clean Water Act through general National Pollutant Discharge Elimination System (“NPDES”) permits issued by the SWRCB or appropriate RWQCB.

The SFPUC currently has several NPDES permits. These permits generally impose discharge limitations, monitoring, reporting, and notification requirements. These permits require the Water Enterprise to control various water quality parameters (such as pH, chlorine residual, turbidity, etc.) and implement best management practices to minimize any adverse environmental effects caused by the discharges from the Regional Water System. Over the past few years, the Water Enterprise has occasionally violated its permit requirements, which has resulted in fines and settlement payments totaling approximately \$700,000. The Water Enterprise is implementing several millions of dollars of capital improvements, as well as operational controls, to more reliably meet permit requirements under Section 402 of the Clean Water Act. See “WATER SYSTEM IMPROVEMENT PROGRAM.”

In December 2011, Hetch Hetchy Water and Power drained Priest Reservoir for maintenance purposes. The Central Valley RWQCB filed a complaint against the SFPUC, alleging that a permit was required for the resulting discharge of sediment downstream under Section 404 of the Clean Water Act. Without conceding liability or the alleged need for a permit for discharge of water from the reservoir, the SFPUC settled the complaint in December 2012 by paying a fine of \$1 million and agreeing to adopt best management practices for future operations to avoid sediment discharges.

Bay-Delta Water Quality Standards

The Water Enterprise obtains the majority of its water supply from Hetch Hetchy Reservoir, located on the main branch of the Tuolumne River, which is an upstream tributary to the San Joaquin River and the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (the “**Bay-Delta**”). In 1995, the SWRCB, which oversees the allocation of water for consumptive and environmental needs, adopted a Water Quality Control Plan (the “**1995 WQCP**”) for the Bay-Delta pursuant to State and federal obligations to protect water quality in the Bay-Delta ecosystem. The 1995 WQCP called for certain flow objectives on the San Joaquin River where it enters the Delta and certain Delta outflows. Because the City is an upstream tributary water right holder, the SWRCB notified 500 parties, including the City, in 1997 that they may be required to implement the WQCP by providing water to the Bay-Delta ecosystem.

In 2000, the SWRCB issued an order implementing the 1995 WQCP. The order requires the United States Bureau of Reclamation and the California Department of Water Resources to provide flows and restrict export pumping to implement the San Joaquin River portion of the 1995 WQCP until the SWRCB otherwise assigns responsibility to provide flow. The order does not in any way condition the City's rights to divert water from the Tuolumne River, nor does it require the City to release water to implement the 1995 WQCP.

In 2006, the SWRCB amended the 1995 WQCP (the "**2006 WQCP**") and identified San Joaquin River flows as an issue of emerging concern because various fish species in the Delta and San Joaquin River basin had not shown significant signs of recovery under the 1995 WQCP. In 2008, in light of continued decline in anadromous and pelagic (open water) fish species, the SWRCB adopted a Strategic Workplan for Activities in the San Francisco Bay/Sacramento-San Joaquin Delta Estuary. The Strategic Workplan calls for review and implementation of the 2006 WQCP's San Joaquin River flow objectives.

In February 2009, the SWRCB noticed its intent to review and update water quality objectives of the 2006 WQCP and the program of implementation, which could result in changes to water rights and water quality regulation consistent with the program of implementation. In a letter dated December 19, 2011, the SWRCB stated it would complete its review of the 2006 WQCP's San Joaquin River flow objectives by September 2012.

In 2012, the SWRCB issued a supplemental environmental document ("**SED**") in support of amendments to the 2006 WQCP that examined several alternative San Joaquin River flow objectives and implementation strategies. The SED was the subject of extensive public comment, and the SWRCB stated it would revise the SED and reissue it for public comment in spring 2015. The analysis considered the environmental impacts of changes to the Lower San Joaquin River flows to support and maintain the natural production of viable native San Joaquin River watershed fish populations migrating through the Sacramento-San Joaquin River Delta. The range of flows analyzed included springtime releases totaling from 20% to 60% of natural unimpaired flows (i.e. flow without dams in place) on the Stanislaus, Tuolumne and Merced Rivers, with a preferred alternative of 35% of unimpaired flows. Should the SWRCB decide to implement this proposal, any necessary changes to upstream water rights would be considered in a separate proceeding. If that occurs, the SWRCB may require the SFPUC to release water from its system, and, depending upon the quantity, there could be an increase in the degree of rationing required by the City's water customers during times of extended drought.

FERC Proceeding to Increase Flows in the Lower Tuolumne River

The Federal Energy Regulatory Commission ("**FERC**") licenses the New Don Pedro Project, owned and operated by the Districts. The City helped fund the original construction of New Don Pedro Project in exchange for a water bank account allowing the SFPUC to receive water credits for advanced releases from the Hetch Hetchy Project to the New Don Pedro Reservoir.

The current FERC license for the New Don Pedro Project expired in 2016, and the Districts are now operating under an annual license that incorporates the conditions of their prior license. The Districts initiated the process to relicense the New Don Pedro Project using FERC's Integrated Licensing Process in 2010. Relicensing is a lengthy process, stretching over a number of years and open to public participation. It is estimated the process may cost up to \$50 million to complete, which costs are split for certain studies between the Districts and the SFPUC pursuant to an existing agreement.

The Districts are in the process of working through a Study Plan related to the relicensing that was issued and subsequently supplemented by FERC. The Study Plan described numerous studies to be completed. As of June 21, 2016, only 5 studies had not yet been finalized and submitted to FERC. The Districts obtained two extensions from FERC in order to complete a study on predation in the Lower Tuolumne River, which is currently due March 15, 2017. After all of the studies are submitted to FERC, the New Don Pedro Project must be reviewed under CEQA and NEPA before FERC can issue a new license.

The Districts are also working through a licensing proceeding for the La Grange Diversion Dam (the "**La Grange Project**"), which is located on the Tuolumne River 2 miles downstream of the New Don Pedro Project. FERC has indicated that it intends to prepare a single draft Environmental Impact Statement ("**EIS**") and a final EIS ("**FEIS**") under NEPA for licensing the La Grange Project and relicensing the New Don Pedro Project.

A 1995 Don Pedro Project Settlement Agreement (“**Settlement Agreement**”) and a 1996 Order by FERC (“**1996 Order**”) established increased water flows on the Tuolumne River to protect fisheries and riparian resources. A restoration plan (“**Restoration Plan**”) adopted in 2000 guides planning, funding and implementation efforts. The Restoration Plan calls for a series of projects with a combined estimated cost of \$25 million to improve river channel, riparian and fisheries conditions within a 27 mile stretch of the Tuolumne River corridor below La Grange Diversion Dam. Four of the ten priority projects have been completed. However, no additional projects are in the planning or construction phases due to the limited availability of federal and State grant funds.

Pursuant to a then-existing agreement between the City and the Districts, the City might have been liable to provide a portion of the increased flows mandated under the 1995 Settlement Agreement. Instead, the City and the Districts entered into a new agreement whereby the Districts agreed to provide all flows ordered by FERC to implement the Settlement Agreement until FERC issues a new license for the New Don Pedro Project in exchange for which the City pays to the Districts on a monthly basis an amount aggregating \$3.5 million per year, subject to an escalation clause applied to keep pace with inflation. Pursuant to the terms of its agreement with the Districts, the City may withdraw from the agreement upon one year’s notice.

The term of the Settlement Agreement runs until FERC issues a new license for the New Don Pedro Project. License conditions, such as release requirements, could change under a new license. Changed release requirements could adversely affect the availability of Tuolumne River water to the SFPUC and incidental hydroelectric generation.

Dam Licensing and Safety Issues

In 1929, the California Legislature enacted legislation providing for supervision over non-federal dams in the State. The statutes place the supervision of the safety of non-federal dams and reservoirs under the jurisdiction of the DSOD. Dams under jurisdiction are artificial barriers, together with appurtenant work, including outlet towers, which are twenty-five feet or more in height or have an impounding capacity of fifty acre-feet or more. Any artificial barrier not in excess of six feet in height, regardless of storage, or that has a capacity not in excess of fifteen acre-feet, regardless of height, is not considered jurisdictional.

The DSOD reviews plans and specifications for the construction of new dams or for the enlargement, alteration, repair or removal of existing dams, under applications, and must grant written approval before the owner can proceed with construction. The DSOD routinely inspects operating dams to assure that they are adequately maintained. The DSOD also conducts investigations of selected dams and directs the owners to additional investigations and detailed safety evaluations when necessary.

The SFPUC has eighteen dams under the jurisdiction of the DSOD. The Calaveras Dam is the only dam that is currently the subject of orders by the DSOD. No other dams have DSOD-related mandates for upgrades at this time.

Crystal Springs Reservoir System. An order imposed by DSOD prohibited use of stop logs in the reservoir spillway due to seismic concerns and resulted in a loss of historic storage capacity at Lower Crystal Springs Reservoir. As part of the WSIP, the SFPUC restored the historical maximum capacity of 69,400 acre-feet through capital improvements. DSOD then rescinded the storage restriction. However, the land that will be inundated by the restored capacity has been populated with fountain thistle, an endangered plant species. The recovered storage will be available to the Regional Water System over time as the impacts to fountain thistle are mitigated for under the terms of federal and State endangered species act permits.

Calaveras Dam. Due to seismic stability concerns regarding Calaveras Dam, the DSOD has restricted the amount of water stored in Calaveras Reservoir to a target maximum of 38,000 acre feet, a reduction in storage capacity of approximately 60%. In 2011, under DSOD direction, the SFPUC began improvements to Calaveras Dam to alleviate seismic safety concerns. The SFPUC anticipates substantial completion of such improvements by Fiscal Year 2018-19. The replacement dam and reservoir will store 96,800 acre-feet of water, the historical maximum capacity. See “CAPITAL IMPROVEMENT PROGRAM – Water System Improvement Program – Regional Program.”

Pilarcitos Dam. Pilarcitos Dam, with a capacity of approximately 3,100 acre feet, was originally constructed in 1862 by the Spring Valley Water Works. In August 2013, DSOD requested the SFPUC to perform geotechnical sampling and testing of the Pilarcitos dam foundation for a dam safety evaluation, a seismic stability evaluation of the outlet tower, and a review of dam instrumentation. On December 9, 2014, the SFPUC awarded a contract for this work to satisfy the 2013 DSOD request and provide engineering and geotechnical services for potential seismic rehabilitation at Pilarcitos Dam. The SFPUC submitted various geotechnical reports and condition assessment reports to DSOD in June 2016. The SFPUC's two-year budget and CIP include capital improvements that are likely to be prescribed by DSOD.

Hazardous Material Management

The handling of hazardous materials is subject to a variety of federal and State regulations. The SFPUC currently complies with regulations regarding hazardous material safety with respect to hazardous material disposal and employee safety. In 2015, however, the Alameda County Department of Health and the Alameda County District Attorney's Office filed an enforcement action against the SFPUC, alleging deficient record keeping and storage management. In August 2016, the City's Board of Supervisors approved settlement of the enforcement action, including payment of a \$250,000 fine. The SFPUC has revised its hazardous materials management systems and anticipates an annual increase of \$100,000 in operating costs to ensure future compliance.

Endangered Species

Various aquatic species (including native fishes) present in the Tuolumne River and Bay Area streams (e.g., Alameda, San Mateo and Pilarcitos Creeks) are either listed or candidates for listing under the State or federal endangered species acts. New listings and future enforcement actions under the acts, or conditions placed in permits to undertake construction for certain WSIP projects, could potentially directly affect water supplies available to the Regional Water System. The SFPUC is working with the responsible State and federal agencies to obtain permits under the acts, which would avoid regulatory uncertainty and ensure water supply reliability for the Regional Water System. In addition, future enforcement actions involving the Bay Delta or Bay Delta tributaries could further affect the availability of supplies to the State Water Project and the Central Valley Project, reducing SFPUC customers' alternate water supplies and increasing their need for additional Regional Water System deliveries.

On August 18, 2014, the Center for Environmental Science, Accuracy, & Reliability ("**CESAR**") and Jean Sagouspe, a member of CESAR and an owner of farmland in California's Central Valley that receives its water from the CVP (the "**Plaintiffs**"), filed a complaint against the National Park Service ("**NPS**") and named federal officials (collectively the "**Federal Defendants**") in Federal District Court in the District of Columbia. The Complaint alleges that NPS annually approves instream flow releases from the "Hetch-Hetchy Project," and further alleges that the Federal Defendants have failed to comply with the Endangered Species Act ("**ESA**") and NEPA in connection with such alleged annual approvals. The City intervened in the case and, along with the Federal Defendants, obtained a venue transfer to the Eastern District of California. The City and the Federal Defendants view the Plaintiffs' claims as frivolous and without any merit. Nevertheless, as the Plaintiffs request that the Court enjoin the City's diversions from the Tuolumne River and enjoin operation of the "Hetch Hetchy Project" until the Federal Defendants comply with the ESA and NEPA in connection with the alleged annual approvals, were such injunctive relief to be granted, in whole or in part, the regional water supply would necessarily be significantly reduced. The Eastern District ordered the case to be resolved by cross motions for summary judgment based on an administrative record compiled by NPS. The Plaintiffs and the Federal Defendants submitted their summary judgment briefings in March 2016 and a decision on the merits is expected in 2016.

Required Instream Flow Schedules from Regional Water System Dams

In order to comply with federal and State permit requirements in connection with dam and reservoir improvements to be carried out as part of the WSIP, the SFPUC has implemented schedules of instream flow releases from Lower Crystal Springs Reservoir into San Mateo Creek, and plans to begin flow releases from Calaveras Reservoir and the bypass of flow from the Upper Diversion Dam to enhance habitat for native species following the completion of the new Calaveras Dam in 2019. The SFPUC has proposed the Alameda Creek Recapture Project to recover the loss of water supply associated with Calaveras Dam releases and bypasses. The

SFPUC has initiated the WaterMAP to make up the water supply loss associated with the Crystal Springs Dam releases, approximately 3.5 mgd.

CONSTITUTIONAL, STATUTORY AND CHARTER LIMITATIONS

The activities of the SFPUC and the Water Enterprise, including, without limitation, the establishment of rates for water service and the issuance of Bonds, are subject to a number of limitations under both State and local law. Certain of such limitations are summarized below. Additionally, such limitations may be revised, enhanced, expanded, or otherwise altered as provided under State and local law, including in certain instances by legislation adopted by State, regional or local authorities, including the State Legislature or the Board of Supervisors, or by the voters of the State or the City themselves through the power of initiative or referendum, by voting in favor of amendments to the Charter, or in any other lawful manner.

State Law Limitations

Tax and Spending Limitations. The taxing powers of public agencies in the State are limited by Article XIII A of the California Constitution, added by an initiative amendment approved by the voters on June 6, 1978, and commonly known as Proposition 13.

Article XIII A limits the maximum ad valorem tax on real property to 1% of “full cash value,” which is defined as “the County Assessor’s valuation of real property as shown on the Fiscal Year 1975-76 tax bill under ‘full cash value’ or, thereafter, the appraised value of real property when purchased, newly constructed, or a change in ownership has occurred after the 1975 assessment.” The full cash value may be adjusted annually to reflect inflation at a rate not to exceed 2% per year, or reduction in the consumer price index or comparable local data, or declining property value caused by damage, destruction, or other factors.

The tax rate limitation referred to above does not apply to ad valorem taxes to pay the debt service on any indebtedness approved by the voters before July 1, 1978, or on any bonded indebtedness for the acquisition or improvement of real property approved by two-thirds of the votes cast by the voters voting on the proposition.

Under the terms of Article XIII A and pursuant to an allocation system created by implementing legislation, each county is required to levy the maximum ad valorem tax permitted by Article XIII A and to distribute the proceeds to local agencies.

Assessed valuation growth allowed under Article XIII A (new construction, change of ownership and up to 2% annual value growth) is allocated among the jurisdictions that serve the tax rate area within which the growth occurs. Local agencies and schools share the growth of base revenues from the tax rate area. Each year’s growth allocation becomes part of each agency’s allocation in the following year. The availability of revenues from tax bases to such entities may be affected by the existence of certain successor agencies to former redevelopment agencies that, under certain circumstances, may be entitled to such revenues resulting from the upgrading of certain property values.

Under State law, any fee that exceeds the reasonable cost of providing the service for which the fee is charged may be considered a “special tax” that must be authorized by a two thirds vote of the electorate. Accordingly, if a portion of the SFPUC’s water user rates or capacity charges were determined by a court to exceed the reasonable cost of providing service, the SFPUC might not be permitted to continue to collect that portion unless it were authorized to do so by a two-thirds majority of the votes cast in an election to authorize the collection of that portion of the rates or fees. If the SFPUC were unable to obtain such a two-thirds majority vote and were unable to reduce costs, such failure could adversely affect the SFPUC’s ability to pay the debt service on the 2016 Series C Bonds. However, the reasonable cost of providing water services has been determined by the State Controller to include depreciation and allowance for the cost of capital improvements. In addition, State courts have determined that fees such as capacity charges will not be special taxes if they approximate the reasonable cost of constructing the water system improvements contemplated by the local agency imposing the fee.

The United States Supreme Court has upheld Article XIII A against a challenge alleging violation of equal protection under the Fourteenth Amendment to the United States Constitution.

Proposition 218. Proposition 218, a State ballot initiative known as the “Right to Vote on Taxes Act,” was approved by the voters on November 5, 1996. The initiative added Articles XIII C and XIII D to the California Constitution, creating additional requirements for the imposition by most local governments of “general taxes,” “special taxes,” “assessments,” “fees,” and “charges.” Articles XIII C and XIII D became effective, pursuant to their terms, as of November 6, 1996, although compliance with some of the provisions was deferred until July 1, 1997, and certain of the provisions purport to apply to any tax imposed for general governmental purposes (i.e., “general taxes”) imposed, extended or increased on or after January 1, 1995 and prior to November 6, 1996.

Article XIII D imposes substantive and procedural requirements on the imposition, extension or increase of any “fee” or “charge” subject to its provisions. A “fee” or “charge” subject to Article XIII D includes any levy, other than an ad valorem tax, special tax or assessment, imposed by an agency upon a parcel or upon a person as an incident of property ownership. Article XIII D prohibits, among other things, the imposition of any proposed fee or charge, and, possibly, the increase of any existing fee or charge, in the event written protests against the proposed fee or charge are presented at a required public hearing on the fee or charge by a majority of owners of the parcels upon which the fee or charge is to be imposed. Except for fees and charges for water, sewer and refuse collection services, the approval of a majority of the property owners subject to the fee or charge, or at the option of the agency, by a two-thirds vote of the electorate residing in the affected area, is required not less than 45 days following the public hearing on any such proposed new or increased fee or charge. In the view of the SFPUC, rates for water usage charged by the SFPUC to the Wholesale Customers are not fees or charges under Article XIII D, although no assurance may be given by the SFPUC that a court would not determine otherwise.

The California Supreme Court decisions in *Richmond v. Shasta Community Services District*, 32 Cal. 4th 409 (2004) (“**Richmond**”), and *Bighorn-Desert View Water Agency v. Verjil*, 39 Cal. 4th 206 (2006) (“**Bighorn**”) have clarified uncertainty surrounding the applicability of Section 6 of Article XIII D to service fees and charges. In *Richmond*, the Shasta Community Services District charged a water connection fee, which included a capacity charge for capital improvements to the water system and a fire suppression charge. The Court held that both the capacity charge and the fire suppression charge were not subject to Article XIII D because a water connection fee is not a property-related fee or charge because it results from the property owner’s voluntary decision to apply for the connection. In both *Richmond* and *Bighorn*, however, the Court stated that a fee for ongoing water service through an existing connection is imposed “as an incident of property ownership” within the meaning of Article XIII D, rejecting, in *Bighorn*, the water agency’s argument that consumption-based water charges are not imposed “as an incident of property ownership” but as a result of the voluntary decisions of customers as to how much water to use.

The SFPUC provides public notice of proposed water rate increases in accordance with the requirements of Article XIII D through means that include, among others, holding informational presentations at community group meetings, mailings to residential and commercial customers of public hearings on rate increases, and press releases and media campaigns regarding rate increases, followed by public hearings conducted by the SFPUC’s Rate Fairness Board and by the SFPUC itself. The SFPUC also develops and adopts retail utility user rates and fees in accordance with the requirements of Article XIII D(6)(b) that limit property-related fees and charges.

Article XIII C extends the people’s initiative power to reduce or repeal previously authorized local taxes, assessments, fees and charges. This extension of the initiative power is not limited by the terms of Article XIII C to fees, taxes, assessment fees and charges imposed after November 6, 1996 and absent other authority could result in retroactive reduction in any existing taxes, assessments, fees or charges. In *Bighorn*, the Court concluded that under Article XIII C local voters by initiative may reduce a public agency’s water rates and delivery charges. The Court noted, however, that it was not holding that the authorized initiative power is free of all limitations, stating that it was not determining whether the electorate’s initiative power is subject to the public agency’s statutory obligation to set water service charges at a level that will “pay the operating expenses of the agency, ... provide for repairs and depreciation of works, provide a reasonable surplus for improvements, extensions, and enlargements, pay the interest on any bonded debt, and provide a sinking or other fund for the payment of the principal of such debt as it may become due.”

