

In the opinion of Stradling Yocca Carlson & Rauth, a Professional Corporation, Sacramento, California, and Curis Bartling P.C., Oakland, California ("Co-Bond Counsel"), under existing statutes, regulations, rulings and judicial decisions, and assuming the accuracy of certain representations and compliance with certain covenants and requirements described herein, interest (and original issue discount) on the 2018 Series ABC Bonds is excluded from gross income for federal income tax purposes and is not an item of tax preference for purposes of calculating the federal alternative minimum tax imposed on individuals. In the further opinion of Co-Bond Counsel, interest (and original issue discount) on the 2018 Series ABC Bonds is exempt from State of California personal income tax. See the caption "TAX MATTERS" with respect to tax consequences concerning the 2018 Series ABC Bonds.



\$594,145,000

PUBLIC UTILITIES COMMISSION OF THE CITY AND COUNTY OF SAN FRANCISCO
Wastewater Revenue Bonds

\$229,050,000
2018 Series A (Green Bonds)



\$185,950,000
2018 Series B

\$179,145,000
2018 Series C (Green Bonds)



Dated: Date of Delivery

Due: October 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 Public Utilities Commission of the City and County of San Francisco Wastewater Revenue Bonds, 2018 Series A (Green Bonds) (the "2018 Series A Bonds"), 2018 Series B (the "2018 Series B Bonds") and, collectively with the 2018 Series A Bonds, the "2018 Series AB Bonds"), or 2018 Series C (Green Bonds) (the "2018 Series C Bonds" and, collectively with the 2018 Series AB Bonds, the "2018 Series ABC Bonds"). 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 2018 Series ABC Bonds pursuant to authority granted by the Charter of the City and County of San Francisco (the "City"), through Proposition E approved by voters of the City on November 5, 2002. The 2018 Series AB Bonds will be issued under a Seventh Supplemental Indenture, dated as of August 1, 2018 (the "Seventh Supplemental Indenture"), by and between the SFPUC and U.S. Bank National Association, as trustee (the "Trustee"). The 2018 Series C Bonds will be issued under an Eighth Supplemental Indenture, dated as of August 1, 2018 (the "Eighth Supplemental Indenture"), by and between the SFPUC and the Trustee. The Seventh Supplemental Indenture and the Eighth Supplemental Indenture supplement the Indenture dated as of January 1, 2003, by and between the SFPUC and the Trustee (as supplemented and amended to date, the "Indenture"). See "SECURITY FOR THE BONDS."

Purposes. The 2018 Series ABC Bonds are being issued primarily to finance and refinance (through the retirement of a portion of the outstanding commercial paper notes) certain capital projects benefiting the Wastewater Enterprise (as defined herein). Proceeds of the 2018 Series ABC Bonds will also be applied to (i) fund capitalized interest with respect to the 2018 Series ABC Bonds to August 1, 2020, and (ii) pay the costs of issuance of the 2018 Series ABC Bonds. See "PLAN OF FINANCE," "ESTIMATED SOURCES AND USES OF FUNDS," and "GREEN BONDS DESIGNATION AND CLIMATE CERTIFICATION."

Denominations and Interest. The 2018 Series ABC 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 2018 Series AB Bonds is payable semiannually on April 1 and October 1 of each year, commencing October 1, 2018. See "THE 2018 SERIES AB BONDS." Interest on the 2018 Series C Bonds during the Initial Term Rate Period (as defined herein) is payable semiannually on April 1 and October 1 of each year, commencing October 1, 2018. See "THE 2018 SERIES C BONDS."

Book-Entry Only. The 2018 Series ABC 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 2018 Series ABC Bonds. The principal of, premium, if any, and interest on the 2018 Series ABC Bonds are payable to DTC by the Trustee, and, so long as DTC is acting as securities depository for the 2018 Series ABC 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 2018 SERIES AB BONDS" and "THE 2018 SERIES C BONDS."

Redemption. The 2018 Series AB Bonds are subject to optional and mandatory sinking fund redemption prior to maturity as described herein. See "THE 2018 SERIES AB BONDS—Redemption of 2018 Series AB Bonds." The 2018 Series C Bonds are subject to optional redemption during the Initial Term Rate Period prior to maturity as described herein. See "THE 2018 SERIES C BONDS—Redemption of 2018 Series C Bonds During Initial Term Rate Period."

Mandatory Tender. The 2018 Series C Bonds are also subject to mandatory tender as described herein. See "THE 2018 SERIES C BONDS—Mandatory Tender of 2018 Series C Bonds."

Security. Under the Indenture, the SFPUC has irrevocably pledged the Net Revenues of its Wastewater Enterprise to the punctual payment of principal of, premium, if any, and interest on the 2018 Series ABC Bonds and all outstanding parity revenue bonds issued under the Indenture, including Parity State Loans (as defined herein), subject to the allocation of funds provided in the Indenture. The 2018 Series ABC Bonds are payable on a parity with certain Outstanding Bonds previously issued by the SFPUC under the Indenture and certain Parity State Loans. No Reserve Account will be established for the 2018 Series AB Bonds or for the 2018 Series C Bonds. See "SECURITY FOR THE BONDS."

Limited Obligation. The SFPUC is not obligated to pay the principal of, premium, if any, or interest on the 2018 Series ABC Bonds from any source of funds other than Net Revenues of the Wastewater Enterprise. The SFPUC has no taxing power. The General Fund of the City is not liable for the payment of the principal of, premium, if any, or interest on the 2018 Series ABC 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 2018 Series ABC Bonds. The 2018 Series ABC 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 Net Revenues. See "SECURITY FOR THE BONDS."

MATURITY SCHEDULES
(See inside cover)

The 2018 Series ABC Bonds are offered when, as and if issued by the SFPUC and received by the Underwriters, subject to the approval of validity by Stradling Yocca Carlson & Rauth, a Professional Corporation, Sacramento, California, and Curis 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. Montague DeRose and Associates, LLC, Walnut Creek, California, and Hilltop Securities Inc., San Francisco, California, Co-Municipal Advisors to the SFPUC, assisted in the structuring of this financing. Certain matters will be passed upon for the Underwriters by Kutak Rock LLP, Irvine, California. It is expected that the 2018 Series ABC Bonds in fully registered form will be available for delivery in book-entry form through the facilities of DTC, on or about August 9, 2018.

J.P. Morgan
Goldman Sachs & Co. LLC
Siebert Cisneros Shank & Co., L.L.C.
Underwriters for the 2018 Series AB Bonds

Citigroup
Morgan Stanley
Piper Jaffray & Co.
Underwriters for the 2018 Series C Bonds

MATURITY SCHEDULES

2018 Series A Bonds
Base CUSIP* Number: 79768H
Base ISIN* Number: US79768H

\$158,185,000 Serial Bonds

Maturity (October 1)	Principal Amount	Interest Rate	Yield [†]	CUSIP*	ISIN*	Common Code [±]
2022	\$ 7,715,000	5.00%	1.59%	EA2	EA23	186108922
2023	7,160,000	5.00	1.69	EB0	EB06	186108914
2024	6,580,000	5.00	1.83	EC8	EC88	186108949
2025	6,915,000	5.00	1.96	ED6	ED61	186108965
2026	7,270,000	5.00	2.10	EE4	EE45	186108957
2027	7,645,000	5.00	2.19	EF1	EF10	186108973
2028	8,035,000	5.00	2.26 ^c	EG9	EG92	186109007
2029	8,445,000	5.00	2.40 ^c	EH7	EH75	186108981
2030	8,880,000	5.00	2.48 ^c	EJ3	EJ32	186108990
2031	9,335,000	5.00	2.57 ^c	EK0	EK05	186109031
2032	9,815,000	5.00	2.64 ^c	EL8	EL87	186109015
2033	10,315,000	5.00	2.71 ^c	EM6	EM60	186109023
2034	10,845,000	5.00	2.75 ^c	EN4	EN44	186109066
2035	11,400,000	5.00	2.79 ^c	EP9	EP91	186109040
2036	11,985,000	5.00	2.84 ^c	EQ7	EQ74	186109058
2037	12,600,000	5.00	2.87 ^c	ER5	ER57	186109082
2038	13,245,000	5.00	2.90 ^c	ES3	ES31	186109074

\$70,865,000 4.00% Term Bonds Due October 1, 2043 Yield[†] 3.34%^c CUSIP* 79768H ET1
ISIN* US79768H ET14 Common Code[±] 186109104

* CUSIP is a registered trademark of the American Bankers Association. CUSIP and ISIN data herein is provided by CUSIP Global Services (CGS), which is managed on behalf of the American Bankers Association by S&P Global Market Intelligence. This data is not intended to create a database and does not serve in any way as a substitute for the CGS data base. Neither the SFPUC nor the Underwriters assumes any responsibility for the accuracy of the CUSIP or ISIN data.

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

± The Common Codes are provided herein by Euroclear Bank S.A./N.V. Common Codes are provided for convenience of reference only. Neither the SFPUC nor the Underwriters assume any responsibility for the accuracy of the Common Codes data.

^c Yield to par call on April 1, 2028.

2018 Series B Bonds
Base CUSIP* Number: 79768H
Base ISIN* Number: US79768H

\$128,365,000 Serial Bonds

Maturity (October 1)	Principal Amount	Interest Rate	Yield [†]	CUSIP*	ISIN*	Common Code [±]
2022	\$ 6,260,000	5.00%	1.59%	EU8	EU86	186109112
2023	5,810,000	5.00	1.69	EV6	EV69	186109147
2024	5,335,000	5.00	1.83	EW4	EW43	186109155
2025	5,610,000	5.00	1.96	EX2	EX26	186109163
2026	5,900,000	5.00	2.10	EY0	EY09	186109171
2027	6,200,000	5.00	2.19	EZ7	EZ73	186109180
2028	6,520,000	5.00	2.26 ^c	FA1	FA14	186109198
2029	6,855,000	5.00	2.40 ^c	FB9	FB96	186109201
2030	7,205,000	5.00	2.48 ^c	FC7	FC79	186109210
2031	7,575,000	5.00	2.57 ^c	FD5	FD52	186109236
2032	7,960,000	5.00	2.64 ^c	FE3	FE36	186109244
2033	8,375,000	5.00	2.71 ^c	FF0	FF01	186109252
2034	8,800,000	5.00	2.75 ^c	FG8	FG83	186109279
2035	9,255,000	5.00	2.79 ^c	FH6	FH66	186109287
2036	9,730,000	5.00	2.84 ^c	FJ2	FJ23	186109295
2037	10,225,000	5.00	2.87 ^c	FK9	FK95	186109309
2038	10,750,000	5.00	2.90 ^c	FL7	FL78	186109325

\$57,585,000 5.00% Term Bonds Due October 1, 2043 Yield[†] 2.99%^c CUSIP* 79768H FM5
ISIN* US79768H FM51 Common Code[±] 186109333

2018 Series C Bonds

\$179,145,000 Mandatory Put Bonds

Maturity (October 1)	Principal Amount	Initial Mandatory Tender Date (October 1)	Initial Term Rate	Price [†]
2048	\$179,145,000	2023	2.125%	100%

CUSIP* 79768H DZ8 ISIN* US79768H DZ82 Common Code[±] 186151429

* CUSIP is a registered trademark of the American Bankers Association. CUSIP and ISIN data herein is provided by CUSIP Global Services (CGS), which is managed on behalf of the American Bankers Association by S&P Global Market Intelligence. This data is not intended to create a database and does not serve in any way as a substitute for the CGS data base. Neither the SFPUC nor the Underwriters assumes any responsibility for the accuracy of the CUSIP or ISIN data.

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

± The Common Codes are provided herein by Euroclear Bank S.A./N.V. Common Codes are provided for convenience of reference only. Neither the SFPUC nor the Underwriters assume any responsibility for the accuracy of the Common Codes data.

^c Yield to par call on April 1, 2028.

SFPUC WASTEWATER ENTERPRISE AND MAJOR FACILITIES



Figure 1-1 – SFPUC Wastewater Enterprise and Major Facilities (Not to Scale)

The SFPUC Wastewater Enterprise operates and maintains the City’s combined sewer system which collects and treats both sewage and stormwater. The map above shows the geographical boundaries of the combined sewer system, major facilities of the combined sewer system and the ridge separating the Bayside from the Westside facilities.

This system consists of 993 miles of sewer lines which collect sanitary sewage from homes, businesses, and stormwater runoff; large transport storage box facilities; 27 pump stations that transport sewage and stormwater; and three treatment plants that discharge the treated water into the San Francisco Bay and Pacific Ocean. San Francisco has eight distinct urban watersheds: five on the Bayside (North Shore; Channel; Islais; Sunnydale; and Yosemite) and three on the Westside (Richmond; Sunset; and Lake Merced). The three treatment plants in the sewer system treat sewage and stormwater based on whether the collection point is on the Bayside or the Westside. The Oceanside Treatment Plant is not connected to the Bayside treatment systems, and the Southeast Treatment Plant and North Point Wet-Weather Facility are not connected to the Westside treatment system. See “THE WASTEWATER ENTERPRISE.”

The 2018 Series ABC 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 of its income or receipts, except the Net Revenues of its Wastewater Enterprise. See “SECURITY FOR THE BONDS.”

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 2018 Series ABC 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 2018 Series ABC 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 Underwriters have provided the following sentence for inclusion in this Official Statement: The Underwriters have reviewed the information in this Official Statement in accordance with, and as part of, their responsibilities to investors under the federal securities laws as applied to the facts and circumstances of this transaction, but the Underwriters do not guarantee the accuracy or completeness of such information.

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 2018 Series ABC Bonds.*

The issuance and sale of the 2018 Series ABC 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 2018 SERIES ABC BONDS, THE UNDERWRITERS MAY OVERALLOT OR EFFECT TRANSACTIONS WHICH STABILIZE OR MAINTAIN THE MARKET PRICE OF THE 2018 SERIES ABC 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 2018 Series ABC 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.

INFORMATION CONCERNING OFFERING RESTRICTIONS IN CERTAIN JURISDICTIONS OUTSIDE THE UNITED STATES

REFERENCES HEREIN TO THE “ISSUER” MEANS THE SAN FRANCISCO PUBLIC UTILITIES COMMISSION AND REFERENCES TO “BONDS” OR “SECURITIES” MEAN THE 2018 SERIES ABC BONDS OFFERED HEREBY. NEITHER THE ISSUER NOR THE UNDERWRITERS ASSUME ANY RESPONSIBILITY FOR THIS SECTION.

MINIMUM UNIT SALES

THE BONDS WILL TRADE AND SETTLE ON A UNIT BASIS (ONE UNIT EQUALING ONE BOND OF \$5,000 PRINCIPAL AMOUNT). FOR ANY SALES MADE OUTSIDE THE UNITED STATES, THE MINIMUM PURCHASE AND TRADING AMOUNT IS 30 UNITS (BEING 30 BONDS IN AN AGGREGATE PRINCIPAL AMOUNT OF \$150,000).

NOTICE TO PROSPECTIVE INVESTORS IN THE EUROPEAN ECONOMIC AREA

THE BONDS ARE NOT INTENDED TO BE OFFERED, SOLD OR OTHERWISE MADE AVAILABLE TO AND SHOULD NOT BE OFFERED, SOLD OR OTHERWISE MADE AVAILABLE TO ANY RETAIL INVESTOR IN THE EUROPEAN ECONOMIC AREA (“EEA”). FOR THESE PURPOSES, A RETAIL INVESTOR MEANS A PERSON WHO IS ONE (OR MORE) OF: (I) A RETAIL CLIENT AS DEFINED IN POINT (11) OF ARTICLE 4(1) OF DIRECTIVE 2014/65/EU (AS AMENDED, “**MIFID II**”); OR (II) A CUSTOMER WITHIN THE MEANING OF DIRECTIVE 2002/92/EC (AS AMENDED, THE “**INSURANCE MEDIATION DIRECTIVE**”), WHERE THAT CUSTOMER WOULD NOT QUALIFY AS A PROFESSIONAL CLIENT AS DEFINED IN POINT (10) OF ARTICLE 4(1) OF MIFID II; OR (III) NOT A QUALIFIED INVESTOR AS DEFINED IN DIRECTIVE 2003/71/EC (AS AMENDED, THE “**PROSPECTUS DIRECTIVE**”). CONSEQUENTLY, NO KEY INFORMATION DOCUMENT REQUIRED BY REGULATION (EU) NO 1286/2014 (AS AMENDED, THE “**PRIIPS REGULATION**”) FOR OFFERING OR SELLING THE BONDS OR OTHERWISE MAKING THEM AVAILABLE TO RETAIL INVESTORS IN THE EEA HAS BEEN PREPARED AND THEREFORE OFFERING OR SELLING THE BONDS OR OTHERWISE MAKING THEM AVAILABLE TO ANY RETAIL INVESTOR IN THE EEA MAY BE UNLAWFUL UNDER THE PRIIPS REGULATION.

THIS OFFICIAL STATEMENT HAS BEEN PREPARED ON THE BASIS THAT ALL OFFERS OF THE BONDS TO ANY PERSON THAT IS LOCATED WITHIN A MEMBER STATE OF THE EEA WILL BE MADE PURSUANT TO AN EXEMPTION UNDER ARTICLE 3 OF THE PROSPECTUS DIRECTIVE, AS IMPLEMENTED IN MEMBER STATES OF THE EEA, FROM THE REQUIREMENT TO PRODUCE A PROSPECTUS FOR OFFERS OF THE SECURITIES. ACCORDINGLY, ANY PERSON MAKING OR INTENDING TO MAKE ANY OFFER IN THE EEA OF THE BONDS SHOULD ONLY DO SO IN CIRCUMSTANCES IN WHICH NO OBLIGATION ARISES FOR THE ISSUER OR ANY OF THE UNDERWRITERS TO PRODUCE A PROSPECTUS FOR SUCH OFFER. NEITHER THE ISSUER NOR THE UNDERWRITERS HAVE AUTHORIZED, NOR DO THEY AUTHORIZE, THE MAKING OF ANY OFFER OF

BONDS THROUGH ANY FINANCIAL INTERMEDIARY, OTHER THAN OFFERS MADE BY THE UNDERWRITERS, WHICH CONSTITUTE THE FINAL PLACEMENT OF THE BONDS CONTEMPLATED IN THIS OFFICIAL STATEMENT.

IN RELATION TO EACH MEMBER STATE OF THE EEA THAT HAS IMPLEMENTED THE PROSPECTUS DIRECTIVE (EACH, A “**RELEVANT MEMBER STATE**”), WITH EFFECT FROM AND INCLUDING THE DATE ON WHICH THE PROSPECTUS DIRECTIVE IS IMPLEMENTED IN THAT RELEVANT MEMBER STATE, THE OFFER OF ANY BONDS WHICH IS THE SUBJECT OF THE OFFERING CONTEMPLATED BY THIS OFFICIAL STATEMENT IS NOT BEING MADE AND WILL NOT BE MADE TO THE PUBLIC IN THAT RELEVANT MEMBER STATE, OTHER THAN: (A) TO ANY LEGAL ENTITY WHICH IS A “QUALIFIED INVESTOR” AS SUCH TERM IS DEFINED IN THE PROSPECTUS DIRECTIVE; (B) TO FEWER THAN 150 NATURAL OR LEGAL PERSONS (OTHER THAN “QUALIFIED INVESTORS” AS SUCH TERM IS DEFINED IN THE PROSPECTUS DIRECTIVE), SUBJECT TO OBTAINING THE PRIOR CONSENT OF THE RELEVANT INITIAL PURCHASER OR THE ISSUER FOR ANY SUCH OFFER OR (C) IN ANY OTHER CIRCUMSTANCES FALLING WITHIN ARTICLE 3(2) OF THE PROSPECTUS DIRECTIVE; PROVIDED THAT NO SUCH OFFER OF THE BONDS SHALL REQUIRE THE ISSUER OR THE INITIAL PURCHASERS TO PUBLISH A PROSPECTUS PURSUANT TO ARTICLE 3 OF THE PROSPECTUS DIRECTIVE OR A SUPPLEMENT TO A PROSPECTUS PURSUANT TO ARTICLE 16 OF THE PROSPECTUS DIRECTIVE.

FOR THE PURPOSES OF THIS PROVISION, THE EXPRESSION AN “OFFER OF SECURITIES TO THE PUBLIC” IN RELATION TO THE BONDS IN ANY RELEVANT MEMBER STATE MEANS THE COMMUNICATION IN ANY FORM AND BY ANY MEANS OF SUFFICIENT INFORMATION ON THE TERMS OF THE OFFER AND THE BONDS TO BE OFFERED SO AS TO ENABLE AN INVESTOR TO DECIDE TO PURCHASE THE BONDS, AS THE SAME MAY BE VARIED IN THAT RELEVANT MEMBER STATE BY ANY MEASURE IMPLEMENTING THE PROSPECTUS DIRECTIVE IN THAT RELEVANT MEMBER STATE.

EACH SUBSCRIBER FOR OR PURCHASER OF THE SECURITIES IN THE OFFERING LOCATED WITHIN A RELEVANT MEMBER STATE WILL BE DEEMED TO HAVE REPRESENTED, ACKNOWLEDGED AND AGREED THAT IT IS A “QUALIFIED INVESTOR” WITHIN THE MEANING OF ARTICLE 2(1)(E) OF THE PROSPECTUS DIRECTIVE. THE ISSUER AND EACH INITIAL PURCHASER AND OTHERS WILL RELY ON THE TRUTH AND ACCURACY OF THE FOREGOING REPRESENTATION, ACKNOWLEDGEMENT AND AGREEMENT.

NOTICE TO PROSPECTIVE INVESTORS IN THE UNITED KINGDOM

THIS OFFICIAL STATEMENT IS FOR DISTRIBUTION ONLY TO, AND IS DIRECTED SOLELY AT, PERSONS WHO (I) ARE INVESTMENT PROFESSIONALS AS SUCH TERM IS DEFINED IN ARTICLE 19(5) OF THE FINANCIAL SERVICES AND MARKETS ACT 2000 (FINANCIAL PROMOTION) ORDER 2005, AS AMENDED (THE “**FINANCIAL PROMOTION ORDER**”), (II) ARE PERSONS FALLING WITHIN ARTICLE 49(2)(A) TO (D) OF THE FINANCIAL PROMOTION ORDER, (III) ARE OUTSIDE THE UNITED KINGDOM, OR (IV) ARE PERSONS TO WHOM AN INVITATION OR INDUCEMENT TO ENGAGE IN INVESTMENT ACTIVITY (WITHIN THE MEANING OF SECTION 21 OF THE FINANCIAL SERVICES AND MARKETS ACT 2000 (THE “**FSMA**”)) IN CONNECTION WITH THE ISSUE OR SALE OF ANY BONDS MAY OTHERWISE BE LAWFULLY COMMUNICATED OR CAUSED TO BE COMMUNICATED (ALL SUCH PERSONS TOGETHER BEING REFERRED TO AS “**RELEVANT PERSONS**”). THIS OFFICIAL STATEMENT IS DIRECTED ONLY AT RELEVANT PERSONS AND MUST NOT BE ACTED ON OR RELIED ON BY PERSONS WHO ARE NOT RELEVANT PERSONS. ANY INVESTMENT OR INVESTMENT ACTIVITY TO WHICH THIS OFFICIAL STATEMENT RELATES IS AVAILABLE ONLY TO RELEVANT PERSONS AND WILL BE ENGAGED IN ONLY WITH RELEVANT PERSONS. ANY PERSON WHO IS NOT A RELEVANT PERSON SHOULD NOT ACT OR RELY ON THIS OFFICIAL STATEMENT OR ANY OF ITS CONTENTS. THIS OFFICIAL STATEMENT HAS NOT BEEN APPROVED FOR THE PURPOSES OF SECTION 21 OF THE FSMA AND DOES NOT CONSTITUTE AN OFFER TO THE PUBLIC IN ACCORDANCE WITH THE PROVISIONS OF SECTION 85 OF THE FSMA.

NOTICE TO PROSPECTIVE INVESTORS OF HONG KONG

THE CONTENTS OF THIS OFFICIAL STATEMENT HAVE NOT BEEN REVIEWED BY ANY REGULATORY AUTHORITY IN HONG KONG. YOU ARE ADVISED TO EXERCISE CAUTION IN RELATION TO THE OFFER OF THE BONDS. IF YOU ARE IN ANY DOUBT ABOUT ANY OF THE CONTENTS OF THIS OFFICIAL STATEMENT, YOU SHOULD OBTAIN INDEPENDENT PROFESSIONAL ADVICE.

THIS OFFICIAL STATEMENT HAS NOT BEEN, AND WILL NOT BE, REGISTERED AS A PROSPECTUS (AS DEFINED IN THE COMPANIES (WINDING UP AND MISCELLANEOUS PROVISIONS) ORDINANCE (CHAPTER 32 OF THE LAWS OF HONG KONG)) IN HONG KONG NOR HAS IT BEEN APPROVED BY THE SECURITIES AND FUTURES COMMISSION OF HONG KONG PURSUANT TO THE SECURITIES AND FUTURES ORDINANCE (CHAPTER 571 OF THE LAWS OF HONG KONG) (“SFO”). ACCORDINGLY, THE BONDS MAY NOT BE OFFERED OR SOLD IN HONG KONG BY MEANS OF THIS OFFICIAL STATEMENT OR ANY OTHER DOCUMENT, AND THIS OFFICIAL STATEMENT MUST NOT BE ISSUED, CIRCULATED OR DISTRIBUTED IN HONG KONG, OTHER THAN (A) TO ‘PROFESSIONAL INVESTORS’ AS DEFINED IN THE SFO AND ANY RULES MADE UNDER THE SFO OR (B) IN OTHER CIRCUMSTANCES WHICH DO NOT RESULT IN THIS OFFICIAL STATEMENT OR ANY OTHER DOCUMENT BEING A “PROSPECTUS” AS DEFINED IN THE COMPANIES (WINDING UP AND MISCELLANEOUS PROVISIONS) ORDINANCE (CAP. 32) OF HONG KONG (THE “C(WUMP)O”) OR WHICH DO NOT CONSTITUTE AN OFFER TO THE PUBLIC WITHIN THE MEANING OF THE C(WUMP)O. IN ADDITION, NO PERSON MAY ISSUE OR HAVE IN ITS POSSESSION FOR THE PURPOSES OF ISSUE, WHETHER IN HONG KONG OR ELSEWHERE, ANY ADVERTISEMENT, INVITATION OR DOCUMENT RELATING TO THE BONDS, WHICH IS DIRECTED AT, OR THE CONTENTS OF WHICH ARE LIKELY TO BE ACCESSED OR READ BY, THE PUBLIC OF HONG KONG (EXCEPT IF PERMITTED TO DO SO UNDER THE SECURITIES LAWS OF HONG KONG) OTHER THAN WITH RESPECT TO BONDS WHICH ARE OR ARE INTENDED TO BE DISPOSED OF ONLY (A) TO PERSONS OUTSIDE HONG KONG, (B) TO ‘PROFESSIONAL INVESTORS’ AS DEFINED IN THE SFO AND ANY RULES MADE UNDER THE SFO.

NOTICE TO PROSPECTIVE INVESTORS IN SWITZERLAND

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WHERE THE BONDS ARE SUBSCRIBED OR PURCHASED UNDER SECTION 275 OF THE SFA BY A RELEVANT PERSON WHICH IS:

(A) A CORPORATION (WHICH IS NOT AN ACCREDITED INVESTOR (AS DEFINED IN SECTION 4A OF THE SFA)) THE SOLE BUSINESS OF WHICH IS TO HOLD INVESTMENTS AND THE ENTIRE SHARE CAPITAL OF WHICH IS OWNED BY ONE OR MORE INDIVIDUALS, EACH OF WHOM IS AN ACCREDITED INVESTOR; OR

(B) A TRUST (WHERE THE TRUSTEE IS NOT AN ACCREDITED INVESTOR) WHOSE SOLE PURPOSE IS TO HOLD INVESTMENTS AND EACH BENEFICIARY OF THE TRUST IS AN INDIVIDUAL WHO IS AN ACCREDITED INVESTOR,

SECURITIES (AS DEFINED IN SECTION 239(1) OF THE SFA) OF THAT CORPORATION OR THE BENEFICIARIES' RIGHTS AND INTEREST (HOWSOEVER DESCRIBED) IN THAT TRUST SHALL NOT BE TRANSFERRED WITHIN SIX MONTHS AFTER THAT CORPORATION OR THAT TRUST HAS ACQUIRED THE BONDS PURSUANT TO AN OFFER MADE UNDER SECTION 275 OF THE SFA, EXCEPT:

(1) TO AN INSTITUTIONAL INVESTOR OR TO A RELEVANT PERSON DEFINED IN SECTION 275(2) OF THE SFA, OR TO ANY PERSON ARISING FROM AN OFFER REFERRED TO IN SECTION 275(1A) OR SECTION 276(4)(I)(B) OF THE SFA;

(2) WHERE NO CONSIDERATION IS OR WILL BE GIVEN FOR THE TRANSFER;

(3) WHERE THE TRANSFER IS BY OPERATION OF LAW;

(4) AS SPECIFIED IN SECTION 276(7) OF THE SFA; OR

(5) AS SPECIFIED IN REGULATION 32 OF THE SECURITIES AND FUTURES (OFFERS OF INVESTMENTS) (SHARES AND DEBENTURES) REGULATIONS 2005 OF SINGAPORE.

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SAN FRANCISCO PUBLIC UTILITIES COMMISSION

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Ann Moller Caen, Commissioner
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Francesca Vietor, Commissioner

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Michael Carlin, Deputy General Manager and Chief Operating Officer
Gregory J. Norby, Assistant General Manager, Wastewater 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
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CITY AND COUNTY OF SAN FRANCISCO

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London Breed

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Vallie Brown, District 5
Jane Kim, District 6
Sandra Lee Fewer, District 1
Rafael Mandelman, District 8
Aaron Peskin, District 3
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TABLE OF CONTENTS

	<u>Page</u>		<u>Page</u>
INTRODUCTION	1	Labor Relations	31
General.....	1	Employee Benefit Plans.....	33
Authority for Issuance.....	1	Pension and Health Care Costs Reforms	37
Purposes	2	THE WASTEWATER ENTERPRISE.....	38
The SFPUC and the Wastewater Enterprise.....	2	Background and History.....	38
Security for the Bonds.....	2	Service Area	39
Outstanding and Future Parity Bonds and Other		Customer Base.....	39
Indebtedness.....	3	Combined Sewage and Stormwater System	40
Amendments Effected by Sixth Supplemental		Wastewater Treatment.....	42
Indenture	4	System Capacity	45
Risk Factors	4	Current System Demands	45
Continuing Disclosure.....	4	Projected Future Demand	46
Other Matters	4	WASTEWATER ENTERPRISE CAPITAL	
THE 2018 SERIES AB BONDS	5	PROGRAM.....	46
General.....	5	Capital and Financial Planning Process	46
Securities Depository and Book-Entry System	5	Sewer System Improvement Program	46
Redemption of 2018 Series AB Bonds.....	5	Renewal and Replacement.....	47
Defeasance	7	Treasure Island	47
THE 2018 SERIES C BONDS	7	Wastewater Facilities and Infrastructure	48
General.....	7	Environmental Considerations.....	48
Securities Depository and Book-Entry System	8	SEWER SYSTEM IMPROVEMENT PROGRAM.....	49
Redemption of 2018 Series C Bonds During Initial		Program Summary.....	49
Term Rate Period.....	8	SSIP Program Development and Chronology	49
Mandatory Tender of 2018 Series C Bonds	9	Program Objectives	50
Defeasance	10	Program Goals.....	50
PLAN OF FINANCE.....	10	Program Scope	50
ESTIMATED SOURCES AND USES OF FUNDS.....	11	Program Budget.....	52
GREEN BONDS DESIGNATION AND CLIMATE		Program Schedule.....	52
CERTIFICATION	11	Management Approach.....	52
SECURITY FOR THE BONDS	13	Potential Changes to SSIP Projects	53
Pledge of Net Revenues	13	FINANCING PLAN FOR WASTEWATER	
Flow of Funds	14	ENTERPRISE CAPITAL PROGRAM.....	54
Rate Covenants	15	Long Term Financing of Capital Program.....	54
No Reserve Account	16	Interim Funding Program Facilities.....	54
Additional Series of Bonds	16	Sources and Uses of Funding the Capital Program.....	54
Additional Parity State Loans	18	FINANCIAL OPERATIONS.....	55
Refunding Bonds	19	General	55
Subordinate Obligations; Obligations Not Payable		Wastewater Enterprise Rates and Charges	56
from Revenues	19	Revenues	61
Investments	19	Operating and Maintenance Expenses.....	63
PROPOSED AMENDMENTS TO THE INDENTURE ..	20	Financial Management Policies.....	64
OBLIGATIONS PAYABLE FROM NET REVENUES ..	21	Investment of SFPUC Funds	65
Authority for Issuance of Revenue Bonds and Other		Risk Management and Insurance.....	65
Obligations Payable from Net Revenues.....	21	HISTORICAL OPERATING RESULTS.....	67
Outstanding Parity Revenue Bonds.....	21	Summary of Historical Operating Results and Debt	
Additional Bonds	21	Service Coverage.....	67
Parity Loans	21	PROJECTED OPERATING RESULTS	69
Contingent Payment Obligations	24	Assumptions Used in Projections	71
Subordinate Debt and Interim Funding Program	24	RISK FACTORS.....	71
Other Subordinate Obligations Payable from Net		General	72
Revenues.....	24	Limited Obligation	72
Revenue Bond Oversight Committee.....	25	No Reserve Account.....	72
Debt Service Requirements.....	26	Payment of the 2018 Series C Bonds on the Initial	
THE CITY AND COUNTY OF SAN FRANCISCO	27	Mandatory Tender Date.....	72
THE PUBLIC UTILITIES COMMISSION	28	Interim Funding Program Facilities.....	72
General.....	28	Limitations on Rate-Setting.....	73
Organization, Purposes and Powers	28	Initiative, Referendum and Charter Amendments	
Commission Members	29	and Future Legislation	73
Management.....	29		

TABLE OF CONTENTS (Continued)

	<u>Page</u>		<u>Page</u>
Risks Related to Wastewater Enterprise Facilities and Operation.....	73	Regulatory Trends	85
Cybersecurity	76	Other Regulatory Agencies with Jurisdiction Over the Wastewater Enterprise	86
Cost of the SSIP; Timely Completion of the SSIP	77	Other Laws Affecting the Wastewater Enterprise	87
Construction Related Risks	78	CONSTITUTIONAL, STATUTORY AND CHARTER LIMITATIONS	87
Climate Change, Risk of Sea Level Rise and Flooding Damage.....	78	State Law Limitations.....	87
Economic, Political, Social and Environmental Conditions	80	Initiative and Referendum	89
Bankruptcy	80	Charter Limitations.....	89
Limitations on Remedies.....	81	Future Charter Amendments.....	90
Loss of Tax Exemption/Risk of Tax Audit of Municipal Issuers	82	LITIGATION.....	90
Change in Tax Law	82	TAX MATTERS.....	90
Failure to Maintain Credit Ratings.....	82	U.S. Holders	91
Secondary Market	82	Non-U.S. Holders	92
Uncertainties of Projections, Forecasts and Assumptions.....	82	Foreign Account Tax Compliance Act—U.S. Holders and Non-U.S. Holders.....	93
Green Bonds	83	CERTAIN LEGAL MATTERS	94
Other Risks	83	RATINGS	94
REGULATORY MATTERS.....	83	UNDERWRITING.....	95
History and Background	83	2018 Series AB Bonds.....	95
Federal and State Clean Water Act Permits	83	2018 Series C Bonds	95
City’s 1974 Master Plan.....	84	FINANCIAL STATEMENTS	96
Combined Sewer Overflow Control Policy.....	84	CONTINUING DISCLOSURE	97
Stormwater Regulations.....	85	CO-MUNICIPAL ADVISORS	97
		APPROVAL AND EXECUTION	98

APPENDIX A — SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE

APPENDIX B — SFPUC WASTEWATER ENTERPRISE FINANCIAL STATEMENTS

APPENDIX C — PROPOSED FORM OF OPINION OF CO-BOND COUNSEL

APPENDIX D — FORM OF CONTINUING DISCLOSURE CERTIFICATE

APPENDIX E — BOOK-ENTRY ONLY SYSTEM AND GLOBAL CLEARANCE PROCEDURES

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OFFICIAL STATEMENT

\$594,145,000
PUBLIC UTILITIES COMMISSION
OF THE CITY AND COUNTY OF SAN FRANCISCO
WASTEWATER REVENUE BONDS

\$229,050,000
2018 Series A (Green Bonds)

\$185,950,000
2018 Series B

\$179,145,000
2018 Series C (Green Bonds)

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 2018 Series ABC 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 its Wastewater Revenue Bonds, 2018 Series A (Green Bonds) (the “**2018 Series A Bonds**”), 2018 Series B (the “**2018 Series B Bonds**” and, collectively with the 2018 Series A Bonds, the “**2018 Series AB Bonds**”), and 2018 Series C (Green Bonds) (the “**2018 Series C Bonds**” and, collectively with the 2018 Series AB Bonds, the “**2018 Series ABC Bonds**”).

Authority for Issuance

The SFPUC is issuing the 2018 Series ABC Bonds pursuant to authority granted by the Charter (the “**Charter**”) of the City and County of San Francisco (the “**City**”), under Proposition E, approved by the voters of the City on November 5, 2002. The 2018 Series AB Bonds will be issued under a Seventh Supplemental Indenture, dated as of August 1, 2018 (the “**Seventh Supplemental Indenture**”), by and between the SFPUC and U.S. Bank National Association, as trustee (the “**Trustee**”). The 2018 Series C Bonds will be issued under an Eighth Supplemental Indenture, dated as of August 1, 2018 (the “**Eighth Supplemental Indenture**”), by and between the SFPUC and the Trustee. The Seventh Supplemental Indenture and the Eighth Supplemental Indenture supplement an Indenture, dated as of January 1, 2003 (the “**Original Indenture**”), by and between the SFPUC and the Trustee, as amended by a First Amendment to Indenture dated as of May 1, 2010, a First Supplemental Indenture dated as of May 1, 2010, a Second Supplemental Indenture dated as of January 1, 2013, a Third Supplemental Indenture dated as of February 1, 2013, a Fourth Supplemental Indenture dated as of May 1, 2016, a Fifth Supplemental Indenture dated as of September 14, 2017 (the “**Fifth Supplemental Indenture**”), a Sixth Supplemental Indenture dated as of July 1, 2018 (the “**Sixth Supplemental Indenture**”), and a Ninth Supplemental Indenture dated as of July 27, 2018 (the “**Ninth Supplemental Indenture**”), each between the SFPUC and the Trustee. The Original Indenture, as so amended and supplemented, including and as amended and supplemented by the Seventh Supplemental Indenture and the Eighth Supplemental Indenture, is referred to herein collectively as the “**Indenture**.”

The 2018 Series ABC Bonds are being issued pursuant to Ordinance No. 107-14, adopted by the Board of Supervisors of the City (the “**Board of Supervisors**”) on June 24, 2014, and Ordinance No. 111-16, adopted by the Board of Supervisors on June 14, 2016, and under a resolution adopted by the SFPUC governing body (the “**Commission**”) on July 10, 2018.

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

Purposes

The 2018 Series A Bonds are being issued primarily to finance and refinance (through the retirement of a portion of the outstanding commercial paper notes) select projects in the SFPUC's Sewer System Improvement Program (as further described herein, the "SSIP"). The 2018 Series B Bonds are being issued primarily to finance select projects authorized in the capital program for the Wastewater Enterprise (as defined herein). The 2018 Series C Bonds are being issued primarily to finance select projects in the SFPUC's SSIP. Proceeds of the 2018 Series ABC Bonds will also be applied to (i) fund capitalized interest with respect to the 2018 Series ABC Bonds to August 1, 2020, and (ii) pay the costs of issuance of the 2018 Series ABC Bonds. See "PLAN OF FINANCE," "ESTIMATED SOURCES AND USES OF FUNDS," "GREEN BONDS DESIGNATION AND CLIMATE CERTIFICATION," "WASTEWATER ENTERPRISE CAPITAL PROGRAM" and "SEWER SYSTEM IMPROVEMENT PROGRAM."

The SFPUC and the Wastewater 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 Wastewater Enterprise provides sewage and stormwater collection, treatment and disposal services to residential, commercial and industrial customers in the City, as well as three municipal sewer service providers that serve residents and businesses in northern San Mateo County. The Wastewater Enterprise's services are provided through (i) a combined system that collects sewage and stormwater, (ii) three wastewater treatment plants and (iii) effluent outfalls to the San Francisco Bay and Pacific Ocean. See "THE WASTEWATER ENTERPRISE."

The other two enterprises of the SFPUC deliver retail water services to the City and wholesale water to users in three other Bay Area counties, 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 premium, if any, or interest on the Bonds (as defined herein), including the 2018 Series ABC Bonds. See "THE PUBLIC UTILITIES COMMISSION."

Security for the Bonds

Under the Indenture, the SFPUC has irrevocably pledged the Net Revenues of the Wastewater Enterprise to the punctual payment of principal of, premium, if any, and interest on the Bonds, which consist of any parity revenue bonds issued under the Indenture, including the 2018 Series ABC Bonds and the outstanding bonds described below, subject to the flow of funds contained in the Indenture. The 2018 Series ABC Bonds and all other Bonds are secured by a parity lien on Net Revenues. Under the Indenture, Parity State Loans (as defined below) are included as Bonds and are secured by a pledge of Net Revenues on a parity with the 2018 Series ABC Bonds. See "SECURITY FOR THE BONDS" and "APPENDIX A—SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE—THE INDENTURE—DEFINITIONS; EQUAL SECURITY: CERTIFICATES AND OPINIONS."

The Indenture defines "Net Revenues" as all "Revenues" less all "Operation and Maintenance Costs of the Enterprise" (each as further defined herein). Revenues are generated principally from the sewer service charges to customers for the sanitary wastewater and stormwater collection, treatment and disposal services of the Wastewater Enterprise. Wastewater rates are set by the SFPUC, subject to rejection by resolution of the Board of Supervisors. See "FINANCIAL OPERATIONS."

The SFPUC is not obligated to pay the principal of, premium, if any, or interest on the 2018 Series ABC Bonds from any source of funds other than Net Revenues of the Wastewater Enterprise. The SFPUC has no taxing power. The General Fund of the City is not liable for the payment of the principal of, premium, if any, or interest on the 2018 Series ABC 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 2018 Series ABC Bonds. The 2018 Series ABC 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 Net Revenues. See "SECURITY FOR THE BONDS."

No Reserve Account will be established for the 2018 Series AB Bonds or for the 2018 Series C Bonds.

Outstanding and Future Parity Bonds and Other Indebtedness

Parity Bonds. All bonds issued and outstanding at any given time under the Indenture, including the 2018 Series ABC Bonds as the context requires, are referred to collectively in this Official Statement as the “**Bonds**.” The SFPUC has previously issued six series of outstanding Bonds, including its Wastewater Revenue Bonds, 2010 Series A (the “**2010 Series A Bonds**”), its Wastewater Revenue Bonds, 2010 Series B (Federally Taxable – Build America Bonds – Direct Payment) (the “**2010 Series B Bonds**” and, together with the 2010 Series A Bonds, the “**2010 Series AB Bonds**”), its Wastewater Revenue Bonds, 2013 Series A (Refunding) (the “**2013 Series A Bonds**”), its Wastewater Revenue Bonds, 2013 Series B (the “**2013 Series B Bonds**” and, together with the 2013 Series A Bonds, the “**2013 Series AB Bonds**”), its Wastewater Revenue Bonds, 2016 Series A (Green Bonds) (the “**2016 Series A Bonds**”), and its Wastewater Revenue Bonds, 2016 Series B (the “**2016 Series B Bonds**” and, together with the 2016 Series A Bonds, the “**2016 Series AB Bonds**”) (collectively, the “**Outstanding Bonds**”). The Outstanding Bonds were outstanding in the aggregate principal amount of \$937,250,000 as of July 1, 2018. See “OBLIGATIONS PAYABLE FROM NET REVENUES—Outstanding Parity Revenue Bonds.”

The Indenture permits, upon the satisfaction of certain conditions, the issuance of additional bonds secured by a pledge of Net Revenues (the “**Additional Bonds**”) on a parity with the Outstanding Bonds and the 2018 Series ABC Bonds. See “SECURITY FOR THE BONDS—Additional Series of Bonds.”

Parity Loans. Under the Indenture, the SFPUC may enter into loan agreements with the State, and any board, department or agency thereof, in order to finance certain categories of projects relating to the facilities of the Wastewater Enterprise. These loans are payable from Net Revenues on a parity with the Bonds (the “**Parity State Loans**”). In accordance with the Fifth Supplemental Indenture, Parity State Loans are treated as “Bonds” for certain purposes under the Indenture. See “APPENDIX A—SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE.”

As of the date of this Official Statement, the SFPUC has entered into four Parity State Loans. The maximum aggregate amount that may be disbursed under such existing Parity State Loans is approximately \$102 million. See “SECURITY FOR THE BONDS—Parity State Loans,” “OBLIGATIONS PAYABLE FROM NET REVENUES—Parity Loans” and “APPENDIX A—SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE.”

Pursuant to the Water Infrastructure Finance and Innovation Act (“**WIFIA**”) loan program, the SFPUC intends to borrow approximately \$699 million from the United States Environmental Protection Agency (the “**EPA**”) to finance 49% of the Wastewater Enterprise’s largest SSIP project, the \$1.27 billion Biosolids Digester Facilities Project to be located at the Southeast Treatment Plant, plus certain eligible expenses. The loan (the “**WIFIA Loan**”) is expected to be made pursuant to a loan agreement between the SFPUC and the EPA (the “**WIFIA Loan Agreement**”), which the SFPUC expects to enter into with the EPA in late July 2018.

The SFPUC expects to issue a parity Bond (the “**WIFIA Bond**”) under the Indenture to evidence its repayment obligation pursuant to the WIFIA Loan to the EPA. The WIFIA Bond will be payable from and secured by a pledge of Net Revenues on a parity with the Bonds. The WIFIA Loan Agreement is expected to permit the SFPUC to finance a portion of the Biosolids Digester Facilities Project on an interim basis with short-term indebtedness to be repaid from the proceeds of the WIFIA Loan. The SFPUC may issue, from time to time, bond anticipation notes payable from and secured by a pledge of Net Revenues on a parity with the Bonds to provide such interim funding. See “OBLIGATIONS PAYABLE FROM NET REVENUES—Parity Loans” and “APPENDIX A—SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE.”

Amendments Effected by Sixth Supplemental Indenture

The Sixth Supplemental Indenture amends and supplements certain provisions of the Indenture, including provisions relating to debt service coverage, conditions for issuing Additional Bonds for refunding, exceptions to conditions for issuing Additional Bonds or obligations, and the rate covenant, and amends and supplements certain definitions relating to variable rate indebtedness. The provisions of the Sixth Supplemental Indenture will become effective when the written consents of the Owners of a majority in aggregate amount of the Bond Obligation of the Bonds then Outstanding have been filed with the Trustee. **By their purchase of 2018 Series ABC Bonds, the purchasers of 2018 Series ABC Bonds irrevocably agree to, accept and consent to the provisions of such amendments.** See “PROPOSED AMENDMENTS TO INDENTURE” and “APPENDIX A—SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE—SIXTH SUPPLEMENTAL INDENTURE—PROPOSED AMENDMENTS TO INDENTURE” for a more detailed explanation of the amendments effected by the Sixth Supplemental Indenture.

Risk Factors

Investment in the 2018 Series ABC 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 2018 Series ABC Bonds, see “RISK FACTORS.”

Continuing Disclosure

The SFPUC has covenanted for the benefit of the Owners and Beneficial Owners of the 2018 Series ABC 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, 2019, with the report for Fiscal Year 2017-18, 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 D—FORM OF CONTINUING DISCLOSURE CERTIFICATE.”

Other Matters

Brief descriptions of the 2018 Series ABC Bonds, the security and sources of payment for the 2018 Series ABC Bonds, the SFPUC, and the Wastewater Enterprise 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 2018 SERIES AB BONDS

General

The 2018 Series AB Bonds will be dated as of their date of delivery and will accrue interest from the date of delivery at the rates per annum set forth on the inside cover page of this Official Statement. Interest on the 2018 Series AB Bonds will be calculated on the basis of a 360-day year composed of twelve 30-day months. Interest on the 2018 Series AB Bonds is payable on April 1 and October 1 of each year, beginning October 1, 2018.

The 2018 Series AB Bonds will mature on the dates and in the principal amounts set forth on the inside cover page of this Official Statement. The 2018 Series AB Bonds will be issued in fully registered form in denominations of \$5,000 or any integral multiple of \$5,000.

Under the Indenture, the record date with respect to the payment of principal of and interest on the 2018 Series AB Bonds is the 15th day of the month immediately preceding an interest payment date, whether or not such day is a Business Day.

Securities Depository and Book-Entry System

The 2018 Series AB Bonds will be issued in fully registered form, registered in the name of Cede & Co., as nominee for The Depository Trust Company (“DTC”), New York, New York, as the Owner of the 2018 Series AB Bonds. So long as DTC, or its nominee, Cede & Co., is the Owner of the 2018 Series AB Bonds, all payments on the 2018 Series AB 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 2018 Series AB Bonds will be the responsibility of the DTC Participants. See “APPENDIX E—BOOK-ENTRY ONLY SYSTEM AND GLOBAL CLEARANCE PROCEDURES.”

Redemption of 2018 Series AB Bonds

Optional Redemption – 2018 Series A Bonds. The 2018 Series A Bonds maturing on and after October 1, 2028 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 April 1, 2028, at a redemption price equal to 100% of the principal amount of the 2018 Series A Bonds to be redeemed, plus accrued interest thereon to the date fixed for redemption, without premium. If 2018 Series A Bonds are to be optionally redeemed in part, the SFPUC shall direct the maturities, or portions thereof, to be redeemed, and, if less than all of the 2018 Series A Bonds of a particular maturity are to be redeemed, the 2018 Series A Bonds shall be redeemed by lot within any such maturity.

Mandatory Sinking Fund Redemption – 2018 Series A Bonds. The 2018 Series A Bonds maturing on October 1, 2043 and payable from the 2018 Series A Sinking Fund Account are further subject to redemption prior to their stated maturity, from the 2018 Series A Sinking Fund Account, on any October 1 on or after October 1, 2039, by lot within any such maturity if less than all of the 2018 Series A 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 Trustee, on or before September 30 of each year (commencing on or before September 30, 2039), will deposit in the 2018 Series A Sinking Fund Account from the Principal Fund moneys in an amount sufficient to call and redeem or to pay at maturity, as the case may be, the principal of 2018 Series A Term Bonds in the following respective principal amounts on the next succeeding October 1 in each of the following years.

2018 Series A Term Bonds maturing on October 1, 2043

Redemption Date (October 1)	Principal Amount
2039	\$13,880,000
2040	14,510,000
2041	15,170,000
2042	15,860,000
2043*	11,445,000

* Maturity

Optional Redemption – 2018 Series B Bonds. The 2018 Series B Bonds maturing on and after October 1, 2028 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 April 1, 2028, at a redemption price equal to 100% of the principal amount of the 2018 Series B Bonds to be redeemed, plus accrued interest thereon to the date fixed for redemption, without premium. If 2018 Series B Bonds are to be optionally redeemed in part, the SFPUC shall direct the maturities, or portions thereof, to be redeemed, and, if less than all of the 2018 Series B Bonds of a particular maturity are to be redeemed, the 2018 Series B Bonds shall be redeemed by lot within any such maturity.

Mandatory Sinking Fund Redemption – 2018 Series B Bonds. The 2018 Series B Bonds maturing on October 1, 2043 and payable from the 2018 Series B Sinking Fund Account are further subject to redemption prior to their stated maturity, from the 2018 Series B Sinking Fund Account, on any October 1 on or after October 1, 2039, by lot within any such maturity if less than all of the 2018 Series B 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 Trustee, on or before September 30 of each year (commencing on or before September 30, 2039), will deposit in the 2018 Series B Sinking Fund Account from the Principal Fund moneys in an amount sufficient to call and redeem or to pay at maturity, as the case may be, the principal of 2018 Series B Term Bonds in the following respective principal amounts on the next succeeding October 1 in each of the following years.

2018 Series B Term Bonds maturing on October 1, 2043

Redemption Date (October 1)	Principal Amount
2039	\$11,275,000
2040	11,790,000
2041	12,325,000
2042	12,890,000
2043*	9,305,000

* Maturity

Selection of 2018 Series AB Bonds for Redemption. Subject to DTC’s procedures relating to the selection of bonds for redemption (see “APPENDIX E—BOOK-ENTRY ONLY SYSTEM AND GLOBAL CLEARANCE PROCEDURES”), whenever less than all of the 2018 Series AB Bond of any one maturity and tenor of any Series are called for redemption and such 2018 Series AB Bonds are redeemable by lot, the Trustee will select the 2018 Series AB Bonds of such maturity and tenor to be redeemed from the Outstanding 2018 Series AB Bonds of such maturity and tenor, by lot or by any other manner in which the Trustee deems fair and equitable. For purposes of such selection, 2018 Series AB Bonds will be deemed to be composed of \$5,000 portions of principal and any such portion may be redeemed separately.

Notice of Redemption for 2018 Series AB Bonds. Notice of redemption will be mailed by the Trustee at least 30 days but not more than 60 days prior to the redemption date to DTC (so long as the DTC Book-Entry System is used). The actual receipt by the owner of any 2018 Series AB 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 2018 Series AB Bonds or the cessation of the accrual of interest on the date fixed for such redemption. See “APPENDIX A—SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE—GENERAL REDEMPTION PROVISIONS—Notice of Redemption” and “APPENDIX E—BOOK-ENTRY ONLY SYSTEM AND GLOBAL CLEARANCE PROCEDURES.”

Rescission of Notice of Redemption for 2018 Series AB Bonds. The SFPUC may, at its option, prior to the date fixed for redemption in any notice of 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 for 2018 Series AB Bonds. 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 2018 Series AB Bonds so 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 2018 Series AB Bonds so called for redemption will cease to accrue, said 2018 Series AB Bonds will cease to be entitled to any benefit or security under the Indenture, and the Owners of said 2018 Series AB 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 2018 Series AB Bonds, will pay such 2018 Series AB Bonds at the redemption price, together with accrued interest thereon. All 2018 Series AB Bonds redeemed will be cancelled upon surrender and no 2018 Series AB 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 2018 Series AB Bond and such 2018 Series AB Bond will no longer be deemed outstanding thereunder if certain conditions set forth in the Indenture are satisfied. See “APPENDIX A—SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE—DEFEASANCE.”

THE 2018 SERIES C BONDS

This section describes certain terms of the 2018 Series C Bonds during the Initial Term Rate Period (as defined herein) only. For a complete description of the 2018 Series C Bonds following the Initial Term Rate Period, see “APPENDIX A—SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE.”

General

The 2018 Series C Bonds will be dated as of their date of delivery and will accrue interest from their date of delivery. Interest on the 2018 Series C Bonds will be calculated on the basis of a 360-day year composed of twelve 30-day months. Interest on the 2018 Series C Bonds will bear interest to October 1, 2023 (the “**Initial Term Rate Period**”) at the rate set forth on the inside front cover for the 2018 Series C Bonds (the “**Initial Term Rate**”). The 2018 Series C Bonds are subject to mandatory tender for purchase during the Initial Term Rate Period on October 1, 2023 (the “**Initial Mandatory Tender Date**”) (see also “—Mandatory Tender of 2018 Series C Bonds”). If insufficient funds are available for the purchase of all 2018 Series C Bonds that are required to be tendered for remarketing on the Initial Mandatory Tender Date, then the 2018 Series C Bonds will bear interest at 6% per annum for the first 79 days following and including the Initial Mandatory Tender Date (also referred to in the Indenture as a “**Failed Tender Date**”), and thereafter at 8% per annum until such 2018 Series C Bonds are redeemed or remarketed in accordance with the Indenture.

Interest on the 2018 Series C Bonds is payable on April 1 and October 1 of each year, beginning October 1, 2018. The 2018 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 2018 Series C Bonds will be issued in fully registered form in denominations of \$5,000 or any integral multiple of \$5,000.

Under the Indenture, the record date with respect to the payment of principal of and interest on the 2018 Series C Bonds is the 15th day of the month immediately preceding an interest payment date, whether or not such day is a Business Day.

Securities Depository and Book-Entry System

The 2018 Series C Bonds will be issued in fully registered form, registered in the name of Cede & Co., as nominee for DTC, New York, New York, as the Owner of the 2018 Series C Bonds. So long as DTC, or its nominee, Cede & Co., is the Owner of the 2018 Series C Bonds, all payments on the 2018 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 2018 Series C Bonds will be the responsibility of the DTC Participants. See “APPENDIX E—BOOK-ENTRY ONLY SYSTEM AND GLOBAL CLEARANCE PROCEDURES.”

Redemption of 2018 Series C Bonds During Initial Term Rate Period

Optional Redemption During Initial Term Rate Period – 2018 Series C Bonds. The 2018 Series C Bonds are subject to redemption at the option of the SFPUC during the initial Term Rate Period in whole or in part on any date on or after April 1, 2023 at a redemption price equal to the principal amount of the 2018 Series C Bonds, or portions thereof, to be redeemed plus accrued but unpaid interest to the date fixed for redemption.

Mandatory Sinking Fund Redemption – 2018 Series C Bonds. The 2018 Series C Bonds maturing on October 1, 2048 and payable from the 2018 Series C Sinking Fund Account are further subject to redemption prior to their stated maturity, from the 2018 Series C Sinking Fund Account, on any October 1 on or after October 1, 2043, by lot within any such maturity if less than all of the 2018 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 Trustee, on or before September 30 of each year (commencing on or before September 30, 2043, will deposit in the 2018 Series C Sinking Fund Account from the Principal Fund moneys in an amount sufficient to call and redeem or to pay at maturity, as the case may be, the principal of 2018 Series C Term Bonds in the following respective principal amounts on the next succeeding October 1 in each of the following years.

2018 Series C Term Bonds maturing on October 1, 2048

Redemption Date (October 1)	Principal Amount
2043	\$ 9,285,000
2044	31,310,000
2045	32,590,000
2046	33,915,000
2047	35,300,000
2048*	36,745,000

* Maturity

Selection of 2018 Series C Bonds for Redemption. Subject to DTC’s procedures relating to the selection of bonds for redemption (see “APPENDIX E—BOOK-ENTRY ONLY SYSTEM AND GLOBAL CLEARANCE PROCEDURES”), whenever less than all of the 2018 Series C Bond of any one maturity and tenor of any Series are called for redemption and such 2018 Series C Bonds are redeemable by lot, the Trustee will select the 2018 Series C Bonds of such maturity and tenor to be redeemed from the Outstanding 2018 Series C Bonds of such maturity and tenor, by lot or by any other manner in which the Trustee deems fair and equitable. For purposes of such selection,

2018 Series C Bonds will be deemed to be composed of \$5,000 portions of principal and any such portion may be redeemed separately.

Notice of Redemption for 2018 Series C Bonds. Notice of redemption will be mailed by the Trustee at least 30 days but not more than 60 days prior to the redemption date to DTC (so long as the DTC Book-Entry System is used). The actual receipt by the owner of any 2018 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 2018 Series C Bonds or the cessation of the accrual of interest on the date fixed for such redemption. See “APPENDIX A—SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE—GENERAL REDEMPTION PROVISIONS—Notice of Redemption” and “APPENDIX E—BOOK-ENTRY ONLY SYSTEM AND GLOBAL CLEARANCE PROCEDURES.”

Rescission of Notice of Redemption for 2018 Series C Bonds. The SFPUC may, at its option, prior to the date fixed for redemption in any notice of 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 for 2018 Series C Bonds. 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 2018 Series C Bonds so 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 2018 Series C Bonds so called for redemption will cease to accrue, said 2018 Series C Bonds will cease to be entitled to any benefit or security under the Indenture, and the Owners of said 2018 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 2018 Series C Bonds, will pay such 2018 Series C Bonds at the redemption price, together with accrued interest thereon. All 2018 Series C Bonds redeemed will be cancelled upon surrender and no 2018 Series C Bonds will be issued in place thereof.

Mandatory Tender of 2018 Series C Bonds

The 2018 Series C Bonds are subject to mandatory tender for purchase during the Initial Term Rate Period on the Initial Mandatory Tender Date at an amount equal to the principal amount of the 2018 Series C Bonds to be purchased plus accrued interest to the date on which such 2018 Series C Bonds are required to be tendered (the “**Purchase Price**”).

Pursuant to the Eighth Supplemental Indenture, the Trustee shall give notice by mail to the Owners of the 2018 Series C Bonds not less than 30 days prior to the Initial Mandatory Tender Date that (i) such 2018 Series C Bonds are subject to mandatory tender for purchase on the Initial Mandatory Tender Date at the Purchase Price and (ii) if an amount of money sufficient and available to pay the Purchase Price of all of the 2018 Series C Bonds is on deposit with the Trustee, all of such 2018 Series C Bonds will be deemed to have been properly tendered for purchase and will cease to bear interest. Receipt of such notice by any Owner of such 2018 Series C Bonds is not a condition precedent to the mandatory tender for purchase of the 2018 Series C Bonds on the Initial Mandatory Tender Date, and failure to receive any such notice or any defect in such notice will not affect the validity of the proceedings for the mandatory tender for purchase of such 2018 Series C Bonds.

No assurance can be given that the SFPUC will have sufficient funds on hand on the Initial Mandatory Tender Date for the 2018 Series C Bonds to pay the Purchase Price of the 2018 Series C Bonds on such date. Failure by the SFPUC to pay the Purchase Price of the 2018 Series C Bonds on the Initial Mandatory Tender Date would not constitute an Event of Default under the Indenture but would increase the amount of interest payable by the SFPUC on the 2018 Series C Bonds. See “RISK FACTORS—Payment of the 2018 Series C Bonds on the Initial Mandatory Tender Date.”

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 2018 Series C Bond and such 2018 Series C Bond will no longer be deemed outstanding thereunder if certain conditions set forth in the Indenture are satisfied. See “APPENDIX A—SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE—DEFEASANCE.”

PLAN OF FINANCE

The 2018 Series A Bonds are being issued primarily to finance and refinance (through the retirement of approximately \$25 million of outstanding commercial paper notes on or prior to August 10, 2018) select SSIP projects. The 2018 Series B Bonds are being issued primarily to finance select projects authorized in the Wastewater Enterprise capital program that are not part of the SSIP. The 2018 Series C Bonds are being issued primarily to finance select SSIP projects. Proceeds of the 2018 Series ABC Bonds will also be applied to (i) fund capitalized interest with respect to the 2018 Series ABC Bonds to August 1, 2020, and (ii) pay the costs of issuance of the 2018 Series ABC Bonds. The SFPUC expects the financing of projects to include reimbursements to the SFPUC from proceeds of the 2018 Series ABC Bonds for certain prior expenditures relating to such projects. See “ESTIMATED SOURCES AND USES OF FUNDS,” “GREEN BONDS DESIGNATION AND CLIMATE CERTIFICATION,” “WASTEWATER ENTERPRISE CAPITAL PROGRAM” and “SEWER SYSTEM IMPROVEMENT PROGRAM.”

The SFPUC also intends to borrow approximately \$699 million from the EPA pursuant to the Water Infrastructure Finance and Innovation Act loan program to finance a portion of the largest SSIP project, the Biosolids Digester Facilities Project. The WIFIA Loan is expected to be made pursuant to the WIFIA Loan Agreement, which the SFPUC expects to enter into with the EPA in late July 2018. The SFPUC expects to issue the WIFIA Bond to evidence its repayment obligation pursuant to the WIFIA Loan to the EPA. The WIFIA Bond will be payable from and secured by a pledge of Net Revenues on a parity with the Bonds. The WIFIA Loan Agreement is expected to permit the SFPUC to finance a portion of the Biosolids Digester Facilities Project on an interim basis with short-term indebtedness to be repaid from the proceeds of the WIFIA Loan. The SFPUC may issue, from time to time, bond anticipation notes payable from and secured by a pledge of Net Revenues on a parity with the Bonds to provide such interim funding. See “OBLIGATIONS PAYABLE FROM NET REVENUES—Parity Loans,” “PROPOSED AMENDMENTS TO INDENTURE,” “SEWER SYSTEM IMPROVEMENT PROGRAM” and “APPENDIX A—SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE—SIXTH SUPPLEMENTAL INDENTURE—PROPOSED AMENDMENTS TO INDENTURE.”

ESTIMATED SOURCES AND USES OF FUNDS

The proceeds of the 2018 Series ABC Bonds are expected to be applied as follows:

	2018 Series A Bonds	2018 Series B Bonds	2018 Series C Bonds	Total
Sources of Funds				
Par Amount	\$229,050,000.00	\$185,950,000.00	\$179,145,000.00	\$594,145,000.00
Original Issue Premium	34,463,483.90	34,494,536.95	--	68,958,020.85
Total Sources	<u>\$263,513,483.90</u>	<u>\$220,444,536.95</u>	<u>\$179,145,000.00</u>	<u>\$663,103,020.85</u>
Uses of Funds				
Deposit to Capital Project Accounts ⁽¹⁾	\$215,996,618.00	\$201,047,258.00	\$170,720,000.00	\$587,763,876.00
Retirement of Commercial Paper Notes ⁽¹⁾	25,016,438.36	--	--	25,016,438.36
Underwriters' Discount	465,036.12	377,530.99	280,091.76	1,122,658.87
Costs of Issuance ⁽²⁾	786,443.65	631,359.07	615,841.97	2,033,644.69
Capitalized Interest ⁽³⁾	21,248,947.77	18,388,388.89	7,529,066.27	47,166,402.93
Total Uses	<u>\$263,513,483.90</u>	<u>\$220,444,536.95</u>	<u>\$179,145,000.00</u>	<u>\$663,103,020.85</u>

⁽¹⁾ To finance and refinance a portion of the SSIP for the 2018 Series A Bonds. To finance select projects authorized in the Wastewater Enterprise capital program for the 2018 Series B Bonds. To finance a portion of the SSIP for the 2018 Series C Bonds. See "PLAN OF FINANCE," "GREEN BONDS DESIGNATION AND CLIMATE CERTIFICATION," "WASTEWATER ENTERPRISE CAPITAL PROGRAM" and "SEWER SYSTEM IMPROVEMENT PROGRAM."

⁽²⁾ The costs of issuance include amounts for legal fees, Trustee's fees, municipal advisory fees, fees of the Public Utilities Revenue Bond Oversight Committee, rating agency fees, printing costs, and other issuance costs relating to the issuance of the 2018 Series ABC Bonds.

⁽³⁾ Represents capitalized interest with respect to the 2018 Series ABC Bonds to August 1, 2020.

GREEN BONDS DESIGNATION AND CLIMATE CERTIFICATION

The 2018 Series A Bonds and the 2018 Series C Bonds are being designated by the SFPUC as "**Green Bonds.**" The purpose of designating the offered bonds as "Green Bonds" is to allow investors to invest directly in bonds which finance environmentally beneficial projects ("**Green Projects**"). For purposes of such determination, the SFPUC considers the projects included in the SSIP to be Green Projects. See "PLAN OF FINANCE," "ESTIMATED SOURCES AND USES OF FUNDS," and "SEWER SYSTEM IMPROVEMENT PROGRAM." The 2018 Series A Bonds and the 2018 Series C Bonds will not constitute "exempt facility bonds" issued to finance "qualified green building and sustainable design projects" within the meaning of Section 142(1) of the Code.

The Climate Bonds Initiative (the "**CBI**") is an international, investor-focused non-profit organization working to focus the global bond market on climate change solutions through the development and promotion of an efficient green bond market. The CBI has established and manages the Climate Bonds Standard (the "**Climate Bonds Standard**") under which the 2018 Series A Bonds and the 2018 Series C Bonds have been certified. All of the projects funded by the 2018 Series A Bonds and the 2018 Series C Bonds have been certified under the Climate Bonds Standard Water Sector Criteria. The certification of the 2018 Series A Bonds and the 2018 Series C Bonds reflects only the views of the third-party verifier report approved by the Climate Bonds Standard Board. The explanation of the significance of this certification may be obtained from the CBI. The SFPUC has provided a third-party verified report to the Climate Bonds Standard Board, including information concerning prior and anticipated capital project expenditures related to the SSIP (some of which does not appear in this Official Statement). As part of the certification process, the SFPUC retained Sustainalytics U.S., Inc., a subsidiary of Sustainalytics Holding, B.V, Netherlands (collectively, "**Sustainalytics**"), to provide a third-party verification that the 2018 Series A Bonds and the 2018 Series C Bonds are aligned with the Climate Bonds Standard.

The certification of the 2018 Series A Bonds and the 2018 Series C Bonds as “Climate Bonds” by the CBI is based solely on the Climate Bonds Standard and does not, and is not intended to make any representation or give any assurance with respect to any other matter relating to the 2018 Series A Bonds, the 2018 Series C Bonds or any SSIP project, including but not limited to this Official Statement, the transaction documents, the SFPUC or the management of the SFPUC.

The certification of the 2018 Series A Bonds and the 2018 Series C Bonds by the CBI was addressed solely to the SFPUC and is not a recommendation to any person to purchase, hold or sell the 2018 Series A Bonds or the 2018 Series C Bonds and such certification does not address the market price or suitability of the 2018 Series A Bonds or the 2018 Series C Bonds for a particular investor. The certification also does not address the merits of the decision by the SFPUC or any third party to participate in any SSIP Green Project and does not express and should not be deemed to be an expression of an opinion as to the SFPUC or any aspect of any SSIP project (including but not limited to the financial viability of any SSIP Green Project) other than with respect to conformance with the Climate Bonds Standard.

In issuing or monitoring, as applicable, the certification, the CBI has assumed and relied upon and will assume and rely upon the accuracy and completeness in all material respects of the information supplied or otherwise made available to the CBI. The CBI does not assume or accept any responsibility to any person for independently verifying (and it has not verified) such information or to undertake (and it has not undertaken) any independent evaluation of any SSIP Green Project or the SFPUC. In addition, the CBI does not assume any obligation to conduct (and it has not conducted) any physical inspection of a SSIP Green Project. The certification may only be used with the 2018 Series A Bonds and the 2018 Series C Bonds and may not be used for any other purpose without the CBI’s prior written consent.

The certification does not and is not in any way intended to address the likelihood of timely payment of interest when due on the 2018 Series A Bonds, the 2018 Series C Bonds and/or the payment of principal at maturity or any other date.

The certification may be withdrawn at any time in the CBI’s sole and absolute discretion and there can be no assurance that such certification will not be withdrawn.

The CBI is not a licensed broker-dealer or a nationally recognized statistical ratings organization. Certification by the CBI is not a recommendation to buy, sell or hold securities, and such certification may be subject to revision or withdrawal, including, without limitation, in the event that the SFPUC’s future capital expenditures from the proceeds of the 2018 Series A Bonds or the 2018 Series C Bonds vary from the anticipated expenditures reviewed by the CBI. The SFPUC will undertake reasonable efforts to ensure that any adjustment of capital expenditures or other actions taken with respect to the 2018 Series A Bonds and the 2018 Series C Bonds will not result in revision or withdrawal of the CBI’s certification; however, there can be no guarantee that such adjustment or other action or a future revision to the CBI’s criteria for certifying bonds will not result in a withdrawal or revision of the CBI’s certification. The SFPUC expects to post information reflecting the expenditure of the proceeds of the 2018 Series A Bonds and the 2018 Series C Bonds on its website.

The 2018 Series B Bonds are not being designated as “Green Bonds.” The Indenture does not restrict the use of proceeds of future issuances of Bonds to the financing of Green Projects and in the future the SFPUC may issue Additional Bonds which are not designated as Green Bonds or certified by the CBI.

The repayment obligations of the SFPUC with respect to the 2018 Series A Bonds and the 2018 Series C Bonds are not conditioned on the completion of any particular project or the satisfaction of any condition relating to the status of the 2018 Series A Bonds, the 2018 Series C Bonds or the certification of such bonds by the CBI. The SFPUC assumes no obligation to ensure compliance with any legal or other principles of Green Bonds, as such principles may evolve over time. See “SECURITY FOR THE BONDS.”

SECURITY FOR THE BONDS

Pledge of Net Revenues

General. Under the Indenture, the SFPUC has irrevocably pledged the Net Revenues of the Wastewater Enterprise to the punctual payment of principal of, premium, if any, and interest on the Bonds, which consist of any parity revenue bonds issued under the Indenture and Parity State Loans. This pledge is subject to the flow of funds contained in the Indenture, as described below. See “—Flow of Funds.”

The facilities comprising the Wastewater Enterprise have not been pledged or mortgaged and do not otherwise secure payment of the Bonds.

Pursuant to Section 5451 of the California Government Code, the pledge of, lien on and security interest in Net 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 2018 Series ABC Bonds; the Net Revenues and such other funds will be immediately subject to such pledge; and such pledge will constitute a lien and security interest which will immediately attach to such Net Revenues and other funds and will be effective, binding and enforceable against the SFPUC, its successors, purchasers of the Net Revenues, 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.

For definitions of capitalized terms used herein and not otherwise defined, see “APPENDIX A—SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE—THE INDENTURE—DEFINITIONS; EQUAL SECURITY: CERTIFICATES AND OPINIONS.”

Limited Obligation. THE SFPUC IS NOT OBLIGATED TO PAY THE PRINCIPAL OF, PREMIUM, IF ANY, OR INTEREST ON THE 2018 SERIES ABC BONDS EXCEPT FROM NET REVENUES OF THE WASTEWATER ENTERPRISE. THE SFPUC HAS NO TAXING POWER. THE GENERAL FUND OF THE CITY IS NOT LIABLE FOR THE PAYMENT OF THE PRINCIPAL OF, PREMIUM, IF ANY, OR INTEREST ON THE 2018 SERIES ABC BONDS, AND NEITHER THE CREDIT NOR THE TAXING POWER OF THE CITY IS PLEDGED TO THE PAYMENT OF THE PRINCIPAL OF, PREMIUM, IF ANY, AND INTEREST ON THE 2018 SERIES ABC BONDS. THE 2018 SERIES ABC 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 NET REVENUES.

Wastewater Enterprise. The Indenture defines “**Enterprise**” (referred to in this Official Statement as the “**Wastewater Enterprise**”) as meaning the whole and each and every part of the municipal sanitary waste and storm water collection, treatment and disposal system and auxiliary or related facilities of the SFPUC, including all of the presently existing system of the SFPUC for the collection, treatment and disposal of sanitary waste and storm water and all future additions, betterments, and extensions to the system or any part thereof.

Net Revenues. The Indenture defines “**Net Revenues**” as all of the Revenues, less all Operation and Maintenance Costs of the Wastewater Enterprise.

The Indenture defines “**Revenues**” as all gross revenues of the Wastewater Enterprise, including all charges received and all other income and receipts derived by the SFPUC from the operation of the Wastewater Enterprise, or arising from the Wastewater Enterprise, including connection and installation charges, but excluding:

- (a) any money received by or for the account of the SFPUC from the levy or collection of taxes;
- (b) moneys received from the State of California and the United States of America and required to be deposited in restricted funds;
- (c) refundable deposits made to establish credit;

- (d) advances and contributions made to the SFPUC to be applied to construction;
- (e) moneys received constituting casualty insurance proceeds with respect to all or any part of the Wastewater Enterprise (which shall be received and disposed of pursuant to the Indenture) and moneys received constituting other insurance proceeds;
- (f) moneys received from the sale or disposition of all or any part of the Wastewater Enterprise (which shall be received and disposed of pursuant to the Indenture);
- (g) moneys received upon the taking by or under the threat of eminent domain of all or any part of the Wastewater Enterprise (which moneys shall be received and disposed of pursuant to the Indenture);
- (h) proceeds from Bonds issued by the SFPUC or proceeds from loans or other indebtedness obtained by the SFPUC; and
- (i) moneys or securities received by the SFPUC as gifts or grants the use of which is restricted by the donor or grantor.

The term “**Revenues**” also includes (i) all interest or other income (excluding profits or losses from the sale or disposition of Permitted Investments or other securities owned by or on behalf of the SFPUC) 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 Wastewater Enterprise and legally available to pay Debt Service, and (ii) any other moneys, proceeds and other amounts that the SFPUC determines should be “Revenues” under the Indenture.

The Indenture defines “**Operation and Maintenance Costs of the Enterprise**” (referred to in this Official Statement as the “**Operation and Maintenance Costs of the Wastewater Enterprise**”) as the reasonable and necessary costs of operating and maintaining the Wastewater Enterprise, calculated on the basis of generally accepted 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 Wastewater Enterprise in good repair and working order, and reasonable amounts for administration, overhead, insurance, taxes (if any), 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, as provided in the Charter.

However, the term “Operation and Maintenance Costs of the Wastewater Enterprise” excludes in all cases (a) depreciation and obsolescence charges or reserves therefor, (b) amortization of intangibles or other bookkeeping entries of a similar nature, (c) costs of capital additions, replacements, betterments, extensions or improvements to the Wastewater Enterprise, which under generally accepted accounting principles are chargeable to a capital account or to a reserve for depreciation, (d) charges for the payment of principal of and interest on any revenue bonds or other indebtedness issued before or after the date of the Indenture for Wastewater Enterprise purposes and (e) such costs as are scheduled to be paid by the SFPUC from moneys other than Revenues, such moneys to be clearly available for such purpose.

Flow of Funds

The Indenture provides that all Revenues must be paid into the Revenue Fund, which must be maintained in the City Treasury. Moneys in the Revenue Fund, including earnings thereon, are required by the Indenture to be applied for the following purposes and only in the following order of priority:

- (a) payment of Operation and Maintenance Costs of the Wastewater Enterprise;

(b) payment of Bonds, Parity State Loans, Policy Costs and amounts due as reimbursement under any Letter of Credit Agreement, as provided in the Indenture; and

(c) any other lawful purpose of the SFPUC.

Net Revenues deposited in the Revenue Fund, as described in (b) above, will be applied to pay interest and principal on the Bonds (which include Parity State Loans) and to make deposits to the Bond Reserve Fund if the amounts therein are less than the Required Reserve. See “APPENDIX A—SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE.”

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 provision of the Code that creates 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.

The Indenture defines “**Build America Bonds**” as any bonds or other obligations issued as Build America Bonds under Section 54AA of the Code, or under any other provision of the Code that creates a substantially similar direct-pay subsidy program.

The Indenture provides that all of the Refundable Credits received by the SFPUC shall be deposited immediately upon receipt in the Interest Fund, and such Refundable Credits are irrevocably pledged to the punctual payment of the interest on the Bonds issued as Build America Bonds, and the Refundable Credits shall not be used for any other purpose while any of the Bonds issued as Build America Bonds remain Outstanding.

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 sanitary waste and storm water collection, treatment and disposal services and facilities furnished by the Wastewater Enterprise so as to yield Revenues at least sufficient, after making reasonable allowances for contingencies and error in the estimates, calculated on a cash basis, to pay the following amounts:

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

Debt Service Coverage. In addition to the requirements set forth under “—Sufficiency of Revenues” 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 sanitary waste and storm water collection, treatment and disposal services and facilities furnished by the Wastewater Enterprise so as to yield Net Revenues during the then immediately ensuing period of twelve months which (together with any fund balances of the SFPUC or the Wastewater Enterprise which are available for payment of Debt Service and are not budgeted to be expended

during such twelve months, but excluding the Bond Reserve Fund), calculated on a cash basis, are at least equal to 1.25 times the Annual Debt Service (but excluding 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) for said twelve-month period.