The courts have not fully interpreted the provisions of Proposition 218. The SFPUC is unable to predict how courts will further interpret Article XIII C and Article XIII D, and what, if any, further implementing legislation will be enacted. Under the Bighorn case, City voters could adopt an initiative measure that reduces or repeals the SFPUC's water rates and charges, though it is not clear whether (and courts have not decided whether) any such reduction or repeal by initiative would be enforceable in a situation in which such rates and charges are pledged to the repayment of bonded indebtedness. There can be no assurance that the courts will not further interpret, or the voters will not amend, Article XIII C and Article XIII D to limit the ability of the SFPUC to impose, levy, charge and collect increased fees and charges for the Water Enterprise, or to call into question water rate increases previously adopted by the SFPUC. No assurance may be given that Articles XIII C and XIII D will not have a material adverse impact on Revenues.

Proposition 26. Proposition 26, which amended Article XIII A and XIII C of the California Constitution, was approved by the electorate at the November 2, 2010 election. Proposition 26 imposes a two-thirds voter approval requirement for the imposition of fees and charges by the State. It also imposes a majority voter approval requirement on local governments with respect to fees and charges for general purposes, and a two-thirds voter approval requirement with respect to fees and charges for special purposes. According to its supporters, Proposition 26 was designed to prevent the circumvention of tax limitations imposed by the voters pursuant to Proposition 13, approved in 1978, Proposition 218, and other measures through the use of non-tax fees and charges.

Proposition 26 expressly excludes from its scope "a charge imposed for a specific government service or product provided directly to the payor that is not provided to those not charged, and which does not exceed the reasonable cost to the governmental entity of providing the service or product to the payor" and "assessments and property-related fees imposed in accordance with the provisions of Article XIII D." The California Supreme Court has held that a fee for ongoing water service through an existing connection is imposed "as an incident of property ownership" within the meaning of Article XIII D. See "– Proposition 218." The SFPUC believes that the initiative is not intended to, and would not, apply to fees for water deliveries and services charged by the SFPUC. The SFPUC, however, is unable to predict how Proposition 26 will be interpreted by the courts to apply to the provision of water services by local governments such as the SFPUC.

Initiative and Referendum

Article XIII A and Articles XIII C and XIII D of the California Constitution were adopted pursuant to the State's constitutional initiative process. From time to time other initiative measures could be adopted by State voters, or by voters of the City, placing additional limitations on the ability of the SFPUC to increase revenues.

Charter Limitations

The Charter requires that bonds (such as the Bonds) secured by revenues, other than refunding bonds, may be issued only with the assent of a majority of voters. However, under the Charter amendments enacted by the voters in November 2002 (Proposition E), the SFPUC may issue revenue bonds, including notes, commercial paper or other forms of indebtedness, when authorized by ordinance approved by a two-thirds vote of the Board of Supervisors, for the purpose of reconstructing, replacing, expanding, repairing or improving water facilities or wastewater facilities or combinations of water and wastewater facilities under the jurisdiction of the SFPUC (and subject to the further conditions contained in Proposition E). See "OBLIGATIONS PAYABLE FROM REVENUES – Authority for Issuance of Revenue Bonds and Other Obligations Payable from Revenues."

In June 1998, the electorate of the City approved Proposition H which, subject to certain exceptions, including a limited exception to raise rates to pay debt service on voter-approved debt, froze the SFPUC's water rates through July 1, 2006. The SFPUC can give no assurance that the electorate will not seek in the future to freeze or limit rate increases.

Future Charter Amendments

Voters in the City could adopt additional Charter amendments in the future which would limit the ability of the SFPUC to issue debt or to enact rate increases, affect the operation of the Water Enterprise or implement other

changes affecting the SFPUC and the Water Enterprise. See “RISK FACTORS – Initiative, Referendum and Charter Amendments and Future Legislation.”

LITIGATION

The SFPUC is not aware of any litigation pending or threatened questioning the political existence of the City or the SFPUC or contesting the SFPUC’s power to fix Water Enterprise rates and charges, or in any way questioning or affecting:

- (i) the proceedings under which the 2016 Series C Bonds are to be issued,
- (ii) the validity of any provision of the 2016 Series C Bonds or the Indenture,
- (iii) the pledge of Revenues by the SFPUC under the Indenture, or
- (iv) the titles to office of the present members of the Board of Supervisors and the Commission.

There are a number of suits and claims pending against the City and the SFPUC impacting the Water Enterprise, which may include personal injury, wrongful death and other suits and claims against which the City may self-insure. The aggregate amount of the self-insured liabilities of the City and the SFPUC which may result from such suits and claims will not, in the opinion of the City Attorney, materially impair the ability of the SFPUC to pay principal of or interest on the 2016 Series C Bonds as they become due. There is no litigation pending, with service of process having been accomplished, against the City or the SFPUC which if determined adversely to the City or the SFPUC would, in the opinion of the City Attorney, materially impair the ability of the SFPUC to pay principal of and interest on the 2016 Series C Bonds as they become due. There is however, a complaint that was filed, on August 18, 2014, requesting injunctive relief that if granted, in whole or in part, would result in a significant reduction in the regional water supply. See “REGULATORY MATTERS – Endangered Species.”

TAX MATTERS

State Tax Exemption on 2016 Series C Bonds. In the opinion of Bond Counsel, under existing law interest on the 2016 Series C Bonds is exempt from personal income taxes of the State of California. Except as set forth in the preceding sentence, Bond Counsel will provide no opinion in connection with the issuance or offering of the 2016 Series C Bonds with regard to any federal, state or local tax consequence of the ownership or disposition of or the receipt of interest on any 2016 Series C Bond. A copy of the form of opinion of Bond Counsel relating to the 2016 Series C Bonds is included in Appendix E.

Federal Income Tax Considerations for the 2016 Series C Bonds. The following is a general summary of certain United States federal income tax consequences of the purchase and ownership of the 2016 Series C Bonds. The discussion is based upon the Internal Revenue Code of 1986 (the “Code”), United States Treasury Regulations, rulings and decisions now in effect, all of which are subject to change (possibly, with retroactive effect) or possibly differing interpretations. No assurance can be given that future changes in the law will not alter the conclusions reached herein.

The discussion below does not purport to deal with United States federal income tax consequences applicable to all categories of investors and generally does not address consequences relating to the disposition of a 2016 Series C Bond by the owner thereof for federal income tax purposes. Further, the discussion below does not discuss all aspects of federal income taxation that may be relevant to a particular investor in the 2016 Series C Bonds in light of the investor’s particular circumstances or to certain types of investors subject to special treatment under the federal income tax laws (including insurance companies, tax exempt organizations and other entities, financial institutions, broker-dealers, persons who have hedged the risk of owning the 2016 Series C Bonds, traders in securities that elect to use a mark to market method of accounting, thrifts, regulated investment companies, pension and other employee benefit plans, partnerships and other pass through entities, certain hybrid entities and owners of interests therein, persons who acquire 2016 Series C Bonds in connection with the performance of services, or persons deemed to sell 2016 Series C Bonds under the constructive sale provisions of the Code). The

discussion below also does not discuss any aspect of state, local, or foreign law or United States federal tax laws other than United States federal income tax law. The discussion below is limited to certain issues relating to initial investors who will hold the 2016 Series C Bonds as “capital assets” within the meaning of section 1221 of the Code, and acquire such 2016 Series C Bonds for investment and not as a dealer or for resale. The discussion below addresses certain federal income tax consequences applicable to owners of the 2016 Series C Bonds who are United States persons within the meaning of section 7701(a)(30) of the Code (“United States persons”) and, except as discussed below, does not address any consequences to persons other than United States persons.

Prospective investors should note that no rulings have been or will be sought from the Internal Revenue Service (the “Service”) with respect to any of the United States federal income tax consequences discussed below, and no assurance can be given that the Service will not take contrary positions.

ALL PROSPECTIVE INVESTORS SHOULD CONSULT THEIR OWN TAX ADVISORS IN DETERMINING THE FEDERAL, STATE, LOCAL, FOREIGN AND ANY OTHER TAX CONSEQUENCES TO THEM FROM THE PURCHASE, OWNERSHIP AND DISPOSITION OF THE 2016 SERIES C BONDS.

Interest on the 2016 Series C Bonds. Bond Counsel has rendered no opinion regarding the exclusion pursuant to section 103(a) of the Code of interest on the 2016 Series C Bonds from gross income for federal income tax purposes. The Commission has taken no action to cause, and does not intend, interest on the 2016 Series C Bonds to be excluded pursuant to section 103(a) of the Code from the gross income of the owners thereof for federal income tax purposes. The Commission intends to treat the 2016 Series C Bonds as debt instruments for all federal income tax purposes, including any applicable reporting requirements under the Code. THE COMMISSION EXPECTS THAT THE INTEREST PAID ON A 2016 SERIES C BOND GENERALLY WILL BE INCLUDED IN THE GROSS INCOME OF THE OWNER THEREOF FOR FEDERAL INCOME TAX PURPOSES WHEN RECEIVED OR ACCRUED, DEPENDING UPON THE TAX ACCOUNTING METHOD OF THAT OWNER.

Disposition of 2016 Series C Bonds, Inclusion of Acquisition Discount and Treatment of Market Discount. An owner of 2016 Series C Bonds will generally recognize gain or loss on the sale or exchange of the 2016 Series C Bonds equal to the difference between the sales price (exclusive of the amount paid for accrued interest) and the owner’s adjusted tax basis in 2016 Series C Bonds. Generally, the owner’s adjusted tax basis in the 2016 Series C Bonds will be the owner’s initial cost, increased by original issue discount (if any) previously included in the owner’s income to the date of disposition. Any gain or loss generally will be capital gain or loss and will be long-term or short-term, depending on the owner’s holding period for the 2016 Series C Bonds.

Under current law, a purchaser of a 2016 Series C Bond who did not purchase that 2016 Series C Bond in the initial public offering (a “subsequent purchaser”) generally will be required, on the disposition (or earlier partial principal payment) of such 2016 Series C Bond, to recognize as ordinary income a portion of the gain (or partial principal payment), if any, to the extent of the accrued “market discount.” In general, market discount is the amount by which the price paid for such 2016 Series C Bond by such a subsequent purchaser is less than the stated redemption price at maturity of that 2016 Series C Bond (or, in the case of a 2016 Series C Bond bearing original issue discount, is less than the “revised issue price” of that 2016 Series C Bond (as defined below) upon such purchase), except that market discount is considered to be zero if it is less than one quarter of one percent of the principal amount times the number of complete remaining years to maturity. The Code also limits the deductibility of interest incurred by a subsequent purchaser on funds borrowed to acquire 2016 Series C Bonds with market discount. As an alternative to the inclusion of market discount in income upon disposition, a subsequent purchaser may elect to include market discount in income currently as it accrues on all market discount instruments acquired by the subsequent purchaser in that taxable year or thereafter, in which case the interest deferral rule will not apply. The recharacterization of gain as ordinary income on a subsequent disposition of such 2016 Series C Bonds could have a material effect on the market value of such 2016 Series C Bonds.

Stated Interest and Reporting of Interest Payments on the 2016 Series C Bonds. The stated interest on the 2016 Series C Bonds will be included in the gross income, as defined in section 61 of the Code, of the owners thereof as ordinary income for federal income tax purposes at the time it is paid or accrued, depending on the tax accounting method applicable to the owners thereof. Subject to certain exceptions, the stated interest on the 2016 Series C Bonds will be reported to the Service. Such information will be filed each year with the Service on Form 1099-INT (or other appropriate reporting form) which will reflect the name, address, and taxpayer identification

number of the owner. A copy of such Form 1099 INT will be sent to each owner of a 2016 Series C Bond for federal income tax purposes.

Original Issue Discount on 2016 Series C Bonds. If the first price at which a substantial amount of the 2016 Series C Bonds of any stated maturity is sold (the “Issue Price”) is less than the stated redemption price at maturity of those 2016 Series C Bonds, the excess of the stated redemption price at maturity of each 2016 Series C Bond of that maturity over the Issue Price of that maturity is “original issue discount.” If the original issue discount on a 2016 Series C Bond is less than the product of one quarter of one percent of its face amount times the number of complete years to its maturity, the original issue discount on that 2016 Series C Bond will be treated as zero. Original issue discount on a 2016 Series C Bond will be amortized over the life of the 2016 Series C Bond using the “constant yield method” provided in the Treasury Regulations. As original issue discount on a 2016 Series C Bond would accrue under the constant yield method, the owner of a 2016 Series C Bond issued with original issue discount generally will be required to include such accrued amount in its gross income as interest, regardless of its regular method of accounting. This can result in taxable income to the beneficial owner of such a 2016 Series C Bond that exceeds actual cash distributions to that owner in a taxable year. To the extent that a 2016 Series C Bond is purchased at a price that exceeds the sum of the Issue Price of that 2016 Series C Bond and all original issue discount on that 2016 Series C Bond previously includible by any holder in gross income (the “revised issue price” of that 2016 Series C Bond), the subsequent inclusion of original issue discount by that purchaser must be reduced to reflect that excess.

The amount of the original issue discount that accrues on the 2016 Series C Bonds each taxable year will be reported annually to the Service and to the owners. The portion of the original issue discount included in each owner’s gross income while the owner holds the 2016 Series C Bonds will increase the adjusted tax basis of the 2016 Series C Bonds in the hands of such owner.

Amortizable Bond Premium for 2016 Series C Bonds. An owner that purchases a 2016 Series C Bond for an amount that is greater than its stated redemption price at maturity will be considered to have purchased the 2016 Series C Bond with “amortizable bond premium” equal in amount to such excess. The owner may elect to amortize such premium using a constant yield method over the remaining term of the 2016 Series C Bond and may offset interest otherwise required to be included in respect of the 2016 Series C Bond during any taxable year by the amortized amount of such excess for the taxable year. 2016 Series C Bond premium on a 2016 Series C Bond held by an owner that does not make such an election will decrease the amount of gain or increase the amount of loss otherwise recognized on the sale, exchange, redemption or retirement of a 2016 Series C Bond. However, if the 2016 Series C Bond may be optionally redeemed after the beneficial owner acquires it at a price in excess of its stated redemption price at maturity, special rules would apply under the Treasury Regulations which could result in a deferral of the amortization of some bond premium until later in the term of the 2016 Series C Bond. Any election to amortize bond premium applies to all taxable debt instruments held by the beneficial owner on or after the first day of the first taxable year to which such election applies and may be revoked only with the consent of the Service.

Medicare Contribution Tax. Pursuant to Section 1411 of the Code, as enacted by the Health Care and Education Reconciliation Act of 2010, an additional tax is imposed on individuals beginning January 1, 2013. The additional tax is 3.8% of the lesser of (i) net investment income (defined as gross income from interest, dividends, net gain from disposition of property not used in a trade or business, and certain other listed items of gross income), or (ii) the excess of “modified adjusted gross income” of the individual over \$200,000 for unmarried individuals (\$250,000 for married couples filing a joint return and a surviving spouse). Owners of the 2016 Series C Bonds should consult with their own tax advisor concerning this additional tax, as it may apply to interest earned on the 2016 Series C Bonds as well as gain on the sale of a 2016 Series C Bond.

Defeasance of 2016 Series C Bonds. Persons considering the purchase of a 2016 Series C Bond should be aware that the bond documents permit the Commission under certain circumstances to deposit monies or securities with the Trustee, resulting in the release of the lien of the Indenture (a “defeasance”). A defeasance could be a taxable event resulting in the realization of gain or loss by the owner of a defeased 2016 Series C Bond for federal income tax purposes, without any corresponding receipt of monies by the owner. Such gain or loss generally would be subject to recognition for the tax year in which such realization occurs, as in the case of a sale or exchange; in addition, the defeased instrument may be treated as having been reissued with original issue discount or bond

issuance premium with the consequences described above. Owners of 2016 Series C Bonds are advised to consult their own tax advisers with respect to the tax consequences resulting from such events.

Backup Withholding. Under section 3406 of the Code, an owner of a 2016 Series C Bond who is a United States person may, under certain circumstances, be subject to “backup withholding” of current or accrued interest on a 2016 Series C Bond or with respect to proceeds received from a disposition of the 2016 Series C Bond. This withholding applies if such owner of a 2016 Series C Bond: (i) fails to furnish to the payor such owner’s social security number or other taxpayer identification number (“TIN”); (ii) furnishes the payor an incorrect TIN; (iii) fails to properly report interest, dividends, or other “reportable payments” as defined in the Code; or (iv) under certain circumstances, fails to provide the payor with a certified statement, signed under penalty of perjury, that the TIN provided to the payor is correct and that such owner is not subject to backup withholding.

Backup withholding will not apply, however, with respect to payments made to certain owners of the 2016 Series C Bonds. Owners of the 2016 Series C Bonds should consult their own tax advisors regarding their qualification for exemption from backup withholding and the procedures for obtaining such exemption.

Withholding on Payments to Nonresident Alien Individuals and Foreign Corporations. Under sections 1441 and 1442 of the Code, nonresident alien individuals and foreign corporations are generally subject to withholding at the current rate of 30% (subject to change) on periodic income items arising from sources within the United States, provided such income is not effectively connected with the conduct of a United States trade or business.

Assuming the interest income of such an owner of the 2016 Series C Bonds is not treated as effectively connected income within the meaning of section 864 of the Code, such interest will be subject to 30% withholding, or any lower rate specified in an income tax treaty, unless such income is treated as portfolio interest. Interest will be treated as portfolio interest if: (i) the owner provides a statement to the payor certifying, under penalties of perjury, that such owner is not a United States person and providing the name and address of such owner; (ii) such interest is treated as not effectively connected with the owner’s United States trade or business; (iii) interest payments are not made to a person within a foreign country that the Service has included on a list of countries having provisions inadequate to prevent United States tax evasion; (iv) interest payable with respect to the 2016 Series C Bonds is not deemed contingent interest within the meaning of the portfolio debt provision; (v) such owner is not a controlled foreign corporation, within the meaning of section 957 of the Code; and (vi) such owner is not a bank receiving interest on the 2016 Series C Bonds pursuant to a loan agreement entered into in the ordinary course of the bank’s trade or business.

Assuming payments on the 2016 Series C Bonds are treated as portfolio interest within the meaning of sections 871 and 881 of the Code, then no withholding under section 1441 and 1442 of the Code and no backup withholding under section 3406 of the Code is required with respect to owners or intermediaries who have furnished Form W-8 BEN, Form W-8 EXP or Form W-8 IMY, as applicable, provided the payor does not have actual knowledge or reason to know that such person is a United States person.

The preceding discussion of certain United States federal income tax consequences is for general information only and is not tax advice. Accordingly, each investor should consult its own tax advisor as to particular tax consequences to it of purchasing, owning, and disposing of the 2016 Series C Bonds, including the applicability and effect of any state, local, or foreign tax laws, and of any proposed changes in applicable laws.

CERTAIN LEGAL MATTERS

Certain legal matters incident to the authorization, sale and delivery of the 2016 Series C Bonds are subject to the approval of Norton Rose Fulbright US LLP, San Francisco, California, and Curles Bartling P.C., Oakland, California, Co-Bond Counsel to the SFPUC. Certain legal matters are being passed upon for the SFPUC by the City Attorney and by Orrick, Herrington & Sutcliffe LLP, San Francisco, California, Disclosure Counsel. Co-Bond Counsel and Disclosure Counsel will receive compensation that is contingent upon the sale and delivery of the 2016 Series C Bonds.

The form of approving opinion of Co-Bond Counsel is set forth in Appendix E, and will be available at the time of delivery of the 2016 Series C Bonds. Co-Bond Counsel is not passing upon and undertakes no responsibility for the accuracy, completeness or fairness of the information contained in this Official Statement.

Orrick, Herrington & Sutcliffe LLP has served as Disclosure Counsel to the SFPUC and in such capacity has advised the SFPUC with respect to the requirements of applicable securities laws and participated with responsible SFPUC officials and staff in conferences and meetings where information contained in this Official Statement was reviewed for accuracy and completeness. Disclosure Counsel is not responsible for the accuracy or completeness of the information presented in this Official Statement and has not undertaken to independently verify any of such information. Rather, the SFPUC is solely responsible for the accuracy and completeness of the information contained in this Official Statement. Upon the issuance of the 2016 Series C Bonds, Orrick, Herrington & Sutcliffe LLP will deliver a letter to the SFPUC concerning certain matters with respect to the Official Statement. No purchaser or holder of the 2016 Series C Bonds, or other person or party other than the SFPUC, will be entitled to rely on such letter or on the fact that Orrick, Herrington & Sutcliffe LLP has acted as Disclosure Counsel to the SFPUC.

RATINGS

Moody's Investors Service ("**Moody's**") has assigned its municipal bond rating of " " to the 2016 Series C Bonds, and S&P Global Ratings, a Standard & Poor's Financial Services LLC business ("**S&P**"), has assigned its municipal bond rating of " " to the 2016 Series C Bonds.