The SFPUC may make adjustments from time to time in such rates, fees and charges and may make such classification thereof as it deems necessary, but is obligated not to reduce such rates, fees and charges below those in effect unless the Revenues resulting after such reduced rates are put into effect will at all times be sufficient to meet the requirements described in this section, “Rate Covenants.”

“**Annual Debt Service**” is defined in the Indenture as the sum of principal and interest on all Outstanding Bonds and Parity State Loans as computed for the twelve-month period ending June 30 to which reference is made, and calculated in a manner consistent with the determination of Average Annual Debt Service and Maximum Annual Debt Service as provided in the definitions thereof. 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, including the 2010 Series B Bonds, amounts equal to the Refundable Credits the SFPUC is scheduled to receive during each such twelve-month period ending June 30 will be deducted from such interest. See “APPENDIX A – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE.”

Pursuant to Federal sequestration legislation passed by Congress in 2011 and 2013, Federal subsidy payments for direct pay bonds, including Build America Bonds, have been reduced (by formula) from the original funding subsidy level of 35% of interest costs on direct pay bonds, including Build America Bonds. The sequestration reduction rate of the Federal subsidy payment for Build America Bonds is 6.6% for the Federal government’s fiscal year beginning October 1, 2017, which means that refundable credits sought by the SFPUC for its Build America Bonds will be reduced by this percentage. This reduction will increase the SFPUC’s net interest cost. The percentage reduction is re-determined for each Federal fiscal year. The SFPUC can give no assurance regarding the level of subsidy payments or changes in the sequestration rate, if any, in the future. In Fiscal Year 2016-17, the SFPUC received approximately \$3.5 million in Refundable Credits for the Wastewater Enterprise.

Proposed Amendments to Indenture. The Sixth Supplemental Indenture includes amendments to the Indenture impacting the SFPUC’s rate covenant. See “PROPOSED AMENDMENTS TO THE INDENTURE” and “APPENDIX A—SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE—SIXTH SUPPLEMENTAL INDENTURE—PROPOSED AMENDMENTS TO INDENTURE.”

No Reserve Account

The Indenture requires that the Bond Reserve Fund be established with the Trustee and funded in an amount equal to the “**Required Reserve**,” if any, applicable to each series of Bonds. If the Required Reserve for a Series of Bonds is greater than zero, the Indenture requires the establishment of a bond reserve account (each, a “**Reserve Account**”) within the Bond Reserve Fund for such Series of Bonds, and requires the deposit in that bond reserve account of an amount equal to the Required Reserve for the related Series of Bonds.

The Seventh Supplemental Indenture does *not* require the establishment of a Reserve Account for the 2018 Series AB Bonds and the Eighth Supplemental Indenture does *not* require the establishment of a Reserve Account for the 2018 Series C Bonds. The Reserve Accounts established with respect to the 2010 Series AB Bonds do not secure the 2018 Series ABC Bonds. No Reserve Account has been established with respect to the 2013 Series AB Bonds or the 2016 Series AB Bonds.

Additional Series of Bonds

The Charter and the Indenture authorize the issuance of Additional Bonds payable from Net Revenues on a parity with Outstanding Bonds and the 2018 Series ABC Bonds, upon satisfaction of the conditions set forth therein.

The SFPUC expects to issue Additional Bonds to finance the costs of additional improvements included in the SSIP and other portions of the Wastewater Enterprise’s capital program. See “FINANCING PLAN FOR

WASTEWATER ENTERPRISE CAPITAL PROGRAM” and “RISK FACTORS—Costs of the SSIP; Timely Completion of the SSIP.”

Charter Requirements. Under the Charter, the SFPUC may issue revenue bonds (including Additional Bonds) relating to the Wastewater Enterprise without voter approval in the following circumstances, among others:

- (a) to issue revenue bonds (including Additional Bonds) approved by an affirmative vote of two-thirds of the members of the Board of Supervisors for the purpose of reconstructing, replacing, expanding, repairing or improving the Wastewater Enterprise;
- (b) to issue bonds (including Additional Bonds) approved by an affirmative vote of three-fourths of the members of the Board of Supervisors if the bonds are to finance buildings, fixtures or equipment which are deemed necessary by the Board of Supervisors to comply with an order of a duly constituted state or federal authority having jurisdiction over the Wastewater Enterprise; and
- (c) to issue refunding bonds which are expected to result in net debt service savings to the City on a present value basis, calculated as described in the SFPUC’s Debt Management Policies and Procedures.

The Charter also generally authorizes the SFPUC to issue revenue bonds upon the approval of a majority of the voters voting on the proposition at a general or special election.

Notwithstanding any other provision of the Charter or of any ordinance of the City, the Board of Supervisors may, in connection with the issuance of additional bonds as described under paragraph (a) above, take any and all actions necessary to authorize, issue and repay such bonds, including, but not limited to, modifying schedules of rates and charges to provide for the payment and retirement of such bonds, subject to the following conditions:

- (a) Certification by an independent engineer retained by the SFPUC that:
 - (1) the projects to be financed by the additional bonds, including the prioritization, cost estimates and scheduling, meet utility standards; and
 - (2) that 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 bonds to be issued, and estimated renewal and replacement costs.
- (b) Certification by the City 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 (“CEQA”).

Indenture Requirements. The Indenture provides that Additional Bonds secured on a parity with the Bonds may be issued for any lawful purpose if no Event of Default has occurred and is continuing under the Indenture or any Supplemental Indenture and no event has occurred which, but for the passage of time or the giving of notice, would constitute an Event of Default under the Indenture or any Supplemental Indenture. Prior to the issuance of such Additional Bonds, the SFPUC is required to file with the Trustee, among other documents, the following:

- (a) a Certificate of the SFPUC demonstrating that the SFPUC has complied with the rate covenant under the Indenture and that the requirements for issuing Additional Bonds under the Indenture have been met;
- (b) if any portion of the proceeds of such Series of Bonds is to be used to finance construction of a Project, a certificate of the Consulting Engineers setting forth (i) the estimated date of completion for the portion of the Project for which such Series of Bonds is being issued and for any other

uncompleted portion of the Project, and (ii) an estimate of the cost of construction of such portion of the Project and of any other uncompleted portion of the Project;

- (c) a Certificate of the SFPUC setting forth for each of the next three Fiscal Years (and, if any portion of the proceeds of such Series of Bonds is to be used to finance construction, the three Fiscal Years following the Fiscal Year in which the Consulting Engineers estimate such portion of the Project will be completed), estimates of (i) Revenues, (ii) Operation and Maintenance Costs of the Wastewater Enterprise and (iii) Net Revenues; and
- (d) a Certificate of the SFPUC setting forth (i) the estimates of Net Revenues as set forth in the Certificate of the SFPUC pursuant to paragraph (c) above for each of such three Fiscal Years (and, if any portion of the proceeds of such Series of Bonds is to be used to finance construction, the three Fiscal Years following the Fiscal Year in which the Consulting Engineers estimate such portion of the Project will be completed), (ii) the Annual Debt Service for each of such Fiscal Years, including Annual Debt Service as estimated in such Certificate of the SFPUC with respect to future Series of Bonds, if any, which such Certificate of the SFPUC shall estimate will be required to complete payment of the cost of construction of such portion of the Project and any other uncompleted portion of the Project, and (iii) demonstrating that the estimated Net Revenues (together with any fund balances of the SFPUC which are available for the payment of Debt Service but excluding the Bond Reserve Fund) in each of the Fiscal Years set forth in (c) above is at least equal to 1.25 times the Annual Debt Service for such respective Fiscal Years.

See “APPENDIX A—SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE—THE INDENTURE—DEFINITIONS; EQUAL SECURITY: CERTIFICATES AND OPINIONS” and “—ISSUANCE OF ADDITIONAL SERIES OF BONDS.”

The Indenture provides the SFPUC with flexibility as to the nature and terms of any Additional Bonds issued with a lien and charge on Net Revenues on a parity with the Outstanding Bonds. Such Additional Bonds may: mature over any period of time; bear interest at a fixed, variable or zero rate; be in any denominations; be in any form (including registered, coupon or book-entry); include or exclude redemption provisions; be subject to optional or mandatory tender for purchase; be sold at such price or prices; be further secured by any separate and additional security; and otherwise include such additional terms and provisions as the SFPUC may determine, consistent with the Indenture and applicable provisions of the Charter.

Proposed Amendments to Indenture. The Sixth Supplemental Indenture includes amendments to the Indenture impacting the requirements for the issuance of Additional Bonds to finance projects. See “PROPOSED AMENDMENTS TO THE INDENTURE” and “APPENDIX A—SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE—SIXTH SUPPLEMENTAL INDENTURE—PROPOSED AMENDMENTS TO INDENTURE.”

Additional Parity State Loans

Pursuant to the Charter, the SFPUC can incur indebtedness, including additional State and federal loans, without voter approval, but subject to Board of Supervisors’ approval. In addition, the Indenture permits the SFPUC to enter into Parity State Loans or loans on a subordinated lien basis relative to the Bonds, as determined by the SFPUC.

Under the Indenture, the SFPUC may only enter into additional Parity State Loans if no Event of Default has occurred and is continuing under the Indenture or any Supplemental Indenture (and no event has occurred which, but for the passage of time or the giving of notice, would constitute an Event of Default under the Indenture or any Supplemental Indenture).

In addition, in connection with the execution and delivery of such Parity State Loans, the SFPUC is required to deliver a Certificate to the Trustee setting forth, for each of the next three Fiscal Years after the delivery of the Parity State Loans:

- (a) the Revenues and Operation and Maintenance Costs of the Wastewater Enterprise and Net Revenues; and
- (b) the Annual Debt Service assuming delivery of the Parity State Loans;

demonstrating that the estimated Net Revenues (together with any fund balances of the SFPUC which are available for Debt Service, but excluding the Bond Reserve Fund), in each of such three Fiscal Years is at least equal to 1.25 times the Annual Debt Service.

Pursuant to the State's Revolving Fund Loan program (the "**SRF Loan Program**"), the SFPUC has entered into four State Revolving Fund Loans (each an "**SRF Loan**") with a maximum principal amount authorized to be disbursed thereunder of approximately \$102 million. The SFPUC plans to apply for additional SRF Loans over the next several years to obtain long-term financing for a portion of the SSIP. However, the SFPUC can give no assurance that it will receive additional SRF Loans. See "OBLIGATIONS PAYABLE FROM NET REVENUES—Parity Loans" and "APPENDIX A—SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE."

Proposed Amendments to Indenture. The Sixth Supplemental Indenture includes amendments to the Indenture impacting the requirements for additional Parity State Loans and includes amendments to the Indenture allowing loans from the federal government (or any board, department or agency thereof), upon satisfaction of certain conditions, to be payable from Net Revenues on a parity with the Bonds. See "PROPOSED AMENDMENTS TO THE INDENTURE" and "APPENDIX A—SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE—SIXTH SUPPLEMENTAL INDENTURE—PROPOSED AMENDMENTS TO INDENTURE."

Refunding Bonds

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.

Indenture Requirements. The Indenture provides that Additional Bonds may be issued to refund any Bonds without meeting the test for the issuance of Additional Bonds described above, if the SFPUC delivers to the Trustee (among other documents) a certificate of a Qualified Financial Advisor to the effect that the Average Annual Debt Service for the Additional Bonds will be equal to or less than the Average Annual Debt Service on the Bonds to be refunded.

Proposed Amendments to Indenture. The Sixth Supplemental Indenture includes amendments to the Indenture impacting the requirements for the issuance for Additional Bonds for refunding purposes. See "PROPOSED AMENDMENTS TO THE INDENTURE" and "APPENDIX A—SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE—SIXTH SUPPLEMENTAL INDENTURE—PROPOSED AMENDMENTS TO INDENTURE."

Subordinate Obligations; Obligations Not Payable from Revenues

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 Net Revenues after and subordinate to the payment from Net Revenues of the principal of and interest on the Bonds, or (ii) from moneys which are not Revenues. The SFPUC may issue bonds or incur other indebtedness secured by a pledge of Net Revenues on a basis subordinate to the pledge thereof securing the Bonds without limitation.

Investments

The Indenture provides that moneys in all funds and accounts held by the Trustee under the Indenture shall be invested upon receipt 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."

PROPOSED AMENDMENTS TO THE INDENTURE

The Sixth Supplemental Indenture amends and supplements certain provisions of the Indenture that will become effective when the written consents of the Owners of a majority in aggregate amount of the Bond Obligation of the Bonds then Outstanding have been filed with the Trustee (such date, the "Effective Date"). **By their purchase of the 2018 Series ABC Bonds, the purchasers of the 2018 Series ABC Bonds irrevocably agree to, accept and consent to the provisions of such amendments for all purposes of the Indenture.**

The proposed amendments in the Sixth Supplemental Indenture include, among others, amendments to the definitions of "Annual Debt Service," "Average Annual Debt Service," "Maximum Annual Debt Service" and "Parity State Loans" and the addition of the defined term "Excluded Principal," as well as amendments to the requirements for the issuance of Additional Bonds (to finance additional Projects and for refunding purposes), the entering into of loans from the State and the federal government (or any board, department or agency thereof) and the SFPUC's rate covenants. For a description of the proposed amendments set forth in the Sixth Supplemental Indenture, see "APPENDIX A—SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE—SIXTH SUPPLEMENTAL INDENTURE—PROPOSED AMENDMENTS TO INDENTURE."

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OBLIGATIONS PAYABLE FROM NET REVENUES

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

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 2018 Series ABC Bonds are being issued pursuant to Ordinance No. 107-14, adopted by the Board of Supervisors on June 24, 2014, and Ordinance No. 111-16, adopted by the Board of Supervisors on June 14, 2016, and under a resolution adopted by the SFPUC governing body (the “**Commission**”) on July 10, 2018. See “SECURITY FOR THE BONDS—Additional Series of Bonds,” “—Additional Parity State Loans” and “—Refunding Bonds.”

Outstanding Parity Revenue Bonds

The following Outstanding Bonds have been issued pursuant to the Indenture and are secured by a parity pledge of Net Revenues on a parity with the 2018 Series ABC Bonds and the Parity State Loans.

Series of Bonds	Purpose	Initial Principal Amount	Principal Amount Outstanding as of July 1, 2018
2010 Series A Bonds	Refinance capital program costs	\$ 47,050,000	\$ 32,820,000
2010 Series B Bonds ⁽¹⁾	Finance and refinance SSIP and other capital program costs	192,515,000	192,515,000
2013 Series A Bonds	Refund 2003 Clean Water Bonds and refund SRF Loans	193,400,000	71,930,000
2013 Series B Bonds	Finance and refinance SSIP and other capital program costs	331,585,000	331,585,000
2016 Series A Bonds	Finance and refinance SSIP and other capital program costs	240,580,000	240,580,000
2016 Series B Bonds	Finance and refinance capital program costs	67,820,000	67,820,000
Total:		\$1,072,950,000	\$937,250,000

⁽¹⁾ Issued as Build America Bonds.

Additional Bonds

General. The SFPUC intends to issue Additional Bonds under the Indenture to finance select capital program projects, including SSIP projects. See “WASTEWATER ENTERPRISE CAPITAL PROGRAM,” “SEWER SYSTEM IMPROVEMENT PROGRAM” and “FINANCING PLAN WASTEWATER ENTERPRISE CAPITAL PROGRAM.”

Parity Loans

Parity State Loans. The SFPUC has entered into and plans to apply for additional Parity State Loans over the next several years to obtain long-term financing for a portion of the SSIP. The Parity State Loans are low-cost SRF Loans provided and administered by the State Water Resources Control Board on a project-by-project basis. The State’s current SRF Loan Program provides favorable terms to the SFPUC, including up to 30-year amortizing loan terms which commence one year following project completion, an interest rate on each SRF Loan that is equal to one-half of the true interest cost for the State of California’s most recent general obligation bond issue at the time such loan is entered into, and repayment of the SRF Loans on a parity with the Bonds rather than on a basis senior to the Bonds (as had been the case in connection with certain loans entered into under the prior version of the

program). The SRF Loan Program offers loans to applicant entities based on available moneys and placement on a statewide priority list. SRF Loan Program moneys are disbursed on a cost-incurred basis pursuant to disbursement requests submitted by the SFPUC under the SRF Loan documents. Although placement on the priority list is a necessary condition to receiving SRF Loan Program moneys, placement on the priority list does not create an obligation on the part of the applicant to accept SRF Loan Program moneys.

The following table sets forth the SRF Loans that the SFPUC has entered into pursuant to the State’s SRF Loan Program, the SRF Loan commitment amount, the disbursement amount requested as of July 1, 2018, the interest rate, the estimated/actual project completion date and the estimated loan repayment commencement date.

Project	SRF Loan Commitment Amount as of July 1, 2018	Disbursement Amount Requested as of July 1, 2018 ⁽¹⁾	Interest Rate	Estimated/Actual Project Completion Date ⁽²⁾⁽³⁾	Estimated Loan Repayment Commencement Date ⁽²⁾⁽³⁾
Lake Merced Green Infrastructure Project	\$ 7,435,000	\$1,998,180	1.6%	July 31, 2020	July 31, 2021
Southeast Treatment Plant Primary/Secondary Clarifier Upgrade Project	34,445,778	0	1.8	March 30, 2018	March 30, 2019
Southeast Treatment Plant 521/522 and Disinfection Upgrade Project	40,006,740	0	1.8	July 18, 2019	July 18, 2020
North Point Facility Outfall Rehabilitation Project	20,199,435	4,719,968	1.8	March 7, 2018	February 28, 2019
Total:	\$102,086,953	\$6,718,148			

⁽¹⁾ SRF Loan Program moneys are disbursed on a cost-incurred basis pursuant to disbursement requests submitted by the SFPUC.

⁽²⁾ Parity State Loans amortize over a 30-year term commencing one year following completion of the project. The North Point Facility Outfall Rehabilitation Project was completed on March 7, 2018; however, loan repayment for such project will commence February 28, 2019.

⁽³⁾ Estimated project completion date as of July 1, 2018, for the Lake Merced Green Infrastructure Project and Southeast Treatment Plant 521/522 and Disinfection Upgrade Project. Actual project completion date for the Southeast Treatment Plant Primary/Secondary Clarifier Upgrade Project and North Point Facility Outfall Rehabilitation Project.

The SFPUC is obligated to repay an SRF Loan only after it has submitted a disbursement request and received SRF Loan Program moneys from the State. As of July 1, 2018, the SFPUC has submitted a disbursement request and received SRF Loan Program moneys for the Lake Merced Green Infrastructure Project SRF Loan in the approximate amount of \$2.0 million and the North Point Facility Outfall Rehabilitation Project SRF Loan in the approximate amount of \$4.7 million. Disbursement requests have not been submitted for the Southeast Treatment Plant Primary/Secondary Clarifier Upgrade Project or the Southeast Treatment Plant 521/522 and Disinfection Upgrade Project as of July 1, 2018.

The State Water Resources Control Board approved the State of California Clean Water State Revolving Fund Intended Use Plan for Fiscal Year 2018-19 (the “**Intended Use Plan**”) on June 19, 2018. The Intended Use Plan sets forth a list of projects (the “**Fundable List**”) that the Division of Financial Assistance anticipates funding in fiscal year ending June 30, 2019. The Fundable List includes, among others, two projects that are currently part of the SSIP: (i) \$132.0 million for the Biosolids Digester Facilities Project (including up to \$4.0 million of principal forgiveness in the form of a grant), and (ii) \$39.7 million for the Oceanside Treatment Plant Digester Gas Utilization Upgrades (including up to \$4.0 million of principal forgiveness in the form of a grant). Inclusion on the Fundable List does not, however, constitute a financing commitment, a guarantee that sufficient funds from the anticipated sources of funds will be available, or a determination of eligibility. Any such funding would take the form of a loan from the State Water Resources Control Board to the SFPUC, constituting a Parity State Loan.

The SFPUC had previously entered into 13 SRF Loans totaling an aggregate principal amount of \$280 million during the period from 1991 to 2001 under the State's original SRF Loan Program, including certain loans that were payable on a basis senior to repayment of the Bonds. As of February 2013, the SFPUC had paid in full all such prior SRF Loans.

The SFPUC has covenanted in the Seventh Supplemental Indenture and the Eighth Supplemental Indenture not to enter into state loans payable on a basis senior to the Bonds.

Water Infrastructure Finance and Innovation Act Loan. Pursuant to the Water Infrastructure Finance and Innovation Act loan program, the SFPUC intends to borrow approximately \$699 million from the EPA to finance 49% of the Wastewater Enterprise's largest SSIP project, the \$1.27 billion Biosolids Digester Facilities Project to be located at the Southeast Treatment Plant, plus certain eligible expenses. See "SEWER SYSTEM IMPROVEMENT PROGRAM—Program Scope—Treatment Plants." The WIFIA Loan is expected to be made pursuant to the WIFIA Loan Agreement, which the SFPUC expects to enter into with the EPA in late July 2018.

The SFPUC expects to issue a parity Bond under the Ninth Supplemental Indenture (the "**WIFIA Bond**") to evidence its repayment obligation pursuant to the WIFIA Loan to the EPA. The WIFIA Bond will be payable from and secured by a pledge of Net Revenues on a parity with the Bonds. Subject to the satisfaction of the requirements under the Indenture for the issuance of Additional Bonds, the principal amount of the WIFIA Bond will be increased on each disbursement date of the WIFIA Loan to evidence the amount of such loan disbursed on such date. Following the effective date of the Sixth Supplemental Indenture, the SFPUC will be able to satisfy the conditions set forth in the Indenture for the issuance of Additional Bonds for the entire, undisbursed WIFIA Loan amount, eliminating the requirement to satisfy such upon each disbursement date. See "SECURITY FOR THE BONDS—Additional Series of Bonds," "PROPOSED AMENDMENTS TO INDENTURE" and "APPENDIX A—SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE—SIXTH SUPPLEMENTAL INDENTURE—PROPOSED AMENDMENTS TO INDENTURE."

The WIFIA Loan Agreement will permit the SFPUC to draw on the WIFIA Loan from time to time, provided that such loan must be disbursed no later than one year following the substantial completion date of the Biosolids Digester Facilities Project (currently estimated to be May 1, 2024). Each draw is subject to the satisfaction of conditions, including without limitation, the delivery to the EPA of financial projections evidencing that the SFPUC will be able to satisfy its rate covenant for the current fiscal year and each of the next 10 fiscal years.

The WIFIA Loan is expected to bear interest at the U.S. Treasury rate plus one basis point (for comparable maturities) and is anticipated to have a final maturity date of April 1, 2059. No payment of principal or interest on the WIFIA Loan is anticipated to be made prior to April 1, 2026. Prior to April 1, 2026, interest is expected to accrete and will be added to the outstanding principal balance of the WIFIA Bond. From April 1, 2026 through April 1, 2043, only interest is expected to be payable on the WIFIA Loan. Principal of the WIFIA Loan is expected to be amortized commencing on April 1, 2043 and to continue through the final maturity date of the WIFIA Loan.

If an event of default occurs under the WIFIA Loan Agreement, the EPA may elect to suspend future disbursements of the WIFIA Loan, to terminate the capitalized interest period (thus causing interest to be payable on a current basis), to require the payment of a default interest rate (equal to the WIFIA Loan rate plus 200 basis points) and to institute legal action to enforce the provisions of the WIFIA Loan Agreement. However, the EPA cannot take any action, in law or in equity, which would affect the application of the Net Revenues of the Wastewater Enterprise or to accelerate the payment obligations under the WIFIA Bond except pursuant to the EPA's rights as a parity Bondholder under the Indenture.

No reserve account is expected to be established to secure the WIFIA Loan.

The WIFIA Loan Agreement is expected to permit the SFPUC to finance a portion of the Biosolids Digester Facilities Project on an interim basis with short-term indebtedness to be repaid from the proceeds of the WIFIA Loan. The SFPUC may issue, from time to time, bond anticipation notes ("**BANs**") to provide such interim funding. Such BANs may be payable from and secured by a pledge of Net Revenues on a parity with the Bonds.

Contingent Payment Obligations

The Wastewater Enterprise has no interest rate swaps, caps or hedges or other contingent payment obligations payable from Net Revenues. The Wastewater Enterprise may in the future, however, incur contingent payment obligations payable from Net Revenues. Such contingent payment obligations may be payable on a parity with the Bonds if the conditions for the issuance of parity debt under the Indenture are met. See “SECURITY FOR THE BONDS—Additional Series of Bonds; —Additional Parity State Loans.”

Subordinate Debt and Interim Funding Program

No Limits on Subordinate Debt. The SFPUC may issue bonds or incur other indebtedness secured by a pledge of Net Revenues on a basis subordinate to the pledge thereof securing the Bonds, without limitation.

Interim Funding Program. The SFPUC has established an Interim Funding Program (the “**Interim Funding Program**”) (formerly known as the “Commercial Paper Program”) to fund construction costs relating to Wastewater Enterprise capital projects.

The Interim Funding Program is authorized for the Wastewater Enterprise in the amount of \$750 million. Of this amount, \$675 million is authorized for the SFPUC to issue commercial paper notes (the “**Commercial Paper Notes**”) secured by six bank credit facilities, as set forth below. The remaining \$75 million of the Interim Funding Program is in the form of a bank revolving credit agreement with U.S. Bank National Association. The revolving credit agreement permits the SFPUC to make draws directly on the bank, with the SFPUC’s payment obligation evidenced by a tax-exempt revolving note (the “**Revolving Notes**”).

The Commercial Paper Notes are secured by: (a) a Letter of Credit (“**LOC**”) with Sumitomo Mitsui Bank in the amount of \$150 million and a stated expiration date of March 10, 2021; (b) an LOC with Bank of America, N.A. in the amount of \$150 million and a stated expiration date of June 1, 2020; (c) a Revolving Credit and Term Loan Agreement (“**RCTLA**”), as amended, with MUFG Bank, Ltd. (formerly The Bank of Tokyo-Mitsubishi UFJ, Ltd.), acting through its New York Branch in the amount of \$75 million and a stated expiration date of July 10, 2019; (d) an LOC with Barclays Bank PLC in the amount of \$100 million and a stated expiration date of October 19, 2018; (e) an RCTLA with State Street Bank and Trust Company in the amount of \$100 million and a stated expiration date of October 16, 2019; and (f) an LOC with Sumitomo Mitsui Bank in the amount of \$100 million and a stated expiration date of June 2, 2022. The Revolving Notes may be issued pursuant to a \$75 million RCTLA with U.S. Bank National Association with a stated expiration date of July 25, 2020.

The Commercial Paper Notes and the Revolving Notes are payable from Net Revenues, and are secured on a parity lien basis with each other. The Commercial Paper Notes and the Revolving Notes, collectively, are secured on a basis subordinate to the payment of debt service on the Bonds and the Parity State Loans.

As of July 1, 2018, the SFPUC had approximately \$263 million principal amount of Commercial Paper Notes outstanding and no Revolving Notes outstanding. Approximately \$25 million principal amount of the outstanding Commercial Paper Notes will be refunded with proceeds of the 2018 Series A Bonds on or about August 10, 2018.

Other Subordinate Obligations Payable from Net Revenues

The SFPUC completed the construction of a 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 and property 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). As of July 1, 2018, the principal amount outstanding of the 2009 Golden Gate COPs was \$149,385,000. The SFPUC allocates such

payment obligations internally among its three utility enterprises based on percentage usage. The Wastewater Enterprise has been allocated 18.88% of such obligations, payable from Net Revenues on a basis subordinate to the payment of principal of and interest on the Bonds.

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 Wastewater Enterprise, the Water 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 under the auspices of the Bay Area Water Supply and Conservation Agency. 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 intends to seek approval of extension of its term beyond the current expiration date.

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 30 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 of Supervisors or may remand the decision to the RBOC for further consideration.

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Debt Service Requirements

Set forth in the following table are debt service requirements for the Outstanding Bonds and the 2018 Series ABC Bonds assuming no early redemptions.

DEBT SERVICE REQUIREMENTS ON OUTSTANDING BONDS AND 2018 SERIES ABC BONDS

Fiscal Year (ending June 30)	Outstanding Bonds ⁽¹⁾⁽²⁾⁽⁴⁾	2018 Series A Bonds Principal	2018 Series A Bonds Interest ⁽⁴⁾	2018 Series B Bonds Principal	2018 Series B Bonds Interest ⁽⁴⁾	2018 Series C Bonds Principal	2018 Series C Bonds Interest ⁽³⁾⁽⁴⁾	Total Debt Service ⁽⁴⁾⁽⁵⁾
2019	\$ 62,191,513	--	--	--	--	--	--	\$62,191,513
2020	64,286,401	--	--	--	--	--	--	64,286,401
2021	64,358,276	--	\$ 7,162,567	--	\$ 6,198,333	--	\$2,537,888	80,257,063
2022	62,895,276	--	10,743,850	--	9,297,500	--	3,806,831	86,743,457
2023	59,366,766	\$ 7,715,000	10,550,975	\$ 6,260,000	9,141,000	--	3,806,831	96,840,572
2024	61,871,262	7,160,000	10,179,100	5,810,000	8,839,250	--	5,486,316	99,345,927
2025	61,748,691	6,580,000	9,835,600	5,335,000	8,560,625	--	7,165,800	99,225,716
2026	61,649,463	6,915,000	9,498,225	5,610,000	8,287,000	--	7,165,800	99,125,488
2027	61,541,918	7,270,000	9,143,600	5,900,000	7,999,250	--	7,165,800	99,020,568
2028	61,386,933	7,645,000	8,770,725	6,200,000	7,696,750	--	7,165,800	98,865,208
2029	61,222,623	8,035,000	8,378,725	6,520,000	7,378,750	--	7,165,800	98,700,898
2030	61,049,953	8,445,000	7,966,725	6,855,000	7,044,375	--	7,165,800	98,526,853
2031	60,869,568	8,880,000	7,533,600	7,205,000	6,692,875	--	7,165,800	98,346,843
2032	60,674,477	9,335,000	7,078,225	7,575,000	6,323,375	--	7,165,800	98,151,877
2033	60,470,008	9,815,000	6,599,475	7,960,000	5,935,000	--	7,165,800	97,945,283
2034	60,263,121	10,315,000	6,096,225	8,375,000	5,526,625	--	7,165,800	97,741,771
2035	60,046,852	10,845,000	5,567,225	8,800,000	5,097,250	--	7,165,800	97,522,127
2036	59,820,621	11,400,000	5,011,100	9,255,000	4,645,875	--	7,165,800	97,298,396
2037	59,586,627	11,985,000	4,426,475	9,730,000	4,171,250	--	7,165,800	97,065,152
2038	59,338,150	12,600,000	3,811,850	10,225,000	3,672,375	--	7,165,800	96,813,175
2039	59,077,039	13,245,000	3,165,725	10,750,000	3,148,000	--	7,165,800	96,551,564
2040	58,809,155	13,880,000	2,557,000	11,275,000	2,597,375	--	7,165,800	96,284,330
2041	58,536,081	14,510,000	1,989,200	11,790,000	2,020,750	--	7,165,800	96,011,831
2042	58,390,100	15,170,000	1,395,600	12,325,000	1,417,875	--	7,165,800	95,864,375
2043	58,392,100	15,860,000	775,000	12,890,000	787,500	--	7,165,800	95,870,400
2044	20,574,000	11,445,000	228,900	9,305,000	232,625	\$ 9,285,000	6,980,100	58,050,625
2045	20,568,900	--	--	--	--	31,310,000	6,168,200	58,047,100
2046	20,569,100	--	--	--	--	32,590,000	4,890,200	58,049,300
2047	20,568,300	--	--	--	--	33,915,000	3,560,100	58,043,400
2048	--	--	--	--	--	35,300,000	2,175,800	37,475,800
2049	--	--	--	--	--	36,745,000	734,900	37,479,900
TOTAL ⁽⁴⁾⁽⁵⁾	\$1,600,123,269	\$229,050,000	\$148,465,692	\$185,950,000	\$132,711,583	\$179,145,000	\$176,297,366	\$2,651,742,909

(1) Includes the 2010 Series AB Bonds, 2013 Series AB Bonds and 2016 Series AB Bonds. Does not include debt service relating to any Parity State Loans, BANs or the WIFIA Bond. See "OBLIGATIONS PAYABLE FROM NET REVENUES—Parity Loans—Parity State Loans; Water Infrastructure Finance and Innovation Act Loan." Also does not include debt service on subordinate Commercial Paper Notes or Revolving Notes. See "OBLIGATIONS PAYABLE FROM NET REVENUES—Subordinate Debt and Commercial Paper."

(2) Calculation of interest due on Outstanding Bonds shown without an offset for Refundable Credits.

(3) Assumes the 2018 Series C Bonds bear interest at a rate of 4% per annum after the Initial Term Rate Period.

(4) Net of capitalized interest payments.

(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 2018 SERIES ABC 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 2018 SERIES ABC BONDS. THE 2018 SERIES ABC 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 San Francisco 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 Napa and Sonoma “wine country” is about an hour’s drive to the north. The City’s 2017 population was approximately 884,000.

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 California State Supreme Court is also based in San Francisco.

The City is a major convention and tourist destination. According to the San Francisco Travel Association, a nonprofit membership organization, during the calendar year 2016, approximately 25.2 million people visited the City and spent an estimated \$9.0 billion during their visit, of which approximately \$750 million was generated to the City in direct spending from convention visitors.

The City benefits from a highly skilled, educated and professional labor force. The per-capita personal income of the City for fiscal year 2016-17 was \$109,048 and unemployment was 3.1%. The San Francisco Unified School District operates 16 transitional kindergarten schools, 64 elementary schools serving grades K-5, eight schools serving grades K-8, 13 middle schools serving grades 6-8, 19 high schools serving grades 9-12, five continuation/alternative schools, and nine County and Court 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 2016-17, SFO serviced approximately 54 million passengers and handled 535,581 metric tons of cargo. The City is also served by the Bay Area Rapid Transit District (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, operated by the City, 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 11 districts to serve 4-year terms, and a Mayor who serves as chief executive officer, elected citywide to a 4-year term. The City's original budget for fiscal years 2017-18 and 2018-19 totals \$10.12 billion and \$10.00 billion, respectively.

The General Fund portion of each year's adopted budget is \$5.15 billion in fiscal year 2017-18 and \$5.31 billion in fiscal year 2018-19, with the balance being allocated to all other funds, including enterprise fund departments, such as SFO, the San Francisco-Municipal Transportation Agency, the Port Commission and the SFPUC. The City employed 32,749 full-time-equivalent employees at the end of fiscal year 2016-17, of which 2,124 positions were funded from sources other than the City's General Fund. According to the Controller of the City (the "**Controller**"), the fiscal year 2017-18 total net assessed valuation of taxable property in the City is approximately \$234.1 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 Wastewater Enterprise, the Water Enterprise and the Power Enterprise (which is a component of Hetch Hetchy Water and Power), all as further described below.

The revenues of the Water 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 Net Revenues."

Organization, Purposes and Powers

Wastewater Enterprise. The Wastewater Enterprise's collection and treatment system consists of a combined sewer collection system conveying sewage 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 the San Francisco Bay and 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. See "THE WASTEWATER ENTERPRISE."

Water Enterprise. Nearly 2.6 million people rely on water supplied by the SFPUC to meet their daily water needs through its 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 contractual agreements.

The revenues of the Water 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 Net Revenues."

Hetch Hetchy – Water and Power Operations. Hetch Hetchy Water and Power operates the dams (among them O'Shaughnessy Dam being the largest), reservoirs (among them Hetch Hetchy Reservoir being the largest), 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**"), which provides water for distribution through the Water Enterprise and hydroelectric, solar and other power for municipal and public infrastructure, services and facilities of the City (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 SFO. Additionally, the Power Enterprise provides power to the Modesto Irrigation District and Turlock Irrigation District, 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 Net 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>
Ike Kwon, President	2	February 2015	August 2018 ⁽¹⁾
Vince Courtney, Vice President	5	January 2011	August 2020
Ann Moller Caen	3	March 1997	August 2020
Anson Moran	4	July 2009	August 2018 ⁽¹⁾
Francesca Vietor	1	September 2008	August 2020

⁽¹⁾ Pursuant to Section 4.101.5 of the Charter, the tenure of a member of the Commission will terminate no later than 60 days after the expiration of the member’s term, unless the member is re-appointed. Mayor London Breed is expected to appoint or reappoint members of the Commission in the near future.

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 \$7.045 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, as well as the Bay Area Council. He is a member of the National Society of Black Engineers. 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.

Gregory J. Norby. Gregory J. Norby was appointed on April 26, 2018, to serve as Assistant General Manager of the Wastewater Enterprise, effective July 2, 2018. Mr. Norby has over 20 years of experience in private sector water infrastructure engineering and public utility management, most recently as General Manager of the Ross Valley Sanitary District. He also previously served as General Manager of the Mammoth Community Water District. He is a licensed professional engineer with a B.S. in Civil Engineering California State University, Chico, and an M.S. in Civil Engineering from Utah State 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 B.S. in Biology from Stanford University and an M.B.A. 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, Ms. Ellis served as a Commissioner for two years. She 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. Ms. Ellis 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, Ms. Ellis 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. Ms. Ellis received her M.S. 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 Capital 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 development of program goals and objectives for the WSIP, and development of the engineering alternatives for program environmental review. She developed and led the team that set up the program controls system to track and report on the WSIP projects' progress relative to scope, schedule and budget. In 2008, she took over the design team of SFPUC and consultant staff to lead production of project designs for construction, working to ensure that projects met the WSIP level of service goals and objectives for seismic and delivery reliability, water quality, and water supply. She is a licensed professional civil engineer in California, and holds a degree in Civil Engineering from the University of California, Berkeley.

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.

Labor Relations

The City's budget for fiscal years 2017-18 and 2018-19 includes 30,835 and 30,938 budgeted City positions, respectively. 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 City Charter. San Francisco is unusual among California's cities and counties in that nearly all of its employees, even managers, are represented by labor organizations. Further, the City Charter provides a unique impasse resolution procedure. In most cities and counties, when labor organizations

cannot reach agreement on a new contract, there is no mandatory procedure to settle the impasse. However, in San Francisco, nearly all of the City’s contracts advance to interest arbitration in the event the parties cannot reach agreement. This process provides a mandatory ruling by an impartial third party arbitrator, who will set the terms of the new agreement. 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. See “RISK FACTORS—Risks Related to Wastewater Enterprise Facilities and Operation—Labor Actions.”

The City’s employee selection procedures are established and maintained through a civil service system. In general, selection procedures and other merit system issues, with the exception of discipline, are not subject to arbitration. Disciplinary actions are generally subject to grievance arbitration, with the exception of police, fire and sheriff’s employees.

In February 2017, the City negotiated two-year contract extensions (for fiscal years 2017-18 and 2018-19) with most of its labor unions. The parties agreed to a wage increase schedule of 3% on July 1, 2017 and 3% on July 1, 2018, with a provision to delay the fiscal year 2018-19 adjustment by six months if the City’s deficit for fiscal year 2018-2019, as projected in the March 2018 update to the Five Year Financial Plan (the “**March 2018 Update**”), exceeds \$200 million. Pursuant to the March 2018 Update, the City’s deficit for fiscal year 2018-2019 was projected to be approximately \$37.9 million. Most labor agreements expire in June 2019. New agreements are expected to be completed prior to the adoption of the fiscal year 2019-20 budget.

The SFPUC employs 2,455 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, 15 presently represent SFPUC employees. Most City employees collectively bargain every two years.

Over the next five years, approximately 33.2% 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 2020 Strategic Sustainability Plan includes an “effective workforce” goal, which focuses on a number of workforce development and sustainability initiatives. The SFPUC also provides ethics training, diversity training, management training, environmental management system training, as well as fraud prevention and awareness training.

The following table summarizes the number of SFPUC and Wastewater Enterprise employees covered by a memorandum of understanding (similar to a collective bargaining agreement) as of April 30, 2018, each of which expire on June 30, 2019.

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TABLE 1
MEMORANDA OF UNDERSTANDING

Employee Bargaining Unit	SFPUC Full-Time Equivalent Employment⁽¹⁾	Wastewater Enterprise Full-Time Equivalent Employment⁽¹⁾
International Association of Machinists, Lodge 1414	49	3
Carpenters, Local 22	20	2
International Brotherhood of Electrical Workers, Local 6	126	21
Laborers, Local 261	150	34
San Francisco Association of Personnel Professionals, Local 21	35	2
Municipal Executives Association	160	11
Operating Engineers, Local 3	24	1
Plumbers, Local 38	231	34
International Federation of Professional and Technical Engineers, Local 21	950	164
Service Employees International Union, Local 1021	334	43
San Francisco City Workers United	15	5
Stationary Engineers, Local 39	315	209
Teamsters, Local 856	1	0
Teamsters, Local 853	39	15
Transport Workers Union Local 250-A, Automotive Service Workers	5	1
Unrepresented Employees ⁽²⁾	1	0
Total	2,455	545

⁽¹⁾ Represents budgeted numbers as of April 30, 2018. 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 memoranda of understanding (similar to collective bargaining agreements).

⁽²⁾ Not covered by a memorandum of understanding (similar to a collective bargaining agreement).

Source: SFPUC Human Resource Services.

Employee Benefit Plans

Retirement System Plan Description. The SFPUC participates in the City’s single employer defined benefit pension 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 Retirement System was initially established by approval of City voters on November 2, 1920 and the State Legislature on January 12, 1921 and is currently codified in the City Charter. The Charter provisions governing the Retirement System may be revised only by a Charter amendment, which requires an affirmative public vote at a duly called election. 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 under “—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 one member of the Board of Supervisors appointed by the President of the Board of Supervisors. The Retirement Board appoints an Executive Director and an Actuary to aid in the administration of the Retirement System. The Executive Director serves as chief executive officer, with responsibility extending to all divisions of the Retirement System. The Actuary’s responsibilities include advising the Retirement Board on actuarial matters and monitoring of actuarial service providers. The Retirement Board retains an independent consulting actuarial firm to prepare the annual valuation reports and other analyses. The

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

In 2014, the Retirement System filed an application with the Internal Revenue Service (“IRS”) for a Determination Letter. In July 2014, the IRS issued a favorable Determination Letter for SFERS. 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. A tax qualified plan also provides tax advantages to the City and to members of the Retirement System. The favorable Determination Letter included IRS review of all SFERS provisions, including the provisions of Proposition C approved by the City voters in November 2011.

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, 1145 Market Street, 5th Floor, San Francisco, CA 94103, or by calling (415) 487-7000.

The funded status of the Plan as of July 1, 2017 (the most recent date for which information is available) was as follows:

TABLE 2
RETIREMENT PLAN FUNDED STATUS
(AS OF JULY 1, 2017)

	(\$000,000s)
Actuarial Liability	\$25,706.1
Actuarial Value of Assets	22,185.2
Unfunded Actuarial Liability	3,520.8
Funded Status (assets/liabilities)	86.3%

Source: SFERS July 1, 2017 Actuarial Valuation Report, Produced by Cheiron, February 20, 2018 and SFPUC.

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 2014-15, 2015-16 and 2016-17, the SFPUC’s employee contribution rates varied from 7.5% to 13.0% as a percentage of gross covered salary. For Fiscal Year 2016-17, 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 Wastewater Enterprise. For the prior four Fiscal Years, the Wastewater Enterprise has paid 100% of its required contributions. The contributions by the Wastewater Enterprise required for Fiscal Years 2013-14 through 2016-17 are summarized in the following table.

TABLE 3
WASTEWATER ENTERPRISE RETIREMENT PLAN CONTRIBUTIONS

Fiscal Year	Actuarially Determined Rate as a Percentage of Covered Payroll	Contribution (000s)	Percent of Required Contribution
2013-14	24.8%	\$11,290	100%
2014-15	26.8	12,288	100
2015-16	22.8	10,930	100
2016-17	21.4	11,270	100

Source: SFERS July 1, 2017 Actuarial Valuation Report, Produced by Cheiron, February 20, 2018 and 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 November 2017 Retirement Board meeting, the Retirement Board adopted updated economic assumptions for the July 1, 2017, actuarial valuation after consideration of two options presented by the consulting actuarial firm. Key economic assumptions are the long-term investment earnings assumption of 7.50%, the long-term wage inflation assumption of 3.50%, and the long-term consumer price index assumption of 3.00%. In November 2015 the Retirement Board 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 (the “**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 five-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 Pension Contributions and 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 an increase in the employer contribution rate for Fiscal Year 2016-17, from 22.80% to 26.76%. The City projects that SFERS employer contribution rates will continue to increase in Fiscal Year 2017-18.

Healthcare Benefits. Healthcare benefits for 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 Wastewater Enterprise's annual contribution for both active and retired employees was approximately \$10.5 million and \$11.3 million in Fiscal Years 2015-16 and 2016-17, respectively. Included in these amounts are \$2.7 million and \$3.0 million for Fiscal Years 2015-16 and 2016-17, respectively, to provide post-retirement benefits for the Wastewater Enterprise's 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 ("**OPEB**") other than pensions obligations, ARC adjustment, and OPEB cost based upon an actuarial valuation performed in accordance with Governmental Accounting Standards Board Statement ("**GASB**") No. 45, Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions, 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 following table shows the components of the City's annual OPEB allocations for the Wastewater Enterprise for the Fiscal Years 2015-16 and 2016-17, for the amount contributed to the plan, and changes in the City's net OPEB obligation:

TABLE 4
ANNUAL OPEB OBLIGATION FOR THE WASTEWATER ENTERPRISE
FOR FISCAL YEARS 2015-16 AND 2016-17
(IN THOUSANDS)

	<u>2016</u>	<u>2017</u>
Annual required contribution	\$ 6,389	\$ 7,397
Interest on net OPEB obligation	2,209	2,010
Adjustment to ARC	(1,650)	(813)
Annual OPEB cost (expense)	<u>\$ 6,768</u>	<u>\$ 8,594</u>
Contribution made	<u>(2,695)</u>	<u>(2,977)</u>
Increase in net OPEB obligation	\$ 4,073	\$ 5,617
Net OPEB obligation – beginning of year	<u>41,980</u>	<u>46,053</u>
Net OPEB obligation – end of year	\$46,053	\$51,670

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 was approximately \$4.2 billion for Fiscal Year 2016-17. The amount allocable to the Wastewater Enterprise, as of June 30, 2017, was approximately \$51.7 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. City and County of San Francisco*, 235 Cal. App. 4th 619 (2015) 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. This decision is now final and its implementation increased the July 1, 2016 unfunded actuarial liability by \$429.3 million for Supplemental COLAs granted retroactive to July 1, 2013 and July 1, 2014.

On July 13, 2016, the Retirement Board adopted a resolution to exempt members who retired before November 6, 1996, from the "fully funded" provision related to payment of Supplemental COLAs under Proposition C. The resolution directed that retroactive payments for Supplemental COLAs be made to these retirees. After the Retirement Board adopted said resolution, the Retirement System published an actuarial study on the cost to the fund of payments to the pre-1996 retirees. The study reports that the two retroactive supplemental payments will trigger immediate payments of \$34 million, create additional liability for continuing payments of \$114 million, and cause a new unfunded liability of \$148 million. This liability does not include the Supplemental COLA payments that may be triggered in the future. Under the cost sharing formulas in Proposition C, the City and its employees will pay for these costs in the form of higher yearly contribution rates. The Controller has projected the future cost to the City and its employees to be \$260 million, with over \$200 million to be paid in the next five fiscal years. The City obtained a permanent injunction to prevent SFERS from making Supplemental COLA payments to these members who retired before November 6, 1996. The Retirement Board has appealed the Superior Court's injunction, and the schedule for that appeal is not yet known.

THE WASTEWATER ENTERPRISE

Background and History

Initial development of the City's combined system dates back to the second half of the 19th century. In accordance with common engineering practice of that period, the combined system collected both sewage and stormwater runoff and transported them to a large number of discharge points on the shoreline of San Francisco Bay. Now all municipal wastewater treatment providers nationally are required to provide some level of urban stormwater treatment.

Today the Wastewater Enterprise provides sewage and stormwater collection, treatment and disposal services through the operation of combined sewage and stormwater system. The Wastewater Enterprise provides such sanitary wastewater and stormwater services across eight distinct urban watersheds, with the Southeast Treatment Plant (defined herein) providing all-weather wastewater treatment and the North Point Facility (defined herein) providing wet-weather treatment, serving the North Shore, Channel, Islais, Sunnyside, and Yosemite urban watersheds with effluent outfalls to the San Francisco Bay (the "**Bayside Watersheds**"), and the Oceanside Treatment Plant (defined herein) providing all-weather wastewater treatment serving the Richmond, Sunset, and Lake Merced urban watersheds with an effluent outfall to the Pacific Ocean (the "**Westside Watersheds**").

Of an estimated total combined wastewater flow of 40 billion gallons per year throughout the entire system, aggregating both watersheds, approximately 34 billion gallons per year receive full secondary treatment, 4.5 billion gallons per year receive primary or decant treatment and are discharged to deep-water outfalls, and 1.5 billion

gallons per year receive the equivalent to wet weather primary treatment and are discharged through nearshore outfalls.

In separate sewer areas of the city, new multi-phase revitalization projects such as Mission Bay, Treasure Island and the Hunter’s Point Naval Shipyard are implementing green infrastructure or low-impact design elements that allow for the treatment of stormwater by natural techniques such as vegetated swales, infiltration and other approved methods prior to discharge into the receiving waters.

The Wastewater Enterprise was operated by the City’s Department of Public Works until July 1996, when then Mayor Willie Brown Jr. transferred its operation to the SFPUC.

Service Area

The service area of the Wastewater Enterprise encompasses approximately 29,773 acres and includes residents of the City and of northern San Mateo County through arrangements with three municipal sewer service providers: North San Mateo County Sanitation District, the Bayshore Sanitary District and the City of Brisbane (collectively, the “**Municipal Customers**”). The SFPUC also currently provides wastewater treatment service on Treasure Island pursuant to contract, and expects eventually to expand its service area to include Treasure Island. See “—Wastewater Treatment—Contract Services,” “WASTEWATER ENTERPRISE CAPITAL PROGRAM – Treasure Island” and “FINANCING PLAN FOR WASTEWATER ENTERPRISE CAPITAL PROGRAM.”

The Wastewater Enterprise serves residential, commercial and industrial users, making up a daytime “population equivalent” of approximately 1.1 million in 2017. United States Census estimates of the total daytime and nighttime populations of the City from calendar years 2013 to 2017 are reflected in the table below.

**TABLE 5
CITY AND COUNTY OF SAN FRANCISCO POPULATION
CALENDAR YEARS 2013 TO 2017**

	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>
Daytime ⁽¹⁾	1,021,134	1,070,852	1,083,849	1,122,430	1,143,547
Nighttime	837,442	852,469	864,816	870,887	884,363

⁽¹⁾ Includes the estimated number of people who work, but do not live, within the City.

Source: *United States Census.*

Customer Base

As of January 2018, the SFPUC has 164,024 active retail wastewater accounts. Of these, over 90% are residential accounts, with the remainder being commercial, industrial, or municipal. Major non-residential customer categories include retail, offices, restaurants, and services, which together account for 50% of non-residential customers. The total number of customer accounts has changed very little over the previous five years, increasing by a total of less than 1% since Fiscal Year 2012-13. Although the City’s population is increasing, the SFPUC anticipates similarly modest growth in the total number of customer accounts over the next several years, as the majority of new customer accounts opened in the City are for urban infill construction replacing previously-existing buildings and the SFPUC’s multifamily residential accounts comprise multiple dwelling units. In addition to its retail customers, the SFPUC provides wholesale sewage treatment services to three customers located in northern San Mateo County, and operates wastewater treatment facilities on Treasure Island pursuant to a “caretaker” contractual agreement and certain lease agreements between the Treasure Island Development Authority and the U.S. Navy. See “—Wastewater Treatment—Contract Services.”

The following table sets forth a five-year history of the number of customer accounts served by the Wastewater Enterprise, grouped by user type.

TABLE 6
SUMMARY OF ACTIVE SEWER ACCOUNTS BY USER TYPE
FISCAL YEARS 2012-13 to 2016-17

User Type	2012-13	2013-14	2014-15	2015-16	2016-17
Multi-Family Residential ⁽¹⁾	36,301	36,248	36,313	36,293	36,323
Single-Family Residential	111,007	111,125	111,173	111,137	111,268
<i>Subtotal Residential</i>	147,308	147,373	147,486	147,430	147,591
Commercial Customers ⁽¹⁾	15,400	15,430	15,460	15,411	15,388
Municipal Customers	729	725	731	738	751
Suburban Customers ⁽²⁾	8	9	9	8	8
Total	163,445	163,537	163,686	163,587	163,738

⁽¹⁾ Includes Presidio Trust Wastewater Accounts, which consist of one multi-family residential, one mixed-use (residential and commercial), and three commercial customer accounts.

⁽²⁾ In addition to suburban customers, service is provided to North San Mateo County Sanitation District, Bayshore Sanitary District and the City of Brisbane.

Source: SFPUC.

Separate rate schedules apply to single-family residential, multi-family residential, and non-residential customers. See “FINANCIAL OPERATIONS—Wastewater Enterprise Rates and Charges.”

Combined Sewage and Stormwater System

History and Background Regarding Combined System. On average, over three quarters of the City’s annual rainfall occurs between November and March. Depending on the duration, intensity and storm pattern, combined flows of sewage and stormwater can exceed the collection and treatment system hydraulic capacity, resulting in combined sewer discharges.

In order to reduce the number and volume of combined sewer overflows during wet-weather events, the City built a series of large underground transport/storage structures (box sewers and tunnels) around the perimeter of the City to intercept, temporarily store, and transport the mixture of storm runoff and sewage to new or upgraded treatment facilities. The primary purpose of this system of transport/storage structures is to reduce the incidence and volume of storm runoff and sewage and provide treatment of discharges in wet weather. Prior to their construction, untreated combined sewer overflows occurred throughout the City whenever rainfall occurred at a rate of 0.02 inches per hour. By providing both storage volume and detention time, the transport/storage structures allow for treatment of the stored combined sewage and stormwater flows at the treatment plants after storms. In addition, the retention of the combined flows in the transport/storage structures allows solids to settle, and weir and baffle structures retain floatable materials, providing the equivalent of wet-weather primary treatment.

With these improvements, the facilities of the Wastewater Enterprise are designed to minimize the number of wet-weather discharge events. In all methods of discharge, the combined wastewater receives the level of treatment prescribed by federal and state law.

Sewer Lines. The Wastewater Enterprise’s collection and transport system currently has a storage capacity of approximately 200 million gallons, and includes approximately 993 miles of sewer lines of which 792 miles is made up of collecting sewers of 36 inches or less in diameter.

**TABLE 7
SEWER SYSTEM BY PIPE LENGTH IN MILES AND AGE**

Year Built	Gravity Pipe ≤ 36" Diameter	All Other Pipe⁽¹⁾	Total Pipe	Percent of Total
1860 – 1900	70	39	109	11%
1901 – 1940	339	64	403	41
1941 – 1980	178	58	236	24
1981 – present	182	38	220	22
Unknown	23	2	25	3
Total ⁽²⁾	792	201	993	100%

⁽¹⁾ Includes gravity pipe greater than 36" in diameter, tunnels, force mains, transport/storage, effluent outfall and overflow discharge.

⁽²⁾ Totals may not add due to independent rounding.

Source: SFPUC, *Wastewater Enterprise*.

Transport/Storage Structures. In addition to sewer lines, the Wastewater Enterprise maintains 24 miles of underground transport/storage structures which are located around the perimeter of the City to intercept, temporarily store, and transport the mix of stormwater runoff and sewage to treatment plants. These structures, which operate in both dry and wet weather, were built between 1979 and 1997. The largest of these structures, the Westside Transport structure, is approximately 2 miles long, 45 feet deep and 25 feet wide. The transport/storage structures were designed with sufficient storage to reduce combined sewer discharges and protect beneficial uses of receiving waters for the San Francisco Bay and Pacific Ocean. The transport/storage and collection system provides approximately 200 million gallons worth of storage (approximately three days of dry weather flow).

The performance of the transport/storage structures and treatment facilities complies with the requirements of the National Combined Sewer Overflow Control Policy, as implemented by discharge permits issued on behalf of the EPA by the San Francisco Bay Regional Water Quality Control Board (the "**Regional Water Quality Control Board**"). See "REGULATORY MATTERS." By providing both storage volume and detention time, the transport/storage structures allow for delayed treatment of combined sewage and stormwater flows at the treatment plants at the conclusion of a wet weather event. They also provide a "buffer" for dry weather flows in the event of an unplanned outage.

Pump Stations. The Wastewater Enterprise has 27 pump stations, which include six major all-weather pump stations, two major wet-weather pump stations, 18 minor pump stations, and one major effluent pump station for bayside effluent discharge.

Outfalls and Nearshore Discharge Structures. The Wastewater Enterprise currently has three offshore outfalls that discharge to deep waters — Southeast Bay Outfall, Northpoint Outfall, and Southwest Ocean Outfall. In addition to these outfalls, 36 combined sewer discharge structures, or near-shore outfalls, serve as relief points of the combined sewer system. These structures operate infrequently, and only during large storm events. Discharges through these permitted sites receive the equivalent of wet weather primary treatment.

Urban Watershed Management. The SFPUC is working to improve the system's stormwater drainage performance and its sewage treatment efficiency. The SFPUC Stormwater Program complies with regulatory requirements and is designed to maximize sewer system performance, engage community members in its work, improve watershed function, enhance the environmental quality of the City's neighborhoods, and protect the water quality of the San Francisco Bay and Pacific Ocean. To achieve these goals, the SFPUC has adopted regulations that require new and redevelopment projects in San Francisco to install and operate green technologies for managing stormwater runoff.

Useful Life. The average useful life of typical collecting sewers (i.e., gravity pipes 36 inches or less in diameter) is approximately 110 years. The average useful life for other sewer pipes/infrastructure (such as tunnels, force mains, transport/storage boxes) is 50 years, while large outfalls have a typical useful life ranging from 50 to 100 years. However, many conditions, including pipe material and soil conditions, affect actual pipe lifespan. The

approximate ages of the various components of the Wastewater Enterprise's sewer lines are set forth in Table 7 above.

The historical rate of replacement for the Wastewater Enterprise's sewer pipes (less than 36-inch diameter) has been at a 200-year replacement cycle. Aging sewers, if left unaddressed, would result in increased leakage, sinkholes, sewer line failures, reduced system reliability and possibly public health and safety risks. The SFPUC has developed its capital program, including SSIP and the Renewal and Replacement program in part to address the aging infrastructure, with the objective of ultimately returning to a 110-year replacement cycle, and in part to upgrade other critical infrastructure. Replacement of specific sewer sections will be prioritized under an asset management approach which considers the current condition of the section in question and applicable risks of failure. The sewers will be inspected through closed-circuit television and the likelihood of failure will be calculated based on a condition scoring algorithm taking into account the severity and quantity of defects identified in each inspection. The consequence of failure is calculated based on level of service, including protection of the public, preservation and improvement of quality of life, cost efficiency, customer service, and environmental responsibility. To implement this Renewal and Replacement program, the SFPUC has divided San Francisco into 182 individual grids for the purpose of scheduling inspections for all gravity sewer mains on a five-year cycle. These grids are prioritized by predicted total risk, using age of sewer as the main factor. The goal is to inspect the sewers predicted to be in the worst condition and in highly sensitive locations first. As the inspections proceed, each surveyed sewer receives a risk score and sewers identified for replacement are scheduled based on risk scores, proximity, and utility coordination. See "WASTEWATER ENTERPRISE CAPITAL PROGRAM" and "SEWER SYSTEM IMPROVEMENT PROGRAM."

Wastewater Treatment

Wastewater Treatment Plants. The Wastewater Enterprise operates three major wastewater treatment facilities (in addition to the transport/storage structures that provide the equivalent of wet weather primary treatment), two serving the Bayside Watersheds and one serving the Westside Watersheds:

- Southeast Water Pollution Control Plant (the "**Southeast Treatment Plant**"), which treats dry and wet weather flows collected from the Bayside Watersheds (18,597 acres, or 63% of the total city service area) as well as the Municipal Customers;
- North Point Wet Weather Facility (the "**North Point Facility**"), which treats a portion of wet-weather flows collected from the north Bayside Watersheds; and
- Oceanside Water Pollution Control Plant (the "**Oceanside Treatment Plant**"), which treats dry and wet weather flows collected from the Westside Watersheds (11,176 acres, or 37% of the total city service area) and minor flows from northern San Mateo County.

The Oceanside Treatment Plant and related collection facilities in the Westside Watersheds are not interconnected with the Southeast Treatment Plant or the North Point Facility and the collection facilities in the Bayside Watersheds.

Southeast Treatment Plant. The Southeast Treatment Plant is an all-weather secondary wastewater treatment plant serving the sewage and stormwater treatment needs for nearly two-thirds of the City in the Bayside Watersheds, which consists of 18,587 acres including the Marina, Downtown, South of Market Area, Mission, Hunters Point, and Visitacion Valley neighborhoods, plus 1.65 million gallons per day ("**mgd**") of dry weather flow from North San Mateo County Sanitation District, Bayshore Sanitary District and the City of Brisbane. Land uses in the Bayside Watersheds are a mixture of residential, commercial, light industrial and heavy industrial. The Southeast Treatment Plant, as the only Bayside dry-weather facility, is a critical component of the system that must meet high availability requirements. The Bayside Watersheds wastewater flow is collected by the combined sewer system and conveyed to the Southeast Treatment Plant via gravity sewers, tunnels, transport/storage structures, pump stations and force mains.

The Southeast Treatment Plant provides preliminary, primary and secondary treatment using a high-purity-oxygen activated sludge process prior to effluent disinfection. Sludge treatment consists of gravity-belt thickening, anaerobic digestion, chemical conditioning and dewatering. Plant effluent is discharged during dry weather into the San Francisco Bay through a deep water outfall in the vicinity of Pier 80. During wet weather, treated effluent is discharged through the Pier 80 outfall and through an additional outfall at the shoreline of Islais Creek.

The Southeast Treatment Plant was planned and designed in the 1940s and commenced operations in 1951 as a primary treatment facility. In order to meet the mandates of the federal Clean Water Act, the Southeast Treatment Plant was expanded in the early 1980s to provide secondary treatment of all Bayside Watersheds' dry-weather flows with a daily average design capacity of approximately 85 mgd and peak-hour design flow of 142 mgd. In 1996, the Southeast Treatment Plant's wet weather capacity was increased to 250 mgd, with 150 mgd receiving secondary treatment prior to disinfection and discharge. During wet weather, additional wet-weather facilities are operated at the Southeast Treatment Plant to provide primary treatment and disinfection to the remaining 100 mgd of combined wastewater flow.

The Southeast Treatment Plant operates every day of the year in both wet weather and dry weather conditions. Many of its critical systems have operated past their expected useful life and replacement facilities are needed to ensure reliability requirements are met, including seismic upgrades. At the start of SSIP the Program Management Consultant (the "**Program Management Consultant**") conducted a full condition assessment of the Southeast Treatment Plant and the highest priority needs were identified for both the liquid treatment and solids treatment facilities. The assessment took into account current maintenance records, remaining life, and compliance with levels of service. Projects have been identified for all of the major treatment processes, and for various support, monitoring and control systems. Maintenance and repair projects, including repairs to digester roofs and existing biosolids treatment and storage equipment, have been undertaken to bolster some of the facilities considered to be the most vulnerable so that they function until the new facilities are completed. See "SEWER SYSTEM IMPROVEMENT PROGRAM." Because the Southeast Treatment Plant is not interconnected with the other treatment plants, it cannot be shut down during construction of such projects as there would be no substitute wastewater treatment option. Instead, the Southeast Treatment Plant will remain in service during construction. See "RISK FACTORS—Risks Related to Wastewater Enterprise Facilities and Operation—Aging Facilities" and "—Limited Redundancy."

North Point Wet-Weather Facility. The North Point Facility is a wet-weather primary wastewater treatment plant serving the northeast quadrant of the Bayside Watersheds, an area comprising predominantly commercial and residential land uses. The North Point Facility was originally constructed in 1951 as an all-weather primary treatment facility, but did not incorporate digesters and so sludge was pumped to the digesters at the newly constructed Southeast Treatment Plant for treatment. In response to the mandates of the federal Clean Water Act, the North Point Facility was converted into a strictly wet-weather treatment plant in 1983, providing up to 150 mgd of primary treatment.

The North Point Facility provides preliminary, primary and disinfection treatment. Effluent from the North Point Facility is discharged into the San Francisco Bay through a deep water outfall system at Piers 33 and 35. At the conclusion of each wet-weather event, grit and solids are flushed out of the sedimentation tanks and directed to the Channel Pump Station, which pumps them to the Southeast Treatment Plant for treatment.

Oceanside Treatment Plant. Constructed in 1993, the Oceanside Treatment Plant is an all-weather secondary wastewater treatment plant that provides the wastewater treatment and stormwater treatment needs for the City's Westside Watersheds and San Mateo County flows that drain to the Westside Watersheds. Land uses in the Westside Watersheds are primarily residential.

The Oceanside Treatment Plant's dry weather capacity is up to 43 mgd of secondary treatment. The Oceanside Treatment Plant's wet-weather capacity is up to 65 mgd of primary and 43 mgd of secondary treatment using the high-purity-oxygen activated sludge process. Sludge treatment consists of gravity belt thickening, anaerobic digestion, chemical conditioning and dewatering. The Oceanside Treatment Plant began operations in September 1993 and complies with all dry- and wet-weather discharge requirements. Up to 195 mgd of plant effluent and decanted wet weather flow is discharged approximately four miles offshore into the Pacific Ocean through a deep ocean outfall.

Emergency Operations. The Wastewater Enterprise maintains up-to-date contingency plans in the event of an unplanned outage or failure of a treatment facility, process unit, pump station, sewer pipeline or other infrastructure element. The wastewater collection and treatment system is designed with some redundancy and flexibility in order to facilitate responses to emergency events, though the Westside Watersheds and Oceanside Watersheds are not interconnected. The collection system is equipped with pump stations and isolation valves so that flows can be redirected to help mitigate impacts in the event of a failure.

If an unplanned shutdown of critical treatment facilities were to occur, the transport/storage structures and collection system pipes provide approximately 200 million gallons of storage (providing up to several days of storage in some portions of the system, depending on the inflow). The wastewater treatment facilities and major pump stations are also built with some redundancy, and in some instances may continue operation with select equipment outages. Critical infrastructure elements with higher failure risk or for which adequate redundancy is not available have been identified as projects in the SSIP to increase system flexibility and the ability to respond to unplanned events. See “RISK FACTORS—Risks Related to Wastewater Enterprise Facilities and Operations.”

Biosolids Management. The Southeast Treatment Plant and the Oceanside Treatment Plant produce approximately 70,000 wet tons per year of sewage sludge or biosolids, which are highly treated and anaerobically digested. During wet-weather months, biosolids are trucked to the Potrero Hills Landfill in Solano County and the Altamont and Vasco Road Landfills in Alameda County, where biosolids are used as alternative daily cover. During dry-weather months, biosolids are trucked to various ranches in Solano County and applied directly as a soil amendment for farming or to enhance pasture productivity in accordance with federal and local county regulations. Throughout the year, a portion of the SFPUC’s biosolids are sent to a ranch in Sacramento County for use as a soil amendment in accordance with federal and local county regulations. Additionally, a small portion (approximately 10%) of the SFPUC’s biosolids are trucked to Lystek, a facility which processes “Class B” biosolids into a “Class A” liquid fertilizer.

The Wastewater Enterprise coordinates the application, testing and sampling procedures required by the applicable regulatory agencies. Because current beneficial use options may not offer a long-term solution (due to more stringent regulations and encroaching suburban development in currently agricultural use areas), the SFPUC is exploring other means of beneficially using biosolids and upgrading the level of treatment. The Oceanside Treatment Plant’s digesters were retrofitted for a conversion to a Temperature Phased Anaerobic Digestion (“TPAD”) process to enable the Oceanside Treatment Plant to produce “Class A” biosolids. The TPAD process is currently operational and the Oceanside Treatment Plant is in the process of certifying the “Class A” status of its biosolids with the EPA. The SFPUC also plans to implement technology at the Southeast Treatment Plant to produce “Class A” biosolids as part of an SSIP project.

See “SEWER SYSTEM IMPROVEMENT PROGRAM” and “REGULATORY MATTERS” below.

Contract Services. The Wastewater Enterprise also provides wastewater treatment service on Treasure Island, by agreement with the Treasure Island Development Authority (“TIDA”), a non-profit public benefit agency vested with the rights to administer municipal services to Treasure Island and Yerba Buena Island during interim reuse of the property. Such wastewater treatment service is provided at a wastewater treatment plant currently owned by the U.S. Navy, subject to agreements between TIDA and the U.S. Navy for the conveyance of property on Treasure Island to TIDA. The wastewater system serving Treasure Island and Yerba Buena Island, located in San Francisco Bay between the San Francisco and Oakland, currently relies on pumping to convey sewage to a secondary facility for treatment and discharge. The treatment plant is designed to treat an average of 2.0 mgd, with a permitted capacity of up to 4.4 mgd. The wastewater collection system consists of 10 miles of sewers and 29 wastewater pump stations. In addition, a stormwater collection system includes six stormwater pump stations and a number of shallow water outfalls.

In connection with ongoing redevelopment activities on Treasure Island, the SFPUC anticipates that the Treasure Island facilities, including collection and other facilities being built by the developer as part of the project, will eventually be transferred to the SFPUC and be integrated into the Wastewater Enterprise’s overall system assets. Following such transfer, the SFPUC would provide sewer discharge service and impose rates and charges directly on customers on Treasure Island, and payments the SFPUC receives from such customers would constitute Revenues as and to the extent provided under the Indenture. The SFPUC would also be responsible for operation

and maintenance, and such costs would constitute Operation and Maintenance Costs of the Wastewater Enterprise as and to the extent provided under the Indenture. Finally, the SFPUC would be responsible for the future repair and replacement of all facilities transferred to it, including collection and treatment facilities. The SFPUC expects that it will need to replace the existing treatment plant on Treasure Island, and has included preliminary projected costs of such project in its 10-Year Capital Plan. See “—Projected Future Demand,” “WASTEWATER ENTERPRISE CAPITAL PROGRAM—Treasure Island” and “FINANCING PLAN FOR WASTEWATER ENTERPRISE CAPITAL PROGRAM.”

System Capacity

When the three treatment facilities and other elements of the collection system are fully operational, the Wastewater Enterprise can provide up to 575 mgd of combined wastewater and stormwater treatment, including 193 mgd of secondary treatment, 272 mgd of primary treatment and 110 mgd of equivalent-to-primary treatment provided by the transport/storage structures located around the perimeter of the City.

**TABLE 8
TREATMENT PLANT MAXIMUM CAPACITY
(MILLION GALLONS PER DAY)**

<u>Plant</u>	<u>Dry Weather</u>	<u>Peak Wet Weather</u>
Southeast Treatment Plant	105	250
Oceanside Treatment Plant	43	65
North Point Facility	N/A	150
Total	148	465

Source: SFPUC, Wastewater Enterprise.

The three treatment plants discharge up to 365 mgd through deep-water outfalls. Another 100 mgd of secondary treated effluent with disinfection can be discharged through a shallow water outfall to Islais Creek during peak wet-weather events. The combined sewer system is designed to handle wet weather events and its permits explicitly allows for them, including discharge from the system when a storm exceeds the capacity of the system.

Current System Demands

Wastewater Enterprise facilities collected, treated and discharged an average of approximately 68.4 mgd of sanitary wastewater during dry-weather periods between Fiscal Years 2012-13 and 2016-17.

**TABLE 9
AVERAGE DRY WEATHER TREATMENT
FISCAL YEARS 2012-13 TO 2016-17
(MILLION GALLONS PER DAY)**

<u>Plant</u>	<u>2012-13</u>	<u>2013-14</u>	<u>2014-15</u>	<u>2015-16</u>	<u>2016-17</u>
Southeast Treatment Plant	57.4	57.8	51.9	53.8	56.4
Oceanside Treatment Plant	13.8	12.8	12.2	12.7	13.2
Total	71.2	70.6	64.1	66.5	69.6

Source: SFPUC, Wastewater Enterprise.

Projected Future Demand

The SFPUC's 2018 wastewater rate study projected that in-City sanitary wastewater discharge will remain at its current levels through 2022, even though the total number of wastewater accounts are projected to grow at 0.1% annually during the same period. See "—Service Area" and "—Customer Base." This differential is attributable to decreases in average per capita water usage due to ongoing conservation initiatives, including plumbing codes which apply to all new development. This forecast translates to flat projections of influent flow and solids to the treatment plants.

The Wastewater Enterprise's existing treatment plants have sufficient excess capacity to address the projected demand, therefore no significant expansion is expected to be required in order to meet the needs of the City based upon these population growth projections alone. However, the SFPUC expects to provide a new treatment plant at Treasure Island with additional capacity and associated infrastructure in order to meet the needs at full build-out of the proposed conversion of the former Treasure Island Naval Station to residential and commercial uses, though agreements for the provision and construction of the treatment plant have not yet been finalized. See "—Contract Services."

Because the SFPUC maintains a combined sewer system, there may be other factors in the future, including environmental changes and regulatory developments, that could require expanded collection or treatment capacity.

WASTEWATER ENTERPRISE CAPITAL PROGRAM

Capital and Financial Planning Process

The SFPUC's long-term capital and financial planning is performed on an annual rolling 10-year forward looking basis. The SFPUC prepares a 10-Year Capital Plan for each of its enterprises, as required by the Charter. The 10-Year Capital Plan serves as the basis for the development of the annual 10-Year Financial Plan. Proposed long-term capital programs, projects and investments, and related costs are included in the 10-Year Financial Plan. Consistent with the Charter, updates to the 10-Year Capital and Financial Plans are annually reviewed and adopted by the SFPUC Commission each February. The 10-Year Financial 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 10-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 the capital programs can change. Consequently, even though the annual capital programs are based on the 10-Year Capital Plan, they may occasionally differ from it.

The Wastewater Enterprise 10-Year Capital Plan for Fiscal Years 2018-19 to 2027-28, adopted by the SFPUC Commission in February 2018 (the "**10-Year Capital Plan for Fiscal Years 2018-19 to 2027-28**"), totals approximately \$5.616 billion, which includes approximately \$1.090 billion budgeted for Fiscal Year 2018-19 and Fiscal Year 2019-20. See "FINANCING PLAN FOR WASTEWATER ENTERPRISE CAPITAL PROGRAM." The 10-Year Capital Plan includes projects in four categories: (i) the Sewer System Improvement Program; (ii) Renewal and Replacement; (iii) Treasure Island; and (iv) Wastewater Facilities and Infrastructure.

Sewer System Improvement Program

The SFPUC has embarked on a comprehensive Sewer System Improvement Program ("**SSIP**"). SSIP projects make up approximately \$4.007 billion of the 10-Year Capital Plan for Fiscal Years 2018-19 to 2027-28. The SSIP is a series of major capital improvement projects that are intended to bring the City's wastewater and stormwater collection system into a state of good repair, and meet goals and levels of service originally endorsed by the Commission in 2012 and revised by the Commission in March 2016 and April 2018.

The SSIP capital projects address specific challenges and deficiencies facing the Wastewater Enterprise, maximize system reliability and flexibility, improve operational and seismic reliability, and ensure present and

future regulatory compliance. The SSIP project development will also consider environmental benefits, sustainability, and community benefits in addressing long-term wastewater needs. However, the SFPUC is not subject to any consent decree requiring specific improvements. The implementation of the SSIP projects is being phased over a 20-year period in an effort to maintain ratepayer affordability and minimize impacts throughout the City.

Information on the SSIP may be found under “SEWER SYSTEM IMPROVEMENT PROGRAM.”

Renewal and Replacement

The Wastewater Enterprise undertakes renewal and replacement projects to improve performance or extend the service life of an existing asset. These projects are typically annual ongoing projects and fall into two categories: Renewal and Replacement Collection System and Renewal and Replacement Treatment Plants. Renewal and replacement projects make up approximately \$1.293 billion of the 10-Year Capital Plan for Fiscal Years 2018-19 to 2027-28.

The Renewal and Replacement Collection System category includes the following projects: condition assessment projects to clean, video inspect, as well as perform condition assessment of sewer facilities; sewer improvement projects to maintain the existing functionality of the collection system and repair and replacement of structurally inadequate sewers; spot sewer repair projects which consist of as-needed repair of localized failed sections of existing sewer facilities; hydraulic improvement projects to upgrade sewers with hydraulic deficiencies; and salt water intrusion projects to prevent San Francisco Bay water from entering the wastewater collection system, which can be detrimental to the treatment plant’s biological system and result in corrosion of exposed metal, and reduce the reliability of recycled water.

The Renewal and Replacement Treatment Plants category includes projects to maintain the capacity and reliable performance and extend the useful life of aging assets such as transport/storage boxes, discharge structures, pump stations, force mains, tunnels and treatment plants. Priority lists are maintained for both collection and treatment projects, with collection system projects identified using an asset management approach which considers the current condition of the section in question and applicable risks of failure. See “THE WASTEWATER ENTERPRISE—Combined Sewage and Stormwater System—Useful Life.”

Treasure Island

Treasure Island and Yerba Buena Island, located in San Francisco Bay between the City and Oakland, are served by a wastewater system that currently relies on pumping to convey wastewater to a secondary facility for treatment and discharge. Treasure Island projects make up approximately \$43.4 million of the 10-Year Capital Plan for Fiscal Years 2018-19 to 2027-28. The treatment plant is designed to treat an average flow of 2 mgd, with a permitted capacity of up to 4.4 mgd. These wastewater facilities are not interconnected with the wastewater infrastructure in San Francisco. The Treasure Island treatment plant is currently owned by the U.S. Navy, but operated and maintained by the Wastewater Enterprise pursuant to a cooperative agreement with the U.S. Navy. However, the SFPUC expects eventually to expand its service area to include Treasure Island. See “—Wastewater Treatment – Contract Services.” In connection with such expansion, the SFPUC anticipates constructing a new treatment plant with additional capacity and associated infrastructure in order to meet the needs at full build-out of the proposed conversion of the former Treasure Island Naval Station to residential and commercial uses, though agreements for the provision and construction of the treatment plant have not yet been finalized. The projected costs of such project, however, are included in the SFPUC’s 10-Year Capital Plan.

The Treasure Island and Yerba Buena Island wastewater collection system consists of 10 miles of sewers and 29 wastewater pump stations. In addition, a stormwater collection system includes six stormwater pump stations and a number of shallow water outfalls. With the exception of any new treatment plant constructed by the SFPUC, the SFPUC expects that the developer undertaking the conversion project will construct all other new wastewater infrastructure relating to the development, including collection facilities, prior to transferring such facilities to the SFPUC.

Wastewater Facilities and Infrastructure

There are five projects in the category of Wastewater Facilities and Infrastructure: (i) the Ocean Beach Protection Project, (ii) the Southeast Community Center Improvements Project, (iii) the Southwest Ocean Outfall Project, (iv) the Southeast Outfall Condition Assessment and Rehabilitation Project, and (v) the Islais Creek Outfall Project. Wastewater Facilities and Infrastructure projects make up approximately \$273.0 million of the 10-Year Capital Plan for Fiscal Years 2018-19 to 2027-28.

Ocean Beach Protection Project. The Ocean Beach Protection Project will facilitate the development of a comprehensive shoreline management and protection plan in partnership with relevant stakeholders and regulatory agencies to provide a long-term solution to the erosion issue along Ocean Beach between Sloat and Skyline Boulevards, in an effort to protect the integrity of critical SFPUC wastewater assets that are jeopardized by the ongoing shoreline erosion and to mitigate potential impacts to the Lake Merced Tunnel and other critical wastewater assets at this location. Such assets include the Lake Merced Transport Tunnel, the Westside Pump Station, the Westside Transport, and the Oceanside Treatment Plant.

Southeast Community Center Improvements Project. The Southeast Community Center Improvements Project provides improvements to the Southeast Community Center. The Southeast Community Center was originally built in the 1980s as a community mitigation measure for expansion of the Southeast Treatment Plant with the purpose of providing opportunities for residents in the Bayview Hunters Point community to participate in education programs, to establish and expand daycare opportunities and to provide information and resources for the enhancement and growth of the community as a whole. The Southeast Community Center Improvements Project will focus on improving the functional and operational reliability of the facility to ensure it fulfills its goals of providing for the education and jobs-training needs of the community. Infrastructure improvements, such as energy efficiency upgrades, building envelope repairs, tenant space reconfigurations and consolidations, life/safety, and accessibility upgrades, as required by applicable codes, will be provided. The project will include evaluation of programming and siting of the community facility and associated green houses.

Southwest Ocean Outfall Project. The Southwest Ocean Outfall Project will provide improvements and modifications to the Southwest Ocean Outfall, which is part of the Oceanside Treatment Plant. The Oceanside Treatment Plant and the associated westside facilities provide all-weather wastewater collection and treatment of flows from the westside of San Francisco. This project will include condition assessment of the outfall, as well as an allowance to perform repairs. These improvements and modifications are expected to ensure that the Oceanside Treatment Plant and Southwest Ocean Outfall will remain operationally compliant with State and Federal regulatory requirements.

Southeast Outfall Condition Assessment and Rehabilitation Project. The Southeast Outfall Condition Assessment and Rehabilitation Project is a condition assessment to determine the pipeline condition of Reach 2 (Onshore Force Main) and Reach 3 (Offshore Outfall) and to evaluate if it can provide reliable service until the outfall is replaced. These improvements and modifications are expected to ensure that the Southeast Treatment Plant and Southeast Bay Outfall will remain operationally compliant with State and Federal regulatory requirements.

Islais Creek Outfall Project. The Islais Creek Outfall Project will replace the effluent pipelines within Islais Creek and rehabilitate the existing upstream, on-shore pipelines, booster pump station pump manifold and isolation valves. This project was included in the capital program following a determination by the SFPUC in 2015 that one of the two pipelines had extensive corrosion and a risk of pipeline failure would continue to exist until the issue could be addressed.

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.

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.

Prior to the sale of bonds, the San Francisco Planning Department Environmental Review Officer will issue a “Planning Certificate” required under Proposition E approved by the voters of San Francisco at the November 5, 2002 General Election. 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.

SEWER SYSTEM IMPROVEMENT PROGRAM

Program Summary

The SFPUC has embarked on a comprehensive \$7.045 billion Sewer System Improvement Program to be implemented in three overlapping phases over approximately 20 years. The SSIP is a citywide investment to upgrade the SFPUC’s aging infrastructure to ensure a reliable, sustainable and seismically safe sewer system. It contains a series of major capital improvement projects that are necessary to bring the City’s wastewater and stormwater system into a state of good repair, and meet the Commission-endorsed goals and levels of service. The Commission’s authorization of the SSIP specified that the program would be implemented in three phases, with the highest priority and best defined projects to be included in Phase 1.

SSIP Program Development and Chronology

In February 2010, the Commission directed staff to proceed with the procurement of a program management consultant to assist City staff with implementation of the SSIP. AECOM-Parsons Joint Venture was selected and the Program Management Consultant team began work on September 6, 2011 to validate the SSIP scope, schedule and budget.

On August 28, 2012, the Commission endorsed specific goals and levels of service, validated the scope and phased implementation approach for the overall \$6.9 billion SSIP, and authorized staff to move forward with planning and development on a proposed Phase 1 set of projects representing \$2.7 billion of the total.

In October 2015, the SSIP staff began to work on refining the SSIP’s scope, budget and schedule based on newly available information, and various constraints and challenges. This effort to “baseline” the SSIP included

project re-prioritization, scope refinement and budget and schedule re-alignments. This assessment was completed in February 2016 and the Commission was provided with recommendations for revising the SSIP.

On March 22, 2016, the Commission approved the “March 2016 SSIP Baseline Scope, Budget, and Schedule” (the “**March 2016 SSIP Baseline**”). The overall SSIP budget remained at approximately \$6.9 billion, however, the budget for SSIP Phase 1 increased from \$2.7 billion to \$2.910 billion, when flood resilience projects were added to the SSIP.

On April 24, 2018 the Commission approved revisions to the 2016 SSIP Baseline Scope, Schedule and Budget for Phase 1 projects as the “2018 Revised Baseline Scope, Schedule and Budget for the SSIP Phase 1 Projects” (the “**April 2018 SSIP Re-Baseline**”). The budget for Phase 1 of SSIP increased from \$2.910 billion to \$2.979 billion, increasing the overall SSIP budget to \$7.045 billion.

Program Objectives

The SSIP capital improvement projects are designed to address specific infrastructure challenges and deficiencies facing the Wastewater Enterprise, maximize system reliability and flexibility, improve operational and seismic reliability, and promote current and future regulatory compliance. The SSIP project development will also consider environmental benefits, sustainability, and community benefits in addressing the long-term wastewater needs.

Program Goals

The program goals for the SSIP, as endorsed by the Commission in August 2012, include the following:

1. Provide a compliant, reliable, resilient and flexible system that can respond to catastrophic events;
2. Integrate grey and green infrastructure to manage stormwater and minimize flooding;
3. Provide benefits to impacted communities;
4. Modify the system to adapt to climate change;
5. Achieve economic and environmental sustainability; and
6. Maintain ratepayer affordability.

The March 2016 SSIP Baseline and April 2018 SSIP Re-Baseline reviews of the SSIP did not change these program goals.

Program Scope

The SSIP is further broken into three major subprograms: Treatment Plants, Collection System, and Land Reuse. Due to the size of the overall program, a three-phased approach was developed for affordability and to simplify implementation of the SSIP projects. The timing of the three phases overlap to correspond with the duration and completion of specific major projects. A description of each of the subprograms is below.

Treatment Plants. Treatment plant projects are proposed at the Southeast Treatment Plant, Oceanside Treatment Plant and North Point Facility that will address aging infrastructure and outdated technologies; increase seismic and operational reliability; and reduce odors, noise, visual and other public impacts. These projects will also address long-term regulatory compliance by ensuring continued performance that is aimed at meeting current and future regulatory mandates.

A majority of the SSIP improvements will occur at the Southeast Treatment Plant to upgrade the building and systems which were planned, designed and constructed in the 1940s and early 1950s. See “WASTEWATER

ENTERPRISE—Wastewater Treatment—Southeast Treatment Plant.” The Biosolids Digester Facilities Project, which consist of new digester and solids handling facilities to replace the aging facilities at the Southeast Treatment Plant, will include more modern treatment processes designed to produce “Class A” biosolids. Biosolids treatment processes are expected to include solids thickening, screening, dewatering, thermal hydrolysis pretreatment, digestion, gas handling, energy generation and reuse, and odor control. Eight other SSIP projects are scheduled to be constructed at the Southeast Treatment Plant during the same timeframe, which will require careful logistical and space planning and scheduling of key project interfaces. These other projects focus on liquid treatment and basic infrastructure, including: construction of a new all-weather 250 million gallon per day headworks facility, improvements to oxygen generation, clarifiers, gas handling, disinfection, facility-wide distributed control systems and power feed and switchgear. The Southeast Treatment Plant will be operational throughout the construction of these capital improvements. See “WASTEWATER ENTERPRISE—Wastewater Treatment—Southeast Treatment Plant” and “RISK FACTORS—Risks Related to Wastewater Enterprise Facilities and Operation—Limited Redundancy.”

In addition to the work at Southeast Treatment Plant, there will be reliability improvements to both Oceanside Treatment Plant and North Point Facility, including seismic, electric, and general reliability improvements for these aging facilities.

Collection System. Proposed collection system projects will increase the ability of the sewer system to collect and convey wastewater and stormwater and will address aging infrastructure, including large diameter sewers, pump stations, transport/storage boxes, and combined sewer discharge structures. The collection system projects also include interdepartmental projects that capture sewer improvement opportunities arising from capital projects initiated by other City agencies. Additionally, the SFPUC anticipates projects focused on stormwater management and control, including addressing flood resilience in low lying areas subject to flood risk in the SFPUC’s design storm through grey and green infrastructure.

The largest collection system project is the Central Bayside System Improvement Project. This project would provide redundancy to the existing 66-inch Channel Force Main, which conveys 60% of the flow to the Southeast Treatment Plant, and improve stormwater conveyance in the local drainage basins. The Channel Force Main has been subject to long term settlement and previously experienced temporary failures in connection with the Loma Prieta Earthquake in 1989. Phase 1 of the SSIP only includes planning and preliminary design work for this project. Flood resilience is the next largest suite of projects and includes improvements to stormwater management systems intended to reduce flooding during wet weather.

Specific improvements for the collection system have been prioritized through the SFPUC’s “Collection System Strategy: Using an Urban Watershed Approach.” The strategy involved balancing the needs of the collection system for system reliability and stormwater management. Project prioritization and phasing was guided by the Commission-endorsed levels of service, the timing of critical needs, and opportunities for capital investments.

Land Reuse. Phase 1 includes projects to acquire 1800 Jerrold and 1801 Jerrold, located adjacent to the Southeast Treatment Plant, to serve a variety of functions in support of projects. Over the next 10 years, multiple construction projects have been planned at the Southeast Treatment Plant to upgrade and/or replace aging infrastructure. Each of these potential projects will require laydown, trailers and staging areas, as well as secured space for physical storage of equipment. 1800 Jerrold is a 6.04 acre site which is presently occupied by another city department under the Office of Contract Administration and used as a central shop. 1801 Jerrold, a 1.54 acre site, is under the jurisdiction of the Department of Public Works and is presently used as a dispatch yard for street repair. It was formerly an asphalt plant for the City. Subsequent to the relocation of current occupants, the properties will be acquired and the sites cleared and remediated for other potential uses to support the Southeast Treatment Plant and SSIP. Following the completion of geotechnical and environmental investigation, plans for demolition, environmental remediation and reuse will be developed.

As of April 2018, only Phase 1 planning, design and construction projects for Treatment Plants, Collection System and Land Reuse have been approved for implementation. Future phases of the SSIP will include projects in all three subprograms. The majority of the work in Phase 1 is for planning, design and construction of improvements at the Treatment Plants. See Table 10 – Sewer System Improvement Program (April 2018 Approved SSIP).

Program Budget

The Commission has authorized SFPUC staff to proceed with planning and developing projects for Phase 1 of the SSIP. To date, the Board of Supervisors has appropriated approximately \$1.885 billion of the Commission-approved \$2.979 billion budget for Phase 1 projects. Subject to Commission and Board of Supervisors consideration of project environmental review and actions to approve project budgets, construction of Phase 1 projects and implementation of Phases 2 and 3 of the SSIP would occur over a 20-year period. The following table summarizes the program budget pursuant to the April 2018 Revised Baseline SSIP.

TABLE 10
SEWER SYSTEM IMPROVEMENT PROGRAM
(APRIL 2018 REVISED BASELINE SSIP)⁽¹⁾
(MILLIONS)

Subprograms	Phase 1	Phase 2	Phase 3	Total Project Cost Estimate
Treatment Plants	\$2,251	\$1,097	\$398	\$3,746
Collection System	505	1,891	485	2,881
Land Reuse	98	0	0	98
Program Management	125	152	43	320
Total SSIP	\$2,979	\$3,140	\$926	\$7,045

⁽¹⁾ The Commission approved the April 2018 SSIP Re-Baseline on April 24, 2018.

Source: SFPUC, Wastewater Enterprise.

Due to the size of the overall program, a phased approach was developed to simplify implementation of the SSIP projects. This was done to manage rate impacts, consider construction sequencing impacts, and maintain existing operations and permit compliance. Each of the projects in the SSIP contributes to the wastewater system meeting the Commission-endorsed goals and levels of service. Phase 1 projects focus on ensuring regulatory compliance, enhancing process reliability and redundancy, improving plant odor control, and replacing antiquated biosolids and headworks facilities with state of the art technology. As such, Phase 1 focuses on treatment plant improvements, while Phase 2 emphasizes collection system improvements, and Phase 3 primarily focuses on improvements resulting from condition assessment investigations.

Program Schedule

According to the April 2018 SSIP Re-Baseline, the SSIP Phase 1 completion date is October 2026. As of July 1, 2018, approximately 22% of Phase 1 SSIP projects has been completed.

Management Approach

The development and implementation of the projects in the capital program, including SSIP projects, are led by SFPUC staff, with oversight and ultimate responsibility by the General Manager, Assistant General Manager of the Wastewater Enterprise, and Assistant General Manager of the Infrastructure Division.

Consultants are employed to support a number of programmatic functions, such as strategic program development, risk assessment and mitigation, program controls, various independent technical reviews, construction planning and management, communications 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.

Potential Changes to SSIP Projects

The majority of SSIP Phase 1 projects will be moving into the construction phase in 2018 and 2019, uncertainties exist that may result in changes to the scope and phasing of the projects, changes to the project budgets, and delays and cost increases. These factors include, without limitation, the following:

- market conditions and the bidding environment for construction costs, which could worsen over the 20-year life of the program;
- market conditions for financing the various phases of the SSIP, which could worsen over the 20-year life of the program;
- changes in the legal and regulatory requirements affecting the Wastewater Enterprise and the SSIP (see “REGULATORY MATTERS”);
- the discovery of unforeseen underground/geotechnical conditions, particularly for projects with tunneling activities and extensive earthwork;
- the discovery of unforeseen site conditions associated with existing infrastructure; many of the SSIP projects involve upgrades to existing structures and facilities that were built a very long time ago and accurate as-built records are not always available;
- the discovery of unforeseen site conditions associated with utility conflicts;
- unexpected failure of aging infrastructure or major equipment that warrant expedited repair or replacement;
- unexpected environmental discoveries that may impact construction activities; those may include the discovery of protected species, archaeological artifacts, contaminated soil or hazardous material at project sites;
- contractor claims, contractor non-performance, failure of contractors to execute within contract price, or failure of contractors to meet schedule terms;
- errors or omissions in contract documents (drawings and specifications) that may result in change orders;
- equipment and material vendors’ lack of compliance with quality and schedule requirements;
- inclement weather affecting contractor performance and timeliness of completion;
- labor issues involving work stoppages or slowdowns;
- the occurrence of a major seismic or other natural or man-made catastrophic event; or
- unforeseen public opposition to projects or elements of projects.

See “RISK FACTORS.”

FINANCING PLAN FOR WASTEWATER ENTERPRISE CAPITAL PROGRAM

Long Term Financing of Capital Program

Pursuant to the Wastewater Enterprise's 10-Year Financial Plan for Fiscal Years 2018-19 to 2027-28, which is based on the 10-Year Capital Plan for that period, and which was adopted by the SFPUC Commission in February 2018, it is projected that long-term debt financing, including the 2018 Series ABC Bonds, will fund approximately \$4.323 billion of the 10-Year Capital Plan. Revenue (pay-as-you-go) funding is projected to provide approximately \$1.246 billion of funds and capacity fees is projected to provide approximately \$46.5 million of the remaining portion of the 10-Year Capital Plan. Long-term debt financing is expected to be comprised primarily of the 2018 Series ABC Bonds, Additional Bonds and Parity State Loans. However, although not currently reflected in the 10-Year Financial Plan for Fiscal Years 2018-19 to 2027-28, a portion of the 10-Year Capital Plan may instead be funded by the WIFIA Loan. See "OBLIGATIONS PAYABLE FROM NET REVENUES—Parity Loans—Water Infrastructure Finance and Innovation Act Loan Program."

Interim Funding Program Facilities

The SFPUC utilizes the Interim Funding Program to meet the expenditure and encumbrance needs of capital projects on an interim basis through design and into the early project construction phase. The Interim Funding Program is authorized for the Wastewater Enterprise in the amount of \$750 million. Of this amount, \$675 million is authorized for the SFPUC to issue Commercial Paper Notes and the remaining \$75 million is in the form of a bank revolving credit agreement, which permits the SFPUC to make draws directly on the bank, with the SFPUC's payment obligation evidenced by the Revolving Notes.

Interim funding program obligations are then refunded and consolidated into either long-term revenue bond issues, a Parity State Loan when the outstanding and encumbered amount of the interim funding obligations 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.

As of July 1, 2018, the SFPUC had approximately \$263 million principal amount of Commercial Paper Notes outstanding and no Revolving Notes outstanding. Approximately \$25 million principal amount of the outstanding Commercial Paper Notes will be refunded with proceeds of the 2018 Series A Bonds on or about August 10, 2018. The SFPUC anticipates issuing additional Commercial Paper Notes and making draws directly on the U.S. Bank National Association facility to provide interim financing for Wastewater Enterprise capital projects. See "OBLIGATIONS PAYABLE FROM NET REVENUES—Subordinate Debt and Interim Funding Program."

The WIFIA Loan Agreement is expected to permit the SFPUC to finance a portion of the Biosolids Digester Facilities Project on an interim basis with short-term indebtedness to be repaid from the proceeds of the WIFIA Loan. The SFPUC may issue, from time to time, BANs to provide such interim funding. Such BANs may be payable from and secured by a pledge of Net Revenues on a parity with the Bonds. See "OBLIGATIONS PAYABLE FROM NET REVENUES—Parity Loans—Water Infrastructure Finance and Innovation Act Loan Program."

Sources and Uses of Funding the Capital Program

The table below sets forth the projected sources and uses of funds for the Wastewater Enterprise's capital program, including the SSIP. Non-SSIP capital program categories include Renewal and Replacement projects, Wastewater Facilities and Infrastructure projects, and Treasure Island projects. The projected repayment of principal and interest on these future debt financings has been incorporated into the SFPUC's approved rates through Fiscal Year 2017-18, as well as projected rates for the remaining projection period set forth in the 10-Year Financial Plan for Fiscal Years 2018-19 to 2027-28.

The SFPUC has approved a four-year retail sewer rate package beginning in Fiscal Year 2018-19, with rates increasing by approximately 7.7% during each of the four years. In addition, the SFPUC projects that retail sewer rates will increase annually by an average of approximately 8.0% to 10.0% from Fiscal Year 2022-23 to

Fiscal Year 2027-28. Any future rate increases are subject to future Commission approval (subject to the Board of Supervisor’s ability to reject rate increases). See “FINANCIAL OPERATIONS—Wastewater Enterprise Rates and Charges.”

TABLE 11
WASTEWATER ENTERPRISE CAPITAL PROGRAM
FINANCING PLAN FOR FISCAL YEARS 2017-18 TO 2022-23
(IN THOUSANDS)⁽¹⁾

	<u>2017-18⁽²⁾</u>	<u>2018-19⁽²⁾</u>	<u>2019-20⁽²⁾</u>	<u>2020-21</u>	<u>2021-22</u>	<u>2022-23</u>
USES OF FUNDS						
SSIP	\$670,560	\$433,032	\$295,440	\$892,254	\$806,531	\$696,593
Renewal and Replacement Wastewater Facilities & Infrastructure	100,735	112,765	117,479	122,394	116,097	121,825
Treasure Island	19,000	80,206	24,979	18,543	97,706	16,524
Total Uses	<u>\$810,758</u>	<u>\$632,376</u>	<u>\$461,855</u>	<u>\$1,046,191</u>	<u>\$1,020,334</u>	<u>\$834,842</u>
SOURCES OF FUNDS						
Revenue Bonds / Parity State Loans ⁽³⁾	\$763,258	\$519,611	\$344,376	\$923,797	\$904,237	\$713,116
Wastewater Revenues	45,000	106,765	112,979	117,894	111,597	117,326
Capacity Charge Revenues	2,500	6,000	4,500	4,500	4,500	4,500
Total Sources	<u>\$810,758</u>	<u>\$632,376</u>	<u>\$461,855</u>	<u>\$1,046,191</u>	<u>\$1,020,334</u>	<u>\$834,942</u>

⁽¹⁾ Amounts set forth are projections. Actual results may differ materially from these projections. See “FORWARD-LOOKING STATEMENTS” above.

⁽²⁾ Budgeted.

⁽³⁾ Does not reflect any BANs or the WIFIA Bond.

Source: SFPUC, Financial Services.

FINANCIAL OPERATIONS

General

The SFPUC is a department of the City and, as such, the financial operations of the SFPUC’s three enterprises are included in the Comprehensive Annual Financial Report of the City and shown as enterprise funds. *The City’s Comprehensive Annual Financial Report is not incorporated by reference herein.*

The following information is provided with respect to the Wastewater 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 Wastewater Enterprise are organized on the basis of a proprietary fund type, specifically an enterprise fund. The financial activities of the Wastewater 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 SFPUC 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 which prepares 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) 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.

CSA published a performance audit of the Wastewater Enterprise in June 2017. The report focused on workorder processes, premium pay, overtime and sick leave. To date, the SFPUC has implemented half of all the report’s recommendations and is scheduled to implement the remaining recommendations in 2018.

Financial Management Policies. To support sound financial management practices during periods of instability and to ensure organizational accountability and disciplined decision making, and to maintain the highest practical credit ratings, the SFPUC conducted an extensive peer review study to compare the financial policies of other United States municipal utilities, analyze rating agency evaluations of financial policies and recommend changes to the SFPUC’s existing financial policies. Based on this study, the Commission adopted in February and March 2017 a Debt Service Coverage Policy, a Capital Financing Policy and a Fund Balance Reserve Policy. Such new policies replaced the SFPUC’s existing Fund Balance Reserve Policy. The Commission also revised its Debt Management Policies and Procedures in August 2017. See “—Financial Management Policies.” In addition, the Commission adopted a Ratepayer Assurance Policy to address the prudent use of ratepayer funds and the establishment of rates and charges and to ensure process transparency.

Financial and Procurement System. The City implemented a new financial and procurement system in July 2017. Trained City staff have used the new system through all of Fiscal Year 2017-18. The new system is being used to report accounting, procurement and financial information for Fiscal Year 2017-18 and thereafter.

Wastewater Enterprise Rates and Charges

General. Sewer service charges are the primary funding source for the payment of costs associated with the Wastewater Enterprise’s sanitary wastewater and stormwater collection, treatment and disposal services. Pursuant to the Charter, an independent consultant prepares an analysis of projected revenues and revenue requirements of the Wastewater Enterprise at least once every five years. Based on this analysis, the SFPUC sets rates projected to be sufficient to fund the proposed budget, to maintain an adequate operating reserve and to comply with Indenture requirements. In addition to meeting the SFPUC’s capital financing, debt service coverage and reserve policy minimums, the rates must also comply with regulations or policies promulgated by the EPA, the State Water Resources Control Board and the Board of Supervisors and with the requirements of the City’s Charter and the State Constitution; however, the SFPUC’s sewer service rates are not subject to any approval proceedings by the California Public Utilities Commission or any other State or federal agencies. See “CONSTITUTIONAL, STATUTORY AND CHARTER LIMITATIONS—State Law Limitations.”

Federal and State Requirements. Under federal clean water laws and regulations, entities accepting federal grant funds and loans (such as the SFPUC) must comply with certain requirements related to the sufficiency of revenues and system operations, maintenance and replacement. Federal and state requirements related to grant and loan funding are administered and enforced by the State Water Resources Control Board. See “REGULATORY MATTERS” for a more detailed discussion of State and Federal regulations affecting the Wastewater Enterprise.

Summary of Charter Rate-Setting Requirements. Pursuant to certain provisions of Proposition E, which became effective with respect to the Wastewater Enterprise on January 3, 2003, the Charter was amended to authorize the Commission to set rates, fees and other charges in connection with providing Wastewater Enterprise services. These rate changes are subject to rejection, within 30 days of submission, by the Board of Supervisors. If the Board of Supervisors does not act within 30 days, the rates become effective without further action.

In setting Wastewater Enterprise rates, fees and charges, the Commission must:

- (a) Establish rates, fees and charges at levels sufficient (i) to improve or maintain financial condition and bond ratings at or above levels equivalent to highly rated utilities (see “RATINGS”), (ii) to meet requirements and covenants under all bond resolutions and indentures (including the Indenture) and (iii) to provide sufficient resources for the continued financial health (including appropriate reserves), operation, maintenance and repair, consistent with good utility practice;
- (b) Retain an independent rate consultant to conduct rate and cost of service studies at least every five years;
- (c) Set retail rates, fees and charges based on the cost of service;
- (d) Conduct all studies mandated by applicable State or Federal law to consider implementing connection fees servicing new development;
- (e) Conduct studies of rate-based conservation incentives and/or lifeline rates and similar rate structures to provide assistance to low income users, and to take the results of each study into account when establishing rates, fees and charges, in accordance with State and federal laws; and
- (f) Adopt annually a rolling five-year forecast of rates, fees and charges.

Rate Setting Process. The Wastewater Enterprise periodically adjusts rates based on a comprehensive cost of service analysis and the resulting revenue requirement analysis, as required by the Charter. The biannual budget submitted to the Commission, the Mayor and the Board of Supervisors for approval, along with the long-term projections in the 10-Year Financial Plan adopted by the Commission, are used as the basis for determining annual revenue requirements. The Wastewater Enterprise projects revenues under the existing schedule of rates for sufficiency. If additional revenues are required to meet budgetary sufficiency or if the cost structure of the Wastewater Enterprise has changed, recommended rate schedule increases are submitted to the Commission for its consideration. After receiving public comment, the Commission adopts a rate resolution and transmits its recommended rate schedules to the Board of Supervisors. Once submitted, the Board of Supervisors has authority under the Charter to vote to reject the proposed rate schedules within 30 days. If rejected, the existing rate schedules remain in effect until such time as a new rate schedule is resubmitted by the Commission and not rejected by the Board of Supervisors.

Whenever rates are revised, costs are allocated to pollutant parameters, volume, suspended solids, oil and grease, and chemical oxygen demand, and any costs are then allocated to each of the rate categories. See “—Wastewater Enterprise Rates and Charges—Rate Categories.”

As part of the annual 10-Year Financial Plan process, the Wastewater Enterprise develops a ten-year rate forecast using projected revenues under existing rates plus additional revenues from projected rate increases, as required, to meet the projected revenue requirements during the forecast period. This forecast is updated each year resulting in a “rolling” rate forecast that is intended to moderate the effects of any significant changes in revenue requirements in any year.

In addition to complying with the requirements of the Charter, the rate-setting process must comply with the requirements of the State Constitution. See “CONSTITUTIONAL, STATUTORY AND CHARTER LIMITATIONS—State Law Limitations.”

SFPUC Citizens Advisory Committee and Rate Fairness Board The Public Utilities Commission Citizens' Advisory Committee ("CAC"), established by a Charter amendment in 2002, provides recommendations to the SFPUC's General Manager and the Board of Supervisors regarding the SFPUC's long-term strategic, financial and capital improvement plans. The CAC is comprised of 17 appointees. Each member of the Board of Supervisors may appoint one member who must be a resident of his or her supervisory district. Candidates must demonstrate one or more of the following qualifications: represent a community, business, environmental, or environmental justice organization, or have demonstrated knowledge, skill or experience in a field related to public utilities, environmental justice or environmental science. Two additional members of the CAC are appointed by the President of the Board of Supervisors, one of whom represents a small business and the other of whom represents an environmental justice organization. Four members are appointed by the Mayor and must include one member who represents regional water customers of the SFPUC, one who represents a large City water user, one who has knowledge of engineering or financial management and one who represents a regional or statewide environmental organization.

Proposition E, approved by voters in 2002, directed the establishment of a Rate Fairness Board to advise the SFPUC on water, sewer and power rate matters. The Rate Fairness Board consists 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 City retail customers, consisting of one appointed by the Mayor and one by the Board of Supervisors; and two City retail business customers, consisting of a large business customer appointed by the Mayor and a small business customer appointed by the Board of Supervisors. Specific powers for the Rate Fairness Board include the authority to: (1) annually review the five-year rate forecasts produced by the SFPUC enterprises, including the Wastewater Enterprise; (2) hold one or more public hearings on annual rate recommendations before the SFPUC adopts rates; (3) provide a report and recommendations to the SFPUC on any rate proposal; and, (4) in connection with periodic rate studies, submit to the SFPUC rate policy recommendations for the Commission's consideration, including recommendations to reallocate costs among various retail utility customer classifications, subject to any outstanding bond requirements. The Rate Fairness Board is not authorized, however, to reject proposed rates approved by the Commission.

Currently Approved Four-Year Rate Schedule. In April 2018, the Commission approved four years of annual retail water and sewer service rate increases beginning July 1, 2018 and applicable to Fiscal Years 2018-19 through 2021-22. Separate rate schedules apply to single-family residential, multi-family residential, and non-residential customers. See "THE WASTEWATER ENTERPRISE—Customer Base." Under State law, all sewer rates reflect cost of service by customer class.

Prior to June 30, 2018, 100% of the Wastewater Enterprise's customer bills were calculated based on metered water volumes, with a per-customer "flow factor" adjustment to estimate the percentage of water that does not enter the system as sewage. Beginning July 1, 2018, in addition to the monthly discharge volume charge, a flat monthly service charge will be billed to all wastewater customers. Wastewater service charges recover a portion of fixed costs associated with customer service and billing, which are the same for all customers. See "—Residential Users and "—Non-Residential Users."

Residential Users. Residential users are charged a fixed monthly service charge and volumetric charges on the basis of discharge units. Monthly discharge units are determined for residential customer accounts by multiplying an account's total monthly water consumption by the "flow factor" applicable to such account, which calculation is designed to approximate that portion of the account's total water use returned to the sewer system as wastewater. For example, a customer using 10 units of water and having a flow factor of 90% would be billed for 9 discharge units. Each discharge unit represents 100 cubic feet of water discharged as approximated by this calculation. The standard flow factor for single-family residential accounts is 90%. The standard flow factor for multi-family residential accounts is 95%. All residential discharge is assumed to be of a standard strength. Multi-family residential water rates have a multiplier based on the number of dwelling units at the service address and sewer service charges are assessed on the basis of water use as billed by the Water Enterprise multiplied by a flow factor.

Prior to June 30, 2017, single and multi-family residential wastewater rates had two tiers. As of July 1, 2017, single and multi-family residential wastewater rates have a uniform, single rate for all discharge units.

TABLE 12
HISTORICAL SINGLE-FAMILY RESIDENTIAL SEWER RATES
FOR FISCAL YEARS 2010-11 TO 2017-18

Fiscal Year	Tier One⁽¹⁾	Additional Discharge Units⁽¹⁾	Estimated Average Monthly Bill
2010-11	\$6.91	\$9.21	\$42.83
2011-12	7.16	9.55	44.40
2012-13	7.52	10.03	46.63
2013-14	7.90	10.53	48.97
2014-15	9.06	11.23	44.89
2015-16	9.82	11.34	45.97
2016-17	10.84	11.66	50.24
2017-18	12.40	12.40	56.92

⁽¹⁾ Prior to July 1, 2014, the first 300 cubic feet of water consumption was billed at the Tier One rate and all additional discharge units was billed at the single-family residential wastewater rate per month. Between July 1, 2014 and June 30, 2016, the first 400 cubic feet of water consumption was billed at the Tier One rate and all additional discharge units was billed at the single-family residential wastewater rate per month. Effective July 1, 2017, single-family residential wastewater billing is based on a single volumetric charge and a monthly fixed charge. See Table 14 – Adopted Single-Family and Multi-Family Residential Sewer Rates for Fiscal Years 2018-19 to 2021-22.

Source: SFPUC, Financial Services.

TABLE 13
HISTORICAL MULTI-FAMILY RESIDENTIAL SEWER RATES
FOR FISCAL YEARS 2010-11 TO 2017-18

Fiscal Year	Tier One⁽¹⁾	Additional Discharge Units⁽¹⁾	Estimated Average Monthly Bill Per Dwelling Unit
2010-11	\$6.51	\$8.68	\$31.68
2011-12	7.49	9.99	36.46
2012-13	7.86	10.49	38.27
2013-14	8.25	11.01	40.16
2014-15	9.24	11.48	36.90
2015-16	9.95	11.51	37.91
2016-17	10.91	11.75	40.96
2017-18	12.40	12.40	45.88

⁽¹⁾ Prior to July 1, 2016, the first 300 cubic feet of water consumption was billed at the Tier One rate and all additional discharge units was billed at the multi-family residential wastewater rate per month. Effective July 1, 2017, multi-family residential wastewater billing is based on a single volumetric charge and a monthly fixed charge. See Table 14 – Adopted Single-Family and Multi-Family Residential Sewer Rates for Fiscal Years 2018-19 to 2021-22.

Source: SFPUC, Financial Services.

TABLE 14
ADOPTED SINGLE-FAMILY AND MULTI-FAMILY RESIDENTIAL SEWER RATES
FOR FISCAL YEARS 2018-19 TO 2021-22

Fiscal Year	Monthly Service Charge	All Discharge Units	Projected Average Monthly Bill (Single-Family)	Projected Average Monthly Bill Per Dwelling Unit ⁽¹⁾ (Multi-Family)
2018-19 ⁽²⁾	\$0.98	\$13.06	\$61.84	\$52.02
2019-20 ⁽²⁾	2.19	13.88	66.87	55.67
2020-21 ⁽²⁾	3.60	14.89	72.84	60.14
2021-22 ⁽²⁾	5.21	15.97	79.31	64.95

⁽¹⁾ The average water consumption for multi-family residential customers is assumed to be 1,250 cubic feet of water per month for 3 dwelling units.

⁽²⁾ Rates approved on April 10, 2018.

Source: SFPUC, Financial Services.

Non-Residential Users. Non-residential wastewater rates include a fixed monthly service charge and a uniform rate for volume plus per pound strength charges. Non-residential users are charged the cost for each parameter according to the schedule of rates in the table below. Customers whose parameter loadings are not based on periodic sampling are charged on the basis of standard parameter loadings established by the General Manager for each Standard Industrial Classification code in accordance with applicable state and federal laws and regulations.

TABLE 15
HISTORICAL AND ADOPTED NON-RESIDENTIAL DISCHARGE RATES
(PER DISCHARGE UNIT)

Fiscal Year	Volume charge (per 100 cubic feet)	Suspended solids (per pound)	Oil/Grease (per pound)	Chemical Oxygen Demand (per pound)
2010-11	\$6.5548	\$0.8819	\$1.1035	\$0.2156
2011-12	6.5548	0.8819	1.1035	0.2156
2012-13	6.5548	0.8819	1.1035	0.2156
2013-14	6.6203	0.8907	1.1145	0.2178
2014-15	6.1450	0.8280	0.8670	0.4400
2015-16	6.4530	0.8700	0.8670	0.4400
2016-17	6.9040	0.9310	0.9740	0.4940
2017-18	7.6640	1.0330	1.0820	0.5480
2018-19 ⁽¹⁾	7.8400	1.3200	1.3310	0.5190
2019-20 ⁽¹⁾	8.2900	1.4120	1.4240	0.5550
2020-21 ⁽¹⁾	8.8600	1.5250	1.5380	0.5990
2021-22 ⁽¹⁾	9.4600	1.6470	1.6610	0.6470

⁽¹⁾ Rates approved on April 10, 2018.

Source: SFPUC, Financial Services.

Appeals. While most customers are billed for sewer usage on the basis of standard flow factor assumptions, customers may appeal this determination. For example, it is assumed that 90% of the volume of water measured at the customer meter for a single-family residential user is discharged to the sewer system as wastewater requiring treatment. Customers who can demonstrate higher rates of consumptive use than that reflected in the applicable flow factor, such as irrigation, can apply to the Residential Users Appeals Board for a lower flow factor (i.e., percentage of metered water returned to the sewage system).

Revenues

Sewer Service Charges. Sewer service charges are imposed based on discharge volume estimates and, in the case of non-residential users, suspended solids, oil and grease and chemical oxygen demand. See “WASTEWATER ENTERPRISE—Rates and Charges.” The following tables show billed discharge by category and annual sewer billings by customer class for Fiscal Years 2012-13 to 2016-17.

**TABLE 16
ANNUAL BILLED DISCHARGE BY CATEGORY**

Fiscal Year	Volume (Hundred Cubic Feet)	Suspended Solids (Thousand Pounds)	Oil and Grease (Thousand Pounds)	Chemical Oxygen Demand (Thousand Pounds)
2012-13	26,535,868	46,183	14,070	113,223
2013-14	26,796,985	46,638	14,209	114,337
2014-15	24,667,341	42,931	13,079	105,250
2015-16	23,818,801	41,454	12,629	101,630
2016-17	23,819,100	41,455	12,630	101,631

Source: SFPUC, Financial Services.

**TABLE 17
ANNUAL SEWER BILLINGS BY USER TYPE
FOR FISCAL YEARS 2012-13 to 2016-17
(IN THOUSANDS)**

User Type	2012-13	2013-14	2014-15	2015-16	2016-17
Multi-Family Residential	\$ 95,607	\$ 99,603	\$100,178	\$101,730	\$110,829
Single-Family Residential	58,683	64,377	61,048	61,177	66,661
<i>Subtotal Residential</i>	<u>\$154,290</u>	<u>\$163,980</u>	<u>\$161,226</u>	<u>\$162,907</u>	<u>\$177,490</u>
Commercial	\$ 74,978	\$ 76,740	\$ 76,042	\$77,387	\$80,968
Municipal Customers	6,520	6,205	5,534	5,965	7,586
Suburban	2	3	2	2	2
Total	\$235,790	\$246,928	\$242,804	\$246,261	\$266,046

Source: SFPUC, Financial Services.

Sewer Account Billing and Delinquencies. Sewer service charges are billed on a combined water and sewer utility bill on either a monthly or bi-monthly basis. Payments are due 15 days after the bill date. If payments are not made, late payment charges are assessed 15 days from the due date or 30 days from the bill date. Accounts are considered delinquent 15 days after a second unpaid bill. Water service may be disconnected or a lien may be assessed against the property for non-payment of water and sewer services.

Current accounts receivables are shown in the following table. These amounts exclude receivables from municipal customers.

TABLE 18
ACCOUNTS RECEIVABLES AGING REPORT
AS OF JUNE 30, 2017

Period	Amount	Percent of Total	Percent of Total Fiscal Year 2016-17 Revenues⁽¹⁾
Current	\$26,386,224	79.2%	9.9%
31—60 Days	1,333,830	4.0	0.5
61—90 Days	512,083	1.5	0.2
Over 90 Days	5,103,504	15.3	1.9%
Total	\$33,335,641	100.0%	
Credit Balances	\$ (733,295)		
Total Aged Receivables	\$32,602,346		
Less Allowance For Doubtful Accounts	(2,853,698)		
Accounts Receivable, Net of Allowance	\$29,748,648		

⁽¹⁾ Revenues consists of sewer service charges only.
Source: SFPUC, Financial Services.

Once an account is delinquent, a series of notices are sent to the customer and if payment is still not made, action to shut-off the water supply is initiated. However, if the delinquent account is in the name of the property owner and payment is still not made despite such notices, the customer will receive a lien warning notice. After a lien notice is delivered, a lien hearing is held and, if the bill still remains outstanding, the lien is recorded and can only be removed upon full payment of all unpaid charges, plus administrative fees and interest. Liens not paid during the Fiscal Year in which they are recorded are transferred to the City Tax Collector's Office, Bureau of Delinquent Revenues for collection as a lien against the property. Accounts for which property transfers occurred prior to recording the lien and closed accounts with amounts less than \$25 are normally written off as uncollectible.

As a result of these collections processes, the SFPUC's annual write-offs for wastewater accounts remain relatively low. The following table shows a five-year history of write-offs for uncollectible accounts, excluding municipal customers:

TABLE 19
WRITE-OFFS FOR UNCOLLECTIBLE ACCOUNTS
FISCAL YEARS 2012-13 TO 2016-17

Fiscal Year	Amount
2012-13	\$ 1,965
2013-14 ⁽¹⁾	771,446
2014-15 ⁽¹⁾	890,010
2015-16	10,390
2016-17	43,552

⁽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 uncollectible by the Bureau of Delinquent Revenues in Fiscal Years 2013-14 and 2014-15. The Bureau of Delinquent Revenues began reporting such uncollectible amounts to the SFPUC on an annual basis following Fiscal Year 2014-15.

Source: SFPUC, Financial Services.

Capacity Charges. Effective July 1, 2005, any customer requesting a new connection to the sewer system or requiring additional collection or treatment capacity as a result of any addition, improvement, modification or change in use of an existing connection as determined solely by the General Manager must pay a capacity charge for the new or additional capacity required to serve the customer. The capacity charge is site specific and may not be sold, traded or conveyed in a manner to another site or customer. The capacity charge does not convey or imply ownership in or of any facilities of the Wastewater Enterprise.

Effective July 1, 2014, capacity charges are assessed based on water meter equivalents, which provide a direct estimate of wastewater flow to the system, and Standard Industrial Classification code, which accounts for wastewater strength. For a single residential customer with a 5/8" water meter, the wastewater capacity charge fee for Fiscal Year 2018-19 is \$4,780. The capacity charge is adjusted on July 1st of each subsequent year by the annual change in the 20-City Average Construction Cost Index published by Engineering News Record Magazine.

Capacity charges have averaged approximately 2.2% of revenues over the past three years.

Operating and Maintenance Expenses

“Operating and Maintenance Expenses” cover the general operational expenses of the Wastewater Enterprise. These expenses include labor and employment benefits, contractual services, materials and supplies, depreciation, general and administrative, services from other departments and other miscellaneous costs. See “HISTORICAL OPERATING RESULTS” and “THE PUBLIC UTILITIES COMMISSION—Employee Relations.” Services from other departments include payment for services from other City departments, such as the City Attorney’s Office and the General Services Agency.

Allocation of Costs. Various common costs incurred by the SFPUC are allocated among the Wastewater Enterprise, the Water Enterprise and the Power Enterprise. The most recent cost allocation review was completed in January 2018. 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.

For Fiscal Year 2017-18, the SFPUC budgeted \$28.7 million in administrative costs to the Wastewater Enterprise, which is recorded as personal service expenses and also in other various operating expenses in the Wastewater Enterprise financial statements. For Fiscal Year 2016-17, the SFPUC allocated \$29.0 million in administrative costs to the Wastewater Enterprise.

Payments to/from the City. The SFPUC receives payments from other agencies of the City for their share of the proportionate cost of the service provided to them. These service deliveries are budgeted to generate approximately \$5.6 million in revenues for the Wastewater Enterprise for Fiscal Year 2017-18 and generated approximately \$5.1 million in revenues for Fiscal Year 2016-17. Over the past five years, these service deliveries generated revenues that have averaged approximately 3% of Wastewater Enterprise revenues.

A variety of City departments provide services such as engineering, purchasing, legal, data processing, telecommunications, and human resources to the Wastewater Enterprise and charge amounts designed to recover those costs. These charges are expected to total approximately \$34.4 million for Fiscal Year 2017-18 and totaled approximately \$33.8 million in Fiscal Year 2016-17.

On October 7, 2009, the City issued \$167.67 million in fixed-rate certificates of participation to fund the construction of the headquarters of the SFPUC at 525 Golden Gate Avenue in San Francisco. Pursuant to a Memorandum of Understanding between the City and the SFPUC, the SFPUC agreed to reimburse the City General Fund for all debt service in connection with this City financing. As of July 1, 2018, the principal amount outstanding of the 2009 Golden Gate COPs was \$149,385,000. 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 NET REVENUES—Other Obligations Payable from Net Revenues.”

Financial Management Policies

Debt Management Policies and Procedures. The SFPUC has established “Debt Management Policies and Procedures” for debt financing under its jurisdiction. The SFPUC has also established separate “SFPUC Bond Disclosure Policies and Procedures” which are appended to the “Debt Management Policies and Procedures.” These policies apply to all SFPUC enterprises, including the Wastewater Enterprise, and are intended to enable the SFPUC to effectively manage its debt issuance and administration practices and comply with all debt issuance and administration rules and regulations. Pursuant to the Debt Management Policies and Procedures, no more than 25% of each SFPUC enterprise’s outstanding debt shall be variable rate obligations. The “Debt Management Policies and Procedures” are reviewed bi-annually and revised, as necessary, with Commission approval. The most recent revisions were approved on August 8, 2017.

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, makes no representation that these policies will be followed by the SFPUC.

Debt Service Coverage Policy. The Commission adopted a debt service coverage policy (the “**Debt Service Coverage Policy**”) on March 28, 2017, which applies to all SFPUC enterprises, including the Wastewater Enterprise. Pursuant to the Debt Service Coverage Policy, to ensure that the SFPUC maintains access to low-cost capital and retains financial flexibility for contingencies, the SFPUC will aim to adopt budgets, rates and financial plans that generate revenues such that debt service coverage on an Indenture basis (including certain available fund balances) will be at least 1.35 times and debt service coverage on a current basis will be at least 1.10 times.

The Indenture includes a rate covenant of 1.25 times coverage (including certain available fund balances). See “SECURITY FOR THE BONDS—Rate Covenants—Debt Service Coverage.”

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

Capital Financing Policy. The Commission adopted a capital financing policy (the “**Capital Financing Policy**”) on March 28, 2017, which applies to all SFPUC enterprises, including the Wastewater Enterprise. The SFPUC relies mainly on current revenue and debt financing to pay for capital assets or improvements. According to the Capital Financing Policy, the appropriate mix of current revenues versus debt financing depends, in part, on the capital investment lifecycle of the Wastewater Enterprise. Accordingly, the SFPUC has determined that over the 10-year financial planning horizon, the SFPUC will aim to pay for a minimum ranging between 15% and 30% of the Wastewater Enterprise’s capital budget from current revenues.

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

Fund Balance Reserve Policy. The Commission adopted a fund balance reserve policy (the “**Fund Balance Reserve Policy**”) on February 28, 2017, which applies to all SFPUC enterprises, including the Wastewater Enterprise. Pursuant to the Fund Balance Reserve Policy, for the time period covered in the 10-Year Financial Plan, the SFPUC will aim to propose operating and capital budgets and rates for adoption such that the Fund Balance Reserve totals a minimum of 90 days or 25% of operations and maintenance expenses (including programmatic projects and excluding debt service and revenue-funded capital) throughout the forecast period. Amounts in excess of such minimum will be considered for contingencies and rate stabilization.

The SFPUC makes no representation that this policy will not be revised or amended and, except to the extent required for compliance with the terms of the Indenture, makes no representation that this policy 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 May 31, 2018 to be 432 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 May 31, 2018. The Wastewater Enterprise’s pooled deposits and investments accounted for approximately \$208.8 million, or approximately 1.9%, of such amounts.

TABLE 20
CITY POOLED INVESTMENT FUND
(AS OF MAY 31, 2018)

<u>Investment</u>	<u>Book Value (millions)</u>
U.S. Treasuries	\$1,060.6
Federal Agencies	4,887.3
State & Local Government Agency Obligations	197.7
Public Time Deposits	24.7
Negotiable CDs	2,247.8
Commercial Paper	945.7
Medium Term Notes	88.8
Money Market Funds	862.3
Supranationals	689.3
Total	<u>\$11,004.2</u>

Source: Office of the Treasurer and 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 Wastewater 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 and Contractual Risk Transfer
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
Crime	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 for the Power Enterprise and the CleanPowerSF Program and plans are in place to continue implementation across the remainder of the SFPUC as needed.

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 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 Wastewater Enterprise for Fiscal Years 2015-16 and 2016-17, prepared by the SFPUC and audited by KPMG LLP, independent certified public accountants, are attached as APPENDIX B 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 B—SFPUC WASTEWATER ENTERPRISE FINANCIAL STATEMENTS.”

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TABLE 21
HISTORICAL REVENUE, OPERATING & MAINTENANCE EXPENSE
AND DEBT SERVICE COVERAGE FOR FISCAL YEARS ENDED JUNE 30
(IN THOUSANDS)⁽¹⁾

	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>
OPERATING & INVESTMENT REVENUE					
Sewer Service Charges ⁽²⁾	\$235,479	\$244,705	\$244,604	\$249,203	\$267,601
Other Revenues	5,738	5,869	5,041	5,328	5,395
Investing Activities	524	2,400	1,207	1,185	2,327
Capacity Charges ⁽³⁾	11,337	9,523	6,357	7,244	4,345
Total Revenues	<u>\$253,078</u>	<u>\$262,497</u>	<u>\$257,209</u>	<u>\$262,960</u>	<u>\$279,668</u>
OPERATING & MAINTENANCE EXPENSE					
Salary and Fringe Benefits ⁽⁴⁾	\$ 84,155	\$ 85,114	\$ 76,396	\$ 79,088	\$115,288
Contractual Services	13,418	14,314	13,841	15,069	13,825
Materials and Supplies	10,481	10,830	9,815	10,192	8,736
Depreciation	46,347	48,402	50,254	50,799	55,441
Services of Other Departments	34,141	35,274	36,212	36,157	36,832
General and Administrative ⁽⁵⁾	3,760	396	10,232	5,323	406
Other ⁽⁶⁾	15,958	22,010	19,735	24,925	13,692
Total Operating Expenses	<u>\$208,260</u>	<u>\$216,340</u>	<u>\$216,485</u>	<u>\$221,553</u>	<u>\$244,220</u>
OPERATING AND INVESTMENT INCOME	<u>\$ 44,818</u>	<u>\$ 46,157</u>	<u>\$ 40,724</u>	<u>\$ 41,407</u>	<u>\$ 35,448</u>
COVERAGE CALCULATION⁽⁷⁾					
Operating and Investment Income	\$ 44,818	\$ 46,157	\$ 40,724	\$41,407	\$ 35,448
+ Adjustment to Investing Activities ⁽⁸⁾	337	(601)	127	(12)	251
+ Depreciation & Non-Cash Expenses	52,108	50,717	51,773	56,285	57,998
+ Changes in Working Capital ⁽⁹⁾	(13,795)	12,908	3,923	2,404	26,292
+ SRF Loan Payments	(9,421)	0	0	0	0
= "Net Revenues"	<u>\$ 74,047</u>	<u>\$109,181</u>	<u>\$ 96,547</u>	<u>\$100,084</u>	<u>\$119,989</u>
+ Other Available Funds ⁽¹⁰⁾	80,094	109,807	134,413	139,847	131,554
Funds Available for Bond Debt Service	<u>\$154,141</u>	<u>\$218,988</u>	<u>\$230,960</u>	<u>\$239,931</u>	<u>\$251,543</u>
Bond Debt Service ⁽¹⁴⁾	<u>\$ 37,921</u>	<u>\$ 48,932</u>	<u>\$ 48,878</u>	<u>\$ 60,022</u>	<u>\$ 48,769</u>
DEBT SERVICE COVERAGE⁽¹¹⁾⁽¹⁴⁾					
Indenture Basis ⁽¹²⁾	4.06x	4.48x	4.73x	4.00x	5.16x
Current Basis ⁽¹³⁾	1.95x	2.23x	1.98x	1.67x	2.46x

(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 B—SFPUC WASTEWATER 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 Assets. Examples of excluded elements are Grant Revenue, Interest Expense and Gains from Sale of Assets. Totals may not add due to independent rounding.

(2) Slight decrease in revenues resulted from rate increase in Fiscal Year 2014-15 offset by volume decrease due to drought-related conservation.

(3) Decrease in Fiscal Year 2016-17 due to reduction in permits issued.

(4) Increase in Fiscal Year 2016-17 mainly due to increase in pension accrual.

(5) Decrease in Fiscal Year 2016-17 is due to lower judgments and claims liability based on actuarial estimate.

(6) Decrease in Fiscal Year 2016-17 primarily due to increase in capitalization of expenses.

(7) The Indenture defines "Net Revenues" on a cash basis.

(8) Represents adjustments to show investing activities on a cash basis.

(9) Fiscal Year 2016-17 increase primarily driven by adjustments relating to pension obligations. See "APPENDIX B—SFPUC WASTEWATER ENTERPRISE FINANCIAL STATEMENTS."

- (10) Per the Indenture, includes any fund balances of the SFPUC or the Wastewater Enterprise available for payment of debt service and not budgeted to be expended during the 12 months following a calculation date, excluding monies held in any Reserve Account established under the Indenture.
- (11) Coverage does not include debt service on subordinate obligations, including the Wastewater Enterprise's share of lease payments associated with the 2009 Golden Gate COPs and debt service on Commercial Paper Notes.
- (12) Calculated as the sum of Net Revenues plus "Other Available Funds," divided by debt service on Bonds and Parity State Loans. The Indenture includes a rate covenant of 1.25x "Debt Service Coverage." See "SECURITY FOR THE BONDS—Rate Covenants—Debt Service Coverage."
- (13) Unaudited. Per the Indenture, calculated as Net Revenues divided by debt service on Bonds and SRF Loans.
- (14) Bond Debt Service and Debt Service Coverage calculated per Indenture are net of capitalized interest; these differ from amounts presented in previous Annual Reports (as defined herein) and SFPUC Comprehensive Annual Financial Reports.

Source: SFPUC, Financial Services.

PROJECTED OPERATING RESULTS

The following table presents projected operating results for the Wastewater Enterprise. These projections are based on an analysis of historical trends, adjusted where appropriate for known or anticipated changes in operations. The projections are also based on the assumption that all rate increases necessary to finance future expenses, including the SSIP and other capital programs, 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 BONDS FOR THE CAPITAL PROGRAM, INCLUDING SSIP. 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 22
PROJECTED REVENUE, OPERATING AND MAINTENANCE EXPENSE
AND DEBT SERVICE COVERAGE FOR FISCAL YEAR ENDING JUNE 30
(IN THOUSANDS)⁽¹⁾

	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>
REVENUE						
Sewer Service ⁽²⁾	\$305,967	\$327,645	\$350,401	\$378,579	\$408,687	\$445,462
Capacity Charges	6,430	6,000	4,500	4,500	4,500	4,500
Interest Income ⁽³⁾	1,480	1,822	1,988	3,016	3,649	4,138
Other Miscellaneous Income	3,902	3,751	3,712	3,753	3,808	3,870
Total Revenues	<u>\$317,779</u>	<u>\$339,219</u>	<u>\$360,602</u>	<u>\$389,848</u>	<u>\$420,644</u>	<u>\$457,970</u>
OPERATION AND MAINTENANCE COSTS OF THE WASTEWATER ENTERPRISE⁽⁴⁾	<u>\$165,939</u>	<u>\$176,698</u>	<u>\$181,554</u>	<u>\$186,683</u>	<u>\$191,999</u>	<u>\$197,474</u>
NET REVENUES⁽⁵⁾	<u>\$151,840</u>	<u>\$162,521</u>	<u>\$179,048</u>	<u>\$203,166</u>	<u>\$228,645</u>	<u>\$260,496</u>
plus OTHER AVAILABLE FUNDS⁽⁶⁾	<u>\$144,716</u>	<u>\$198,814</u>	<u>\$189,136</u>	<u>\$188,530</u>	<u>\$189,508</u>	<u>\$214,418</u>
FUNDS AVAILABLE FOR DEBT SERVICE	<u>\$296,556</u>	<u>\$361,335</u>	<u>\$368,184</u>	<u>\$391,696</u>	<u>\$417,703</u>	<u>\$474,913</u>
DEBT SERVICE⁽⁷⁾	\$47,003	\$59,950	\$62,690	\$80,759	\$87,704	\$111,534
DEBT SERVICE COVERAGE⁽⁸⁾						
Indenture Basis ⁽⁹⁾	6.31x	6.03x	5.87x	4.85x	4.76x	4.26x
Current Basis ⁽¹⁰⁾	3.23x	2.71x	2.86x	2.52x	2.61x	2.34x

(1) Amounts set forth in the table are projections. Actual results may differ materially from these projections. See “FORWARD-LOOKING STATEMENTS” and “—Assumptions Used in Projections.” Totals may not add due to independent rounding.

(2) Reflects adopted annual rate increases of 7% for Fiscal Year 2018-19 and Fiscal Year 2019-20, 8% for Fiscal Year 2020-21 and Fiscal Year 2021-22 and 9% for Fiscal Year 2022-23. See “—Assumptions Used in Projections.”

(3) Assumes a range of 1.24% to 1.93% earnings rate on invested cash balance over projection period.

(4) Operating and Maintenance Expenses net of depreciation and other non-cash items per Indenture.

(5) Represents Net Revenues under the Indenture.

(6) Per the Indenture, includes any fund balances of the SFPUC or the Wastewater Enterprise available for payment of debt service and not budgeted to be expended during the 12 months following a calculation date, excluding monies held in any Reserve Account established under the Indenture.

(7) Consists of projected debt service on Outstanding Bonds, the 2018 Series ABC Bonds, Additional Bonds and Parity State Loans, net of capitalized interest and anticipated BABs Subsidy Payments. BABs Subsidy Payments expected to be received assume the continuation of 6.6% sequestration rate effective October 1, 2017. See “SECURITY FOR THE BONDS—Rate Covenants—Debt Service Coverage.” Future debt issuances to fund renewal and replacement and SSIP capital projects are expected to total approximately \$2.5 billion over the projection period. Standard assumptions include 30-year term, 5% interest rate, and 30 months of capitalized interest, with the exception of the 2018 Series ABC Bonds, which assumes 24 months of capitalized interest. The actual size and timing of issuances will depend on market conditions and other factors as determined by the SFPUC. Does not include debt service on any BANs or the WIFIA Bond.

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

(9) Calculated as the sum of Net Revenues plus “Other Available Funds,” divided by debt service on Bonds and Parity State Loans. The Indenture includes a rate covenant of 1.25x “Debt Service Coverage.” See “SECURITY FOR THE BONDS—Rate Covenants—Debt Service Coverage.”

(10) Calculated as Net Revenues divided by debt service on Bonds and Parity State Loans.

Source: SFPUC, Financial Services.

Assumptions Used in Projections

In the preparation of the projections set forth in Table 22, 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 auditors.

The assumptions used in the table include the following:

Projected Revenue and Rate Increases. Projected revenues are based on projected wastewater service sales and the schedules of rates to be effective in each year. In April 2018, the SFPUC adopted schedules of rates to be effective in Fiscal Years 2018-19 through 2021-22. The adopted schedules provide for rate increases of 7% in Fiscal Year 2018-19 and Fiscal Year 2019-20 and 8% in Fiscal Year 2020-21 and Fiscal Year 2021-22. Projected revenues assume a rate increase of 9% in Fiscal Year 2022-23.

Projected Operation and Maintenance Costs of the Wastewater Enterprise. Operation and Maintenance Costs of the Wastewater Enterprise are projected to grow by 5.3% for Fiscal Year 2017-18, by 6.5% for Fiscal Year 2018-19, by 2.7% for Fiscal Year 2019-20, by 2.8% for Fiscal Years 2020-21 and 2021-22, and by 2.9% for Fiscal Year 2022-23.

Projected Debt Service. Projected debt service reflects the scheduled debt service on the 2010 Series AB Bonds, the 2013 Series AB Bonds and the 2016 Series AB Bonds (net of capitalized interest and expected Build America Bonds interest subsidy payments relating to 2010 Series B Bonds), the estimated debt service on the 2018 Series ABC Bonds, Additional Bonds and four Parity State Loans. Projected debt service does not reflect debt service on any BANs or the WIFIA Bond. Interest on WIFIA Loan capitalized but not payable within projections period.

Following the issuance of the 2018 Series ABC Bonds, the SFPUC anticipates that it will issue Additional Bonds in Fiscal Years 2019-20 to 2022-23 to fund approximately \$2.2 billion of SSIP and other Wastewater Enterprise capital program projects. The projected debt service for the 2018 Series ABC Bonds and the Additional Bonds assumes a borrowing rate of 5%, no reserve account and up to 30 months of capitalized interest. The actual issuance dates, borrowing rates and capitalized interest periods may vary from these assumptions. The SFPUC may also issue refunding bonds from time to time in response to market conditions in order to achieve debt service savings.

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 2018 Series ABC 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 2018 Series ABC 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 2018 Series ABC 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 value and/or in the marketability of the 2018 Series ABC Bonds or adversely affect the ability of the SFPUC to make timely payments of principal of or interest on the 2018 Series ABC Bonds. There can be no assurance that other risk factors not discussed herein will not become material in the future, 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 Net Revenues sufficient to pay principal of and interest on the 2018 Series ABC 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, general and local economic conditions and changes in law and government regulations could adversely affect the amount of Net Revenues realized by the SFPUC or significantly raise the cost of operating the Wastewater Enterprise.

In addition, the realization of future Net Revenues is subject to, among other things, the capabilities of management of the SFPUC, the ability of the SFPUC to provide service to its customers, the ability of the SFPUC to establish, maintain and collect charges from its 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 Wastewater Enterprise, the Bonds and other obligations payable from Net Revenues. See “FINANCIAL OPERATIONS” and “OBLIGATIONS PAYABLE FROM NET 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 Bonds.

The SFPUC is not obligated to pay the principal of, premium, if any, or interest on the 2018 Series ABC Bonds except from Net Revenues of the Wastewater Enterprise. The SFPUC has no taxing power. The General Fund of the City is not liable for the payment of the principal of, premium, if any, or interest on the 2018 Series ABC 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 2018 Series ABC Bonds. The 2018 Series ABC 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 Net Revenues.

No Reserve Account

No Reserve Account has been established for the 2018 Series ABC Bonds. The Reserve Accounts established with respect to other Series of Bonds do not secure the 2018 Series ABC Bonds.

Payment of the 2018 Series C Bonds on the Initial Mandatory Tender Date

No assurance can be given that the SFPUC will have sufficient funds on hand on the Initial Mandatory Tender Date for the 2018 Series C Bonds to pay the Purchase Price of the 2018 Series C Bonds on such date. In the event the SFPUC does not have sufficient funds on hand to pay the Purchase Price of the 2018 Series C Bonds on the Initial Mandatory Tender Date, the SFPUC’s ability to pay the Purchase Price will depend on the SFPUC’s ability to issue and sell refunding obligations to refund the 2018 Series C Bonds on or prior to such date or to remarket the 2018 Series C Bonds. Failure by the SFPUC to pay the Purchase Price of the 2018 Series C Bonds on the Initial Mandatory Tender Date would not constitute an Event of Default under the Indenture but would increase the amount of interest payable by the SFPUC on the 2018 Series C Bonds.

Interim Funding Program Facilities

Commercial Paper Notes. The bank credit facilities supporting the Commercial Paper Notes are subject to early termination upon the occurrence of certain events, including the failure of the SFPUC to make certain payments, the occurrence of certain bankruptcy or insolvency-related events, the reduction below specified levels or the withdrawal or suspension of ratings on certain obligations of the SFPUC payable from Net Revenues or certain other specified events of default. 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 outstanding reimbursement obligation of the SFPUC to the bank providing such facility for draws made for the payment of principal of or interest on Commercial Paper Notes could bear interest at rates higher than the rates borne by the Commercial Paper Notes; and (c) any such outstanding reimbursement obligation of the SFPUC could be accelerated and become immediately due and payable. The Commercial Paper Notes and any reimbursement obligations are payable from Net Revenues on a basis subordinate to the Bonds.

Revolving Notes. The commitment of the bank to make advances under the revolving credit agreement for interim funding (the repayment obligation of the SFPUC for which are evidenced by the Revolving Notes) may be terminated by the bank upon the occurrence of certain events, including the failure of the SFPUC to make certain payments, the occurrence of certain bankruptcy or insolvency-related events, the reduction below specified levels or the withdrawal or suspension of ratings on certain obligations of the SFPUC payable from Net Revenue or certain other specified events of defaults. Upon such an event of default, (a) the outstanding repayment obligation of the SFPUC evidenced by the Revolving Notes would bear interest at substantially increased interest rates and (b) the bank could declare all amounts outstanding under the Revolving Notes to be immediately due and payable.

See “OBLIGATIONS PAYABLE FROM NET REVENUES—Subordinate Debt and Interim Funding Program.”

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 2018 Series ABC Bonds will require the SFPUC to raise wastewater rates payable by its customers. The increase of wastewater rates is subject to various substantive and procedural requirements and limitations. See “CONSTITUTIONAL, STATUTORY AND CHARTER LIMITATIONS.”

Initiative, Referendum and 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 Wastewater 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, 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.

Risks Related to Wastewater Enterprise Facilities and Operation

The operation of the Wastewater Enterprise, and the physical condition of the Wastewater Enterprise facilities, are subject to a number of risk factors that could adversely affect the reliability of the SFPUC to provide sewage and stormwater collection and treatment services, or increase the operating expenses of the Wastewater Enterprise. Prolonged damage to the Wastewater Enterprise facilities could interrupt the ability of the SFPUC to realize Net Revenues sufficient to pay principal of and interest on the 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 Bonds. These factors could include, among others, the following:

Aging Facilities. Certain Wastewater Enterprise facilities are near the end of their useful life. Aging assets result in decreased reliability due to sewer line breakage and unplanned facility outages and place a greater maintenance burden on Wastewater Enterprise operations. The average useful life of the sewer system’s sewers (i.e., gravity pipes 36 inches or less in diameter) is approximately 110 years, though many conditions, such as pipe material and soil conditions, affect actual pipe lifespan. The recent historical rate of replacement for the Wastewater Enterprise’s sewer pipes has been at a 200-year replacement cycle. See “THE WASTEWATER ENTERPRISE—Combined Sewage and Stormwater System.” Aging sewers, if left unaddressed, would result in increasing system failures, sinkholes in the street, reduced system reliability and possibly risks to public health and safety and the environment.

The SFPUC uses a risk-based approach to sewer replacement and replaces 15 miles per year of aging infrastructure. The capital program, including the SSIP, is intended to help increase system reliability through equipment and facility improvement including, among other things, increasing sewer inspections and condition assessments in order to more effectively prioritize areas of pipeline replacement. In addition to the collection system, other types of facilities, such as treatment plants and pump stations, also face reliability issues due to age and poor condition. The aging system will be further challenged in connection with the SSIP because it must remain operational during project delivery. Specifically, during construction of SSIP capital projects, all work, including any required partial, temporary facility shutdowns, will have to be carefully scheduled so that the plants remain functional and in compliance with all permits and other applicable requirements.

Limited Redundancy. Many critical Wastewater Enterprise facilities must remain constantly operational to collect and treat sewage and stormwater flows in accordance with Regional Water Quality Control Board requirements. See “REGULATORY MATTERS.” Certain of these Wastewater Enterprise facilities and systems are aging and have limited redundancy. See “—Aging Facilities.” In addition, the Oceanside Treatment Plant and the other facilities in the Westside Watersheds are not interconnected with the Southeast Treatment Plant, the North Point Facility or the other facilities in the Bayside Watersheds. See “THE WASTEWATER ENTERPRISE—Wastewater Treatment.” This limited redundancy in facilities and systems, including the absence of an interconnection between the treatment plants and other facilities located in the two separate watersheds, constrains the SFPUC’s ability to take components of the system out of service for maintenance and repairs, or to provide backup treatment and other facilities in the event of an unplanned outage. For example, work at the Southeast Treatment Plant will be done while the plant is operating, requiring coordination of facility and systems shutdowns with construction plans. During dry weather, however, the collection system does have excess storage capacity due to the transport/storage structures which can provide up to 200 million gallons worth of capacity and help facilitate treatment flexibility when needed.

The SFPUC expects the SSIP to address certain redundancy issues, including: power supply redundancy for the three treatment plants, and rehabilitation and addition of redundant pumps as necessary at major pump stations. Interconnection of the facilities in the Westside Watersheds and Bayside Watersheds is not included in the SSIP, however. See “THE WASTEWATER ENTERPRISE—Wastewater Treatment.”

Seismic Hazards. The Bay Area is in a seismically active region. The San Andreas Fault lies immediately west of the City, and the Hayward Fault is approximately 15 miles to the east of the City. 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 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. Another was the 1868 Hayward earthquake along the Hayward Fault. The most recent significant earthquake was the October 1989 Loma Prieta earthquake on the San Andreas Fault, which had a magnitude of 7.1 on the Richter scale and an epicenter near Santa Cruz, approximately 55 miles south of the City. According to a recent United States Geological Survey, a significant earthquake along these or other faults has a high probability of occurrence during the repayment period of the 2018 Series ABC Bonds. A significant earthquake that impacts the City could adversely affect the ability of Wastewater Enterprise customers to pay for service and the capital and operating expenses of the Wastewater Enterprise.

Older facilities may have an increased risk of failure in the event of an earthquake. SSIP and other portions of the capital program include planned and proposed improvements to such older facilities for the purpose of improving seismic reliability.

With certain minor exceptions, the SFPUC does not maintain commercial earthquake insurance coverage for the facilities. See “FINANCIAL OPERATIONS—Risk Management and Insurance.”

Flooding and Other Natural and Man-Made Disasters. Flooding and other natural disasters, including without limitation flooding, landslides, and fire, or man-made disasters or accidents, including without limitation natural gas pipeline failures or explosions, could interrupt operation of the Wastewater Enterprise, result in liability claims against the Wastewater Enterprise, or otherwise adversely impact the Wastewater Enterprise’s ability to provide services or collect Revenues. See “—Unanticipated Decreases in Water Sales Volumes” and “—Potential Impacts of Climatic Change and Sea Level Rise.” For example, major rainstorms in the City which exceed the capacity of the combined storm drainage/sewer system, result in flooding and property damage, especially in some low-lying areas with structures built on or near land which was originally creeks or bays. Severe flood damage occurred in 2004 due to major rainstorms. Property owners in low-lying areas filed claims against the City, many of which were settled. Some claims proceeded to litigation, and the City settled those suits in 2007.

In 2009 and 2012, rainstorms resulted in additional flooding and property damage. In December 2014, two severe rainstorms caused flooding in many of the same low-lying areas that had flooded in 2004, 2009 and 2012. In early 2017, another major rainstorm caused flooding in certain low-lying areas. The City responded to these storms in each of the affected neighborhoods and helped coordinate and pay for initial clean-up and repair of damage to affected properties. In addition, property owners filed numerous claims for property damage. The City’s aggregate costs incurred for restoration, damage mitigation, and claims settlements exceed \$5 million for the two December 2014 storms. The SFPUC continues to conduct technical analysis, explore infrastructure improvements, and document design, operation and maintenance practices necessary to minimize flooding in these areas.

Statutory and Regulatory Compliance. The operation of the Wastewater Enterprise is subject to a variety of federal and State statutory and regulatory requirements concerning matters such as water quality, discharge requirements, and biosolids management. Significant fines and penalties could result should the SFPUC fail to comply with applicable laws and regulations. In addition to claims by private parties, changes in the scope and standards for public agency wastewater systems such as the Wastewater Enterprise may also lead to administrative orders issued by federal or State regulators. Such regulatory actions could also require significant capital expenditures to achieve statutory and regulatory compliance, which may impact the SFPUC’s capital improvement plans, projects and priorities for the Wastewater Enterprise. Future compliance with increased regulatory requirements or enforcement orders could impose substantial additional operating expenses on the Wastewater Enterprise. See “REGULATORY MATTERS.”

Unanticipated Decreases in Water Sales Volumes. Under the SFPUC’s current rate structure, Wastewater Enterprise customer bills are calculated primarily based on metered water volumes (with certain “flow factor” adjustments) and rates are established based upon expected metered water volumes. As a result, water deliveries at less than expected levels would result in lower than expected Revenues. Reduced water deliveries could result from, among other circumstances, reduced water supply, conservation measures or damage to storage, transportation, treatment or delivery systems of the SFPUC’s Water Enterprise. See “FINANCIAL OPERATIONS—Wastewater Enterprise Rates and Charges” and “Seismic Hazards” and “Other Natural or Man-Made Disasters.”

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.”

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

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 Wastewater 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 Wastewater 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.

Safety and Security. The occurrence of military conflicts and terrorist activities may adversely impact the operations of the Wastewater Enterprise or the finances of the SFPUC. The SFPUC continually plans and prepares for emergency situations and immediately responds to ensure services are maintained. 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 Wastewater Enterprise or that costs of security measures will not be greater than presently anticipated.

Cybersecurity

City Measures. The City, like many other large public and private entities, relies on a large and complex technology environment to conduct its operations, and faces multiple cybersecurity threats including, but not limited to, hacking, viruses, malware and other attacks on its computing and other digital networks and systems (collectively, “**Systems Technology**”). As a recipient and provider of personal, private, or sensitive information, the City has been the subject of cybersecurity incidents that have resulted in or could have resulted in adverse consequences to the City’s Systems Technology and that required a response action to mitigate the consequences.

Cybersecurity incidents could result from unintentional events, or from deliberate attacks by unauthorized entities or individuals attempting to gain access to the City’s Systems Technology for the purposes of misappropriating assets or information or causing operational disruption and damage. To mitigate the risk of business operations impact and/or damage from cybersecurity incidents or cyber-attacks, the City invests in multiple forms of cybersecurity and operational safeguards. In November 2016, the City adopted a City-wide Cyber Security Policy (the “**City Cyber Policy**”) to support, maintain, and secure critical infrastructure and data systems. The objectives of the City Cyber Policy include the protection of critical infrastructure and information, manage risk, improve cyber security event detection and remediation, and facilitate cyber awareness across all City departments. The City’s Department of Technology has established a cybersecurity team to work across all City departments, including the SFPUC, to implement the City Cyber Policy. The City Cyber Policy is reviewed periodically.

The City has also appointed a City Chief Information Security Officer (the “**CCISO**”), who is directly responsible for understanding the business and related cybersecurity needs of the City’s 54 departments, including the SFPUC. The CCISO is responsible for identifying, evaluating, responding, and reporting on information security risks in a manner that meets compliance and regulatory requirements, and aligns with and supports the risk posture of the City.

SFPUC Measures. The SFPUC also relies on a large and complex technology environment to conduct its operations. Although the SFPUC maintains its own business and control networks that are separate from the City’s network, the SFPUC faces similar cybersecurity threats as the City, including hacking, viruses, malware and other attacks on its computing and other digital networks and systems. To mitigate the risk of and damage from cybersecurity incidences or cyberattacks, the SFPUC abides by the City Cyber Policy and also maintains its own information security program (the “**SFPUC Information Security Program**”). The SFPUC Information Security Program is based on National Institute of Standards and Technology cybersecurity guidance and employs industry standard Center for Internet Security critical security controls. In addition, control networks for the Water Enterprise and the Wastewater Enterprise adhere to the American Water Works Association Cyber Security guidance and the

control networks for the Power Enterprise adhere to the North American Electric Reliability Corporation critical infrastructure protection controls. The SFPUC Information Security Program includes state of the art information security systems and 14 cybersecurity policies. The information security systems are continuously tested with internal vulnerability assessments that include daily updates on malware threats. The SFPUC's cybersecurity policies are prescriptive for hardening servers, network devices and databases, and for addressing system administrator controls, mobile device management, incident response, security patching, antivirus, email, passwords, remote access, secure asset disposal, end user controls, and timely removal of access to systems and facilities for staff that leave employment at the SFPUC. The SFPUC Information Security Program is periodically reviewed for effectiveness by independent consultants. In addition, pursuant to the SFPUC's policies, the City Services Auditor and independent cybersecurity auditors perform extensive penetration and vulnerability testing on the SFPUC's business and control networks every other year.

The SFPUC has also appointed a Chief Information Security Officer (the "CISO"). In addition to working with the CCISO on information security policy development and solution sharing, the CISO is responsible for annual updates to the SFPUC's policies, is charged with identifying and monitoring threats which are typically addressed by the SFPUC's information technology services team, educating staff concerning vulnerabilities and constantly improving the SFPUC Information Security Program.

While the SFPUC Information Security Program is periodically reviewed, no assurances can be given by the SFPUC that such measures will ensure against other cybersecurity threats and attacks. Cybersecurity breaches could damage the SFPUC's information security systems and cause material disruption to the SFPUC's operations and the provision of SFPUC services. The costs of remedying any such damage or protecting against future attacks could be substantial. Further, cybersecurity breaches could expose the SFPUC to material litigation and other legal risks, which could cause the SFPUC to incur material costs related to such legal claims or proceedings. The SFPUC does not purchase liability insurance covering cyber-losses and does not require its vendors to purchase technology errors and omissions insurance coverage.

Cost of the SSIP; Timely Completion of the SSIP

The SSIP is the largest component of the Wastewater Enterprise's capital program. The completion of various SSIP projects could be delayed and the overall cost of such projects could increase for a variety of reasons, including, but not limited to, actions by State or federal regulatory agencies, voter initiatives, legal challenges on environmental or other grounds, prolonged contractor disputes, changes in price of commodities or labor, unanticipated geologic or soil conditions, or the occurrence of an earthquake or other natural disaster. See "SEWER SYSTEM IMPROVEMENT PROGRAM—Potential Changes to SSIP Projects."

The SFPUC intends to finance the development and implementation of SSIP projects through the issuance of Additional Bonds and Parity State Loans. If SSIP projects are completed at the cost and on the schedule presently under consideration by the SFPUC, the cost of such projects will require a significant planned increase in the amount of debt payable from Revenues, which will result in significant planned rate increases. Correspondingly, debt service coverage for the Bonds will also be significantly lower than it is currently. Were SSIP projects delayed or the cost of SSIP projects to increase without an offsetting reduction in the program scope, the SFPUC would be required either to incur more debt payable from Revenues or to cash fund those costs from Revenues. Either option would likely increase rates payable by SFPUC customers to levels higher than presently anticipated by the SFPUC, and could result in lower debt service coverage ratios than presently anticipated by the SFPUC. See "FINANCING PLAN FOR WASTEWATER ENTERPRISE CAPITAL PROGRAM."

Over the next several years the SFPUC expects to issue Additional Bonds and Parity State Loans to fund development and implementation of SSIP projects. The issuance by the SFPUC of such debt is subject to various approval requirements. See "OBLIGATIONS PAYABLE FROM NET REVENUES."

The ability of the SFPUC to issue Additional Bonds and Parity State Loans to finance the development and implementation of SSIP projects may also be adversely affected by any adverse change in the financial position of the SFPUC or by general market conditions. There can be no assurance that the SFPUC will be able to issue Additional Bonds or Parity State Loans in an aggregate amount sufficient to finance all of the costs of completing the SSIP projects.

Construction Related Risks

General. Construction projects in the capital program, including the SSIP, 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; or (vi) 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, given the limited redundancy of certain Wastewater Enterprise facilities and systems, such systems must remain operational during construction, which could affect construction schedules or budgets. See “—Risks Related to Wastewater Enterprise Facilities and Operation.”

In addition, the SFPUC expects numerous other large construction projects to be scheduled in the region during the same time period as the SSIP, which could potentially limit contractor resources available to the SFPUC during bidding or construction phases. The SFPUC conducts regular contractor outreach and expects to continue to work closely with potential contractors to attempt to mitigate the impact of such simultaneous scheduling of large projects.

Furthermore, much of the construction work will occur at a single physical location, the Southeast Treatment Plant. The phasing staging, materials and/or equipment laydown areas, parking, truck routes, security, and operating needs are being clearly defined for the plant and each individual project by the SFPUC, with consideration of multiple project interfaces. The Southeast Treatment Plant will remain in operation while these projects are being implemented. Currently logistics planning is identifying on and off site parking, construction laydown and staging areas, truck routing for regular operations and construction and the overall facility and equipment shut-down schedule required to maintain permit compliance and complete the SSIP.

Increased construction costs or delays for any reason in connection with the SFPUC’s capital program and the SSIP could impact the Wastewater Enterprise’s financial condition in general and the implementation of its capital programs in particular.