The ratings assigned by Moody's and S&P express only the views of the respective rating agencies. The explanation of the significance of these ratings, and any outlook associated with these ratings, may be obtained from Moody's and S&P, respectively. Each rating agency generally bases its rating on its own investigations, studies, and assumptions. The SFPUC has provided certain additional information and materials to the rating agencies (some of which does not appear in this Official Statement).

A securities rating is not a recommendation to buy, sell or hold securities and may be subject to revision or withdrawal at any time. There is no assurance such ratings will continue for any given period of time or that such ratings will not be revised downward or withdrawn entirely by the rating agencies, if in the judgment of such rating agencies, circumstances so warrant. Any such downward revision or withdrawal of such ratings may have an adverse effect on the market price of the 2016 Series C Bonds. The SFPUC undertakes no responsibility to maintain its current ratings on the 2016 Series C Bonds or to oppose any such downward revision, suspension or withdrawal.

UNDERWRITING

The 2016 Series C Bonds are being purchased by _____ (the "**Underwriter**") as winner of a competitive bid conducted on _____, 2016. The Underwriter has agreed to purchase the 2016 Series C Bonds from the SFPUC at a purchase price of \$_____ (consisting of \$_____ aggregate principal amount of the 2016 Series C Bonds, [plus a net original issue premium] [less a net original discount] of \$_____ less an underwriter's discount of \$_____). Under the terms of its bid, the Underwriter will be obligated to purchase all of the 2016 Series C Bonds if any are purchased, the obligation to make such purchase being subject to certain terms and conditions to be satisfied by the SFPUC.

The Underwriter has certified the reoffering prices or yields set forth on the inside cover of this Official Statement. The SFPUC takes no responsibility for the accuracy of these prices or yields. The Underwriter may offer and sell the 2016 Series C Bonds to certain dealers and others at prices lower than the offering prices stated on the inside cover page. The offering prices may be changed from time to time by the Underwriter.

FINANCIAL STATEMENTS

Attached as Appendix D are the audited financial statements of the Water Enterprise (the "**Financial Statements**") for Fiscal Years 2013-14 and 2014-15, prepared by the SFPUC and audited by KPMG LLP,

independent certified public accountants, San Francisco, California (the “**Auditor**”). The financial statements are included for convenience.

The SFPUC has not requested nor did the SFPUC obtain permission from the Auditor to include the audited financial statements as an Appendix to this Official Statement. Accordingly, the Auditor has made no representation in connection with inclusion of the audits herein that there has been no material change in the financial condition of the SFPUC since the most recent audit was concluded. The Auditor has not been engaged to perform and has not performed, since the date of its report included herein, any procedures on the financial statements addressed in that report. The Auditor also has not performed any procedures relating to this Official Statement.

CONTINUING DISCLOSURE

The SFPUC has covenanted for the benefit of the Owners and Beneficial Owners of the 2016 Series C Bonds, under a Continuing Disclosure Certificate dated as of the Closing Date, to provide certain financial information and operating data (the “**Annual Report**”) not later than nine months following the end of its Fiscal Year (presently June 30), beginning on March 31, 2017, with the report for Fiscal Year 2015-16, and to promptly provide notice of the occurrence of certain enumerated events set forth in the Continuing Disclosure Certificate (“**Listed Events**”).

The SFPUC will file the Annual Report and any notice of Listed Events as described in the Continuing Disclosure Certificate. The specific nature of the information to be contained in the Annual Report or the notices of Listed Events is set forth in the Continuing Disclosure Certificate. These covenants have been made in order to assist the Underwriters in complying with the Rule. The form of the Continuing Disclosure Certificate is attached to this Official Statement as Appendix F.

Although the SFPUC filed on EMMA materials describing the effectiveness of certain amendments to the indenture pursuant to which the SFPUC’s wastewater revenue bonds have been issued (payable from revenues of a separate enterprise fund—see “THE PUBLIC UTILITIES COMMISSION – Organization, Purposes and Powers”), it failed to file timely a simultaneous and duplicative notice of material event.

The SFPUC has, at least once in the last five years, failed to file in a timely manner notice of a change in the rating of SFPUC bonds resulting from a change in the rating of a bond insurer. As of the date of this Official Statement, the current ratings of the SFPUC’s bonds are correct on EMMA

CO-MUNICIPAL ADVISORS

Backstrom McCarley Berry & Co., LLC, San Francisco, California, and Montague DeRose and Associates, LLC, Walnut Creek, California (the “**Co-Municipal Advisors**”), have served as Co-Municipal Advisors to the SFPUC in connection with the structuring and delivery of the 2016 Series C Bonds. The Co-Municipal Advisors are not obligated to undertake, and have not undertaken to make, an independent verification or to assume responsibility for the accuracy, completeness or fairness of the information contained in this Official Statement. The Co-Municipal Advisors will receive compensation that is contingent upon the sale and delivery of the 2016 Series C Bonds.

MISCELLANEOUS

References made in this Official Statement to certain documents and reports are brief summaries thereof that do not purport to be complete or definitive, and reference is made to such documents and reports for full and complete statements of the contents thereof.

The appendices to this Official Statement are integral parts of this Official Statement. Investors must read the entire Official Statement, including the appendices, to obtain information essential to making an informed investment decision.

APPROVAL AND DELIVERY

This Official Statement has been duly approved and authorized to be delivered by the SFPUC.

PUBLIC UTILITIES COMMISSION OF THE CITY AND
COUNTY OF SAN FRANCISCO

By: _____
Harlan L. Kelly, Jr.
General Manager

APPENDIX A

SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE

This Appendix contains summaries of certain provisions of the Indenture, which are in addition and complementary to the summaries found in the Official Statement under the captions “INTRODUCTION” “THE 2016 SERIES C BONDS” and “SECURITY FOR THE BONDS.” The following summaries are qualified in their entirety by reference to the complete Indenture, a copy of which can be obtained from the SFPUC.

APPENDIX B

SUMMARY OF CERTAIN PROVISIONS OF THE WATER SUPPLY AGREEMENT

The following brief summary of certain provisions of the Water Supply Agreement is subject in all respects to all of the provisions of such document. This brief summary does not purport to be a complete statement of said provisions and prospective purchasers of the 2016 Series C Bonds are referred to the complete text of said document.

Definitions

“1984 Agreement” refers to the 1984 Settlement Agreement and Master Water Sales Contract between the City and County of San Francisco and certain Suburban Purchasers in San Mateo County, Santa Clara County and Alameda County, which expired on June 30, 2009.

“Act” refers to the Raker Act, 38 Stat. 242, the Act of Congress, enacted in 1913, that authorized the construction of the Hetch Hetchy system on federal lands.

“Adjusted Proportional Annual Use” means the respective percentages of annual water use, as adjusted to reflect deliveries of water by the Hetch Hetchy Water & Power Project to outside City Retail Customers.

“Agreement” refers to the Water Supply Agreement, by and among San Francisco and the Wholesale Customers who approve the Agreement.

“BAWSCA” refers to the Bay Area Water Supply and Conservation Agency established pursuant to Division 31 of the California Water Code (Water Code §§81300-81461) or its successor and permitted assigns.

“CEQA” refers to the California Environmental Quality Act found at §§21000 et seq. of the Public Resources Code and the Guidelines for the California Environmental Quality Act found at §§15000 et seq. of Title 14 of the California Code of Regulations, as amended from time to time.

“Commission” means the governing board of the SFPUC.

“Debt Service” means principal and interest paid during a fiscal year on Indebtedness incurred by the SFPUC for the 2006 Revenue Bonds, Series A, and subsequently issued Indebtedness (exclusive of 2006 Revenue Bonds, Series B and C), the proceeds of which are used or are scheduled to be used for the acquisition or construction of New Regional Assets or to refund such Indebtedness.

“Direct Retail” refers to Regional Water System capital or operating expenditures that are incurred to provide water service solely to Retail Customers.

“Direct Wholesale” refers to Regional Water System capital or operating expenditures that are incurred to provide water service solely to one or more Wholesale Customers.

“Drought” means a water shortage caused by lack of precipitation, as reflected in resolutions of the Commission calling for voluntary or mandatory water rationing based on evaluation of water stored or otherwise available to the Regional Water System, whether or not the Commission declares a water shortage emergency pursuant to Water Code §§ 350 et seq., as amended from time to time.

“Emergency” means a sudden, non-drought event, such as an earthquake, failure of Regional Water System infrastructure or other catastrophic event or natural disaster that results in an insufficient supply of water available to the Retail or Wholesale Service Areas for basic human consumption, firefighting, sanitation, and fire protection.

“Encumbrance” or **“Encumber”** refers to the process by which the City Controller certifies the availability of amounts previously appropriated by the Commission for specifically identified SFPUC capital projects performed either by third parties or through work orders to other San Francisco departments.

“Environmental Enhancement Surcharge” means the surcharge to be imposed by the SFPUC on individual parties to the Agreement whose use exceeds their Interim Supply Allocation when the collective use of water by all parties to the Agreement is in excess of the Interim Supply Limitation.

“Excess Use Charges” are monthly charges set by the SFPUC, in the form of multipliers, that are applied to the Wholesale Customer water rates during times of mandatory rationing if a Wholesale Customer’s water usage is greater than its shortage allocation.

“Fundamental Rights” of Wholesale Customers are their status as parties to the Agreement, their allocation of water recognized in the Agreement, their protection against arbitrary, unreasonable, or unjustly discriminatory rates and any other specific rights described in the Agreement.

“Hetch Hetchy Enterprise” refers to Hetch Hetchy Water and Power Enterprise, a SFPUC operating department.

“Indebtedness” includes revenue bonds, bond anticipation notes, certificates of participation (excluding certificates of participation towards which SFPUC contributes debt service as an operating expense), and commercial paper.

“Individual Water Sales Contract” refers to the contracts between each Wholesale Customer and San Francisco that details customer-specific matters such as location of service connections, service area maps and other matters specific to that customer.

“Individual Supply Guarantee” refers to each Wholesale Customer’s share of the Supply Assurance.

“Interim Supply Allocation” refers to each Wholesale Customer’s share, to be established by the SFPUC of the Interim Supply Limitation.

“Interim Supply Limitation” refers to the 265 MGD annual average limitation on water deliveries until December 31, 2018 from Regional Water System watersheds imposed by the SFPUC in its approval of the WSIP in Resolution Number 08-0200 dated October 30, 2008.

“Joint,” when used in connection with Hetch Hetchy Enterprise assets or expenses, refers to assets used or expenses incurred in providing both water supply (“Water-Related”) and in the generation and transmission of electrical energy (“Power-Related”).

“Local System Water” refers to Regional Water System water supplies developed in San Mateo, Alameda and Santa Clara Counties or otherwise not produced by the Hetch Hetchy Enterprise under rights of way granted by the Act.

“MGD” refers to an average flow rate of one million gallons per day over a specific time period, often a year. For example, one MGD is equal to 365 million gallons per year or 1,120 acre feet per year.

“Net Annual Debt Service” refers to debt service less payments made from proceeds of Indebtedness (e.g., capitalized interest), earnings on bond proceeds (e.g., reserve fund earnings) used to pay Debt Service, and interest paid from renewed commercial paper, or from reserve fund liquidation.

“New Assets” refers to Regional and Hetch Hetchy Water-Only and Water-Related capital assets added to Regional Water System plant in service after June 30, 2009.

“**New Regional Assets**” refers to New Assets placed in service on or after July 1, 2009 that are used and useful in delivering water to Wholesale Customers. The following four categories comprise New Regional Assets:

1. Water Enterprise Regional Assets
2. Water Enterprise Direct Wholesale Assets
3. Hetch Hetchy Water Only Assets
4. Water-Related portion (45 percent) of Hetch Hetchy Joint Assets

“**Power-Only**,” when used with reference to Hetch Hetchy Enterprise capital costs and operating and maintenance expenses, means capital costs and expenses that are incurred solely for the construction and operation of assets used to generate and transmit electrical energy.

“**Power-Related**” refers to the power related portion (55%) of Joint Hetch Hetchy Enterprise assets or expenses.

“**Proportional Annual Use**” means the shares of deliveries from the Regional Water System used by City Retail Customers and by the Wholesale Customers in a fiscal year, expressed as a percentage.

“**Proportional Water Use**” refers the general principle of allocating Regional Water System costs based on the relative purchases of water by Retail and Wholesale Customers.

“**Regional**,” when used with reference to Water Enterprise capital assets and operating expenses, refers to assets and expenses that benefit Wholesale and Regional Customers.

“**Regional Water System**” means the water storage, transmission and treatment system operated by the SFPUC in Tuolumne, Stanislaus, San Joaquin, Alameda, Santa Clara, San Mateo and San Francisco counties, including projects constructed under the WSIP, but excluding Direct Retail and Direct Wholesale assets.

“**Retail Customers**” means any customer that purchases water from San Francisco that is not a Wholesale Customer, whether located inside or outside of San Francisco.

“**Retail Service Area**” means the areas where SFPUC sells water to Retail Customers.

“**Retail Water**” means water sold by the SFPUC to its Retail Customers within and outside San Francisco.

“**San Francisco**” refers to the City and County of San Francisco.

“**SFPUC**” refers to the San Francisco Public Utilities Commission as an operating department of San Francisco, the General Manager of which reports to the Commission.

“**Substantially Expended**,” when used with respect to a specific bond issue, means 98% of the proceeds from that bond issue and investment earnings contributed to the project fund have been expended.

“**Supply Assurance**” means the 184 MGD maximum annual average metered supply of water dedicated by San Francisco to public use in the Wholesale Service Area (not including San Jose and Santa Clara).

“**Term**” means the 25-year term of the Agreement commencing July 1, 2009, including one or both 5-year extensions authorized by the Agreement.

“**Tier 1 Shortage Plan**” refers to the Water Shortage Allocation Plan, adopted by the SFPUC and the Wholesale Customers in conjunction with the Agreement describing the method for allocating water between the

SFPUC and the Wholesale Customers collectively for shortages of up to 20% of deliveries from the Regional Water System, as amended from time-to-time.

“**Water Enterprise**” refers to the San Francisco Water Department (SFWD), an SFPUC Operating Department.

“**Water Management Charge**” refers to the charge collected by San Francisco on behalf of BAWSCA for local water resource development in the Wholesale Service Area.

“**Water-Only**,” when used with reference to Hetch Hetchy Enterprise capital costs and operating and maintenance expenses, means capital costs and expenses that are incurred solely for the construction and operation of assets used to protect water quality or to provide for the delivery of water for consumptive purposes.

“**Water-Related**” refers to the water related portion (45%) of Joint Hetch Hetchy Enterprise assets or expenses.

“**Wheeling Statute**” refers to Article 4 of Chapter 11 of the California Water Code, as amended from time to time.

“**Wholesale Capital Fund**” is the account established by the SFPUC for deposit of Wholesale Customer revenue that is used to fund the wholesale share of revenue-funded New Regional Assets.

“**Wholesale Customer**” or “**Customers**” means one or more of the 27 water customers that are contracting for purchase of water from San Francisco pursuant to the Agreement.

“**Wholesale Revenue Coverage**” refers to the additional dollar amount included in wholesale rates each fiscal year that is charged to Wholesale Customers by the SFPUC for their proportionate share of Debt Service coverage.

“**Wholesale Revenue Coverage Reserve**” refers to the account established by the SFPUC for deposit of Wholesale Revenue Coverage.

“**Wholesale Revenue Requirement**” means the calculated Wholesale Customer portion of SFPUC Regional Water System capital and operating costs.

“**Wholesale Service Area**” means the combined service areas of the Wholesale Customers, as delineated on the service area maps attached to each Individual Water Sales Contract.

“**WSIP**” refers to the Water System Improvement Program approved by the Commission in Resolution No. 08-0200 on October 30, 2008, as amended from time to time.

Term

The Term of the Agreement is twenty five (25) years. The Term shall began on July 1, 2009 and ends on June 30, 2034.

In December 2031, the SFPUC may provide written notice to the Wholesale Customers that it is willing to extend the Term of the Agreement. Between January 1, 2032 and June 30, 2032, any Wholesale Customer may accept the SFPUC’s offer to extend the Term by providing a written notice of extension to the SFPUC. If such notices of extension are received from Wholesale Customers representing at least two-thirds in number as of June 30, 2032 and seventy five percent (75%) of the quantity of water delivered by the SFPUC to all Wholesale Customers during fiscal year 2030-31, the Term shall be extended for another five (5) years (“First Extension Term”), through June 30, 2039. No party to the Agreement which does not wish to remain a party during the Extension Term shall be compelled to do so by the actions of other parties.

In December 2036, the SFPUC may provide written notice to the Wholesale Customers that it is willing to extend the Term of the Agreement. Between January 1, 2037 and June 30, 2037, any Wholesale Customer may accept the SFPUC's offer to extend the Term by providing a written notice of extension to the SFPUC. If such notices of extension are received from Wholesale Customers representing at least two-thirds in number as of June 30, 2037 and seventy five percent (75%) of the quantity of water delivered by the SFPUC to all Wholesale Customers during fiscal year 2035-36, the Term shall be extended for another five (5) years ("Second Extension Term"), through June 30, 2044. No party to the Agreement which does not wish to remain a party during the Extension Term shall be compelled to do so by the actions of other parties.

Amendments to Agreement

The Agreement may be amended with the written consent of San Francisco and of Wholesale Customers representing at least two-thirds in number and seventy five percent (75%) of the quantity of water delivered by San Francisco to all Wholesale Customers during the fiscal year immediately preceding the amendment.

No amendment which adversely affects a Fundamental Right of a Wholesale Customer may be made without the written consent of that customer.

Supply Assurance

San Francisco agrees to deliver water to the Wholesale Customers up to the amount of the Supply Assurance. Water delivered by San Francisco to Retail Customers shall not be included in the Supply Assurance. Until December 31, 2018, such commitment is subject to the Interim Supply Limitation provisions in the Agreement.

Both the Supply Assurance and the Individual Supply Guarantees identified are expressed in terms of daily deliveries on an annual average basis and do not themselves constitute a guarantee by San Francisco to meet peak daily or hourly demands of the Wholesale Customers, irrespective of what those peak demands may be. The parties acknowledge, however, that the Regional Water System has been designed and constructed to meet peak daily and hourly demands and that its capacity to do so has not yet been reached. San Francisco agrees to operate the Regional Water System to meet peak requirements of the Wholesale Customers to the extent possible without adversely affecting its ability to meet peak demands of Retail Customers. The Agreement shall not preclude San Francisco from undertaking to meet specific peak demand requirements of individual Wholesale Customers in their Individual Water Sales Contracts.

The Supply Assurance is perpetual and shall survive the expiration or earlier termination of the Agreement. Similarly, the Individual Supply Guarantees and/or the Individual Water Sales Contracts are perpetual and shall survive the expiration or earlier termination of the Agreement or the Individual Water Sales Contracts.

The amount of water made available by San Francisco to the Wholesale Customers is subject to reduction, to the extent and for the period made necessary by reason of water shortage, Drought, Emergencies, or by malfunctioning or rehabilitation of facilities in the Regional Water System. The amount of water made available to the Wholesale Customers may not be reduced, however, merely because the water recycling and groundwater projects which WSIP envisions to be constructed within San Francisco, or the conservation programs intended to reduce water use by Retail Customers that are included in the WSIP, do not generate the yield or savings (10 MGD combined) anticipated by San Francisco.

Allocation of Supply Assurance

A portion of the Supply Assurance has been allocated among 24 of the 27 Wholesale Customers. Three Wholesale Customers do not have Individual Supply Guarantees. The cities of San Jose and Santa Clara do not have an Individual Supply Guarantee because San Francisco has provided water to them on a temporary and interruptible basis. The City of Hayward does not have an Individual Supply Guarantee because of the terms of the 1962 contract between it and San Francisco.

If the total amount of water delivered by San Francisco to Hayward and to the Wholesale Customers with Individual Supply Guarantees exceeds 184 MGD over a period of three consecutive fiscal years (i.e., July 1 through June 30), then the Individual Supply Guarantees of those Wholesale Customers shall be reduced pro rata so that their combined entitlement and the sustained use by Hayward does not exceed 184 MGD.

It is the responsibility of each Wholesale Customer to limit its purchases of water from San Francisco so as to remain within its Individual Supply Guarantee. San Francisco is not liable to any Wholesale Customer or obligated to supply more water to any Wholesale Customer individually or to the Wholesale Customers collectively than the amount to which it or they are otherwise entitled under the Agreement due to the use by any Wholesale Customer of more water than the amount to which it is entitled under the Agreement.

San Francisco installs such new connections between the Regional Water System and the distribution system of any Wholesale Customer that are necessary to deliver the quantities of water to which the Wholesale Customer is entitled under the Agreement. San Francisco has the right to determine the location of such connections, in light of the need to maintain the structural integrity of the Regional Water System and, where applicable, the need to limit peaking directly off of Regional Water System pipelines by a Wholesale Customer's individual retail customers, the need to ensure that a Wholesale Customer's individual retail customers have access to alternative sources of water in the event of a reduction in San Francisco's ability to provide them with water, and other factors which may affect the desirability or undesirability of a particular location.