Land Acquisition. Certain SSIP projects will require the SFPUC to acquire land in and around its facilities in the City. For example, the Southeast Treatment Plant is located in densely urban environment with industrial and residential buildings—as such, securing space around the Southeast Treatment Plant will be critical.

A project manager has been hired to manage land issues because many parcels require long lead times to gain site control. Property is challenging to acquire or lease in the Bay Area generally and in the City in particular. Real estate prices in the City and throughout the Bay Area can be volatile and have in general been increasing during recent years. The SSIP currently includes an estimated \$98.3 million related to future land purchases required for the expansion of the Southeast Treatment Plant and an estimated \$11.3 million related to potential land leases for construction staging areas. At present, the SFPUC cannot predict the final cost of such acquisitions and leases; but it is possible that such costs will exceed budgeted amounts.

Climate Change, Risk of Sea Level Rise and Flooding Damage

Impact on San Francisco. Numerous scientific studies on global climate change show that sea levels will rise given the increasing temperature of the oceans and growing ocean volume, as land ice melts and runs off into the ocean. Over the past century, the sea level has risen about eight inches around the San Francisco Bay and along the Pacific coast. Such scientific studies also project accelerating sea level rise due to climate change over the coming century. As a result, coastal areas like San Francisco are at risk of substantial flood damage over time and this will affect private development as well as public infrastructure, including roads, utilities, emergency services, schools and parks. The City could lose considerable tax revenues and many residents, businesses and governmental operations along the waterfront could be displaced.

The City, including the SFPUC, the Port of San Francisco, Department on the Environment and various other departments and agencies, have been preparing for these impacts for many years and have issued a number of public reports. For example, in March 2016, the City released a report entitled “Sea Level Rise Action Plan,” identifying geographic zones at risk of sea level rise and providing a framework for completing a comprehensive vulnerability assessment to inform the development of adaptation strategies to confront these risks. That study shows an upper range of end-of-century projections for permanent sea level rise plus temporary flooding due to 100-year storm of up to 108 inches above 2015 average high tide. The City is currently working on a citywide vulnerability and risk assessment that will likely be finalized and released in late 2018. Following completion of the vulnerability and risk assessment, the City will begin work on an adaptation plan to establish a long-term comprehensive planning framework, identify funding sources and prioritize investments. The adaptation plan is anticipated to be completed in 2020.

In April 2017, the Working Group of the California Ocean Protection Council Science Advisory Team (in collaboration with several state agencies, including the California Natural Resource Agency, the Governor’s Office of Planning and Research, and the California Energy Commission) published a report entitled “Rising Seas in California: An Update on Sea Level Rise Science” (the “Sea Level Rise Report”) to provide a new synthesis of the state of science regarding sea level rise. The Sea Level Rise Report will provide the basis for State guidance to state and local agencies for incorporating sea-level rise into design, planning, permitting, construction, investment and other decisions. Among many findings, the Sea Level Rise Report indicates that the effects of sea level rise are already being felt in coastal California with more extensive coastal flooding during storms, period tidal flooding, and increased coastal erosion. In addition, the Sea Level Rise Report notes that the rate of ice sheet loss from Greenland and Antarctic ice sheets pose a particular risk of sea level rise for the California coastline.

The City has already incorporated site specific adaptation plans in the conditions of approval for certain large waterfront development projects, such as the Candlestick/Hunters Point Shipyard, Treasure Island, Pier 70 and Mission Rock projects. Also, the City has started the process of planning to fortify the Port’s seawall from sea level rise, including an initial investment of approximately \$8 million during Fiscal Year 2017-18 and consideration of additional financing options. The City expects short term upgrades to cost more than \$500 million and long term upgrades to cost more than \$5 billion.

A scientific report issued in March 2018 by professors at the University of California, Berkeley, and the University of Arizona suggests that flooding risk from climate change could be exacerbated in the San Francisco Bay Area due to the sinking of soil, known as subsidence. The risk of subsidence affects certain parts of San Francisco built on landfill. Under the new projections in this report, damage due to flooding could be worse than estimated under earlier climate change studies.

Projections of the impacts of global climate change on San Francisco are complex and depend on many factors that are outside the City’s control. The various scientific studies that forecast the amount and timing of sea level rise and its adverse impacts, including flooding risk, are based on assumptions contained in such studies, but actual events may vary materially. Also, the scientific understanding of climate change and its effects continues to evolve. Accordingly, the City is unable to forecast with certainty when sea level rise or other adverse impacts of climate change (e.g., the occurrence and frequency of 100 year storm events and king tides) will occur. In particular the City cannot predict the timing or precise magnitude of adverse economic effects, including, without limitation, material adverse impacts on the business operations or financial condition of the City and the local economy. While the impacts of climate change may be mitigated by the City’s past and future investment in adaptation strategies, the City can give no assurance about the net effects of those strategies and whether the City will be required to take additional adaptive mitigation measures.

The City has filed a lawsuit against five investor-owned oil companies that is pending in the United States District Court, Northern District of California, Case No. 3:17-cv-06012-WHA, entitled *The People of the State of California, acting by and through the San Francisco City Attorney, Dennis J. Herrera, v. BP P.L.C, et al.* In that lawsuit, the City Attorney is seeking to have the companies pay into an equitable abatement fund to help fund investment in sea level rise adaptation infrastructure. On June 25, 2018, the Federal court granted defendants’ motion to dismiss the lawsuit. The City is currently evaluating the ruling and in the process of determining its next steps. While the City continues to believe that its claims are meritorious, the City cannot give any assurance or prediction regarding the outcome of this litigation.

Impact on SFPUC Wastewater Enterprise. The impacts of climate change that would most affect the Wastewater Enterprise relate to changing rainfall patterns, sea level rise and rising tides. Existing climate change models show varied results in terms of projected rainfall patterns making proactive, long-term planning difficult. If they do occur, significant changes in rainfall (intensity, duration or frequency or certain combinations thereof) could substantially alter the sewer system's stormwater and wastewater collection and storage functions. The SFPUC, in partnership with SFO, the Port of San Francisco and the Office of Resilience and Recovery, is investigating a partnership with Lawrence Berkeley National Laboratory in order to continue to refine and help advance their innovative climate change related modeling to study the effects of climate change on extreme precipitation in the San Francisco region.

Projected levels for sea level rise and rising tides could result in a backflow (or inflow) of San Francisco Bay water into the sewer system at the lowest weir elevation and increased infiltration due to higher groundwater in coastal areas. The Wastewater Enterprise has already begun to experience occasional inflows and infiltration from the San Francisco Bay into its sewer system during certain high tides. In response, the Wastewater Enterprise is planning to implement, through the SSIP, a monitoring program and backflow mitigation measures at some points where tides may backflow into the system.

In 2016, the SFPUC completed a City-wide flood resilience analysis to characterize the impact of storms, develop a risk-based framework to identify and prioritize its investments in projects to reduce or mitigate flooding risks, and confirm the City's standard design storm through a benefit-cost analysis. This study served as the foundation for prioritizing capital investments in the coming years. In 2017, SFPUC staff, in conjunction with other City departments and industry experts, developed a suite of programmatic strategies for flood resilience that are intended to reduce flood risk Citywide in storms that exceed the capacity of the SFPUC's stormwater collection system and before capital projects can be built.

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

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 2018 Series ABC Bonds.

To the extent that 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 2018 Series ABC Bonds may not be able to assert a claim against any property of the City other than the Net 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 2018 Series ABC 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 2018 Series ABC 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 2018 Series ABC 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 2018 Series ABC Bonds.

Revenues are deposited with and held by the Treasurer and may be commingled with other City funds. See "SECURITY FOR THE BONDS—Flow of Funds." 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 2018 Series ABC 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 2018 Series ABC 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 2018 Series ABC 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 2018 Series ABC Bonds, as long as the bankruptcy court determines that the alterations are fair and equitable.

There may be delays in payments on the 2018 Series ABC 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 2018 Series ABC Bonds, or result in losses to the holders of the 2018 Series ABC 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 2018 Series ABC Bonds.

The City invests Revenues in the City Pool. See "FINANCIAL OPERATIONS—Investment of SFPUC Funds." Should those investments suffer losses, Revenues may be lower than expected, and there may be delays or reductions in payments on the 2018 Series ABC Bonds.

Limitations on Remedies

The remedies available to the owners of the 2018 Series ABC 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 2018 Series ABC 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 2018 Series ABC Bonds, that the 2018 Series ABC 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. The various other legal opinions to be delivered concurrently with the issuance of the 2018 Series ABC Bonds will be similarly qualified. See "APPENDIX C—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 2018 Series ABC Bonds, there can be no assurance that the available legal remedies will be adequate to protect the interests of the holders of the 2018 Series ABC Bonds.

Loss of Tax Exemption/Risk of Tax Audit of Municipal Issuers

As discussed under “TAX MATTERS,” interest on the 2018 Series ABC Bonds could fail to be excluded from the gross income of the owners thereof for purposes of federal income taxation retroactive to the date of the issuance of the 2018 Series ABC Bonds as a result of future acts or omissions of the SFPUC in violation of its covenants to comply with requirements of the Internal Revenue Code of 1986, as amended. Should such an event of taxability occur, the 2018 Series ABC Bonds are not subject to redemption or any increase in interest rate and will remain outstanding until maturity.

The IRS has initiated an expanded program for the auditing of tax-exempt securities issues, including both random and targeted audits. It is possible that the 2018 Series ABC Bonds could be selected for audit by the IRS. It is also possible that the market value of the 2018 Series ABC Bonds might be affected as a result of such an audit of the 2018 Series ABC Bonds (or by an audit of similar securities).

Change in Tax Law

As discussed under “TAX MATTERS,” current and future legislative proposals, if enacted into law, clarification of the Code or court decisions may cause interest on the 2018 Series ABC Bonds to be subject, directly or indirectly, in whole or in part, to federal income taxation or to be subject to or exempted from state income taxation, or otherwise prevent beneficial owners from realizing the full current benefit of the tax status of such interest.

Failure to Maintain Credit Ratings

Certain rating agencies have assigned ratings to the 2018 Series ABC 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 2018 Series ABC Bonds. The SFPUC undertakes no obligation to maintain its current credit ratings on the 2018 Series ABC 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 2018 Series ABC Bonds or, if a secondary market exists, that the 2018 Series ABC 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.”

Green Bonds

The 2018 Series A Bonds and the 2018 Series C Bonds are being designated by the SFPUC as “Green Bonds” and have been certified by the CBI based solely on the Climate Bonds Standard. See “GREEN BONDS DESIGNATION AND CLIMATE CERTIFICATION.” The 2018 Series A Bonds and the 2018 Series C Bonds may not be a suitable investment for all investors seeking exposure to green assets. There can be no assurance that the SSIP Green Projects funded with the proceeds from 2018 Series A Bonds or the 2018 Series C Bonds will meet investor expectations regarding sustainability performance. Adverse environmental or social impacts may occur during the design, construction and operation of the SSIP Green Projects.

The terms “Green Bonds” and “Green Projects” are neither defined in nor related to provisions in the Indenture or otherwise defined under State or Federal laws. The use of such terms herein is for identification purposes only and is not intended to provide or imply that an owner of the 2018 Series A Bonds or the 2018 Series C Bonds is entitled to any additional security other than as provided in the Indenture. The purpose of labeling the 2018 Series A Bonds and the 2018 Series C Bonds as “Green Bonds” is, as noted, to allow owners of the 2018 Series A Bonds and the 2018 Series C Bonds to invest directly in bonds that will finance environmentally beneficial projects. The SFPUC assumes no obligation to ensure that these projects comply with the principles of green projects as such principles may hereafter evolve.

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 2018 Series ABC Bonds. There may be other risks inherent in ownership of the 2018 Series ABC 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 2018 Series ABC Bonds.

REGULATORY MATTERS

The Wastewater Enterprise meets all known current regulatory permit requirements for its facilities, and is in material compliance with the Porter-Cologne and Clean Water Acts (as described below). This section summarizes the regulatory framework governing the Wastewater Enterprise and its operations.

History and Background

In 1969, the State adopted the Porter-Cologne Water Quality Act (the “**Porter-Cologne Act**”), creating the State’s current legal framework for the protection of water quality. This adoption was followed at the federal level by the Water Pollution Control Act Amendments of 1972 (the “**Clean Water Act**”). The Clean Water Act provided an aggressive timetable for eliminating pollution of the nation’s waters and established the basic secondary treatment requirement that 85% of pollutants, as defined in administrative regulations, be removed from sanitary wastewater. The Clean Water Act also required the issuance of discharge permits on a nationwide basis and established a federal grant program for construction of publicly owned wastewater facilities, subsequently replaced by the state revolving fund loan program. Although the EPA has ultimate responsibility for administering the Clean Water Act, many functions have been delegated to the State. The administration of the current loan program and enforcement of regulations are a joint undertaking of the State Water Resources Control Board, the Regional Water Quality Control Board, and EPA Region IX.

Federal and State Clean Water Act Permits

Under the Porter-Cologne and Clean Water Acts, the Regional Water Quality Control Board administers water pollution control programs. The Regional Water Quality Control Board issues discharge permits under Section 402 of the Clean Water Act, which establishes the National Pollutant Discharge Elimination System (“**NPDES**”) permit system. These permits, issued for a five-year period, are also wastewater discharge requirements for the purposes of the Porter-Cologne Act and apply to discharges from the SFPUC’s treatment plants and combined sewer discharge facilities.

The Wastewater Enterprise's combined sewer system operates under two wastewater NPDES permits: the 2013 Bayside Permit (NPDES Permit No. CA0037664), covering the Southeast Treatment Plant, the North Point Facility and other bayside facilities that discharge into the San Francisco Bay; and the 2009 Oceanside Permit (NPDES Permit No. CA0037681; issued jointly with EPA Region IX), covering the Oceanside Treatment Plant discharges and other westside facilities that discharge into the Pacific Ocean. A small portion of the Wastewater Enterprise system within the City consists of separate storm and sanitary sewers. This portion of the system is regulated under the State General Permit for Small Municipal Separate Storm Sewer Systems (MS4) (NPDES Permit No. CAS000004) and the State Waste Discharge Requirements for Sanitary Sewer Systems (Order No. 2006-0003-DWQ).

In July 2016, the SFPUC entered into a stipulated order to pay an administrative civil liability of \$611,100 to resolve an enforcement action brought with regard to alleged permit violations that took place in 2014. Per the terms of the order, the SFPUC has paid the full amount towards a supplemental environmental project. Currently, the SFPUC's discharges are in material compliance with its permit requirements.

In February 2016, the EPA initiated an investigation of the SFPUC's operations of the City's combined sewer system with a particular focus on the SFPUC's operations during wet weather conditions. The EPA notified the SFPUC that it is considering an enforcement action against the SFPUC for violating the Clean Water Act. The SFPUC expects to negotiate a settlement in response to the enforcement action. As of the date of this Official Statement, the EPA has not yet provided the SFPUC with proposed settlement options, which could involve the payment of fines and modifications to the SFPUC's current capital improvement plans, projects and priorities. The SFPUC cannot determine to what extent, if any, any further action by the EPA will have on the SFPUC's current operations of the City's combined sewer system or the Wastewater Enterprise's short-term and long-term capital improvement plans.

City's 1974 Master Plan

In response to the Clean Water Act, the City developed its master plan in 1974 (the "**1974 Master Plan**") and implemented it over a 25-year period. Projects within the 1974 Master Plan included construction of the City's transport and storage structures; enlargement and upgrade of the Southeast Treatment Plant to secondary treatment for the Bayside Watershed dry-weather flow; development of the North Point Facility as a wet-weather facility; and construction of the Oceanside Treatment Plant, a secondary treatment facility that replaced the prior outdated Richard-Sunset Plant on the west side of the City. The 1974 Master Plan built San Francisco's modern-day wastewater and stormwater system.

Combined Sewer Overflow Control Policy

With the exception of a small portion of the City of Sacramento, the SFPUC is the only wastewater agency in the State that operates a combined sewer system, in which sanitary wastewater and stormwater runoff are conveyed and treated in the same system of pipes and treatment, storage and discharge facilities. In order to address the unique characteristics of combined sewer systems, the EPA adopted the Combined Sewer Overflow Control Policy (59 FR 18688) in 1994 (the "**CSO Policy**"). This policy established a consistent national approach for controlling discharges from CSOs to the nation's water, and has since been incorporated into the Clean Water Act by the Wet Weather Water Quality Act of 2000.

The CSO Policy created a two-phased process for combined sewer systems. During the first phase, the permittee is required to implement "nine minimum controls" specified in the CSO Policy. In addition, the permittee is required to develop and implement a long-term control plan for the purpose of providing facilities and controls sufficient to comply with water quality standards. The SFPUC has implemented the "nine minimum controls," and construction of the Master Plan projects constituted implementation of the long-term control plan.

The SFPUC's discharge permits require the preparation of reports analyzing the efficacy of the system's wet weather operations and the attainment of water quality standards. The SFPUC's efficacy report for the Bayside Watersheds was submitted in September 2017; the efficacy report for the Westside Watersheds was submitted in July 2014.

Stormwater Regulations

In 1987, Congress revised the Clean Water Act to more effectively address pollution caused by stormwater runoff. The regulations require stormwater management plans for municipalities and controls on certain construction sites and other industries. Urban areas with combined sewers, such as most of the City, are exempt from such regulations. Because a small portion of the City is served by separate sewer systems, the implementation of the Municipal Separate Storm Sewer System (“MS4”) permit requirements occurred under Phase II of the stormwater program, following the earlier Phase I implementation for cities with a large separate sewer system. The permit for small MS4s (NPDES Permit No. CAS000004) is issued by the State Water Resources Control Board and regulates the stormwater discharge from the SFPUC’s separate sewer systems. The SFPUC operates a stormwater management program that complies with the requirements of the MS4 permit.

Regulatory Trends

Regulatory developments at the State and Federal level, as well as ongoing permit reissuance activities, may increase operations costs and capital needs of the Wastewater Enterprise and may have an effect on the Wastewater Enterprise operations and its revenues. In the future, additional constituents of concern (possibly including pollutants such as ammonia, nutrients, endocrine disrupting chemicals, human-made chemicals/products) will likely be identified, and additional effluent limits may be added for wastewater discharges into the San Francisco Bay and Pacific Ocean, as water quality objectives are developed for new compounds and improved analytical techniques become available. Additional source control measures, public education and outreach, and additional or advanced treatment processes may be necessary to achieve compliance. SFPUC staff is actively engaged with regulatory officials and the public in the development of these regulatory matters.

These topics and their possible effect on the Wastewater Enterprise are briefly described below:

Impaired Water Bodies and Total Maximum Daily Loads. The Clean Water Act requires states to identify all water bodies that do not achieve designated water quality standards or objectives. Such water bodies are designated as “impaired,” and states are required to identify all sources contributing to the impairment under the Total Maximum Daily Load (“TMDL”) program. States are required to designate wasteload allocations to each contributing point source, such as the SFPUC discharges, in order to promote the recovery of the water body. Central and lower San Francisco Bay are currently listed as “impaired” for a number of organic and inorganic pollutants, as well as invasive species and trash. The Regional Water Quality Control Board has completed San Francisco Bay TMDLs for mercury and polychlorinated biphenyl (“PCBs”) and has issued a fecal indicator bacteria TMDL for San Francisco Bay beaches, which is currently in the implementation process.

The San Francisco Bay mercury and PCBs TMDLs are implemented through a group watershed permit (Order No. R2-2012-0096) (the “**Watershed Permit**”) that applies to all municipal, industrial, and stormwater discharges to San Francisco Bay. The Watershed Permit contains effluent limitations for mercury and PCB discharges from the Southeast Treatment Plant with which the SFPUC currently complies.

Contaminated Bay Sediments. California Water Code, Division 7, Chapter 5.6 established a program to assess sediment contamination of the State’s enclosed bays and estuaries. Known as the Bay Protection and Toxic Cleanup Program, the focus of this effort was to identify contaminated sediments with elevated levels of toxins.

In 1999, the Statewide plan identified Mission Creek and Islais Creek as high priority toxic hot spots. For Mission Creek, the plan included preliminary estimates of investigation and study costs at \$1 million, remediation and follow-up monitoring ranging from \$0.8 to \$1.8 million, and possible sewer system structural changes up to \$75 million. The plan included a preliminary estimate of investigation and study costs for Islais Creek at \$1 million. Remediation and monitoring were estimated to range from \$0.8 to \$5.2 million, and possible sewer system structural changes up to \$75 million for Islais Creek. The estimated costs shown above were developed by the Regional Water Quality Control Board and State Water Resources Control Board in 1998 and 1999. The SFPUC provided comments and data studies disputing both the extent of contamination in the creeks and any asserted causal relationship to SFPUC activities. The plan is not self-executing, and requires further regulatory action by the Regional Water Quality Control Board, which has indicated that contaminated sediment issues will be addressed through the TMDL analysis and implementation programs mentioned above. In 2002, both Mission Creek and Islais Creek were added

to the Clean Water Act 303(d) list of water quality limited segments (i.e., impaired waterways). A TMDL (or related action) must be completed for the listed waterways.

The 1999 Statewide plan also identified Central Basin (adjacent to the San Francisco Bayside shoreline) as a moderate priority toxic hot spot, but did not identify investigation or remediation costs (costs were only developed for the high priority sites). Central Basin has also been placed on the CWA 303(d) list.

The SFPUC continues to dispute the extent of contamination in the creeks and any causal relationship to SFPUC activities, and will vigorously participate in the development of any TMDLs for such areas.

EPA Region IX has listed Yosemite Creek as a “superfund” site. Its sediments, adjacent to Hunters Point and the former U.S. Navy Shipyard, must be addressed. The City, along with other potentially responsible parties, is participating in a voluntary nonbinding mediation to allocate any cleanup costs. Because the process is in its early stages, SFPUC cannot reasonably predict whether or to what extent it may be partially responsible for contributing to this contamination remediation project, or whether such cleanup will have any impact on current sewer system operations.

Pursuant to GASB Statement No. 49, *Accounting and Financial Reporting for Pollution Remediation Obligations*, the Wastewater Enterprise reported \$2.7 million in pollution remediation liability as of June 30, 2017.

Contaminants of Emerging Concern. Contaminants of emerging concern include alkyl phenols, flame retardants, hormones, personal care products, pharmaceuticals, steroids, perfluorinated compounds, microplastics and pesticides, which typically enter municipal wastewater through bathing, cleaning, laundry, and the disposal of unused products. Pharmaceuticals typically include prescription and over-the-counter therapeutic drugs for both human and veterinary treatment. Personal care products typically include soaps, fragrances, and cosmetics. Secondary treatment facilities remove some of these contaminants, even though they are not specifically designed for this purpose. Currently no water quality standards exist for most of these compounds, therefore, the SFPUC permits do not contain effluent limitations for them.

Nutrient Control for the Bayside. San Francisco Bay has long been recognized as a nutrient-enriched estuary; however, until recently, it had not experienced negative effects of over-enrichment. Changes recently observed in San Francisco Bay indicate that the Bay’s resilience to the effects of nutrient enrichment may be declining. In response to these changes, the Regional Water Quality Control Board issued a permit (NPDES No. CA0038873) in 2014 for all municipal discharges into the San Francisco Bay to monitor and report nutrient discharges. The Regional Water Quality Control Board has indicated that it intends to also develop numeric nutrient endpoints (“NNEs”) after the science is developed enough to provide a scientifically defensible framework for adopting numeric water quality criteria. When and whether NNEs will result in new limits that would apply to SFPUC treatment facilities is unclear at this time. The SFPUC and regional groups like the Bay Area Clean Water Association (of which the SFPUC is a member) are participating in the Regional Water Quality Control Board’s consideration of the need for and potential characteristics of any such future regulation.

Other Regulatory Agencies with Jurisdiction Over the Wastewater Enterprise

Other regulatory agencies with approval or oversight responsibilities over the siting, construction or operational impacts of the Wastewater Enterprise on air, water and natural resources include the Bay Area Air Quality Management District, the Bay Conservation and Development Commission, the California Coastal Commission, the State Lands Commission, the California Department of Public Health, the National Marine Fisheries Service, the United States Fish and Wildlife Service, the California Department of Fish and Wildlife, and the U.S. Army Corps of Engineers.

Other Laws Affecting the Wastewater Enterprise

As a public agency the SFPUC's actions must be consistent with CEQA and, where federal approvals or funding is involved, NEPA. The federal Clean Air Act and the California Clean Air Act of 1988 also regulate emissions from the treatment facilities. All of the SFPUC's treatment facilities meet present Bay Area Air Quality Management District standards.

CONSTITUTIONAL, STATUTORY AND CHARTER LIMITATIONS

The activities of the SFPUC and the Wastewater Enterprise, including, without limitation, the establishment of rates for sewer service and the issuance of Bonds (which include Parity State Loans), 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 wastewater 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 Bonds.

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.

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 wastewater 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.”

Article XIII D imposes the substantive requirement that any wastewater charges may not exceed the proportional cost of the providing service to customers. The Fourth District of the California Court of Appeal decision in *Capistrano Taxpayers Association, Inc. v. City of San Juan Capistrano*, 235 Cal.App.4th 1493 (2015),

clarified that tiered rate structures are compatible with the cost of service limitations of Article XIII D when each tier structure is supported by cost of service calculations. The court held that San Juan Capistrano’s water rates violated Article XIII D because no evidence in the record adequately showed that each tier corresponded to the cost of providing service at a given level of usage.

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 wastewater 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 Wastewater Enterprise, or to call into question wastewater 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 Net 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 SFPUC believes that the initiative is not intended to, and would not, apply to fees for wastewater 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 wastewater 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) and in June 2018 (Proposition A), 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, clean water facilities, power facilities, or combinations of water, clean water and power facilities under the jurisdiction of the SFPUC or for any other lawful purpose of the water, clean water or power utilities of the City in furtherance of the purposes provided in the Charter (and subject to the further conditions contained in Proposition E and Proposition A). See “OBLIGATIONS PAYABLE FROM NET REVENUES— Authority for Issuance of Revenue Bonds and Other Obligations Payable from Net Revenues” and “SECURITY FOR THE BONDS—Additional Series of Bonds,” “—Additional Parity Loans” and “—Refunding Bonds.”

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 Wastewater Enterprise or implement other changes affecting the SFPUC and the Wastewater 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 wastewater rates and charges, or in any way questioning or affecting:

- (i) the proceedings under which the 2018 Series ABC Bonds are to be issued;
- (ii) the validity of any provision of the 2018 Series ABC Bonds or the Indenture;
- (iii) the pledge of Net 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 Wastewater 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 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 Bonds as they become due.

TAX MATTERS

The following discussion summarizes certain U.S. federal tax considerations generally applicable to holders of the 2018 Series ABC Bonds that acquire their 2018 Series ABC Bonds in the initial offering. The discussion below is based upon laws, regulations, rulings, and decisions in effect and available on the date hereof, all of which are subject to change, possibly with retroactive effect. Prospective investors should note that no rulings have been or are expected to be sought from the U.S. Internal Revenue Service (the “IRS”) with respect to any of the U.S. federal tax consequences discussed below, and no assurance can be given that the IRS will not take contrary positions. Further, the following discussion does not deal with U.S. tax consequences applicable to any given investor, nor does it address the U.S. tax considerations applicable to all categories of investors, some of which may be subject to special taxing rules (regardless of whether or not such investors constitute U.S. Holders), such as certain U.S. expatriates, banks, REITs, RICs, insurance companies, tax-exempt organizations, dealers or traders in securities or currencies, partnerships, S corporations, estates and trusts, investors that hold their 2018 Series ABC Bonds as part of a hedge, straddle or an integrated or conversion transaction, or investors whose “functional currency” is not the U.S. dollar. Furthermore, it does not address (i) alternative minimum tax consequences (other than expressly set forth below), (ii) the net investment income tax imposed under Section 1411 of the Code, or (iii) the indirect effects on persons who hold equity interests in a holder. This summary also does not consider the taxation of the 2018 Series ABC Bonds under state, local or non-U.S. tax laws (other than expressly set forth below). In addition, this summary generally is limited to U.S. tax considerations applicable to investors that acquire their 2018 Series ABC Bonds pursuant to this offering for the issue price that is applicable to such 2018 Series ABC Bonds (i.e., the price at which a substantial amount of the 2018 Series ABC Bonds are sold to the public) and who will hold their 2018 Series ABC Bonds as “capital assets” within the meaning of Section 1221 of the Code.

As used herein, “U.S. Holder” means a beneficial owner of a 2018 Series ABC Bond that for U.S. federal income tax purposes is an individual citizen or resident of the United States, a corporation or other entity taxable as a corporation created or organized in or under the laws of the United States or any state thereof (including the District of Columbia), an estate the income of which is subject to U.S. federal income taxation regardless of its

source or a trust where a court within the United States is able to exercise primary supervision over the administration of the trust and one or more United States persons (as defined in the Code) have the authority to control all substantial decisions of the trust (or a trust that has made a valid election under U.S. Treasury Regulations to be treated as a domestic trust). As used herein, “Non-U.S. Holder” generally means a beneficial owner of a 2018 Series ABC Bond (other than a partnership) that is not a U.S. Holder. If a partnership holds 2018 Series ABC Bonds, the tax treatment of such partnership or a partner in such partnership generally will depend upon the status of the partner and upon the activities of the partnership. Partnerships holding 2018 Series ABC Bonds, and partners in such partnerships, should consult their own tax advisors regarding the tax consequences of an investment in the 2018 Series ABC Bonds (including their status as U.S. Holders or Non-U.S. Holders).

Notwithstanding the rules described below, it should be noted that, under newly enacted law that is effective for tax years beginning after December 31, 2017 (or, in the case of original issue discount, for tax years beginning after December 31, 2018), certain taxpayers that are required to prepare certified financial statements or file financial statements with certain regulatory or governmental agencies may be required to recognize income, gain and loss with respect to the 2018 Series ABC Bonds at the time that such income, gain or loss is recognized on such financial statements instead of under the rules described below.

Prospective investors should consult their own tax advisors in determining the U.S. federal, state, local or non-U.S. tax consequences to them from the purchase, ownership and disposition of the 2018 Series ABC Bonds in light of their particular circumstances.

U.S. Holders

In the opinion of Stradling Yocca Carlson & Rauth, a Professional Corporation, Sacramento, California, and Curls Bartling P.C., Oakland, California, Co-Bond Counsel, under existing statutes, regulations, rulings and judicial decisions, interest on the 2018 Series ABC Bonds is excluded from gross income for federal income tax purposes, and is not an item of tax preference for purposes of calculating the federal alternative minimum tax imposed on individuals. In the further opinion of Co-Bond Counsel, interest on the 2018 Series ABC Bonds is exempt from State of California personal income tax.

The difference between the issue price of a 2018 Series ABC Bond (the first price at which a substantial amount of the 2018 Series ABC Bonds of a maturity is to be sold to the public) and the stated redemption price at maturity with respect to the 2018 Series ABC Bond (to the extent the redemption price at maturity is greater than the issue price) constitutes original issue discount. Original issue discount accrues under a constant yield method, and original issue discount will accrue to a Beneficial Owner before receipt of cash attributable to such excludable income. The amount of original issue discount deemed received by a Beneficial Owner will increase the Beneficial Owner’s basis in the applicable 2018 Series ABC Bond. In the opinion of Co-Bond Counsel, the amount of original issue discount that accrues to the Beneficial Owner of the 2018 Series ABC Bond is excluded from gross income of such Beneficial Owner for federal income tax purposes and is not an item of tax preference for purposes of the federal alternative minimum tax imposed on individuals. In the opinion of Co-Bond Counsel, the amount of original issue discount that accrues to the Beneficial Owner of the 2018 Series ABC Bonds is exempt from State of California personal income tax.

Co-Bond Counsel’s opinion as to the exclusion from gross income for federal income tax purposes of interest (and original issue discount) on the 2018 Series ABC Bonds is based upon certain representations of fact and certifications made by the SFPUC and others and is subject to the condition that the SFPUC comply with all requirements of the Internal Revenue Code of 1986, as amended (the “Code”), that must be satisfied subsequent to the issuance of the 2018 Series ABC Bonds to assure that interest (and original issue discount) on the 2018 Series ABC Bonds will not become includable in gross income for federal income tax purposes. Failure to comply with such requirements of the Code might cause the interest (and original issue discount) on the 2018 Series ABC Bonds to be included in gross income for federal income tax purposes retroactive to the date of issuance of the 2018 Series ABC Bonds. The SFPUC will covenant to comply with all such requirements.

The amount by which a Beneficial Owner’s original basis for determining loss on sale or exchange in the applicable 2018 Series ABC Bonds (generally, the purchase price) exceeds the amount payable on maturity (or on an earlier call date) constitutes amortizable bond premium, which must be amortized under Section 171 of the Code; such amortizable bond premium reduces the Beneficial Owner’s basis in the applicable 2018 Series ABC Bond (and

the amount of tax-exempt interest received), and is not deductible for federal income tax purposes. The basis reduction as a result of the amortization of bond premium may result in a Beneficial Owner realizing a taxable gain when a 2018 Series ABC Bond is sold by the Beneficial Owner for an amount equal to or less (under certain circumstances) than the original cost of the 2018 Series ABC Bond to the Beneficial Owner. Purchasers of the 2018 Series ABC Bonds should consult their own tax advisors as to the treatment, computation and collateral consequences of amortizable bond premium.

Co-Bond Counsel's opinions may be affected by actions taken (or not taken) or events occurring (or not occurring) after the date hereof. Co-Bond Counsel has not undertaken to determine, or to inform any person, whether any such actions or events are taken or do occur. The Indenture and the Tax Certificate relating to the 2018 Series ABC Bonds permit certain actions to be taken or to be omitted if a favorable opinion of a Co-Bond Counsel is provided with respect thereto. Co-Bond Counsel expresses no opinion as to the effect on the exclusion from gross income for federal income tax purposes of interest (or original issue discount) on any 2018 Series ABC Bond if any such action is taken or omitted based upon the advice of counsel other than Co-Bond Counsel.

Although Co-Bond Counsel will render an opinion that interest (and original issue discount) on the 2018 Series ABC Bonds is excluded from gross income for federal income tax purposes provided that the SFPUC continues to comply with certain requirements of the Code, the ownership of the 2018 Series ABC Bonds and the accrual or receipt of interest (and original issue discount) with respect to the 2018 Series ABC Bonds may otherwise affect the tax liability of certain persons. Co-Bond Counsel expresses no opinion regarding any such tax consequences. Accordingly, before purchasing any of the 2018 Series ABC Bonds, all potential purchasers should consult their tax advisors with respect to collateral tax consequences relating to the 2018 Series ABC Bonds.

The Internal Revenue Service (the "IRS") has initiated an expanded program for the auditing of tax-exempt bond issues, including both random and targeted audits. It is possible that the 2018 Series ABC Bonds will be selected for audit by the IRS. It is also possible that the market value of the 2018 Series ABC Bonds might be affected as a result of such an audit of the 2018 Series ABC Bonds (or by an audit of similar bonds). No assurance can be given that in the course of an audit, as a result of an audit, or otherwise, Congress or the IRS might not change the Code (or interpretation thereof) subsequent to the issuance of the 2018 Series ABC Bonds to the extent that it adversely affects the exclusion from gross income of interest (and original issue discount) on the 2018 Series ABC Bonds or their market value.

SUBSEQUENT TO THE ISSUANCE OF THE 2018 SERIES ABC BONDS THERE MIGHT BE FEDERAL, STATE, OR LOCAL STATUTORY CHANGES (OR JUDICIAL OR REGULATORY CHANGES TO OR INTERPRETATIONS OF FEDERAL, STATE, OR LOCAL LAW) THAT AFFECT THE FEDERAL, STATE, OR LOCAL TAX TREATMENT OF THE 2018 SERIES ABC BONDS INCLUDING THE IMPOSITION OF ADDITIONAL FEDERAL INCOME OR STATE TAXES BEING IMPOSED ON OWNERS OF TAX-EXEMPT STATE OR LOCAL OBLIGATIONS, SUCH AS THE 2018 SERIES ABC BONDS. THESE CHANGES COULD ADVERSELY AFFECT THE MARKET VALUE OR LIQUIDITY OF THE 2018 SERIES ABC BONDS. NO ASSURANCE CAN BE GIVEN THAT SUBSEQUENT TO THE ISSUANCE OF THE 2018 SERIES ABC BONDS STATUTORY CHANGES WILL NOT BE INTRODUCED OR ENACTED OR JUDICIAL OR REGULATORY INTERPRETATIONS WILL NOT OCCUR HAVING THE EFFECTS DESCRIBED ABOVE. BEFORE PURCHASING ANY OF THE 2018 SERIES ABC BONDS, ALL POTENTIAL PURCHASERS SHOULD CONSULT THEIR TAX ADVISORS REGARDING POSSIBLE STATUTORY CHANGES OR JUDICIAL OR REGULATORY CHANGES OR INTERPRETATIONS, AND THEIR COLLATERAL TAX CONSEQUENCES RELATING TO THE 2018 SERIES ABC BONDS.

Non-U.S. Holders

Interest. Subject to the discussions below under the headings "Information Reporting and Backup Withholding" and "Foreign Account Tax Compliance Act," payments of principal of, and interest on, any 2018 Series ABC Bond to a Non-U.S. Holder, other than (1) a controlled foreign corporation, a such term is defined in the Code, which is related to the SFPUC through stock ownership and (2) a bank which acquires such 2018 Series ABC Bond in consideration of an extension of credit made pursuant to a loan agreement entered into in the ordinary course of business, will not be subject to any U.S. federal withholding tax provided that the beneficial owner of the 2018 Series ABC Bond provides a certification completed in compliance with applicable statutory and regulatory

requirements, which requirements are discussed below under the heading “Information Reporting and Backup Withholding,” or an exemption is otherwise established.

Disposition of the 2018 Series ABC Bonds. Subject to the discussions below under the headings “Information Reporting and Backup Withholding” and “Foreign Account Tax Compliance Act,” any gain realized by a Non-U.S. Holder upon the sale, exchange, redemption, retirement (including pursuant to an offer by the Commission) or other disposition of a 2018 Series ABC Bond generally will not be subject to U.S. federal income tax, unless (i) such gain is effectively connected with the conduct by such Non-U.S. Holder of a trade or business within the United States; or (ii) in the case of any gain realized by an individual Non-U.S. Holder, such holder is present in the United States for 183 days or more in the taxable year of such sale, exchange, redemption, retirement (including pursuant to an offer by the Commission) or other disposition and certain other conditions are met.

U.S. Federal Estate Tax. A 2018 Series ABC Bond that is held by an individual who at the time of death is not a citizen or resident of the United States will not be subject to U.S. federal estate tax as a result of such individual’s death, provided that, at the time of such individual’s death, payments of interest with respect to such 2018 Series ABC Bond would not have been effectively connected with the conduct by such individual of a trade or business within the United States.

Information Reporting and Backup Withholding. Subject to the discussion below under the heading “Foreign Account Tax Compliance Act,” under current U.S. Treasury Regulations, payments of principal and interest on any 2018 Series ABC Bonds to a holder that is not a United States person will not be subject to any backup withholding tax requirements if the beneficial owner of the 2018 Series ABC Bond or a financial institution holding the 2018 Series ABC Bond on behalf of the beneficial owner in the ordinary course of its trade or business provides an appropriate certification to the payor and the payor does not have actual knowledge that the certification is false. If a beneficial owner provides the certification, the certification must give the name and address of such owner, state that such owner is not a United States person, or, in the case of an individual, that such owner is neither a citizen nor a resident of the United States, and the owner must sign the certificate under penalties of perjury. The current backup withholding tax rate is 24%.

Foreign Account Tax Compliance Act—U.S. Holders and Non-U.S. Holders

Sections 1471 through 1474 of the Code impose a 30% withholding tax on certain types of payments made to foreign financial institutions, unless the foreign financial institution enters into an agreement with the U.S. Treasury to, among other things, undertake to identify accounts held by certain U.S. persons or U.S. owned entities, annually report certain information about such accounts, and withhold 30% on payments to account holders whose actions prevent it from complying with these and other reporting requirements, or unless the foreign financial institution is otherwise exempt from those requirements. In addition, FATCA imposes a 30% withholding tax on the same types of payments to a non-financial foreign entity unless the entity certifies that it does not have any substantial U.S. owners or the entity furnishes identifying information regarding each substantial U.S. owner. Failure to comply with the additional certification, information reporting and other specified requirements imposed under FATCA could result in the 30% withholding tax being imposed on payments of interest and principal under the 2018 Series ABC Bonds and sales proceeds of 2018 Series ABC Bonds held by or through a foreign entity. In general, withholding under FATCA currently applies to payments of U.S. source interest (including OID) and, under current guidance, will apply to (i) gross proceeds from the sale, exchange or retirement of debt obligations paid after December 31, 2018 and (ii) certain “passthrough” payments no earlier than January 1, 2019. Prospective investors should consult their own tax advisors regarding FATCA and its effect on them.

The foregoing summary is included herein for general information only and does not discuss all aspects of U.S. federal taxation that may be relevant to a particular holder of 2018 Series ABC Bonds in light of the holder’s particular circumstances and income tax situation. Prospective investors are urged to consult their own tax advisors as to any tax consequences to them from the purchase, ownership and disposition of 2018 Series ABC Bonds, including the application and effect of state, local, non-U.S., and other tax laws.

A copy of the proposed form of opinion of Co-Bond Counsel is attached hereto as Appendix C.

CERTAIN LEGAL MATTERS

Certain legal matters incident to the authorization, sale and delivery of the 2018 Series ABC Bonds are subject to the approval of Stradling Yocca Carlson & Rauth, a Professional Corporation, Sacramento, California, and Curls 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**”). Certain legal matters are being passed upon for the Underwriters by Kutak Rock LLP, Irvine, California. Co-Bond Counsel and Disclosure Counsel will receive compensation that is contingent upon the sale and delivery of the 2018 Series ABC Bonds.

The form of approving opinion of Co-Bond Counsel is set forth in Appendix C, and will be available at the time of delivery of the 2018 Series ABC 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 2018 Series ABC 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 2018 Series ABC 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 “Aa3” to the 2018 Series ABC Bonds and S&P Global Ratings, a division of Standard & Poor’s Financial Services LLC (“**S&P**”), has assigned its municipal bond rating of “AA” to the 2018 Series ABC 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 2018 Series ABC Bonds. The SFPUC undertakes no responsibility to maintain its current ratings on the 2018 Series ABC Bonds or to oppose any such downward revision, suspension or withdrawal.

UNDERWRITING

2018 Series AB Bonds

The 2018 Series AB Bonds are being purchased by J.P. Morgan Securities LLC, on behalf of itself and Goldman Sachs & Co. LLC and Siebert Cisneros Shank & Co., L.L.C. (collectively, the “**2018 Series AB Underwriters**”).

The 2018 Series AB Underwriters have agreed to purchase the 2018 Series A Bonds from the SFPUC at a purchase price of \$263,048,447.78 (consisting of \$229,050,000.00 aggregate principal amount of the 2018 Series A Bonds, plus original issue premium of \$34,463,483.90, less an underwriter’s discount of \$465,036.12). Under the bond purchase contract to be entered into in connection with the purchase of the 2018 Series A Bonds, the 2018 Series AB Underwriters will be obligated to purchase all of the 2018 Series A 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 2018 Series AB Underwriters have agreed to purchase the 2018 Series B Bonds from the SFPUC at a purchase price of \$220,067,005.96 (consisting of \$185,950,000.00 aggregate principal amount of the 2018 Series B Bonds, plus original issue premium of \$34,494,536.95 less an underwriter’s discount of \$377,530.99). Under the bond purchase contract to be entered into in connection with the purchase of the 2018 Series B Bonds, the 2018 Series AB Underwriters will be obligated to purchase all of the 2018 Series B 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 2018 Series AB Underwriters have certified the reoffering prices or yields of the 2018 Series AB Bonds set forth on the inside cover hereof. The SFPUC takes no responsibility for the accuracy of these prices or yields. The 2018 Series AB Underwriters may offer and sell the 2018 Series A Bonds or the 2018 Series B 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 2018 Series AB Underwriters.

The 2018 Series AB Underwriters and their respective affiliates are full service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, investment management, principal investment, hedging, financing and brokerage activities. Certain of the 2018 Series AB Underwriters and their respective affiliates have, from time to time, performed, and may in the future perform, various investment banking services for the SFPUC for which they received or will receive customary fees.

In the ordinary course of their various business activities, the 2018 Series AB Underwriters and their respective affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (which may include bank loans and/or credit default swaps) for their own account and for the accounts of their customers and may at any time hold long and short positions in such securities and instruments. Such investment and securities activities may involve securities and instruments of the SFPUC.

J.P. Morgan Securities LLC (“**JPMS**”), one of the Underwriters of the 2018 Series AB Bonds, has entered into negotiated dealer agreements (each, a “**Dealer Agreement**”) with each of Charles Schwab & Co., Inc. (“**CS&Co.**”) and LPL Financial LLC (“**LPL**”) for the retail distribution of certain securities offerings at the original issue prices. Pursuant to each Dealer Agreement, each of CS&Co. and LPL will purchase 2018 Series AB Bonds from JPMS at the original issue price less a negotiated portion of the selling concession applicable to any 2018 Series AB Bonds that such firm sells.

2018 Series C Bonds

The 2018 Series C Bonds are being purchased by Citigroup Global Markets Inc., on behalf of itself and Morgan Stanley & Co. LLC and Piper Jaffray & Co. (collectively, the “**2018 Series C Underwriters**” and, together with the 2018 Series AB Underwriters, the “**Underwriters**”).

The 2018 Series C Underwriters have agreed to purchase the 2018 Series C Bonds from the SFPUC at a purchase price of \$178,864,908.24 (consisting of \$179,145,000.00 aggregate principal amount of the 2018 Series C

Bonds, less an underwriter's discount of \$280,091.76). Under the bond purchase contract to be entered into in connection with the purchase of the 2018 Series C Bonds, the 2018 Series C Underwriters will be obligated to purchase all of the 2018 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 2018 Series C Underwriters have certified the reoffering prices or yields of the 2018 Series C Bonds set forth on the inside cover hereof. The SFPUC takes no responsibility for the accuracy of these prices or yields. The 2018 Series C Underwriters may offer and sell the 2018 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 2018 Series C Underwriters.

The 2018 Series C Underwriters and their respective affiliates are full service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, investment management, principal investment, hedging, financing and brokerage activities. Certain of the 2018 Series C Underwriters and their respective affiliates have, from time to time, performed, and may in the future perform, various investment banking services for the SFPUC for which they received or will receive customary fees.

In the ordinary course of their various business activities, the 2018 Series C Underwriters and their respective affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (which may include bank loans and/or credit default swaps) for their own account and for the accounts of their customers and may at any time hold long and short positions in such securities and instruments. Such investment and securities activities may involve securities and instruments of the SFPUC.

Citigroup Global Markets Inc., one of the Underwriters of the 2018 Series C Bonds, has entered into a retail distribution agreement with Fidelity Capital Markets, a division of National Financial Services LLC (together with its affiliates, "**Fidelity**"). Under this distribution agreement, Citigroup Global Markets Inc. may distribute municipal securities to retail investors at the original issue price through Fidelity. As part of this arrangement, Citigroup Global Markets Inc. will compensate Fidelity for its selling efforts.

Morgan Stanley & Co. LLC, one of the Underwriters of the 2018 Series C Bonds, has entered into a retail distribution arrangement with its affiliate Morgan Stanley Smith Barney LLC. As part of this arrangement, Morgan Stanley & Co. LLC may distribute municipal securities to retail investors through the financial advisor network of Morgan Stanley Smith Barney LLC. As part of this arrangement, Morgan Stanley & Co. LLC may compensate Morgan Stanley Smith Barney LLC for its selling efforts with respect to the 2018 Series C Bonds.

FINANCIAL STATEMENTS

Attached as Appendix B are the audited financial statements of the Wastewater Enterprise (the "**Financial Statements**") for Fiscal Years 2015-16 and 2016-17, 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 audited financial statements of the SFPUC are public documents and 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 2018 Series ABC 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, 2019, with the report for Fiscal Year 2017-18, and to promptly provide notices 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 D. As of the date hereof, the SFPUC is in compliance in all material respects with its continuing disclosure undertakings.

CO-MUNICIPAL ADVISORS

Montague DeRose and Associates, LLC, Walnut Creek, California, and Hilltop Securities Inc., San Francisco, California (the “**Co-Municipal Advisors**”), have served as Co-Municipal Advisors to the SFPUC in connection with the structuring and delivery of the 2018 Series ABC Bonds. The Co-Municipal Advisors have participated with responsible SFPUC officials and staff in conferences and meetings where information contained in this Official Statement was reviewed for accuracy and completeness. The Co-Municipal Advisors are not, however, 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 2018 Series ABC Bonds.

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APPROVAL AND EXECUTION

This Official Statement has been duly approved, executed and delivered by the SFPUC.

PUBLIC UTILITIES COMMISSION OF THE
CITY AND COUNTY OF SAN FRANCISCO

By: _____ /s/ Harlan L. Kelly, Jr.
Harlan L. Kelly, Jr.
General Manager

APPENDIX A

SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE

This Appendix includes summaries of certain provisions of the Indenture, which are in addition and complementary to the summaries found under “INTRODUCTION,” “THE 2018 SERIES AB BONDS,” “THE 2018 SERIES C BONDS” and “SECURITY FOR THE BONDS” in the Official Statement. The following summaries are qualified in their entirety by reference to the Indenture, a copy of which can be obtained from the SFPUC.

The 2018 Series AB Bonds are issued under the Indenture, dated as of January 1, 2003, as amended and supplemented (the “Indenture”), including as supplemented by the Seventh Supplemental Indenture dated as of August 1, 2018 (the “Seventh Supplemental Indenture”). The 2018 Series C Bonds are issued under the Indenture, including as supplemented by the Eighth Supplemental Indenture dated as of August 1, 2018 (the “Eighth Supplemental Indenture”). The Indenture, which is summarized under the caption “THE INDENTURE,” includes definitions of terms and other provisions specific to the 2018 Series AB Bonds and the 2018 Series C Bonds and the provisions applicable to all of the Bonds. The terms of the Seventh Supplemental Indenture are summarized under the caption “THE SEVENTH SUPPLEMENTAL INDENTURE” below and include provisions specific to the 2018 Series AB Bonds. The terms of the Eighth Supplemental Indenture are summarized under the caption “THE EIGHTH SUPPLEMENTAL INDENTURE” below and include provisions specific to the 2018 Series C Bonds.

The Commission has approved amendments to the Indenture set forth in a Sixth Supplemental Indenture, dated as of July 1, 2018 (the “Sixth Supplemental Indenture”), which amendments will take effect once the consents required by the Indenture are obtained. All Owners of the 2018 Series ABC Bonds confirm, agree to, accept and consent to, and Owners of any Bonds issued after the date hereof will be deemed to have agreed to, accepted and consented to, the amendments to the Indenture set forth in the Sixth Supplemental Indenture for all purposes of the Indenture. The terms of the Sixth Supplemental Indenture are summarized under the caption “THE SIXTH SUPPLEMENTAL INDENTURE” below.

THE INDENTURE

DEFINITIONS; EQUAL SECURITY; CERTIFICATES AND OPINIONS

Unless the context otherwise requires, the terms defined in the Indenture will, for all purposes of the Indenture and of any Supplemental Indenture and of any certificate, opinion or other document mentioned in the Indenture, have the meanings specified in the Indenture. Unless otherwise defined in the Indenture, all terms used in the Indenture will have the meanings assigned to such terms in the Law.

“Accreted Value” means, with respect to any Capital Appreciation Bond, the principal amount thereof plus the interest accrued thereon from its date, compounded at the approximate interest rate thereof on each date specified in the Supplemental Indenture pursuant to which such Capital Appreciation Bonds are issued. The Accreted Value on any such date of compounding will be the amount set forth in the Accreted Value Table and, with respect to any date other than a date on which compounding occurs, will be determined by straight-line interpolation (based on a year consisting of 12 30-day months), as calculated by the Trustee. The calculation of Accreted Value by the Trustee will be binding and conclusive as to the Accreted Value of Capital Appreciation Bonds.

“Accreted Value Table” means, with respect to any Capital Appreciation Bonds, the corresponding table attached as an Exhibit to a Supplemental Indenture pursuant to which Additional Bonds constituting Capital Appreciation Bonds are issued.

“Additional Bonds” means bonds, notes or other obligations of the Commission (other than Parity State Loans) payable from Net Revenues and ranking on a parity with the Bonds and issued pursuant to a Supplemental Indenture in compliance with the Indenture, as applicable.

“Annual Debt Service” means the sum of principal and interest on all Outstanding Bonds and Parity State Loans as computed for the twelve-month period ending June 30 to which reference is made, and calculated in a

manner consistent with the determination of Average Annual Debt Service and Maximum Annual Debt Service as provided in the definitions thereof. 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, amounts equal to the Refundable Credits the Commission is scheduled to receive during each such twelve-month period ending June 30 will be deducted from such interest.

Upon the effectiveness of the amendments in the Sixth Supplemental Indenture, the definition of “Annual Debt Service” above will be amended as described under the caption “SIXTH SUPPLEMENTAL INDENTURE — PROPOSED AMENDMENTS TO INDENTURE — Amendments to Definitions” below.

“Arbitrage Certificate” means the arbitrage certificate or similar tax certificate delivered or to be delivered by the Commission at the time of issuance and delivery of a Series of Bonds, as the same may be amended or supplemented in a accordance with its terms.

“Authorized Officer” of the Trustee means and includes the chairman of the board of directors, the president, every vice president, every assistant vice president, the cashier, every assistant cashier, every trust officer, and every other officer and assistant officer of the Trustee to whom any trust matter is referred because his or her knowledge of, and familiarity with, a particular subject.

“Average Annual Debt Service” means, as of the date of calculation, total remaining Debt Service divided by the number of twelve-month periods ending on June 30 (including any fractional periods) remaining until the last maturity date of any Outstanding Bond, calculated by the Commission using the following assumptions:

(a) In determining the principal amount due in each year, payment will (unless a different subsection of the definition applies for purposes of determining principal maturities or amortization) be assumed to be made in accordance with any amortization schedule established for such debt, including any Minimum Sinking Fund Account Payments or any scheduled redemption or payment of Bonds on the basis of Accreted Value, and for such purpose, the redemption payment or payment of Accreted Value will be deemed a principal payment and interest that is compounded and paid as Accreted Value will be deemed due on the scheduled redemption or Payment Date of such Capital Appreciation Bond.

(b) If any of the Outstanding Series of Bonds constitute Balloon Indebtedness or Balloon Indebtedness and Variable Rate Indebtedness or if Bonds then proposed to be issued would constitute Balloon Indebtedness or Balloon Indebtedness and Variable Rate Indebtedness, then, for purposes of determining Average Annual Debt Service, such amounts as constitute Balloon Indebtedness will be treated as if the principal amount of such Bonds were to be amortized from the date of their original issuance in substantially equal annual installments of principal and interest over a term of 25 years, and the interest rate used for such computation will, in the case of Variable Rate Indebtedness, be the average rate quoted over the 10 years preceding the date of calculation as the BMA Municipal Swap Index of Municipal Market Data or, if such index is no longer available, the J.J. Kenny Index in each case as such term is defined in the 1992 ISDA U.S. Municipal Counterparty definitions.

(c) If any Outstanding Bonds constitute Tender Indebtedness or if Bonds then proposed to be issued would constitute Tender Indebtedness, then for purposes of determining the amounts of principal and interest due in any Fiscal Year on such Bonds, the options or obligations of the owners of such Bonds to tender the same for purchase or payment prior to their stated maturity or maturities will be treated as a principal maturity occurring on the first date on which owners of such Bonds may or are required to tender such Bonds except that any such option or obligation to tender Bonds will be ignored and not treated as a principal maturity, if (i) such Bonds are rated in one of the two highest long-term rating categories (without reference to gradations such as “plus” or “minus”) by Moody’s and by S&P, or such Bonds are rated in the highest short-term, note or commercial paper rating categories by Moody’s and by S&P, and (ii) the obligation, if any, the Commission may have under a Letter of Credit Agreement with respect to such Bonds, other than its obligations on such Bonds, is either subordinated to the obligation of the Commission on the Bonds or is incurred under the conditions and meeting the tests for the issuance of Additional Bonds set forth in the Indenture.

(d) If any Outstanding Bonds constitute Variable Rate Indebtedness, or if Bonds proposed to be issued will be Variable Rate Indebtedness, the average rate quoted over the 10 years preceding the date of calculation as the BMA Municipal Swap Index of Municipal Market Data or, if such index is no longer available, the J.J. Kenny Index, in each case as such term is defined in the 1992 ISDA U.S. Municipal Counterparty definitions.

(e) If Defeasance Obligations have been deposited with and are held by the Trustee or another fiduciary to be used to pay principal or interest on specified Bonds, then the principal or interest to be paid from such Defeasance Obligations or from the earnings thereon will be disregarded and not included in calculating Average Annual Debt Service.

(f) In determining the amount of interest coming due during any twelve-month period ending June 30 on any Series of Bonds that are issued as Build America Bonds, amounts equal to the Refundable Credits the Commission is scheduled to receive during each such twelve-month period ending June 30 will be deducted from such interest.

Upon the effectiveness of the amendments in the Sixth Supplemental Indenture, the definition of “Average Annual Debt Service” above will be amended as described under the caption “SIXTH SUPPLEMENTAL INDENTURE — PROPOSED AMENDMENTS TO INDENTURE — Amendments to Definitions” below.

“Balloon Indebtedness” means a Series of Bonds 25% or more of the principal of which matures on the same date and is not required by the documents governing such Bonds to be amortized by payment or redemption prior to such date. For purposes of this definition, an optional or mandatory tender of Bonds for purchase as described within the definition of Tender Indebtedness will not be treated as a maturity.

“Board of Supervisors” means the Board of Supervisors of the City from time to time or any other governing board of the City provided for by law.

“Bond Obligation” means, as of any given date of calculation, (1) with respect to any Outstanding Current Interest Bond, the principal amount of such Bond, (2) with respect to any Outstanding Capital Appreciation Bond, the Accreted Value thereof as of the most recent date of the compounding of interest thereon preceding such date of calculation (unless such date of calculation is a date (unless such date of calculation is a date on which interest thereon is compounded, in which case as of such date), and (3) with respect to any outstanding Parity State Loan, the unpaid principal amount of the Parity State Loan.

“Bondowner” or “Owner” means any person who is the registered owner of any Outstanding Bond, or the bearer of any Outstanding Bond that has a maturity of one year or less and is issued in bearer form.

Upon the effectiveness of the amendments in the Sixth Supplemental Indenture, the definition of “Bondowner” and “Owner” above will be amended as described under the caption “SIXTH SUPPLEMENTAL INDENTURE — PROPOSED AMENDMENTS TO INDENTURE — Amendments to Definitions” below.

“Bond Reserve Fund” means the fund by that name established under the Indenture.

“Bond Reserve Fund Policy” means a financial guaranty issued to satisfy all or a portion of the Required Reserve for a Series of Bonds, which may be (a) a policy of insurance or surety bond issued by a Bond Reserve Fund Policy Provider, obligations insured by which have, at the time of the issuance of such financial guaranty, a rating by Moody’s and S&P which is at least as high as the underlying rating on the related Series of Bonds (i.e., the rating given without regard to any municipal bond or financial guaranty insurance, letter of credit, or similar guaranty or credit enhancement on that Series of Bonds), or (b) a Letter of Credit issued by a Qualified Bank.

“Bond Reserve Fund Policy Provider” means a municipal bond insurance company or other insurance company that is the issuer of a Bond Reserve Fund Policy.

“Bonds” means Clean Water Revenue Bonds authorized by, and at anytime Outstanding under, the Indenture or any Supplemental Indenture, including any Additional Bonds authorized by, and at any time Outstanding under, this Indenture and any Supplemental Indenture, and for purposes of the provisions of the Indenture described in this Appendix A under the captions “REVENUES AND FUNDS — Pledge and Assignment of Net Revenues; Revenue Fund — Pledge of Net Revenues; Perfection of Lien,” “EVENTS OF DEFAULT AND REMEDIES OF BONDOWNERS — Events of Default; Acceleration; Waiver of Default” and “— Application of Funds Upon Acceleration” and in the Official Statement under the caption “SECURITY FOR THE BONDS — Rate Covenants,” the term “Bonds” includes Parity State Loans.

“Build America Bonds” means any bonds or other obligations issued as Build America Bonds under Section 54AA of the Code, or under any other provision of the Code that creates a substantially similar direct-pay subsidy program.

“Business Day” means any day other than (a) a Saturday, Sunday or day upon which commercial banks in San Francisco, California, or New York, New York are authorized or required to be closed and (b) for purposes of payments and other actions relating to Bonds secured by a Letter of Credit, a day upon which commercial banks are authorized to be closed in the city in which is located the office of the Qualified Bank at which demands for payment under the Letter of Credit are to be presented.

“Capital Appreciation Bonds” means all or any portion of a Series of Bonds designated as Capital Appreciation Bonds and on which interest is compounded and paid either at maturity or on prior redemption.

“Capital Project Account” means each account by that name established within the Capital Project Fund.

“Capital Project Fund” means the fund by that name established under the Indenture.

“Certificate of the Commission” means an instrument in writing signed by the President or by the General Manager or by any other officer of the Commission duly authorized by the Commission for that purpose, and by the Secretary. Any such instrument and supporting opinions or representations, if any, may, but need not, be combined in a single instrument with any other instrument, opinion or representation, and the two or more so combined will be read and construed as a single instrument. If and to the extent required by the provisions of the Indenture, each Certificate of the Commission will include the statements provided for in the Indenture.

“Charter” means the Charter of the City as it now exists or as it may be later amended, and any new or successor Charter.

“City” means the existing political subdivision known as the City and County of San Francisco, in the State of California, as the same is organized and existing under and by virtue of the Constitution and laws of the State of California and the Charter, and any public body later created as a successor thereto.

“Closing Date” means August 9, 2018, the date of the original issuance and delivery of the 2018 Series ABC Bonds.

“Code” means the Internal Revenue Code of 1986, as amended.

“Commission” means the Public Utilities Commission of the City, and all commissions, agencies or public bodies later created which succeed to or take over the powers and duties of the Commission with respect to the Enterprise.

“Consulting Engineers” means any engineer or firm of engineers retained by the Commission having a wide and favorable reputation for skill and experience in evaluating the construction and operation of public utilities, including public sanitary waste and storm water collection, treatment and disposal systems, or in other revenue producing publicly-owned enterprises, to perform the acts and carry out the duties provided for such consulting engineers in the Indenture.

“Controller” means the Controller of the City from time to time, and includes any deputy acting for the Controller.

“Credit Provider” means a Municipal Bond Insurer that has issued an outstanding policy of municipal bond or financial guaranty insurance or a Qualified Bank that has issued an outstanding Letter of Credit which, in each case, secures payment of principal of, and interest on, or tender price of, all or a portion of a Series of Bonds; provided that “Credit Provider” will not refer to a Bond Reserve Fund Policy Provider.

“Current Interest Bonds” means all or any portion of a Series of Bonds designated as Current Interest Bonds and which pay interest at least semiannually to the Owners thereof excluding the first payment of interest thereon.

“Debt Service” means the sum of all principal and interest due on all Outstanding Bonds and Parity State Loans as of the date of calculation.

“Defeasance Obligations” means:

- (a) Cash;
- (b) Federal Securities;
- (c) The interest component of Resolution Funding Corporation strips which have been stripped by request to the Federal Reserve Bank of New York in book entry form;
- (d) Pre-refunded municipal bonds rated “Aaa” by Moody’s and “AAA” by S&P, provided that, if the issue is rated only by S&P (i.e., there is no Moody’s rating), then the pre-refunded municipal bonds must have been pre-refunded with cash, direct U.S. or U.S. guaranteed obligations, or AAA rated pre-refunded municipals; and
- (e) Bonds, debentures, notes or other evidence of indebtedness issued or guaranteed by any of the following federal agencies and provided such obligations are backed by the full faith and credit of the United States of America (stripped securities are only permitted if they have been stripped by the agency itself): (i) direct obligations or fully guaranteed certificates of beneficial ownership of the U.S. Export-Import Bank; (ii) certificates of beneficial ownership of the Farmers Home Administration; (iii) participation certificates of the General Services Administration; (iv) Federal Financing Bank bonds and debentures; (v) guaranteed Title XI financings of the U.S. Maritime Administration; and (vi) project notes, local authority bonds, new communities debentures and U.S. public housing notes and bonds of the U.S. Department of Housing and Urban Development.

Upon the effectiveness of the amendments in the Sixth Supplemental Indenture, the defined term “Excluded Principal” will be added to the Indenture, having the definition described under the caption “SIXTH SUPPLEMENTAL INDENTURE — PROPOSED AMENDMENTS TO INDENTURE — Amendments to Definitions” below.

“Enterprise” means the whole and each and every part of the municipal sanitary waste and storm water collection, treatment and disposal system and auxiliary or related facilities of the Commission, including all of the presently existing system of the Commission for the collection, treatment and disposal of sanitary waste and storm water, and all future additions, betterments, and extensions to that system or any part thereof.

“Event of Default” means an event of that name described in the Indenture.

“Failed Tender Date” means, with respect to the 2018 Series C Bonds, the date on which insufficient funds are available for the purchase of all 2018 Series C Bonds that are required to be tendered for remarketing on a Mandatory Tender Date.

“Federal Securities” means United States treasury notes, bonds, bills or certificates of indebtedness, or obligations for which the faith and credit of the United States of America are pledged for the payment of principal and interest (including obligations issued or held in book-entry form and securities which represent an undivided interest in such direct obligations and CATs and TGRS), and also any securities now or later authorized, both the principal of and interest on which is guaranteed directly by the full faith and credit of the United States of America.

“Financial Newspaper or Journal” means *The Wall Street Journal* or *The Bond Buyer*, or any other newspaper Or journal publishing financial news and selected by the Trustee, whose decision will be final and conclusive, printed in the English language, customarily published on each Business Day and circulated in San Francisco, California.

“First Amendment” means that certain First Amendment to Indenture dated as of May 1, 2010, between the Commission and the Trustee.

“Fiscal Year” means the period beginning on July 1 of each year and ending on the next succeeding June 30, or such other fiscal year as may be adopted by the Commission for its general accounting purposes or the then current accounting period of the City if the Commission has no separate accounting period.

“Fitch” means Fitch, Inc., doing business as Fitch Ratings, a corporation duly organized and existing under and by virtue of the laws of the State of Delaware, and its successors and assigns, except that if such corporation is dissolved or liquidated or no longer performs the functions of a securities rating agency, then the term “Fitch” will be deemed to refer to any other nationally recognized securities rating agency selected by the Commission.

“General Manager” means the general manager of the Commission appointed by the Mayor from time to time pursuant to the Charter or any other applicable provision of law, and includes any other person acting on behalf of the General Manager.

“Indenture” means the Indenture, dated as of January 1, 2003, by and between the Commission and the Trustee, as originally executed or as it may from time to time be supplemented or amended by any Supplemental Indenture delivered under the provisions of the Indenture.

“Independent Certified Public Accountant” means any certified public accountant or firm of such accountants appointed and paid by the Commission, and who, or each of whom --

- (a) is in fact independent and not under control of the City or the Commission;
 - (b) does not have any substantial interest, direct or indirect, with the City or the Commission;
- and
- (c) is not connected with the City or the Commission as an officer or employee of the City or the Commission, but who may be regularly retained to make annual or other audits of the books of or reports to the City or the Commission.

“Information Services” means:

- (a) Financial Information, Inc.’s “Daily Called Bond Service,” 30 Montgomery Street, 10th Floor, Jersey City, New Jersey 07302, Attention: Editor;
- (b) Mergent/FIS, 5250 77 Center Drive, Suite 150, Charlotte, North Carolina, 28217, Attn: Called Bond Dept.; and
- (c) Kenny S&P, 55 Water Street, 45th Floor, New York, New York 10041, Attention: Notification Department;

or, in accordance with then-current guidelines of the Securities and Exchange Commission, such other addresses or such other services providing information with respect to called bonds, or no such services, as the Commission may designate in a Written Request of the Commission delivered to the Trustee.

“Interest Payment Date” means those interest payment dates set forth for the 2003 Refunding Series A Bonds in the Indenture, and those interest payment dates set forth for any Additional Bonds in a Supplemental Indenture in accordance with the Indenture, as appropriate. With respect to the 2018 Series ABC Bonds, Interest Payment Date means April 1 and October 1 of each year, commencing October 1, 2018.

“Interim Funding Program” means, together, the notes captioned “Public Utilities Commission of the City and County of San Francisco Commercial Paper Notes (Wastewater Series, Proposition E)” in the aggregate principal amount not to exceed \$675,000,000 and obligations captioned “Public Utilities Commission of the City and County of San Francisco Revolving Obligations (Wastewater Series, Proposition E) in the aggregate principal amount not to exceed \$75,000,000.

“Law” means the Charter, the San Francisco Administrative Code, and all laws of the State of California supplemental thereto, including the Revenue Bond Law of 1941 to the extent made applicable by the Charter or by the San Francisco Administrative Code. Whenever reference is made in the Indenture to the “Law,” reference is made to the Law as in force on the date of the Indenture or any Supplemental Indenture, unless the context otherwise requires.

“Legal Investments” means bonds, notes, certificates of indebtedness, bills, acceptances or other securities in which funds of the Commission may now or later be legally invested as provided by the law in effect at the time of such investment.

“Letter of Credit” means an irrevocable and unconditional letter of credit, a standby purchase agreement, a line of credit or other similar credit arrangement issued by a Qualified Bank to secure payment of Balloon Indebtedness, Variable Rate Indebtedness, Tender Indebtedness or a Series of Bonds, or to satisfy all or a portion of the Required Reserve.

“Letter of Credit Agreement” means an agreement between the Commission and a Qualified Bank pursuant to which the Qualified Bank agrees to issue a Letter of Credit and which sets forth the repayment obligation of the Commission to the Qualified Bank on account of any advances under the Letter of Credit.

“Letter of Representations” means the letter or letters of representation of the Commission delivered to and accepted by The Depository Trust Company setting forth the basis on which The Depository Trust Company serves as depository for the Bonds, as originally executed or as it may be supplemented or revised or replaced by a letter to a substitute depository.

“Mandatory Tender Date” means, with respect to the 2018 Series C Bonds: (a) the Interest Payment Date on which the Term Rate Period then applicable to the 2018 Series C Bonds ends or, if such Interest Payment Date is not a Business Day, the next succeeding Business Day and (b) any Business Day while the 2018 Series C Bonds bear interest at the Stepped Rate.

“Maturity Date” means the maturity dates set forth for the 2003 Refunding Series A Bonds in the Indenture, and each maturity date set forth for any Additional Bonds in a Supplemental Indenture in accordance with the Indenture, as appropriate.

“Maximum Annual Debt Service” means, as of the date of calculation, the largest Annual Debt Service in the then current or any future Fiscal Year, calculated by the Commission using the following assumptions:

- (a) In determining the principal amount due in each year, payment will (unless a different subsection of the definition applies for purposes of determining principal maturities or amortization) be assumed to be made in accordance with any amortization schedule established for such debt, including any Minimum Sinking Fund Account Payments or any scheduled redemption or payment of Bonds on the basis

of Accreted Value, and for such purpose, the redemption payment or payment of Accreted Value will be deemed a principal payment and interest that is compounded and paid as Accreted Value will be deemed due on the scheduled redemption or Payment Date of such Capital Appreciation Bond.

(b) If any of the Outstanding Series of Bonds constitute Balloon Indebtedness or Balloon Indebtedness and Variable Rate Indebtedness or if Bonds then proposed to be issued would constitute Balloon Indebtedness or Balloon Indebtedness and Variable Rate Indebtedness, then, for purposes of determining Maximum Annual Debt Service, such amounts as constitute Balloon Indebtedness will be treated as if the principal amount of such Bonds were to be amortized from the date of their original issuance in substantially equal annual installments of principal and interest over a term of 25 years, and the interest rate used for such computation will, in the case of Variable Rate Indebtedness, be the average rate quoted over the 10 years preceding the date of calculation as the BMA Municipal Swap Index of Municipal Market Data or, if such index is no longer available, the J.J. Kenny Index in each case as such term is defined in the 1992 ISDA U.S. Municipal Counterparty definitions.

(c) If any Outstanding Bonds constitute Tender Indebtedness or if Bonds then proposed to be issued would constitute Tender Indebtedness, then for purposes of determining the amounts of principal and interest due in any Fiscal Year on such Bonds, the options or obligations of the owners of such Bonds to tender the same for purchase or payment prior to their stated maturity or maturities will be treated as a principal maturity occurring on the first date on which owners of such Bonds may or are required to tender such Bonds except that any such option or obligation to tender Bonds will be ignored and not treated as a principal maturity, if (i) such Bonds are rated in one of the two highest long-term rating categories (without reference to gradations such as “plus” or “minus”) by Moody’s and by S&P, or such Bonds are rated in the highest short-term, note or commercial paper rating categories by Moody’s and by S&P, and (ii) the obligation, if any, the Commission may have under a Letter of Credit Agreement with respect to such Bonds, other than its obligations on such Bonds, is either subordinated to the obligation of the Commission on the Bonds or is incurred under the conditions and meeting the tests for the issuance of Additional Bonds set forth in the Indenture.

(d) If any Outstanding Bonds constitute Variable Rate Indebtedness, or Bonds proposed to be issued will be Variable Rate Indebtedness, the average rate quoted over the 10 years preceding the date of calculation as the BMA Municipal Swap Index of Municipal Market Data or, if such index is no longer available, the J.J. Kenny Index, in each case as such term is defined in the 1992 ISDA U.S. Municipal Counterparty definitions.

(e) If Defeasance Obligations have been deposited with, and are held by the Trustee or another fiduciary to be used to pay principal or interest on specified Bonds, then the principal or interest to be paid from, such Defeasance Obligations or from the earnings thereon will be disregarded and not included in calculating Maximum Annual Debt Service.

(f) In determining the amount of interest coming due during any twelve-month period ending June 30 on any Series of Bonds that are issued as Build America Bonds, amounts equal to the Refundable Credits the Commission is scheduled to receive during such twelve-month period ending June 30 will be deducted from such interest.

Upon the effectiveness of the amendments in the Sixth Supplemental Indenture, the definition of “Maximum Annual Debt Service” above will be amended as described under the caption “SIXTH SUPPLEMENTAL INDENTURE — PROPOSED AMENDMENTS TO INDENTURE — Amendments to Definitions” below.

“Mayor” means the Mayor of the City from time to time.

“Minimum Sinking Fund Account Payments” means the aggregate amounts required by the Indenture and any subsequent Supplemental Indenture to be deposited in Sinking Fund Accounts for the payment of Term Bonds.

“Moody’s” means Moody’s Investors Service, Inc., a corporation duly organized and existing under and by virtue of the laws of the State of Delaware, and its successors and assigns, except that if such corporation is dissolved or liquidated or no longer performs the functions of a securities rating agency, then the term “Moody’s” will be deemed to refer to any other nationally recognized securities rating agency selected by the Commission.

“Municipal Bond Insurer” means any insurance company or companies which is or are designated as such in the Indenture or a Supplemental Indenture, and which has or have issued a policy of municipal bond insurance or a financial guaranty insurance policy insuring payment of the principal of and interest on any of the Bonds of any Series of Bonds.

“Net Revenues” means all of the Revenues less all Operation and Maintenance Costs of the Enterprise.

“Operation and Maintenance Costs of the Enterprise” means the reasonable and necessary costs of operating and maintaining the Enterprise, calculated on generally accepted 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 Enterprise in good repair and working order, and reasonable amounts for administration, overhead, insurance, taxes (if any), and the payment of pension charges and proportionate payments to such compensation and other insurance or outside reserve funds as the Commission may establish or the Board of Supervisors may require with respect to employees of the Commission, as provided in the Charter. However, the term “Operation and Maintenance Costs of the Enterprise” excludes in all cases (a) depreciation and obsolescence charges or reserves therefor, (b) amortization of intangibles or other bookkeeping entries of a similar nature, (c) costs of capital additions, replacements, betterments, extensions or improvements to the Enterprise, which under generally accepted accounting principles are chargeable to a capital account or to a reserve for depreciation, (d) charges for the payment of principal and interest on any revenue bonds or other indebtedness previously or later issued for Enterprise purposes and (e) such costs as are scheduled to be paid by the Commission from moneys other than Revenues, such moneys to be clearly available for such purpose.

“Opinion of Counsel” means a written opinion of counsel (who may be counsel for the City or the Commission) retained by the Commission. If and to the extent required by the provisions of the Indenture, each Opinion of Counsel will include the statements provided for in the Indenture.

“Outstanding,” when used as of any particular time with reference to Bonds, means (subject to the provisions of the Indenture) all Bonds theretofore executed, issued and delivered by the Commission under the Indenture except --

- (a) Bonds theretofore cancelled by the Trustee or surrendered to the Trustee for cancellation;
- (b) Bonds for the payment or redemption of which funds or securities in the necessary amount (as set forth in the Indenture) have theretofore been deposited with a fiduciary (whether upon or prior to the maturity or redemption date of such Bonds), provided that, if such Bonds are to be redeemed prior to the maturity thereof, notice of such redemption is given as in provided in the Indenture, or provision satisfactory to the Trustee is made for the giving of such notice; and
- (c) Bonds in lieu of or in substitution for which other Bonds have been executed, issued and delivered by the Commission pursuant to the Indenture.

For purposes of this definition and within the meaning of the Indenture, any Bonds, the principal of or interest on which has been paid by a Credit Provider, will not be deemed paid by or on behalf of the Commission, will not be defeased and will remain Outstanding under the Indenture until the Credit Provider has been paid or reimbursed for such payment by the Commission.

“Parity State Loans” means those loan agreements entered into between the Commission and the State of California (or any board, department or agency thereof) to finance additions, betterments, extensions, repairs,

renewals or replacements to the Enterprise, which are entered into after the issuance of the 2003 Refunding Series A Bonds and which, by their terms, are payable from Net Revenues on a parity basis with debt service on the Bonds.

Upon the effectiveness of the amendments in the Sixth Supplemental Indenture, all references to the term “Parity State Loans” in the Indenture shall be deemed to refer to “Parity Loans,” having the definition described under the caption “SIXTH SUPPLEMENTAL INDENTURE — PROPOSED AMENDMENTS TO INDENTURE — Amendments to Definitions” below.

“Payment Date” means any date on which payment of the principal of or interest on the Bonds is due, or on which any Term Bonds are required to be redeemed from any Minimum Sinking Fund Account Payments.