Wholesale Customer Service Areas

A Wholesale Customer may not deliver water furnished to it by San Francisco outside the boundary of its service area without the prior written consent of San Francisco, except for deliveries to another Wholesale Customer on an emergency and temporary basis. San Francisco may refuse a Wholesale Customer's request to expand its service area on any reasonable basis.

If two or more Wholesale Customers agree to adjust the boundaries of their respective service areas so that one assumes an obligation to serve customers in an area that was previously within the service area of another Wholesale Customer, they may also correspondingly adjust their respective Individual Supply Guarantees.

San Francisco acknowledges that it has heretofore consented in writing to deliveries of water by individual Wholesale Customers outside their service area boundaries and agrees that nothing in the Agreement is intended to affect such prior authorizations, which remain in full force and effect according to their terms.

Permanent Transfers of Individual Supply Guarantees

A Wholesale Customer that has an Individual Supply Guarantee may transfer a portion of it to one or more other Wholesale Customers; transfers of a portion of an Individual Supply Guarantee must be permanent; and transfers of portions of Individual Supply Guarantees are subject to approval by the SFPUC. SFPUC review is limited to (1) whether a proposed transfer complies with the Act, and (2) whether the affected facilities in the Regional Water System have sufficient capacity to accommodate delivery of the increased amount of water to the proposed transferee.

Restrictions on Resale

Each Wholesale Customer agrees that it will not sell any water purchased from San Francisco to a private party for resale by such private party to others in violation of the Act.

Each Wholesale Customer also agrees that it will not sell water purchased from San Francisco to another Wholesale Customer without prior written approval of the SFPUC, except on a temporary and emergency basis. The SFPUC agrees that it will not unreasonably withhold its consent to a request by a Wholesale Customer to deliver water to another Wholesale Customer for resale.

Conservation; Use of Local Sources

Each Wholesale Customer shall take all actions within its legal authority related to water conservation that are necessary to insure that the SFPUC (a) remains eligible for (i) state and federal grants and (ii) access to the Drought Water Bank operated by the California Department of Water Resources, as well as other Drought-related water purchase or transfer programs, and (b) complies with future legal requirements imposed on the Regional Water System by the federal government, the State, or any other third party as conditions for receiving funding or water supply.

San Francisco and each Wholesale Customer agree that they will diligently apply their best efforts to use both surface water and groundwater sources located within their respective service areas and available recycled water to the maximum feasible extent, taking into account the environmental impacts, the public health effects and the effects on supply reliability of such use, as well as the cost of developing such sources.

Restrictions on Purchases of Water from Others; Minimum Annual Purchases

Each Wholesale Customer (except for Alameda County Water District and the cities of Milpitas, Mountain View and Sunnyvale) agrees that it will not contract for, purchase or receive, with or without compensation, directly or indirectly, from any person, corporation, governmental agency or other entity, any water for delivery or use within its service area without the prior written consent of San Francisco.

The prohibition in the preceding sentence does not apply to:

1. recycled water;
2. water necessary on an emergency and temporary basis, provided that the Wholesale Customer promptly gives San Francisco notice of the nature of the emergency, the amount of water that has been or is to be purchased, and the expected duration of the emergency; or
3. water in excess of a Wholesale Customer's Individual Supply Guarantee.

Alameda County Water District and the cities of Milpitas, Mountain View and Sunnyvale may purchase water from sources other than San Francisco, provided that San Francisco shall require that each purchase a minimum annual quantity of water from San Francisco. Due to continued dry years in the last four years, and the call for voluntary rationing from the wholesale and retail customers, the SFPUC waived the minimum purchase requirements from these agencies from Fiscal Year 2013-14 through Fiscal Year 2016-17.

Water Quality

San Francisco shall deliver treated water to Wholesale Customers (except Coastside County Water District, which receives untreated water from Crystal Springs and Pilarcitos Reservoirs) that complies with primary maximum contaminant level and treatment technique standards at the regulatory entry points designated in the San Francisco Regional Water System Domestic Water Supply Permit (currently Permit No. 02-04-04P3810001) issued by the California Department of Public Health.

Completion of WSIP

San Francisco will complete construction of the physical facilities in the WSIP by June 2019. The SFPUC agrees to provide for full public review and comment by local and state interests of any proposed changes that delay previously adopted project completion dates or that delete projects. The SFPUC shall meet and consult with BAWSCA before proposing to the Commission any changes in the scope of WSIP projects which reduce their capacity or ability to achieve adopted levels of service goals. The SFPUC retains discretion to determine whether to approve the physical facilities in the WSIP until after it completes the CEQA process.

Regional Water System Repair, Maintenance and Operation

San Francisco will keep the Regional Water System in good working order and repair consistent with prudent utility practice.

San Francisco will continue to operate its reservoirs in a manner that assigns higher priority to the delivery of water to the Bay Area and the environment than to the generation of electric power. The SFPUC, as the Regional Water System operator, is solely responsible for making day-to-day operational decisions.

Shortages

Notwithstanding San Francisco's obligations to deliver the Supply Assurance to the Wholesale Customers collectively and the Individual Supply Guarantees to Wholesale Customers individually, San Francisco may reduce the amount of water available or interrupt water deliveries to specific geographical areas within the Regional Water System service area to the extent that such reductions are necessary due to Emergencies, or in order to install, repair, rehabilitate, replace, investigate or inspect equipment in, or perform other maintenance work on, the Regional Water System. Such reductions or interruptions may be imposed by San Francisco without corresponding reductions or interruptions in the amount of water available to SFPUC water users outside the specific geographical area where reductions or interruptions are necessary, if the system's ability to supply water outside the specific geographical area has not been impaired. In the event of such a reduction or interruption, San Francisco will restore the supply of water to the specific geographical area as soon as is possible.

Following a major system emergency event, the SFPUC will work closely with its Wholesale Customers to monitor customer demand, including the demand source. In the event that any individual Wholesale Service Area or Retail Service Area customer's uncontrolled distribution system leaks could result in major water waste and endanger the supply provided by the Regional Water System as a whole, flow through some customer connections may need to be temporarily reduced or terminated. SFPUC will work closely with customers to assess the nature of the demand (e.g. fire-fighting versus leakage), so that public health and safety protection can be given top priority.

1. All emergencies that require use of non-potable source water will require use of chlorine, or other suitable disinfectant, if feasible.

2. San Francisco will use its best efforts to meet the seismic reliability and delivery reliability level of service goals adopted by the Commission in conjunction with the WSIP. San Francisco will distribute water on an equitable basis throughout the Regional Water System service area following a regional Emergency, subject to physical limitations caused by damage to the Regional Water System.

Notwithstanding San Francisco's obligations to deliver the Supply Assurance to the Wholesale Customers collectively and the Individual Supply Guarantees to Wholesale Customers individually, San Francisco may reduce the amount of water available to the Wholesale Customers in response to Drought.

1. The Tier 1 Shortage Plan set forth in the Agreement will continue to be used to allocate water from the Regional Water System between Retail and Wholesale Customers during system-wide shortages of 20% or less.

2. San Francisco and the Wholesale Customers may negotiate in good faith revisions to the Tier 1 Shortage Plan to adjust for and accommodate anticipated changes due to demand hardening in the SFPUC's Wholesale and Retail Service Areas. Until agreement is reached, the current Tier 1 Shortage Plan will remain in effect.

3. The SFPUC will honor allocations of water among the Wholesale Customers ("Tier 2 Allocations") provided by BAWSCA or if unanimously agreed to by all Wholesale Customers. If BAWSCA or all Wholesale Customers do not provide the SFPUC with Tier 2 Allocations, then the SFPUC may make a final allocation decision after first meeting and discussing allocations with BAWSCA and the Wholesale Customers. For Regional Water System shortages in excess of 20%, San Francisco shall (a) follow the Tier 1 Shortage Plan

allocations up to the 20% reduction, (b) meet and discuss how to implement incremental reductions above 20% with the Wholesale Customers, and (c) make a final determination of allocations above the 20% reduction. After the SFPUC has made the final allocation decision, the Wholesale Customers shall be free to challenge the allocation on any applicable legal or equitable basis.

4. San Francisco will use its best efforts to identify potential sources of dry year water supplies and establish the contractual and other means to access and deliver those supplies in sufficient quantity to meet a goal of not more than 20% system-wide shortage in any year of the design drought.

Wheeling of Water from Outside SFPUC System

Subject to the Wheeling Statute, the SFPUC will not deny use of Regional Water System unused capacity for wheeling when such capacity is available for wheeling purposes during periods when the SFPUC has declared a water shortage emergency under Water Code Section 350 if the following conditions are met:

A. The transferor pays reasonable charges incurred by the SFPUC as a result of the wheeling, including capital, operation, maintenance, administrative and replacement costs (as such are defined in the Wheeling Statute).

B. Wheeled water that is stored in the Regional Water System spills first.

C. Wheeled water will not unreasonably: (1) impact fish and wildlife resources in Regional Water System reservoirs; (2) diminish the quality of water delivered for consumptive uses; or (3) increase the risk of exotic species impairing Regional Water System operations. The transferor may at its own expense provide for treatment to mitigate these effects.

D. Priority will be given to wheeling by Wholesale Customers or BAWSCA over arrangements for third-party public entities.

Limits on New Customers

Until December 31, 2018, San Francisco will not enter into contracts to supply water to any entity other than a Wholesale Customer (whether permanent or temporary, firm or interruptible) unless:

1. It completes any necessary environmental review under CEQA of the proposed new wholesale water service obligations;

2. It concurrently completes any necessary environmental review under CEQA and commits to make both San Jose and Santa Clara permanent customers with Individual Supply Guarantees equal to at least 9 MGD; and

3. The Agreement is amended to incorporate any commitments to proposed new wholesale customers and to San Jose and Santa Clara, and to address the effects, if any, of the new customer(s) on water supply reliability, water quality and cost to existing customers of the Regional Water System.

As of January 1, 2019, San Francisco will not enter into contracts to supply water to any entity other than a Wholesale Customer (whether permanent or temporary, firm or interruptible) unless:

1. It completes any necessary environmental review under CEQA of the proposed new wholesale water service obligations;

2. It concurrently completes any necessary environmental review under CEQA and commits to make both San Jose and Santa Clara permanent customers with Individual Supply Guarantees equal to at least 9 MGD;

3. Doing so increases the reliability of the Regional Water System; and

4. The Agreement is concurrently amended (a) to reflect that increased reliability by means of an increased commitment by San Francisco to deliver water during Droughts and (b) to address the effects, if any, of the new customer(s) on water supply, water quality and cost to existing customers of the Regional Water System.

San Francisco may enter into new retail water service obligations outside of the City and County of San Francisco:

1. Only in Alameda, San Mateo, Santa Clara, San Joaquin and Tuolumne Counties;
2. That are within or immediately adjacent to areas in which it currently serves other Retail Customers; and
3. Until the aggregate additional demand represented by the new retail customers reaches 0.5 MGD.

The limitations on serving new Retail Customers described in this subsection do not apply to historical obligations to supply water that may be contained in prior agreements between the SFPUC or its predecessor the Spring Valley Water Company, and individual users or property owners located adjacent to Regional Water System transmission pipelines.

Subject to completion of necessary environmental review under CEQA, San Francisco may at any time enter into water exchanges or cost sharing agreements with other water suppliers to enhance dry year or normal year water deliveries, provided that San Francisco cannot incur new water service obligations to such other water suppliers unless the requirements for taking on new wholesale customers are met.

New Sources of Water Supply to Maintain Supply Assurance

Sudden and unanticipated events may require San Francisco to act promptly to protect the health, safety and economic well-being of its Retail and Wholesale Customers. Such sudden events include, but are not limited to drought, earthquakes, terrorist acts, catastrophic failures of facilities owned and operated by San Francisco, and other natural or man-made events. If such events diminish San Francisco's ability to maintain the Supply Assurance, San Francisco may increase the Wholesale Revenue Requirement to pay for planning, evaluation and implementation of replacement sources of supply when such needs arise and without the prior approval of the Wholesale Customers.

Climate change, regulatory actions and other events may impact San Francisco's ability to maintain the Supply Assurance from its existing surface water supplies, but on timescales long enough to permit San Francisco to collaborate with its Wholesale Customers on how best to address possible impacts to water supply. If such events diminish San Francisco's ability to maintain the Supply Assurance, San Francisco may increase the Wholesale Revenue Requirement to pay for planning, evaluation and implementation of replacement sources of supply when such needs arise and without the prior approval of the Wholesale Customers.

New Sources of Water Supply to Increase Supply Assurance

The Commission action in SFPUC Resolution Number 08-0200, adopted October 30, 2008 requires certain decisions by San Francisco regarding whether to supply more than 265 MGD from its watersheds following 2018. Such decisions are to be made by December 31, 2018, subject to the exercise of San Francisco's retained CEQA discretion. San Francisco's future decisions may include an offer to increase the Supply Assurance at the request of some or all of its Wholesale Customers. Costs associated with providing additional water from its existing water supplies in San Mateo, Santa Clara, Alameda, Tuolumne, and Stanislaus Counties shall be allocated to Wholesale and Retail Customers as described in the Agreement.

If San Francisco seeks to develop additional water supplies from new sources to increase the Supply Assurance available to Wholesale Customers, studies and resulting water supply projects will be conducted jointly with BAWSCA under separate agreement(s) specifying the purpose of the projects, the anticipated regional benefits and how costs of studies and implementation will be allocated and charged. Nothing in the Agreement shall serve as

precedent for the allocation of such new supply capital costs between Retail and Wholesale Customers or associated operational expenses, which shall only occur following approval of both parties and amendment of the Agreement, if necessary.

Interim Supply Limitation Imposed by SFPUC

In adopting the WSIP in Res. No. 08-0200, the Commission included full implementation of all proposed WSIP capital improvement projects to achieve level of service goals relating to public health, seismic safety, and delivery reliability, but decided to adopt a water supply element that includes the Interim Supply Limitation. Between the effective date of the Agreement and December 31, 2018, the Interim Supply Limitation is allocated as follows between Retail and Wholesale Customers:

| | |
|----------------------------------|---------|
| Retail Customers' allocation: | 81 MGD |
| Wholesale Customers' allocation: | 184 MGD |

The Wholesale Customers' collective allocation of 184 MGD under the Interim Supply Limitation includes the demand of the cities of San Jose and Santa Clara, whose demand is not included in the Supply Assurance.

Transfers of Interim Supply Allocations

Any Wholesale Customer, including Hayward, may transfer a portion of its Interim Supply Allocation to one or more other Wholesale Customers. All Wholesale Customers are also eligible transferees, including California Water Service Company up to its Individual Supply Guarantee. Transfers of a portion of an Interim Supply Allocation must be prospective. The duration of a transfer cannot be less than the balance of the fiscal year. Transfers of portions of Interim Supply Allocations are subject to approval by the SFPUC. SFPUC review is limited to determining (1) whether a proposed transfer complies with the Act, and (2) whether the affected facilities in the Regional Water System have sufficient capacity to accommodate delivery of the increased amount of water to the proposed transferee. The SFPUC will not unreasonably withhold or delay its approval. Transfers of Interim Supply Allocations shall continue in effect until the earlier of (1) delivery of written notice to the SFPUC by the transfer participants that the transfer has been rescinded or (2) December 31, 2018.

Environmental Enhancement Surcharge

Beginning with wholesale water rates for fiscal year 2011-12, and continuing for the duration of the Interim Supply Limitation, the Commission will establish the Environmental Enhancement Surcharge concurrently with the budget-coordinated rate process set forth in the Agreement. The monetary amount of the Environmental Enhancement Surcharge per volume of water, such as dollars per acre-foot, will be equivalent for Retail Customer use in excess of 81 MGD and Wholesale Customer use in excess of 184 MGD.

Beginning in fiscal year 2011-12, the Environmental Enhancement Surcharge will be levied only if and when combined Retail Customer and Wholesale Customer purchases exceed the Interim Supply Limitation of 265 MGD and if the fund described below has been established by the San Francisco Board of Supervisors. In that event, the Environmental Enhancement Surcharge will apply to Retail Customers for use in excess of 81 MGD and to individual Wholesale Customers for use in excess of their Interim Supply Allocations established by the Commission.

1. Environmental Enhancement Surcharges related to the Retail Customers' use in excess of their 81 MGD Retail Customer Allocation will be paid by the SFPUC, and no portion of such surcharges may be allocated to Wholesale Customers. The method of recovering the Environmental Enhancement Surcharges imposed upon Retail Customers shall be within the sole discretion of the SFPUC.

2. Environmental Enhancement Surcharges related to the individual Wholesale Customers' use in excess of their respective Interim Supply Allocations will be paid to the SFPUC by individual Wholesale Customers.

Environmental Enhancement Surcharges paid by the SFPUC and by Wholesale Customers will be placed into a restricted reserve fund. The SFPUC will request the San Francisco Board of Supervisors to establish this fund by ordinance and, if adopted, the fund will be subject to the following restrictions:

1. Interest earnings will stay in the reserve fund.
2. The reserve fund shall (a) be subject to automatic appropriation; (b) require unexpended and unencumbered fund balances to be carried forward from year to year; and (c) not be transferred to the San Francisco General Fund.
3. The reserve fund may be used only for specific environmental restoration and enhancement measures for the Sierra and local watersheds, such as those included in the Watershed Environmental Improvement Program.
4. Environmental Enhancement Surcharge proceeds shall be expended in an expeditious manner. Any Environmental Enhancement Surcharge proceeds that remain in the reserve fund as of December 31, 2018 shall be used to complete projects previously approved. Upon completion of the identified projects, the balance of any unexpended sums in the reserve fund shall be distributed to BAWSCA and the SFPUC in proportion to the total amount of surcharges assessed to the Wholesale and Retail Customers, respectively.

Specific uses of Environmental Enhancement Surcharges will be decided by the SFPUC and BAWSCA General Managers following input from environmental stakeholders and other interested members of the public. If parties are unable to agree, then they will jointly select a third person to participate in making the decision.

San Jose/ Santa Clara Interim Supply Allocation and Process for Reduction/ Termination.

San Francisco will supply a combined annual average of 9 MGD to the cities of San Jose and Santa Clara through 2018. Water supplied by San Francisco may only be used in the existing defined service areas in the northern portions of San Jose and Santa Clara. San Francisco may reduce the quantity of water specified in this section when it establishes the Interim Supply Allocations for Wholesale Customers. The establishment of Interim Supply Allocations for San Jose and Santa Clara shall not be considered a reduction of supply, provided that the Interim Supply Allocations assigned to San Jose and Santa Clara do not effect a reduction greater than the aggregate average reduction in Individual Supply Guarantees for Wholesale Customers that have such guarantees.

San Francisco Decisions in 2018 Regarding Future Water Supply

By December 31, 2018, San Francisco will have completed any necessary CEQA review that is relevant to making San Jose and Santa Clara permanent customers of the Regional Water System and will decide whether or not to make San Jose and Santa Clara permanent customers of the Regional Water System. San Francisco will make San Jose and Santa Clara permanent customers only if, and to the extent that, San Francisco determines that Regional Water System long term water supplies are available. In the event that San Francisco decides to afford permanent status to San Jose and Santa Clara, the Agreement will be amended.

By December 31, 2018, San Francisco will have completed any necessary CEQA review and will decide how much water if any, in excess of the Supply Assurance it will supply to Wholesale Customers from the Regional Water System to meet their projected future water demands until the year 2030, and whether to offer a corresponding increase in the Supply Assurance as a result of its determination.

Retained Discretion of SFPUC and Wholesale Customers

The Agreement contemplates discretionary actions that the SFPUC and the Wholesale Customers may choose to take in the future that could result in physical changes to the environment (“Discretionary Actions”). The Discretionary Actions include decisions to:

1. Develop additional or alternate water resources by the SFPUC or one or more Wholesale Customers;
2. Implement the physical facilities comprising the WSIP by December 31, 2015;
3. Approve wheeling proposals by Wholesale Customers;
4. Approve new wholesale customers and water exchange or cost sharing agreements with other water suppliers;
5. Provide additional water to San Jose and/or Santa Clara;
6. Offer permanent status to San Jose and/or Santa Clara;
7. Reduce or terminate supply to San Jose and/or Santa Clara;
8. Provide additional water to Wholesale Customers in excess of the Supply Assurance to meet their projected future water demands; and
9. Offer a corresponding volumetric increase in the Supply Assurance.

Wholesale Revenue Requirement

The Agreement shall be applicable only to the water rates charged by San Francisco to the Wholesale Customers. Nothing contained in the Agreement shall limit, constrain, or in any way affect the rates which San Francisco may charge for water sold to Retail Customers or the methodology by which such rates are determined.

The Agreement sets forth the method by which the Wholesale Customers’ collective share of expenses incurred by the SFPUC in delivering water to them will be determined.

The Agreement implements two general principles as follows: (1) the Wholesale Customers should not pay for expenses of SFPUC operations from which they receive no benefit and (2) the Wholesale Customers should pay their share of expenses incurred by the SFPUC in delivering water to them on the basis of Proportional Annual Use unless otherwise explicitly provided in the Agreement.

To implement these general principles, the Wholesale Revenue Requirement will consist of, and be limited to the Wholesale Customers’ shares of the following categories of expense:

1. Contribution to the capital cost of Water Enterprise New Regional Assets.
2. Water Enterprise operation and maintenance expenses, including power purchased from the Hetch Hetchy Enterprise that is used in the operation of the Water Enterprise.
3. Water Enterprise administrative and general expenses.
4. Water Enterprise property taxes.
5. The Water Enterprise’s share of the Hetch Hetchy Enterprise’s operation and maintenance, administrative and general, and property tax expenses.

6. The Water Enterprise's share of the Hetch Hetchy Enterprise's capital cost of New Assets classified as Water-Only and the Water-Related portion of Joint Assets.

In each of these cost categories, Direct Retail Expenses will be allocated entirely to Retail Customers. Direct Wholesale Expenses will be allocated entirely to the Wholesale Customers. Regional Expenses will be allocated between Retail Customers and Wholesale Customers.

For purposes of establishing the rates to be charged Wholesale Customers, expenses will be based on the budget for, and estimates of water purchases in, the following fiscal year. For purposes of accounting, the Wholesale Revenue Requirement will be determined on the basis of actual expenses incurred and actual water use.

In addition, rates charged to Wholesale Customers may include the Wholesale Customers' contribution to a Wholesale Revenue Coverage Reserve, which is not included in the Wholesale Revenue Requirement itself.

Capital Cost Contribution – New Regional Assets

The Wholesale Customers shall pay the wholesale share of Net Annual Debt Service for new Regional Assets.

1. The amount of Net Annual Debt Service for New Regional Assets will be determined for each series of Indebtedness issued. Until the proceeds of a particular series are Substantially Expended, the amount attributable to specific projects will be based on the expected use of proceeds shown in the "Certificate Regarding Use of Proceeds" executed by the SFPUC General Manager on behalf of the Commission in connection with the sale of the Indebtedness.

2. After the proceeds of a series are Substantially Expended, the SFPUC General Manager will prepare and execute a certificate showing the actual expenditure of proceeds at an allocation of Net Debt Service to New Regional Assets for a series of bonds will be used in the fiscal year in which the proceeds have been Substantially Expended and thereafter.

3. The Wholesale Customers' share of Net Annual Debt Service for the New Regional Assets that are categorized as Direct Wholesale will be 100 percent. (None of the projects in the WSIP are categorized as Direct Wholesale.) The Wholesale Customers' share of Net Annual Debt Service for all other New Regional Assets will be determined each year and will be equal to the Wholesale Customers' Proportional Annual Use.

4. If Indebtedness is issued by the SFPUC to refund the 2006 Revenue Bonds, Series A or to refund any other long-term Indebtedness issued after July 1, 2009, the Net Annual Debt Service attributable to proceeds used for refunding will be allocated on the same basis as the Indebtedness being refunded.

5. In addition to Net Debt Service, Wholesale Customers will pay a proportionate share of annual administrative costs associated with Indebtedness, such as bond trustee fees, credit rating agency fees, letter of credit issuer fees, San Francisco Revenue Bond Oversight Committee fees, etc., but only to the extent such fees are neither paid from proceeds of Indebtedness nor included in SFPUC operation and maintenance or administrative and general expenses.

The Wholesale Customers shall pay the wholesale share of the appropriation contained in the SFPUC annual budget for each year to be used to acquire or construct New Regional Assets.

The Wholesale Customers' share of the annual appropriation for revenue-funded New Regional Assets that are categorized as Direct Wholesale will be 100 percent. The Wholesale Customers' share of the annual appropriation for all other revenue-funded New Regional Assets will be determined each year and will be equal to the Wholesale Customers' Proportional Annual Use in each fiscal year. The amount appropriated in each fiscal year for the wholesale share of New Regional Assets shall be contributed to the Wholesale Capital Fund.

Hetch Hetchy Enterprise Expenses

There are two steps involved in determining the amount of the Wholesale Customers' share of Hetch Hetchy Enterprise expenses.

1. The first step is to determine the Water Enterprise's share of Hetch Hetchy Enterprise operation expenses, maintenance expenses, administrative and general expenses, and property taxes.

2. The second step is to determine the Wholesale Customers' share of expenses allocable to the Water Enterprise.

The Water Enterprise's share of Hetch Hetchy Enterprise expenses consist of 100 percent of Water-Only expenses and the Water-Related portion (45%) of Joint expenses.

The Wholesale Customers' share of the sum of the Water Enterprise's share of Hetch Hetchy Enterprise expenses shall be calculated by multiplying that dollar amount by Adjusted Proportional Annual Use.

Wholesale Customers are also allocated a share of Hetch Hetchy Enterprise capital costs. The components of Hetch Hetchy Enterprise capital costs are as follows:

1. The Water Enterprise will be assigned 100 percent of Net Annual Debt Service attributable to acquisition and construction of New Hetch Hetchy Enterprise assets that are Water-Only and the Water-Related portion (45 percent) of Net Annual Debt Service on New Hetch Hetchy Enterprise Joint assets.

2. The Water Enterprise will be assigned 100 percent of capital expenditures from revenues for New Hetch Hetchy Enterprise assets that are Water-Only and the Water-Related portion (45 percent) of such expenditures for new Hetch Hetchy Enterprise Joint assets.

The Wholesale Customers' share of the Net Annual Debt Service and revenue funded capital expenditures shall be calculated by multiplying that dollar amount by Adjusted Proportional Annual Use.

Additional Agreements Related to Financial Issues

The Wholesale Customers have no entitlement to any of the following sources of revenue to the SFPUC.

1. Revenues from leases or sales of SFPUC real property.
2. Revenues from other utility services such as the sale of electric power, natural gas and steam.
3. Revenues from the sale of water to customers and entities other than the Wholesale Customers.
4. Revenues earned from the investment of SFPUC funds other than funds contributed by the Wholesale Customers to the Wholesale Revenue Coverage Reserve or the Wholesale Capital Fund. Wholesale Customers are also entitled to the benefit of earnings on proceeds of Indebtedness (through expenditure on New Regional Assets and /or application to Debt Service) and to interest on the Balancing Account.

5. Revenues not related to the sale of water.

The Wholesale Customers will not be charged with any of the following expenses:

1. Capital costs for assets constructed or acquired prior to July 1, 1984.
2. Expenses incurred by the SFPUC for generation and distribution of electric power, including Hetch Hetchy Enterprise Power-Only expenses and the Power-Related share of Hetch Hetchy Enterprise Joint

expenses. An exception to this is Regional energy costs incurred by the Water Enterprise, for which Wholesale Customers are charged on the basis of Proportional Annual Use.

3. Expenses incurred by SFPUC in providing water to Retail Customers.
4. Expenses associated with the SFPUC's accruals or allocations for uncollectible Retail Water accounts.
5. Attorneys' fees and costs incurred by the Wholesale Customers that a court of competent jurisdiction orders San Francisco to pay as part of a final, binding judgment against San Francisco.
6. Any expenses associated with funding any reserves (other than the required Wholesale Revenue Coverage Reserve) accrued and not anticipated to be paid within one year unless such reserve is established by mutual agreement of the SFPUC and BAWSCA.
7. Any expenses accrued in respect to pending or threatened litigation, damage or personal injury claims or other loss contingencies unless projected to be paid within one year. Otherwise, such expenses will be charged to the Wholesale Customers when actually paid.
8. Any expenses associated with installing, relocating, enlarging, removing or modifying meters and service connections at the request of an individual Wholesale Customer.
9. The Retail Customers' portion of any Environmental Enhancement Surcharges imposed to enforce the Interim Supply Limitation.

The following payments by Wholesale Customers, individually or collectively, are not credited as Wholesale revenues.

1. Payments by individual Wholesale Customers of the Environmental Enhancement Surcharge imposed to enforce the Interim Supply Limitation.
2. Payments of attorneys' fees and costs incurred by San Francisco that a court of competent jurisdiction orders the Wholesale Customers to pay as part of a final, binding judgment against the Wholesale Customers.
3. Payments by individual Wholesale Customers for installation, relocation, enlargement, removal or modification of meters and service connections requested by, and charged to, a Wholesale Customer.
4. Payments applied to the amortization of the ending balance in the balancing account under the 1984 Agreement.
5. Payments of the Water Management Charge which are delivered to BAWSCA.
6. Payments directed to the Wholesale Revenue Coverage Reserve.
7. Prepayments of certain capital and revenues payment.

The Wholesale Customers will receive a proportional benefit from funds received by the SFPUC from (a) governmental grants, rebates, reimbursements or other subventions, (b) private-sector grants for Regional capital or operating purposes of the Water Enterprise and the Water-Only and Water-related portion of Joint Hetch Hetchy Water Enterprise expenses, or (c) a SFPUC use of taxable bonds.

The Wholesale Customers will receive a proportionate benefit from recovery of damages, including liquidated damages, by SFPUC from judgments against or settlements with contractors, suppliers, sureties, etc.,

related to Regional Water System projects and the Water-Only and Water-Related portion of Joint Hetch Hetchy Enterprise projects.

The SFPUC will continue to charge Wholesale Customers for assets acquired or constructed with proceeds of Indebtedness on which Wholesale Customers paid Debt Service during the Term of the Agreement on the “cash” basis (as opposed to the “utility” basis) after the expiration or earlier termination of the Agreement.

Rate Adjustments

Adjustments to the rates applicable to the Wholesale Customers, other than emergency rate increases and drought rate increases, shall be coordinated with the budget development process described in the Agreement.

The Commission may adjust the Wholesale Customers’ rates in response to an Emergency that damages the Regional Water System and disrupts San Francisco’s ability to maintain normal deliveries of water to Retail and Wholesale Customers. In such an Emergency, the Commission may adopt an emergency rate surcharge applicable to Wholesale Customers without following the budgeting procedures set forth in the Agreement, provided that any such rates surcharge imposed by the Commission shall be applicable to both Retail and Wholesale Customers and incorporate the same percentage increase for all customers. Any emergency rate surcharge adopted by the Commission shall remain in effect only until the next-budget coordinated rate-setting cycle.

If the Commission declares a water shortage emergency under Water Code Section 350, implements the Tier 1 Shortage Plan and imposes drought rates on Retail Customers, it may concurrently adjust wholesale rates independently of coordination with the annual budget process. Those adjustments may be designed to encourage water conservation and may constitute changes to the structure of the rates. Drought Rate payments and payments of excess use charges levied in accordance with the Tier 1 Shortage Plan constitute Wholesale Customer Revenue and count towards the Wholesale Revenue Requirement. The SFPUC may use these revenues to purchase additional water for the Wholesale Customers from the State Drought Water Bank or other willing seller.

Rate Structure

The Agreement is not intended and shall not be construed to limit the Commission’s right (a) to adjust the structure of the rate schedule applicable to the Wholesale Customers (i.e., the relationship among the several charges set out therein) or (b) to add, delete, or change the various charges which make up the rate schedule, provided that neither such charges nor the structure of the rate schedule(s) applicable to the Wholesale Customers shall be arbitrary, unreasonable, or unjustly discriminatory as among said customers. The SFPUC will give careful consideration to proposals for changes in the rate schedule made jointly by the Wholesale Customers but, subject to the limitations set out above, shall retain the sole and exclusive right to determine the structure of the rate schedule.

The SFPUC may recommend, and the Commission may adopt, changes in the structure of wholesale rates at any time. However, the new rate schedule implementing these changes will become effective at the beginning of the following fiscal year.

Balancing Account

After the close of each fiscal year, the SFPUC will compute the costs allocable to the Wholesale Customers for that fiscal year based on actual costs incurred by the SFPUC and actual amounts of water used by the Wholesale Customers and the Retail Customers. That amount will be compared to the amounts billed to the Wholesale Customers for that fiscal year (including any Excess Use Charges, but excluding revenues not credited to the Wholesale Revenue Requirement). The difference will be posted to a “balancing account” as a credit to, or charge against, the Wholesale Customers. Interest shall also be posted to the balancing account calculated by multiplying the amount of the opening balance by the average net interest rate, certified by the Controller as earned in the San Francisco Treasury for the previous fiscal year on the San Francisco County Pooled Investment Account. Interest, when posted, will carry the same mathematical sign (whether positive or negative) as carried by the opening balance. The amount posted to the balancing account in each year shall be added to, or subtracted from, the balance in the account from previous years.

If the amount in the balancing account is owed to the Wholesale Customers (a positive balance), the SFPUC shall take it into consideration in establishing wholesale rates. However, the SFPUC need not apply the entire amount to reduce wholesale rates for the immediately ensuing year. Instead, the SFPUC may prorate a positive ending balance over a period of up to three successive years in order to avoid fluctuating decreases and increases in wholesale rates.

If the amount in the balancing account is owed to the SFPUC (a negative balance), the SFPUC shall not be obligated to apply all or any part of the negative balance in establishing wholesale rates for the immediately ensuing year. Instead, the SFPUC may prorate the negative balance in whole or in part over multiple years in order to avoid fluctuating increases and decreases in wholesale rates. As of June 30, 2016, the amount of the credit due to the Wholesale Customers for the balancing account was estimated to be \$21,538,827.

Wholesale Revenue Coverage Reserve

The SFPUC may include in wholesale rates for any fiscal year an additional dollar amount (“Wholesale Revenue Coverage”), which for any fiscal year shall equal the following:

1. The lesser of (i) 25% of the Wholesale Customers’ share of Net Annual Debt Service for that fiscal year, or (ii) the amount necessary to meet the Wholesale Customers’ proportionate share of Debt Service coverage required by then-current Indebtedness for that fiscal year, minus

2. A credit for (i) the actual amount previously deposited in the “Wholesale Revenue Coverage Reserve,” (ii) accrued interest on the amounts on deposit in the Wholesale Revenue Coverage Reserve, and (iii) an amount equal to any additional interest that would have accrued on the actual amounts previously deposited in the Wholesale Revenue Coverage Reserve assuming no withdrawals had been made therefrom.

During each fiscal year, the SFPUC will set aside and deposit that portion of revenue equal to Wholesale Revenue Coverage into a separate account that the SFPUC will establish and maintain, to be known as the “Wholesale Revenue Coverage Reserve.” Deposits into the Wholesale Revenue Coverage Reserve shall be made no less frequently than monthly. The Wholesale Revenue Coverage Reserve shall be credited with interest. The SFPUC may use amounts in the Wholesale Revenue Coverage Reserve for any lawful purpose. Any balance in the Wholesale Revenue Coverage Reserve in excess of the Wholesale Revenue Coverage amount as of the end of any fiscal year shall be applied as a credit against wholesale rates in the immediately following fiscal year unless otherwise directed by BAWSCA.

Conditions in the municipal bond market may change from those prevailing in 2009. If, prior to expiration of the Term, the SFPUC determines that it would be in the best financial interest of both Retail Customers and Wholesale Customers of the Regional Water System for the Debt Service coverage requirement to be increased in one or more series of proposed new Indebtedness above 1.25%, or for the coverage covenant to be strengthened in other ways, it will provide a written report to BAWSCA. The report will contain (1) a description of proposed covenant(s) in the bond indenture; (2) an explanation of how savings are expected to be achieved (e.g., increase in the SFPUC’s credit rating over the then-current level; ability to obtain credit enhancement, etc.); (3) the estimated all-in true interest cost savings; (4) a comparison of the Wholesale Revenue Requirements using the Debt Service coverage limitation and under the proposed methodology; and (5) a comparison of the respective monetary benefits expected to be received by both Retail and Wholesale Customers. The SFPUC and BAWSCA agree to meet and confer in good faith about the proposed changes.

Any increase in Debt Service coverage proposed by the SFPUC shall be commensurate with Proportional Water Use by Retail and Wholesale Customers. If the SFPUC demonstrates that an increase in Debt Service coverage will result in equivalent percentage reductions in total Wholesale and Retail Debt Service payments over the life of the proposed new Indebtedness, based on Proportional Water Use, BAWSCA may agree to a modification of the Wholesale Revenue Coverage requirement. If BAWSCA does not agree to a proposed modification in coverage requirements in the covenants for new Indebtedness, SFPUC may nevertheless proceed with the modification and the issuance of new Indebtedness. Any Wholesale Customer, or BAWSCA, may challenge an increase in the Wholesale Revenue Requirement resulting from the modification in Debt Service coverage through arbitration. If the arbitrator finds that the increase in Debt Service coverage (1) did not and will not result in

equivalent percentage reductions in total Wholesale and Retail Debt Service payments over the life of the proposed new Indebtedness, based on Proportional Water Use, or (2) was not commensurate with Proportional Water Use, the arbitrator may order the Wholesale Revenue Requirement to be recalculated both retrospectively and prospectively to eliminate the differential impact to Wholesale or Retail Customers.

Working Capital Requirement

The SFPUC maintains working capital in the form of unappropriated reserves for the purpose of bridging the gap between when the SFPUC incurs operating expenses required to provide service and when it receives revenues from its Retail and Wholesale Customers. The Wholesale Customers shall fund their share of working capital as part of the annual Wholesale Revenue Requirement calculation. The amount of wholesale working capital for which the Wholesale Customers will be responsible will be determined using the 60-day standard formula approach.

Applying this approach, annual wholesale working capital equals one-sixth of the wholesale allocation of operation and maintenance, administrative and general, and property tax expenses for the Water and Hetch Hetchy Enterprises. Wholesale working capital shall be calculated separately for the Water and Hetch Hetchy Enterprises.

Wholesale Capital Fund

The SFPUC shall establish a comparable Wholesale Revenue-Funded Capital Fund (Wholesale Capital Fund) to enable the Wholesale Customers to fund the wholesale share of revenue-funded New Regional Assets. The SFPUC may include in wholesale rates for any fiscal year an amount equal to the wholesale share of the SFPUC's appropriation for revenue funded New Regional Assets for that year, which sum will be credited to the Wholesale Capital Fund. The wholesale share of other sources of funding, where legally permitted and appropriately accounted for under GAAP, will also be credited to the Wholesale Capital Fund, together with interest earnings on the Wholesale Capital Fund balance.

The SFPUC will expend revenues appropriated and transferred to the Wholesale Capital Fund only on New Regional Assets.

In order to prevent the accumulation of an excessive unexpended and unencumbered surplus in the Wholesale Capital Fund, any excess fund balance (i.e., an accumulated unexpended, unencumbered amount in excess of 10% of the wholesale share of total capital appropriations for New Regional Assets during the five preceding years) will be transferred for the credit of the Wholesale Customers to the Balancing Account.

Arbitration and Judicial Review

All questions or disputes arising under the following subject areas shall be subject to mandatory, binding arbitration and shall not be subject to judicial determination:

1. the determination of the Wholesale Revenue Requirement, which shall include both the calculations used in the determination and the variables used in those calculations;
2. the SFPUC's adherence to accounting practices and conduct of the compliance audit; and
3. the SFPUC's classification of new assets for purposes of determining the Wholesale Revenue Requirement.

All other questions or disputes arising under this Agreement shall be subject to judicial determination. Disputes about the scope of arbitrability shall be resolved by the courts.

Preservation of Water Rights; Notice of Water Rights Proceedings

It is the intention of San Francisco to preserve all of its water rights, irrespective of whether the water held under such water rights is allocated under the Agreement. Nothing in the Agreement shall be construed as an abandonment, or evidence of an intent to abandon, any of the water rights that San Francisco presently possesses.

Reservations of, and Limitations on, Claims

The 1984 Agreement resolved a civil action brought against San Francisco by certain of the Wholesale Customers. Plaintiffs in that action contended that they, and other Wholesale Customers that are municipalities or special districts, were “co-grantees” within the meaning of Section 8 of the Act and were entitled to certain rights, benefits and privileges by virtue of that status. San Francisco disputed those claims.

Nothing in the Agreement, or in the Individual Water Sales Contracts, shall be construed or interpreted in any way to affect the ultimate resolution of the controversy between the Parties concerning whether any of the Wholesale Customers are “co-grantees” under the Act and, if so, what rights, benefits and privileges accrue to them by reason of that claimed status.

The following claims, which San Francisco disputes, are reserved but may not be asserted during the Term (or portions thereof, as indicated):

1. The Wholesale Customers’ claim that the Act entitles them to water at cost.
2. The Wholesale Customers’ claim that San Francisco is obligated under the Act or state law to supply them with additional water in excess of the Supply Assurance. This claim may not be asserted unless and until San Francisco decides not to meet projected water demands of Wholesale Customers in excess of the Supply Assurance.
3. The claim by San Jose and Santa Clara that they are entitled under the Act, or any other federal or state law, to permanent, non-interruptible status and to be charged rates identical to those charged other Wholesale Customers. This claim may not be asserted unless and until San Francisco notifies San Jose or Santa Clara that it intends to interrupt or terminate water deliveries.
4. The Wholesale Customers’ claim that the SFPUC is not entitled to impose a surcharge for lost power generation revenues attributable to furnishing water in excess of the Supply Assurance. This claim may not be asserted unless and until SFPUC furnishes water in excess of the Supply Assurance during the Term and also includes such a surcharge in the price of such water.
5. Claims by Wholesale Customers (other than San Jose and Santa Clara, whose service areas are fixed) that SFPUC is obligated under the Act or state law to furnish water, within their Individual Supply Guarantee, for delivery to customers outside their existing service area and that Wholesale Customers are entitled to enlarge their service areas to supply those customers. Such claims may be asserted only after SFPUC’s denial of, or failure for six months to act on, a written request by a Wholesale Customer to expand its service area.