“Permitted Investments” means any of the following, to the extent permitted by law and by any policy guidelines promulgated by the Commission or the City:

- (a) Cash;
- (b) Federal Securities;
- (c) the interest component of Resolution Funding Corporation strips which have been stripped by request to the Federal Reserve Bank of New York in book entry form;
- (d) bonds, debentures, notes or other evidence of indebtedness issued or guaranteed by any of the following federal agencies and provided such obligations are backed by the full faith and credit of the United States of America (stripped securities are only permitted if they have been stripped by the agency itself): (i) direct obligations or fully guaranteed certificates of beneficial ownership of the U.S. Export-Import Bank; (ii) certificates of beneficial ownership of the Farmers Home Administration; (iii) Federal Housing Administration debentures; (iv) participation certificates of the General Services Administration; (v) Federal Financing Bank bonds and debentures; (vi) guaranteed mortgage-backed bonds or guaranteed pass-through obligations of the Government National Mortgage Association; (vii) guaranteed Title XI financings of the U.S. Maritime Administration; and (viii) project notes, local authority bonds, new communities debentures and U.S. public housing notes and bonds of the U.S. Department of Housing and Urban Development;
- (e) bonds, debentures, notes or other evidence of indebtedness issued or guaranteed by any of the following non-full faith and credit U.S. government agencies (stripped securities only as stripped by the agency itself): (i) senior debt obligations of the Federal Home Loan Bank System; (ii) participation certificates and senior debt obligations of the Federal Home Loan Mortgage Corporation; (iii) mortgaged-backed securities and senior debt obligations of the Fannie Mae; (iv) senior debt obligations of the Student Loan Marketing Association; (v) obligations of the Resolution Funding Corporation; and (vi) consolidated system-wide bonds and notes of the Farm Credit System;
- (f) money market funds registered under the Federal Investment Company Act of 1940, whose shares are registered under the Federal Securities Act of 1933, and having a rating by S&P of at least AAAM-G, AAAM or AAM, and a rating by Moody’s of Aaa, Aa1 or Aa2 (such funds may include funds for which the Trustee, its affiliates, parent or subsidiaries provide investment advisory or, other management services);
- (g) certificates of deposit (including those of the Trustee, its parent and its affiliates) secured at all times by collateral described in (a) or (b) above, which have a maturity not greater than one year from the date of investment and which are issued by commercial banks, savings and loan associations or mutual savings banks whose short-term obligations are rated “A-1+” or better by S&P and “Prime-1” by Moody’s, which collateral must be held by a third party and provided that the Trustee must have a perfected first security interest in such collateral;

- (h) certificates of deposit, savings accounts, deposit accounts or money market deposits (including those of the Trustee and its affiliates) which are fully insured by FDIC, including BIF and SAIF;
- (i) investment agreements, including guaranteed investment contracts, forward purchase agreements, reserve fund put agreements and collateralized investment agreements acceptable to the Credit Provider;
- (j) commercial paper rated “Prime-1” by Moody’s and “A-1+” or better by S&P;
- (k) bonds or notes issued by any state or municipality which are rated by Moody’s and S&P in one of the two highest rating categories assigned by such agencies;
- (l) federal funds or bankers acceptances with a maximum term of one year of any bank which an unsecured, uninsured and unguaranteed obligation rating of “Prime-1” or “A3” or better by Moody’s, and “A-1+” by S&P;
- (m) the Local Agency Investment Fund which is administered by the California Treasurer for the investment of funds belonging to local agencies within the State of California, provided for investment of funds held by the Trustee, the Trustee is entitled to make investments and withdrawals in its own name as Trustee; and
- (n) Any other investment approved in writing by the Credit Provider.

“Policy Costs” means the amounts owing to a Bond Reserve Fund Policy Provider, including the principal amount of any draw on a Bond Reserve Fund Policy, interest thereon and reasonable expenses incurred by the Bond Reserve Fund Policy Provider in enforcing payment of Policy Costs, as more fully set forth in the agreement pursuant to which such Bond Reserve Fund Policy is issued.

“President” means the President of the Commission from time to time, or any other person acting on behalf of the President.

“Pricing Notice” means, with respect to the 2018 Series C Bonds, the Certificate of the Commission delivered to the Trustee and the Remarketing Agent pursuant to the Eighth Supplemental Indenture in connection with the establishment of a Term Rate Period for the 2018 Series C Bonds.

“Principal Payment Date” means the principal payment date set forth for the 2003 Refunding Series A Bonds in the Indenture, and the principal payment date set forth for any Additional Bonds in a Supplemental Indenture in accordance with the Indenture, as appropriate. With respect to the 2018 Series ABC Bonds, Principal Payment Date means October 1 of each year, commencing October 1, 2018.

“Project” means any repairs, replacements, additions, enlargements, betterments, extensions and other improvements to or benefiting, and the equipping of, the Enterprise, including, without limitation, the acquisition of land therefor.

“Proportionate Basis,” when used with respect to the redemption of Bonds, means that the amount of Bonds of each maturity to be redeemed will be determined as nearly as practicable by multiplying the total amount of funds available for redemption by the ratio which the amount of Bond Obligation of Bonds of such maturity bears to the amount of all Bond Obligation of Bonds to be redeemed, provided that if the amount available for redemption of Bonds of any maturity is insufficient to redeem a multiple of \$5,000 principal amount or Accreted Value payable at maturity, such amount will be applied to the redemption of the highest possible integral multiple (if any) of \$5,000 principal amount or Accreted Value payable at maturity. For purposes of the foregoing, Term Bonds will be deemed to mature in the years and in the amounts of the Minimum Sinking Fund Account Payments and Capital Appreciation Bonds and Current Interest Bonds maturing or subject to Minimum Sinking Fund Account Payments in the same year will be treated as separate maturities.

When used with respect to the payment or purchase of Bonds, “Proportionate Basis” will have the same meaning set forth above except that “pay” or “purchase” will be substituted for “redeem” or “redemption” and “paid” or “purchased” will be substituted for “redeemed.”

“Purchase Price” means, with respect to the 2018 Series C Bonds, an amount equal to the principal amount of the 2018 Series C Bonds to be purchased plus accrued interest to date on which such 2018 Series C Bonds are required to be tendered.

“Qualified Bank” means a state or national bank or trust company or savings and loan association or a foreign bank with a domestic branch or agency which is organized and in good standing under the laws of the United States or any state thereof or any foreign country, which has a debt rating at least as high as the underlying rating on the related Series of Bonds at the time such Qualified Bank delivers a Letter of Credit or a Bond Reserve Fund Policy (i.e., the rating given without regard to any municipal bond or financial guaranty insurance, letter of credit, or similar guaranty or credit enhancement on that Series of Bonds) as provided by Moody’s, by S&P or Fitch.

“Qualified Financial Advisor” means a person or a firm selected by the Commission who or which engages in the business of advising the management of public agencies similar to the Commission concerning the issuance of debt.

“Qualified Independent Consultant” means a person or a firm who or which engages in the business of advising the management of public agencies concerning the operation and financing of public utilities, including public municipal sanitary waste and storm water collection, treatment and disposal systems, and also including advice and consultation generally concerning the use and operation of public utilities, including public municipal sanitary waste and storm water collection, treatment and disposal systems, and which person or firm, by reason of his or its knowledge and experience, has acquired a reputation as a recognized consultant. Such Qualified Independent Consultant may include a person or firm rendering professional engineering or accounting services in addition to his or its occupation as a public utility consultant and may include any person or firm regularly employed by the City or the Commission as a consultant to the City or the Commission.

“Rebate Fund” means the fund established and so designated for a Series of Bonds.

“Refundable Credits” means (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 Commission 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 provision of the Code that creates 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 Commission has elected to receive under the applicable provisions of the Code.

“Remarketing Agent” means, with respect to the 2018 Series C Bonds, the entity employed by the Commission to remarket the 2018 Series C Bonds in connection with a new Term Rate Period.

“Required Reserve” means, with respect to Series of Bonds issued prior to the effective date of the amendments set forth in the First Amendment, between the Commission and the Trustee, but only until the effective date of the amendments set forth in the First Amendment, for any Series of Bonds, as of any date of calculation, an amount equal to the lesser of: (i) Maximum Annual Debt Service on all such Series of Bonds (excluding from such calculation Parity State Loans, if any) then Outstanding; or (ii) 125% of Average Annual Debt Service on all such Series of Bonds (excluding from such calculation Parity State Loans, if any) then Outstanding; provided, that (i) on and after the effective date of the amendments set forth in the First Amendment, “Required Reserve will mean, with respect to a Series of Bonds issued prior to the effective date of the amendments set forth in the First Amendment, 50% of Maximum Annual Debt Service on all such Series of Bonds (excluding from such calculation Parity State Loans, if any) then Outstanding, and (ii) in no event will the Commission, in connection with issuance of a Series of Additional Bonds, be obligated to deposit an amount in the Bond Reserve Fund which is in excess of the amount permitted by the applicable provisions of the Code to be so deposited from the proceeds of tax-exempt bonds without having to restrict the yield of any investment purchased with any portion of such deposit.

“Required Reserve” means, with respect to Series of Bonds issued on or after the effective date of the amendments set forth in the First Amendment, for any Series of Bonds, as of any date of calculation, the amount, if any, required to be deposited into a Reserve Account for that Series of Bonds, as defined in and provided by the Supplemental Indenture pursuant to which such Series of Bonds is issued; provided, however, that in no event will the Commission, in connection with issuance of a Series of Additional Bonds, be obligated to deposit an amount in the Bond Reserve Fund which is in excess of the amount permitted by the applicable provisions of the Code to be so deposited from the proceeds of tax-exempt bonds without having to restrict the yield of any investment purchased with any portion of such deposit.

“Reserve Account” means each account established in the Bond Reserve Fund with respect to each Series of Bonds issued under the Indenture.

“Revenue Fund” means the fund by that name established pursuant to the Indenture.

“Revenues” means all gross revenues of the Enterprise, including all charges received for and all other income and receipts derived by, the Commission from the operation of the Enterprise, or arising from the Enterprise, including connection and installation charges, but excluding – (a) any money received by or for the account the Commission from the levy or collection of taxes, (b) moneys received from the State of California and the United States of America and required to be deposited in restricted funds, (c) refundable deposits made to establish credit, (d) advances and contributions made to the Commission to be applied to construction, (e) moneys received constituting casualty insurance proceeds with respect to all or any part of the Enterprise (which will be received and disposed of pursuant to the Indenture) and moneys received constituting other insurance proceeds, (f) moneys received from the sale or disposition of all or any part of the Enterprise (which will be received and disposed of pursuant to the Indenture), (g) moneys received upon the taking by or under the threat of eminent domain of all or any part of the Enterprise (which moneys will be received and disposed of pursuant to the Indenture), (h) proceeds from Bonds issued by the Commission or proceeds from loans or other indebtedness obtained by the Commission, and (i) moneys or securities received by the Commission as gifts or grants, the use of which is restricted by the donor or grantor.

The term “Revenues” also includes (i) all interest or other income (excluding profits or losses from the sale or disposition of Permitted Investments or other securities owned by or on behalf of the Commission) 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 Enterprise and legally available to pay Debt Service, and (ii) any other moneys, proceeds and other amounts that the Commission determines should be “Revenues” under the Indenture.

“Secretary” means the Secretary of the Commission from time to time.

“Securities Depositories” means The Depository Trust Company, 711 Stewart Avenue, Garden City, New York 11530, Fax-(516) 227-4039 or 4190; or, in accordance with then-current guidelines of the Securities and Exchange Commission, to such other addresses or such other securities depositories, or no such depositories, as the Commission may designate in a Written Request of the Commission delivered to the Trustee.

“Senior State Loans” means those loan agreements entered into between the Commission and the State of California (or any board, department or agency thereof) to finance additions, betterments, extensions, repairs, renewals or replacements to the Enterprise, which (i) have been entered into and are in effect prior to the issuance of the 2003 Refunding Series A Bonds, or (ii) which are entered into after the issuance of the 2003 Refunding Series A Bonds and which, by their terms, are payable from Revenues on a basis senior to Debt Service. The Commission acknowledges that the payment of the Senior State Loans described in (i) above is not, by the terms of such Senior State Loans, senior to the payment of Debt Service, but has, for purposes of the Indenture, elected to treat such payment of such Senior State Loans as senior to the payment of Debt Service.

“Serial Bonds” means all or any portion of a Series of Bonds designated as Serial Bonds and for which no Minimum Sinking Fund Account Payments are provided.

“Series” means any series of Bonds executed, authenticated and delivered pursuant to the Indenture and identified as a separate Series of Bonds, including any Additional Bonds issued pursuant to a Supplemental Indenture and the Indenture.

Upon the effectiveness of the amendments in the Sixth Supplemental Indenture, the defined term “SIFMA” will be added to the Indenture, having the definition described under the caption “SIXTH SUPPLEMENTAL INDENTURE — PROPOSED AMENDMENTS TO INDENTURE — Amendments to Definitions” below.

“Sinking Fund Accounts” means any special account or accounts established by the Indenture or any Supplemental Indenture or Indentures in the Principal Fund (established pursuant to the Indenture) for the payment of Term Bonds.

“S&P” means Standard & Poor’s Ratings Services, a corporation duly organized and existing under and by virtue of the laws of the State of New York, and its successors and assigns, except that if such corporation is dissolved or liquidated or no longer performs the functions of a securities rating agency, then the term “S&P” will be deemed to refer to any other nationally recognized securities rating agency selected by the Commission.

“Stepped Rate” means, for each 2018 Series C Bond, (a) in the event that insufficient funds are available for the purchase of all 2018 Series C Bonds that are required to be tendered for remarketing on the first Mandatory Tender Date applicable thereto, 6% per annum for the first 79 days following and including the Failed Tender Date and 8% per annum thereafter and (b) in the event that insufficient funds are available for the purchase of all 2018 Series C Bonds that are required to be tendered for remarketing on any subsequent Mandatory Tender Date, the rate specified as the Stepped Rate in the applicable Pricing Notice.

“Term Rate” means, with respect to the 2018 Series C Bonds (a) for the initial Term Rate Period applicable thereto, the rate of interest that is specified as such in the Eighth Supplemental Indenture and (b) for each subsequent Term Rate Period, the interest rate not in excess of the 10% per annum that, if borne by the 2018 Series C Bonds throughout said Term Rate Period, would, in the judgment of the Remarketing Agent, having due regard for the prevailing market conditions for obligations of the same general character and credit quality as the 2018 Series C Bonds, result in the lowest interest rate that would enable the Remarketing Agent to sell the 2018 Series C Bonds at par on the applicable Mandatory Tender Date.

“Term Rate Period” means, with respect to the 2018 Series C Bonds, initially the period beginning on the Closing Date and ending October 1, 2023, and subsequently, (a) the period specified as such as described below under “EIGHTH SUPPLEMENTAL INDENTURE — PROVISIONS RELATING TO 2018 SERIES C BONDS — Authorization and Terms of 2018 Series C Bonds” and (b) subsequent to such period, the period that commences on the day following a Mandatory Tender Date and ends on the next Mandatory Tender Date as specified by the Commission in the applicable Pricing Notice.

“Supplemental Indenture” means any indenture amendatory of or supplemental to the Indenture that complies with the provisions of the Indenture for amendments and supplements, and includes any amended and restated indenture that complies with the provisions of the Indenture for amendments and supplements.

“Tender Indebtedness” means any Bonds or portions of Bonds a feature of which is an option, on the part of the Bondowners, or an obligation, under the terms of such Bonds, to tender all or a portion of such Bonds to the Commission, the Trustee or other fiduciary or agent for payment or purchase and requiring that such Bonds or portions of Bonds be purchased if properly presented.

“Term Bonds” means all or any portion of a Series of Bonds designated as Term Bonds and which are payable at or before their specified maturity date or dates from Minimum Sinking Fund Account Payments established for that purpose and calculated to retire such Bonds on or before their specified maturity date or dates.

“Treasurer” means the Treasurer of the City and includes any deputy acting for the Treasurer.

“Trustee” means U.S. Bank, National Association, acting as an independent trustee with the duties and powers provided in the Indenture, its successors and assigns, and any other corporation or association which may at any time be substituted in its place, as provided in the Indenture.

“2018 Series ABC Bonds” means the 2018 Series A Bonds, the 2018 Series B Bonds and the 2018 Series C Bonds.

“2018 Continuing Disclosure Certificate” means the Continuing Disclosure Certificate, dated the date of initial issuance of the 2018 Series ABC Bonds, executed and delivered by the Commission, as it may be supplemented and amended in accordance with its terms.

“2018 Series A Bonds” means the Public Utilities Commission of the City and County of San Francisco Wastewater Revenue Bonds 2018 Series A (Green Bonds).

“2018 Series A Capital Project Account” means the account by that name established within the Capital Project Fund pursuant to the Seventh Supplemental Indenture.

“2018 Series A Capitalized Interest Account” means the account by that name established within the Interest Fund pursuant to the Seventh Supplemental Indenture.

“2018 Series A Costs of Issuance Fund” means the fund by that name established pursuant to the Seventh Supplemental Indenture.

“2018 Series A Project” means financing, from amounts on deposit in the 2018 Series A Capital Project Account, the reconstructing, replacing, expanding, repairing or improving facilities that are part of, or of benefit to the Enterprise pursuant to the Law, including Section 8B.124 of the Charter.

“2018 Series A Rebate Fund” means the fund by that name established pursuant to the Seventh Supplemental Indenture.

“2018 Series A Reimbursement Account” means the account by that name established within the Principal Fund pursuant to the Seventh Supplemental Indenture.

“2018 Series A Sinking Fund Account” means the account by that name established within the Principal Fund pursuant to the Seventh Supplemental Indenture.

“2018 Series B Bonds” means the Public Utilities Commission of the City and County of San Francisco Wastewater Revenue Bonds 2018 Series B.

“2018 Series B Capital Project Account” means the account by that name established within the Capital Project Fund pursuant to the Seventh Supplemental Indenture.

“2018 Series B Capitalized Interest Account” means the account by that name established within the Interest Fund pursuant to the Seventh Supplemental Indenture.

“2018 Series B Costs of Issuance Fund” means the fund by that name established pursuant to the Seventh Supplemental Indenture.

“2018 Series B Project” means financing, from amounts on deposit in the 2018 Series B Capital Project Account, the reconstructing, replacing, expanding, repairing or improving facilities that are part of, or of benefit to the Enterprise pursuant to the Law, including Section 8B.124 of the Charter.

“2018 Series B Rebate Fund” means the fund by that name established pursuant to the Seventh Supplemental Indenture.

“2018 Series B Sinking Fund Account” means the account by that name established within the Principal Fund pursuant to the Seventh Supplemental Indenture.

“2018 Series C Bonds” means the Public Utilities Commission of the City and County of San Francisco Wastewater Revenue Bonds 2018 Series C (Green Bonds).

“2018 Series C Capital Project Account” means the account by that name established within the Capital Project Fund pursuant to the Eighth Supplemental Indenture.

“2018 Series C Capitalized Interest Account” means the account by that name established within the Interest Fund pursuant to the Eighth Supplemental Indenture.

“2018 Series C Costs of Issuance Fund” means the fund by that name established pursuant to the Eighth Supplemental Indenture.

“2018 Series C Project” means financing, from amounts on deposit in the 2018 Series C Capital Project Account, the reconstructing, replacing, expanding, repairing or improving facilities that are part of, or of benefit to the Enterprise pursuant to the Law, including Section 8B.124 of the Charter.

“2018 Series C Rebate Fund” means the fund by that name established pursuant to the Eighth Supplemental Indenture.

“2018 Series C Sinking Fund Account” means the account by that name established within the Principal Fund pursuant to the Eighth Supplemental Indenture.

“2003 Refunding Series A Bonds” has the meaning set forth in the Indenture.

“2003 Refunding Series A Reserve Account” means the account by that name established within the Bond Reserve Fund pursuant to the Indenture.

“Variable Rate Indebtedness” means any portion of indebtedness, the interest rate on which is not fixed at the time such indebtedness is incurred, and has not at some subsequent date been fixed for the entire term of the indebtedness.

“Written Request of the Commission,” “Written Requisition of the Commission” and “Written Statement of the Commission” mean, respectively, a written request, requisition or statement signed by or on behalf of the Commission by the President or the General Manager or the Secretary or by any person (whether or not an officer of the Commission) who is authorized by resolution of the Commission (which resolution will be provided to the Trustee) or otherwise to sign or execute such a document on its behalf.

Equal Security. In consideration of the acceptance of the Bonds by those who will hold the same from time to time, the Indenture will be deemed to be and will constitute a contract between the Commission, the Trustee and the Owners from time to time of the Bonds to secure the full and final payment of the interest and principal on the Bonds, subject to the agreements, conditions, covenants and terms contained therein; and the covenants and agreements therein set forth to be performed on behalf of the Commission or the Trustee will be for the equal and proportionate benefit, security and protection of all Owners of the Bonds without preference, priority or distinction as to security or otherwise of any of the Bonds over any of the others by reason of the Series, number or date thereof or the time of issue, sale, execution or delivery thereof, or otherwise for any cause whatsoever, except as expressly provided in the Indenture or in the Bonds.

Content of Certificates and Opinions. (a) Every certificate or opinion with respect to compliance with a condition or covenant provided for in the Indenture, including each Certificate of the Commission, will include (i) a statement that the person or persons making or giving such certificate or opinion have read such covenant or condition and the definitions in the Indenture relating thereto; (ii) a brief statement as to the nature and scope of the examination or investigation upon which the statements or opinions contained in such certificate or opinion are based; (iii) a statement that, in the opinion of the signers, they have made or caused to be made such examination or investigation as is necessary to enable them to express an informed opinion as to whether or not such covenant or condition has been complied with; and (iv) a statement as to whether, in the opinion of the signers, such condition or covenant has been complied with.

(b) Any such certificate or opinion made or given by an officer of the Commission may be based, insofar as it relates to legal, accounting or Enterprise matters, upon a certificate or opinion of or representations by counsel, accountants or consultants, unless such officer knows, or in the exercise of reasonable care should have known, that the certificate or opinion or representations with respect to the matters upon which his certificate or opinion may be based, as aforesaid, are erroneous. Any such certificate or opinion made or given by counsel, accountants or consultants may be based, insofar as it relates to factual matters, information with respect to which is in the possession of the Commission, upon the certificate or opinion of or representations by an officer or officers of the Commission, unless such counsel, accountant or consultant knows, or in the exercise of reasonable care should have known, that the certificate or opinion or representations with respect to the matters upon which his opinion may be based as aforesaid are erroneous.

THE BONDS

Authorization. (a) Issuance of Bonds. (i) Bonds may be issued under the Indenture from time to time in order to obtain funds for the purposes authorized therein. The Bonds will be issued under the Charter and the Law for the purpose of financing or refinancing the acquisition, construction, replacement, reconstruction, extension, improvement and development of the Enterprise.

(ii) The aggregate principal amount of Bonds which may be issued under the Indenture is not limited (subject, however, to the right of the Commission and the Board of Supervisors of the City, which is reserved by the Indenture, to limit or restrict the aggregate principal amount of Bonds which may at any time be issued and Outstanding under the Indenture) and consists or may consist of one or more Series of varying denominations, dates, maturities, interest rates and other provisions, all issued and to be issued pursuant to the Indenture and the Law, subject to the limitations contained in the Indenture.

(iii) The Indenture constitutes a continuing agreement with the Owners of all of the Bonds issued or to be issued under the Indenture and then Outstanding to secure the full and final payment of the principal of and the premiums, if any, and the interest on all Bonds which may from time to time be executed and delivered under the Indenture, subject to the covenants, agreements, provisions and conditions contained in the Indenture.

(iv) The Bonds are designated generally as the "Clean Water Revenue Bonds," each Series thereof to bear such additional designation as may be necessary or appropriate to distinguish such Series from every other Series of Bonds. The Bonds may be issued in such Series as from time to time will be established and authorized by the Commission, subject to the provisions and conditions contained in the Indenture.

Execution of Bonds. (a) The Bonds will be executed on behalf of the Commission by the manual or facsimile signatures of its President or General Manager and the Controller and under the seal of the Commission attested by the manual or facsimile signature of the Secretary. Such seal may be in the form of a facsimile of the Commission's seal and may be imprinted or impressed upon the Bonds. The Bonds will then be delivered to the Trustee for authentication by it. In case any of the officers who have signed or attested any of the Bonds cease to be such officer or officers before the Bonds so signed or attested have been authenticated or delivered by the Trustee or issued by the Commission, such Bonds may nevertheless be authenticated, delivered and issued and, upon such authentication, delivery and issue, will be as binding upon the Commission as though those who signed and attested the same had continued to be such officers, and also any Bond may be signed and attested on behalf of the Commission by such persons as on the actual date of the execution of such Bond will be the President or General

Manager or the Secretary or the Controller although at the nominal date of such Bond any such person did not hold such title.

(b) Except as may be provided in any Supplemental Indenture, only such of the Bonds as will bear thereon a certificate of authentication and registration in the form recited in the Indenture, executed by the Trustee, will be valid or obligatory for any purpose or entitled to the benefits of the Indenture, and such certificate of the Trustee will be conclusive evidence that the Bonds so authenticated have been duly authenticated and delivered under the Indenture and are entitled to the benefits of the Indenture.

Transfer of Bonds. (a) Any Bond may, in accordance with its terms, be transferred, upon the books required to be kept pursuant to the provisions of the Indenture, by the person in whose name it is registered, in person or by his or her duly authorized attorney, upon surrender of such Bond for cancellation, accompanied by delivery of a written instrument of transfer in a form approved by the Trustee duly executed.

(b) Whenever any Bond or Bonds are surrendered for transfer, the Commission will execute and the Trustee will authenticate and deliver a new Bond or Bonds of the same Series, tenor and maturity, for a like aggregate principal amount. The Trustee will require the payment by any Bondowner requesting any such transfer of any tax or other governmental charge required to be paid with respect to such transfer.

(c) No transfer of Current Interest Bonds will be required to be made by the Trustee after the fifteenth day of the month next preceding each interest payment date, or, as, to any Bonds called for redemption, within 30 days of the date fixed for redemption.

Exchange of Bonds. (a) Bonds may be exchanged at the principal corporate trust office of the Trustee in San Francisco, California, for a like aggregate principal amount of Bonds of other authorized denominations of the same Series, tenor and maturity. The Trustee will require the payment by the Bondowner requesting such exchange of any tax or other governmental charge required to be paid with respect to such exchange.

(b) No exchange of Current Interest Bonds will be required to be made by the Trustee after the fifteenth day of the month next preceding each interest payment date, or, as to any Bonds called for redemption, within thirty days of the date fixed for redemption.

Bond Register. The Trustee will keep or cause to be kept, at the principal corporate trust office of the Trustee in St. Paul, Minnesota, sufficient books for the registration and transfer of the Bonds, which will during regular business hours of the Trustee be open to inspection by the Commission; and, upon presentation for such purpose, the Trustee will, under such reasonable regulations as the Trustee may prescribe, register or transfer or cause to be registered or transferred, on said books, Bonds as provided in the Indenture.

Temporary Bonds. The Bonds may be initially issued in temporary form exchangeable for definitive Bonds when ready for delivery. The temporary Bonds may be printed, lithographed or typewritten, will be of such denominations as may be determined by the Commission, will be in registered, form without coupons and may contain such reference to any of the provisions of the Indenture as may be appropriate. Every temporary Bond will be executed by the Commission and be authenticated by the Trustee upon the same conditions and in substantially the same manner as the definitive fully registered Bonds. If the Commission issues temporary Bonds it will execute and furnish definitive Bonds without delay, and thereupon the temporary Bonds may be surrendered, for cancellation, in exchange therefor at the principal corporate trust office of the Trustee in St. Paul, Minnesota, and the Trustee will deliver in exchange for such temporary Bonds definitive Bonds of an equal aggregate principal amount of Bonds of the same Series, tenor and maturity or maturities. Until so exchanged, the temporary Bonds will be entitled to the same benefits under the Indenture as definitive Bonds executed and delivered under the Indenture.

Bonds Mutilated, Lost, Destroyed or Stolen. If any Bond becomes mutilated, the Commission, at the expense of the Owner of said Bond, will execute, and the Trustee will thereupon authenticate and deliver, a new Bond of like tenor and number in exchange and substitution for the Bond so mutilated (except that such number may be preceded by a distinguishing prefix), but only upon surrender to the Trustee of the Bond so mutilated. Every mutilated Bond so surrendered to the Trustee will be cancelled by it and delivered to, or upon the order of, the

Commission. If any Bond becomes lost, destroyed or stolen, evidence of such loss, destruction or theft may be submitted to the Commission and the Trustee and, if such evidence is satisfactory to both and indemnity satisfactory to them is given, the Commission, at the expense of the Owner, will execute, and the Trustee will thereupon authenticate and deliver a new Bond in lieu of and in substitution for the Bond so lost, destroyed or stolen (except that such number may be preceded by a distinguishing prefix). The Commission may require payment of a sum not exceeding the actual cost of preparing each new Bond issued under the Indenture and of the expenses which may be incurred by the Commission and, the Trustee in the premises. Any Bond issued under the provisions of the Indenture in exchange for any Bond mutilated or in lieu of any Bond alleged to be lost, destroyed or stolen will constitute an original additional contractual obligation on the part of the Commission, whether or not the Bond so mutilated or so alleged to be lost, destroyed or stolen be at any time enforceable by anyone, and will be equally and proportionately entitled to the benefits of the Indenture with all other Bonds secured by the Indenture. Neither the Commission nor the Trustee will be required to treat both the original Bond and any duplicate Bond as being Outstanding for the purpose of determining the principal amount of Bonds which may be issued under the Indenture or for the purpose of determining any percentage of Bonds Outstanding thereunder, but both the original and duplicate Bond will be treated as one and the same.

ISSUANCE OF ADDITIONAL SERIES OF BONDS

Capital Project Fund. (a) The Commission has covenanted and agreed to maintain under the Indenture the separate fund known as the “Clean Water Revenue Bond Capital Project Fund” (called the “Capital Project Fund” in the Indenture). The Treasurer will hold the amounts on deposit in the Capital Project Fund. The Controller will maintain and account for the Capital Project Fund so long as any moneys are on deposit therein. The Commission will establish within the Capital Project Fund separate Capital Project Accounts relating to separate Series of Bonds, to the extent needed for a Series of Bonds.

(b) Upon completion of the acquisition and construction of the Project, the Commission may direct the transfer of any remaining balance in the Capital Project Fund to the Interest Fund. Upon completion of acquisition or construction of the Project or any portion thereof, the Commission will file with the Trustee a Certificate or Written Statement of the Commission stating the fact and date of such completion of construction.

(c) The moneys in the Capital Project Fund will be held by the Treasurer in trust and applied to the costs of acquisition, construction, expansion, improvement, financing and refinancing of the Project and the expenses incident thereto or connected therewith, including, if necessary, interest to the extent permitted by law, reimbursement to the Commission for expenses incurred prior to the issuance of the applicable Series of Bonds to the extent permitted by law, and the costs incurred in connection with the issuance of the applicable Series of Bonds to the extent not provided for.

(d) The Treasurer will pay out moneys from the Capital Project Fund only upon warrants drawn by the Controller in the manner provided by law. No withdrawals will be made from the Capital Project Fund for any purpose not authorized by law.

Issuance of Additional Bonds. In addition to the 2003 Refunding Series A Bonds, the Commission may, subject to the requirements of the Law, by Supplemental Indenture establish one or more other Series of Bonds payable from Net Revenues on a parity with the 2003 Refunding Series A Bonds and secured by a lien upon and pledge of Net Revenues equal to the lien and pledge securing the 2003 Refunding Series A Bonds, and the Commission may issue and the Trustee may authenticate and deliver Bonds of any Series so established, in such principal amount and for such lawful purpose or purposes (including refunding of any Bonds issued under the Indenture and then Outstanding) as will be determined by the Commission in said Supplemental Indenture, but only upon compliance by the Commission with the provisions of the Indenture, and subject to the following specific conditions, which have been made conditions precedent to the issuance of any such additional Series of Bonds by the Indenture:

(a) No Event of Default has occurred and is continuing under the Indenture or any Supplemental Indenture and no event has occurred which, but for the passage of time or the giving of notice, would constitute an Event of Default under the Indenture or any Supplemental Indenture.

(b) The Supplemental Indenture providing for the issuance of such additional Series of Bonds requires that the amount on deposit in the Bond Reserve Fund to be established pursuant to the Indenture be increased, if and to the extent necessary, immediately upon the receipt of the proceeds of the sale of such additional Series of Bonds, to an amount equal to the Required Reserve. This deposit may be made from such proceeds or any other source, as provided in the Supplemental Indenture.

(c) The Supplemental Indenture providing for the issuance of such additional Series of Bonds provides for the payment of interest and principal as follows:

(i) Principal on such Additional Bonds is payable either semiannually on April 1 and October 1 of each year in which principal falls due or annually on October 1 of each year in which principal falls due, and Term Bonds of any Series have a principal maturity date of October 1. Interest on such Additional Bonds that are Current Interest Bonds is payable semiannually on April 1 and October 1 of each year excepting the first year, provided that the first installment of interest is payable on either April 1 or October 1 and is for a period of not longer than twelve months and that the interest is payable thereafter semiannually on April 1 and October 1.

(ii) Notwithstanding the foregoing, the Supplemental Indenture authorizing the issuance of such Additional Bonds may provide for the payment of principal and interest on dates other than those specified above if the Supplemental Indenture provides for the monthly payment of a portion of interest and principal becoming due and payable on the succeeding Interest Payment Date and Principal Payment Date, as applicable, as set forth in detail in the Supplemental Indenture.

(iii) Interest on any Bonds constituting Variable Rate Indebtedness or Tender Indebtedness may be payable on such Payment Dates as will be specified in the Supplemental Indenture.

(d) Fixed serial maturities or mandatory Minimum Sinking Fund Account Payments, or any combination thereof, is established in amounts sufficient to provide for the retirement of all of the Bonds of such additional Series on or before their respective maturity dates, unless such Bonds are Balloon Indebtedness.

(e) The aggregate principal amount of Bonds issued under the Indenture does not exceed any limitation imposed by law or by any Supplemental Indenture.

(f) After the sale of the Series of Additional Bonds proposed to be issued (but prior to the issuance and delivery thereof and receipt of payment therefor), the Commission will file the following documents with the Trustee; these documents will, with respect to such Series of Additional Bonds, be based upon the actual interest rate or rates determined at the time of sale thereof (except that, with respect to Variable Rate Indebtedness, the interest rate for the Series of Additional Bonds will be calculated in accordance with the provisions of the definitions of Average Annual Debt Service and Maximum Annual Debt Service).

(i) If any portion of the proceeds of such Series of Bonds is to be used to finance construction of a Project, a certificate of the Consulting Engineers setting forth (A) the estimated date of completion for the portion of the Project for which such 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.

(ii) A Certificate of the Commission setting forth for each of the next three Fiscal Years (and if any portion of the proceeds of such Series of Bonds is to be used to finance construction, the three Fiscal Years following the Fiscal Year in which the Consulting Engineers estimate such portion of the Project will be completed) estimates of (A) Revenues, (B) Operation and Maintenance Costs of the Enterprise and (C) Net Revenues.

(iii) A Certificate of the Commission setting forth (A) the estimates of Net Revenues, as set forth in the Certificate of the Commission pursuant to paragraph (ii) above, for each of such three Fiscal Years (and, if any portion of the proceeds of such Series of Bonds is to be used to finance construction, the three Fiscal Years following the Fiscal Year in which the Consulting Engineers estimate such portion of the Project

will be completed), (B) the Annual Debt Service for each of such Fiscal Years, including Annual Debt Service as estimated in such Certificate of the Commission with respect to future Series of Bonds, if any, which such Certificate of the Commission will estimate will be required to complete payment of the cost of construction of such portion of the Project and any other uncompleted portion of the Project, and (C) demonstrating that the estimated Net Revenues (together with any fund balances of the Commission which are available for the payment of Debt Service but excluding the Bond Reserve Fund) in each of the Fiscal Years set forth in (ii) above is at least equal to 1.25 times the Annual Debt Service for such respective Fiscal Years.

(iv) A Certificate of the Commission that all of the requirements of the Indenture have been met.

Upon the effectiveness of the amendments in the Sixth Supplemental Indenture, the provisions of the Indenture described in paragraphs (d) and (f) above will be amended and restated in their entirety as described under the caption “SIXTH SUPPLEMENTAL INDENTURE — PROPOSED AMENDMENTS TO INDENTURE — Amendments to Conditions of Issuance of Additional Bonds” below.

Issuance of Additional Bonds for Refunding. In addition to the 2003 Refunding Series A Bonds, the Commission may, subject to the requirements of the Law, by Supplemental Indenture establish one or more other Series of Bonds payable from Net Revenues on a parity with the 2003 Refunding Series A Bonds and secured by a lien upon and pledge of Net Revenues equal to the lien and pledge securing the 2003 Refunding Series A Bonds, and the Commission may issue, and the Trustee may authenticate and deliver, Bonds of any Series so established, for the purpose of refunding any Bonds issued under the Indenture and then Outstanding, but only upon compliance by the Commission with the provisions of the Indenture, and subject to the following specific conditions, which are made conditions precedent to the issuance of any such additional Series of Bonds by the Indenture:

(a) No Event of Default has occurred and is continuing under the Indenture or any Supplemental Indenture and no event has occurred which, but for the passage of time or the giving of notice would constitute an Event of Default under the Indenture or any Supplemental Indenture.

(b) The Supplemental Indenture providing for the issuance of such additional Series of Bonds requires that the amounts on deposit in the Bond Reserve Fund to be established pursuant to the Indenture be increased, if necessary, upon the receipt of the proceeds of the sale of such additional Series of Bonds to an amount equal to the Required Reserve. This deposit may be made from such proceeds or any other source, as provided in the Supplemental Indenture.

(c) The Supplemental Indenture providing for the issuance of such additional Series of Bonds provides for the payment of interest and principal as follows:

(i) Principal on such Additional Bonds is payable either semiannually on April 1 and October 1 of each year in which principal falls due or annually on October 1 of each year in which principal falls due, and Term Bonds of any Series will have a principal maturity date of October 1. Interest on such Additional Bonds that are Current Interest Bonds is payable semiannually on April 1 and October 1 of each year excepting the first year, provided that the first installment of interest is payable on either April 1 or October 1 and is for a period of not longer than twelve months and that the interest will be payable thereafter semiannually on April 1 and October 1.

(ii) Notwithstanding the foregoing, the Supplemental Indenture authorizing the issuance of such Additional Bonds may provide for the payment of principal, and interest on dates other than those specified above if the Supplemental Indenture provides for the monthly payment of a portion of interest and principal becoming due and payable on the succeeding Interest Payment Date and Principal Payment Date, as applicable, as set forth in detail in the Supplemental Indenture.

(iii) Interest on any Bonds constituting Variable Rate Indebtedness or Tender Indebtedness may be payable on such Payment Dates as specified in the Supplemental Indenture providing for the issuance of such Bonds.

(d) Fixed serial maturities or mandatory Minimum Sinking Fund Account Payments, or any combination thereof, are established in amounts sufficient to provide for the retirement of all of the Bonds of such additional Series on or before their respective maturity dates, unless such Bonds are Balloon Indebtedness.

(e) The aggregate principal amount of Bonds issued under the Indenture does not exceed any limitation imposed by law or by any Supplemental Indenture.

(f) The proceeds of the Bonds of such additional Series will be used, together with any other available moneys, to refund (by defeasance, current refunding or crossover refunding) all or a portion of the Bonds then Outstanding, and the Average Annual Debt Service for the Bonds of such additional Series (during the period from their issuance to their last maturity date) will be equal to or less than the Average Annual Debt Service on the Bonds to be refunded (during the period from the issuance of the additional Series to the last maturity date of the Bonds to be refunded).

(g) After the sale of the additional Series of Bonds proposed to be issued (but prior to the issuance and delivery thereof and receipt of payment therefor), the Commission will file the following documents with the Trustee; these documents will, with respect to such additional Series of Bonds, be based upon the actual interest rate or rates determined at the time of sale thereof.

(i) A Certificate of the Commission that all of the requirements of the Indenture have been met.

(ii) A certificate of one or more Qualified Financial Advisors that the requirements of clause (f) above have been met.

Upon the effectiveness of the amendments in the Sixth Supplemental Indenture, the provisions of the Indenture described in paragraph (f) above will be amended and restated in its entirety as described under the caption “SIXTH SUPPLEMENTAL INDENTURE — PROPOSED AMENDMENTS TO INDENTURE — Amendments to Conditions of Issuance of Additional Bonds for Refunding” below.

Proceedings for the Issuance of Additional Series of Bonds. (a) Whenever the Commission determines to issue an additional Series of Bonds pursuant to the Indenture, the Commission will execute or adopt a Supplemental Indenture providing for the issuance of such additional Series of Bonds.

(b) Such Supplemental Indenture will specify the maximum principal amount of Bonds of such Series, provide for the distinctive designation of Bonds of such Series, and prescribe the other terms and conditions of such additional Series of Bonds in accordance with the Indenture and subject to the provisions of the Indenture. The Commission may by such Supplemental Indenture prescribe any provisions respecting the Bonds of such Series not inconsistent with the terms of the Indenture, including registration, transfer and exchange provisions, provisions for the payment of principal and interest and sinking fund provisions.

(c) Before such additional Series of Bonds may be issued and delivered, the Commission will file the following documents with the Trustee:

(i) An Opinion of Counsel setting forth (1) that such counsel has examined the Supplemental Indenture and found it to be in compliance with the requirements of the Indenture; (2) that the execution and delivery of the additional Series of Bonds have been sufficiently and duly authorized by the Commission; (3) that said additional Series of Bonds, when duly executed by the Commission and, if required, authenticated and delivered by the Trustee, will be valid and binding special obligations of the Commission, payable from Net Revenues as provided in the Indenture; and (4) that the issuance of the additional Series of Bonds will not adversely affect the exclusion from federal income taxation of interest on any Bonds then Outstanding.

(ii) The certificates and reports required by the Indenture if the Additional Bonds constitute an additional lien on the Net Revenues or if the Additional Bonds are issued to refund any Outstanding Bonds, as appropriate.

(iii) The Supplemental Indenture, duly executed or certified and approved by the Trustee.

Upon the delivery to the Trustee of the foregoing instruments, the Trustee will authenticate and deliver said additional Series of Bonds, in the aggregate principal amount specified in such Supplemental Indenture, to, or upon the Written Request of, the Commission, when such additional Series of Bonds is presented to it for that purpose.

No Issuance of Additional Bonds or Other Obligations Except as Permitted in the Indenture; Exceptions. So long as any of the Bonds remain Outstanding, the Commission may issue any Additional Bonds or obligations payable from Net Revenues on a parity with the Bonds only pursuant to the Indenture, *except* under any of the following conditions, in which case none of the limitations or restrictions on the issuance of additional Series of Bonds set forth in the Indenture will be applicable: (a) if the Owners of a majority in aggregate amount of the Bond Obligation and any Credit Provider consent in writing to the issuance of such Additional Bonds or obligations, or (b) the obligation constitutes debt of the Commission (including without limitation loan agreements entered into between the Commission and the State of California (or any board, department or agency thereof) to finance or refinance additions, betterments, extensions, repairs, renewals or replacements to the Enterprise) payable by its terms from Net Revenues on a subordinate basis to the payment of Debt Service on the Bonds.

In addition, the Commission may enter into additional Senior State Loans and into Parity State Loans if no Event of Default has occurred and is continuing under the Indenture or any Supplemental Indenture (and no event has occurred which, but for the passage of time or the giving of notice, would constitute an Event of Default under the Indenture or any Supplemental Indenture) and, in connection with the execution and delivery of such Senior State Loans or Parity State Loans, as applicable, the Commission delivers a Certificate to the Trustee setting forth, for each of the next three Fiscal Years after the delivery of the Senior State Loans or Parity State Loans, as applicable, (i) the Revenues, Operation and Maintenance Costs of the Enterprise and Net Revenues (assuming the delivery of the Senior State Loans, as applicable) and (ii) the Annual Debt Service (assuming the delivery of the Parity State Loans, as applicable), and demonstrating that the estimated Net Revenues (together with any fund balances of the Commission, which are available for Debt Service, but excluding the Bond Reserve Fund), in each of such Fiscal Years is at least equal to 1.25 times the Annual Debt Service.

Upon the effectiveness of the amendments in the Sixth Supplemental Indenture, the provisions of the Indenture described in the preceding paragraph above will be amended and restated in its entirety as described under the caption “SIXTH SUPPLEMENTAL INDENTURE — PROPOSED AMENDMENTS TO INDENTURE — Amendments to Conditions to Enter into Additional Parity Loans” below.

Validity of Bonds. The validity of the authorization and issuance of the Bonds will not be dependent on or affected in any way by any proceedings taken by the Commission for the improvement of the Enterprise, or by any contracts made by the Commission in connection therewith, or the failure to construct the Project, the Enterprise or any part thereof. The recital contained in the Bonds that they are regularly issued pursuant to the Law will be conclusive evidence of their validity and of compliance with the provisions of law in their issuance.

GENERAL REDEMPTION PROVISIONS

Selection of Bonds for Redemption. Whenever less than all of the Bonds of any one maturity and tenor of any Series are called for redemption and such Bonds are redeemable by lot, the Trustee will select the Bonds of such maturity and tenor to be redeemed, from the Outstanding Bonds of such maturity and tenor, by lot or by any other manner which the Trustee deems fair and equitable. For purposes of such selection, Bonds will be deemed to be composed of \$5,000 portions (of principal in the case of Current Interest Bonds or of Accreted Value at maturity in the case of Capital Appreciation Bonds) and any such portion may be redeemed separately. The Trustee will promptly notify the Commission in writing of the numbers of the Bonds so selected for redemption.

Notice of Redemption. (a) The Trustee will mail notice of redemption, not less than 30 nor more than 60 days prior to the redemption date, to (i) the respective Owners of any Bonds designated for redemption at their addresses appearing on the bond registration books of the Trustee, (ii) the Securities Depositories and (iii) one or more Information Services.

(b) Each notice of redemption will state the date of such notice, the Series of Bonds to be redeemed, the date of issue of such Series of Bonds, the redemption date, the redemption price including, in the case of Capital Appreciation Bonds, the Accreted Value thereof, the place or places of redemption (including the name and appropriate address or addresses of the Trustee), the CUSIP number (if any) of the maturity or maturities, and, if less than all of any such maturity is to be redeemed, the distinctive certificate numbers of the Bonds of such maturity, to be redeemed, and, in the case of Bonds to be redeemed in part only, the respective portions of the principal amount thereof to be redeemed. Each such notice will also state that on said date there will become due and payable on each of said Bonds the principal amount thereof or of said specified portion of the principal amount thereof in the case of a Bond to be redeemed in part only, together with interest accrued thereon to the redemption date, and the premium, if any, thereon (such premium to be specified) and that from and after such redemption date interest thereon will cease to accrue, and will require that such Bonds be then surrendered at the address or addresses of the Trustee specified in the redemption notice.

(c) Failure by the Trustee to give notice pursuant to the Indenture to any one or more of the Information Services or Securities Depositories, or the insufficiency of any such notices will not affect the sufficiency of the proceedings for redemption. Neither failure by the Trustee to mail notice of redemption pursuant to the Indenture to any one or more of the respective Owners of any Bonds designated for redemption nor any defect in such notice will affect the sufficiency of the proceedings for redemption with respect to the Owners to whom such notice was mailed.

(d) Notice of redemption of Bonds will be given by the Commission or, at the request of the Commission, by the Trustee for and on behalf and at the expense of the Commission.

Partial Redemption of Bond. Upon surrender of any Bond redeemed in part only (except as otherwise provided in the Indenture) the Commission will execute and the Trustee will authenticate and deliver to the Owner thereof, at the expense of the Commission, a new Bond or Bonds of authorized denominations equal in aggregate principal amount to the unredeemed portion of the Bond surrendered and of the same Series, tenor, interest rate and maturity.

Effect of Redemption. (a) When notice of redemption has been duly given under the Indenture, and moneys for payment of the redemption price are held by the Trustee, the Bonds so 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 Bonds so called for redemption will cease to accrue, those Bonds will cease to be entitled to any benefit or security under the Indenture, and the Owners of those Bonds will have no rights in respect thereof except to receive payment of the redemption price thereof. The Trustee will, upon surrender for payment of any of said Bonds (except as otherwise provided in the Indenture), pay such Bonds at the redemption price as aforesaid, together with accrued interest thereon.

(b) All Bonds redeemed pursuant to the provisions of the Indenture will be cancelled upon surrender, and no Bonds will be issued in place thereof.

Rescission of Notice of Redemption. The Commission may, at its option, prior to the date fixed for redemption in any notice of 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.

REVENUES AND FUNDS

Pledge and Assignment of Net Revenues; Revenue Fund.

(a) Establishment of Revenue Fund. In accordance with the Charter, but subject to the budget and fiscal provisions of the Charter, whenever revenue bonds issued by the Commission pursuant to the Charter or refunding bonds of such revenue bonds are Outstanding, all of the Revenues of the Enterprise will be set aside and deposited into a fund in the City treasury previously established and known as the "Enterprise Revenue Fund" (called the "Revenue Fund" in the Indenture). All amounts paid into the Revenue Fund will be maintained by the Treasurer separate and apart from all other City funds. Separate accounts will be kept of the Revenue Fund with respect to receipts and disbursements. The Revenue Fund will be exempted from the requirements of the Charter.

(b) Priority of Disbursements from Revenue Fund. Moneys in the Revenue Fund, including earnings thereon, will be appropriated, transferred, expended or used for the following purposes, and only in accordance with the following priority: (i) the payment of the Operation and Maintenance Costs of the Enterprise; (ii) the payment of Senior State Loans; (iii) the payment of Bonds, Parity State Loans, Policy Costs and amounts due as reimbursement under any Letter of Credit Agreement, as provided in the Indenture and, as applicable, any Supplemental Indenture; and (iv) any other lawful purpose of the Commission.

(c) Pledge of Net Revenues; Perfection of Lien. (i) Subject to the provisions above, all of the Net Revenues (except amounts on deposit in the various Rebate Funds) are irrevocably pledged by the Indenture to the punctual payment of the principal of and interest and redemption premium, if any, on the Bonds and the Policy Costs, and the Net Revenues will not be used for any other purpose while any of the Bonds remain Outstanding or Policy Costs remain unpaid; except that the Net Revenues may be used for such purposes as are expressly permitted in the Charter and the Indenture. Pursuant to Section 5451 of the California Government Code, said pledge will constitute a lien on and security interest in the Net Revenues for the payment of the Bonds and the Policy Costs in accordance with the terms thereof and of the Indenture, and will immediately attach to the collateral and be effective, binding, and enforceable against the Commission, its successors, purchasers of the Net Revenues, creditors and all others asserting any rights thereto, irrespective of whether such parties have notice of such pledge and without the need for any physical delivery, recordation, filing or further act.

(ii) The Commission will not take any action which alters the pledge of Net Revenues or the order of priority of payment of the Net Revenues used for the payment of principal of and interest on the Bonds.

(d) Disposition of Excess Amounts in Revenue Fund. Except as otherwise provided in a Supplemental Indenture, all moneys remaining in the Revenue Fund on each October 5 (or on such earlier day as the amounts required for the transfers set forth in the Indenture are on deposit in the Revenue Fund), after the setting aside and transferring of all of the amounts required to be set aside or transferred by the Treasurer under the Indenture, will be applied for any lawful purpose of the Commission.

Establishment and Maintenance of Funds for Net Revenues; Use and Withdrawal of Revenues. (a) The Trustee will establish and maintain, in trust, so long as any Bonds are Outstanding, the Interest Fund, Principal Fund, and Bond Reserve Fund. The Trustee will hold all amounts deposited in each of these funds in trust and apply, use and withdraw those funds only for the purposes authorized in the Indenture.

(b) After the making of the payments required by the Indenture the Commission will transfer all Net Revenues in the Revenue Fund, on a parity basis, as follows: (i) to the Trustee, at the times and in the amounts set forth in the Indenture, for deposit in the following funds, to the extent necessary, in the following order of priority: the Interest Fund, Principal Fund, and Bond Reserve Fund, and (ii) as needed for the payment of any Parity State Loans. The requirements of the Interest Fund, the Principal Fund and the Reserve Fund at the time of deposit will be satisfied before any transfer is made to any fund subsequent in priority. The Trustee will disburse amounts on deposit in these funds in accordance with the Indenture.

Interest Fund. (a) On or before 5 Business Days before each Interest Payment Date, the Treasurer will pay to the Trustee for deposit in the Interest Fund an amount equal to the interest becoming due and payable on the Outstanding Current Interest Bonds on that Interest Payment Date (taking into account amounts on deposit in the Interest Fund and available for the payment of interest on such Interest Payment Date and excluding any interest for which there is moneys deposited in the Interest Fund or the Capital Project Fund from the proceeds of any Series of Bonds, or other source and reserved as capitalized interest to pay such interest on such Interest Payment Date).

(b) The Trustee will use and withdraw moneys in the Interest Fund solely for the purpose of paying 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).

All of the Refundable Credits received by the Commission will be deposited immediately upon receipt in the Interest Fund, and such Refundable Credits are irrevocably pledged by the Indenture to the punctual payment of the interest on the Bonds issued as Build America Bonds, and the Refundable Credits will not be used for any other purpose while any of the Bonds issued as Build America Bonds remain Outstanding. Pursuant to Section 5451 of the California Government Code, this pledge constitutes a lien on and security interest in the Refundable Credits for the payment of interest on the Bonds issued as Build America Bonds in accordance with the terms thereof and of the Indenture, and will immediately attach and be effective, binding, and enforceable against the Commission, its successors, purchasers of the Refundable Credits, creditors and all others asserting any rights thereto, irrespective of whether such parties have notice of such pledge and without the need for any physical delivery, recordation, filing or further act. Notwithstanding the foregoing deposit and pledge, the Refundable Credits are not considered Revenues or included in the calculation of Revenues under the Indenture. Additionally, in calculating the amount that the Treasurer pays to the Trustee for deposit in the Interest Fund as provided above, the Treasurer and the Trustee will take into account Refundable Credits only if they have been deposited in the Interest Fund on or prior to the fifth Business Day prior to the applicable Interest Payment Date and have not been previously expended to pay Debt Service on the Bonds issued as Build America Bonds or otherwise transferred out of the Interest Fund.

Principal Fund; Sinking Fund Accounts. (a) On or before 5 Business Days before each Principal Payment Date, the Treasurer will pay to the Trustee for deposit in the Principal Fund an amount equal to at least the following:

(i) the aggregate amount of Bond Obligation becoming due and payable on the Outstanding Serial Bonds of all Series having a maturity date on the next succeeding Principal Payment Date, plus

(ii) the aggregate of the Minimum Sinking Fund Account Payments to be paid on the next succeeding Principal Payment Date into the respective Sinking Fund Accounts for the Term Bonds of all Series for which Sinking Fund Accounts have been created (all such Minimum Sinking Fund Account Payments will be made without priority of any payment into any one such Sinking Fund Account over any other such payment), plus

(iii) if any Balloon Indebtedness is Outstanding and principal is due on such Balloon Indebtedness on or prior to the next succeeding Principal Payment Date, sufficient amounts to pay when due the Balloon Indebtedness, plus

(iv) if any Letter of Credit Agreement has been entered into on a parity with the Bonds, sufficient amounts to pay when due the obligations of the Commission under such Letter of Credit Agreement due on the next succeeding Maturity Date.

(b) If the moneys in the Principal Fund on any Principal Payment Date are less than the amount of Bond Obligation and redemption premium on the Outstanding Term Bonds required to be redeemed or paid at maturity on such Principal Payment Date, plus the Balloon Indebtedness and the obligations of the Commission under any Letter of Credit Agreements due on such Principal Payment Date, then the moneys in the Principal Fund will be applied on a Proportionate Basis and in such proportion as the Serial Bonds, Term Bonds, Balloon Indebtedness and Letter of Credit Agreement obligations bear to each other.

(c) No deposit need be made into the Principal Fund so long as it contains an amount equal to an amount sufficient to make the payment required above.

(d) The Trustee will use and withdraw all moneys in the Principal Fund solely for the purpose of paying the Bond Obligation of the Bonds, any Balloon Indebtedness and any Letter of Credit Agreement obligations when due and payable, except that the Trustee will use and withdraw all moneys in any Sinking Fund Account (except as otherwise provided in the Indenture) only to purchase or to redeem or to pay at maturity Term Bonds of the Series for which such Sinking Fund Account was created, as provided in the Indenture or in any Supplemental Indenture.

Bond Reserve Fund; Reserve Accounts. (a) On or before 5 Business Days before each Interest Payment Date, the Treasurer will pay to the Trustee for deposit in the Bond Reserve Fund the aggregate amount of each unreplenished prior withdrawal from the Bond Reserve Fund until there is on deposit in the Bond Reserve Fund a balance equal to the Required Reserve.

(b) 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 5 Business Days before each Interest Payment Date, the Treasurer will pay to the Trustee or to the Bond Reserve Fund Policy Provider, with notice to the Trustee, an amount at least equal to the aggregate amount of Policy Costs owing with respect to such Bond Reserve Fund Policy. If the Trustee receives such payment, it will immediately remit the same to the Bond Reserve Fund Policy Provider.

(c) No deposit need be made into the Bond Reserve Fund so long as there exists in the Bond Reserve Fund an amount equal to the Required Reserve, or when and if the sum of the amounts contained (excluding all Bond Reserve Fund Policies) therein and in the Interest Fund and in the Principal Fund is at least equal to the sum of the aggregate principal amount of all of the Bonds then Outstanding and all of the interest then due or thereafter to become due on all such Bonds.

(d) The Trustee will establish and hold within the Bond Reserve Fund a 2003 Refunding Series A Reserve Account with respect to the 2003 Refunding Series A Bonds. In addition, the Trustee will establish and hold a Reserve Account for each Series of Additional Bonds issued under the Indenture, if and to the extent required by the Supplemental Indenture pursuant to which that Series of Bonds is issued. Upon the issuance of a Series of Additional Bonds, there will be deposited into the Reserve Account for that Series an amount equal to the Required Reserve, if any, established for that Series of Bonds under the Supplemental Indenture pursuant to which that Series of Bonds is issued. Upon the issuance of a Series of Additional Bonds, the Commission will advise the Trustee of the Required Reserve to be maintained in the Reserve Account for that Series. Unless otherwise provided in the Supplemental Indenture pursuant to which a Series of Bonds is issued, the Reserve Account established with respect to a Series of Bonds will be available only to pay Debt Service on such Series of Bonds, and will not be available to pay Debt Service on any other Series of Bonds, provided that amounts in the Reserve Accounts (the "Prior Reserve Accounts") with respect to the Series of Bonds (the "Prior Series of Bonds") issued prior to the effective date of the amendments set forth in the First Amendment, will be available to pay the Debt Service on all the Prior Series of Bonds, except that the Trustee will apply any Bond Reserve Fund Policy on deposit in a Prior Reserve Account solely to the payment of Debt Service on the Prior Series of Bonds to which such Prior Reserve Account relates, and such Bond Reserve Fund Policy will not be available for payment of any other Series of Bonds.

(e) Except with respect to the Prior Reserve Accounts and the Prior Series of Bonds, the Trustee will use and withdraw cash amounts on deposit in each respective Reserve Account within the Bond Reserve Fund solely to pay the principal of, Minimum Sinking Fund Account Payments with respect to, and interest on, the Series of Bonds with respect to which that Reserve Account was established (unless otherwise provided in the Supplemental Indenture pursuant to which a Series of Bonds was issued), in the event that no other moneys are available therefor, or for payment or redemption of such Series of Bonds. Additionally, unless otherwise provided in the Supplemental Indenture pursuant to which a Series of Bonds was issued, the Trustee will apply any Bond Reserve Fund Policy on deposit in a Reserve Account solely to the payment of the Series of Bonds to which such Reserve Account relates, and such Bond Reserve Fund Policy will not be available to pay Debt Service on any other Series of Bonds. With respect to the Prior Reserve Accounts, the Trustee will use and withdraw cash amounts on deposit in the respective Prior Reserve Accounts within the Bond Reserve Fund on a proportionate basis solely to pay the principal of, Minimum Sinking Fund Account Payments with respect to and interest on any of the Outstanding Prior Series of

Bonds in the event that no other moneys are available therefor, or for payment or redemption of Outstanding Bonds. However, as stated above, the Trustee will apply any Bond Reserve Fund Policy on deposit in a Prior Reserve Account solely to the payment of the Prior Series of Bonds to which such Prior Reserve Account relates, and such Bond Reserve Fund Policy will not be available for payment of any other Series of Bonds.

(f) Following application of all other funds held in the Reserve Account relating to a Series of Bonds, the Trustee will draw under any Bond Reserve Fund Policy issued with respect to such Series of Bonds, in a timely manner and pursuant to the terms of such Bond Reserve Fund Policy, to the extent necessary in order to obtain sufficient funds on or prior to the date such funds are needed to pay the Bond Obligation of, Minimum Sinking Fund Account Payments with respect to, and interest on such Series of Bonds when due.

(g) If the Trustee has notice, that any payment of principal of or interest on a Bond has been recovered from its Bondowner under the United States Bankruptcy Code by a trustee in bankruptcy in accordance with the final, nonappealable order of a court having competent jurisdiction, the Trustee, pursuant to the terms of the Bond Reserve Fund Policy, if any, securing the Series of Bonds of which such Bond is a part, will so notify the Bond Reserve Fund Policy Provider and draw on such policy to the lesser of the extent required or the maximum amount of such policy in order to pay to such Bondowners the principal of and interest so recovered.

(h) If and to the extent that more than one Bond Reserve Fund Policy satisfies the portion of the Required Reserve relating to a Series of Bonds, drawings under such Bond Reserve Fund Policies and payment of Policy Costs with respect to such Bond Reserve Fund Policies will be made on a pro rata basis (calculated by reference to the maximum amounts of such Bond Reserve Fund Policies).

(i) If a Bond Reserve Fund Policy is deposited in a Reserve Account in which cash has been previously deposited in satisfaction of the Required Reserve for the applicable Series of Bonds, the Trustee will release cash from that Reserve Account in an amount equal to the Bond Reserve Fund Policy being deposited, and will transfer the cash so released to the Commission to be used for any lawful purpose, *provided, however*, that the Commission will ensure that the use of any cash so released will not adversely affect the exclusion from gross income of the interest on the Bonds under Section 103 of the Code.

(j) Deposits to the Bond Reserve Fund will be applied on a pro rata basis to the respective Reserve Accounts, calculated by reference to the amounts initially deposited in such Reserve Accounts, and within each Reserve Account first to satisfying any portion of the Required Reserve to be maintained within such Reserve Account not covered by a Bond Reserve Fund Policy, and second to the pro rata payment of Policy Costs until satisfied.

(k) So long as the Commission is not in default under the Indenture, and in each Reserve Account there is a balance equal to the Required Reserve for the Series of Bonds relating to that Reserve Account, the Trustee will withdraw any amount in the Bond Reserve Fund in excess of the Required Reserve, semiannually on March 15 and September 15 of each year, and transfer that amount to the Treasurer for deposit in the Revenue Fund or, during the period of construction of the Project or any portion thereof, the Capital Project Account for the related Series of Bonds. Notwithstanding the foregoing, the Commission will have the right to request the Trustee to withdraw excess amounts on deposit in the Bond Reserve Fund at any time.

(l) Except as provided in the Indenture with respect to the Prior Reserve Accounts and the Prior Series of Bonds, unless otherwise provided in a Supplemental Indenture, amounts on deposit in any Reserve Account will be available for the payment of Debt Service only with respect to the Series of Bonds for which that Reserve Account was established.

Deposit and Investment of Moneys in Funds. (a) All moneys held by the Treasurer in the Revenue Fund or the Capital Project Fund may be invested in Legal Investments, maturing not later than the date on which such moneys are required for payment by the Treasurer.

(b) All moneys held by the Trustee and allocated to any of the funds held by it, subject to the restrictions set forth in the Arbitrage Certificate, will be invested in Permitted Investments, as directed by the

Commission, maturing not later than the date on which such moneys are required for payment by the Trustee, except that moneys in the Bond Reserve Fund will be deposited or invested in Permitted Investments which mature not more than seven years from the date of investment or the final date of maturity of the Outstanding Bonds, whichever is earlier.

(c) If at any time any of the investments stated to be Permitted Investments under the Indenture cease to be a Legal Investment for the funds held under the Indenture, the Commission will so advise the Trustee by a Written Statement. The Trustee will not be responsible for making any investment which is not a Legal Investment if the Commission has not previously delivered a Written Request or Statement correctly advising the Trustee that such investment was no longer a Legal Investment.

(d) Permitted Investments on deposit in the Bond Reserve Fund or in any account therein will not have a maturity extending beyond five years from the date of acquisition thereof unless otherwise approved by the Credit Provider or unless such Permitted Investment is described in clause (i) of the definition thereof.

(e) For the purpose of determining the amount of money in the Bond Reserve Fund, all investments of moneys therein will be valued at least annually at the market value of such investments.

(f) All interest received on any moneys held and invested by the Treasurer or the Trustee under the Indenture will be deposited in the Revenue Fund, except: (i) all interest received on any moneys invested in the Principal Fund, Interest Fund or Rebate Fund will remain in the Principal Fund, Interest Fund or Rebate Fund, respectively, and (ii) prior to receipt by the Trustee of notice of completion of construction of the Project or any portion thereof, all interest received on any moneys invested in the Capital Project Fund will remain in the Capital Project Fund held by the Treasurer; and (iii) all interest on any amounts on deposit in the Bond Reserve Fund to the extent that amounts on deposit in the Bond Reserve Fund exceed the Required Reserve will be deposited in the Interest Fund.

(g) The Trustee may sell or present for redemption any obligations so purchased by it whenever it is necessary in order to provide moneys to meet any payment, and the Trustee will not be liable or responsible for any loss resulting from such investment. The Trustee may act as principal or agent in the acquisition or disposition of any investment. The Trustee may commingle any of the moneys held by it under the Indenture for investment purposes only; provided, however, that the Trustee will account separately for the moneys belonging to each fund or account established pursuant to the Indenture and held by it.

Interest Rate Swaps. (a) The Commission may and the Trustee will, upon the Written Request or Statement of the Commission, enter into an interest rate swap agreement corresponding to the interest rate or rates payable on a Series of Bonds or any portion thereof, provided that the Trustee is supplied with an Opinion of Counsel to the effect that (i) such action is permitted under the laws of the State of California, (ii) entering into the interest rate swap agreement will not adversely affect the tax-exempt status of interest on the bonds, and (iii) entering into the interest rate swap agreement complies with the terms of the Indenture. The amounts received by the Commission or the Trustee, if any, under such a swap agreement may be applied to the deposits required under the Indenture. The entity with which the Commission or the Trustee may contract for an interest rate swap is limited to entities that are rated in one of the two highest short-term or long-term debt rating categories by Moody's and S&P. If the Commission so designates, amounts payable under the interest rate swap agreement will be made on a parity basis with payments on the Bonds and, in such event, the Commission will pay to the Trustee for deposit in the Interest Fund, at the times and in the manner provided by the Indenture, the amounts to be paid under such interest rate swap agreement, as if such amounts were additional interest due on the Bonds to which such interest rate swap relates.

(b) Notwithstanding the foregoing, the Commission will not enter into an interest rate swap agreement without first making the determination required pursuant to Section 5922 of the California Government Code.

COVENANTS OF THE COMMISSION

Payment of Principal and Interest. The Commission will punctually pay or cause to be paid the principal and interest (and premium, if any) to become due in respect of every Bond issued under the Indenture at the times and places and in the manner provided therein and in the Bonds, in strict conformity with the terms of the Bonds and of the Indenture, but solely from Net Revenues, as provided therein.

Against Encumbrances. (a) Subject to any rights of the United States of America or the State of California, and subject to the “Sale or Other Disposition of Property” provisions below, the Commission will not mortgage or otherwise encumber, pledge or place any charge upon the Enterprise or any part thereof, or upon any of the Net Revenues, prior to or on a parity with the Bonds, provided that Letter of Credit Agreements entered into in connection with Balloon Indebtedness, Variable Rate Indebtedness or Tender Indebtedness may be payable on a parity with the Bonds.

(b) So long as any Bonds are Outstanding, the Commission will not issue any bonds or obligations payable from Net Revenues or secured by a pledge, lien or charge upon Net Revenues prior to or on a parity with the Bonds, other than the Bonds, provided that Letter of Credit Agreements entered into in connection with Balloon Indebtedness, Variable Rate Indebtedness, or Tender Indebtedness may be payable on a parity with the Bonds.

(c) Nothing in the Indenture, and particularly nothing in the two foregoing clauses, will prevent the Commission from authorizing and issuing bonds, notes, warrants, certificates or other obligations or evidences of indebtedness which as to principal or interest, or both, (i) are payable from Net Revenues after and subordinate to the payment from Net Revenues of the principal of and interest on the Bonds, or (ii) are payable from moneys which are not Revenues as such term is defined in the Indenture.

Sale or Other Disposition of Property. (a) The Commission will not sell or otherwise dispose of the Enterprise or any part thereof essential to the proper operation of the Enterprise or to the maintenance of the Revenues except as expressly permitted in the Indenture. The Commission will not enter into any lease or agreement which impairs the operation of the Enterprise or impedes the rights of the Owners of the Bonds with respect to the Net Revenues or the operation of the Enterprise, but the Commission may enter into any lease or agreement concerning all or any part of the Enterprise if such lease or agreement will not impair the operation of the Enterprise or impede the rights of the Owners of the Bonds with respect to the Net Revenues or the operation of the Enterprise.

(b) Any real or personal property which has become nonoperative or which is not needed for the efficient and proper operation of the Enterprise, or any material or equipment which has worn out, may be sold if all of the net proceeds of such sale (less any amounts payable to the United States of America or the State of California or required by the United States of America or the State of California to be deposited in a restricted fund) are deposited in the Revenue Fund.

(c) The Commission expressly reserves by the Indenture the right to sell all or a portion of the Enterprise, and to enter into and execute agreements for and to complete such sale, but subject to the following specific conditions, which have been made conditions precedent to such sale by the Indenture:

(i) The Commission is in compliance with all covenants set forth in the Indenture and in all Supplemental Indentures theretofore adopted by the Commission, and no Event of Default has occurred and is continuing under the Indenture or any Supplemental Indentures theretofore adopted by the Commission (and no event has occurred which but for the passage of time would constitute an Event of Default under the Indenture or any Supplemental Indenture). The Commission will file a Certificate of the Commission to that effect with the Trustee.

(ii) The Commission determines by resolution whether the net proceeds of the sale (less any amounts payable to the United States of America or the State of California or required to be deposited in a restricted fund) are to be used for the redemption of Bonds or for the making of additions or improvements to or extensions of the Enterprise.

(iii) If the Commission determines that the net proceeds of the sale (less any amounts payable to the United States of America or the State of California or required to be deposited in a restricted fund) are to be used for the redemption of Bonds, such proceeds of the sale are deposited with the Trustee, and the following conditions are satisfied:

(A) The Commission adopts a resolution providing for the redemption of the maximum principal amount of Bonds which can be redeemed from such proceeds of such sale, or, if no Bonds are subject to redemption on the next succeeding Interest Payment Date, directing the Trustee (1) to hold such proceeds in trust, (2) to invest such proceeds in the investments permitted in the Indenture until any Bonds become redeemable, subject to any restrictions imposed by the Indenture, (3) to deposit the interest and income on such proceeds in the Revenue Fund as such interest and income is received, and (D) to use such proceeds to redeem Bonds in the amount and manner specified in the Indenture and any Supplemental Indenture on the first Interest Payment Date on which the Bonds can be redeemed; and a certified copy of such resolution has been filed with the Trustee along with a Written Request or Certificate of the Commission containing such direction.

(B) If such proceeds are not to be immediately used for the redemption of Bonds but instead are to be held by the Trustee until Bonds become redeemable, the Commission will file with the Trustee a written report of an Independent Certified Public Accountant stating (1) the amount of proceeds to be deposited with the Trustee from such sale, (2) an estimate of the total amount of Bond Obligation and the amount of Bonds of each maturity which could be redeemed from such proceeds on the first Interest Payment Date on which Bonds are redeemable, and (3) the estimated annual interest and income to be earned on such proceeds while held and invested by the Trustee. Such interest and income on such proceeds upon receipt by the Trustee will be deposited in the Revenue Fund and will be treated as Revenues for all purposes of the Indenture, including determining whether the Commission is in compliance with the rate covenant contained in the Indenture.

(C) If such proceeds of such sale are to be immediately used to redeem Bonds, the Net Revenues for the last Fiscal Year or last recorded twelve-month period preceding the date of the adoption by the Commission of the resolution authorizing such sale, less a deduction for the portion of such Net Revenues attributable to the portion of the Enterprise to be sold, all as shown by a certificate or opinion of an Independent Certified Public Accountant or a written report of a Qualified Independent Consultant, have produced a sum equal to at least 1.25 times Maximum Annual Debt Service on the Bonds to be Outstanding following the redemption of Bonds from the proceeds of such sale.

(D) If such proceeds are not to be immediately used for the redemption of Bonds but instead are to be held by the Trustee until Bonds become redeemable, the Net Revenues for the last Fiscal Year or last recorded twelve-month period preceding the date of adoption by the Commission of the resolution authorizing such sale, less a deduction for the portion of such Net Revenues attributable to the portion of the Enterprise to be sold, plus an allowance for the estimated annual interest or income to be earned on the invested proceeds of such sale while held and invested by the Trustee, all as shown by a certificate or opinion of an Independent Certified Public Accountant or a written report of a Qualified Independent Consultant, have produced a sum equal to at least 125 times Maximum Annual Debt Service.

(iv) If the Commission determines that the net proceeds of the sale (less any amounts payable to the United States of America or the State of California or required to be deposited in a restricted fund) are to be used for the making of additions or improvements to or extensions of the Enterprise, such proceeds of the sale will be deposited by the Treasurer in a special fund in trust to be held by the Treasurer to be used for the making of additions or improvements to or extensions of the Enterprise, and the condition set forth in the following sentence will have been satisfied. The Net Revenues for the last Fiscal Year or last recorded twelve-month period preceding the date of the adoption by the Commission of the resolution authorizing such sale, less a deduction for the portion of such Net Revenues attributable to the portion of the Enterprise to be sold, all as shown by a written report of an Independent Certified Public Accountant, plus

(A) An allowance for Net Revenues from any additions or improvements to or extensions of the Enterprise to be made with the proceeds of such sale or with the proceeds of Bonds previously issued, and also for Net Revenues from any such additions, improvements or extensions which have been made from

moneys from any source but which, during all or any part of such Fiscal Year or recorded twelve-month period, were not in service, all in an amount equal to 100% of the estimated additional average annual Net Revenues to be derived from such additions, improvements and extensions for the first twenty-four months in which each addition, improvement or extension is respectively to be in operation, all as shown by the certificate or opinion of a Qualified Independent Consultant; and

(B) An allowance for earnings arising from any increase in the charges made for the use of the Enterprise which has become effective prior to such sale, but which, during all or any part of such Fiscal Year or recorded twelve-month period, was not in effect, in an amount equal to 100% of the amount by which the Net Revenues would have been increased if such increase in charges had been in effect during the whole of such Fiscal Year or recorded twelve-month period, as shown by the certificate or opinion of a Qualified Independent Consultant;

have produced a sum equal to at least 1.25 times the Maximum Annual Debt Service on the Bonds then Outstanding. Any balance of such proceeds from any such sale not required by the Commission for the purposes aforesaid will be deposited in the Revenue Fund established pursuant to the Indenture and applied as provided in the Indenture.

Operation and Maintenance of Enterprise. The Commission will maintain and preserve the Enterprise in good repair and working order at all times from the Revenues available for such purposes, in conformity with standards customarily followed for municipal sanitary waste and storm water collection, treatment and disposal systems of like size and character. The Commission will from time to time make all necessary and proper repairs, renewals, replacements and substitutions to the properties of the Enterprise, so that at all times business carried on in connection with the Enterprise will and can be properly and advantageously conducted in an efficient manner and at reasonable cost, and will operate the Enterprise in an efficient and economical manner, consistent with the protection of the Owners of the Bonds, and will not commit or allow any waste with respect to the Enterprise.

Liens and Claims. Subject to any rights of the United States of America or the State of California, the Commission will keep the Enterprise and all parts thereof free from judgments, from mechanics' and materialmen's liens and from all liens and claims of whatsoever nature or character, to the end that the security provided pursuant to the Indenture may at all times be maintained and preserved, and the Commission will keep the Enterprise and the Revenues free from any liability which might hamper the Commission in conducting its business, or operating the Enterprise. Subject to the provisions of the Indenture, the Trustee at its option (after first giving the Commission thirty days' written notice to comply therewith and failure of the Commission to so comply within said thirty-day period) may defend against any and all actions or proceedings in which the validity of the Indenture is or might be questioned, or may pay or compromise any claim or demand asserted in any such actions or proceedings; provided, however, that, in defending against such actions or proceedings or in paying or compromising such claims or demands, the Trustee will not in any event be deemed to have waived or released the Commission from liability for or on account of any of its covenants and warranties contained in the Indenture, or from its liability under the Indenture to defend the validity of the Indenture and the pledge made in the Indenture and to perform such covenants and warranties.

Insurance. The Commission will procure, and maintain at all times while any of the Bonds are Outstanding, adequate fidelity insurance or bonds on all officers and employees handling or responsible for any Revenues or funds of the Enterprise, such insurance or bonds to be in an aggregate amount at least equal to the maximum amount of such Revenues or funds at any one time in the custody of all such officers and employees or in the amount of \$1,000,000, whichever is less.

The insurance described above may be provided as a part of any comprehensive fidelity and other insurance and not separately for the Enterprise.

The Commission may purchase, on all or any of the Bonds of any Series, insurance assuring the Bondowners that the principal of and interest on the insured Bonds will be paid when due and payable. The purchase of any such insurance will not constitute a preference or priority of the insured Bonds over any Bonds not so insured, and all Bonds Outstanding, irrespective of the providing of such insurance on some of the Bonds, will be equally and proportionately secured by the Indenture.

Books and Accounts; Financial Statements. (a) The Commission will keep proper books of record and accounts of the Enterprise, separate from all other records and accounts of the Commission, in which complete and correct entries will be made of all transactions relating to the Enterprise. Such books of record and accounts will at all times during business hours be subject to the inspection of the Trustee (who will have no duty to inspect) or of any Owner of Bonds then Outstanding or their representatives authorized in writing, at reasonable hours, upon reasonable prior notice and under reasonable conditions.

(b) So long as any of the Bonds are Outstanding, the Commission will prepare and file with the Trustee annually, within seven months after the close of each Fiscal Year, financial statements of the Enterprise for the preceding Fiscal Year, prepared in, accordance with generally accepted accounting principles applied on a consistent basis from year to year (“Enterprise Financial Statements”), which will include a statement of net assets, statement of revenues, expenses and changes in net assets, and statement of cash flows. The Enterprise Financial Statements will be examined by and include the certificate or opinion of an Independent Certified Public Accountant. The Trustee will not be required to review any such statement.

(c) The Commission will furnish a copy of the Enterprise Financial Statements to any Bondowner upon request, and will furnish to the Trustee such reasonable number of copies thereof (not exceeding 100 copies) as may be required by the Trustee for distribution to investment bankers, security dealers and others interested in the Bonds and to the Owners of Bonds requesting copies thereof. The Trustee will not be required to incur any nonreimbursable expenses in making such distribution.

Enterprise Budgets. The Commission will prepare and submit to the Mayor for review and submission to the Board of Supervisors for approval an annual budget for the Enterprise for each Fiscal Year. Such budget will set forth in reasonable detail the Revenues anticipated to be derived in such Fiscal Year, the expenditures anticipated to be paid or provided for therefrom in such Fiscal Year, and the amounts required to provide for the payment of the principal of and interest and redemption premium, if any, on the Bonds during such Fiscal Year, to pay or provide for Operation and Maintenance Costs of the Enterprise for such Fiscal Year, to make up any deficiencies in any fund or account anticipated for the then current Fiscal Year, and to pay or provide for the payment of all other claims or obligations required to be paid from Revenues in such Fiscal Year, and will show that Net Revenues will be at least adequate to satisfy the requirements of the Indenture. Such budget will comply with any conditions or restrictions set forth in any agreements between the Commission and users of the Enterprise. The Commission will take all action available and necessary to obtain approval or acceptance of the budget by the Mayor and the Board of Supervisors. The Commission will supply to the Trustee and to any Bondowners who will so request in writing a copy of the annual budget for the Fiscal Year covered by such budget. Such budget will be open for inspection by any Owner at the principal corporate trust office of the Trustee during normal business hours.