The Wholesale Customers (and the SFPUC, where specified) will refrain from the following activities during the Term (or portions thereof, as specified):

1. The Wholesale Customers and the SFPUC will not contend before any court, administrative agency or legislative body or committee that the methodology for determining the Wholesale Revenue Requirement (or the requirements for (a) amortization of the ending balance under the 1984 Agreement, or (b) contribution to the Wholesale Revenue Coverage) determined in accordance with the Agreement violates the Act or any other provision of federal law, state law, or San Francisco’s City Charter, or is unfair, unreasonable or unlawful.
2. The Wholesale Customers will not challenge the transfer of funds by the SFPUC to any other San Francisco City department or fund, provided such transfer complies with the San Francisco City Charter. The

transfer of its funds, whether or not permitted by the City Charter, will not excuse the SFPUC from its failure to perform any obligation imposed by the Agreement.

3. The Wholesale Customers and the SFPUC will not assert monetary claims against one another based on the 1984 Agreement other than otherwise arbitral claims arising from the three fiscal years immediately preceding the start of the Term (i.e., Fiscal Years 2006-07, 2007-08 and 2008-09).

The Wholesale Customers do not, by executing the Agreement, concede the legality of the SFPUC's establishing Interim Supply Allocations or imposing Environmental Enhancement Surcharges on water use in excess of such allocations. Any Wholesale Customer may challenge such allocation when imposed and/or such surcharges if and when levied, in any court of competent jurisdiction.

The furnishing of water in excess of the Supply Assurance by San Francisco to the Wholesale Customers shall not be deemed or construed to be a waiver by San Francisco of its claim that it has no obligation under any provision of law to supply such water to the Wholesale Customers, nor shall it constitute a dedication by San Francisco to the Wholesale Customers of such water.

Prohibition of Assignment

The Agreement shall be binding on, and shall inure to the benefit of, the Wholesale Customers and San Francisco, and their respective successors and permitted assigns. Each Wholesale Customer agrees that it will not transfer or assign any rights or privileges under the Agreement, either in whole or in part, or make any transfer of all or any part of its water system or allow the use thereof in any manner whereby any provision of the Agreement will not continue to be binding on it, its assignee or transferee, or such use of the system. Any assignment or transfer in violation of this covenant, and any assignment or transfer that would result in the supply of water in violation of the Act, shall be void.

Nothing shall prevent any Wholesale Customer (except the California Water Service Company and Stanford) from entering into a joint powers agreement or a municipal or multi-party water district with any other Wholesale Customer (except the two listed above) to exercise the rights and obligations granted to and imposed upon the Wholesale Customers hereunder, nor shall this section prevent any Wholesale Customer (except the two listed above) from succeeding to the rights and obligations of another Wholesale Customer hereunder as long as the Wholesale Service Area served by the Wholesale Customers involved in the succession is not thereby enlarged.

APPENDIX C

WATER SYSTEM IMPROVEMENT PROGRAM

Program Development and Chronology

The SFPUC began development of the Capital Improvement Program (“CIP”) in the late 1990s through a series of studies, reports, and authorizations. The SFPUC initiated a water supply planning effort that culminated in the Water Supply Master Plan, issued in April 2000. Concurrent with the Water Supply Master Plan efforts, reliability studies of the water system facilities were conducted to assess their vulnerability to earthquakes, landslides, fire, flood, and power outages.

On May 28, 2002, the Commission approved the *Long-Term Strategic Plan for Capital Improvements*, the *Long-Range Financial Plan* and the *Capital Improvement Program and Appendices* (Resolution No. 02-0101). These reports establish the original framework of the SFPUC CIP.

On November 5, 2002, San Francisco residents voted to approve Proposition A, a \$1.628 billion revenue bond measure to fund the CIP and undertake the most extensive upgrade of the local and regional water delivery systems in the City’s history. The original program contained a total of seventy-seven water infrastructure projects designed to replace or repair key facilities, improve the system’s seismic robustness, enhance water quality, and improve water supply reliability.

On November 5, 2002 the voters also approved Proposition E, which authorizes the SFPUC, subject to the referendum process, to issue revenue bonds, notes and other forms of indebtedness when authorized by ordinance approved by a two-thirds vote of the Board of Supervisors, for the purpose of reconstructing, replacing, expanding, preparing or improving water facilities or wastewater facilities or combinations of water and wastewater facilities under the jurisdiction of the SFPUC. Board action to authorize or issue bonds under this provision is subject to certain additional conditions, requiring certification by an independent engineer and certification by the San Francisco Planning Department. Proposition E also established the Public Utilities Rate Fairness Board.

In August 2003, the SFPUC submitted its first annual status report and update to the State on the implementation of the CIP as required by State Assembly Bill 1823, Wholesale Regional Water System Security and Reliability Act (“AB 1823”). The status report documented the changes made to the May 2002 version of the CIP. Pursuant to the reporting requirements of AB 1823, annual reports describing the progress made on the implementation of the program have been submitted to the State on or before September 1 of each year.

In October 2004, the SFPUC General Manager ordered a thorough review of the CIP with a focus on ensuring system-wide integration of the projects within the program. This undertaking resulted in the development of program-specific goals and objectives, the refinement of project scopes and renaming of the CIP to the WSIP. The scope, schedule, and budget of the program were refined based on the newly adopted goals and objectives.

In February 2005, the SFPUC published its refined program, entitled *Water System Improvement Program Prepared for the Programmatic Environmental Impact Report*, which documented the Levels of Services (“LOS”) goals used to define the WSIP for the Program Environmental Impact Report (the “PEIR”). The February 2005 program description presented water system improvements recommended to meet LOS goals for water quality, seismic and delivery reliability, and water supply.

In August 2005, the SFPUC retained the services of Parsons Water & Infrastructure (“Parsons”) with CH2M Hill as a major sub-consultant to provide program, project, and preconstruction management services on the WSIP. The consultant team’s first assignment was to review the program for adequacy in meeting LOS goals; determine whether any additional projects were needed to fulfill the goals; and review individual project scopes, budgets, and schedule requirements. Parsons and CH2M Hill provided the results of their assessment and their recommendations in the *Water System Improvement Program Assessment Report* (“Assessment”), published on October 21, 2005. The Assessment supported and confirmed that the overall program met the established LOS

goals, and the necessity and scope of individual projects in the WSIP. The Assessment also identified some specific recommendations for changes in the overall program and individual projects.

In addition to this independent review, a Seismic Safety Task Force was convened to provide guidance on the seismic design requirements of the program. This group, comprised of five experts in the fields of structural and seismic engineering, was tasked to assess potential system vulnerabilities and propose seismic design criteria for WSIP projects.

The revised program and the recommendations, upon which SFPUC management, staff, the Assessment Team, Bay Area Water Stewards and BAWSCA agreed, were adopted by the Commission on November 29, 2005. The revised program is described in the *Water System Improvement Program* (SFPUC, January 2006). The refined scopes, schedules, and budgets documented in that report are considered the “Original or Baseline Scopes, Schedules and Budget” for the WSIP, and are referred to as the “December 2005 Approved Scopes, Schedules and Budget.”

On January 19, 2006, pursuant to the reporting requirements of AB 1823, the SFPUC submitted a change notice report, *AB1823: Notice of Changes to Water System Improvement Program (“Change Notice”)* (SFPUC, January 2006), to the State, along with the January 2006 program description document. This Change Notice described in detail changes between the program adopted in November 2005 and the previously adopted program in May 2002, including development of the LOS goals and subsequent project descriptions. The report was amended to respond to questions from the California Seismic Safety Commission and resubmitted to the State on March 8, 2006.

As projects developed during 2006 and 2007, more information became available about project design details, environmental compliance and permitting needs, right-of-way challenges, and facility shutdown and construction sequencing requirements. In 2007, the WSIP Management Team (the “WSIP Team”) initiated a number of initiatives to assess various conditions and aspects of the WSIP that may impact the SFPUC’s ability to deliver the program as planned. These comprehensive programmatic efforts, which included a WSIP Risk Assessment and a WSIP Re-alignment Initiative, resulted in the formulation of a comprehensive risk management strategy and the identification of project scope, schedule and budget adjustments necessary to best deliver the program while continuing to meet all underlying WSIP LOS goals.

On July 28, 2009, in compliance with AB 1823 and AB 2437, the Commission adopted the June 2009 Revised WSIP, which established new approved scopes, schedules and budgets for the program. This is referred to herein as the “June 2009 Approved Scopes, Schedules and Budget.” The variance between these two budgets is summarized in the “*Program Budget*” section of this document. This report described in detail the schedule and major scope changes made to the previously adopted program (i.e., program approved by the Commission on February 20, 2008 and described in the AB 1823 Change Notice report dated March 31, 2008). The September 1, 2009 Change Notice Report included the latest regional project schedules (June 2009 Approved Schedules) and regional project descriptions (June 2009 Approved Scopes) approved for the WSIP.

On July 12, 2011, in compliance with AB 1823 and AB 2437, the Commission adopted the June 2011 Revised WSIP, which established scope, schedule and budget revisions for the program. This is referred to herein as the “June 2011 Approved Scopes, Schedules and Budget.” The September 1, 2011 Change Notice Report included the latest regional project schedules and regional project descriptions (June 2011 Approved Scopes) approved for the WSIP.

On June 12, 2012, the Commission adopted budget and schedule changes for three individual WSIP projects: Irvington Tunnels 1 and 2, Bay Division Pipeline (BDPL) Reliability Upgrade – Pipeline, and Pulgas Balancing – Modification of the Existing Dechloramination Facility. A Change Notice Report documenting these project-specific revisions was submitted to the State on July 12, 2012.

On October 9, 2012, the Commission approved budget changes for four individual WSIP projects: San Joaquin Pipeline (SJPL) System, Tesla Treatment Facility, Vegetation Restoration of WSIP Construction Sites and Program Management.

On January 22, 2013, the Commission approved budget and schedule changes for one individual project: Calaveras Dam Replacement. A Change Notice Report documenting these project-specific revisions was submitted to the State on February 20, 2013.

On April 23, 2013, in compliance with AB 1823, the Commission adopted the March 2013 Revised WSIP, which established scope, schedule and budget revisions for the program.

On April 22, 2014, in compliance with AB 1823, the Commission adopted the March 2014 Revised WSIP, which established scope, schedule and budget revisions for the program.

On December 8, 2015, in compliance with AB 1823, the Commission adopted schedule revisions to six individual projects.

On April 26, 2016, in compliance with AB 1823, the Commission adopted the March 2016 Revised WSIP which established scope, schedule and budget revisions to the program.

On June 30, 2016, the SFPUC submitted its latest AB 1823: Notice of Changes to Water System Improvement Program Report to the State. This report describes in detail the schedule and scope changes made to the previously adopted program (i.e., program approved by the Commission on April 26, 2016). The June 30, 2016 Change Notice Report includes the latest regional project schedules (March 2016 Approved Schedules) and regional project descriptions (March 2016 Approved Scopes) approved for the WSIP. Although AB 1823 does not require the reporting of budget changes, the SFPUC elected to include updated budget figures in the Notice of Changes Report submitted to the State.

The March 2016 Revised WSIP enacted a limited number of changes from the March 2014 WSIP, which include modification of the scope of four projects: (Alameda Creek Recapture Project; Calaveras Dam Replacement Project; Bioregional Habitat Restoration; and Watershed Environmental Improvement Program), and the extension of the overall program completion date from May 2019 to December 2019, excluding approximately \$281 million of local water supply projects funded from WSIP funds but no longer included in WSIP, which have anticipated completion dates after December 2019. In addition, a WSIP Closeout Project was added to each of the following regions: San Joaquin, Sunol Valley, Bay Division and Peninsula. The overall program cost forecast was revised from \$4.765 billion to \$4.845 billion.

Program Objectives

The WSIP is based on two fundamental principles - a clean, unfiltered water source and a gravity-driven system. Projects within the WSIP are developed based on these principles as well as key policies of the SFPUC, including sustainability and environmental stewardship.

The following program objectives were defined for the program:

- Furnish system improvements to provide high quality water that reliably meets current and foreseeable local, State, and federal requirements.
- Reduce vulnerability of the water system to damage from earthquakes.
- Increase reliability of the system to deliver water by improving redundancy needed to accommodate planned outages for maintenance and unplanned outages resulting from facility failure.
- Provide near-term improvement of water supply/drought protection.
- Set forth long-term water supply/drought management options for technical evaluation, cost analysis, and environmental review.

- Enhance sustainability through improvements that optimize protection of the natural and human environment.
- Provide improvements resulting in a cost-effective fully operational water system.

Levels of Service Goals

In order to address the program objectives and consequently derive design criteria and develop project specific scopes for the program, the SFPUC provided direction on Levels of Service (“LOS”) goals and objectives for water quality, seismic reliability, delivery reliability, and water supply, listed in order of priority. These LOS goals and objectives were developed to provide a quantifiable means of setting project-specific design criteria and project scopes for addressing the program objectives. The LOS goals and objectives for the program are summarized below:

I. Water Quality (maintain high water quality)

- Design improvements to meet current and foreseeable future federal and State water quality requirements.
- Provide clean, unfiltered water originating from Hetch Hetchy Reservoir and filtered water from local watersheds.
- Continue to implement watershed protection measures.

II. Seismic Reliability (reduce vulnerability to earthquakes)

- Design improvements to meet current seismic standards.
- Deliver basic service to the three regions in the service area (East/South Bay, Peninsula, and San Francisco) within 24 hours after a major earthquake. Basic service is defined as average winter-month usage, and the performance objective for design of the Regional Water System is 229 mgd. The performance objective is to provide delivery to at least 70 percent of the turnouts in each region, with 104, 44, and 81 mgd delivered to the East/South Bay, Peninsula, and San Francisco, respectively.
- Restore facilities to meet average-day demand of up to 300 mgd within thirty (30) days after a major earthquake.

III. Delivery Reliability (increase delivery reliability and improve ability to maintain the system)

- Provide operational flexibility to allow planned maintenance shutdown of individual facilities without interrupting customer service.
- Provide operational flexibility to minimize the risk of service interruption due to unplanned facility upsets or outages.
- Provide operational flexibility and system capacity to replenish local reservoirs as needed.
- Meet the estimated average annual demand of up to 300 mgd under the conditions of one planned shutdown of a major facility for maintenance concurrent with one unplanned facility outage due to a natural disaster, emergency or facility failure/upset.

IV. Water Supply (meet customer water needs in non-drought and drought periods)

- Meet average annual water demand of 265 mgd from the SFPUC watersheds for retail and wholesale customers during non-drought years for system demands through 2018.
- Meet dry-year delivery needs through 2018 while limiting rationing to a maximum 20 percent system-wide reduction in water service during extended droughts.
- Diversify water supply options during non-drought and drought periods.
- Improve use of new water sources and drought management, including groundwater, recycled water, conservation and transfers.

V. Sustainability (enhance sustainability in all system activities)

- Manage natural resources and physical systems to protect watershed ecosystems.
- Meet, at a minimum, all current and anticipated legal requirements for protection of fish and wildlife habitat.
- Manage natural resources and physical systems to protect public health and safety.

VI. Cost-effectiveness (achieve a cost-effective, fully operational system)

- Ensure cost-effective use of funds.
- Maintain gravity-driven system.
- Implement regular inspection and maintenance program for all facilities.

The first four goals, Water Quality, Seismic Reliability, Delivery Reliability, and Water Supply are used to determine project design criteria. The last two goals, Sustainability and Cost-Effectiveness, are overarching program goals that are not applied to specific criteria at the project level and thus are only infrequently described in project and program documents.

Management Approach

The implementation of the WSIP is led by SFPUC staff in the Infrastructure Division of the SFPUC. The delivery of the program is ultimately the responsibility of the SFPUC General Manager and the SFPUC Assistant General Manager – Infrastructure. Day to day management responsibility is under the direction of the WSIP Director, who reports to the SFPUC Assistant General Manager - Infrastructure.

Consultants, however, play a key role in the implementation of the program. Consultants support the WSIP Team on a number of programmatic functions such as strategic program development, risk assessment and mitigation, program controls, various independent technical reviews, construction planning and management, supplier quality surveillance and labor and community relations. The services of consultants are also used on an as-needed or project-specific basis to assist SFPUC staff with functions such as engineering design, environmental review, right-of-way engineering and surveying, and construction management.

The WSIP is divided into two major phases – pre-construction and construction. The Pre-Construction Deputy Director is responsible for overseeing the program through the bid and award phase, which includes all planning, design, environmental review, right-of-way and bidding activities. The Construction Deputy Director is responsible for the program during the construction phase, project close-out phase and for some activities during the design and bid and award phases (e.g., constructability reviews and preparation of contract specifications).

The implementation of the program is managed at three different levels – program, regional and project levels. Specific decision-making authorities are designated for each level. At the program level, the Program Director manages and directs all aspects of the implementation and delivery of the WSIP, including strategic direction of the program, policy, systems and procedures to support execution. At the regional level, Regional Project Managers manage the delivery of all projects assigned to a region during all project phases. At the project level, the Project Manager oversees the delivery of a project through all phases up to the bid and award phase and the Project Construction Manager oversees delivery during the construction and close-out phases.

The management approach during construction is thoroughly documented in the WSIP Construction Management Plan. The latest version of the Construction Management Plan and the Safety Approach associated with the plan, as well as other important information on the WSIP Construction Management (“CM”) Program is available on the SFPUC Website.

Program Scope

The WSIP presently includes a total of 87 projects (excluding five Water Supply Projects), which vary in size from a few million dollars to over \$800 million. The projects are divided into two sub-programs – Local and Regional.

The Local Program includes 35 projects (excluding 5 Water Supply Projects) that are located within the city limits of San Francisco and only benefit city residents. (As of July 1, 2011, management and implementation of the Water Supply Projects were transferred from the WSIP Local Program to the Water Enterprise Capital Improvement Program.) These projects, which are typically smaller in size than the larger Regional Projects, include improvements to existing in-City distribution pipelines, storage reservoirs/tanks, pump stations, and miscellaneous facilities. They are referred to as “Local Projects” and they are reported in Table C-1 below as part of the project category titled “San Francisco Local Projects.” The cost of the Local Projects is absorbed in the retail rates of San Francisco customers. Under the WSIP, recycled water projects and some groundwater projects will be classified as Local Projects for rate setting purposes. See “FUTURE WATER DEMAND AND SUPPLY – Water Supply Initiatives.”

The Regional Program includes 52 projects that benefit both San Francisco residents and the 27 Wholesale Customers. These projects, which are typically much larger and located mostly outside San Francisco limits, are referred to as “Regional Projects.” They include a wide variety of improvements such as upgrades to and the addition of new treatment, transmission (pipelines, tunnels, pump stations), and storage (dams and reservoirs) facilities spread over seven different counties (Tuolumne, Stanislaus, San Joaquin, Alameda, Santa Clara, San Mateo, and San Francisco). The cost of the Regional Projects is incorporated in the rates paid by both Retail Customers and Wholesale Customers.

The Regional Program is further divided into the following categories of projects:

San Joaquin Regional Projects. These projects are designed to improve water delivery reliability by augmenting three existing transmission pipelines that transmit the Hetch Hetchy water supply across the San Joaquin Valley, and enhance water quality by building the Tesla Disinfection Facility, a new advanced disinfection/treatment facility for the SFPUC’s largest source of supply.

Sunol Valley Regional Projects. The projects within this region are designed to address delivery and seismic vulnerabilities associated with the delivery of Hetch Hetchy water through the Sunol Valley and water originating from the Alameda Watershed. Projects include the construction of a new Calaveras Dam, a fourth Alameda Siphon, two new Irvington Tunnels and other connecting large-diameter pipelines, as well as upgrades to the existing Sunol Valley Water Treatment Plant and San Antonio Pump Station. All of these facilities are within or in close proximity to the Calaveras Fault influence zone.

Bay Division Regional Projects. The projects within this region address the seismic vulnerability of the four Bay Division Pipelines, which transmit the blend of Hetch Hetchy and Sunol Valley water across the San Francisco Bay to the Peninsula and serve a large number of Wholesale Customers. The projects in this region

address the crossing of the Hayward Fault and system vulnerability associated with the close proximity of the San Andreas Fault; and add system redundancy and operational flexibility.

Peninsula Regional Projects. The projects within this region are generally designed to address facility seismic vulnerabilities, and meet water quality and delivery goals for the Crystal Springs, San Andreas and Pilarcitos Reservoirs. Projects include the construction of a new Crystal Springs Bypass Tunnel and large-diameter pipelines, as well as upgrades to the existing Harry Tracy Water Treatment Plant, the Pulgas Balancing Reservoir, and the Lower Crystal Springs Dam. All these facilities are located within the San Andreas Fault influence zone.

San Francisco Regional Projects. The projects within this region include the seismic retrofit of the Sunset and University Mound Terminal Reservoirs, and a groundwater storage and recovery project. The two reservoir projects are located within the City but can be used to supply water back to the Northern Peninsula, which can benefit the Wholesale Customers. The groundwater project includes improvements in both San Mateo and San Francisco counties.

Support Projects (formally System Wide Region). In July 2011, the System Wide Region was re-named as Support Projects. These projects include (1) system security upgrades, which involves the development and integration of security components at critical water system facilities, (2) the PEIR, which was prepared in compliance with CEQA to identify and analyze potential programmatic environmental impacts of the proposed system improvements, (3) the Watershed Environmental Improvement Program, which consists of conservation easements and/or fee title purchase of property from willing landowners to permanently protect Alameda Creek Watershed lands, (4) the Bioregional Habitat Restoration project (formerly Habitat Reserve Program), which is intended to provide a coordinated and consolidated approach to compensate for habitat impacts that would result from the implementation of the WSIP projects in the San Joaquin, Sunol Valley, Bay Division and Peninsula Regions of the Regional Water System, (5) Vegetation Restoration of WSIP Construction Sites, which was added to the Program in March 2014 to provide maintenance, monitoring and reporting of onsite habitat restoration installed at the various WSIP construction sites, and (6) Regional Program management.

The latest program scope, the March 2016 scope, was approved by the Commission on April 26, 2016, and is documented in the *AB 1823: Notice of Changes to Water System Improvement Program Report* submitted to the State on June 30, 2016.

2005, 2007, 2009, 2011, 2013, 2014 and 2016 WSIP Program Schedules and Budgets

The project schedules and budgets first developed when an infrastructure program is created are based on the limited information available at the time. Costs and schedule contingencies are typically added to account for the various levels of certainty and unforeseen circumstances. As projects become better defined through the planning, environmental and design phases, new information becomes available that allows for refinement of project schedules and budgets. It is therefore typical for large infrastructure programs like the WSIP to adopt revised schedules and budgets as part of program implementation.

In the case of the WSIP, major schedule and cost revisions were approved by the Commission in the December 2005 Approved Scopes, Schedules and Budget; the December 2007 Approved Scopes, Schedules and Budget; the June 2009 Approved Scopes, Schedules and Budget, the June 2011 Approved Scopes, Schedules and Budget; the March 2013 Approved Scopes, Schedules and Budget; the March 2014 Approved Scopes, Schedules, and Budget; and the March 2016 Approved Scopes, Schedules and Budget. The SFPUC also updates projections of each WSIP's project's completion date and cost at completion on a monthly basis. These projections are published every three months in the WSIP Quarterly Reports, available on the SFPUC Website.

Program Schedule. The last revision to program schedule and budget was approved in April 2016. The overall program completion date adopted as a part of the March 2016 Revised WSIP is December 2019, which represents a 7-month extension to the last schedule approved by the Commission as part of the March 2014 Program. All but six projects (Calaveras Dam Replacement, Alameda Creek Recapture, Regional Groundwater Storage and Recovery, Long-Term Mitigation Endowment, Bioregional Habitat Restoration, and Watershed Environmental Improvement Program) will be completed by the end of 2016. In addition, four projects (WSIP

Closeout Projects) have been added to address various issues that need to be addressed in order to fully meet LOS goals in each of the San Joaquin, Sunol Valley, Bay Division and Peninsula regions.

2016 Program Budget, Budget Comparisons and Spending Summary. The following table summarizes the Approved Budgets for the December 2005 WSIP, the December 2007 Revised WSIP, the June 2009 Revised WSIP, the July 2011 Revised WSIP; the March 2013 Revised WSIP; the March 2014 Revised WSIP; and the March 2016 Revised WSIP, all of which were approved by the Commission.

**TABLE C-1
2016 WSIP BUDGET AND PROJECTED COSTS
(IN MILLIONS)**

| Project Category | Dec-05 Approved Budget ⁽¹⁾ | Dec-07 Approved Budget ⁽²⁾ | Jun-09 Approved Budget ⁽³⁾ | Jun-11 Approved Budget ⁽⁶⁾ | Mar-13 Approved Budget ⁽⁷⁾ | Mar-14 Approved Budget ⁽⁸⁾ | Mar-16 Approved Budget ⁽⁹⁾ |
|---|--|--|--|--|--|--|--|
| San Joaquin Regional Projects | \$559.3 | \$486.2 | \$430.1 | \$337 | \$349 | \$347 | \$345 |
| Sunol Valley Regional Projects | 870.9 | 957.8 | 1,054.0 | 1,063 | 1,263 | 1,374 | 1,476 |
| Bay Division Regional Projects | 749.7 | 796.2 | 785.1 | 706 | 665 | 666 | 652 |
| Peninsula Regional Projects | 700.5 | 712.4 | 894.8 | 774 | 808 | 809 | 805 |
| San Francisco Regional Projects | 164.9 | 138.2 | 160.3 | 194 | 208 | 221 | 221 |
| San Francisco Local Projects | 383.2 | 383.2 | 599.8 | 642 | 620 | 619 | 613 |
| Water Supply Projects ⁽⁴⁾ | 280.6 | 265 | 0 | 0 | 0 | 0 | 0 |
| Support Projects | 81.4 | 190.8 | 189.8 | 254 | 255 | 257 | 262 |
| Program Reserve | 0 | 0 | 0 | 144 | 0 | 0 | 0 |
| Net Financing ⁽⁵⁾ | 552.4 | 462.4 | 471.7 | 472 | 472 | 472 | 472 |
| Program Total[†] | \$4,342.3 | \$4,392.1 | \$4,585.6 | \$4,586 | \$4,640 | \$4,765 | \$4,845 |

[†] Totals may not add due to independent rounding.

(1) The Commission approved what is referred to as the “December 2005 Approved Budget” on November 29, 2005. This is also referred to in publicly available materials as the “Baseline Budget.”

(2) The Commission approved what is referred to as the “December 2007 Approved Budget” on February 18, 2008.

(3) The Commission approved what is referred to as the “June 2009 Approved Budget” on July 28, 2009.

(4) Water Supply projects were transferred to the San Francisco Regional and San Francisco Local categories as part of the June 2009 Approved Scopes, Schedules and Budget.

(5) Does not include \$107 million of realized bond premium to date.

(6) The Commission approved what is referred to as the “July 2011 Approved Budget” in June 2011.

(7) The Commission approved what is referred to as the “March 2013 Approved Budget” in April 2013.

(8) The Commission approved what is referred to as the “March 2014 Approved Budget” in April 2014.

(9) The Commission approved what is referred to as the “March 2016 Approved Budget” in April 2016.

Source: SFPUC, Financial Planning

The program level cost variance between the December 2005 Approved Budget and the December 2007 Approved Budget was relatively small (an additional \$49.16 million, or 1.1% increase). In general, the need to compensate for the additional resources needed to address real estate requirements (land acquisition and

encroachment removal) and complete delivery activities (program management, project management and environmental review/permitting/mitigation) accounts for this variance.

The variance between the December 2007 Approved Budget and the June 2009 Approved Budget is approximately \$194 million or a 4.4% increase. Significant cost increases in two projects account to a great extent for this projected overall increase in the program cost. The Calaveras Dam Replacement Project and the Harry Tracy Water Treatment Plant Long-Term Improvements Project currently carry an approximate projected variance (June 2009 Approved Budget minus December 2007 Approved Budget) of an additional \$102 million and \$183 million, respectively. The NOA and fisheries issues described above are the main factors increasing the cost of the Calaveras Dam Replacement Project. In the case of the Harry Tracy Water Treatment Plant Long-Term Improvements Project, the cost increase is due to the recent discovery of a new strand of the Sierra Fault at the project site, which is necessitating the relocation of two large treated water reservoirs – work that was not in the original project scope.

There is no variance between the June 2009 Approved Budget and the July 2011 Approved Budget.

The variance between the July 2011 Approved Budget and the March 2013 Approved Budget is approximately \$54 million or a 1.2% increase. The only project with significant cost increase the Calaveras Dam Replacement Project due to discovery of an ancient landslide uncovered during construction, resulting in an additional 3 million cubic yards of excavation on this project.

The variance between the March 2013 Approved Budget and the March 2014 Approved Budget is approximately \$125 million or a 2.7% increase. The forecasted cost increases in the following five projects account to a great extent for this projected overall increase in the program cost: 1) Calaveras Dam Replacement Project (\$95 million) due to discovery of a second ancient landslide and secondary faulting, requiring additional excavation and re-design of spillway foundation and re-alignment of the outlet conduit, 2) Irvington Tunnels 1 and 2 (\$15 million) due to highly variable tunneling conditions; including squeezing ground, hard rock, and gassy tunneling conditions, 3) Regional Groundwater Storage and Recovery (\$13 million) to allow for additional right-of-way costs and higher construction cost estimates, 4) Crystal Springs/San Andreas Transmission Upgrade (\$7 million) due to differing site conditions for underwater construction, and 5) Alameda Creek Recapture project (\$5 million) due to the need to incorporate additional operational scenarios to recapture the required water yield on this project. Some forecasted decreases on other WSIP projects allowed for a net of \$125 million overall forecasted cost increase.

The variance between the March 2014 Approved Budget and the March 2016 Approved Budget is \$80 million or a 1.7% increase. This variance was due, primarily, to forecasted cost increases for five of the WSIP projects as well as forecast reductions on six complete or near-complete WSIP projects. The most significant of the project increases was \$91.7 million for the Calaveras Dam Replacement Project (CDRP), including the main dam project as well as the Fish Passage Facilities at Alameda Creek Diversion Dam (ACDD), a subproject to the CDRP. For the main project, the recent impacts are due to change orders related to the development of the borrow area for the production of hard rock material (Zone 5) to be placed in the upstream shell of the new dam embankment. The excavation requires additional quantities and longer rock dowels and shotcrete for excavation slope stability of the borrow area, importing and stockpiling of Zone 5 materials from an offsite quarry to supplement onsite supplies for schedule enhancement, disposal of additional mélange shale waste, and acceleration of the project schedule for the embankment dam construction. For the Fish Passage Facilities at ACDD subproject, the budget increase is due to changes during the design of the fish ladder that were not known at the time of the original planning level preliminary cost estimate. Some forecasted decreases on other WSIP projects allowed for a net of \$80 million overall forecasted cost increase.

A summary of the WSIP budget and appropriations is provided in the following table.

**TABLE C-2
WSIP BUDGET AND SPENDING SUMMARY
AS OF JUNE 30, 2016
(IN MILLIONS)**

| | <u>Total Approved</u> | <u>Expended/Encumbered</u> | <u>Remaining Balance</u> |
|-------------------------------|-----------------------|----------------------------|--------------------------|
| Regional Projects | \$3,761.1 | \$3,488.7 | \$272.4 |
| Local Projects ⁽¹⁾ | 612.7 | 420.8 | 191.9 |
| Financing Costs | 471.7 | 224.0 | 247.7 |
| Total † | <u>\$4,845.5</u> | <u>\$4,135.5</u> | <u>\$710.0</u> |

† Totals may not add due to independent rounding.

⁽¹⁾ Local projects include \$281 million in WSIP funding to Water Supply Projects; however, these projects were transferred to the Water Enterprise Capital Improvements Program in July 2011 and have anticipated completion dates later than December 2019.

Note: Certain amounts set forth in the table are projections. Actual results may differ from these projections. See “FORWARD-LOOKING STATEMENTS” above.

Source: SFPUC, Financial Services

Program Changes. The list of projects to be built in the WSIP has not changed significantly since the program was initiated in 2002. Some projects have been combined, some have been split, some have been renamed and only a few have been eliminated or added. These changes, as well as major project scope modifications, are thoroughly documented in the Change of Notice reports submitted to the State (see “Program Development and Chronology” above). The latest program scope, the March 2016 scope, approved by the Commission on April 26, 2016 is documented in the AB 1823: Notice of Changes to Water System Improvement Program Report submitted to the State on June 30, 2016.

Program Status and Performance

Work Breakdown Structure. The WSIP, like most other large infrastructure programs, is managed based on a standardized work breakdown structure (“WBS”). The performance and status of the WSIP is often reported at the phase level of the WBS.

The WSIP WBS includes 9 different phases – Project Management, Planning, Environmental, Right-of-Way, Design, Bid & Award, Construction, Construction Management, and Close-Out. A very brief summary of the work involved in each phase is provided below.

The Project Management Phase involves project-specific oversight and management functions that extend from project initiation to construction completion and start up of new facilities. They include project controls, change and risk management, cost estimating and scheduling, value engineering, document control, communications and project team oversight.

The Planning Phase involves the definition of performance objectives and general design requirements based on the input provided by the client, field investigations and preliminary engineering work. Planning deliverables typically include a Needs Assessment Report, an Alternative Analysis Report and a Conceptual Engineering Report.

The Environmental Phase involves the analyses and review required to comply with CEQA and the work needed to obtain all required permits from local, State and federal resources agencies.

The Right-of-Way Phase involves all real estate activities (e.g., land surveys, property appraisals, legal descriptions, easement agreements, etc.) needed to secure the temporary and permanent property and access rights needed to build, maintain and operate the facilities and improvements included in the program.

The Design Phase involves the various engineering tasks needed to prepare the construction contract documents (drawings and specifications).

The Bid & Award Phase involves the advertisement of construction contracts, the administration of the bidding process and the selection of the lowest, qualified, responsible and responsive bidder for each contract.

The Construction Phase involves all the fieldwork required to build the improvements specified in the construction contract documents. Key construction milestones include: contractor mobilization, testing and start-up, substantial completion, client acceptance of improvements and final completion.

The Construction Management Phase involves a number of oversight functions to monitor and verify the work of construction contractors in the field. Key functions include field inspections and testing, quality assurance, schedule and cost control, claims analysis, contract administration and safety monitoring.

The Close-Out Phase involves the post-construction, administrative tasks needed to complete construction contracts. This often includes negotiating and reaching final agreements on outstanding contract items and verifying that all contract terms have been met.

Status of WSIP Projects. Very significant progress has been made on the WSIP in recent years, and the overall program is now approximately 92% complete. One can assess the overall status of a capital program comprised of multiple projects by looking at the number of projects and the value of these projects in each of the major implementation phases of the program. Table C-3 shows the number of WSIP projects active in each of these phases. The Local Program is over 99% complete with only one active project remaining in construction, whereas the Regional Program is approximately 91% complete. The Local Program is further along because the projects in that program are smaller and less complex and require minimal environmental review.

**TABLE C-3
STATUS OF WSIP PROJECTS THROUGH JUNE 30, 2016**

| | Number of Projects | | Value of Projects (in millions) | |
|-----------------|--------------------|------------------|---------------------------------|------------------|
| | Local Program | Regional Program | Local Program | Regional Program |
| Active Phase | | | | |
| Planning | 0 | 0 | \$0 | \$0 |
| Design | 0 | 1 | 0 | 30 |
| Bid & Award | 0 | 0 | 0 | 0 |
| Construction | 1 | 8 | 49 | 2,072 |
| Close-Out | 0 | 1 | 0 | 42 |
| Completed | 34 | 36 | 282 | 1,574 |
| Not Applicable* | 0 | 2 | 0 | 32 |
| Not Initiated | 0 | 4 | 0 | 11 |
| Total†: | 35 | 52 | \$331 | \$3,761 |

† Totals may not add due to independent rounding.

* “Not Applicable” category is for projects that do not include construction, including the Watershed Environmental Improvement Program and the Long-Term Mitigation Endowment.

Source: SFPUC, 4th quarter Fiscal Year 2015-16 WSIP Quarterly Report.

Performance of WSIP Projects. The performance of a program can be assessed by comparing planned expenditures against the value of the work completed. Such a comparison is provided in Table C-4. In general, actual performance on the Local and Regional Programs tracks planned performance well. Some delays, however, have occurred in the environmental review of some large water supply projects. These delays have had an impact on the performance of the Environmental Phases and, to some extent, the performance of subsequent phases (Design and Construction). A number of measures are being implemented to mitigate these environmental delays.

**TABLE C-4
PERFORMANCE OF WSIP PROJECTS THROUGH JUNE 30, 2016
COMPARED TO 2016 APPROVED BUDGET PLAN**

| Phase | Local Program ⁽²⁾ | | Regional Program ⁽³⁾ | |
|-----------------------------------|------------------------------|-------------|---------------------------------|-------------|
| | % Planned | % Completed | % Planned | % Completed |
| All Phases | 99.4 | 99.8 | 91.3 | 91.4 |
| Project Management | 100.0 | 99.9 | 93.4 | 93.0 |
| Planning | 100.0 | 100.0 | 100.0 | 100.0 |
| Environmental | 100.0 | 100.0 | 97.6 | 97.4 |
| Right-of-Way | 0 | 0 | 87.9 | 87.1 |
| Design | 100.0 | 100.0 | 99.0 | 98.6 |
| Bid and Award | 100.0 | 100.0 | 97.0 | 97.0 |
| Construction Management | 100.0 | 100.0 | 89.0 | 89.2 |
| Construction | 99.3 | 99.8 | 90.6 | 90.9 |
| Close-Out | 94.6 | 94.6 | 67.9 | 67.9 |
| Program Management ⁽¹⁾ | N/A | N/A | 89.9 | 89.2 |

(1) The WSIP Regional Program tracks an additional Program Management phase.

(2) Local Program percentages do not include Local Water Supply projects.

(3) Regional Program percentages do not include Support (formerly System-Wide) projects.

Source: SFPUC, 4th quarter Fiscal Year 2015-16 WSIP Quarterly Supplemental Report.

Program Risk Management

2007 Risk Assessment. In 2007, the SFPUC commissioned a comprehensive programmatic risk assessment (the “2007 Risk Assessment”) to identify risk factors and exposures that could lead to schedule delays and cost escalation as the WSIP moves forward from planning and design into construction.

The Risk Assessment concluded that the risks representing the greatest potential cost liabilities for the WSIP were: (1) general inflation of material and labor costs; (2) contracting (i.e., ability to attract enough contractors to bid on WSIP projects); (3) potential delays in the environmental review process; and (4) the lack of a well-established construction management organization.

Subsequent Developments and Mitigation Measures. Since 2007, the risk factors identified by the 2007 Risk Assessment have been mitigated by certain developments, and by actions taken by the SFPUC, including the following:

- The SFPUC experienced significantly lower than anticipated construction bids due to a highly competitive bidding environment for construction projects that were bid between 2007 and 2012. This benefit has been offset by construction cost increases due to differing site conditions experienced during construction.
- The scheduling risks associated with the environmental review of projects were significantly reduced following certification of the WSIP Preliminary Environmental Impact Report in October 2008 (as no appeals to the San Francisco Board of Supervisors or legal actions were filed during the challenge period). Furthermore, all but 1 of the project-specific environmental documents have been certified to date.
- The SFPUC implemented a new construction management approach, organization structure, contracting strategy, operations plan, business processes, procedures and customized Management Information System.
- The SFPUC formulated a WSIP Risk Mitigation Action Plan, which provides comprehensive step-by-step actions to address each of the risks described in the 2007 Risk Assessment. Progress made on implementation of the plan is reported in the WSIP Quarterly Reports.

- The SFPUC developed a risk management program that focuses on the WSIP construction phase, and involves the identification, assessment, analysis and management of risks associated with construction activities.
- The SFPUC adopted an enterprise risk management software tool to evaluate the effects of risk systematically across the WSIP program and track and monitor mitigation actions more effectively and efficiently.

APPENDIX D

SFPUC WATER ENTERPRISE FINANCIAL STATEMENTS

APPENDIX E

PROPOSED FORM OF OPINION OF CO-BOND COUNSEL

APPENDIX F

FORM OF CONTINUING DISCLOSURE CERTIFICATE

§ _____
**Public Utilities Commission
of the
City and County of San Francisco
San Francisco Water Revenue Bonds,
2016 Series C
(Federally Taxable)**

This Continuing Disclosure Certificate (the “Disclosure Certificate”) is executed and delivered by the Public Utilities Commission of the City and County of San Francisco (the “SFPUC”) in connection with the issuance of the water revenue bonds captioned above (the “2016 Series C Bonds”). The 2016 Series C Bonds are being issued pursuant to an Amended and Restated Indenture, dated as of August 1, 2002, between the SFPUC and U.S. Bank National Association, as trustee (the “Trustee”), as amended and supplemented, including as amended and supplemented by a Twenty-Third Supplemental Indenture, dated as of October 1, 2016, by and between the SFPUC and the Trustee (collectively, the “Indenture”).

The SFPUC covenants and agrees as follows:

SECTION 1. Purpose of the Disclosure Certificate. This Disclosure Certificate is being executed and delivered by the SFPUC for the benefit of the Holders and Beneficial Owners of the 2016 Series C Bonds and in order to assist the Participating Underwriters in complying with Securities and Exchange Commission (the “S.E.C.”) Rule 15c2-12(b)(5).

SECTION 2. Definitions. In addition to the definitions set forth in the Indenture, which apply to any capitalized term used in this Disclosure Certificate unless otherwise defined in this Section 2, the following capitalized terms shall have the following meanings:

“**Annual Report**” shall mean any Annual Report provided by the SFPUC pursuant to, and as described in, Sections 3 and 4 of this Disclosure Certificate.