Maintenance of Revenues. The City will not acquire, construct, operate or maintain, and will not within the scope of its powers permit any other public or private corporation, political subdivision, district or agency or any person whatsoever to acquire, construct, operate or maintain, within the City or any part thereof, any system or utility competitive with the Enterprise. The Commission will have in effect, or cause to have in effect, at all times an ordinance or resolution requiring all customers of the Enterprise to pay the fees, rates and charges applicable to the municipal sanitary waste and storm water collection, treatment and disposal services and facilities furnished by the Enterprise. The Commission will not provide any service of the Enterprise free of charge to any person, firm or corporation, or to any public agency (including the United States of America, the State of California and any public corporation, political subdivision, city, county, district or agency of any thereof), except (i) for free use by the City and its agencies, (ii) to the extent that any such free use is required by the terms of any existing contract or agreement and (iii) for incidental insignificant free use so long as such free use does not prevent the Commission from satisfying the other covenants of the Indenture, including, without limitation, the rate covenant set forth in the Indenture.

Payment of Taxes, Etc. The Commission will pay and discharge, or cause to be paid and discharged, all taxes, assessments and other governmental charges which may later be lawfully imposed upon the Commission on account of the Enterprise or any portion thereof or upon any Revenues and which, if unpaid, might impair the security of the Bonds, when the same becomes due, but nothing contained in the Indenture will require the Commission to pay any such tax, assessment or charge so long as it will in good faith contest the validity thereof.

The Commission will duly observe and conform with all valid requirements of any governmental authority relative to the Enterprise or any part thereof.

Acquisition and Construction of Improvements. The Commission will commence and will continue to completion the acquisition and construction of the improvements to the Enterprise proposed to be financed from any Series of Bonds, in a timely manner in accordance with sound engineering practice, and said improvements will be acquired, constructed and completed in a sound and economical manner and in conformity with law.

Eminent Domain Proceeds. If all or any part of the Enterprise is taken by or under threat of eminent domain proceedings, the net proceeds realized by the Commission or the City therefrom (excluding any portion thereof payable to the United States of America or the State of California or required by the United States of America or the State of California to be deposited in a restricted fund) will be deposited by the Treasurer in a special fund in trust and applied and disbursed by the Treasurer subject to the following conditions:

(a) If such eminent domain proceedings have had a material adverse effect upon the Revenues and the security of the Bonds, the Commission will by resolution determine to apply such proceeds for one of the following purposes:

(i) The Commission may determine to apply such proceeds to the purchase, defeasance or redemption of Bonds then Outstanding. In that event, the Treasurer will transfer such proceeds to the Trustee who will apply such proceeds on a Proportionate Basis to the redemption of Bonds of each Series then Outstanding in the proportion which the Bond Obligation amount of each Series bears to the aggregate Bond Obligation amount of all Bonds then Outstanding. If no Bonds are subject to redemption on the next succeeding Interest Payment Date, the Commission will direct the Trustee (A) to hold such proceeds in trust, (B) to invest such proceeds in the investments permitted in the Indenture until any Bonds become redeemable, subject to any restrictions imposed by the Indenture, (C) to deposit the interest and income on such proceeds in the Revenue Fund as such interest and income is received, and (D) to use such proceeds to redeem Bonds in the amount and manner specified in the Indenture and any Supplemental Indenture on the first Interest Payment Date on which the Bonds can be redeemed. Additionally, in such event, the Commission will file with the Trustee a written report of an Independent Certified Public Accountant stating (A) the amount of proceeds to be deposited with the Trustee from such eminent domain proceedings, (B) an estimate of the total amount of Bond Obligation and the amount of Bonds of each maturity that could be redeemed from such proceeds on the first Interest Payment Date on which Bonds are redeemable, and (C) the estimated annual interest and income to be earned on such proceeds while held and invested by the Trustee. Such interest and income on such proceeds upon receipt by the Trustee will be deposited in the Revenue Fund and will be treated as Revenues for all purposes of the Indenture, including determining whether the Commission is in compliance with the rate covenant contained in the Indenture.

(ii) The Commission may determine to apply such proceeds to the cost of additions or improvements to or extensions of the Enterprise if (A) the Commission first secures and files with the Trustee a written report of a Qualified Independent Consultant showing (1) the loss in annual Revenues, if any, suffered, or to be suffered, by the Commission by reason of such eminent domain proceedings, (2) a general description of the additions, improvements or extensions then proposed to be acquired by the Commission from such proceeds, and (3) an estimate of the additional Revenues to be derived from such additions, improvements or extensions; and (B) such written report states that such additional Revenues will sufficiently offset the loss of Revenues resulting from such eminent domain proceedings so that the ability of the Commission to meet its obligations under the Indenture will not be substantially impaired. The Commission will then promptly proceed with the construction of the additions, improvements or extensions substantially in accordance with such written report. Payments for such construction will be made by the Commission from such proceeds. Any balance of such proceeds not required by the Commission for the purposes aforesaid will be deposited in the Revenue Fund and applied as provided in the Indenture.

(b) If such eminent domain proceedings has had no effect, or at the most a relatively immaterial effect, upon the Revenues and the security of the Bonds, and a Qualified Independent Consultant so concludes in a written report filed with the Trustee, the Commission may determine to apply such proceeds to the costs of additions or improvements to or extensions of the Enterprise or may deposit such proceeds in the Revenue Fund, to be applied as provided in the Indenture.

Compliance with Indenture. The Commission will faithfully observe and perform all the covenants, conditions and requirements of the Indenture, and will not suffer or permit any default to occur under the Indenture, or do or permit to be done, in, upon or about the Enterprise, or any part thereof, anything that might in any way weaken, diminish or impair the security intended to be given pursuant to the Indenture.

Observance of Laws and Regulations. The Commission will comply promptly, fully and faithfully with and abide by any statute, law, ordinance, order, rule or regulation, judgment, decree, direction or requirement now in force or later enacted, adopted or entered by any competent governmental authority or agency applicable or with respect to or affecting the acquisition, construction or reconstruction of the Enterprise or any part thereof or applicable or with respect to or affecting the operation, manner, use or condition of the Enterprise or any part or parcel thereof or adjoining public ways; provided that the Commission need not comply with any such statute, law, ordinance, rule, regulation, judgment, decree, direction or requirement if and so long as the Commission in good faith is contesting or permitting or causing to be contested the applicability or validity thereof by appropriate proceedings diligently prosecuted, even though such contest may result in the imposition of a lien or charge against the Enterprise or the Revenues, if (1) the Commission will effectively prevent foreclosure or enforcement of any such lien or charge and (2) the foreclosure or enforcement of any such lien or charge will be stayed, and if said stay thereafter expires, the Commission will forthwith discharge such lien or charge or cause the same to be discharged, so that pending such proceedings the Enterprise and the Revenues thereof will not be affected thereby, and the security of the Bonds will not be impaired.

Prosecution and Defense of Suits. The Commission will promptly from time to time take such action as may be necessary or proper to remedy or cure any defect in or cloud upon the title to the Enterprise later developing, and will prosecute all such suits, actions and other proceedings as may be appropriate for such purposes and, to the extent permitted by law, will indemnify and save the Trustee and every Bondowner harmless from all loss, cost, damage and expense, including attorneys' fees, which they or any of them may incur by reason of any such defect, cloud, suit, action or proceeding.

The Commission will defend against every suit, action or proceeding at any time brought against the Trustee or any Bondowner upon any claim arising out of the receipt, application or disbursement of any of the Revenues or involving the rights of the Trustee or any Bondowner under the Indenture; provided, that the Trustee or any Bondowner at its or his election may appear in and defend any such suit, action or proceeding. The Commission will, to the extent permitted by law and without making any representation as to the enforceability of the covenants in this paragraph, indemnify and hold harmless the Trustee and the Bondowners against any and all liability claimed or asserted by any person arising out of such receipt, application or disbursement, and will indemnify and hold harmless the Bondowners against any attorneys' fees or other expenses which any of them may incur in connection with any litigation to which any of them may become a defendant by reason of his ownership of Bonds. The Commission, to the extent permitted by law, will promptly reimburse any Bondowner in the full amount of any attorneys' fees or other expenses which he may incur in litigation or otherwise in order to enforce his rights under the Indenture or the Bonds, provided that such litigation has concluded favorably to such Bondowner's contentions therein. Notwithstanding any contrary provision of the Indenture, this covenant will remain in full force and effect, even though all indebtedness and obligations issued under the Indenture may have been fully paid and satisfied, until the Commission has been dissolved.

Governmental Approvals. The Commission will perform any construction, reconstructions and restorations of, improvements, betterments and extensions to, and equipplings and furnishings of, and will operate and maintain the Enterprise at standards required in order that the same may continue to be approved by the proper and competent authority or authorities of the State of California as a public municipal sanitary waste and storm water collection, treatment and disposal system.

Further Assurances. Whenever and so often as requested so to do by the Trustee or any Bondowner, the Commission will promptly execute and deliver or cause to be executed and delivered all such other and further instruments, documents or assurances, and promptly do or cause to be done all such other and further things, as may be necessary or reasonably required in order to further and more fully vest in the Trustee and the Bondowners all rights, interest, powers, benefits, privileges and advantages conferred or intended to be conferred upon them by the Indenture.

Casualty Insurance; Use of Proceeds. (a) The Commission will at all times maintain such insurance on the Enterprise as is customarily maintained with respect to works and properties of like character against accident to, loss of or damage to such works or properties. If any useful part of the Enterprise is damaged or destroyed, or such damage or destruction have had a material adverse effect upon the Revenues and the security of the Bonds, the Commission will by resolution determine to apply the proceeds of any insurance for such loss or damage for one of the following purposes:

(i) The Commission may determine to apply such proceeds to the purchase, defeasance or redemption of Bonds then Outstanding. In that event, the Treasurer will transfer such proceeds to the Trustee who will apply such proceeds on a Proportionate Basis to the redemption, defeasance or purchase of Bonds of each Series then Outstanding in the proportion which the Bond Obligation amount of each Series bears to the aggregate Bond Obligation amount of all Bonds then Outstanding. If no Bonds are subject to redemption on the next succeeding Interest Payment Date, the Commission will direct the Trustee (A) to hold such insurance proceeds in trust, (B) to invest such insurance proceeds in the investments permitted in the Indenture until any Bonds become redeemable, subject to any restrictions imposed by the Indenture, (C) to deposit the interest and income on such insurance proceeds in the Revenue Fund as such interest and income is received, and (D) to use such insurance proceeds to redeem Bonds in the amount and manner specified in the Indenture and any Supplemental Indenture on the first interest payment date on which the Bonds can be redeemed. Additionally, in such event, the Commission will file with the Trustee a written report of an Independent Certified Public Accountant stating (A) the amount of insurance proceeds to be deposited with the Trustee in connection with any insured loss or damage, (B) an estimate of the total amount of Bond Obligation and the amount of Bonds of each maturity which could be redeemed from such proceeds on the first interest payment date on which Bonds are redeemable, and (C) the estimated annual interest and income to be earned on such insurance proceeds while held and invested by the Trustee. Such interest and income on such insurance proceeds upon receipt by the Trustee will be deposited in the Revenue Fund and will be treated as Revenues for all purposes of the Indenture, including determining whether the Commission is in compliance with the rate covenant contained in the Indenture.

(ii) The Commission may determine to apply such insurance proceeds to the cost of additions or improvements to or extensions of the Enterprise if (A) the Commission first secures and files with the Trustee a written report of a Qualified Independent Consultant showing (A) the loss in annual Revenues, if any, suffered, or to be suffered, by the Commission by reason of the loss or damage to the Enterprise, (B) a general description of the additions, improvements or extensions then proposed to be acquired by the Commission from such proceeds, and (C) an estimate of the additional Revenues to be derived from such additions, improvements or extensions; and (B) such written report states that such additional Revenues will sufficiently offset the loss of Revenues resulting from such insured loss or damage so that the ability of the Commission to meet its obligations under the Indenture will not be substantially impaired. The Commission will then promptly proceed with the construction of the additions, improvements or extensions substantially in accordance with such written report. Payments for such construction will be made by the Commission from such insurance proceeds. Any balance of such proceeds not required by the Commission for the purposes aforesaid will be deposited in the Revenue Fund and applied as provided in the Indenture.

(b) If such insured loss, damage or destruction has had no effect, or at the most a relatively immaterial effect, upon the Revenues and the security of the Bonds, and a Qualified Independent Consultant so concludes in a written report filed with the Trustee, the Commission may determine to apply such proceeds to the costs of additions or improvements to or extensions of the Enterprise, or such proceeds may be used for any other lawful purpose of the Enterprise.

(c) Any such insurance will be in the form of policies or contracts for insurance with insurers of good standing and will be payable to the Commission, or may be in the form of self-insurance by the Commission. The Commission will establish such fund or funds or reserves as it determines, in its sole judgement, are necessary to provide for its share of any such self-insurance.

EVENTS OF DEFAULT AND REMEDIES OF BONDOWNERS

Events of Default; Acceleration; Waiver of Default. If one or more of the following events (called “Events of Default” in the Indenture) happens, that is to say – (a) if default is made in the due and punctual payment

of the principal of, or the premium (if any) on, any Bond when and as the same becomes due and payable, whether at maturity as therein expressed, by proceedings for redemption, by declaration or otherwise, or if default is made in the redemption from any Sinking Fund Account of any Term Bonds in the amounts and at the times provided therefor; (b) if default is made in the due and punctual payment of any installment of interest on any Bond when and as such interest installment becomes due and payable; (c) if default is made by the Commission in the observance of any of the other covenants, agreements or conditions on its part in the Indenture or in the Bonds contained, and such default continues for a period of 30 days after written notice thereof, specifying such default and requiring the same to be remedied, is given to the Commission by the Trustee or by a Credit Provider, or to the Commission and the Trustee by the Owners of not less than 25% of the Bond Obligation; or (d) if the Commission or the City files a petition or answer seeking reorganization or arrangement under the federal bankruptcy laws or any other applicable law of the United States of America, or if a court of competent jurisdiction approves a petition, filed with or without the consent of the Commission or the City, as the case may be, seeking reorganization under the federal bankruptcy laws or any other applicable law of the United States of America, or if, under the provisions of any other law for the relief or aid of debtors, any court of competent jurisdiction assumes custody or control of the Commission or the City or of the whole or any substantial part of the property of either; then and in each and every such case during the continuance of such Event of Default, the Trustee may, and upon the written request of the Owners of not less than a majority in aggregate amount of the Bond Obligation or of a Credit Provider will, upon notice in writing to the Commission, declare the principal of all of the Current Interest Bonds then Outstanding, and the interest accrued thereon, the Capital Appreciation Bonds then Outstanding, in the amount of the Accreted Value thereof, and the Parity State Loans then outstanding, in the amount of the obligations due thereunder, to be due and payable immediately, and upon any such declaration the same will become and will be immediately due and payable, anything contained in the Indenture or in the Bonds to the contrary notwithstanding.

This provision, however, is subject to the condition that if, at any time after the principal of the Bonds have been so declared due and payable, and before any judgment or decree for the payment of the moneys due has been obtained or entered as provided in the Indenture, the Commission deposits with the Trustee a sum sufficient to pay all principal and Accreted Value of the Bonds maturing prior to such declaration and all matured installments of interest (if any) upon all the Current Interest Bonds, with interest on such overdue payments of principal and Accreted Value and interest installments at the rate or rates of interest borne by the respective Bonds, and the reasonable expenses of the Trustee, and any and all other defaults known to the Trustee (other than in the payment of principal and Accreted Value of and interest on the Bonds due and payable solely by reason of such declaration) have been made good or cured to the satisfaction of the Trustee, or provision deemed by the Trustee to be adequate has been made therefor, then, and in every such case, (i) if such declaration has been made by the Trustee, the Trustee, or (ii) if such declaration has been made upon the written request of Bondowners, the Owners of not less than a majority in aggregate amount of the Bond Obligation of the Bonds then Outstanding, or (iii) if such declaration has been made upon the written request of a Credit Provider, such Credit Provider, may, by written notice to the Commission and, in cases (ii) and (iii) above, to the Trustee, on behalf of the Owners of all of the Bonds, rescind and annul such declaration and its consequences; but no such rescission and annulment will extend to or will affect any subsequent default, or will impair or exhaust any right or power consequent thereon.

Application of Funds Upon Acceleration. All of the Revenues, including all sums in all of the funds provided for in the Indenture upon the date of the declaration of acceleration as provided in the Indenture and all sums thereafter received by the Commission or the Trustee under the Indenture, will, if received by the Commission, be transmitted to the Trustee and be applied by the Trustee in the order following, upon presentation of the several Bonds, and the stamping thereon of the payment if only partially paid, or upon the surrender thereof if fully paid --

First, to the payment of the costs and expenses of the Bondowners in declaring such Event of Default, including reasonable compensation to their agents, attorneys and counsel; and to the payment of the costs and expenses of the Trustee, including but not limited to reasonable compensation to its agents, attorneys and counsel;

Second, to the payment of the whole amount of Bond Obligation then owing and unpaid upon the Bonds, with interest on, with respect to the Current Interest Bonds, the overdue principal and installments of interest, with respect to the Capital Appreciation Bonds, the Accreted Value thereof, and with respect to the Parity State Loans, the obligations due thereunder, at the rate or rates of interest borne by the respective Bonds, and in case such moneys shall be insufficient to pay in full the whole amount so owing and unpaid

upon the Bonds, then to the payment of such principal and interest, Accreted Value and obligations (under Parity State Loans) without preference or priority of principal over interest, or of interest over principal, or of any installment of interest over any other installment of interest, ratably to the aggregate of such principal and interest, Accreted Value and obligations (under Parity State Loans); and

Third, to the payment of all Policy Costs, and in case such moneys are insufficient to pay in full all Policy Costs owing and unpaid, then to the payment of such Policy Costs pro rata (calculated by reference to the maximum amounts available under the respective Bond Reserve Fund Policies).

Suits at Law or in Equity and Mandamus. In case one or more of the Events of Default happens, then and in every such case the Owner of any Bond at the time Outstanding will be entitled to proceed to protect and enforce the rights vested in such Owner by the Indenture by such appropriate judicial proceeding as such Owner deems most effectual to protect and enforce any such right, either by suit in equity or by action at law, whether for the specific performance of any covenant or agreement contained in the Indenture, or in aid of the exercise of any power granted in the Indenture, or to enforce any other legal or equitable right vested in the Owners of Bonds by the Indenture or by law; provided, however, that no such Bondowner will have the right to institute any such judicial proceeding pursuant to the Indenture unless (a) such Owner has previously given to the Trustee written notice of the occurrence of an Event of Default under the Indenture; (b) the Owners of at least ten percent (10%) in aggregate amount of Bond Obligation of the Bonds then Outstanding have made written request to the Trustee to exercise the powers granted in the Indenture or to institute such action, suit or proceeding in its own name; (c) such Owner or said Owners have tendered to the Trustee reasonable indemnity against the costs, expenses and liabilities to be incurred in compliance with such request; (d) the Trustee has refused or omitted to comply with such request for a period of sixty (60) days after such written request has been received by, and said tender of indemnity has been made to, the Trustee; and (e) the Trustee has not received contrary directions from the Owners of a majority in aggregate amount of Bond Obligation of the Bonds Outstanding. The provisions of the Indenture constitute a contract with the Owners of the Bonds, and such contract and duties of the Commission and of the Commission members and of the officers and employees of the Commission and of the City are enforceable by any Bondowner by mandamus or other appropriate suit, action or proceeding in any court of competent jurisdiction.

Non-waiver. Nothing in the Indenture, or in the Bonds, will affect or impair the obligation of the Commission, which is absolute and unconditional, to pay the principal of and the interest (and premium, if any) on the Bonds to the respective Owners of the Bonds at the respective dates of maturity, or upon call for redemption, as provided in the Indenture, but only out of the Revenues pledged in the Indenture for such payments, or affect or impair the right of action, which is also absolute and unconditional, of such Owners to institute suit to enforce such payment by virtue of the contract embodied in the Bonds.

A waiver of any default or breach of duty or contract by any Bondowner will not affect any subsequent default or breach of duty or contract, or impair any rights or remedies on the subsequent default or breach. No delay or omission of the Trustee or of any Owner of any of the Bonds to exercise any right or power arising upon the happening of any Event of Default will impair any such right or power or will be construed to be a waiver of any such Event of Default or an acquiescence therein, and every power and remedy given by the Law or the Indenture to the Trustee or to the Owners of Bonds may be exercised from time to time and as often as will be deemed expedient by the Trustee or the Owners of Bonds.

If a suit, action or proceeding to enforce any right or exercise any remedy is abandoned or determined adversely to the Bondowners, the Commission and the Bondowners will be restored to their former positions, rights and remedies as if such suit, action or proceeding had not been brought or taken.

Actions by Trustee as Attorney-in-Fact. Any suit, action or proceeding which any Owner of Bonds will have the right to bring to enforce any right or remedy under the Indenture may be brought by the Trustee for the equal benefit and protection of all Owners of Bonds similarly situated (notwithstanding any conditions upon the bringing of any such action, suit or proceeding set forth in the Indenture) and the Trustee is appointed (and the successive respective Owners of the Bonds issued under the Indenture, by taking and holding the same, will be conclusively deemed so to have appointed it) the true and lawful attorney-in-fact of the respective Owners of the Bonds for the purpose of bringing any such suit, action, or proceeding and to do and perform any and all acts and

things for and in behalf of the respective Owners of the Bonds as a class or classes, as may be necessary or advisable in the opinion of the Trustee as such attorney-in-fact.

Remedies Not Exclusive. No remedy conferred in the Indenture upon or reserved to the Trustee or to the Owners of Bonds is intended to be exclusive of any other remedy. Every such remedy will be cumulative and will be in addition to every other remedy given under the Indenture or now or later existing, at law or in equity or by statute or otherwise and may be exercised without exhausting and without regard to any other remedy conferred by the Law or any other law.

Power of Trustee to Control Proceedings. In the event that the Trustee, upon the happening of an Event of Default, has taken any action, by judicial proceedings or otherwise, pursuant to its duties under the Indenture, whether upon its own discretion or upon the request of the Owners of at least ten percent (10%) in aggregate amount of the Bond Obligation, it will have full power, in the exercise of its discretion for the best interests of the Owners of the Bonds, with respect to the continuance, discontinuance, withdrawal, compromise, settlement or other disposal of such action; provided, however, that the Trustee does not, unless there no longer continues an Event of Default under the Indenture, discontinue, withdraw, compromise or settle, or otherwise dispose of any litigation pending at law or in equity, if at the time there has been filed within a written request signed by the Owners of at least a majority in aggregate amount of the Bond Obligation under the Indenture opposing such discontinuance, withdrawal, compromise, settlement or other disposal of such litigation.

Remedies of Bond Reserve Fund Policy Provider. If the Commission fails to pay Policy Costs to a Bond Reserve Fund Policy Provider to the extent and at the times required by the provisions of the Indenture and such failure continues for 30 days after written notice of such default is received by the Commission and the Trustee from such Bond Reserve Fund Policy Provider or if an Event of Default set forth in the Indenture occurs and is continuing, then the Bond Reserve Fund Policy Provider may exercise any remedy provided under the Indenture to the Trustee or available at law or in equity to protect and enforce its right to receive payment of Policy Costs; provided, that, in no event, will the Bond Reserve Fund Policy Provider be able to declare the principal and Accreted Value of the Bonds and the interest accrued thereon to be due and payable immediately or to exercise any remedy that the Trustee, in its sole discretion, determines would adversely affect the Bondowners.

Rights of Credit Provider. Each Credit Provider, during any period in which an Event of Default has occurred and is continuing, will be recognized as the Owner of each Bond which it guarantees or insures for the purposes of exercising all rights and privileges available to Bondowners. Any acceleration of principal payments with respect to Bonds guaranteed or insured by a Credit Provider are subject to such Credit Provider's prior written direction or consent (but only if such Credit Provider is not in default under its guaranty or insurance policy). Each Credit Provider, will have the right to institute any suit, action or proceeding at law or in equity under the same terms as an Owner of the Bonds that such Credit Provider guarantees or insures.

THE TRUSTEE

Appointment and Duties of Trustee. The Trustee accepts by the Indenture the trusts imposed upon it as Trustee under the Indenture for the purpose of receiving all moneys which the Commission is required to deposit with the Trustee under the Indenture and agrees to allocate, use and apply the same as provided in the Indenture and otherwise to hold all the offices and to perform all the functions and, duties provided in the Indenture to be held and performed by the Trustee and agrees to perform such duties and obligations, subject to the terms and conditions set forth in the Indenture. The Commission agrees that it will maintain a Trustee having an office in San Francisco or Los Angeles, California, so long as any Bonds are Outstanding and unpaid.

The Trustee will, prior to an Event of Default, and after the curing of all Events of Default which may have occurred, perform such duties and only such duties as are specifically set forth in the Indenture. The Trustee will, during the existence of any Event of Default (which has not been cured), exercise such of the rights and powers vested in it by the Indenture, and use the same degree of care and skill in their exercise, as a prudent person would exercise or use under the circumstances in the conduct of his own affairs.

So long as there is no Event of Default under the Indenture, the Commission may remove the Trustee, by giving written notice to such Trustee and by giving Bondowners notice by mail, first class postage prepaid, of such

removal, and any successor thereto, and may appoint a successor or successors thereto; provided that any such successor will be a bank or trust company doing business and having an office in San Francisco or Los Angeles, California, having a combined capital and surplus of at least \$100,000,000, and subject to supervision or examination by federal or state authority. If such bank or trust company publishes a report of condition at least, annually, pursuant to law or to the requirements of any supervising or examining authority above referred to, then for the purpose of the Indenture the combined capital and surplus of such bank or trust company will be deemed to be its combined capital and surplus as set forth in its most recent report of condition so published.

The Trustee may at any time resign by giving written notice to the Commission and by giving the Bondowners notice by mail, first class postage prepaid, of such resignation. Upon receiving such notice of resignation, the Commission will promptly appoint a successor Trustee by an instrument in writing. Any resignation or removal of the Trustee and appointment of a successor Trustee will become effective upon acceptance of appointment by the successor Trustee. If no successor Trustee has been appointed and has accepted appointment within forty-five days of giving notice of removal or notice of resignation as aforesaid, the resigning Trustee or any Bondowner (on behalf of himself or herself and all other Bondowners) may petition any court of competent jurisdiction for the appointment of a successor Trustee, and such court may thereupon, after such notice (if any) as it may deem proper, appoint such successor Trustee.

Any company into which the Trustee may be merged or converted or with which it may be consolidated or any company resulting from any merger, conversion or consolidation to which it will be a party or any company to which the Trustee may sell or transfer all or substantially all of its corporate trust business, provided such company will be eligible under the Indenture, will be the successor to such Trustee without the execution or filing of any paper or any further act, anything in the Indenture to the contrary notwithstanding.

Authorization of Trustee. The Trustee is authorized by the Indenture to pay the principal of and interest and redemption premium, if any, on the Bonds when due and payable, or on call and redemption or on purchase by the Trustee prior to maturity, and to cancel all Bonds upon payment thereof and to return the same so cancelled to the Commission, subject to the provisions of the Indenture. The Trustee will keep accurate records of all funds administered by it and of all Bonds and interest payments paid and discharged.

The Trustee and its directors, officers, employees or agents may in good faith buy, sell, own, hold and deal in any of the Bonds and may join in any action which any Owner of a Bond may be entitled to take, with like effect as if the Trustee was not the Trustee under the Indenture. The Trustee may in good faith hold any other form of indebtedness of the Commission or of the City, own, accept or negotiate any drafts, bills of exchange, acceptances or obligations of the Commission and make disbursements for the Commission and enter into any commercial or business arrangement therewith, without limitation.

Fees and Expenses. The Commission will compensate the Trustee for its services rendered pursuant to the provisions of the Indenture, and also for all reasonable expenses, charges, counsel fees and other disbursements, including those of its attorneys, agents and employees, incurred in and about the performance of its powers and duties under the Indenture. The obligations of the Commission under the Indenture to compensate the Trustee for services and to pay or reimburse the Trustee for disbursements, liabilities and advances will constitute additional indebtedness under the Indenture.

Liability of Trustee. (a) The recitals of facts, covenants and agreements in the Indenture and in the Bonds contained will be taken as statements, covenants and agreements of the Commission, and the Trustee assumes no responsibility for the correctness of the same, does not make any representations as to the validity or sufficiency of the Indenture or of the Bonds, and will not incur any responsibility in respect thereof, other than in connection with the duties or obligations in the Indenture or in the Bonds expressly assigned to or imposed upon it. The Trustee will not be liable in connection with the performance of its duties under the Indenture, except for its own negligence or default.

(b) The Trustee will not be liable for any error of judgment made in good faith by an Authorized Officer of the Trustee, unless it is proved that the Trustee was negligent in ascertaining the pertinent facts.

(c) The Trustee will not be liable with respect to any action taken or omitted to be taken by it in good faith in accordance with the direction of the Owners of not less than a majority in aggregate amount of Bond Obligations of the Bonds at the time Outstanding relating to the time, method and place of conducting any proceeding for any remedy available to the Trustee, or exercising any trust or power conferred upon the Trustee under the Indenture.

(d) The Trustee will be under no obligation to exercise any of the rights or powers vested in it by the Indenture at the request, order or direction of any of the Bondowners pursuant to the provisions of the Indenture unless such Bondowners have offered to the Trustee reasonable security or indemnity against the costs, expenses and liabilities which may be incurred therein or thereby.

(e) The Trustee will not be liable for any action taken by it in good faith and believed by it to be authorized or within the discretion or rights or powers conferred upon it by the Indenture.

(f) The Trustee will not be deemed to have knowledge of any Event of Default under the Indenture unless and until it has actual knowledge thereof, or has received written notice thereof, at its principal corporate trust office in San Francisco, California. Except as otherwise expressly provided in the Indenture, the Trustee will not be bound to ascertain or inquire as to the performance or observance of any of the terms, conditions, covenants or agreements in the Indenture or of any of the documents executed in connection with the Bonds or the delivery of the Bonds, or as to the existence of an Event of Default thereunder. The Trustee will not be responsible for the validity or effectiveness of any collateral given to or held by it. The Trustee will not be responsible for the recording or filing of any document relating to the Indenture or of financing statements (or continuation statements in connection therewith) or of any supplemental instruments or documents of further assurance as may be required by law in order to perfect the security interests in any collateral given to or held by it.

(g) No provision of the Indenture will require the Trustee to expend or risk its own funds or otherwise incur any financial liability in the performance of any of its duties under the Indenture, or in the exercise of any of its rights or powers.

(h) The Commission further agrees to indemnify, to the extent permitted by law and without making any representation as to the enforceability of this covenant, and save the Trustee, its directors, officers, employees and agents harmless against any liabilities which it may incur in the exercise and performance of its powers and duties under the Indenture, including but not limited to costs and expenses incurred in defending against any claim or liability, which are not due to its negligence or default.

(i) The provisions above will survive the resignation or removal of the Trustee, payment of the Bonds and discharge of the Indenture.

Rights of Trustee to Rely Upon Documents. The Trustee will be protected in acting upon any notice, resolution, request, consent, order, certificate, report, direction, Bond or other paper or document believed by it to be genuine and to have been signed or presented by the proper party or parties. The Trustee may consult with counsel, who may be counsel to the Commission or to the City, with regard to legal questions, and the opinion of such counsel will be full and complete authorization and protection in respect of any action taken or suffered under the Indenture in good faith and in accordance therewith.

The Trustee will not be bound to recognize any person as the Owner of a Bond unless and until his title thereto is satisfactorily established, if disputed.

Whenever in the administration of its duties under the Indenture the Trustee deems it necessary or desirable that a matter be proved or established prior to taking or suffering any action under the Indenture, such matter (unless other evidence in respect thereof be in the Indenture specifically prescribed) may, in the absence of bad faith on the part of the Trustee, be deemed to be conclusively proved and established by a Certificate of the Commission, and such Certificate will be full warrant to the Trustee for any action taken or suffered under the provisions of the Indenture or any Supplemental Indenture upon the faith thereof, but in its discretion the Trustee may, in lieu thereof, accept other evidence of such matter or may require such additional evidence as to it may seem reasonable.

MODIFICATION OR AMENDMENT OF THE INDENTURE

Amendments Permitted. (a)(i) The Indenture and the rights and obligations of the Commission and of the Owners of the Bonds and of the Trustee may be modified or amended at any time by a Supplemental Indenture which will become binding when the written consents of the Owners of a majority in aggregate amount of the Bond Obligation of the Bonds (or, if such Supplemental Indenture is only applicable to a Series of Bonds, such Series of Bonds) then Outstanding, exclusive of Bonds disqualified as provided in the Indenture, and of each Credit Provider (so long as such Credit Provider is not in default under the policy of municipal bond insurance or Letter of Credit issued by it in connection with any Series of Bonds) have been filed with the Trustee (provided, that no such Credit Provider will unreasonably withhold consent to such modification or amendment). (ii) The Indenture and the rights and obligations of the Commission and of the Owners of the Bonds and of the Trustee may also be modified or amended at any time by a Supplemental Indenture which will become binding when the written consents of each Credit Provider have been filed with the Trustee, provided that at such time the payment of the principal of and interest on all Outstanding Bonds will be insured by a policy or policies of municipal bond insurance or payable under a Letter of Credit issued by a Credit Provider. (iii) No such modification or amendment will (A) extend the fixed maturities of the Bonds, or extend the time for making any Minimum Sinking Fund Account Payments, or reduce the rate of interest thereon, or extend the time of payment of interest, or reduce the amount of principal thereof, or reduce any premium payable on the redemption thereof, without the consent of the Owner of each Bond so affected, or (B) reduce the aforesaid percentage of the Bond Obligation the consent of the Owners of which is required for the execution of any amendment or modification of the Indenture, or (C) modify any of the rights or obligations of the Trustee without its written consent thereto.

(b) The Indenture and the rights and obligations of the Commission and of the Owners of the Bonds may also be modified or amended at any time by a Supplemental Indenture which will become binding upon adoption, without the consent of any Bondowners or any Credit Provider (but with notice to each Credit Provider), but only to the extent permitted by law and only if the Trustee determines, which determination may be based upon a good faith reliance upon an Opinion of Counsel, that the provisions of such Supplemental Indenture will not materially adversely affect the interests of the Owners, including, without limitation, for any one or more of the following purposes – (i) to add to the covenants and agreements of the Commission contained in the Indenture other covenants and agreements thereafter to be observed or to surrender any right or power in the Indenture reserved to or conferred upon the Commission; (ii) to cure, correct or supplement any ambiguous or defective provision or omission or mistake contained in the Indenture or in regard to questions arising under the Indenture, as the Commission may deem necessary or desirable; (iii) to provide for the issuance of additional Series of Bonds, and to provide the terms and conditions under which such additional Series of Bonds may be issued, subject to and in accordance with the provisions of the Indenture; and (iv) to provide additional security for the Bonds.

Procedure for Amendment with Written Consent of Bondowners. The Commission may at any time adopt a Supplemental Indenture amending the provisions of the Bonds or of the Indenture or any Supplemental Indenture, to the extent that such amendment is permitted by the Indenture, to take effect when and as provided in the Indenture. A copy of or a summary of the provisions of such Supplemental Indenture, together with a request to Bondowners and to each Credit Provider for their consent thereto, will be mailed, first class postage prepaid, by the Commission to each Owner of Bonds and to each Credit Provider, but failure to mail copies of such Supplemental Indenture or summary thereof and request will not affect the validity of the Supplemental Indenture when assented to as provided in the Indenture.

Such Supplemental Indenture will not become effective unless there are filed with the Trustee the written consents of the Owners of a majority in aggregate amount of the Bond Obligation of the Bonds then Outstanding (exclusive of Bonds disqualified as provided in the Indenture) and of each Credit Provider and a notice has been mailed as provided below. Each such consent will be effective only if accompanied by proof of ownership of the Bonds for which such consent is given, which proof will be such as is permitted by the Indenture. Any such consent will be binding upon the Owner of the Bonds giving such consent and on any subsequent Owner (whether or not such subsequent Owner has notice thereof) unless such consent is revoked in writing by the Owner giving such consent or a subsequent Owner by filing such revocation with the Trustee prior to the date when the notice provided below for has been mailed.

After the Owners of the required percentage of Bond Obligation and each Credit Provider has filed their consents to the Supplemental Indenture, the Commission will mail a notice to the Bondowners in the manner provided above for the mailing of the Supplemental Indenture, stating in substance that the Supplemental Indenture has been consented to by the Owners of the required percentage of Bond Obligation and each Credit Provider and will be effective as provided in the Indenture (but failure to mail copies of said notice will not affect the validity of the Supplemental Indenture or consents thereto), and proof of the mailing of such notice will be filed with the Trustee. A record, consisting of the papers required by the Indenture to be filed with the Trustee, will be proof of the matters therein stated until the contrary is proved. The Supplemental Indenture will become effective upon the filing with the Trustee of the proof of the mailing of such last-mentioned notice.

In lieu of obtaining any demand, request, direction, consent or waiver in writing, the Trustee may call and hold a meeting of the Bondowners upon such notice and in accordance with such rules and regulations as the Trustee considers fair and reasonable for the purpose of obtaining any such action.

Disqualified Bonds. Bonds owned or held by or for the account of the Commission or of the City (but excluding Bonds held in any pension or retirement fund) will not be deemed Outstanding for the purpose of any consent or other action or any calculation of Outstanding Bonds provided for in the Indenture, and will not be entitled to consent to or take any other action provided for in the Indenture. For the purpose of the Indenture no bank organized under the laws of the State of California and no national banking association doing business in said State, or elsewhere, will be deemed to be an agency of the Commission.

The Commission may adopt appropriate regulations to require each Bondowner, before his consent provided for in the Indenture will be deemed effective, to reveal if the Bonds as to which such consent is given are disqualified as provided in the Indenture.

Effect of Supplemental Indenture. From and after the time any Supplemental Indenture becomes effective pursuant to the Indenture, the Indenture will be deemed to be modified and amended in accordance therewith, and the respective rights, duties and obligations under the Indenture of the Commission, the Trustee and all Owners of Bonds Outstanding will thereafter be determined, exercised and enforced under the Indenture subject in all respects to such modification and amendment, and all the terms and conditions of any such Supplemental Indenture will be deemed to be part of the terms and conditions of the Indenture for any and all purposes.

Endorsement or Replacement of Bonds Issued Before Amendments. The Commission may determine that Bonds issued and delivered before the effective date of any action taken as provided in the Indenture will bear a notation, by endorsement or otherwise, in form approved by the Commission, as to such action. In that case, upon demand of the Owner of any Bond Outstanding at such effective date and presentation of his Bond for the purpose at the office of the Commission or at such other office as the Commission may select and designate for that purpose, a suitable notation will be made on such Bond. The Commission may determine that new Bonds, so modified as in the opinion of the Commission is necessary to conform to such action, will be prepared, executed and delivered. In that case, upon demand of the Owner of any Bonds then Outstanding, such new Bonds will be exchanged at the principal corporate trust office of the Trustee in San Francisco, California, without cost to such Owner, for Bonds of the same character then Outstanding, upon surrender of such Bonds.

Amendatory Endorsement of Bonds. The provisions of the Indenture will not prevent any Bondowner from accepting any amendment as to the particular Bonds held by such Bondowner, provided that due notation thereof is made on such Bonds.

DEFEASANCE

Discharge of Indenture. (a) If the Commission pays and discharges the entire indebtedness on all Bonds Outstanding in any one or more of the following ways – (1) by well and truly paying or causing to be paid the principal of (including redemption premiums, if any) and interest on all Bonds Outstanding, as and when the same become due and payable (but this clause will not include Bonds the principal of or interest on which has been paid by a Credit Provider until the Credit Provider has been paid or reimbursed for such payment by the Commission); or (2) by depositing with the Trustee, an escrow agent or other fiduciary, in trust, at or before maturity, money which, together with the amounts then on deposit in the Principal Fund, the Interest Fund and the Bond Reserve Fund, is

fully sufficient to pay or redeem all Bonds Outstanding, including all principal, interest and redemption premiums, if any; or (3) by delivering to the Trustee, for cancellation by it, all Bonds Outstanding; or (4) by depositing with the Trustee, an escrow agent or other fiduciary, in trust, Defeasance Obligations in such amount which, in the determination of an Independent Certified Public Accountant, who certifies such determination to the Trustee, will, together with the income or increment to accrue thereon and any other moneys of the Commission made available for such purpose, be fully sufficient to pay and discharge the indebtedness on all Bonds (including all principal, interest and redemption premiums, if any) at or before their respective maturity dates; and if the Commission also pays or causes to be paid all other sums payable under the Indenture by the Commission, including all Policy Costs, then and in that case, at the election of the Commission (evidenced by a Certificate of the Commission signifying its intention to pay and discharge all such indebtedness, which will be filed with the Trustee), and notwithstanding that any Bonds have been surrendered for payment, the pledge of the Net Revenues and other funds provided for in the Indenture and all other obligations of the Commission under the Indenture will cease, terminate and be completely discharged, except only as provided in the Indenture, and the Owners of the Bonds not so surrendered and paid will thereafter be entitled to payment only out of the Defeasance Obligations deposited with the Trustee, escrow agent or other fiduciary as aforesaid for their payment; subject, however, to the provisions of the Indenture. The discharge of the obligations of the Commission under the Indenture will be without prejudice to the rights of the Trustee to charge for and be reimbursed by the Commission for any expenditures which it may thereafter incur in connection with the Indenture.

The Commission may at any time surrender to the Trustee for cancellation by it any Bonds previously issued and delivered, which the Commission may have acquired in any manner whatsoever, and such Bonds, upon such surrender and cancellation, will be deemed to be paid and retired.

(b) In the event that any portion or all of the Bonds are to be paid and discharged pursuant to the Indenture, the Credit Provider will be provided with 15 days advance notice and will be provided with a draft copy of any proposed escrow agreement establishing the defeasance trust, the form of the Independent Certified Public Accountants certificate or letter, the preliminary official statement of the refunding issue (if applicable) and the form of Opinion of Counsel to the effect that upon the deposit of funds and investments under the escrow or other applicable agreement, the Bonds being paid and discharged will no longer be deemed to be outstanding under the Indenture. Substitution of securities held in trust under the escrow agreement will not be permitted unless there has first been delivered to the escrow agent (1) a certificate of Independent Certified Public Accountant to the effect that the escrow investments, as substituted, are sufficient to pay debt service on the Bonds being paid and discharged whether to maturity or date of redemption, as applicable, and (2) an Opinion of Counsel to the effect that the substitution is permitted under the escrow agreement and does not, in and of itself, adversely affect the exclusion from gross income of interest on the Bonds being so paid and discharged for purposes of federal income taxation.

A final copy of any such escrow agreement and the Independent Certified Public Accountant's certificate stating that the escrow is sufficient to meet the standards of the Indenture, the final official statement for the refunding issue (if applicable), the approving opinion of bond counsel with respect to the refunding issue, the Trustee's receipt, and the Trustee's certification as to the application of funds will be furnished to the Credit Provider no later than 10 days (or such later date which is the first date practicable to deliver such items in the event that the refunding issue is not sold early enough to provide such items 10 days prior to the date of defeasance) prior to the defeasance of Bonds by the Commission.

If a forward purchase or supply contract is employed in connection with the defeasance of any of the Bonds, the verification report relating to the defeasance of such Bonds will expressly state that the adequacy of the escrow to accomplish the defeasance relies solely on the initial escrowed investments and the maturing principal thereof and interest income thereon and does not assume performance under or compliance with the forward supply contract, and the applicable escrow agreement will provide that in the event of any discrepancy or difference between the terms of the forward supply contract and the escrow agreement, the terms of the escrow agreement will be controlling.

(d) Notwithstanding anything in the Indenture to the contrary, in the event that the principal and/or interest due of the Bonds is paid by any Credit Provider in accordance with the terms of the Indenture, such Bonds will remain Outstanding for all purposes, not be defeased or otherwise satisfied and not be considered paid by the Commission, and the assignment and pledge of the Net Revenues and other assets under the Indenture and all

covenants, agreements and other obligations of the Commission to the Owners so paid will continue to exist and will run to the benefit of the Credit Provider, and the Credit Provider will be subrogated to the rights of such Owners, as applicable.

Discharge of Liability on Bonds. Upon the deposit with the Trustee, an escrow agent or other fiduciary, in trust, at or before maturity, of Defeasance Obligations in the necessary amount to pay or redeem Outstanding Bonds (whether upon or prior to their maturity or the redemption date of such Bonds), provided that if such Bonds are to be redeemed prior to the maturity thereof, notice of such redemption has been given as provided in the Indenture or provision satisfactory to the Trustee has been made for the giving of such notice, then all liability of the Commission in respect of such Bonds will cease, determine and be completely discharged, except only that thereafter the Owners thereof will be entitled to payment of the principal of and interest on such Bonds by the Commission, and the Commission will remain liable for such payment, but only out of the Defeasance Obligations deposited in an escrow fund established for this purpose and held by the Trustee, an escrow agent, or other fiduciary, as aforesaid for their payment, subject, however, to the provisions of the Indenture.

Payment of Bonds after Discharge of Indenture. Notwithstanding any provisions of the Indenture, any moneys deposited in trust for the payment of the principal of, or interest or premium on, any Bonds and remaining unclaimed for two years after the principal of all the Outstanding Bonds has become due and payable (whether at maturity or upon call for redemption or by declaration as provided in the Indenture) will then be repaid to the Commission upon its Written Request, and the Owners of such Bonds will thereafter be entitled to look only to the Commission for payment thereof, and all liability of the Trustee or any other fiduciary with respect to such moneys will thereupon cease; provided, however, that before the repayment of such moneys to the Commission as aforesaid, the Trustee may (at the cost of the Commission) first publish at least once in a Financial Newspaper or Journal a notice, in such form as may be deemed appropriate by the Trustee, with respect to the Bonds so payable and not presented and with respect to the provisions relating to the repayment to the Commission of the moneys held for the payment thereof. In the event of the repayment of any such moneys to the Commission as aforesaid, the Owners of the Bonds in respect of which such moneys were deposited will thereafter be deemed to be general creditors of the Commission for amounts equivalent to the respective amounts deposited for the payment of such Bonds and so repaid to the Commission (without interest thereon).

MISCELLANEOUS

Liability of Commission Limited to Net Revenues. (a) Notwithstanding anything contained in the Indenture, the Commission will not be required to advance any moneys derived from the proceeds of any taxes levied or collected by the City, or from any source of income other than the Net Revenues, for the payment of the principal of or interest on the Bonds, for the operation and maintenance of the Enterprise, for the performance of any covenants contained in the Indenture or for the payment of any obligations under the Indenture, including indemnification. The Commission may, however, advance funds for any such purpose, provided that such funds are derived from a source legally available for such purpose and may be used by the Commission for such purpose without incurring indebtedness.

(b) The Bonds will be revenue bonds, payable exclusively from the Net Revenues as provided in the Indenture. The general fund of the City is not liable, and the credit or taxing power of the City is not pledged, for the payment of the Bonds or their interest. The Owners of the Bonds will never have the right to compel the exercise of the taxing power of the City or the forfeiture of any property of the Commission or of the City. The principal of and interest on the Bonds and any premiums upon the redemption of any thereof will not be a debt of the Commission or the City, nor a legal or equitable pledge, charge, lien or encumbrance upon any property of the Commission or of the City or upon any of its income, receipts or revenues except the Net Revenues pledged to the payment thereof as provided in the Indenture.

Successor Is Deemed Included in All References to Predecessor. Whenever in the Indenture or any Supplemental Indenture either the Commission or the Trustee is named or referred to, such reference will be deemed to include the successors or assigns thereof, and all the covenants and agreements contained in the Indenture by or on behalf of the Commission or the Trustee will bind and inure to the benefit of the respective successors and assigns thereof whether so expressed or not.

Limitation of Rights to Parties and Bondowners. Nothing in the Indenture or in the Bonds expressed or implied is intended or will be construed to give to any person, other than the Commission, the Trustee, any Bond Reserve Fund Policy Provider, any Credit Provider and the Owners of the Bonds issued under the Indenture, any legal or equitable right, remedy or claim under or in respect of the Indenture or any covenant, condition or provision therein or contained in the Indenture; and all such covenants, conditions and provisions are and will be held to be for the sole and exclusive benefit of the Commission, the Trustee, the Bond Reserve Fund Policy Provider, the Credit Provider and the Owners of the Bonds issued under the Indenture.

Waiver of Notice. Whenever in the Indenture the giving of notice by mail or otherwise is required, the giving of such notice may be waived in writing by the person entitled to receive such notice and in any such case the giving or receipt of such notice will not be a condition precedent to the validity of any action taken in reliance upon such waiver.

Destruction of Bonds. Whenever provision is made in the Indenture for the cancellation by the Trustee and the delivery to the Commission of any Bonds, the Trustee may destroy such Bonds (in the presence of an officer of the Commission, if the Commission will so require), and, deliver a certificate of such destruction to the Commission, unless the Commission will, by Written Request of the Commission, request the Trustee to instead cancel and deliver said Bonds to the Commission.

Severability of Invalid Provisions. If any one or more of the provisions contained in the Indenture or in the Bonds is for any reason held to be invalid, illegal or unenforceable in any respect, then such provision or provisions will be deemed severable from the remaining provisions contained in the Indenture and such invalidity, illegality or unenforceability will not affect any other provision of the Indenture, and the Indenture will be construed as if such invalid or illegal or unenforceable provision had never been contained in the Indenture. The Commission declares by the Indenture that it would have adopted the Indenture and each and every other Section, paragraph, sentence, clause or phrase of the Indenture and authorized the issuance of the Bonds pursuant thereto irrespective of the fact that any one or more Sections, paragraphs, sentences, clauses or phrases of the Indenture may be held illegal, invalid or unenforceable. If, by reason of the judgment of any court, the Trustee or any successor Trustee is rendered unable to perform its duties under the Indenture, and if no successor Trustee be then appointed, all such duties and all of the rights and powers of the Trustee under the Indenture will be assumed by and vest in the Treasurer in trust for the benefit of the Bondowners.

Evidence of Rights of Bondowners. Any request, consent or other instrument required by the Indenture to be signed and executed by Bondowners may be in any number of concurrent writings of substantially similar tenor and may be signed or executed by such Bondowners in person or by an agent or agents duly appointed in writing. Proof of the execution of any such request, consent or other instrument or of a writing appointing any such agent, will be sufficient for any purpose of the Indenture and will be conclusive in favor of the Trustee and of the Commission if made in the manner provided in the Indenture.

The fact and date of the execution by any person of any such request, consent or other instrument or writing may be proved in any manner reasonably acceptable to the Trustee.

The ownership of Bonds will be proved by the bond registration books maintained pursuant to the Indenture

Any request, consent, vote or declaration of the Owner of any Bond will bind every future Owner of the same Bond and the Owner of every Bond issued in exchange therefor or in lieu thereof, in respect of anything done or suffered to be done by the Trustee or the Commission in pursuance of such request, consent, vote or declaration.

Credit Provider and Bond Reserve Fund Policy Provider Provisions. Any provisions in the Indenture requiring consent from the Credit Providers will have no force or effect with respect to a Credit Provider or a Bond Reserve Fund Policy Provider during any period in which such Credit Provider or a Bond Reserve Fund Policy Provider is in default in its obligations under the related Letter of Credit, insurance policy or Bond Reserve Fund Policy. The provisions with respect to the Credit Provider and Bond Reserve Fund Policy Provider may be disregarded if no Credit Providers or Bond Reserve Fund Policy Providers are in existence with respect to the Outstanding Bonds.

Funds and Accounts. Any fund required by the Indenture to be established and maintained by the Commission or the Controller or the Treasurer or the City or the Trustee may be established and maintained in the accounting records of the Commission or the Controller or the Treasurer or the City or the Trustee either as a fund or an account, and may, for the purposes of such records, any audits thereof and any reports or statements with respect thereto, be treated either as a fund or as an account; but all such records with respect to all such funds will at all times be maintained in accordance with generally accepted accounting practices and with due regard for the protection of the security of the Bonds and the rights of every Owner thereof.

Repeal of Inconsistent Resolution. Any resolution of the Commission, and any part of any resolution, inconsistent with the Indenture, is repealed to the extent of such inconsistency by the Indenture.

Waiver of Personal Liability. No Commission member or officer, agent or employee of the Commission or of the City will be individually or personally liable for the payment of the principal of or interest on the Bonds; but nothing contained in the Indenture will relieve any such Commission member or officer, agent or employee from the performance of any official duty provided by law.

Governing Law. The Indenture will be construed and governed in accordance with the laws of the State of California.

Business Day. Except as specifically set forth in a Supplemental Indenture, any payments or transfers which would otherwise become due on any day which is not a Business Day become due or will be made on the next succeeding Business Day.

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SEVENTH SUPPLEMENTAL INDENTURE

PROVISIONS RELATING TO 2018 SERIES AB BONDS

Authorization and Terms of 2018 Series AB Bonds. The principal of and premium, if any, on the 2018 Series AB Bonds will be payable by check or wire in lawful money of the United States of America to the Owner thereof, upon the surrender thereof at the corporate trust office of U.S. Bank National Association, in San Francisco, California, or such other office designated by the Trustee.

The interest on the 2018 Series AB Bonds will be payable in like lawful money to the person whose name appears on the bond registration books of the Trustee as the Owner thereof as of the close of business on the 15th day of the calendar month immediately preceding an interest payment date, whether or not such day is a Business Day, such interest to be paid by check mailed to such Owner at such address as appears on such registration books or at such address as such Owner may have filed with the Trustee for that purpose, or at the request of an Owner of at least \$1,000,000 in aggregate principal amount of 2018 Series AB Bonds filed with the Trustee by such 15th day, by wire transfer to such account designated in such request at a financial institution in the United States.

Each 2018 Series AB will bear interest from the interest payment date next preceding the date of authentication thereof unless it is authenticated as of a day during the period from the 16th day of the calendar month next preceding any interest payment date to the interest payment date, inclusive, in which event it will bear interest from such interest payment date, or unless it is authenticated on or before September 15, 2018, in which event it will bear interest from the Closing Date; provided, however, that if, at the time of authentication of any Bond, interest is in default on Outstanding Bonds, such Bond will bear interest from the interest payment date to which interest has previously been paid or made available for payment on the Outstanding Bonds and will be payable to the Owners thereof of record as of a special date as will be established by the Trustee following such default.

On January 30, 2013, certain amendments set forth in the First Amendment that govern the sizing of the Required Reserve for each Series of Bonds became effective in accordance with the terms of the Indenture. As a result, the Commission has determined not to fund the Required Reserve for the 2018 Series AB Bonds.

The Commission has reviewed all proceedings previously taken relative to the authorization of the 2018 Series AB Bonds and has found, as a result of such review, that all conditions, things and acts required by law to exist, happen or be performed precedent to and in the issuance of the 2018 Series AB Bonds do exist, have happened and have been performed in due time, form and manner as required by law, and the Commission is authorized, pursuant to each and every requirement of law, including the Law, to issue the 2018 Series AB Bonds in the manner and form provided in the Seventh Supplemental Indenture.

Use of Depository. (a) The 2018 Series AB Bonds will be initially registered as provided in the Seventh Supplemental Indenture. Registered ownership of the 2018 Series AB Bonds, or any portions thereof, may not thereafter be transferred except: (i) to any successor of The Depository Trust Company or its nominee, or of any substitute depository designated pursuant to the Seventh Supplemental Indenture (a "Substitute Depository"); provided that any successor of The Depository Trust Company or Substitute Depository will be qualified under any applicable laws to provide the service proposed to be provided by it; (ii) to any Substitute Depository not objected to by the Trustee, upon (1) the resignation of The Depository Trust Company or its successor (or any Substitute Depository or its successor) from its functions as depository, or (2) a determination by the Commission that The Depository Trust Company (or its successor) is no longer able to carry out its functions as depository; provided that any such Substitute Depository will be qualified under any applicable laws to provide the services proposed to be provided by it; or (iii) to any person as provided below, upon (1) the resignation of The Depository Trust Company or its successor (or any Substitute Depository or its successor) from its functions as depository, or (2) a determination by the Commission to remove The Depository Trust Company or its successor (or Substitute Depository or its successor) from its functions as depository.

(b) In the case of any transfer pursuant to the foregoing, upon receipt of all Outstanding 2018 Series AB Bonds by the Trustee, together with a Written Request of the Commission to the Trustee designating the Substitute Depository, a single new 2018 Series AB Bonds, which the Commission will prepare or cause to be

prepared, will be executed and delivered for each maturity of 2018 Series AB Bonds then Outstanding, registered in the name of such successor or such Substitute Depository, or their nominees, as the case may be, all as specified in such Written Request of the Commission.

In the case of any transfer pursuant to clause (a)(iii) above, upon receipt of all Outstanding 2018 Series AB Bonds by the Trustee, together with a Written Request of the Commission to the Trustee, new 2018 Series AB Bonds, which the Commission will prepare or cause to be prepared in definitive form, will be executed and delivered in such denominations and registered in the names of such persons as are requested in such Written Request of the Commission, subject to the limitations of the Seventh Supplemental Indenture, provided that the Trustee will not be required to deliver such new 2018 Series AB Bonds within a period less than 60 days after the date of receipt of such Written Request from the Commission.

(c) In the case of a partial redemption or an advance refunding of any 2018 Series AB Bonds evidencing a portion of the principal maturing in a particular year, The Depository Trust Company or its successor (or any Substitute Depository or its successor) will make an appropriate notation on such 2018 Series AB Bonds indicating the date and amounts of such reduction in principal, in form acceptable to the Trustee. The Trustee will not be liable for such depository's failure to make such notations or errors in making such notations.

(d) The Commission and the Trustee will be entitled to treat the person in whose name any 2018 Series AB is registered as the Owner thereof for all purposes of the Indenture and any applicable laws, notwithstanding any notice to the contrary received by the Trustee or the Commission; and the Commission and the Trustee will not have responsibility for transmitting payments to, communicating with, notifying, or otherwise dealing with any beneficial owners of the 2018 Series AB Bonds. Neither the Commission nor the Trustee will have any responsibility or obligation, legal or otherwise, to any such beneficial owners or to any other party, including The Depository Trust Company or its successor (or Substitute Depository or its successor), except to the Owner of any 2018 Series AB Bonds, and the Trustee may rely conclusively on its records as to the identity of the Owners of the 2018 Series AB Bonds.

(e) Notwithstanding any other provision of the Seventh Supplemental Indenture and so long as all Outstanding 2018 Series AB Bonds are registered in the name of Cede & Co. or its registered assigns, the Commission and the Trustee will cooperate with Cede & Co., as sole registered Bondowner, and its registered assigns, in effecting payment of the principal of and redemption premium, if any, and interest on the 2018 Series AB Bonds by arranging for payment in such manner that funds for such payments are properly identified and are made available on the date they are due all in accordance with the Letter of Representations delivered by the Commission and the Trustee to The Depository Trust Company with respect to the 2018 Series AB Bonds, the provisions of which the Trustee may rely upon to implement the foregoing procedures notwithstanding any inconsistent provisions in the Seventh Supplemental Indenture.

Application of Proceeds of 2018 Series A Bonds. Amounts on deposit in the 2018 Series A Capitalized Interest Account will be applied to the payment of interest on the 2018 Series A Bonds on each April 1 and October 1, commencing on October 1, 2018, in such amounts as specified in a written certificate of the Commission delivered to the Trustee not less than five Business Days prior to each April 1 and October 1, prior to amounts on the Interest Fund being so used. Amounts remaining on deposit in the 2018 Series A Capitalized Interest Account at such time as the Commission has informed the Trustee in a written certificate of the Commission that the 2018 Series A Capitalized Interest Account will be closed will be transferred by the Trustee to the Commission for deposit in the 2018 Series A Capital Project Account. All moneys held by the Trustee in the 2018 Series A Capitalized Interest Account may be invested in Legal Investments maturing not later than the date on which such moneys are required for payment by the Trustee.

Application of Proceeds of 2018 Series B Bonds. Amounts on deposit in the 2018 Series B Capitalized Interest Account will be applied to the payment of interest on the 2018 Series B Bonds on each April 1 and October 1, commencing on October 1, 2018, in such amounts as specified in a written certificate of the Commission delivered to the Trustee not less than five Business Days prior to each April 1 and October 1, prior to amounts on the Interest Fund being so used. Amounts remaining on deposit in the 2018 Series B Capitalized Interest Account at such time as the Commission has informed the Trustee in a written certificate of the Commission that the 2018 Series B Capitalized Interest Account will be closed will be transferred by the Trustee to the Commission for deposit

in the 2018 Series B Capital Project Account. All moneys held by the Trustee in the 2018 Series B Capitalized Interest Account may be invested in Legal Investments maturing not later than the date on which such moneys are required for payment by the Trustee.

Establishment and Application of the 2018 Series A Rebate Fund. (a) The Trustee will establish and maintain a fund separate from any other fund established and maintained under the Seventh Supplemental Indenture to be known as the “2018 Series A Rebate Fund.” Within the 2018 Series A Rebate Fund, the Trustee will maintain such accounts as it is instructed by the Commission as necessary in order to comply with the terms and requirements of the Tax Certificate with respect to the 2018 Series A Bonds, dated the date of issuance of the 2018 Series A Bonds (as used in the Seventh Supplemental Indenture, the “Tax Certificate”).

Subject to the transfer provisions provided in the Seventh Supplemental Indenture, all money at any time deposited in the 2018 Series A Rebate Fund will be held by the Trustee for the account of the Commission in trust, to the extent required to satisfy the requirements for rebate, as set forth in the Tax Certificate (for purposes of this heading “Establishment and Application of the 2018 Series A Rebate Fund,” the “2018 Series A Rebate Requirement”), for payment to the federal government of the United States of America, and no other person will have any rights in or claim to such money. All amounts deposited into or on deposit in the 2018 Series A Rebate Fund will be governed by the Seventh Supplemental Indenture and by the Tax Certificate (which is incorporated in the Seventh Supplemental Indenture by reference). The Trustee will be deemed conclusively to have complied with such provisions and fulfilled its obligation with respect to rebate as long as it follows the written directions of the Commission, including supplying all necessary information in the manner provided in the Tax Certificate. The Trustee will not be required to take any actions under the Seventh Supplemental Indenture or the Tax Certificate in the absence of written directions by the Commission, and will have no liability or responsibility to enforce compliance by the Commission with the terms of the Tax Certificate nor make computations in connection therewith.

(b) Upon the Commission’s written direction, an amount will be deposited to the 2018 Series A Rebate Fund by the Trustee from deposits by the Commission so that the balance of the amount on deposit thereto equals the 2018 Series A Rebate Requirement. Computations of the 2018 Series A Rebate Requirement will be furnished by or on behalf of the Commission in accordance with the Tax Certificate.

(c) The Trustee will have no obligation to rebate any amounts required to be rebated pursuant to the Seventh Supplemental Indenture, other than from moneys held in the funds and accounts created under the Indenture or from other moneys provided to it by or on behalf of the Commission.

(d) The Trustee will invest all amounts held in the 2018 Series A Rebate Fund in Permitted Investments as instructed in writing by the Commission, subject to the restrictions set forth in the Tax Certificate. Moneys will not be transferred from the 2018 Series A Rebate Fund except as provided in the Seventh Supplemental Indenture.

(e) Upon receipt of the Commission’s written directions, the Trustee will remit part or all of the balances in the 2018 Series A Rebate Fund to the United States, as so directed. In addition, if the Commission so directs, the Trustee will deposit moneys into or transfer moneys out of the 2018 Series A Rebate Fund from or into such accounts or funds as directed by the Commission’s written directions. Any funds remaining in the 2018 Series A Rebate Fund after redemption and payment of all of the 2018 Series A Bonds and payment and satisfaction of any 2018 Series A Rebate Requirement will be withdrawn and remitted to the Commission upon the Commission’s written request.

(f) Notwithstanding any other provision of the Indenture, the obligation to remit the 2018 Series A Rebate Requirement to the United States and to comply with all other requirements of the Seventh Supplemental Indenture and the Tax Certificate will survive the defeasance or payment in full of the 2018 Series A Bonds.

Establishment and Application of the 2018 Series B Rebate Fund. (a) The Trustee will establish and maintain a fund separate from any other fund established and maintained under the Seventh Supplemental Indenture to be known as the “2018 Series B Rebate Fund.” Within the 2018 Series B Rebate Fund, the Trustee will maintain such accounts as it is instructed by the Commission as necessary in order to comply with the terms and requirements

of the Tax Certificate with respect to the 2018 Series B Bonds, dated the date of issuance of the 2018 Series B Bonds (for purposes of the following, the “Tax Certificate”).

Subject to the transfer provisions provided in the Seventh Supplemental Indenture, all money at any time deposited in the 2018 Series B Rebate Fund will be held by the Trustee for the account of the Commission in trust, to the extent required to satisfy the requirements for rebate, as set forth in the Tax Certificate (for purposes of this heading “Establishment and Application of the 2018 Series B Rebate Fund”, the “2018 Series B Rebate Requirement”), for payment to the federal government of the United States of America, and no other person will have any rights in or claim to such money. All amounts deposited into or on deposit in the 2018 Series B Rebate Fund will be governed by the Seventh Supplemental Indenture and by the Tax Certificate (which is incorporated in the Seventh Supplemental Indenture by reference). The Trustee will be deemed conclusively to have complied with such provisions and fulfilled its obligation with respect to rebate as long as it follows the written directions of the Commission, including supplying all necessary information in the manner provided in the Tax Certificate. The Trustee will not be required to take any actions under the Seventh Supplemental Indenture or the Tax Certificate in the absence of written directions by the Commission, and will have no liability or responsibility to enforce compliance by the Commission with the terms of the Tax Certificate nor make computations in connection therewith.

(a) Upon the Commission’s written direction, an amount will be deposited to the 2018 Series B Rebate Fund by the Trustee from deposits by the Commission so that the balance of the amount on deposit thereto equals the 2018 Series B Rebate Requirement. Computations of the 2018 Series B Rebate Requirement will be furnished by or on behalf of the Commission in accordance with the Tax Certificate.

(b) The Trustee will have no obligation to rebate any amounts required to be rebated pursuant to the Seventh Supplemental Indenture, other than from moneys held in the funds and accounts created under the Indenture or from other moneys provided to it by or on behalf of the Commission.

(c) The Trustee will invest all amounts held in the 2018 Series B Rebate Fund in Permitted Investments as instructed in writing by the Commission, subject to the restrictions set forth in the Tax Certificate. Moneys will not be transferred from the 2018 Series B Rebate Fund except as provided in the Seventh Supplemental Indenture.

(d) Upon receipt of the Commission’s written directions, the Trustee will remit part or all of the balances in the 2018 Series B Rebate Fund to the United States, as so directed. In addition, if the Commission so directs, the Trustee will deposit moneys into or transfer moneys out of the 2018 Series B Rebate Fund from or into such accounts or funds as directed by the Commission’s written directions. Any funds remaining in the 2018 Series B Rebate Fund after redemption and payment of all of the 2018 Series B Bonds and payment and satisfaction of any 2018 Series B Rebate Requirement will be withdrawn and remitted to the Commission upon the Commission’s written request.

(e) Notwithstanding any other provision of the Indenture, the obligation to remit the 2018 Series B Rebate Requirement to the United States and to comply with all other requirements of the Seventh Supplemental Indenture and the Tax Certificate will survive the defeasance or payment in full of the 2018 Series B Bonds.

Establishment and Application of the 2018 Series A Capital Project Account and the 2018 Series A Reimbursement Account.

(a) 2018 Series A Capital Project Account. The Commission covenants and agrees by the Seventh Supplemental Indenture to establish, maintain and hold under the Seventh Supplemental Indenture within the Capital Project Fund, established under the Indenture, a separate account known as the “2018 Series A Capital Project Account” (called the “2018 Series A Capital Project Account” in the Seventh Supplemental Indenture). The Treasurer will hold the amounts on deposit in the 2018 Series A Capital Project Account, which will be maintained and accounted for by the Controller so long as any moneys are on deposit therein. Upon completion of the 2018 Series A Project, the Commission may direct the transfer of any remaining balance in the 2018 Series A Capital Project Account to any other lawfully available fund or account of the Commission; provided such transfer is consistent with the Commission’s covenants in the Tax Certificate.

The moneys in the 2018 Series A Capital Project Account will be held by the Treasurer in trust and applied to the costs of the 2018 Series A Project and the expenses incident thereto or connected therewith, including, if necessary, interest to the extent permitted by law, reimbursement to the Commission for expenses incurred prior to the issuance of the 2018 Series A Bonds or in connection with the Enterprise, architectural, engineering and inspection fees and expenses, apparatus, equipment and furnishings for the Enterprise, testing and inspection, surveys, insurance premiums, losses during construction not insured against because of deductible amounts, the fees and expenses of the Trustee, legal accounting and consultant fees and expenses, and similar expenses. All moneys held by the Treasurer in the 2018 Series A Capital Project Account may be invested in Legal Investments maturing not later than the date on which such moneys are required for payment by the Treasurer. The Treasurer will pay out moneys from the 2018 Series A Capital Project Account only upon warrants drawn by the Controller in the manner provided by law. No withdrawals will be made from the 2018 Series A Capital Project Account for any purpose not authorized by law.

(b) 2018 Series A Reimbursement Account. The Commission covenants and agrees by the Seventh Supplemental Indenture to establish, maintain and hold under the Seventh Supplemental Indenture within the Capital Project Fund, established under the Indenture, a separate account known as the “2018 Series A Reimbursement Account” (called the “2018 Series A Reimbursement Account” in the Seventh Supplemental Indenture), which will be maintained and accounted for by the Trustee so long as any moneys are on deposit therein. The moneys in the 2018 Series A Reimbursement Account will be held by the Trustee in trust and transferred by the Trustee to U.S. Bank National Association, as issuing and paying agent or revolving line of credit provider under the Interim Financing Program on August 10, 2018, in connection with the reimbursement of certain capital costs previously paid with the proceeds of the Interim Financing Program.

Any balance remaining in the 2018 Series A Reimbursement Account following such application of moneys will be transferred to the Treasurer for deposit in the 2018 Series A Capital Project Account. All moneys held by the Trustee in the 2018 Series A Reimbursement Account will be invested in Permitted Investments specified by the Commission or, if the Commission does not so specify, then in Permitted Investments of the type described in clause (f) of the definition thereof that are rated AAAM-G by S&P and Aaa by Moody’s.

Establishment and Application of the 2018 Series B Capital Project Account.

(a) 2018 Series B Capital Project Account. The Commission covenants and agrees by the Seventh Supplemental Indenture to establish, maintain and hold under the Seventh Supplemental Indenture within the Capital Project Fund, established under the Indenture, a separate account known as the “2018 Series B Capital Project Account” (called the “2018 Series B Capital Project Account” in the Seventh Supplemental Indenture). The Treasurer will hold the amounts on deposit in the 2018 Series B Capital Project Account, which will be maintained and accounted for by the Controller so long as any moneys are on deposit therein. Upon completion of the 2018 Series B Project, the Commission may direct the transfer of any remaining balance in the 2018 Series B Capital Project Account to any other lawfully available fund or account of the Commission; provided such transfer is consistent with the Commission’s covenants in the Tax Certificate.

The moneys in the 2018 Series B Capital Project Account will be held by the Treasurer in trust and applied to the costs of the 2018 Series B Project and the expenses incident thereto or connected therewith, including, if necessary, interest to the extent permitted by law, reimbursement to the Commission for expenses incurred prior to the issuance of the 2018 Series B Bonds or in connection with the Enterprise, architectural, engineering and inspection fees and expenses, apparatus, equipment and furnishings for the Enterprise, testing and inspection, surveys, insurance premiums, losses during construction not insured against because of deductible amounts, the fees and expenses of the Trustee, legal accounting and consultant fees and expenses, and similar expenses. All moneys held by the Treasurer in the 2018 Series B Capital Project Account may be invested in Legal Investments maturing not later than the date on which such moneys are required for payment by the Treasurer. The Treasurer will pay out moneys from the 2018 Series B Capital Project Account only upon warrants drawn by the Controller in the manner provided by law. No withdrawals will be made from the 2018 Series B Capital Project Account for any purpose not authorized by law.

Terms of Redemption – 2018 Series A Bonds.

Rescission of Notice of Redemption. The Commission, may, at its option, on or prior to the date fixed for redemption in any notice of redemption of 2018 Series A Bonds, 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.

The provisions of the Indenture relating to redemption of Bonds set forth in the Indenture will apply to the redemption of the 2018 Series A Bonds.

2018 Series A Sinking Fund Account. The Trustee will establish and hold within the Principal Fund established under the Indenture, a 2018 Series A Sinking Fund Account, which the Commission covenants and agrees by the Seventh Supplemental Indenture to cause to be maintained, for payment of the Bond Obligation of the 2018 Series A Term Bonds.

The Trustee, on or before September 30 of each year (commencing on or before September 30, 2039), will deposit in the 2018 Series A Sinking Fund Account from the Principal Fund moneys in an amount sufficient to call and redeem or to pay at maturity, as the case may be, the principal of 2018 Series A Term Bonds in the respective principal amounts set forth in the Seventh Supplemental Indenture on the next succeeding October 1 in each of the years set forth in the Seventh Supplemental Indenture (each such deposit of moneys being referred to as a “2018 Series A Minimum Sinking Fund Account Payment”).

During the 12-month period immediately preceding each redemption from the 2018 Series A Sinking Fund Account, the Commission may satisfy, in whole or in part, the 2018 Series A Minimum Sinking Fund Account Payment and the redemption therefrom by depositing with the Trustee 2018 Series A Term Bonds for cancellation prior to the Trustee’s selection of the 2018 Series A Term Bonds for redemption.

All moneys in the 2018 Series A Sinking Fund Account, at the Written Request of the Commission, will be used and withdrawn by the Trustee at any time for the purchase of 2018 Series A Term Bonds (except that no 2018 Series A Term Bonds maturing in any year will be purchased so long as any 2018 Series A Term Bonds maturing in any earlier year and being of like tenor are Outstanding) at public or private sale, as and when and at such prices (including brokerage and other charges, but excluding accrued interest, which is payable from the Interest Fund) as the Commission will direct by Written Request, but not to exceed the principal thereof, and all 2018 Series A Term Bonds so purchased by the Trustee or deposited by the Commission, will be cancelled and delivered to the Commission; provided, however, that:

(i) all moneys in the 2018 Series A Sinking Fund Account on each September 15, beginning on September 15, 2039 and ending on September 15, 2043, together with any additional sums the Trustee expects to receive for deposit in the 2018 Series A Sinking Fund Account after such date and on or before the next succeeding October 1, will be used and withdrawn by the Trustee solely for the purpose of redeeming the 2018 Series A Term Bonds that are subject to redemption under the Seventh Supplemental Indenture; and

(ii) the Trustee will during each 12-month period beginning with the 12-month period ending on October 1, 2039, purchase or call and redeem (as provided in the Seventh Supplemental Indenture) an aggregate amount of 2018 Series A Term Bonds equal to at least the amount of Bond Obligation of the 2018 Series A Term Bonds identified in the Seventh Supplemental Indenture for such 12-month period reduced by the principal amount of 2018 Series A Term Bonds deposited by the Commission with the Trustee, except that if 2018 Series A Term Bonds of any Term Bond maturity have previously been redeemed or purchased by the Trustee or deposited by the Commission in excess of the amount of Bond Obligation of the 2018 Series A Term Bonds identified in the Seventh Supplemental Indenture, there will be deemed to have been a reduction of the remaining amounts stated above on a Proportionate Basis, and further except that moneys in the 2018 Series A Sinking Fund Account will be used, to the extent necessary, to purchase or retire the Outstanding 2018 Series A Term Bonds at the maturity thereof.

The Commission by the Seventh Supplemental Indenture covenants and agrees with the Owners of the 2018 Series A Term Bonds to call and redeem 2018 Series A Term Bonds from the 2018 Series A Sinking Fund Account pursuant to the Seventh Supplemental Indenture on October 1 in each of the years, and in the amounts, stated above.

Terms of Redemption – 2018 Series B Bonds.

Rescission of Notice of Redemption. The Commission, may, at its option, on or prior to the date fixed for redemption in any notice of redemption of 2018 Series B Bonds, 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.

The provisions of the Indenture relating to redemption of Bonds set forth in the Indenture will apply to the redemption of the 2018 Series B Bonds.

2018 Series B Sinking Fund Account. The Trustee will establish and hold within the Principal Fund established under the Indenture, a 2018 Series B Sinking Fund Account, which the Commission covenants and agrees by the Seventh Supplemental Indenture to cause to be maintained, for payment of the Bond Obligation of the 2018 Series B Term Bonds.

The Trustee, on or before September 30 of each year (commencing on or before September 30, 2039), will deposit in the 2018 Series B Sinking Fund Account from the Principal Fund moneys in an amount sufficient to call and redeem or to pay at maturity, as the case may be, the principal of 2018 Series B Term Bonds in the respective principal amounts set forth in the Seventh Supplemental Indenture on the next succeeding October 1 in each of the years set forth in the Seventh Supplemental Indenture (each such deposit of moneys being referred to as a “2018 Series B Minimum Sinking Fund Account Payment”).

During the 12-month period immediately preceding each redemption from the 2018 Series B Sinking Fund Account, the Commission may satisfy, in whole or in part, the 2018 Series B Minimum Sinking Fund Account Payment and the redemption therefrom by depositing with the Trustee 2018 Series B Term Bonds for cancellation prior to the Trustee’s selection of the 2018 Series B Term Bonds for redemption.

All moneys in the 2018 Series B Sinking Fund Account, at the Written Request of the Commission, will be used and withdrawn by the Trustee at any time for the purchase of 2018 Series B Term Bonds (except that no 2018 Series B Term Bonds maturing in any year will be purchased so long as any 2018 Series B Term Bonds maturing in any earlier year and being of like tenor are Outstanding) at public or private sale, as and when and at such prices (including brokerage and other charges, but excluding accrued interest, which is payable from the Interest Fund) as the Commission will direct by Written Request, but not to exceed the principal thereof, and all 2018 Series B Term Bonds so purchased by the Trustee or deposited by the Commission, will be cancelled and delivered to the Commission; provided, however, that:

(i) all moneys in the 2018 Series B Sinking Fund Account on each September 15, beginning on September 15, 2039 and ending on September 15, 2043, together with any additional sums the Trustee expects to receive for deposit in the 2018 Series B Sinking Fund Account after such date and on or before the next succeeding October 1, will be used and withdrawn by the Trustee solely for the purpose of redeeming the 2018 Series B Term Bonds that are subject to redemption under the Seventh Supplemental Indenture; and

(ii) the Trustee will during each 12-month period beginning with the 12-month period ending on October 1, 2039, purchase or call and redeem (as provided in the Seventh Supplemental Indenture) an aggregate amount of 2018 Series B Term Bonds equal to at least the amount of Bond Obligation of the 2018 Series B Term Bonds identified in the Seventh Supplemental Indenture for such 12-month period reduced by the principal amount of 2018 Series B Term Bonds deposited by the Commission with the Trustee, except that if 2018 Series B Term Bonds of any Term Bond maturity have previously been redeemed or purchased by the Trustee or deposited by the Commission in excess of the amount of Bond Obligation of the 2018 Series B Term Bonds identified in the Seventh Supplemental Indenture, there will be deemed to have been a reduction of the remaining amounts stated above on a

Proportionate Basis, and further except that moneys in the 2018 Series B Sinking Fund Account will be used, to the extent necessary, to purchase or retire the Outstanding 2018 Series B Term Bonds at the maturity thereof.

The Commission by the Seventh Supplemental Indenture covenants and agrees with the Owners of the 2018 Series B Term Bonds to call and redeem 2018 Series B Term Bonds from the 2018 Series B Sinking Fund Account pursuant to the Seventh Supplemental Indenture on October 1 in each of the years, and in the amounts, stated above.

Tax Covenants. The Commission covenants that it will not take any action, or fail to take any action, if any such action or failure to take action would adversely affect the exclusion from gross income of the interest on the 2018 Series AB Bonds under Section 103 of the Code.

The Commission will not directly or indirectly use or permit the use of any proceeds of the 2018 Series AB Bonds or any other funds of the Commission, or take or omit to take any action that would cause the 2018 Series AB Bonds to be “arbitrage bonds” within the meaning of Section 148(a) of the Code. To that end, the Commission will comply with all requirements of Section 148 of the Code to the extent applicable to the 2018 Series AB Bonds. If at any time the Commission is of the opinion that for purposes of the tax covenants it is necessary to restrict or limit the yield on the investment of any moneys held by the Trustee under the Indenture or otherwise, the Commission will so instruct the Trustee in writing, and the Trustee will take such action as required by such instructions. Without limiting the generality of the foregoing, the Commission agrees that there will be paid from time to time all amounts required to be rebated to the United States pursuant to Section 148(f) of the Code and any temporary, proposed or final Treasury Regulations as may be applied to the 2018 Series AB Bonds from time to time. This covenant will survive payment in full or defeasance of the 2018 Series AB Bonds. The Commission specifically covenants to pay or cause to be paid to the United States, at the times and in the amounts determined, the 2018 Series A Rebate Requirement and the 2018 Series B Rebate Requirement. The Trustee agrees to comply with all written instructions of the Commission given in accordance with the Tax Certificate.

Notwithstanding any provision of the Seventh Supplemental Indenture, if the Commission provides to the Trustee an opinion of nationally recognized bond counsel to the effect that any action required under the Seventh Supplemental Indenture or under the Tax Certificate is no longer required, or to the effect that some further action is required, to maintain the exclusion from gross income of the interest on the 2018 Series AB Bonds under Section 103 of the Code, the Commission and the Trustee may rely conclusively on such opinion in complying with the provisions of the Seventh Supplemental Indenture, and the covenants under the Seventh Supplemental Indenture will be deemed to be modified to that extent. The Commission will assure that the proceeds of the 2018 Series AB Bonds are not so used as to cause the 2018 Series AB Bonds to satisfy the private business tests of Section 141(b) of the Code or the private loan financing test of Section 141(c) of the Code. The Commission will not take any action or permit or suffer any action to be taken if the result of the same would be to cause any of the 2018 Series AB Bonds to be “federally guaranteed” within the meaning of Section 149(b) of the Code.

Continuing Disclosure. The Commission covenants and agrees that it will comply with and carry out all of the provisions of the 2018 Continuing Disclosure Certificate. Notwithstanding any other provision of the Indenture, failure of the Commission to comply with the 2018 Continuing Disclosure Certificate will not be considered an Event of Default; however, any Participating Underwriter (as such term is defined in the 2018 Continuing Disclosure Certificate) or any Bondowner or beneficial owner may take such actions as may be necessary and appropriate, including seeking specific performance by court order, to cause the Commission to comply with its obligations under the Seventh Supplemental Indenture, and the sole remedy in the event of any failure of the Commission to comply with the 2018 Continuing Disclosure Certificate will be an action to compel performance.

No Additional Senior State Loans. No Senior State Loans are currently Outstanding. Notwithstanding anything contained in the Indenture, the Commission will not issue or enter into any additional Senior State Loans or pay any amounts with respect to any loan agreement with the State of California (or any board, department or agency thereof) prior to the payment of amounts described in the Indenture.

MISCELLANEOUS

Terms of 2018 Series AB Bonds Subject to the Indenture. Except as expressly provided in the Seventh Supplemental Indenture, every term and condition contained in the Indenture will apply to the Seventh Supplemental Indenture, and to the 2018 Series AB Bonds, with the same force and effect as if the same were set forth at length in the Seventh Supplemental Indenture, with such omissions, variations and modifications thereof as may be appropriate to make the same conform to the Seventh Supplemental Indenture.

The Seventh Supplemental Indenture and all the terms and provisions contained in the Seventh Supplemental Indenture will form part of the Indenture as fully and with the same effect as if all such terms and provisions had been set forth in the Indenture. The Indenture is ratified and confirmed by the Seventh Supplemental Indenture and will continue in full force and effect in accordance with the terms and provisions thereof, as supplemented and amended by the Seventh Supplemental Indenture.

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EIGHTH SUPPLEMENTAL INDENTURE

PROVISIONS RELATING TO 2018 SERIES C BONDS

Authorization and Terms of 2018 Series C Bonds. The interest rate to be borne by each 2018 Series C Bond subsequent to its initial Term Rate Period will be (a) during any Term Rate Period, the Term Rate established pursuant to the Eighth Supplemental Indenture as described below, and (b) during the period following and including a Failed Tender Date until the establishment of a new Term Rate, the Stepped Rate.

Not less than three Business Days prior to each Mandatory Tender Date the Commission will deliver to the Remarketing Agent for the 2018 Series C Bonds a Pricing Notice specifying the next Term Rate Period and the Stepped Rate and optional redemption provisions to be applicable to the 2018 Series C Bonds in connection with such Term Rate Period, each as determined pursuant to the Eighth Supplemental Indenture.

The Commission will establish as the next Term Rate Period for the 2018 Series C Bonds that period ending on an Interest Payment Date as set forth in a Certificate of the Commission, taking into account the provisions of its other Bonds, will best enable it to produce an efficient and economical balance of low interest rates and minimal remarketing costs and risks.

The Remarketing Agent for the 2018 Series C Bonds will establish the Term Rate for the 2018 Series C Bonds for a Term Rate Period established by the Commission not later than 5:00 p.m. local time in New York City on the second Business Day prior to the commencement of such Term Rate Period.

The interest rate to be applicable to the 2018 Series C Bonds following and including a Failed Tender Date at the expiration of any Term Rate Period will be the Stepped Rate, provided that in connection with a remarketing of the 2018 Series C Bonds the Commission may establish a different Stepped Rate if it receives and delivers to the Trustee concurrently with its delivery of the applicable Pricing Notice an opinion of nationally recognized bond counsel to the effect that the establishment of such different Stepped Rate will not adversely affect the exclusion from gross income for federal income tax purposes of interest on 2018 Series C Bonds which are then unpaid and for which there has been delivered an opinion of nationally recognized bond counsel to the effect that interest on the 2018 Series C Bonds is excluded from gross income for federal income tax purposes.

The principal of and premium, if any, on the 2018 Series C Bonds will be payable by check or wire in lawful money of the United States of America to the Owner thereof, upon the surrender thereof at the corporate trust office of U.S. Bank National Association, in San Francisco, California, or such other office designated by the Trustee.

The interest on the 2018 Series C Bonds will be payable in like lawful money to the person whose name appears on the bond registration books of the Trustee as the Owner thereof as of the close of business on the 15th day of the calendar month immediately preceding an interest payment date, whether or not such day is a Business Day, such interest to be paid by check mailed to such Owner at such address as appears on such registration books or at such address as such Owner may have filed with the Trustee for that purpose, or at the request of an Owner of at least \$1,000,000 in aggregate principal amount of 2018 Series C Bonds filed with the Trustee by such 15th day, by wire transfer to such account designated in such request at a financial institution in the United States.

Each 2018 Series C Bond will bear interest from the interest payment date next preceding the date of authentication thereof unless it is authenticated as of a day during the period from the 16th day of the calendar month next preceding any interest payment date to the interest payment date, inclusive, in which event it will bear interest from such interest payment date, or unless it is authenticated on or before September 15, 2018, in which event it will bear interest from the Closing Date; provided, however, that if, at the time of authentication of any Bond, interest is in default on Outstanding Bonds, such Bond will bear interest from the interest payment date to which interest has previously been paid or made available for payment on the Outstanding Bonds and will be payable to the Owners thereof of record as of a special date as will be established by the Trustee following such default.

On January 30, 2013, certain amendments set forth in the First Amendment that govern the sizing of the Required Reserve for each Series of Bonds became effective in accordance with the terms of the Indenture. As a result, the Commission has determined not to fund the Required Reserve for the 2018 Series C Bonds.

The Commission has reviewed all proceedings previously taken relative to the authorization of the 2018 Series C Bonds and has found, as a result of such review, that all conditions, things and acts required by law to exist, happen or be performed precedent to and in the issuance of the 2018 Series C Bonds do exist, have happened and have been performed in due time, form and manner as required by law, and the Commission is authorized, pursuant to each and every requirement of law, including the Law, to issue the 2018 Series C Bonds in the manner and form provided in the Eighth Supplemental Indenture.

Use of Depository. (a) The 2018 Series C Bonds will be initially registered as provided in the Eighth Supplemental Indenture. Registered ownership of the 2018 Series C Bonds, or any portions thereof, may not thereafter be transferred except: (i) to any successor of The Depository Trust Company or its nominee, or of any substitute depository designated pursuant the Eighth Supplemental Indenture (a “Substitute Depository”); provided that any successor of The Depository Trust Company or Substitute Depository will be qualified under any applicable laws to provide the service proposed to be provided by it; (ii) to any Substitute Depository not objected to by the Trustee, upon (1) the resignation of The Depository Trust Company or its successor (or any Substitute Depository or its successor) from its functions as depository, or (2) a determination by the Commission that The Depository Trust Company (or its successor) is no longer able to carry out its functions as depository; provided that any such Substitute Depository will be qualified under any applicable laws to provide the services proposed to be provided by it; or (iii) to any person as provided below, upon (1) the resignation of The Depository Trust Company or its successor (or any Substitute Depository or its successor) from its functions as depository, or (2) a determination by the Commission to remove The Depository Trust Company or its successor (or Substitute Depository or its successor) from its functions as depository.

(b) In the case of any transfer pursuant to the foregoing, upon receipt of all Outstanding 2018 Series C Bonds by the Trustee, together with a Written Request of the Commission to the Trustee designating the Substitute Depository, a single new 2018 Series C Bond, which the Commission will prepare or cause to be prepared, will be executed and delivered for each maturity of 2018 Series C Bonds then Outstanding, registered in the name of such successor or such Substitute Depository, or their nominees, as the case may be, all as specified in such Written Request of the Commission.

In the case of any transfer pursuant to clause (a)(iii) above, upon receipt of all Outstanding 2018 Series C Bonds by the Trustee, together with a Written Request of the Commission to the Trustee, new 2018 Series C Bonds, which the Commission will prepare or cause to be prepared in definitive form, will be executed and delivered in such denominations and registered in the names of such persons as are requested in such Written Request of the Commission, subject to the limitations of the Eighth Supplemental Indenture, provided that the Trustee will not be required to deliver such new 2018 Series C Bonds within a period less than 60 days after the date of receipt of such Written Request from the Commission.

(c) In the case of a partial redemption or an advance refunding of any 2018 Series C Bonds evidencing a portion of the principal maturing in a particular year, The Depository Trust Company or its successor (or any Substitute Depository or its successor) will make an appropriate notation on such 2018 Series C Bonds indicating the date and amounts of such reduction in principal, in form acceptable to the Trustee. The Trustee will not be liable for such depository’s failure to make such notations or errors in making such notations.

(d) The Commission and the Trustee will be entitled to treat the person in whose name any 2018 Series C Bond is registered as the Owner thereof for all purposes of the Indenture and any applicable laws, notwithstanding any notice to the contrary received by the Trustee or the Commission; and the Commission and the Trustee will not have responsibility for transmitting payments to, communicating with, notifying, or otherwise dealing with any beneficial owners of the 2018 Series C Bonds. Neither the Commission nor the Trustee will have any responsibility or obligation, legal or otherwise, to any such beneficial owners or to any other party, including The Depository Trust Company or its successor (or Substitute Depository or its successor), except to the Owner of any 2018 Series C Bonds, and the Trustee may rely conclusively on its records as to the identity of the Owners of the 2018 Series C Bonds.

(e) Notwithstanding any other provision of the Eighth Supplemental Indenture and so long as all Outstanding 2018 Series C Bonds are registered in the name of Cede & Co. or its registered assigns, the Commission and the Trustee will cooperate with Cede & Co., as sole registered Bondowner, and its registered assigns, in effecting payment of the principal of and redemption premium, if any, and interest on the 2018 Series C Bonds by arranging for payment in such manner that funds for such payments are properly identified and are made available on the date they are due all in accordance with the Letter of Representations delivered by the Commission and the Trustee to The Depository Trust Company with respect to the 2018 Series C Bonds, the provisions of which the Trustee may rely upon to implement the foregoing procedures notwithstanding any inconsistent provisions in the Eighth Supplemental Indenture.

Application of Proceeds of 2018 Series C Bonds. Amounts on deposit in the 2018 Series C Capitalized Interest Account will be applied to the payment of interest on the 2018 Series C Bonds on each April 1 and October 1, commencing on October 1, 2018, in such amounts as specified in a written certificate of the Commission delivered to the Trustee not less than five Business Days prior to each April 1 and October 1, prior to amounts on the Interest Fund being so used. Amounts remaining on deposit in the 2018 Series C Capitalized Interest Account at such time as the Commission has informed the Trustee in a written certificate of the Commission that the 2018 Series C Capitalized Interest Account will be closed will be transferred by the Trustee to the commission for deposit in the 2018 Series C Capital Project Account. All moneys held by the Trustee in the 2018 Series C Capitalized Interest Account may be invested in Legal Investments maturing not later than the date on which such moneys are required for payment by the Trustee.

Establishment and Application of the 2018 Series C Rebate Fund. (a) The Trustee will establish and maintain a fund separate from any other fund established and maintained under the Eighth Supplemental Indenture to be known as the “2018 Series C Rebate Fund.” Within the 2018 Series C Rebate Fund, the Trustee will maintain such accounts as it is instructed by the Commission as necessary in order to comply with the terms and requirements of the Tax Certificate with respect to the 2018 Series C Bonds, dated the date of issuance of the 2018 Series C Bonds (as used in the Eighth Supplemental Indenture, the “Tax Certificate”).

Subject to the transfer provisions provided in the Eighth Supplemental Indenture, all money at any time deposited in the 2018 Series C Rebate Fund will be held by the Trustee for the account of the Commission in trust, to the extent required to satisfy the requirements for rebate, as set forth in the Tax Certificate (for purposes of this heading “Establishment and Application of the 2018 Series C Rebate Fund,” the “2018 Series C Rebate Requirement”), for payment to the federal government of the United States of America, and no other person will have any rights in or claim to such money. All amounts deposited into or on deposit in the 2018 Series C Rebate Fund will be governed by the Eighth Supplemental Indenture and by the Tax Certificate (which is incorporated in the Eighth Supplemental Indenture by reference). The Trustee will be deemed conclusively to have complied with such provisions and fulfilled its obligation with respect to rebate as long as it follows the written directions of the Commission, including supplying all necessary information in the manner provided in the Tax Certificate. The Trustee will not be required to take any actions under the Eighth Supplemental Indenture or the Tax Certificate in the absence of written directions by the Commission, and will have no liability or responsibility to enforce compliance by the Commission with the terms of the Tax Certificate nor make computations in connection therewith.

(b) Upon the Commission’s written direction, an amount will be deposited to the 2018 Series C Rebate Fund by the Trustee from deposits by the Commission so that the balance of the amount on deposit thereto equals the 2018 Series C Rebate Requirement. Computations of the 2018 Series C Rebate Requirement will be furnished by or on behalf of the Commission in accordance with the Tax Certificate.

(c) The Trustee will have no obligation to rebate any amounts required to be rebated pursuant to the Eighth Supplemental Indenture, other than from moneys held in the funds and accounts created under the Indenture or from other moneys provided to it by or on behalf of the Commission.

(d) The Trustee will invest all amounts held in the 2018 Series C Rebate Fund in Permitted Investments as instructed in writing by the Commission, subject to the restrictions set forth in the Tax Certificate. Moneys will not be transferred from the 2018 Series C Rebate Fund except as provided in the Eighth Supplemental Indenture.

(e) Upon receipt of the Commission's written directions, the Trustee will remit part or all of the balances in the 2018 Series C Rebate Fund to the United States, as so directed. In addition, if the Commission so directs, the Trustee will deposit moneys into or transfer moneys out of the 2018 Series C Rebate Fund from or into such accounts or funds as directed by the Commission's written directions. Any funds remaining in the 2018 Series C Rebate Fund after redemption and payment of all of the 2018 Series C Bonds and payment and satisfaction of any 2018 Series C Rebate Requirement will be withdrawn and remitted to the Commission upon the Commission's written request.

(f) Notwithstanding any other provision of the Indenture, the obligation to remit the 2018 Series C Rebate Requirement to the United States and to comply with all other requirements of the Eighth Supplemental Indenture and the Tax Certificate will survive the defeasance or payment in full of the 2018 Series C Bonds.

Establishment and Application of the 2018 Series C Capital Project Account.

(a) 2018 Series C Capital Project Account. The Commission covenants and agrees by the Eighth Supplemental Indenture to establish, maintain and hold under the Eighth Supplemental Indenture within the Capital Project Fund, established under the Indenture, a separate account known as the "2018 Series C Capital Project Account" (called the "2018 Series C Capital Project Account" in the Eighth Supplemental Indenture). The Treasurer will hold the amounts on deposit in the 2018 Series C Capital Project Account, which will be maintained and accounted for by the Controller so long as any moneys are on deposit therein. Upon completion of the 2018 Series C Project, the Commission may direct the transfer of any remaining balance in the 2018 Series C Capital Project Account to any other lawfully available fund or account of the Commission; provided such transfer is consistent with the Commission's covenants in the Tax Certificate.

The moneys in the 2018 Series C Capital Project Account will be held by the Treasurer in trust and applied to the costs of the 2018 Series C Project and the expenses incident thereto or connected therewith, including, if necessary, interest to the extent permitted by law, reimbursement to the Commission for expenses incurred prior to the issuance of the 2018 Series C Bonds or in connection with the Enterprise, architectural, engineering and inspection fees and expenses, apparatus, equipment and furnishings for the Enterprise, testing and inspection, surveys, insurance premiums, losses during construction not insured against because of deductible amounts, the fees and expenses of the Trustee, legal accounting and consultant fees and expenses, and similar expenses. All moneys held by the Treasurer in the 2018 Series C Capital Project Account may be invested in Legal Investments maturing not later than the date on which such moneys are required for payment by the Treasurer. The Treasurer will pay out moneys from the 2018 Series C Capital Project Account only upon warrants drawn by the Controller in the manner provided by law. No withdrawals will be made from the 2018 Series C Capital Project Account for any purpose not authorized by law.

Terms of Redemption – 2018 Series C Bonds.

Rescission of Notice of Redemption. The Commission, may, at its option, on or prior to the date fixed for redemption in any notice of redemption of 2018 Series C Bonds, 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.

The provisions of the Indenture relating to redemption of Bonds set forth in the Eighth Supplemental Indenture will apply to the redemption of the 2018 Series C Bonds.

2018 Series C Sinking Fund Account. The Trustee will establish and hold within the Principal Fund established under the Indenture, a 2018 Series C Sinking Fund Account, which the Commission covenants and agrees by the Eighth Supplemental Indenture to cause to be maintained, for payment of the Bond Obligation of the 2018 Series C Term Bonds.

The Trustee, on or before September 30 of each year (commencing on or before September 30, 2043), will deposit in the 2018 Series C Sinking Fund Account from the Principal Fund moneys in an amount sufficient to call and redeem or to pay at maturity, as the case may be, the principal of 2018 Series C Term Bonds in the respective

principal amounts set forth in the Eighth Supplemental Indenture on the next succeeding October 1 in each of the years set forth in the Eighth Supplemental Indenture (each such deposit of moneys being referred to as a “2018 Series C Minimum Sinking Fund Account Payment”).

During the 12-month period immediately preceding each redemption from the 2018 Series C Sinking Fund Account, the Commission may satisfy, in whole or in part, the 2018 Series C Minimum Sinking Fund Account Payment and the redemption therefrom by depositing with the Trustee 2018 Series C Term Bonds for cancellation prior to the Trustee’s selection of the 2018 Series C Term Bonds for redemption.

All moneys in the 2018 Series C Sinking Fund Account, at the Written Request of the Commission, will be used and withdrawn by the Trustee at any time for the purchase of 2018 Series C Term Bonds (except that no 2018 Series C Term Bonds maturing in any year will be purchased so long as any 2018 Series C Term Bonds maturing in any earlier year and being of like tenor are Outstanding) at public or private sale, as and when and at such prices (including brokerage and other charges, but excluding accrued interest, which is payable from the Interest Fund) as the Commission will direct by Written Request, but not to exceed the principal thereof, and all 2018 Series C Term Bonds so purchased by the Trustee or deposited by the Commission, will be cancelled and delivered to the Commission; provided, however, that:

- (i) all moneys in the 2018 Series C Sinking Fund Account on each September 15, beginning on September 15, 2043 and ending on September 15, 2048, together with any additional sums the Trustee expects to receive for deposit in the 2018 Series C Sinking Fund Account after such date and on or before the next succeeding October 1, will be used and withdrawn by the Trustee solely for the purpose of redeeming the 2018 Series C Term Bonds that are subject to redemption under the Eighth Supplemental Indenture; and
- (ii) the Trustee will during each 12-month period beginning with the 12-month period ending on October 1, 2043, purchase or call and redeem (as provided in the Eighth Supplemental Indenture) an aggregate amount of 2018 Series C Term Bonds equal to at least the amount of Bond Obligation of the 2018 Series C Term Bonds identified in the Eighth Supplemental Indenture for such 12-month period reduced by the principal amount of 2018 Series C Term Bonds deposited by the Commission with the Trustee, except that if 2018 Series C Term Bonds of any Term Bond maturity have previously been redeemed or purchased by the Trustee or deposited by the Commission in excess of the amount of Bond Obligation of the 2018 Series C Term Bonds identified in the Eighth Supplemental Indenture, there will be deemed to have been a reduction of the remaining amounts stated above on a Proportionate Basis, and further except that moneys in the 2018 Series C Sinking Fund Account will be used, to the extent necessary, to purchase or retire the Outstanding 2018 Series C Term Bonds at the maturity thereof.

The Commission by the Eighth Supplemental Indenture covenants and agrees with the Owners of the 2018 Series C Term Bonds to call and redeem 2018 Series C Term Bonds from the 2018 Series C Sinking Fund Account pursuant to the Eighth Supplemental Indenture on October 1 in each of the years, and in the amounts, stated above.

Tax Covenants. The Commission covenants that it will not take any action, or fail to take any action, if any such action or failure to take action would adversely affect the exclusion from gross income of the interest on the 2018 Series C Bonds under Section 103 of the Code.

The Commission will not directly or indirectly use or permit the use of any proceeds of the 2018 Series C Bonds or any other funds of the Commission, or take or omit to take any action that would cause the 2018 Series C Bonds to be “arbitrage bonds” within the meaning of Section 148(a) of the Code. To that end, the Commission will comply with all requirements of Section 148 of the Code to the extent applicable to the 2018 Series C Bonds. If at any time the Commission is of the opinion that for purposes of the tax covenants it is necessary to restrict or limit the yield on the investment of any moneys held by the Trustee under the Indenture or otherwise, the Commission will so instruct the Trustee in writing, and the Trustee will take such action as required by such instructions. Without limiting the generality of the foregoing, the Commission agrees that there will be paid from time to time all amounts required to be rebated to the United States pursuant to Section 148(f) of the Code and any temporary, proposed or final Treasury Regulations as may be applied to the 2018 Series C Bonds from time to time. This covenant will

survive payment in full or defeasance of the 2018 Series C Bonds. The Commission specifically covenants to pay or cause to be paid to the United States, at the times and in the amounts determined, the 2018 Series C Rebate Requirement. The Trustee agrees to comply with all written instructions of the Commission given in accordance with the Tax Certificate.

Notwithstanding any provision of the Eighth Supplemental Indenture, if the Commission provides to the Trustee an opinion of nationally recognized bond counsel to the effect that any action required under the Eighth Supplemental Indenture or under the Tax Certificate is no longer required, or to the effect that some further action is required, to maintain the exclusion from gross income of the interest on the 2018 Series C Bonds under Section 103 of the Code, the Commission and the Trustee may rely conclusively on such opinion in complying with the provisions of the Eighth Supplemental Indenture, and the covenants under the Eighth Supplemental Indenture will be deemed to be modified to that extent. The Commission will assure that the proceeds of the 2018 Series C Bonds are not so used as to cause the 2018 Series C Bonds to satisfy the private business tests of Section 141(b) of the Code or the private loan financing test of Section 141(c) of the Code. The Commission will not take any action or permit or suffer any action to be taken if the result of the same would be to cause any of the 2018 Series C Bonds to be “federally guaranteed” within the meaning of Section 149(b) of the Code.

Continuing Disclosure. The Commission covenants and agrees that it will comply with and carry out all of the provisions of the 2018 Continuing Disclosure Certificate. Notwithstanding any other provision of the Indenture, failure of the Commission to comply with the 2018 Continuing Disclosure Certificate will not be considered an Event of Default; however, any Participating Underwriter (as such term is defined in the 2018 Continuing Disclosure Certificate) or any Bondowner or beneficial owner may take such actions as may be necessary and appropriate, including seeking specific performance by court order, to cause the Commission to comply with its obligations under the Eighth Supplemental Indenture, and the sole remedy in the event of any failure of the Commission to comply with the 2018 Continuing Disclosure Certificate will be an action to compel performance.

No Additional Senior State Loans. No Senior State Loans are currently Outstanding. Notwithstanding anything contained in the Indenture, the Commission will not issue or enter into any additional Senior State Loans or pay any amounts with respect to any loan agreement with the State of California (or any board, department or agency thereof) prior to the payment of amounts described in the Indenture.

Mandatory Tender.

Mandatory Tender at Expiration of Term Rate Period. The Trustee will give notice by mail to the Owners of the 2018 Series C Bonds not less than 30 days prior to each Mandatory Tender Date applicable to such 2018 Series C Bonds that (i) such 2018 Series C Bonds are subject to mandatory tender for purchase on the Mandatory Tender Date at the Purchase Price and (ii) if an amount of money sufficient and available to pay the Purchase Price of all of the 2018 Series C Bonds is on deposit with the Trustee, all of such 2018 Series C Bonds will be deemed to have been properly tendered for purchase and will cease to bear interest. Receipt of such notice by any Owner of such 2018 Series C Bonds will not be a condition precedent to the mandatory tender for purchase of the 2018 Series C Bonds on such Mandatory Tender Date, and failure to receive any such notice or any defect in such notice will not affect the validity of the proceedings for the mandatory tender for purchase of such 2018 Series C Bonds.

Remarketing of Tendered 2018 Series C Bonds. Not less than three Business Days prior to a Mandatory Tender Date (unless at least 60 days prior to a Mandatory Tender Date, or such later date as may be acceptable to the Trustee, the Commission will have given written notice to the Remarketing Agent and the Trustee that the Commission intends to redeem the 2018 Series C Bonds on or before the Mandatory Tender Date) the Commission will deliver to the Remarketing Agent for the 2018 Series C Bonds a Pricing Notice specifying the next Term Rate Period and the Stepped Rate and optional redemption provisions to be applicable to the 2018 Series C Bonds in connection with such Term Rate Period. The Remarketing Agent will provide indicative Term Rates for the next Term Rate Period to the Commission by the day before the date the Remarketing Agent will offer the 2018 Series C Bonds for sale. Following the receipt of the Pricing Notice by the Remarketing Agent and not later than 5:00 p.m. local time in New York City on the second Business Day prior to the Mandatory Tender Date, the Remarketing Agent will offer for sale and use its best efforts to find purchasers for all of the 2018 Series C Bonds at a price equal to the principal amount thereof and, to the extent remarketed, will establish the Term Rate for the next Term Rate

Period and give notice thereof by email to the Commission and the Trustee. The Remarketing Agent will provide the Trustee with notice by email not later than 3:00 p.m. local time in New York City on the Business Day immediately preceding the Mandatory Tender Date indicating whether or not all the 2018 Series C Bonds were remarketed.

If all of such 2018 Series C Bonds are remarketed, the Remarketing Agent will cause the Purchase Price thereof to be paid to the Trustee according to the Operational Arrangements of The Depository Trust Company at or before 12:00 noon local time in New York City on the Mandatory Tender Date; and the Trustee will apply the funds so received to the payment of the portion of the purchase price represented by the principal amount of the 2018 Series C Bonds to the Owners who tendered or who were deemed to have tendered them for purchase (portion of the Purchase Price represented by the accrued but unpaid interest thereon to be paid from the Interest Fund). If the Series 2018 C Bonds are not registered in the name of The Depository Trust Company, or its nominee, to the extent permitted by law, the Remarketing Agent will deliver to the Trustee a notice by email specifying the names, addresses and taxpayer identification numbers of the purchasers and the denominations of 2018 Series C Bonds to be registered in the name of each purchaser by 3:00 p.m. local time in New York City on the Business Day preceding the Mandatory Tender Date, provided that such notice may be supplemented or amended at any time prior 12:30 p.m. local time in New York City on the Mandatory Tender Date.

If the 2018 Series C Bonds are not successfully remarketed, the Remarketing Agent will provide notice to the Commission and the Trustee not later than 5:00 p.m. local time in New York City on the Business Day prior to the Mandatory Tender Date indicating that the Mandatory Tender Date has been rescinded and that the current Term Rate, Term Rate Period, Stepped Rate and optional redemption provisions have not been modified. In such event or in the event that, for whatever reason, the Trustee is not provided with sufficient funds that are available for the purchase of all such 2018 Series C Bonds by the time set forth above, the Trustee will give notice thereof by email to the Remarketing Agent and the Commission and will give notice thereof by mail to the Owners of such 2018 Series C Bonds, indicating that the 2018 Series C Bonds will bear interest at the Stepped Rate until they are successfully remarketed or otherwise redeemed, purchased or paid by the Commission; provided, however, that so long as the Series 2018 C Bonds are registered in the name of The Depository Trust Company, or its nominee, such notice will not be given by mail but will be given to The Depository Trust Company in such manner as is set forth in the Operational Arrangements of The Depository Trust Company. Under such circumstances, the Remarketing Agent will continue to attempt to remarket such 2018 Series C Bonds as described above and, in connection therewith may from time to time establish a new Term Rate to be applicable to the Term Rate Period established by the Commission pursuant to the Eighth Supplemental Indenture. If the Remarketing Agent is successful in remarketing all of the 2018 Series C Bonds, it will give notice thereof by email of the Term Rate to be applicable to the 2018 Series C Bonds and of the date on which the 2018 Series C Bonds will be required to be tendered for remarketing to the Commission and the Trustee; and the Trustee will give notice by mail to the Owners of such 2018 Series C Bonds at least 5 days prior to the date on which such 2018 Series C Bonds will be required to be tendered for remarketing; provided, however, that so long as the Series 2018 C Bonds are registered in the name of The Depository Trust Company, or its nominee, such notice will not be given by mail but will be given to The Depository Trust Company in such manner as is set forth in the Operational Arrangements of The Depository Trust Company. On such date the Remarketing Agent will cause the Purchase Price of the 2018 Series C Bonds to be paid to the Trustee according to the Operational Arrangements of The Depository Trust Company at or before 12:00 noon local time in New York; and the Trustee will apply the funds so received to the payment of the Purchase Price of the 2018 Series C Bonds to the Owners who tendered or who were deemed to have tendered them for purchase. If the Series 2018 C Bonds are not registered in the name of The Depository Trust Company, or its nominee, and to the extent permitted by law, the Remarketing Agent will deliver to the Trustee a notice by email specifying the names, addresses and taxpayer identification numbers of the purchasers and the denominations of 2018 Series C Bonds to be registered in the name of each purchaser by 3:00 p.m. local time in New York City on the Business Day preceding the aforesaid date, provided that such notice may be supplemented or amended at any time prior 12:30 p.m. local time in New York City on the aforesaid date.

Covenant Regarding Remarketing Agent. The Commission covenants for the benefit of the Owners of the 2018 Series C Bonds that, not less than 90 days prior to each Mandatory Tender Date, it will employ a Remarketing Agent for the 2018 Series C Bonds and that the Remarketing Agent so employed (and any co-remarketing agents appointed by the Commission) will have a capitalization of at least \$30,000,000, will be authorized by law to perform all the duties contemplated by the Eighth Supplemental Indenture to be performed by

the Remarketing Agent and will have knowledge and experience in the remarketing of securities such as the 2018 Series C Bonds and a remarketing portfolio (at the time of such appointment) of at least \$100,000,000.

MISCELLANEOUS

Terms of 2018 Series C Bonds Subject to the Indenture. Except as expressly provided in the Eighth Supplemental Indenture, every term and condition contained in the Indenture will apply to the Eighth Supplemental Indenture, and to the 2018 Series C Bonds, with the same force and effect as if the same were set forth at length in the Eighth Supplemental Indenture, with such omissions, variations and modifications thereof as may be appropriate to make the same conform to the Eighth Supplemental Indenture.

The Eighth Supplemental Indenture and all the terms and provisions contained in the Eighth Supplemental Indenture will form part of the Indenture as fully and with the same effect as if all such terms and provisions had been set forth in the Indenture. The Indenture is ratified and confirmed by the Eighth Supplemental Indenture and will continue in full force and effect in accordance with the terms and provisions thereof, as supplemented and amended by the Eighth Supplemental Indenture.

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SIXTH SUPPLEMENTAL INDENTURE
PROPOSED AMENDMENTS TO INDENTURE

The proposed amendments to the Indenture set forth in the Sixth Supplemental Indenture and described below will become effective upon the receipt of the Trustee of all of the consents required under the Indenture. All Owners of the 2018 Series ABC Bonds and any Bonds issued after the date hereof will be deemed to have agreed to, accepted and consented to the amendments to the Indenture set forth in the Sixth Supplemental Indenture for all purposes of the Indenture.

Amendments to Definitions. (i) There will be added to the Indenture the definition of “Excluded Principal” and “SIFMA” having the definitions set forth below; (ii) all references to the term “Parity State Loans” in the Indenture will be deemed to refer to “Parity Loans” and will have the definition set forth below; and (iii) the definitions of “Annual Debt Service,” “Average Annual Debt Service,” “Bondowner,” “Owner” and “Maximum Annual Debt Service” in the Indenture will be replaced by the definitions of such terms set forth below.

“Annual Debt Service” means the sum of principal and interest on all Outstanding Bonds and Parity Loans as computed for the twelve-month period ending June 30 to which reference is made, and calculated by the Commission using the following assumptions:

(a) In determining the principal amount due for such twelve-month period ending June 30, payment shall (unless a different subsection of this definition applies for purposes of determining principal maturities or amortization) be assumed to be made in accordance with the amortization schedule established for such debt, including any Minimum Sinking Fund Account Payments or any scheduled redemption or payment of Bonds on the basis of Accreted Value, and for such purpose, the redemption payment or payment of Accreted Value shall be deemed a principal payment and interest that is compounded and paid as Accreted Value shall be deemed due on the scheduled redemption or Payment Date of such Capital Appreciation Bond, but excluding Excluded Principal.

(b) If any Outstanding Bonds constitute Variable Rate Indebtedness, the interest rate shall, as of the date of calculation, be: (i) the greater of (a) the average SIFMA rate over the past 3 years times 150% or (b) 4 percent or (ii) if, designated in writing by the Commission in the Supplemental Indenture authorizing such Bonds (which the Commission must certify, in the case of obligations interest on which is not excluded from gross income for federal income tax purposes under the Code), a fixed rate of interest reasonably determined by the Commission for obligations with similar duration, which interest rate has been certified by a Qualified Financial Advisor as reasonable concurrent with the execution and delivery of such Supplemental Indenture.

(c) If Defeasance Obligations have been deposited with and are held by the Trustee or another fiduciary to be used to pay principal and/or interest on specified Bonds, or any amounts have been deposited in the Interest Fund from the proceeds of any Series of Bonds or from any other source to pay interest on such Bonds, then the principal and/or interest to be paid from such Defeasance Obligations or from the earnings thereon, or from such amounts in the Interest Fund, shall be disregarded and not included in calculating Annual Debt Service.

(d) In determining the amount of interest coming due during any twelve-month period ending June 30 on any Series of Bonds that are issued as Build America Bonds or obligations issued under any future program similar to Build America Bonds, amounts equal to the Refundable Credits the Commission is scheduled to receive during each twelve-month period ending June 30 shall be deducted from such interest.

“Average Annual Debt Service” means, as of the date of calculation, total remaining Debt Service divided by the number of twelve-month periods ending on June 30 (including any fractional periods) remaining until the last maturity date of any Outstanding Bond, calculated by the Commission using the following assumptions:

(a) In determining the principal amount due in each year, payment shall (unless a different subsection of this definition applies for purposes of determining principal maturities or amortization) be assumed to be made in accordance with any amortization schedule established for such debt, including any Minimum Sinking Fund Account Payments or any scheduled redemption or payment of Bonds on the basis of Accreted Value, and for such purpose, the redemption payment or payment of Accreted Value shall be deemed a principal payment and interest

that is compounded and paid as Accreted Value shall be deemed due on the scheduled redemption or Payment Date of such Capital Appreciation Bond, but excluding Excluded Principal.

(b) If any of the Outstanding Series of Bonds constitute Balloon Indebtedness or Balloon Indebtedness and Variable Rate Indebtedness or if Bonds then proposed to be issued would constitute Balloon Indebtedness or Balloon Indebtedness and Variable Rate Indebtedness, then, for purposes of determining Average Annual Debt Service, such Bonds the principal of which the Commission has not specified as Excluded Principal will be amortized for a period specified by the Commission (but no longer than forty (40) years from the date of the issuance of the Bonds to which such Balloon Indebtedness relates) on a substantially level debt service basis or other amortization basis designated by the Commission, calculated based on a fixed rate equal to the rate at which the Commission could borrow for such period, as certified by a Qualified Financial Advisor.

(c) If any Outstanding Bonds constitute Variable Rate Indebtedness, the interest rate shall, as of the date of calculation, be: (i) the greater of (a) the average SIFMA rate over the past 3 years times 150% or (b) 4 percent or (ii) if, designated in writing by the Commission in the Supplemental Indenture authorizing such Bonds (which the Commission must certify, in the case of obligations interest on which is not excluded from gross income for federal income tax purposes under the Code), a fixed rate of interest reasonably determined by the Commission for obligations with similar duration, which interest rate has been certified by a Qualified Financial Advisor as reasonable concurrent with the execution and delivery of such Supplemental Indenture.

(d) If Defeasance Obligations have been deposited with and are held by the Trustee or another fiduciary to be used to pay principal and/or interest on specified Bonds, or any amounts have been deposited in the Interest Fund from the proceeds of any Series of Bonds or from any other source to pay interest on such Bonds, then the principal and/or interest to be paid from such Defeasance Obligations or from the earnings thereon, or from such amounts in the Interest Fund, shall be disregarded and not included in calculating Average Annual Debt Service.

(e) In determining the amount of interest coming due during any twelve-month period ending June 30 on any Series of Bonds that are issued as Build America Bonds or obligations issued under any future program similar to Build America Bonds, amounts equal to the Refundable Credits the Commission is scheduled to receive during each twelve-month period ending June 30 shall be deducted from such interest.

“Bondowner” or “Owner” means any person who is the registered owner of any Outstanding Bond, or the bearer of any Outstanding Bond that has a maturity of one year or less and is issued in bearer form, or with respect to any Parity Loan, the State of California (or any board, department or agency thereof) or the federal government (or any board, department or agency thereof), as applicable.

“Excluded Principal” means each payment of principal of Bonds with a remaining term, on the date of calculation, of not greater than 60 months and which the Commission specifies in a Certificate of the Commission and filed with the Trustee that the Commission intends to pay from the proceeds of Bonds or Parity Loans, other bonds, notes or other obligations of the Commission or moneys other than Net Revenues. No such determination shall affect the security for the Bonds, Senior State Loans or Parity Loans or the obligation of the Commission to pay the Bonds, Senior State Loans and Parity Loans from Net Revenues.

“Maximum Annual Debt Service” means, as of the date of calculation, the largest amount of Debt Service in the then current or any future Fiscal Year, calculated by the Commission using the following assumptions:

(a) In determining the principal amount due in each year, payment shall (unless a different subsection of this definition applies for purposes of determining principal maturities or amortization) be assumed to be made in accordance with any amortization schedule established for such debt, including any Minimum Sinking Fund Account Payments or any scheduled redemption or payment of Bonds on the basis of Accreted Value, and for such purpose, the redemption payment or payment of Accreted Value shall be deemed a principal payment and interest that is compounded and paid as Accreted Value shall be deemed due on the scheduled redemption or Payment Date of such Capital Appreciation Bond, but excluding Excluded Principal.

(b) If any of the Outstanding Series of Bonds constitute Balloon Indebtedness or Balloon Indebtedness and Variable Rate Indebtedness or if Bonds then proposed to be issued would constitute Balloon

Indebtedness or Balloon Indebtedness and Variable Rate Indebtedness, then, for purposes of determining Maximum Annual Debt Service, such Bonds the principal of which the Commission has not specified as Excluded Principal will be amortized for a period specified by the Commission (but no longer than forty (40) years from the date of the issuance of the Bonds to which such Balloon Indebtedness relates) on a substantially level debt service basis or other amortization basis designated by the Commission, calculated based on a fixed rate equal to the rate at which the Commission could borrow for such period, as certified by a Qualified Financial Advisor.

(c) If any Outstanding Bonds constitute Variable Rate Indebtedness, the interest rate shall, as of the date of calculation, be: (i) the greater of (a) the average SIFMA rate over the past 3 years times 150% or (b) 4 percent or (ii) if, designated in writing by the Commission in the Supplemental Indenture authorizing such Bonds (which the Commission must certify, in the case of obligations interest on which is not excluded from gross income for federal income tax purposes under the Code), a fixed rate of interest reasonably determined by the Commission for obligations with similar duration, which interest rate has been certified by a Qualified Financial Advisor as reasonable concurrent with the execution and delivery of such Supplemental Indenture.

(d) If Defeasance Obligations have been deposited with and are held by the Trustee or another fiduciary to be used to pay principal and/or interest on specified Bonds, or any amounts have been deposited in the Interest Fund from the proceeds of any Series of Bonds or from any other source to pay interest on such Bonds, then the principal and/or interest to be paid from such Defeasance Obligations or from the earnings thereon, or from such amounts in the Interest Fund, shall be disregarded and not included in calculating Maximum Annual Debt Service.

(e) In determining the amount of interest coming due during any twelve-month period ending June 30 on any Series of Bonds that are issued as Build America Bonds or obligations issued under any future program similar to Build America Bonds, amounts equal to the Refundable Credits the Commission is scheduled to receive during each twelve-month period ending June 30 shall be deducted from such interest.

“Parity Loans” means those loan agreements entered into between the Commission and the State of California (or any board, department or agency thereof) or the federal government (or any board, department or agency thereof) to finance additions, betterments, extensions, repairs, renewals or replacements to the Enterprise, which are entered into after the issuance of the 2003 Refunding Series A Bonds and which, by their terms, are secured by a pledge and lien on Net Revenues on a parity basis with debt service on the Bonds. Parity Loans may be evidenced by or secured by Bonds.

“SIFMA” means, as of any date, the most recent rate determined on the basis of the seven day high grade market index of tax exempt variable rate demand obligations, as calculated and published by Bloomberg and made available by the Securities Industry and Financial Markets Association on its SIFMA Municipal Swap Index, or if the SIFMA Municipal Swap Index is no longer published or reported, the rate per annum published or reported on the S&P Municipal Bond 7 Day High Grade Rate Index, or if neither the SIFMA Municipal Swap Index nor the S&P Municipal Bond 7 Day High Grade Rate Index is published, a per annum rate equal to 60% of the yield of the three-month U.S. Treasury bill as reported as of the end of each trading day.

Amendments to Conditions of Issuance of Additional Bonds. The provision of the Indenture described in paragraph (d) under the caption “THE INDENTURE — ISSUANCE OF ADDITIONAL SERIES OF BONDS — Issuance of Additional Bonds” in this Appendix A will be amended and restated in its entirety to read as follows:

“(d) Fixed serial maturities or mandatory Minimum Sinking Fund Account Payments, or any combination thereof, shall be established in amounts sufficient to provide for the retirement of all of the Bonds of such additional Series on or before their respective maturity dates; provided, however, that such requirement shall not apply to Balloon Indebtedness or principal amounts of such Series of Bonds which the Commission has specified as Excluded Principal.”

The provision of the Indenture described in paragraph (f) under the caption “THE INDENTURE — ISSUANCE OF ADDITIONAL SERIES OF BONDS — Issuance of Additional Bonds” in this Appendix A will be amended and restated in its entirety to read as follows:

“(f) After the sale of the Series of Additional Bonds proposed to be issued (but prior to the issuance and delivery thereof and receipt of payment therefor), the Commission shall file the following documents with the Trustee; these documents shall, with respect to such Series of Additional Bonds, be based upon the actual interest rate or rates determined at the time of sale thereof (except that, with respect to Variable Rate Indebtedness, the interest rate for the Series of Additional Bonds shall be calculated in accordance with the provisions of subsection (b) of the definition of Annual Debt Service).

(i) A Certificate of the Commission setting forth for each of the next three Fiscal Years estimates of (A) Revenues, (B) Operation and Maintenance Costs of the Enterprise and (C) Net Revenues.

(ii) A Certificate of the Commission demonstrating that (1) the ratio of (A) Net Revenues for the most recent Fiscal Year for which audited financial statements are available, or any consecutive twelve calendar month period during the eighteen calendar month period prior to the issuance of such additional Series of Bonds, to (B) Annual Debt Service for the current Fiscal Year, calculated as of the date of sale of, and including such additional Series of Bonds, will not be less than 1.25:1; or (2) the ratio of (A) Net Revenues projected by the Commission for each of the next three Fiscal Years as determined in Section 3.05(f)(ii) above, and including in such projections amounts projected to be received from any adopted rate increases and fund balances of the Commission which are projected to be available for the payment of Debt Service (but excluding the Bond Reserve Fund), to (B) Annual Debt Service in each of such three Fiscal Years, calculated as of the date of sale of and including such additional Series of Bonds, will not be less than 1.25:1 in each of such Fiscal Years.”

Amendments to Conditions of Issuance of Additional Bonds for Refunding. The provision of the Indenture described in paragraph (f) under the caption “THE INDENTURE — ISSUANCE OF ADDITIONAL SERIES OF BONDS — Issuance of Additional Bonds for Refunding” in this Appendix A will be amended and restated in its entirety to read as follows:

“(f) After giving effect to the application of the proceeds of the additional Series of Bonds, either (i) Annual Debt Service will not be increased in any Fiscal Year (excluding Debt Service on the Outstanding Bonds to be refunded) in an amount in excess of 5% or (ii) the Average Annual Debt Service for the Bonds of such additional Series (during the period from their issuance to their last maturity date) shall be equal to or less than the Average Annual Debt Service on the Bonds to be refunded (during the period from the issuance of the additional Series to the last maturity date of the Bonds to be refunded).”

Amendments to Conditions to Enter into Additional Parity Loans. The provision of the Indenture described in the second paragraph under the caption “THE INDENTURE — ISSUANCE OF ADDITIONAL SERIES OF BONDS — No Issuance of Additional Bonds or Other Obligations Except as Permitted in the Indenture; Exceptions” in this Appendix A will be amended and restated in its entirety to read as follows:

“In addition, the Commission may enter into Parity Loans if no Event of Default has occurred and is continuing under this Indenture or any Supplemental Indenture (and no event has occurred which, but for the passage of time or the giving of notice, would constitute an Event of Default under this Indenture or any Supplemental Indenture) and, on the date of the execution and delivery of such Parity Loans and with respect to Parity Loans executed and delivered prior to the effective date of the amendments set forth in the Sixth Supplemental Indenture, on the effective date of the amendments set forth in the Sixth Supplemental Indenture, the Commission delivers a Certificate to the Trustee setting forth, for each of the next three Fiscal Years after the delivery of the Parity Loans, and in the case of Parity Loans executed and delivered prior to the effective date of the amendments set forth in the Sixth Supplemental Indenture, the next three Fiscal Years, determined on such date, (i) the Revenues, Operation and Maintenance Costs of the Enterprise and Net Revenues and (ii) the Annual Debt Service (assuming the delivery of the Parity Loans), and demonstrating that the estimated Net Revenues (together with any fund balances of the Commission, which are available for Debt Service, but excluding the Bond Reserve Fund), in each of such Fiscal Years is at least equal to 1.25 times the Annual Debt Service in each of such Fiscal Years.”

Amendments to Covenant Regarding Amounts of Rates and Charges. The Commission’s rate covenant set forth in the Indenture as described in the Official Statement under the caption “SECURITY FOR THE BONDS — Rate Covenants” will be amended and will read as follows:

“(a) To the fullest extent permitted by law, the Commission will establish, fix and prescribe, prior to the commencement of each Fiscal Year, rates, fees and charges in connection with the sanitary waste and storm water collection, treatment and disposal services and facilities furnished by the Enterprise so as to yield Revenues at least sufficient, after making reasonable allowances for contingencies and error in the estimates to pay the following amounts:

(i) 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).

(ii) All other payments required for compliance with the terms of this Indenture and of any Supplemental Indenture providing for the issuance of additional Series of Bonds pursuant to the Indenture.

(iii) All other payments to meet any other obligations of the Commission which are charges, liens or encumbrances upon, or payable from, the Revenues.

(b) In addition to the requirements in subsection (a), to the fullest extent permitted by law, the Commission shall establish, fix and prescribe, prior to the commencement of each Fiscal Year, rates, fees and charges in connection with the sanitary waste and storm water collection, treatment and disposal services and facilities furnished by the Enterprise, which are reasonably expected to be at least sufficient to yield during such Fiscal Year Net Revenues (together with any fund balances of the Commission, which are available for Debt Service, but excluding the Bond Reserve Fund) equal to 1.25 times Annual Debt Service payable in such Fiscal Year.

(c) The Commission may make adjustments from time to time in such rates, fees and charges and may make such classification thereof as it deems necessary, but shall not reduce such rates, fees and charges below those then in effect unless the Revenues resulting after such reduced rates are put into effect will at all times be sufficient to meet the requirements of the rate covenants set forth above.

(d) So long as the Commission has complied with its obligations set forth in clause (a) and clause (b) above, the failure to yield the amount of Revenues as set forth in clause (a) above, or the failure of Net Revenues to equal 1.25 times Annual Debt Service as set forth in clause (b) above at the end of a Fiscal Year, shall not constitute a default or an Event of Default under the Indenture so long as the Commission has complied with clause (a) and clause (b) above at the commencement of the succeeding Fiscal Year.”

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APPENDIX B

SFPUC WASTEWATER ENTERPRISE FINANCIAL STATEMENTS

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San Francisco
Water Power Sewer
Services of the San Francisco Public Utilities Commission

WASTEWATER ENTERPRISE

Financial Statements June 30, 2017 and 2016
(With Independent Auditors' Report Thereon)



Protecting public health and the environment.

SAN FRANCISCO WASTEWATER ENTERPRISE

Table of Contents

	Page
Independent Auditors' Report	1
Management's Discussion and Analysis (Unaudited)	3
Financial Statements:	
Statements of Net Position	15
Statements of Revenues, Expenses, and Changes in Net Position	16
Statements of Cash Flows	17
Notes to Financial Statements	19
Independent Auditors' Report on Internal Control over Financial Reporting and on Compliance and Other Matters Based on an Audit of Financial Statements Performed in Accordance with <i>Government Auditing Standards</i>	50



KPMG LLP
Suite 1400
55 Second Street
San Francisco, CA 94105

Independent Auditors' Report

The Honorable Mayor and Board of Supervisors
City and County of San Francisco:

We have audited the accompanying financial statements of the San Francisco Wastewater Enterprise (the Enterprise), an enterprise fund of the City and County of San Francisco, California (the City), as of and for the years ended June 30, 2017 and 2016, and the related notes to the financial statements, which collectively comprise the Enterprise's basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with U.S. generally accepted accounting principles; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Governmental Auditing Standards*, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the respective financial position of the San Francisco Wastewater Enterprise, an enterprise fund of the City and County of San Francisco, California, as of June 30, 2017 and 2016, and the respective changes in financial position and cash flows thereof for the years then ended in accordance with U.S. generally accepted accounting principles.



Emphasis of Matter

As discussed in note 1, the financial statements of the Enterprise are intended to present the financial position, the changes in financial position of only that portion of the City that is attributable to the transactions of the Enterprise. They do not purport to, and do not, present fairly the financial position of the City as of June 30, 2017 and 2016, the changes in its financial position, or, where applicable, its cash flows for the years then ended in accordance with U.S. generally accepted accounting principles. Our opinion is not modified with respect to this matter.

Other Matters

Required Supplementary Information

U.S. generally accepted accounting principles require that the management's discussion and analysis on pages 3 through 14 be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Reporting Required by Government Auditing Standards

In accordance with *Government Auditing Standards*, we have also issued our report dated November 8, 2017 on our consideration of the Enterprise's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the Enterprise's internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the Enterprise's internal control over financial reporting and compliance.

KPMG LLP

San Francisco, California
November 8, 2017

SAN FRANCISCO WASTEWATER ENTERPRISE

Management's Discussion and Analysis (Unaudited)

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

This section presents management's analysis of the San Francisco Wastewater Enterprise's (the Enterprise) financial condition and activities as of and for the fiscal years ended June 30, 2017 and 2016. Management's Discussion and Analysis (MDA) is intended to serve as an introduction to the Enterprise's financial statements. This information should be read in conjunction with the audited financial statements that follow this section. All dollar amounts, unless otherwise noted, are expressed in thousands of dollars.

The information in this MDA is presented under the following headings:

- Organization and Business
- Overview of the Financial Statements
- Financial Analysis
- Capital Assets
- Debt Administration
- Rates and Charges
- Request for Information

Organization and Business

The San Francisco Public Utilities Commission (SFPUC or the Commission) is a department of the City and County of San Francisco (the City) that is responsible for the maintenance, operation, and development of three utility enterprises: Water, Hetch Hetchy Water and Power and CleanPowerSF, and Wastewater (the Enterprise). The primary responsibility of the Enterprise is to protect the public health and the surrounding bay and ocean receiving waters by collecting, transmitting, treating, and discharging storm and sanitary flows generated in the service area. This includes 993 miles of combined storm and sanitary collection system pipes, sewer mains, transport/storage boxes, other storage structures, and tunnels. San Francisco is the only coastal city in California with a combined sewer system that collects both wastewater and stormwater in the same network of pipes and provides treatment to remove harmful pollutants before discharging into the San Francisco Bay and Pacific Ocean. In addition, the Enterprise serves on a contractual basis certain municipal customers located outside of the City limits, including the North San Mateo County Sanitation District No. 3, Bayshore Sanitary District, and the City of Brisbane. The Enterprise recovers costs of service through user fees based on the volume and strength of sanitary flow. As of June 30, 2017, the Enterprise serves 147,591 residential accounts, which discharge about 16.1 million units of sanitary flow per year (measured in hundreds of cubic feet, or ccf) and 16,141 non-residential accounts, which discharge about 7.8 million ccf per year.

The Enterprise also maintains a Water Pollution Prevention Program that works to keep pollutants from entering the City's sewer system and street storm drains. This includes an industrial and commercial pre-treatment program, which monitors individual businesses that have been issued permits to discharge wastewater into the City's sewer system, as well as outreach, education, and a best management practices program for residents, businesses, and governments.

Overview of the Financial Statements

The Enterprise's financial statements include the following:

Statements of Net Position present information on the Enterprise's assets, deferred outflows, liabilities, and deferred inflows as of year-end, with the difference reported as net position. Over time, increases or decreases in

SAN FRANCISCO WASTEWATER ENTERPRISE

Management's Discussion and Analysis (Unaudited)

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

net position may serve as a useful indicator of whether the financial position of the Enterprise is improving or worsening.

While the *Statements of Net Position* provide information about the nature and amount of resources and obligations at year-end, the *Statements of Revenues, Expenses, and Changes in Net Position* present the results of the Enterprise's operations over the course of the fiscal year and information as to how the net position changed during the year. These statements can be used as an indicator of the extent to which the Enterprise has successfully recovered its costs through user fees and other charges. All changes in net position are reported during the period in which the underlying event giving rise to the change occurs, regardless of the timing of the related cash flows. Thus revenues and expenses are reported in these statements from some items that will result in cash flows in future fiscal periods, such as delayed collection of operating revenues and the expenses of employee earned but unused vacation leave.

The *Statements of Cash Flows* present changes in cash and cash equivalents resulting from operational, capital, non-capital, and investing activities. These statements summarize the annual flow of cash receipts and cash payments, without consideration of the timing of the event giving rise to the obligation or receipt and exclude non-cash accounting measures of depreciation or amortization of assets.

The *Notes to Financial Statements* provide information that is essential to a full understanding of the financial statements that is not displayed on the face of the financial statements.

Financial Analysis

Financial Highlights for Fiscal Year 2017

- Total assets of the Enterprise exceeded total liabilities by \$1,102,459.
- Net position decreased by \$9,677 or 0.8% during the year.
- Capital assets, net of accumulated depreciation and amortization, increased by \$192,038 or 9.3% to \$2,251,700.
- Operating revenues, excluding interest and investment income, and other non-operating revenues, increased by \$15,566 or 5.9% to \$277,341.
- Operating expenses, excluding interest expense, amortization of premium, refunding loss, and issuance cost, and non-operating expenses, increased by \$22,667 or 10.2% to \$244,220.

Financial Highlights for Fiscal Year 2016

- Total assets of the Enterprise exceeded total liabilities by \$1,156,707.
- Net position increased by \$13,888 or 1.2% during the year.
- Capital assets, net of accumulated depreciation and amortization, increased by \$126,874 or 6.6% to \$2,059,662.
- Operating revenues, excluding interest and investment income, and other non-operating revenues, increased by \$5,773 or 2.3% to \$261,775.
- Operating expenses, excluding interest expense, amortization of premium, refunding loss, and issuance cost, and non-operating expenses, increased by \$5,068 or 2.3% to \$221,553.

SAN FRANCISCO WASTEWATER ENTERPRISE

Management's Discussion and Analysis (Unaudited)

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

Financial Position

The following table summarizes the Enterprise's changes in net position.

Table 1
Comparative Condensed Net Position
June 30, 2017, 2016, and 2015

	2017	2016	2015	2017-2016 Change	2016-2015 Change
Total assets:					
Current and other assets	\$ 285,444	442,019	263,361	(156,575)	178,658
Capital assets, net of accumulated depreciation and amortization	2,251,700	2,059,662	1,932,788	192,038	126,874
Total assets	<u>2,537,144</u>	<u>2,501,681</u>	<u>2,196,149</u>	<u>35,463</u>	<u>305,532</u>
Deferred outflows of resources:					
Unamortized loss on refunding of debt	705	945	1,255	(240)	(310)
Pensions	48,192	14,589	12,608	33,603	1,981
Total deferred outflows of resources	<u>48,897</u>	<u>15,534</u>	<u>13,863</u>	<u>33,363</u>	<u>1,671</u>
Liabilities:					
Current liabilities:					
Revenue bonds	20,015	20,870	31,115	(855)	(10,245)
Certificates of participation	643	612	581	31	31
Commercial paper	111,411	61,000	100,000	50,411	(39,000)
Other liabilities	58,559	66,748	58,831	(8,189)	7,917
Subtotal current liabilities	<u>190,628</u>	<u>149,230</u>	<u>190,527</u>	<u>41,398</u>	<u>(41,297)</u>
Long-term liabilities:					
Revenue bonds	1,024,910	1,051,013	716,070	(26,103)	334,943
Certificates of participation	28,370	29,068	29,742	(698)	(674)
Other liabilities	190,777	115,663	97,919	75,114	17,744
Subtotal long-term liabilities	<u>1,244,057</u>	<u>1,195,744</u>	<u>843,731</u>	<u>48,313</u>	<u>352,013</u>
Total liabilities:					
Revenue bonds	1,044,925	1,071,883	747,185	(26,958)	324,698
Certificates of participation	29,013	29,680	30,323	(667)	(643)
Commercial paper	111,411	61,000	100,000	50,411	(39,000)
Other liabilities	249,336	182,411	156,750	66,925	25,661
Total liabilities	<u>1,434,685</u>	<u>1,344,974</u>	<u>1,034,258</u>	<u>89,711</u>	<u>310,716</u>
Deferred inflows of resources:					
Related to pensions	5,093	16,301	33,702	(11,208)	(17,401)
Total deferred inflows of resources	<u>5,093</u>	<u>16,301</u>	<u>33,702</u>	<u>(11,208)</u>	<u>(17,401)</u>
Net position:					
Net investment in capital assets	1,095,165	1,098,723	1,088,552	(3,558)	10,171
Restricted for debt service	977	981	349	(4)	632
Restricted for capital projects	1,653	18,205	20,327	(16,552)	(2,122)
Unrestricted	48,468	38,031	32,824	10,437	5,207
Total net position	<u>\$ 1,146,263</u>	<u>1,155,940</u>	<u>1,142,052</u>	<u>(9,677)</u>	<u>13,888</u>

SAN FRANCISCO WASTEWATER ENTERPRISE

Management's Discussion and Analysis (Unaudited)

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

Net Position, Fiscal Year 2017

For the year ended June 30, 2017, the Enterprise's total net position decreased by \$9,677 or 0.8% as a result of decreases of \$16,552 in restricted for capital projects, \$3,558 in net investment in capital assets and \$4 in restricted for debt service, offset by an increase of \$10,437 in unrestricted net position (see Table 1).

Total assets increased by \$35,463 or 1.4%. Current and other assets represent 11.3% of total assets, a decrease of \$156,575 or 35.4%. The decrease was mainly due to a decrease of \$158,880 in restricted and unrestricted cash and investment attributed to increased spending for the Sewer System Improvement Program (SSIP). Other decreases included \$1,788 in restricted receivables for capacity fees collection policy changes that require full payment of permit fees at the time of issuance coupled with write-offs, \$133 in inventory as more issuances than purchases during the fiscal year, \$51 in custom work receivables, \$21 in lease prepayment to the Recreation and Parks Department for the Civic Center Garage, and \$3 in property rental receivables. These decreases were offset by increases of \$2,808 in charges for services receivables due to a 7% planned rate increase, \$1,219 in state grant receivables as pending reimbursements for the stormwater flood management projects, \$109 due from the Department of Public Works for the Mission Bay South and Hunters View projects, \$83 in interest receivable due to higher annualized interests rates, \$37 in prepayments for property rents, \$23 due from Office of Community Investment and Infrastructure (OCII) for the Candlestick Point and Hunters Point Phase II project, and \$22 in biofuel receivables.

Capital assets, net of accumulated depreciation and amortization, increased by \$192,038 or 9.3% reflecting an increase in construction and capital improvement activities. The largest portion of the Enterprise's net position of \$1,095,165, or 95.5%, represents net investment in capital assets (see Capital Assets section of the MDA for more information). Deferred outflows of resources increased by \$33,363 due to an increase of \$33,603 in pensions based on actuarial report offset by \$240 decrease in unamortized loss on refunding of the 2013 Series A bonds.

Total liabilities increased by \$89,711 or 6.7%. As of June 30, 2017, total outstanding balance of \$1,185,349 for revenue bonds payable, commercial paper, and certificates of participation represented 82.6% of total liabilities, an increase of \$22,786 or 2.0%. The increase was due \$50,411 issuance of commercial paper, offset by \$21,482 in debt repayments, and \$6,143 in amortization of premium during the year. Other liabilities of \$249,336, such as payables to vendors, contractors, and other government agencies for goods and services under contractual agreements, increased by \$66,925 or 36.7%. The increases included \$70,730 in net pension liability due to investment losses, the Appeals Court's elimination of the full funding requirement for certain members, and the impact of the revised demographic assumptions and change in discount rate, \$5,617 in other post-employment benefit obligations as a result of higher actuarially determined annual required contribution, \$1,829 in interest payable due to issuance of revenue bonds 2016 Series A and B and commercial paper, \$1,398 increase in custom work liability mainly due to \$1,500 deposit from Pacific Gas & Electric for the Cross Bore Project, \$391 in customers' prepayments from charges for services, \$90 in pollution remediation liability for the Southeast Wastewater Treatment Plant, \$84 payable to the Department of Public Works for the street repairs and maintenance of the Southeast Wastewater Treatment Plant and Community Center. These increases were offset by decreases of \$10,414 in accounts payable from restricted and unrestricted assets due to less outstanding payables at year end, \$2,484 in general liability based on actuarial estimates, \$150 in liens released for construction and professional contracts, \$104 of repayment made to Hetch Hetchy Power for the 525 Golden Gate Living Machine System, \$60 in employee related benefits including workers' compensation, vacation, and accrued payroll, and \$2 in payable to San Francisco County Transportation Authority for the 19th Avenue project. Deferred inflows of resources decreased by \$11,208 in relation to pensions based on actuarial report.

SAN FRANCISCO WASTEWATER ENTERPRISE

Management's Discussion and Analysis (Unaudited)

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

Net Position, Fiscal Year 2016

For the year ended June 30, 2016, the Enterprise's total net position increased by \$13,888 or 1.2% as a result of increases of \$10,171 in net investment in capital assets, \$5,207 in unrestricted net position, and \$632 in restricted for debt service, offset by a decrease of \$2,122 in restricted for capital projects (see Table 1).

Total assets increased by \$305,532 or 13.9%. Current and other assets increased by \$178,658 or 67.8% due to increases of \$181,703 in restricted and unrestricted cash and investment mainly from the net proceeds of \$285,039 from 2016 Series A and B revenue bonds issuance, offset by increased spending for the Sewer System Improvement Program (SSIP) projects. Other increases included \$2,008 in charges for services receivables due to a 5% planned rate increase, \$36 in interest receivables due to higher cash balance, \$17 in custom work receivables for Candlestick Point Project, and \$12 in property rental receivables. The increases were offset by decreases of \$3,611 in state grant receivables as reimbursements received this year, and \$1,081 in restricted receivables due to a change of collection policy for capacity fees that require full payment of permit fees at the time of issuance effective in July 2015. Other decreases included \$381 of inventory mainly due to \$344 in obsolete inventory write-off, \$19 in prepayment to the Recreation and Parks Department for the Civic Center Garage, \$18 in receivables due from the Department of Public Works for the Mission Bay South projects, \$6 in biofuel receivables, and \$2 in vendor prepayments for permits.

Capital assets, net of accumulated depreciation and amortization, increased by \$126,874 or 6.6% reflecting an increase in construction and capital improvement activities. The largest portion of the Enterprise's net position of \$1,098,723, or 95.1%, represents net investment in capital assets (see Capital Assets section of the MDA for more information). Deferred outflows of resources increased by \$1,671 due to an increase of \$1,981 in pensions based on actuarial report offset by \$310 decrease in unamortized loss on refunding of the 2013 Series A bonds.

Total liabilities increased by \$310,716 or 30.0%. As of June 30, 2016, outstanding revenue bonds payable of \$1,071,883, commercial paper of \$61,000, and certificates of participation of \$29,680 represented an increase of \$285,055 due to the issuance of 2016 Series A and B revenue bonds of \$360,706, offset by \$39,000 in refunding of commercial paper, \$31,696 in debt repayments, and \$4,955 in amortization of premium during the year. Other liabilities of \$182,411, such as payables to vendors, contractors, and other government agencies for goods and services under contractual agreements, increased by \$25,661 or 16.4%. The increases included \$10,562 in net pension liability, \$4,073 in other post-employment benefit obligations as a result of higher actuarially determined annual required contribution, \$3,501 in accounts payable from restricted and unrestricted assets due to higher construction, repair and replacement activities, \$3,166 in general liability based on actuarial estimates, \$2,050 in pollution remediation liability for the Yosemite Creek, the Southeast and the Oceanside Treatments sites, \$1,165 in employee related benefits including workers' compensation, vacation and accrued payroll primarily due to increase in number of days of accrued payroll, \$1,109 in interest payable due to issuance of revenue bonds 2016 Series A and B, \$171 in customers' prepayments from charges for services, and \$146 in lien payable for construction and professional contracts. These increases were offset by decreases of \$253 of repayment made to Hetch Hetchy Power for the 525 Golden Gate Living Machine System and the Lighting Retrofit Project, \$18 in payable to San Francisco County Transportation Authority for the 19th Avenue project, and \$11 in prepaid rents. Deferred inflows of resources decreased by \$17,401 in relation to pensions based on actuarial report.

SAN FRANCISCO WASTEWATER ENTERPRISE

Management's Discussion and Analysis (Unaudited)

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

Results of Operations

The following table summarizes the Enterprise's revenues, expenses, and changes in net position.

Table 2
Comparative Condensed Revenues, Expenses, and Changes in Net Position
Years ended June 30, 2017, 2016, and 2015

	2017	2016	2015	2017-2016 Change	2016-2015 Change
Revenues:					
Charges for services	\$ 267,601	249,203	244,604	18,398	4,599
Rents and concessions	606	753	821	(147)	(68)
Other operating revenues	9,134	11,819	10,577	(2,685)	1,242
Interest and investment income	2,327	1,185	1,207	1,142	(22)
Other non-operating revenues	8,633	8,263	6,564	370	1,699
Total revenues	<u>288,301</u>	<u>271,223</u>	<u>263,773</u>	<u>17,078</u>	<u>7,450</u>
Expenses:					
Operating expenses	244,220	221,553	216,485	22,667	5,068
Interest expenses	28,474	22,251	22,791	6,223	(540)
Amortization of premium, refunding loss, and issuance cost	(5,806)	(2,979)	(5,347)	(2,827)	2,368
Non-operating expenses	383	485	280	(102)	205
Total expenses	<u>267,271</u>	<u>241,310</u>	<u>234,209</u>	<u>25,961</u>	<u>7,101</u>
Change in net position before transfers	<u>21,030</u>	<u>29,913</u>	<u>29,564</u>	<u>(8,883)</u>	<u>349</u>
Transfers from the City and County of San Francisco	40	460	—	(420)	460
Transfers to the City and County of San Francisco	<u>(30,747)</u>	<u>(16,485)</u>	<u>(232)</u>	<u>(14,262)</u>	<u>(16,253)</u>
Net transfers	<u>(30,707)</u>	<u>(16,025)</u>	<u>(232)</u>	<u>(14,682)</u>	<u>(15,793)</u>
Change in net position	<u>(9,677)</u>	<u>13,888</u>	<u>29,332</u>	<u>(23,565)</u>	<u>(15,444)</u>
Net position at beginning of year					
Beginning of year, as previously reported	1,155,940	1,142,052	1,181,867	13,888	(39,815)
Cumulative effect of accounting change	—	—	(69,147)*	—	69,147
Beginning of year as restated	<u>1,155,940</u>	<u>1,142,052</u>	<u>1,112,720</u>	<u>13,888</u>	<u>29,332</u>
Net position at end of year	<u>\$ 1,146,263</u>	<u>1,155,940</u>	<u>1,142,052</u>	<u>(9,677)</u>	<u>13,888</u>

* Cumulative effect of accounting change per GASB Statement No. 68, *Accounting and Financial Reporting for Pensions*.

Results of Operations, Fiscal Year 2017

The Enterprise's total revenues were \$288,301, an increase of \$17,078 or 6.3% from prior year (see Table 2). Charges for services increased by \$18,398 or 7.4% due to an average 7% adopted rate increase and a sanitary flow increase of 38,788 ccf or 0.2% from residential and non-residential customers. Interest and investment income increased by \$1,142 or 96.4% due to higher annualized interest rates and prior year's declines in fair value. Other non-operating revenues increased by \$370 or 4.5% mainly due to \$3,274 in state assistance for the stormwater flood management projects such as the Cesar Chavez Storm Flood Management and Sunnysdale Storm Water Flood Management, \$347 from projects overhead charges, penalty and late payment charges, \$166 from custom work projects such as the Mission Bay South and Hunters View projects, and \$68 in biofuel revenue and sale of assets. The increases in non-operating revenues were offset by a decrease of \$3,485 attributed to prior year's settlement from the Pacific Gas and Electric. Other operating revenues decreased by \$2,685 or 22.7% mainly due to \$2,898 decrease in capacity fees resulting from a 20% decline in permit sales and write-offs of capacity fee receivables, offset by an increase of \$213 from other City Departments such as the San Francisco General Hospital and the Laguna Honda Hospital due to increased sanitary flow. Rents decreased by \$147 or 19.6% due to termination of three leases.

SAN FRANCISCO WASTEWATER ENTERPRISE

Management's Discussion and Analysis (Unaudited)

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

Total expenses increased by \$25,961 or 10.8% due to increases of \$22,667 in operating expenses, \$6,223 in interest expense mainly attributed to higher outstanding principal and commercial paper issued, offset by an increase of \$2,827 in amortization of premium, refunding loss and issuance cost, and \$102 decrease in other non-operating expenses due to lower expenses for the Garden Project and Friends of the Urban Project. The increase of \$22,667 in operating expenses was mainly attributable to \$55,266 increased capital projects spending, largely in SSIP and repair and replacement projects, \$36,200 in personnel services due to pension costs, \$4,642 in depreciation expense due to increased capitalized assets, and \$675 in services provided by other departments mainly for light, heat and power. These increases were offset by decreases of \$66,499 in other operating expenses mainly due to increased capitalization of fixed assets, \$4,917 in general and administrative expenses mainly due to lower judgments and claims liability based on actuarial estimate, \$1,456 in materials and supplies for various projects, and \$1,244 in contractual services mainly due to lower buildings and structures maintenance services.

Net transfers of \$30,707 included \$30,100 transfers to City Real Estate Division for the Phase 1 construction work for the Central Shops Relocation Project, Land Reuse 1800 Jerrod, \$615 to Art Commission for art enrichment and \$32 to the Office of the City Administrator for the Surety Bond Program, offset by \$40 transfer from General Fund for community projects.

Results of Operations, Fiscal Year 2016

The Enterprise's total revenues were \$271,223, an increase of \$7,450 or 2.8% from prior year (see Table 2). Charges for services increased by \$4,599 or 1.9% due to an average 5% adopted rate increase, offset by reduction of sanitary flow of 862,736 ccf or 3.4% from residential and non-residential customers. Other non-operating revenues increased by \$1,699 or 25.9% mainly due to \$2,726 settlement received from Pacific Gas and Electric, and \$48 in biofuel revenue and sale of assets, offset by decrease of \$1,075 in state assistance for stormwater flood management and Civic Center Sustainable District projects. Other operating revenues increased by \$1,242 or 11.7% due to increases of \$887 in capacity fees resulting from an average 3% rate increase and 9% increase in permit applications, and \$355 from other City departments such as San Francisco General Hospital and the Recreation and Parks Department for increased sanitary flow. These increases were offset by decreases of \$68 or 8.3% in property rental due to termination of three leases, and decrease of \$22 or 1.8% in interest and investment income due to declines in market value.

Total expenses increased by \$7,101 or 3.0% due to increases of \$5,068 in operating expenses, \$2,368 in amortization of premium, refunding loss and issuance cost, and \$205 in other non-operating expenses for the Summer Youth Program, landscaping project, and Floodwater Assistant Management Program, offset by a decrease of \$540 in interest expense due to higher capitalized bond interest. The increase of \$5,068 in operating expenses was attributable to \$3,140 in SSIP and repair and replacements project expenses, \$2,692 in personnel services mainly due to cost of living adjustments, health and pension costs, \$2,050 increase in pollution remediation obligations for the Yosemite Creek, the Southeast and the Oceanside Treatments sites, \$1,228 in higher building and equipment maintenance services, \$545 in depreciation expense due to increased capitalized assets, and \$377 in materials and supplies mainly from \$344 obsolete inventory write-off. These increases were offset by a decrease of \$4,909 in general and administrative expenses mainly due to lower judgment and claims liability based on actuarial estimate, and \$55 services provided by other departments for legal and risk management services.

Net transfers of \$16,025 included \$16,453 transfers to Real Estate Division for the Central Shops Relocation Project at 555 Selby Street and 1975 Galvez Avenue properties, and \$32 to Office of the City Administrator for

SAN FRANCISCO WASTEWATER ENTERPRISE

Management's Discussion and Analysis (Unaudited)

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

the Surety Bond Program, offset by \$380 transfer from Department of Public Works for the Ocean Beach project and \$80 for community projects.

Capital Assets

The following table summarizes changes in the Enterprise's capital assets.

Table 3
Capital Assets, Net of Accumulated Depreciation and Amortization
As of June 30, 2017, 2016, and 2015

	2017	2016	2015	2017-2016 Change	2016-2015 Change
Facilities, improvements, machinery, and equipment	\$ 1,664,327	1,657,373	1,531,020	6,954	126,353
Intangible assets	3,457	3,594	3,921	(137)	(327)
Land and rights-of-way	35,737	35,737	35,737	—	—
Construction work in progress	548,179	362,958	362,110	185,221	848
Total	\$ <u>2,251,700</u>	<u>2,059,662</u>	<u>1,932,788</u>	<u>192,038</u>	<u>126,874</u>

Capital Assets, Fiscal Year 2017

The Enterprise has capital assets of \$2,251,700, net of accumulated depreciation and amortization, invested in a broad range of utility capital assets as of June 30, 2017 (see Table 3). This amount represents an increase of \$192,038 or 9.3% from prior fiscal year. The investment in capital assets includes land, buildings, improvements, wastewater treatment plants, sewer pipes and mains, underground transport and storage boxes, pump stations, machinery, and equipment. Construction work in progress increased by \$185,221 or 51.0%, and facilities, improvements, machinery, and equipment increased by \$6,954, or 0.4%, offset by a decrease of \$137, or 3.8%, in intangible assets due to amortization.

Major additions to construction work in progress during the year ended June 30, 2017 include the following:

Biosolids Digester Project	\$ 35,666
SEP Primary and Secondary Clarifier	19,809
Water System Improvement	14,862
SSIP Program Management	14,793
New Grit Removal and Influent Pump Station	13,543
Spot Sewer Replacement	9,482
Channel Tunnel/Bayside Drainage	6,874
Collection Division Consolidation	6,095
Sunset Sewer Replacement	4,962
Westside Pump Station Reliability Improvements	4,721
Land Reuse 1800 Jerrod	4,700
SOMA, Bernal Heights & Excelsior	4,606
32nd, France, Peru Avenues and Lisbon & Vienna	4,315
Other project additions individually below \$4,000	104,225
Total	<u>\$ 248,653</u>

SAN FRANCISCO WASTEWATER ENTERPRISE

Management's Discussion and Analysis (Unaudited)

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

Major depreciable facilities, improvements, intangible assets, machinery, and equipment placed in service, including transfers of completed projects from construction work in progress, during the year ended June 30, 2017 include the following:

As-Needed Spot Sewer Replacement	\$	9,934
As-Needed Main Sewer Replacement		7,863
Naples Street Sewer Replacement		5,749
17th, 33rd, 37th Julian and Revere Avenues Sewer		4,318
Various Locations Sewer Replacement		4,302
Other project additions individually below \$3,000		30,184
Total	\$	<u>62,350</u>

See Note 4 for additional information about capital assets.