“**Beneficial Owner**” shall mean any person that: (a) has or shares the power, directly or indirectly, to make investment decisions concerning ownership of any 2016 Series C Bonds (including persons holding 2016 Series C Bonds through nominees, depositories or other intermediaries) including, but not limited to, the power to vote or consent with respect to any 2016 Series C Bonds or to dispose of ownership of any 2016 Series C Bonds; or (b) is treated as the owner of any 2016 Series C Bonds for federal income tax purposes.

“**Dissemination Agent**” shall mean the SFPUC, acting in its capacity as Dissemination Agent under this Disclosure Certificate, or any successor Dissemination Agent designated in writing by the SFPUC and which has filed with the SFPUC a written acceptance of such designation.

“**Holder**” shall mean either the registered owners of the 2016 Series C Bonds, or, if the 2016 Series C Bonds are registered in the name of The Depository Trust Company or another recognized depository, any applicable participant in such depository system.

“**Listed Events**” shall mean any of the events listed in Section 5(a) of this Disclosure Certificate.

“**MSRB**” shall mean the Municipal Securities Rulemaking Board or any other entity designated or authorized by the Securities and Exchange Commission to receive continuing disclosure filings pursuant to the Rule. Until otherwise designated by the MSRB or the Securities and Exchange Commission, filings with the MSRB are to be made through the Electronic Municipal Market Access (EMMA) website of the MSRB currently located at <http://emma.msrb.org>.

“**Official Statement**” shall mean the final Official Statement, dated _____, 2016, prepared in connection with the sale and offering of the 2016 Series C Bonds.

“**Participating Underwriter**” shall mean any of the original underwriters or purchasers of the 2016 Series C Bonds required to comply with the Rule in connection with the offering of the 2016 Series C Bonds.

“**Rule**” shall mean Rule 15c2-12(b)(5) adopted by the S.E.C. under the Securities Exchange Act of 1934, as the same may be amended from time to time.

SECTION 3. Provision of Annual Reports.

(a) The SFPUC shall, or shall cause the Dissemination Agent to, not later than 9 months after the end of the SFPUC’s fiscal year (which currently ends June 30), commencing March 31, 2017, with the report for the 2015-16 Fiscal Year, provide to the MSRB an Annual Report which is consistent with the requirements of Section 4 of this Disclosure Certificate. If the Dissemination Agent is not the SFPUC, the SFPUC shall provide the Annual Report to the Dissemination Agent not later than 15 days prior to said date. The Annual Report must be submitted in electronic format and accompanied by such identifying information as is prescribed by the MSRB, and may cross-reference other information as provided in Section 4 of this Disclosure Certificate. However, if the audited financial statements of the SFPUC are not available by the date required above for the filing of the Annual Report, the SFPUC shall submit unaudited financial statements and submit the audited financial statements as soon as they are available. If the SFPUC’s Fiscal Year changes, it shall give notice of such change in the same manner as for a Listed Event under Section 5(c).

(b) If the SFPUC is unable to provide to the MSRB an Annual Report by the date required in subsection (a), the SFPUC shall send a notice to the MSRB in substantially the form attached as Exhibit A.

(c) The Dissemination Agent shall (if the Dissemination Agent is other than the SFPUC), file a report with the SFPUC certifying the date that the Annual Report was provided to the MSRB pursuant to this Disclosure Certificate.

SECTION 4. Content of Annual Reports. SFPUC’s Annual Report shall contain or incorporate by reference the following information:

(a) Audited Financial Statements of the municipal water supply, storage and distribution system of the SFPUC for the prior fiscal year, prepared in accordance with generally accepted accounting principles applicable to the SFPUC from time to time. If the SFPUC’s audited financial statements are not available by the date the Annual Report is required to be filed, the Annual Report shall contain unaudited financial statements in a format similar to the financial statements contained in the final Official Statements, and the audited financial statements shall be filed in the same manner as the Annual Report when they become available;

(b) An update for the prior fiscal year of the table in the Official Statement entitled “TABLE 9, HISTORIC WHOLESALE AND RETAIL WATER SALES”;

(c) An update for the prior fiscal year of the table in the Official Statement entitled “TABLE 17, HISTORICAL PERCENTAGE INCREASES (DECREASES) IN WHOLESALE WATER RATES,” provided that such update need include rate increases (decreases) through the end of the prior fiscal year;

(d) An update for the prior fiscal year of the table in the Official Statement entitled “TABLE 20, HISTORICAL AND APPROVED FUTURE PERCENTAGE INCREASES (DECREASES) IN RETAIL WATER RATES,” provided that such update need include rate increases (decreases) through the end of the prior fiscal year;

(e) An update for the prior fiscal year of the table in the Official Statement in the section entitled “OBLIGATIONS PAYABLE FROM REVENUES – Outstanding Parity Revenue Bonds” showing all bonds of the SFPUC secured by Revenues; and

(f) An update for the prior fiscal year of the table in the Official Statement entitled “TABLE 25, HISTORICAL REVENUES, OPERATING & MAINTENANCE EXPENSES AND DEBT SERVICE COVERAGE.”

Any or all of the items listed above may be set forth in a document or set of documents, or may be included by specific reference to other documents, including official statements of debt issues of the SFPUC or related public entities, which are available to the public on the MSRB website. If the document included by reference is a final official statement, it must be available from the MSRB. The SFPUC shall clearly identify each such other document so included by reference.

SECTION 5. Reporting of Significant Events.

(a) The SFPUC shall give, or cause to be given, notice of the occurrence of any of the following Listed Events with respect to the 2016 Series C Bonds:

1. Principal and interest payment delinquencies.
2. Non payment related defaults, if material.
3. Unscheduled draws on debt service reserves reflecting financial difficulties.
4. Unscheduled draws on credit enhancements reflecting financial difficulties.
5. Substitution of credit or liquidity providers, or their failure to perform.
6. Adverse tax opinions, the issuance by the Internal Revenue Service of proposed or final determinations of taxability, Notices of Proposed Issue (IRS Form 5701-TEB) or other material notices or determinations with respect to the tax status of the 2016 Series C Bonds, or other material events affecting the tax exempt status of the 2016 Series C Bonds.
7. Modifications to rights of security holders, if material.
8. Bond calls, if material, and tender offers.
9. Defeasances.
10. Release, substitution, or sale of property securing repayment of the 2016 Series C Bonds, if material.
11. Rating changes.
12. Bankruptcy, insolvency, receivership or similar event of the SFPUC.
13. The consummation of a merger, consolidation, or acquisition involving the SFPUC or the sale of all or substantially all of the assets of the SFPUC, other than in the ordinary course of business, the entry into a definitive agreement to undertake such an action or the termination of a definitive agreement relating to any such actions, other than pursuant to its terms, if material.
14. Appointment of a successor or additional trustee or the change of name of a trustee, if material.

(b) Whenever the SFPUC obtains knowledge of the occurrence of a Listed Event, and, if the Listed Event is described in subsections (a)(2), (a)(6) (other than an adverse tax opinion, the issuance by the IRS of a proposed or final determination of taxability, or a Notice of Proposed Issue (IRS Form 5701-TEB)), (a)(7), (a)(8) (if the event is a bond call), (a)(10), (a)(13) or (a)(14) above, the SFPUC determines that knowledge of the occurrence of that Listed Event would be material under applicable federal securities law, the SFPUC shall, or shall cause the Dissemination Agent (if not the SFPUC) to, file a notice of such occurrence with the MSRB, in an electronic format as prescribed by the MSRB, in a timely manner not in excess of 10 business days after the occurrence of the Listed Event. Notwithstanding the foregoing, notice of Listed Events described in subsections (a)(8) and (9) above need not be given under this subsection any earlier than the notice (if any) of the underlying event is given to holders of affected 2016 Series C Bonds under the Indenture.

(c) For purposes of this Certificate, any event described in paragraph (a)(12) above is considered to occur when any of the following occur: the appointment of a receiver, fiscal agent, or similar officer for the SFPUC in a proceeding under the United States Bankruptcy Code or in any other proceeding under state or federal law in which a court or governmental authority has assumed jurisdiction over substantially all of the assets or business of the SFPUC, or if such jurisdiction has been assumed by leaving the existing governing body and officials or officers in possession but subject to the supervision and orders of a court or governmental authority, or the entry of an order confirming a plan of reorganization, arrangement, or liquidation by a court or governmental authority having supervision or jurisdiction over substantially all of the assets or business of said party.

SECTION 6. Termination of Reporting Obligation. The SFPUC's obligations under this Disclosure Certificate shall terminate upon the legal defeasance, prior redemption or payment in full of all of the 2016 Series C Bonds. If such termination occurs prior to the final maturity of the 2016 Series C Bonds, the SFPUC shall give notice of such termination in the same manner as for a Listed Event under Section 5(c).

SECTION 7. Dissemination Agent. The SFPUC may, from time to time, appoint or engage a Dissemination Agent to assist it in carrying out its obligations under this Disclosure Certificate, and may discharge any such Dissemination Agent, with or without appointing a successor Dissemination Agent. The Dissemination Agent shall have only such duties as are specifically set forth in this Disclosure Certificate.

SECTION 8. Amendment; Waiver. Notwithstanding any other provision of this Disclosure Certificate, the SFPUC may amend or waive this Disclosure Certificate or any provision of this Disclosure Certificate, provided that the following conditions are satisfied:

(a) If the amendment or waiver relates to the provisions of Sections 3(a), 3(b), 4 or 5(a), it may only be made in connection with a change in circumstances that arises from a change in legal requirements, change in law, or change in the identity, nature or status of an obligated person with respect to the 2016 Series C Bonds or the type of business conducted;

(b) The undertaking, as amended or taking into account such waiver, would, in the opinion of the City Attorney or nationally recognized bond counsel, have complied with the requirements of the Rule at the time of the original issuance of the 2016 Series C Bonds, after taking into account any amendments or interpretations of the Rule, as well as any change in circumstances; and

(c) The amendment or waiver either (i) is approved by the owners of a majority in aggregate principal amount of the 2016 Series C Bonds or (ii) does not, in the opinion of the City Attorney or nationally recognized bond counsel, materially impair the interests of the Holders.

In the event of any amendment or waiver of a provision of this Disclosure Certificate, the SFPUC shall describe such amendment in the next Annual Report, and shall include, as applicable, a narrative explanation of the reason for the amendment or waiver and its impact on the type (or in the case of a change of accounting principles, on the presentation) of financial information or operating data being presented by the SFPUC. In addition, if the amendment relates to the accounting principles to be followed in preparing financial statements: (i) notice of such change shall be given in the same manner as for a Listed Event under Section 5; and (ii) the Annual Report for the year in which the change is made should present a comparison (in narrative form and also, if feasible, in quantitative

form) between the financial statements as prepared on the basis of the new accounting principles and those prepared on the basis of the former accounting principles.

SECTION 9. Additional Information. Nothing in this Disclosure Certificate shall be deemed to prevent the SFPUC from disseminating any other information, using the means of dissemination set forth in this Disclosure Certificate or any other means of communication, or including any other information in any Annual Report or notice of occurrence of a Listed Event, in addition to that which is required by this Disclosure Certificate. If the SFPUC chooses to include any information in any Annual Report or notice of occurrence of a Listed Event in addition to that which is specifically required by this Disclosure Certificate, the SFPUC shall have no obligation under this Disclosure Certificate to update such information or include it in any future Annual Report or notice of occurrence of a Listed Event.

SECTION 10. Default. In the event of a failure of the SFPUC to comply with any provision of this Disclosure Certificate, any Participating Underwriter, Holder or Beneficial Owner of the 2016 Series C Bonds may take such actions as may be necessary and appropriate, including seeking mandate or specific performance by court order, to cause the SFPUC to comply with its obligations under this Disclosure Certificate; provided that any such action may be instituted only in a federal or State court located in the City and County of San Francisco, State of California. Failure by the SFPUC to comply with any provision of this Disclosure Certificate shall not be deemed an Event of Default under the Indenture and the sole remedy under this Disclosure Certificate in the event of any failure of the SFPUC to comply with this Disclosure Certificate shall be an action to compel performance.

SECTION 11. Beneficiaries. This Disclosure Certificate shall inure solely to the benefit of the SFPUC, the Dissemination Agent, the Participating Underwriters and Holders and Beneficial Owners from time to time of the 2016 Series C Bonds, and shall create no rights in any other person or entity.

Date: _____, 2016.

PUBLIC UTILITIES COMMISSION OF THE CITY AND
COUNTY OF SAN FRANCISCO

By _____
Harlan Kelly, Jr.
General Manager

Approved as to Form:

DENNIS J. HERRERA
CITY ATTORNEY

By: _____
Deputy City Attorney

CONTINUING DISCLOSURE CERTIFICATE EXHIBIT A

**FORM OF NOTICE TO THE
MUNICIPAL SECURITIES RULEMAKING BOARD
OF FAILURE TO FILE ANNUAL REPORT**

Name of Issuer: PUBLIC UTILITIES COMMISSION OF THE
CITY AND COUNTY OF SAN FRANCISCO

Name of Issue: SAN FRANCISCO WATER REVENUE BONDS,
2016 SERIES C (FEDERALLY TAXABLE)

Date of Issuance: _____, 2016

NOTICE IS HEREBY GIVEN that the SFPUC has not provided an Annual Report with respect to the above-named Bonds as required by Section 3 of the Continuing Disclosure Certificate of the Public Utilities Commission of the City and County of San Francisco, dated _____, 2016. The SFPUC anticipates that the Annual Report will be filed by _____.

Dated: _____

PUBLIC UTILITIES COMMISSION OF THE CITY AND
COUNTY OF SAN FRANCISCO

By: _____ [to be signed only if filed]
Title _____

APPENDIX G

SECURITIES DEPOSITORY AND BOOK-ENTRY SYSTEM

The information in this Appendix has been provided by DTC for use in securities offering documents, and the SFPUC takes no responsibility for the accuracy or completeness thereof. The SFPUC cannot and does not give any assurances that DTC, DTC Participants or Indirect Participants will distribute to the beneficial owners either (a) payments of interest, principal or premium, if any, with respect to the Bonds or (b) certificates representing ownership interest in or other confirmation of ownership interest in the Bonds, or that they will so do on a timely basis or that DTC, DTC Participants or DTC Indirect Participants will act in the manner described in this Official Statement. The current "Rules" applicable to DTC are on file with the Securities and Exchange Commission and the current "Procedures" of DTC to be followed in dealing with DTC Participants are on file with DTC.

As used in this Appendix, "Securities" means the 2016 Series C Bonds, "Issuer" means the SFPUC, and "Agent" means the Trustee.

1. The Depository Trust Company ("DTC"), New York, NY, will act as securities depository for the securities (the "Securities"). The Securities will be issued as fully-registered securities registered in the name of Cede & Co. (DTC's partnership nominee) or such other name as may be requested by an authorized representative of DTC. One fully-registered Security certificate will be issued for each issue of the Securities, each in the aggregate principal amount of such issue, and will be deposited with DTC. If, however, the aggregate principal amount of any issue exceeds \$500 million, one certificate will be issued with respect to each \$500 million of principal amount, and an additional certificate will be issued with respect to any remaining principal amount of such issue.

2. DTC, one of the world's largest securities depositories, is a limited-purpose trust company organized under the New York Banking Law, a "banking organization" within the meaning of the New York Banking Law, a member of the Federal Reserve System, a "clearing corporation" within the meaning of the New York Uniform Commercial Code, and a "clearing agency" registered pursuant to the provisions of Section 17A of the Securities Exchange Act of 1934. DTC holds and provides asset servicing for over 3.5 million issues of U.S. and non-U.S. equity issues, corporate and municipal debt issues, and money market instruments (from over 100 countries) that DTC's participants ("Direct Participants") deposit with DTC. DTC also facilitates the post-trade settlement among Direct Participants of sales and other securities transactions in deposited securities, through electronic computerized book-entry transfers and pledges between Direct Participants' accounts. This eliminates the need for physical movement of securities certificates. Direct Participants include both U.S. and non-U.S. securities brokers and dealers, banks, trust companies, clearing corporations, and certain other organizations. DTC is a wholly-owned subsidiary of The Depository Trust & Clearing Corporation ("DTCC"). DTCC is the holding company for DTC, National Securities Clearing Corporation and Fixed Income Clearing Corporation, all of which are registered clearing agencies. DTCC is owned by the users of its regulated subsidiaries. Access to the DTC system is also available to others such as both U.S. and non-U.S. securities brokers and dealers, banks, trust companies, and clearing corporations that clear through or maintain a custodial relationship with a Direct Participant, either directly or indirectly ("Indirect Participants"). DTC has a Standard & Poor's rating of AA+. The DTC Rules applicable to its Participants are on file with the Securities and Exchange Commission. More information about DTC can be found at www.dtcc.com. The information contained on this Internet site is not incorporated herein by reference.

3. Purchases of Securities under the DTC system must be made by or through Direct Participants, which will receive a credit for the Securities on DTC's records. The ownership interest of each actual purchaser of each Security ("Beneficial Owner") is in turn to be recorded on the Direct and Indirect Participants' records. Beneficial Owners will not receive written confirmation from DTC of their purchase. Beneficial Owners are, however, expected to receive written confirmations providing details of the transaction, as well as periodic statements of their holdings, from the Direct or Indirect Participant through which the Beneficial Owner entered into the transaction. Transfers of ownership interests in the Securities are to be accomplished by entries made on the books of Direct and Indirect Participants acting on behalf of Beneficial Owners. Beneficial Owners will not receive certificates representing their ownership interests in Securities, except in the event that use of the book-entry system for the Securities is discontinued.

4. To facilitate subsequent transfers, all Securities deposited by Direct Participants with DTC are registered in the name of DTC's partnership nominee, Cede & Co., or such other name as may be requested by an authorized representative of DTC. The deposit of Securities with DTC and their registration in the name of Cede & Co. or such other DTC nominee do not effect any change in beneficial ownership. DTC has no knowledge of the actual Beneficial Owners of the Securities; DTC's records reflect only the identity of the Direct Participants to whose accounts such Securities are credited, which may or may not be the Beneficial Owners. The Direct and Indirect Participants will remain responsible for keeping account of their holdings on behalf of their customers.

5. Conveyance of notices and other communications by DTC to Direct Participants, by Direct Participants to Indirect Participants, and by Direct Participants and Indirect Participants to Beneficial Owners will be governed by arrangements among them, subject to any statutory or regulatory requirements as may be in effect from time to time. Beneficial Owners of Securities may wish to take certain steps to augment the transmission to them of notices of significant events with respect to the Securities, such as redemptions, tenders, defaults, and proposed amendments to the Security documents. For example, Beneficial Owners of Securities may wish to ascertain that the nominee holding the Securities for their benefit has agreed to obtain and transmit notices to Beneficial Owners. In the alternative, Beneficial Owners may wish to provide their names and addresses to the registrar and request that copies of notices be provided directly to them.

6. Redemption notices shall be sent to DTC. If less than all of the Securities within an issue are being redeemed, DTC's practice is to determine by lot the amount of the interest of each Direct Participant in such issue to be redeemed.

7. Neither DTC nor Cede & Co. (nor any other DTC nominee) will consent or vote with respect to Securities unless authorized by a Direct Participant in accordance with DTC's MMI Procedures. Under its usual procedures, DTC mails an Omnibus Proxy to Issuer as soon as possible after the record date. The Omnibus Proxy assigns Cede & Co.'s consenting or voting rights to those Direct Participants to whose accounts Securities are credited on the record date (identified in a listing attached to the Omnibus Proxy).

8. Redemption proceeds, distributions, and dividend payments on the Securities will be made to Cede & Co., or such other nominee as may be requested by an authorized representative of DTC. DTC's practice is to credit Direct Participants' accounts upon DTC's receipt of funds and corresponding detail information from Issuer or Agent, on payable date in accordance with their respective holdings shown on DTC's records. Payments by Participants to Beneficial Owners will be governed by standing instructions and customary practices, as is the case with securities held for the accounts of customers in bearer form or registered in "street name," and will be the responsibility of such Participant and not of DTC, Agent, or Issuer, subject to any statutory or regulatory requirements as may be in effect from time to time. Payment of redemption proceeds, distributions, and dividend payments to Cede & Co. (or such other nominee as may be requested by an authorized representative of DTC) is the responsibility of Issuer or Agent, disbursement of such payments to Direct Participants will be the responsibility of DTC, and disbursement of such payments to the Beneficial Owners will be the responsibility of Direct and Indirect Participants.

9. DTC may discontinue providing its services as depository with respect to the Securities at any time by giving reasonable notice to Issuer or Agent. Under such circumstances, in the event that a successor depository is not obtained, Security certificates are required to be printed and delivered.

10. Issuer may decide to discontinue use of the system of book-entry-only transfers through DTC (or a successor securities depository). In that event, Security certificates will be printed and delivered to DTC.

11. The information in this section concerning DTC and DTC's book-entry system has been obtained from sources that Issuer believes to be reliable, but Issuer takes no responsibility for the accuracy thereof.