Sewer System Improvement Program

The Sewer System Improvement Program (SSIP) includes three phases over 20 years to improve the existing wastewater system. In March 2016, the refined program scope and budget increased from \$6.9 billion to \$7.0 billion endorsed by the Commission along with the baseline for scope, schedule and budget for phase I, II, and III projects.

As of June 30, 2017, 13 projects or 18.6% totaling \$97 million were completed, with 39 projects in pre-construction phase, 18 projects in construction phase, and no project in close-out phase. The North Shore to Channel Force Main Drainage Improvement (NSCFM) which was completed in June 2017 is now in service and combined sewage flows are diverted to the NSCFM. One of the SSIP projects, the rehabilitation of the North Point Facility (NPF) outfall system is on-going with expected completion date in February 2018. Program expenditures as of June 30, 2017 totaled \$523.2 million. Additional details regarding the SSIP are available at www.sfwater.org.

Capital Assets, Fiscal Year 2016

The Enterprise has capital assets of \$2,059,662, net of accumulated depreciation and amortization, invested in a broad range of utility capital assets as of June 30, 2016 (see Table 3). This amount represents an increase of \$126,874 or 6.6% from prior fiscal year. The investment in capital assets includes land, buildings, improvements, wastewater treatment plants, sewer pipes and mains, underground transport and storage boxes, pump stations, machinery, and equipment. Facilities, improvements, machinery, and equipment increased by \$126,353, or 8.3%, and construction work in progress increased by \$848 or 0.2%, offset by a decrease of \$327, or 8.3%, in intangible assets due to amortization.

SAN FRANCISCO WASTEWATER ENTERPRISE

Management's Discussion and Analysis (Unaudited)

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

Major additions to construction work in progress during the year ended June 30, 2016 include the following:

Biosolids Digester Project	\$ 25,102
SSIP Program Management	15,388
New Grit Removal and Influent Pump Station	6,728
Spot Sewer Replacement	6,698
Northshore to Channel Force Main	6,136
Wastewater Facility Reliability Improvements	5,414
Main Sewer Replacement	4,302
SSIP Southeast Treatment Plant Improvements	4,190
Sunnydale Sewer Improvements	4,173
Westside Pump Station Reliability Improvements	4,146
Other project additions individually below \$4,000	99,381
Total	<u>\$ 181,658</u>

Major depreciable facilities, improvements, intangible assets, machinery, and equipment placed in service, including transfers of completed projects from construction work in progress, during the year ended June 30, 2016 include the following:

North Shore to Channel Force Main Sewer Improvement	\$ 44,976
Ocean Side Treatment Plant Improvements	25,110
Southeast Treatment Plant Oxygen Generate Plant Replace	10,173
Northside Facility Reliability Valve and Piping System	7,176
Sunnydale Fiberglass Pipes Sewer	4,405
As-Needed Spot Side Sewer and Culvert Connection	4,321
Other project additions individually below \$3,000	80,664
Total	<u>\$ 176,825</u>

See Note 4 for additional information about capital assets.

Sewer System Improvement Program

The Sewer System Improvement Program (SSIP) includes three phases over 20 years to improve the existing wastewater system. In March 2016, the refined program scope and budget increased from \$6.9 billion to \$7.0 billion endorsed by the Commission along with the baseline for scope, schedule and budget for phase I projects.

As of June 30, 2016, 8 projects or 11.4% totaling \$41 million were completed, with 52 projects in pre-construction phase, 9 projects in construction phase, and 1 project in close-out phase. The Southeast Treatment Plant project replaced the antiquated oxygen plants with two technologically advanced oxygen generation plants to significantly reduce energy consumption and was completed in June 2016. The construction for the Westside Pump Station Discharge Pipe Upgrade is on-going with expected completion date in November 2016. Program expenditures as of June 30, 2016 totaled \$324.6 million. Additional details regarding the SSIP are available at www.sfwater.org.

SAN FRANCISCO WASTEWATER ENTERPRISE

Management's Discussion and Analysis (Unaudited)

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

Debt Administration

As of June 30, 2017, 2016 and 2015, the Enterprise's debt from revenue bonds, commercial paper, and certificates of participation were \$1,185,349, \$1,162,563 and \$877,508, respectively, as shown in Table 4. More detailed information about the Enterprise's debt activity is presented in Notes 6, 7, and 8 to the financial statements.

Table 4
Outstanding Debt, Net of Unamortized Costs
As of June 30, 2017, 2016, and 2015

	<u>2017</u>	<u>2016</u>	<u>2015</u>	<u>2017-2016</u> <u>Change</u>	<u>2016-2015</u> <u>Change</u>
Revenue bonds	\$ 1,044,925	1,071,883	747,185	(26,958)	324,698
Commercial paper	111,411	61,000	100,000	50,411	(39,000)
Certificates of participation	29,013	29,680	30,323	(667)	(643)
Total	<u>\$ 1,185,349</u>	<u>1,162,563</u>	<u>877,508</u>	<u>22,786</u>	<u>285,055</u>

The increase of \$22,786 was due to \$50,411 issuance of commercial paper, offset by \$21,482 repayment of outstanding debt and \$6,143 of premium amortizations.

Credit Ratings and Bond Insurance – As of June 30, 2017, the Enterprise carried underlying ratings of “Aa3” and “AA” from Moody’s and Standard & Poor’s (S&P), respectively. As of June 30, 2016, the Enterprise carried underlying ratings of “Aa3” and “AA” from Moody’s and S&P, respectively.

Debt Service Coverage – Pursuant to the Indenture for the Wastewater bonds, the Enterprise covenants to collect sufficient net revenues each fiscal year, together with any Enterprise funds (except Bond Reserve Funds) that are available for payment of debt service and are not budgeted to be expended, at least equal to 1.25 times annual debt service for said fiscal year. During fiscal years 2017 and 2016, the Enterprise's net revenues, together with fund balances available to pay debt service and not budgeted to be expended, were sufficient to meet the rate covenant requirements under the Indenture (see Note 8).

Debt Authorization – Pursuant to the Charter Section 8B.124, the Enterprise can incur indebtedness upon two-thirds vote of the Board of Supervisors. As of June 30, 2017, the Enterprise had \$2,426,577 in combined debt issuance authorization from the Board of Supervisors under Proposition E, with \$639,985 issued against this authorization. The Enterprise has a \$750,000 authorized commercial paper program, with \$111,411 in tax-exempt commercial paper outstanding as of June 30, 2017 and \$61,000 in tax-exempt commercial paper outstanding as of June 30, 2016.

Cost of Debt Capital – The interest rates on the Enterprise's outstanding revenue bonds ranged from 1.0% to 5.8%, with a blended true interest cost of 3.0%, after factoring in federal interest subsidy receipts on Build America Bonds at June 30, 2017. The 2009 Series C certificates of participation carried interest rates ranging from 2.0% to 5.0% and 2009 Series D certificates of participation carried interest rates from 6.4% to 6.5% in fiscal years 2017 and 2016, respectively. The interest rates on short-term debt ranged from 0.5% to 0.9% during fiscal year 2017.

SAN FRANCISCO WASTEWATER ENTERPRISE

Management's Discussion and Analysis (Unaudited)

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

Rates and Charges

Rate Setting Process

Proposition E, as approved by the voters in November 2002, amended the City Charter by adding the new Article VIII B, entitled "Public Utilities," which established the Commission's authority to issue new revenue bonds and set wastewater rates. The Commission is required to:

- Establish rates, fees, and charges based on cost of service;
- Retain an independent rate consultant to conduct cost of service studies at least every five years;
- Consider establishing new connection fees;
- Consider conservation incentives and lifeline rates;
- Adopt a rolling five-year forecast annually; and
- Establish a Rate Fairness Board.

Pursuant to the City and County of San Francisco Charter section 8B.125, an independent rate study is performed at least once every five years. A rate study completed in April 2014 resulted in an approved four-year wastewater rate schedule by the Commission on May 13, 2014. The rates are effective July 1, 2014 through fiscal year 2018. In compliance with City Charter section 8B.125, a new rate study commenced in July 2016 to examine the revenue requirement and cost of service of the Water and Wastewater Enterprises beyond fiscal year 2018. This rate study will result in a recommendation to the Commission in the Spring 2018 for retail rates effective July 1, 2018.

The following table is the Enterprise's ten-year approved average rate adjustments:

Ten-year Average Rate Adjustments	
Effective Date	Rate
July 1, 2009	7.0 ¹ %
July 1, 2010	7.0 ¹
July 1, 2011	5.0 ¹
July 1, 2012	5.0 ¹
July 1, 2013	5.0 ¹
July 1, 2014	5.0 ²
July 1, 2015	5.0 ²
July 1, 2016	7.0 ²
July 1, 2017	11.0 ²
July 1, 2018	8.0 ³

¹ Five-year rate increases adopted and effective July 1, 2009.

² Four-year rate increases adopted and effective July 1, 2014.

³ Projected rate from the 10-year financial plan.

Request for Information

This report is designed to provide our citizens, customers, investors, and creditors with an overview of the Enterprise's finances and to demonstrate the Enterprise's accountability for the money it receives. Questions regarding any of the information provided in this report or requests for additional financial information should be addressed to San Francisco Public Utilities Commission, Chief Financial Officer, Financial Services, 525 Golden Gate Avenue, 13th Floor, San Francisco, CA 94102.

This report is available at <http://www.sfwater.org/index.aspx?page=347>.

SAN FRANCISCO WASTEWATER ENTERPRISE
Statements of Net Position
June 30, 2017 and 2016
(In thousands)

	<u>2017</u>	<u>2016</u>
Assets		
Current assets:		
Cash and investments with City Treasury	\$ 195,559	159,118
Cash and investments outside City Treasury	—	123
Receivables:		
Charges for services (net of allowance for doubtful accounts of \$2,854 in 2017 and \$2,427 in 2016)	28,874	26,055
Due from other City departments	160	28
Due from other governments	2,251	1,032
Interest	255	172
Total current receivables	<u>31,540</u>	<u>27,287</u>
Prepaid charges, advances, and other receivables, current portion	147	140
Inventory	2,046	2,179
Restricted cash and investments outside City Treasury	28,128	39,757
Total current assets	<u>257,420</u>	<u>228,604</u>
Non-current assets:		
Restricted cash and investments with City Treasury	24,767	208,336
Restricted interest and other receivable (net of allowance for doubtful accounts of \$170 in 2017 and \$0 in 2016)	1,149	2,937
Charges for services, less current portion	875	886
Prepaid charges, advances, and other receivables, less current portion	1,233	1,256
Capital assets, not being depreciated and amortized	586,962	401,741
Capital assets, net of accumulated depreciation and amortization	<u>1,664,738</u>	<u>1,657,921</u>
Total non-current assets	<u>2,279,724</u>	<u>2,273,077</u>
Total assets	<u>2,537,144</u>	<u>2,501,681</u>
Deferred outflows of resources		
Unamortized loss on refunding of debt	705	945
Pensions	48,192	14,589
Total deferred outflows of resources	<u>48,897</u>	<u>15,534</u>
Liabilities		
Current liabilities:		
Accounts payable	5,517	8,242
Accrued payroll	4,594	3,981
Accrued vacation and sick leave, current portion	3,429	3,784
Accrued workers' compensation, current portion	1,031	1,023
Due to other City departments, current portion	189	105
Damage claims liability, current portion	4,790	6,383
Unearned revenues, refunds, and other	4,037	2,398
Bond and loan interest payable	11,495	9,666
Revenue bonds, current portion	20,015	20,870
Commercial paper	111,411	61,000
Certificates of participation, current portion	643	612
Current liabilities payable from restricted assets	23,477	31,166
Total current liabilities	<u>190,628</u>	<u>149,230</u>
Long-term liabilities:		
Other post-employment benefits obligations	51,670	46,053
Net pension liability	118,907	48,177
Accrued vacation and sick leave, less current portion	2,520	2,761
Accrued workers' compensation, less current portion	4,549	4,635
Due to other City departments, less current portion	1,061	1,166
Damage claims liability, less current portion	9,359	10,250
Revenue bonds, less current portion	1,024,910	1,051,013
Certificates of participation, less current portion	28,370	29,068
Pollution remediation obligation	2,711	2,621
Total long-term liabilities	<u>1,244,057</u>	<u>1,195,744</u>
Total liabilities	<u>1,434,685</u>	<u>1,344,974</u>
Deferred inflows of resources		
Related to pensions	5,093	16,301
Total deferred inflows of resources	<u>5,093</u>	<u>16,301</u>
Net position		
Net investment in capital assets	1,095,165	1,098,723
Restricted for debt service	977	981
Restricted for capital projects	1,653	18,205
Unrestricted	48,468	38,031
Total net position	<u>\$ 1,146,263</u>	<u>1,155,940</u>

See accompanying notes to financial statements.

SAN FRANCISCO WASTEWATER ENTERPRISE
Statements of Revenues, Expenses, and Changes in Net Position
Years ended June 30, 2017 and 2016
(In thousands)

	<u>2017</u>	<u>2016</u>
Operating revenues:		
Charges for services	\$ 267,601	249,203
Rents and concessions	606	753
Capacity fees	4,345	7,244
Other revenues	4,789	4,575
Total operating revenues	<u>277,341</u>	<u>261,775</u>
Operating expenses:		
Personnel services	115,288	79,088
Contractual services	13,825	15,069
Materials and supplies	8,736	10,192
Depreciation and amortization	55,441	50,799
Services provided by other departments	36,832	36,157
General and administrative and other	14,098	30,248
Total operating expenses	<u>244,220</u>	<u>221,553</u>
Operating income	<u>33,121</u>	<u>40,222</u>
Non-operating revenues (expenses):		
Federal and state grants	3,274	—
Interest and investment income	2,327	1,185
Interest expenses	(28,474)	(22,251)
Amortization of premium, refunding loss, and issuance costs	5,806	2,979
Net gain from sale of assets	37	23
Other non-operating revenues	5,322	8,240
Other non-operating expenses	(383)	(485)
Net non-operating expenses	<u>(12,091)</u>	<u>(10,309)</u>
Change in net position before transfers	21,030	29,913
Transfers from the City and County of San Francisco	40	460
Transfers to the City and County of San Francisco	(30,747)	(16,485)
Net transfers	<u>(30,707)</u>	<u>(16,025)</u>
Change in net position	<u>(9,677)</u>	<u>13,888</u>
Net position at beginning of year	<u>1,155,940</u>	<u>1,142,052</u>
Net position at end of year	<u>\$ 1,146,263</u>	<u>1,155,940</u>

See accompanying notes to financial statements.

SAN FRANCISCO WASTEWATER ENTERPRISE
Statements of Cash Flows
Years ended June 30, 2017 and 2016
(In thousands)

	<u>2017</u>	<u>2016</u>
Cash flows from operating activities:		
Cash received from customers, including cash deposits	\$ 277,219	260,321
Cash received from tenants for rent	606	729
Cash paid to employees for services	(82,623)	(81,182)
Cash paid to suppliers for goods and services	(75,478)	(80,789)
Cash paid for judgments and claims	(2,313)	(168)
Net cash provided by operating activities	<u>117,411</u>	<u>98,911</u>
Cash flows from non-capital financing activities:		
Cash received from grants	2,055	3,611
Cash received from settlements	—	3,485
Cash received from miscellaneous revenues	1,325	759
Cash paid for rebates and program incentives	(383)	(485)
Transfers to the City and County of San Francisco	(30,707)	(16,025)
Net cash used in non-capital financing activities	<u>(27,710)</u>	<u>(8,655)</u>
Cash flows from capital and related financing activities:		
Proceeds from sale of capital assets	37	23
Proceeds from bond issuance, net of premium	—	360,706
Proceeds from commercial paper borrowings	50,411	35,000
Principal paid on commercial paper	—	(74,000)
Principal paid on long-term debt	(21,482)	(31,696)
Interest paid on long-term debt	(44,850)	(34,246)
Interest paid on commercial paper	(402)	(116)
Issuance cost paid on long-term debt	(97)	(1,666)
Acquisition and construction of capital assets	(238,625)	(167,656)
Federal interest income subsidy for Build America Bonds	3,998	3,991
Net cash provided by (used in) capital and related financing activities	<u>(251,010)</u>	<u>90,340</u>
Cash flows from investing activities:		
Interest income received	2,578	1,173
Proceeds from sale of investments outside City Treasury	84,957	192,072
Purchase of investments outside City Treasury	(92,976)	(185,525)
Net cash provided by (used in) investing activities	<u>(5,441)</u>	<u>7,720</u>
Increase (decrease) in cash and cash equivalents	(166,750)	188,316
Cash and cash equivalents:		
Beginning of year	407,281	218,965
End of year	<u>\$ 240,531</u>	<u>407,281</u>
Reconciliation of cash and cash equivalents to the statements of net position:		
Cash and investments with City Treasury:		
Unrestricted	\$ 195,559	159,118
Restricted	24,767	208,336
Cash and investments outside City Treasury:		
Unrestricted	—	123
Restricted	28,128	39,757
Less: Restricted (with maturity more than 90 days - see table in Note 3)	(8,019)	—
Less: Unrealized (gain) loss on investments	96	(53)
Cash and cash equivalents at the end of year on statements of cash flows	<u>\$ 240,531</u>	<u>407,281</u>

SAN FRANCISCO WASTEWATER ENTERPRISE
Statements of Cash Flows
Years ended June 30, 2017 and 2016
(In thousands)

	2017	2016
Reconciliation of operating income to net cash provided by operating activities:		
Operating income	\$ 33,121	40,222
Adjustment to reconcile operating income to net cash provided by operating activities:		
Depreciation and amortization	55,441	50,799
Provision for uncollectible accounts	597	(63)
Write-off of capital assets	1,960	5,549
Changes in operating assets and liabilities:		
Receivables:		
Charges for services	(3,235)	(1,945)
Prepaid charges, advances, and other	1,447	1,126
Due from other City departments	(132)	18
Inventory	133	381
Accounts payable	(2,725)	1,052
Accrued payroll	613	840
Other post-employment benefits obligations	5,617	4,073
Pension obligations	25,919	(8,820)
Accrued vacation and sick leave	(596)	187
Accrued workers' compensation	(78)	138
Due to other City departments	84	(168)
Pollution remediation obligation	90	2,050
Damage claims liability	(2,484)	3,166
Unearned revenues, refunds, and other liabilities	1,639	306
Total adjustments	84,290	58,689
Net cash provided by operating activities	\$ 117,411	98,911
Noncash transactions:		
Accrued capital asset costs	\$ 23,477	31,166
Interfund payable	1,250	1,271

See accompanying notes to financial statements.

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

(1) Description of Reporting Entity

The San Francisco Wastewater Enterprise (the Enterprise), formerly known as the San Francisco Clean Water Program (the Program), was established in 1977 following the transfer of all sewage-system-related assets and liabilities of the City and County of San Francisco (the City) to the Program.

In 1976, the electorate of the City approved a proposition authorizing the City to issue \$240,000 in revenue bonds pursuant to the Revenue Bond Law of 1941 of the State of California for the purpose of acquiring, constructing, improving, and financing improvements to the City's municipal sewage treatment and disposal system. Since then, the City's Board of Supervisors has adopted resolutions (Wastewater Resolutions) providing for the issuance of various sewer revenue and refunding bond series. The Wastewater Resolutions require the City to keep separate books of records and accounts of the Enterprise.

The Enterprise was placed under the jurisdiction of the San Francisco Public Utilities Commission (the Commission) in 1996. The Commission, established in 1932, is responsible for providing operational oversight of the public utility enterprises of the City, which includes the Enterprise along with the City's power and water utilities (i.e., Hetch Hetchy Water and Power and CleanPowerSF, of which the Power Enterprise is a component, and the San Francisco Water Enterprise). The Commission is responsible for determining such matters as the rates and charges for services, approval of contracts, and organizational policy.

Until August 1, 2008, the Commission consisted of five members, all appointed by the Mayor. Proposition E, a City Charter amendment approved by the voters in the June 3, 2008 election, terminated the terms of all five existing members of the Commission, changed the process for appointing new members, and set qualifications for all members. Under the amended Charter, the Mayor continues to nominate candidates to the Commission, but nominees do not take office until the Board of Supervisors votes to approve their appointments by a majority (at least six members). The amended Charter provides for staggered four-year terms for the Commission members and requires them to meet the following qualifications:

- Seat 1 must have experience in environmental policy and an understanding of environmental justice issues.
- Seat 2 must have experience in ratepayer or consumer advocacy.
- Seat 3 must have experience in project finance.
- Seat 4 must have expertise in water systems, power systems, or public utility management.
- Seat 5 is an at-large member.

The SFPUC is a department of the City, and as such, the financial operations of the Enterprise, Hetch Hetchy Water and Power and CleanPowerSF, and the Water Enterprises are included in the Comprehensive Annual Financial Report of the City as enterprise funds. These financial statements are intended to present only the financial position, and the changes in financial position and cash flows of only that portion of the City that is attributable to the transactions of the Enterprise. They do not purport to, and do not, present fairly the financial position of the City as of June 30, 2017 and 2016, the changes in its financial position, or, where applicable, the cash flows for the years then ended, in conformity with U.S. generally accepted accounting principles (GAAP).

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

(2) Significant Accounting Policies

(a) Basis of Accounting and Measurement Focus

The accounts of the Enterprise are organized on the basis of a proprietary fund type, specifically an enterprise fund of the City. The activities of this Enterprise are accounted for with a separate set of self-balancing accounts that comprise the Enterprise's assets, deferred outflows, liabilities, deferred inflows, net position, revenues, and expenses. Enterprise funds account for activities (i) that are financed with debt that is secured solely by a pledge of the net revenues from fees and charges of the activity; or (ii) that are required by laws or regulations that the activity's costs of providing services, including capital costs (such as depreciation or debt service), be recovered with fees and charges, rather than with taxes or similar revenues; or (iii) that the pricing policies of the activity establish fees and charges designed to recover its costs, including capital costs (such as depreciation or debt service).

The financial activities of the Enterprise are accounted for on a flow of economic resources measurement focus, using the accrual basis of accounting in accordance with the U.S. GAAP. Under this method, all assets and liabilities associated with operations are included on the statements of net position; revenues are recognized when earned, and expenses are recognized when liabilities are incurred. Operating revenues are defined as charges to customers, rental income, and capacity fees.

The Enterprise applies all applicable Governmental Accounting Standards Board (GASB) pronouncements.

(b) Cash and Cash Equivalents

The Enterprise considers its pooled deposits and investments held with the City Treasury to be demand deposits and, therefore, cash and cash equivalents for financial reporting. The City Treasury also holds non-pooled cash and investments for the Enterprise. Non-pooled restricted deposits and restricted deposits and investments held outside the City Treasury with original maturities of three months or less are also considered to be cash equivalents.

(c) Investments

Money market funds are carried at cost, which approximates fair value. All other investments are stated at fair value based upon quoted market prices. Changes in fair value are recognized as investment gains or losses and are recorded as a component of non-operating revenues.

(d) Inventory

Inventory consists primarily of construction materials and maintenance supplies and is valued at average cost. Inventory is expensed as it is consumed.

(e) Capital Assets

Capital assets are defined as assets with an initial individual cost of more than \$5 and an estimated useful life in excess of one year. Capital assets with an original acquisition date prior to July 1, 1977 are recorded in the financial statements at estimated cost, as determined by an independent professional appraisal, or at cost, if known. All subsequent acquisitions have been recorded at cost. All donated capital assets are valued at acquisition value at the time of donation. Depreciation and amortization are computed using the straight-line method over the estimated useful lives of the related

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

assets, which range from 1 to 100 years. No depreciation or amortization is recorded in the year of acquisition, and depreciation or amortization is recorded in the year of disposal.

(f) Intangible Assets

Under GASB Statement No. 51, *Accounting and Financial Reporting for Intangible Assets*, intangible assets are defined as identifiable, non-financial assets capable of being separated, sold, transferred, or licensed, and include contractual or legal rights. Examples of intangible assets include rights-of-way easements, land use rights, water rights, licenses, and permits. The accounting pronouncement also provides guidance on the capitalization of internally generated intangible assets, such as the development and installation of computer software by or on behalf of the reporting entity.

According to the standard, the Enterprise is required to capitalize intangible assets with a useful life extending beyond one reporting period. The Enterprise has established a capitalization threshold of \$100. GASB Statement No. 51 also requires amortization of intangible assets over the benefit period, except for certain assets having an indefinite useful life. Assets with an indefinite useful life generally provide a benefit that is not constrained by legal or contractual limitations or any other external factor, and therefore, are not amortized (see Note 4).

(g) Construction Work in Progress

The cost of acquisition and construction of major plant and equipment is recorded as construction work in progress. Costs of construction projects that are discontinued are recorded as an expense in the year in which the decision is made to discontinue such projects.

(h) Capitalization of Interest

A portion of the interest cost incurred on capital projects is capitalized on assets that require a period of time for construction or to otherwise prepare them for their intended use. Such amounts are amortized over the useful lives of the assets (see Note 4).

(i) Bond Discount, Premium, and Issuance Costs

Bond issuance costs related to prepaid insurance costs are capitalized and amortized using the effective interest method. Other bond issuance costs are expensed when incurred. Original issue bond discount or premium are offset against the related debt and are also amortized using the effective interest method.

(j) Accrued Vacation and Sick Leave

Accrued vacation pay, which may be accumulated up to 10 weeks per employee, is charged to expense as earned. Sick leave earned subsequent to December 6, 1978 is non-vesting and may be accumulated up to six months per employee.

(k) Workers' Compensation

The Enterprise is self-insured for workers' compensation claims and accrues the estimated cost of those claims, including the estimated cost of incurred but not reported claims (see Note 11(c)).

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

(l) General Liability

The Enterprise is self-insured for general liability and uninsurable property damage claims. Commercially uninsurable property includes assets that are underground or provide transmission and distribution. Maintained commercial coverage does not cover claims attributed to loss from earthquake, contamination, pollution remediation efforts, and other specific naturally occurring contaminants such as mold. The liability represents an estimate of the cost of all outstanding claims, including adverse loss development and estimated incurred but not reported claims (see Note 11(a)).

(m) Arbitrage Rebate Payable

Certain bonds are subject to arbitrage rebate requirements in accordance with regulations issued by the U.S. Treasury Department. The requirements generally stipulate that earnings from the investment of the tax-exempt bond proceeds that exceed related interest costs on the bonds must be remitted to the federal government on every fifth anniversary of each bond issue. No arbitrage liability is due as of June 30, 2017 or 2016.

(n) Refunding of Debt

Gains or losses occurring from refunding of debt prior to maturity are reported as deferred outflows and deferred inflows of resources from refunding of debt. Deferred outflows and deferred inflows of resources are recognized as a component of interest expense using the effective interest method over the remaining life of the old debt or the life of the new debt, whichever is shorter.

(o) Income Taxes

As a department of a government agency, the Enterprise is exempt from both federal income taxes and California state franchise taxes.

(p) Revenue Recognition

Sewer service charges are based on water usage as determined by the San Francisco Water Enterprise. Effective July 1, 2013, the majority of residential and non-residential customers are billed on a monthly basis except for building and contractor customers which are billed on a bi-monthly basis. Revenues earned but unbilled are accrued as charges for services and reflected as a receivable on the statements of net position.

(q) Use of Estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

(r) Accounting and Financial Reporting for Pollution Remediation Obligations

According to GASB Statement No. 49, *Accounting and Financial Reporting for Pollution Remediation Obligations*, a government would have to estimate its expected outlays for pollution remediation if it knows a site is polluted and any of the following recognition triggers occur:

- Pollution poses an imminent danger to the public or environment and a government has little or no discretion to avoid fixing the problem;

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

- A government has violated a pollution prevention-related permit or license;
- A regulator has identified (or evidence indicates it will identify) a government as responsible (or potentially responsible) for cleaning up pollution, or for paying all or some of the cost of the cleanup;
- A government is named (or evidence indicates that it will be named) in a lawsuit to compel it to address the pollution; or
- A government begins or legally obligates itself to begin cleanup or post-cleanup activities (limited to amounts the government is legally required to complete).

As a part of ongoing operations, situations may occur requiring the removal of pollution or other hazardous material. These situations typically arise in the process of acquiring an asset, preparing an asset for its intended use, or during the design phase of projects under review by the project managers. Other times, pollution may arise during the implementation and construction of a major or minor capital project. Examples of pollution may include, but are not limited to: asbestos or lead paint removal, leaking of sewage in underground pipes or neighboring areas, chemical spills, removal and disposal of known toxic waste, harmful biological and chemical pollution of water, or contamination of surrounding soils by underground storage tanks (see Note 12(d)).

(s) New Accounting Standard Adopted in Fiscal Year 2017

- 1) In June 2015, the GASB issued Statement No. 73, *Accounting and Financial Reporting for Pensions and Related Assets That are Not within the Scope of GASB Statement 68, and Amendments to Certain Provisions of GASB Statements 67 and 68*. GASB Statement No. 73 addresses accounting and financial reporting for pensions provided by governments that are not within the scope of GASB 68. The new standard is effective for periods beginning after June 15, 2016. The Enterprise adopted the provisions of this Statement, which did not have a significant impact on its financial statements.
- 2) In August 2015, the GASB issued Statement No. 77, *Tax Abatement Disclosures*. GASB Statement No. 77 establishes financial reporting standards for tax abatement agreements entered into by state and local governments. The new standard is effective for periods beginning after December 15, 2015. The Enterprise adopted the provisions of this Statement, which did not have a significant impact on its financial statements.
- 3) In December 2015, the GASB issued Statement No. 78, *Pensions Provided through Certain Multiple-Employer Defined Benefit Pension Plans*. GASB Statement No. 78 establishes accounting and financial reporting standards for defined benefit pensions provided by state or local governments through a cost-sharing plan that meets the criteria of Statement No. 68 and is not a state or local governmental pension plan. The new standard is effective for periods beginning after December 15, 2015. The Enterprise adopted the provisions of this Statement, which did not have a significant impact on its financial statements.

(t) GASB Statements Implemented in Fiscal Year 2016

- 1) In fiscal year 2016, the Enterprise adopted GASB Statement No. 72, *Fair Value Measurement and Application*, which requires the Enterprise to use valuation techniques, which are appropriate under the circumstances and are consistent with the market approach, the cost approach, or the income approach. GASB Statement No. 72 establishes a hierarchy of inputs used to measure fair value consisting of three levels. Level 1 inputs are quoted prices in active markets for identical

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

assets or liabilities. Level 2 inputs are inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly. Level 3 inputs are unobservable inputs. The statement also contains note disclosure requirements regarding the hierarchy of valuation inputs and techniques used for the fair value measurements (see Note 3). For those investments held with the City Treasury, the City discloses the requirements regarding the hierarchy of valuation inputs and techniques used for the fair value measurements at the Citywide level. However, such disclosure is not required at the department level for those investments held with the City Treasury.

- 2) GASB Statement No. 82, *Pension Issues-an amendment of GASB Statements No. 67, No. 68, and No. 7*, issued in March 2016 addresses issues regarding (1) the presentation of payroll-related measures in required supplementary information, (2) the selection of assumptions and the treatment of deviations from the guidance in an Actuarial Standard of Practice for financial reporting purposes, and (3) the classification of payments made by employers to satisfy employee (plan member) contribution requirements. The new standard is effective for periods beginning after June 15, 2016 and the City elected early implementation in fiscal year 2016. While there was an impact to the City's financial statements, there was no impact on the Enterprise's financial statements in fiscal year 2016.

(u) Future Implementation of New Accounting Standards

- 1) In June 2015, the GASB issued Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefit Other Than Pension Plans*. GASB Statement No. 75 revises and establishes new accounting and financial reporting requirements for governments that provides their employees with other postemployment benefits other than pensions (OPEB). The new standard is effective for periods beginning after June 15, 2017. The Enterprise will implement the provisions of Statement No. 75 in fiscal year 2018.
- 2) In March 2016, the GASB issued Statement No. 81, *Irrevocable Split-Interest Agreements*. GASB Statement No. 81 establishes accounting and financial reporting standards for irrevocable split-interest agreement created through trusts in which a donor irrevocably transfers resources to an intermediary. The new standard is effective for periods beginning after December 15, 2016. The Enterprise will implement the provisions of Statement No. 81 in fiscal year 2018.
- 3) In November 2016, the GASB issued Statement No. 83, *Certain Asset Retirement Obligations*. GASB Statements No. 83 establishes accounting and financial reporting standards for certain asset retirement obligations (AROS). The new standard is effective for periods beginning after June 15, 2018. The Enterprise will implement the provisions of Statement No. 83 in fiscal year 2019.
- 4) In January 2017, the GASB issued Statement No. 84, *Fiduciary Activities*. GASB Statement No. 84 establishes criteria for state and local governments to identify fiduciary activities and how those activities should be reported. The new standard is effective for periods beginning after December 15, 2018. The Enterprise will implement the provisions of Statement No. 84 in fiscal year 2020.
- 5) In March 2017, the GASB issued Statement No. 85, *Omnibus 2017*. GASB Statement No. 85 addresses practice issues identified during the implementation and application of certain GASB Statements. The new standard is effective for periods beginning after June 15, 2017. The Enterprise will implement the provisions of Statement No. 85 in fiscal year 2018.

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

- 6) In May 2017, the GASB issued Statement No. 86, *Certain Debt Extinguishment Issues*. GASB Statement No. 86 improves accounting and financial reporting for in-substance defeasance of debt using existing resources other than proceeds of refunding debt. The new standard is effective for periods beginning after June 15, 2017. The Enterprise will implement the provisions of Statement No. 86 in fiscal year 2018.
- 7) In June 2017, the GASB issued Statement No. 87, *Leases*. GASB Statement No. 87 establishes a single model for lease accounting and requires reporting of certain lease liabilities that currently are not reported. The new standard is effective for periods beginning after December 15, 2019. The Enterprise will implement the provisions of Statement No. 87 in fiscal year 2021.

(3) Cash, Cash Equivalents, and Investments

The Enterprise's cash, cash equivalents, and investments with the City Treasury are invested in an unrated City pool pursuant to investment policy guidelines established by the City Treasurer. The objectives of the policy guidelines are, in order of priority, preservation of capital, liquidity, and yield. The policy addresses soundness of financial institutions in which the City will deposit funds, types of investment instruments as permitted by the California Government Code, and the percentage of the portfolio that may be invested in certain instruments with longer terms to maturity. The City Treasurer allocates income from the investment of pooled cash at month-end in proportion to the Enterprise's average daily cash balances. The primary objectives of the Enterprise's investment policy are consistent with the City's policy.

The restricted cash for bond reserves is held by an independent trustee outside the City investment pool. The balances as of June 30, 2017 and 2016 were \$28,128 and \$39,757, respectively. Funds held by the trustee established under the 2003 Indenture are invested in "Permitted Investments" as defined in the Indenture. "Permitted Investments" include money market funds registered under the Federal Investment Company Act of 1940 and whose shares are registered under the Federal Securities Act of 1933 and having a rating by S&P of "AAAm-G," "AAAm," or "AAm" and a rating by Moody's of "Aaa," "Aa1," or "Aa2."

The Enterprise categorizes its fair value measurements within the fair value hierarchy established by GAAP. The hierarchy is based on the valuation inputs used to measure fair value of the assets. Level 1 inputs are quoted prices in active markets for identical assets; Level 2 inputs are significant other observable inputs; and Level 3 inputs are significant unobservable inputs. The inputs and techniques used for valuing securities are not necessarily an indication of risk associated with investing in those securities.

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

The following is a summary of the restricted and unrestricted cash and investments outside City Treasury and the fair value hierarchy as of June 30, 2017 and 2016.

Cash and Investments outside City Treasury

Investments	Credit Ratings (S&P/Moody's)	June 30, 2017		Investments exempt from fair value	Fair Value Measurements Using		
		Maturities	Fair Value		Quoted prices in active markets for identical assets (Level 1)	Significant other observable inputs (Level 2)	Unobservable Inputs (Level 3)
Commercial Paper	A-1+/P-1	October 31, 2017	\$ 8,019	8,019	—	—	—
U.S. Treasury Money Market Funds	AAAm/Aaa-mf	< 90 days	20,100	20,100	—	—	—
Money Market Funds	A-1+/P-1	< 90 days	5	5	—	—	—
Cash and Cash Equivalents	N/A		4	4	—	—	—
Total Restricted Cash and Investments outside City Treasury			\$ 28,128	28,128	—	—	—

Cash and Investments outside City Treasury

Investments	Credit Ratings (S&P/Moody's)	June 30, 2016		Investments exempt from fair value	Fair Value Measurements Using		
		Maturities	Fair Value		Quoted prices in active markets for identical assets (Level 1)	Significant other observable inputs (Level 2)	Unobservable Inputs (Level 3)
U.S. Treasury Money Market Funds	AAAm/Aaa-mf	< 90 days	\$ 39,757	39,757	—	—	—
Total Restricted Cash and Investments outside City Treasury			\$ 39,757	39,757	—	—	—
Cash and Cash Equivalents	N/A		123	123	—	—	—
Total Cash and Investments outside City Treasury			\$ 123	123	—	—	—

Commercial paper is valued using a variety of techniques such as matrix pricing; market corroborated pricing inputs such as yield curve, indices, and other market related data. Commercial paper, money market investments, and cash and cash equivalents are exempt from fair value treatment under GASB Statement No. 72.

The restricted cash and investments outside City Treasury as of June 30, 2017 and 2016 included a \$21 and \$0 unrealized gain due to changes in fair values on Commercial Paper.

The Enterprise's cash, cash equivalents, and investments are shown on the accompanying statements of net position as follows:

	2017	2016
Current assets:		
Cash and investments with City Treasury	\$ 195,559	159,118
Cash and investments outside City Treasury	—	123
Restricted cash and investments outside City Treasury	28,128	39,757
Non-current assets:		
Restricted cash and investments with City Treasury	24,767	208,336
Total cash, cash equivalents, and investments	\$ 248,454	407,334

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

The following table shows the percentage distribution of the City's pooled investments by maturity:

Fiscal years ended June 30	Investment maturities (in months)			
	Under 1	1 to less than 6	6 to less than 12	12 to 60
2017	20.1%	21.2%	18.0%	40.7%
2016	18.4%	23.2%	20.3%	38.1%

(4) Capital Assets

Capital assets with a useful life of 50 years or greater include buildings and structures, sewers, wastewater treatment plants, pump stations, and other pipelines.

Capital assets as of June 30, 2017 and 2016 consisted of the following:

	2016	Increases	Decreases	2017
Capital assets not being depreciated and amortized:				
Land and rights-of-way	\$ 35,737	—	—	35,737
Intangible assets	3,046	—	—	3,046
Construction work in progress	362,958	248,653	(63,432) *	548,179
Total capital assets not being depreciated and amortized	401,741	248,653	(63,432)	586,962
Capital assets being depreciated and amortized:				
Facilities and improvements	2,749,916	56,758	—	2,806,674
Intangible assets	4,615	—	—	4,615
Machinery and equipment	92,732	5,592	(499)	97,825
Total capital assets being depreciated and amortized:	2,847,263	62,350 *	(499)	2,909,114
Less accumulated depreciation and amortization for:				
Facilities and improvements	(1,131,048)	(50,188)	—	(1,181,236)
Intangible assets	(4,067)	(137)	—	(4,204)
Machinery and equipment	(54,227)	(5,116)	407	(58,936)
Total accumulated depreciation and amortization	(1,189,342)	(55,441)	407	(1,244,376)
Total capital assets being depreciated and amortized, net	1,657,921	6,909	(92)	1,664,738
Total capital assets, net	\$ 2,059,662	255,562	(63,524)	2,251,700

* Decrease in construction work in progress is greater than increase in capital assets being depreciated is explained by \$1,960 in capital project write-offs, mainly related to the Combined Sewer Discharge Improvements Project, Oceanside Plant Aeration System Upgrade Project, 1260J-Cesar Chavez PH-2 Project, and the Westside Plant Site Reliability Improvements Project.

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

	2015	Increases	Decreases	2016
Capital assets not being depreciated and amortized:				
Land and rights-of-way	\$ 35,737	—	—	35,737
Intangible assets	3,046	—	—	3,046
Construction work in progress	362,110	181,658	(180,810) *	362,958
Total capital assets not being depreciated and amortized	<u>400,893</u>	<u>181,658</u>	<u>(180,810)</u>	<u>401,741</u>
Capital assets being depreciated and amortized:				
Facilities and improvements	2,574,662	175,254	—	2,749,916
Intangible assets	4,615	—	—	4,615
Machinery and equipment	91,201	1,571	(40)	92,732
Total capital assets being depreciated and amortized:	<u>2,670,478</u>	<u>176,825</u> *	<u>(40)</u>	<u>2,847,263</u>
Less accumulated depreciation and amortization for:				
Facilities and improvements	(1,085,755)	(45,293)	—	(1,131,048)
Intangible assets	(3,740)	(327)	—	(4,067)
Machinery and equipment	(49,088)	(5,179)	40	(54,227)
Total accumulated depreciation and amortization	<u>(1,138,583)</u>	<u>(50,799)</u>	<u>40</u>	<u>(1,189,342)</u>
Total capital assets being depreciated and amortized, net	<u>1,531,895</u>	<u>126,026</u>	<u>—</u>	<u>1,657,921</u>
Total capital assets, net	<u>\$ 1,932,788</u>	<u>307,684</u>	<u>(180,810)</u>	<u>2,059,662</u>

* Decrease in construction work in progress is greater than increase in capital assets being depreciated is explained by \$5,549 in capital project write-offs, mainly related to the Northshore to Channel Force Main Project, and the Existing Digester Facilities Reliability Project.

GASB Statement No. 62, *Codification of Accounting and Financial Reporting Guidance Contained in Pre-November 30, 1989 Financial Accounting Standards Board (FASB) and American Institute of Certified Public Accountants (AICPA) Pronouncements*, requires that interest expense incurred during construction of assets be capitalized. Interest included in the construction work in progress and total interest expense incurred during the years ended June 30, 2017 and 2016 are as follows:

	2017	2016
Interest expensed	\$ 28,474	22,251
Interest included in construction work in progress	18,607	13,220
Total interest incurred	<u>\$ 47,081</u>	<u>35,471</u>

During fiscal years ended 2017 and 2016, the Enterprise expensed \$1,960 and \$5,549 respectively, related to demolition, maintenance, and planning costs on certain projects. The amounts of the write-offs were recognized as other operating expenses in the accompanying statements of revenues, expenses, and changes in net position.

(5) Restricted Assets

The Master Bond Resolution was discharged upon the issuance of the 2003 Series A Refunding Bonds. Pursuant to the Indenture, which became effective with the issuance of the 2003 Series A Refunding Bonds, all net revenues of the Enterprise (except amounts on deposit in the rebate fund) are irrevocably pledged to the punctual payment of debt service on the Wastewater revenue bonds. Accordingly, the net revenues of the Enterprise shall not be used for any other purpose while any of its revenue bonds are outstanding except as expressly permitted by the Indenture. Further, all net revenues shall be deposited by the City Treasurer, by instruction of the Enterprise, in special funds designated as the Revenue Fund, which must be maintained in the City Treasury. These funds, held at the City Treasury, are recorded in the statements of net position of the Enterprise as cash and investments. Deposits in the Revenue Fund,

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

including earnings thereon, shall be appropriated, transferred, expended, or used for the following purposes and only in accordance with the following priority:

1. The payment of operation and maintenance costs of the Enterprise;
2. The payment of State revolving fund loans;
3. The payment of bonds, parity State revolving fund loans, policy costs, and amounts due as reimbursement under any letter of credit agreement; and
4. Any other lawful purpose of the Enterprise.

In accordance with the Indenture, the Enterprise maintains certain restricted cash and investment balances in trust. Restricted assets held in trust consisted of the following as of June 30, 2017 and 2016:

	2017	2016
Cash and investments with City Treasury:		
Wastewater revenue bond construction fund	\$ 24,767	208,336
Cash and investments outside City Treasury:		
2009 Series C Certificates of Participation - 525 Golden Gate	459	459
2009 Series D Certificates of Participation - 525 Golden Gate	1,817	1,816
2010 Series A Wastewater revenue bond fund	3,542	3,505
2010 Series B Wastewater revenue bond fund	6,595	6,546
2016 Series A Wastewater revenue bond fund	12,251	21,398
2016 Series B Wastewater revenue bond fund	3,455	6,033
Commercial Paper - Tax Exempt	9	—
Total cash and investments outside City Treasury	28,128	39,757
Interest and other receivables:		
Wastewater revenue bond construction fund including capacity fee receivables	1,149	2,937
Total restricted assets	\$ 54,044	251,030

Restricted assets listed above as cash and investments with City Treasury are held in subfund accounts within the Sewer Revenue Fund of the City Treasury.

(6) Short-Term Debt

Under the voter-approved 2002 Proposition E, in fiscal year 2017 the Commission and Board of Supervisors authorized an increase in the commercial paper authorization to \$750,000 from \$500,000, which authorizes the issuance of up to \$750,000 in commercial paper for the purpose of reconstructing, expanding, repairing, or improving the Enterprise's facilities. The Enterprise had \$111,411 and \$61,000 in commercial paper outstanding as of June 30, 2017 and 2016, respectively.

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

(7) Changes in Long-Term Liabilities

Long-term liability activities for the years ended June 30, 2017 and 2016 are as follows:

	Interest rate *	Maturity (Calendar Year)	2016	Additions	Reductions	2017	Due within one year
Revenue Bonds:							
2010 Series A	4.00% - 5.00%	2021	\$ 47,050	—	(6,935)	40,115	7,295
2010 Series B (Build America)	4.65 - 5.82	2040	192,515	—	—	192,515	—
2013 Series A	1.00 - 5.00	2025	98,585	—	(13,935)	84,650	12,720
2013 Series B	4.00 - 5.00	2042	331,585	—	—	331,585	—
2016 Series A	4.00 - 5.00	2046	240,580	—	—	240,580	—
2016 Series B	4.00 - 5.00	2046	67,820	—	—	67,820	—
For issuance premiums			93,748	—	(6,088)	87,660	—
Total revenue bonds payable			1,071,883	—	(26,958)	1,044,925	20,015
2009 Series C Certificates of Participation (COPs)	2.00 - 5.00	2022	5,000	—	(612)	4,388	643
2009 Series C COPs issuance premiums			222	—	(55)	167	—
2009 Series D COPs (Build America)	6.36 - 6.49	2041	24,458	—	—	24,458	—
Other post-employment benefits obligations			46,053	8,594	(2,977)	51,670	—
Net pension liability			48,177	82,872	(12,142)	118,907	—
Accrued vacation and sick leave			6,545	2,996	(3,592)	5,949	3,429
Accrued workers' compensation			5,658	1,112	(1,190)	5,580	1,031
Damage claims liability			16,633	365	(2,849)	14,149	4,790
Pollution remediation obligation			2,621	90	—	2,711	—
Total			\$ 1,227,250	96,029	(50,375)	1,272,904	29,908

*After adjusting for federal interest subsidy, the true interest costs for revenue bond 2010 Series B and 2009 Series D certificates of participation, both issued as Build America Bonds, are 3.7% and 4.3%, respectively.

	Interest rate *	Maturity (Calendar Year)	2015	Additions	Reductions	2016	Due within one year
Revenue Bonds:							
2010 Series A	4.00% - 5.00%	2021	\$ 47,050	—	—	47,050	6,935
2010 Series B (Build America)	4.65 - 5.82	2040	192,515	—	—	192,515	—
2013 Series A	1.00 - 5.00	2025	129,700	—	(31,115)	98,585	13,935
2013 Series B	4.00 - 5.00	2042	331,585	—	—	331,585	—
2016 Series A	4.00 - 5.00	2046	—	240,580	—	240,580	—
2016 Series B	4.00 - 5.00	2046	—	67,820	—	67,820	—
For issuance premiums			46,335	52,306	(4,893)	93,748	—
Total revenue bonds payable			747,185	360,706	(36,008)	1,071,883	20,870
2009 Series C Certificates of Participation (COPs)	2.00 - 5.00	2022	5,581	—	(581)	5,000	612
2009 Series C COPs issuance premiums			284	—	(62)	222	—
2009 Series D COPs (Build America)	6.36 - 6.49	2041	24,458	—	—	24,458	—
Other post-employment benefits obligations			41,980	6,768	(2,695)	46,053	—
Net pension liability			37,615	23,170	(12,608)	48,177	—
Accrued vacation and sick leave			6,358	3,355	(3,168)	6,545	3,784
Accrued workers' compensation			5,520	1,626	(1,488)	5,658	1,023
Damage claims liability			13,467	6,586	(3,420)	16,633	6,383
Pollution remediation obligation			571	2,050	—	2,621	—
Total			\$ 883,019	404,261	(60,030)	1,227,250	32,672

* After adjusting for federal interest subsidy, the true interest costs for revenue bond 2010 Series B and 2009 Series D certificates of participation, both issued as Build America Bonds, are 3.7% and 4.3%, respectively.

The payments of principal and interest amounts on various bonds are secured by net revenues of the Enterprise.

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

(a) Wastewater Revenue Bonds 2010 Series A

During fiscal year 2010, the Enterprise issued revenue bonds 2010 Series A in the amount of \$47,050 with interest rates ranging from 4.0% to 5.0%. Proceeds from the bonds were used to redeem \$50,000 in outstanding commercial paper notes, fund a cash debt service reserve fund, and pay the costs of issuing the bonds. The bonds were rated “Aa3” and “AA-” by Moody’s and S&P, respectively. Bonds mature through October 1, 2021. The true interest cost is 2.9%. As of June 30, 2017 and 2016, the 2010 Series A bonds’ principal amount outstanding was \$40,115 and \$47,050.

(b) Wastewater Revenue Bonds 2010 Series B

During fiscal year 2010, the Enterprise issued revenue bonds 2010 Series B (Federally Taxable – Build America Bonds – Direct Payment) in the amount of \$192,515 with interest rates ranging from 4.7% to 5.8%. Proceeds from the bonds were used to redeem \$53,500 in outstanding commercial paper notes, provide funding for capital projects in the amount of \$112,429, fund a cash debt service reserve fund, and pay financing costs for the bonds. The bonds were rated “Aa3” and “AA-” by Moody’s and S&P, respectively. Bonds mature through October 1, 2040. The true interest cost is 3.7%. As of June 30, 2017 and 2016, the 2010 Series B bonds’ principal amount outstanding was \$192,515.

(c) Wastewater Revenue Bonds 2013 Series A

In January 2013, the Enterprise issued tax-exempt revenue bonds 2013 Series A in the amount of \$193,400 for the purpose of refunding the remaining portion of the outstanding 2003 Series A bonds maturing on and after October 1, 2013. The bonds carried “Aa3” and “AA-” ratings from Moody’s and S&P, respectively. The 2013 Series A refunding bonds include serial bonds with interest rates varying from 1.0% to 5.0% and have a final maturity in October 2025. The Series A bonds have a true interest cost of 1.2%. The 2013 Series A bonds also refunded the remaining portion of the outstanding state revolving fund loans. The refunding resulted in the recognition of a deferred accounting loss of \$2,986, gross debt service savings of \$35,107 over the next 13 years, and an economic gain of \$32,783 or 15.4% of the refunded principal. As of June 30, 2017 and 2016, the principal amount outstanding of the 2013 Series A bonds was \$84,650 and \$98,585, respectively.

(d) Wastewater Revenue Bonds 2013 Series B

In February 2013, the Enterprise issued revenue bonds 2013 Series B in the amount of \$331,585 with interest rates ranging from 4.0% to 5.0%. Proceeds from the bonds were used for Wastewater capital projects, pay off all outstanding Wastewater commercial paper notes, and pay the costs of issuing the bonds. The bonds were rated “Aa3” and “AA-” by Moody’s and S&P, respectively. Bonds mature through October 1, 2042. The true interest cost is 3.6%. As of June 30, 2017 and 2016, the principal amount outstanding of the 2013 Series B bonds was \$331,585.

(e) Wastewater Revenue Bonds 2016 Series A

In May 2016, the Enterprise issued tax-exempt revenue bonds 2016 Series A (Green Bonds) in the amount of \$240,580 with interest rates ranging from 4.0% to 5.0%. Proceeds from the bonds were used for Wastewater capital projects, to pay off \$53,439 of outstanding commercial paper notes, to fund capitalized interest, and pay the costs of issuing the bonds. The bonds carried ratings of “AA” and “Aa3” from S&P and Moody’s, respectively. Bonds mature through October 1, 2046. The bonds have a true interest cost of 3.2%. As of June 30, 2017 and 2016, the principal amount outstanding of the 2016 Series A bonds was \$240,580.

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

(f) Wastewater Revenue Bonds 2016 Series B

In May 2016, the Enterprise issued tax-exempt revenue bonds 2016 Series B in the amount of \$67,820 with interest rates ranging from 4.0% to 5.0%. Proceeds from the bonds were used for Wastewater capital projects, to pay off \$20,560 of outstanding commercial paper notes, to fund capitalized interest, and pay the costs of issuing the bonds. The bonds carried ratings of “AA” and “Aa3” from S&P and Moody’s, respectively. Bonds mature through October 1, 2046. The bonds have a true interest cost of 3.2%. As of June 30, 2017 and 2016, the principal amount outstanding of the 2016 Series B bonds was \$67,820.

(g) Future Annual Debt Services of Revenue and Refunding Bonds

The following table presents the future annual debt service relating to the revenue and refunding bonds outstanding as of June 30, 2017. The interest before subsidy amounts include the interest for 2010 Series A and B, 2013 Series A and B, and 2016 Series A and B bonds. The federal interest subsidy amounts represent 35% of the interest, excluding sequestration, for the 2010 Series B revenue bonds.

	<u>Principal</u>	<u>Interest before subsidy</u>	<u>Federal interest subsidy*</u>	<u>Interest net of subsidy</u>
Fiscal years ending June 30:				
2018	\$ 20,015	44,128	(3,482)	40,646
2019	21,010	43,191	(3,482)	39,709
2020	22,085	42,201	(3,482)	38,719
2021	23,240	41,118	(3,482)	37,636
2022	22,880	40,015	(3,482)	36,533
2023-2027	122,820	183,358	(15,930)	167,428
2028-2032	157,070	148,134	(12,324)	135,810
2033-2037	196,585	103,602	(7,650)	95,952
2038-2042	241,250	52,901	(2,035)	50,866
2043-2047	130,310	10,362	—	10,362
	<u>957,265</u>	<u>709,010</u>	<u>(55,349)</u>	<u>653,661</u>
Less: Current portion	(20,015)			
Add: Unamortized bond premiums	87,660			
Long-term portion as of June 30, 2017	\$ <u>1,024,910</u>			

* The SFPUC received IRS notice dated August 3, 2016 that the federal interest subsidy on the 2010 Series B bonds is reduced by 6.9%, or a total reduction of \$4,102, due to sequestration over the remaining life of the bonds.

As defined in the Indenture, the principal and interest of the Enterprise’s refunding bonds are payable from its corresponding revenue as well as monies deposited in certain funds and accounts pledged thereto (see Note 5).

(h) Certificates of Participation Issued for the 525 Golden Gate Avenue Headquarters Building

In October 2009, the City issued \$167,670 in certificates of participation to fund the headquarters building of the SFPUC at 525 Golden Gate Avenue. The 2009 Series C were issued for \$38,120 and 2009 Series D for \$129,550 as “Build America Bonds” on a taxable basis under the 2009 American Recovery and Reinvestment Act. The 2009 Series C certificates carry interest rates ranging from 2.0% to 5.0% and mature on November 1, 2022. The 2009 Series D certificates carry interest rates ranging

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

from 6.4% to 6.5% and mature on November 1, 2041. After adjusting for the federal interest subsidy, the true interest cost averages 3.4% and 4.3% for Series C and Series D, respectively.

Under the terms of a memorandum of understanding (MOU) between the City and the SFPUC dated October 1, 2009, the City conveyed the real property to the Trustee, the Bank of New York Mellon Trust Company, N.A., which was replaced by U.S. Bank in March 2014 under a property lease in exchange for the proceeds of the sale of the certificates. The Trustee has leased the property back to the City for the City's use under a project lease. The City is obligated under the project lease to pay base rental payments and other payments to the Trustee each year during the 32-year term of the project lease. The Commission makes annual base rental payments to the City for the building equal to annual debt service on the certificates. It is anticipated these lease costs will be offset with reductions in costs associated with current office rental expense.

Each of the three Enterprises has an ownership interest in the building equal to their projected usage of space as follows: Water (73%), Wastewater (15%), and Power (12%). Similarly, each Enterprise is responsible for a portion of the annual base rental payment based on their ownership percentages less contributed equity. The percentage share of base rental payments for the Enterprises is as follows: Water (71.4%), Wastewater (18.9%), and Power (9.7%).

The future annual debt services relating to the certificates of participation 2009 Series C outstanding as of June 30, 2017 are as follows:

Certificates of Participation 2009			
Series C (Tax Exempt)	Principal	Interest	Total
Fiscal years ending June 30:			
2018	\$ 643	203	846
2019	676	170	846
2020	711	136	847
2021	747	99	846
2022	785	61	846
2023	826	21	847
	<u>4,388</u>	<u>690</u>	<u>5,078</u>
Less: Current portion	(643)		
Add: Unamortized bond premiums	167		
Long-term portion as of June 30, 2017	\$ <u>3,912</u>		

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

The future annual debt services relating to the certificates of participation 2009 Series D outstanding as of June 30, 2017 are as follows:

Certificates of Participation 2009 Series D (Taxable)	Principal	Interest before subsidy	Federal interest subsidy*	Interest net of subsidy
Fiscal years ending June 30:				
2018	\$ —	1,578	(514)	1,064
2019	—	1,578	(514)	1,064
2020	—	1,578	(514)	1,064
2021	—	1,578	(514)	1,064
2022	—	1,578	(514)	1,064
2023-2027	3,678	7,434	(2,422)	5,012
2028-2032	5,539	5,865	(1,912)	3,953
2033-2037	6,825	3,874	(1,262)	2,612
2038-2042	8,416	1,411	(460)	951
Total	<u>—</u>	<u>26,474</u>	<u>(8,626)</u>	<u>17,848</u>
Long-term portion as of June 30, 2017	\$ <u>24,458</u>			

* The SFPUC received IRS notice dated August 3, 2016 that the federal interest subsidy on the 2009 Series D bonds is reduced by 6.9%, or a total reduction of \$639, due to sequestration over the remaining life of the bonds.

(8) Revenue Pledge

The Enterprise has pledged future revenues to repay various revenue bonds. Proceeds from the revenue bonds provided financing for various capital construction projects, and to refund previously issued bonds. The bonds are payable through fiscal year 2047 and are solely from revenues of the Enterprise.

The original amount of revenue bonds issued, total principal and interest remaining, principal and interest paid during fiscal years 2017 and 2016, applicable net revenues, and funds available for debt service are as follows:

	<u>2017</u>	<u>2016</u>
Bonds issued with revenue pledge	\$ 1,072,950	1,072,950
Principal and interest remaining due at the end of the year	1,666,275	1,730,167
Principal and interest paid during the year	60,407	60,022
Net revenues for the year ended June 30	119,989	100,084
Funds available for debt service	251,543	239,931

(9) Employee Benefits

(a) Pension Plan

The Enterprise participates in a cost-sharing multiple-employer defined benefit pension plan (the Plan). The Plan is administered by the San Francisco City and County Employees' Retirement System (SFERS). For purposes of measuring the net pension liability, deferred outflows/inflows of resources related to pensions, pension expense, information about the fiduciary net position of the SFERS plans, and additions to/deductions from the Plan's fiduciary net position have been determined on the same basis as they are reported by Cheiron, the consulting actuary for the Plan. Benefit payments (including refunds of employee contributions) are recognized when currently due and payable in accordance with the benefit terms. Investments are reported at fair value.

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

GASB Statement No. 68 requires that the reported results must pertain to liability and asset information within certain defined timeframes. For this report, the following timeframes are used:

San Francisco Employees's Retirement System - Cost Sharing

Fiscal year 2017	
Valuation Date (VD)	June 30, 2015 updated to June 30, 2016
Measurement Date (MD)	June 30, 2016
Measurement Period (MP)	July 1, 2015 to June 30, 2016

Fiscal year 2016	
Valuation Date (VD)	June 30, 2014 updated to June 30, 2015
Measurement Date (MD)	June 30, 2015
Measurement Period (MP)	July 1, 2014 to June 30, 2015

The City is an employer of the plan with a proportionate share of 94.22% as of June 30, 2016, and 93.90% as of June 30, 2015 (measurement date). The Enterprise's allocation percentage was determined based on the Enterprise's employer contributions divided by the City's total employer contributions for fiscal year 2016. The Enterprise's net pension liability, deferred outflows/inflows of resources related to pensions, amortization of deferred outflows/inflows, and pension expense to each department are based on its allocated percentage. The Enterprise's allocation of the City's proportionate share was 2.17% as of June 30, 2016, and 7.46% as of June 30, 2015 (measurement date).

Plan Description – The Plan provides basic service retirement, disability, and death benefits based on specified percentages of defined final average monthly salary and provides annual cost of living adjustments (COLA) after retirement. The Plan also provides pension continuation benefits to qualified survivors. The City Charter and the Administrative Code are the authorities, which establish and amend the benefit provisions and employer obligations of the Plan. 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 Employees' Retirement System, 1145 Market Street, 5th Floor, San Francisco, CA 94103, or by calling (415) 487-7000.

Benefits – The Retirement System provides service retirement, disability, and death benefits based on specified percentages of defined final average monthly salary and annual COLA after retirement. Benefits and refunds are recognized when due and payable in accordance with the terms of the Plan. The Retirement System pays benefits according to the category of employment and the type of benefit coverage provided by the City. The four main categories of plan members are:

- a) Miscellaneous Non-Safety Members – staff, operational, supervisory, and all other eligible employees who are not in special membership categories.
- b) Sheriff's Department and Miscellaneous Safety Members – Sheriffs assuming office on and after January 7, 2012, and undersheriffs, deputized personnel of the Sheriff's Department, and miscellaneous safety employees hired on and after January 7, 2012.

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

- c) Firefighter Members – firefighters and other employees whose principal duties are in fire prevention and suppression work or who occupy positions designated by law as firefighter member positions.
- d) Police Members – police officers and other employees whose principal duties are in active law enforcement or who occupy positions designated by law as police member positions.

The membership groups and the related service retirement benefits are included in the Notes to the Basic Financial Statements of San Francisco Employees' Retirement System.

All members are eligible to apply for a disability retirement benefit, regardless of age, when they have 10 or more years of credited service and they sustain an injury or illness that prevents them from performing their duties. Safety members are eligible to apply for an industrial disability retirement benefit from their first day on the job if their disability is caused by an illness or injury that they receive while performing their duties.

All retired members receive a benefit adjustment each July 1, which is the Basic COLA. The majority of adjustments are determined by changes in Consumer Price Index with increases capped at 2%. The Plan provides for a Supplemental COLA in years when there are sufficient "excess" investment earnings in the Plan. The maximum benefit adjustment each July 1 is 3.5% including the Basic COLA. Effective July 1, 2012, voters approved changes in the criteria for payment of the Supplemental COLA benefit, so that Supplemental COLAs would only be paid when the Plan is also fully funded on a market value of assets basis. Certain provision of this voter-approved proposition were challenged in the Courts. A decision by the California Courts modified the interpretation of the proposition. Effective July 1, 2012, members who retired before November 6, 1996 will receive a Supplemental COLA only when the Plan is also fully funded on a market value of assets basis. However, the "full funding" requirement does not apply to members who retired on or after November 6, 1996 and were hired before January 7, 2012. For all members hired before January 7, 2012, all Supplemental COLAs paid to them in retirement benefits will continue into the future even where an additional Supplemental COLA is not payable in any given year. For members hired on and after January 7, 2012, a Supplemental COLA will only be paid to retirees when the Plan is fully funded on a market value of asset basis and in addition for these members, Supplemental COLAs will not be permanent adjustments to retirement benefits. That is, in years when a Supplemental COLA is not paid, all previously paid Supplemental COLAs will expire.

Funding & Contribution Policy – Contributions are made to the basic plan by both the City and the participating employees. Employee contributions are mandatory as required by the Charter. Employee contribution rates for fiscal year 2017 varied from 7.5% to 12.0% as a percentage of gross covered salary. Most employee groups agreed through collective bargaining for employees to contribute the full amount of the employee contributions on a pretax basis. The Enterprise is required to contribute at an actuarially determined rate. Based on the July 1, 2015 actuarial report, the required employer contribution rate for fiscal year 2017 was 17.90% to 21.40%.

Employer contributions and employee contributions made by the employer to the Plan are recognized when due and the employer has made a formal commitment to provide the contributions. The City's proportionate share of employer contributions recognized by the Retirement System in fiscal year ended June 30, 2016 and 2015 (measurement periods) were \$496,343 and \$556,511, respectively. The

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

Enterprise's allocation of employer contributions for fiscal year 2016 and 2015 (measurement periods) were \$10,930 and \$12,608, respectively.

Pension Liabilities, Pension Expenses, Deferred Outflows, and Inflows of Resources Related to Pensions

Fiscal Year 2017

The City reported net pension liabilities for its proportionate share of the pension liability of the Plan of \$5,476,653, as of June 30, 2017. The City's net pension liability for the Plan is measured as the proportionate share of the net pension liability. The net pension liability of the Plan is measured as of June 30, 2016 (measurement date), and the total pension liability for the Plan used to calculate the net pension liability was determined by an actuarial valuation as of June 30, 2015 rolled forward to June 30, 2016 using standard update procedures. The City's proportion of the net pension liability was based on a projection of the City's long-term share of contributions to the pension plan relative to the projected contributions of all participating employers, actuarially determined. The Enterprise's allocation of the City's proportionate share of the net pension liability for each Plan as of June 30, 2017 and 2016 (reporting years) was \$118,907 and \$48,177, respectively. During the measurement year 2016, the increase in service costs, interest costs, change in benefits, change in assumptions, and difference between projected and actual investment earnings increased total pension liability. This was only partially offset by an increase in the discount rate, contributions, investment income, and actuarial experience gains, resulting in an overall increase in net pension liability.

For the year ended June 30, 2017, the City's recognized pension expenses was \$1,808,992 including amortization of deferred outflow/inflow related pension items. The Enterprise's allocation of pension expense including amortization of deferred outflow/inflow related pension items was \$37,189. Pension expense increased significantly, largely due to the impact of changes in benefits, namely the updated Supplemental COLA assumptions and amortization of deferred inflows/outflows.

As of June 30, 2017, the Enterprise's reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

Fiscal Year 2017 Schedule of Deferred Outflows and Inflows of Resources		
	Deferred Outflows of Resources	Deferred Inflows of Resources
Pension contribution subsequent to measurement date	\$ 11,270	—
Differences between expected and actual experience	—	4,382
Changes in assumptions	20,455	600
Net difference between projected and actual earnings on pension plan investments	16,258	—
Change in employer's proportion	209	111
Total	\$ 48,192	5,093

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

Amounts reported as deferred outflows, exclusive of contributions made after the measurement date, and deferred inflows of resources will be amortized annually and recognized in pension expense as follows:

<u>Fiscal years</u>	<u>Deferred Outflows/(Inflows) of Resources</u>
2018	\$ 4,684
2019	4,684
2020	12,797
2021	9,664
\$	<u>31,829</u>

Fiscal Year 2016

The City reported net pension liabilities for its proportionate share of the pension liability of the Plan of \$2,156,049 as of June 30, 2016. The City's net pension liability for the Plan is measured as the proportionate share of the net pension liability. The net pension liability of the Plan for June 30, 2016 is measured as of June 30, 2015, and the total pension liability for the Plan used to calculate the net pension liability was determined by an actuarial valuation as of June 30, 2014 rolled forward to June 30, 2015 using standard update procedures. The City's proportion of the net pension liability was based on a projection of the City's long-term share of contributions to the pension plan relative to the projected contributions of all participating employers, actuarially determined. The Enterprise's allocation of the City's proportionate share of the net pension liability for the Plan as of June 30, 2015 (MP) and 2014 (MP) was \$48,177 and \$37,615 respectively. During the measurement year 2015, there were no changes to benefits. The increase in service costs, interest costs, and decrease in the discount rate increased total pension liability and were only partially offset by contributions, investment income, and actuarial experience gains, resulting in an overall increase in net pension liability.

For the year ended June 30, 2016, the City's recognized pension expense was \$106,499 including amortization of deferred outflow/inflow related pension items. The Enterprise's allocation of pension expense including amortization of deferred outflow/inflow related pension items was \$2,110 for fiscal year 2016.

As of June 30, 2016, the Enterprise's reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

<u>Fiscal Year 2016 Schedule of Deferred Outflows and Inflows of Resources</u>	<u>Deferred Outflows of Resources</u>	<u>Deferred Inflows of Resources</u>
Pension contribution subsequent to measurement date	\$ 10,930	—
Differences between expected and actual experience	—	3,275
Changes in assumptions	3,587	938
Net difference between projected and actual earnings on pension plan investments	—	11,914
Change in employer's proportion	72	174
Total	<u>\$ 14,589</u>	<u>16,301</u>

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

Amounts reported as deferred outflows as of June 30, 2016, exclusive of \$10,930 contributions made after the measurement date, and deferred inflows of resources will be recognized in pension expense as follows:

<u>Fiscal years</u>	<u>Deferred Outflows/(Inflows) of Resources</u>
2017	\$ (5,270)
2018	(5,270)
2019	(5,270)
2020	3,168
	<u>\$ (12,642)</u>

Actuarial Assumptions

Fiscal Year 2017

A summary of the actuarial assumptions and methods used to calculate the Total Pension Liability as of June 30, 2016 (measurement period) is provided below, including any assumptions that differ from those used in the July 1, 2015 actuarial valuation. Refer to the July 1, 2015 actuarial valuation report for a complete description of all other assumptions, which can be found on the Retirement System's website <http://mysfers.org>.

Key Actuarial Assumptions

Valuation Date	June 30, 2015 updated to June 30, 2016			
Measurement Date	June 30, 2016			
Actuarial Cost Method	Entry - Age Normal Cost Method			
Expected Rate of Return	7.50%			
Municipal Bond Yield	3.85% as of June 30, 2015 2.85% as of June 30, 2016 Bond Buyer 20 - Bond GO Index, July 2, 2015 and June 30, 2016			
Inflation	3.25%			
Salary Increases	3.75% plus merit component based on employee classification and years of service			
Discount Rate	7.46% as of June 30, 2015 7.50% as of June 30, 2016			
Administrative Expenses	0.45% of payroll as of June 30, 2015 0.60% of payroll as of June 30, 2016			
	Old Miscellaneous and All New	Old Police & Fire, pre 7/1/75	Old Police & Fire, Charters A8.595 and A8.596	Old Police & Fire, Charters A8.559 and A8.585
Basic COLA	<u>Plans</u>	<u></u>	<u></u>	<u></u>
June 30, 2015	2.00%	3.00%	4.00%	5.00%
June 30, 2016	2.00%	2.70%	3.30%	4.40%

Mortality rates for active members and healthy annuitants were based upon adjusted Employee and Healthy Annuitant CalPERS mortality tables projected generationally from the 2009 base year using a modified version of the MP-2015 projection scale.

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

Fiscal Year 2016

A summary of the actuarial assumptions and methods used to calculate the total pension liability as of June 30, 2015 is provided below, including any assumptions that differ from those used in the July 1, 2014 actuarial valuation. Refer to the July 1, 2014 actuarial valuation report for a complete description of all other assumptions, which can be found on the Retirement System's website <http://mysfers.org>.

Key Actuarial Assumptions

Valuation Date	June 30, 2014 updated to June 30, 2015
Measurement Date	June 30, 2015
Actuarial Cost Method	Entry - Age Normal Cost Method
Expected Rate of Return	7.50%
Municipal Bond Yield	4.31% as of June 30, 2014 3.85% as of June 30, 2015 Bond Buyer 20 - Bond GO Index, July 2, 2014 and June 30, 2015
Inflation	3.25%
Salary Increases	3.75% plus merit component based on employee classification and years of service
Discount Rate	7.58% as of June 30, 2014 7.46% as of June 30, 2015
Administrative Expenses	0.45% of payroll as of June 30, 2015

	Old Miscellaneous and All New Plans	Old Police & Fire, pre 7/1/75 Retirements	Old Police & Fire, Charters A8.595 and A8.596	Old Police & Fire, Charters A8.559 and A8.585
Basic COLA	2.00%	3.00%	4.00%	5.00%

Mortality rates for active members were based upon the RP-2000 Employee Tables for Males and Females projected using Scale AA to 2030 for females and to 2005 for males. Mortality rates for healthy annuitants were based upon the RP-2000 Healthy Annuitant Tables for Males and Females projected using Scale AA to 2020.

Discount Rate

Fiscal Year 2017

The beginning and end of year measurements are based on different assumptions and contribution methods that result in different discount rates. The discount rate was 7.50% as of the June 30, 2016 measurement date and 7.46% as of June 30, 2015 measurement date.

The discount rate used to measure the total pension liability as of the June 30, 2016 measurement date was 7.50%. The projection of cash flows used to determine the discount rate assumed that plan member contributions will continue to be made at the rates specified in the Charter. Employer contributions were assumed to be made in accordance with the contribution policy in effect for July 1, 2015 actuarial valuation. That policy includes contributions equal to the employer portion of the Entry

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

Age normal costs for members as of the valuation date, a payment for the expected administrative expenses, and an amortization payment on the unfunded actuarial liability.

The amortization payment is based on closed periods that vary in length depending on the source. Charter amendments prior to July 1, 2014 are amortized over 20 years. After July 1, 2014, any Charter changes to active member benefits are amortized over 15 years and changes to inactive member benefits, including Supplemental COLAs, are amortized over 5 years. The remaining unfunded actuarial liability not attributable to Charter amendments as of July 1, 2013 is amortized over a 19-year period commencing July 1, 2014. Experience gains and losses and assumption or method changes on or after July 1, 2014 are amortized over 20 years. For the July 1, 2016 valuation, the increase in the unfunded actuarial liability attributable to the Supplemental COLAs granted on July 1, 2013 and July 1, 2014 are amortized over 17-years and 5-years, respectively. All amortization schedules are established as a level percentage of payroll so payments increase 3.75% each year. The unfunded actuarial liability is based on an actuarial value of assets that smooths investment gains and losses over five years and a measurement of the actuarial liability that excludes the value of any future Supplemental COLAs.

While the contributions and measure of actuarial liability in the valuation do not anticipate any Supplemental COLAs, the projected contributions for the determination of the discount rate include the anticipated future amortization payments on future Supplemental COLA's for current members when they are expected to be granted. For members who worked after November 6, 1996 and before Proposition C passed, a Supplemental COLA is granted if the actual investment earnings during the year exceed the expected investment earnings on the actuarial value of assets. For members who did not work after November 6, 1996 and before Proposition C passed, the market value of assets must also exceed the actuarial liability at the beginning of the year for the Supplemental COLA to be granted. When a Supplemental COLA is granted, the amount depends on the amount of excess earnings and the basic COLA amount for each membership group. The large majority of members receive a 1.50% Supplemental COLA when granted.

Because the probability of a Supplemental COLA depends on the current funded level of the System for certain members, Cheiron developed an assumption as of the June 30, 2016 measurement date for the probability and amount of Supplemental COLA for each future year. The table below shows the net assumed Supplemental COLA for member with a 2.00% basic COLAs for sample years.

Assumed Supplemental COLA for Members with a 2.00% Basic COLA

<u>Fiscal years</u>	<u>96 - Prop C</u>	<u>Before 11/6/96</u>
		<u>or After Prop C</u>
2018	0.750 %	0.000 %
2023	0.750	0.220
2028	0.750	0.322
2033	0.750	0.370
2038+	0.750	0.375

The projection of benefit payments to current members for determining the discount rate includes the payment of anticipated future Supplemental COLAs.

Based on these assumptions, the Retirement System's fiduciary net position was projected to be available to make projected future benefit payments for current members until fiscal year end 2093

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

when only a portion of the projected benefit payments can be made from the projected fiduciary net position. Projected benefit payments are discounted at the long-term expected return on assets of 7.50% to the extent the fiduciary net position is available to make the payments and at the municipal bond rate of 2.85% to the extent they are not available. The single equivalent rate used to determine the total pension liability as of the June 30, 2016 measurement date was 7.50%.

The long-term expected rate of return on pension plan investments was 7.50%. It was set by the Retirement Board after consideration of both expected future returns and historical returns experienced by the Retirement System. Expected future returns were determined by using a building-block method in which best-estimate ranges of expected future real rates of return were developed for each major asset class. These ranges were combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Target allocation and best estimates of geometric long-term expected real rates of return (net of pension plan investment expense and inflation) for each major asset class are summarized in the following table.

Long-Term Expected Real Rates of Return

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Global Equity	40.0 %	5.1 %
Fixed Income	20.0	1.1
Private Equity	18.0	6.3
Real Assets	17.0	4.3
Hedge Funds/Absolute Returns	5.0	3.3
Total	100.0	

Fiscal Year 2016

The beginning and end of year measurements are based on different assumptions and contribution methods that result in different discount rates. The discount rate was 7.46% as of June 30, 2015 and 7.58% as of June 30, 2014.

The discount rate used to measure the total pension liability as of June 30, 2015 was 7.46%. The projection of cash flows used to determine the discount rate assumed that plan member contributions will continue to be made at the rates specified in the Charter. Employer contributions were assumed to be made in accordance with the contribution policy in effect for July 1, 2014 actuarial valuation. That policy includes contributions equal to the employer portion of the Entry Age normal costs for members as of the valuation date, a payment for the expected administrative expenses, and an amortization payment on the unfunded actuarial liability. The amortization payment is based on closed periods that vary in length depending on the source. Charter amendments prior to July 1, 2014 are amortized over 20 years. After July 1, 2014, any Charter changes to active member benefits are amortized over 15 years and changes to inactive member benefits, including Supplemental COLAs, are amortized over 5 years. The remaining unfunded actuarial liability not attributable to Charter amendments as of July 1, 2013 is amortized over a 19-year period commencing July 1, 2014. Experience gains and losses and assumption or method changes on or after July 1, 2014 are amortized over 20 years. All amortization schedules are established as a level percentage of payroll so payments increase 3.75% each year. The unfunded actuarial liability is based on an actuarial value of assets that smooths investment gains and

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

losses over five years and a measurement of the actuarial liability that excludes the value of any future Supplemental COLAs.

While the contributions and measure of actuarial liability in the valuation do not anticipate any Supplemental COLAs, the projected contributions for the determination of the discount rate include the anticipated future amortization payments on future Supplemental COLA's for current members when they are expected to be granted. For a Supplemental COLA to be granted the market value of assets must exceed the actuarial liability at the beginning of the year and the actual investment earnings during the year must exceed the expected investment earnings on the actuarial value of assets. When a Supplemental COLA is granted, the amount depends on the amount of excess earnings and the basic COLA amount for each membership group. In most cases, the large majority of members receive a 1.50% Supplemental COLA.

Because the probability of a Supplemental COLA depends on the current funded level of the system, we developed an assumption as of June 30, 2015 of the probability and amount of Supplemental COLA for each future year. The table below shows the net assumed Supplemental COLAs for member with a 2.00% basic COLAs for sample years.

Assumed Supplemental COLA for Members with a 2.00% Basic COLA

<u>Fiscal years</u>	<u>Assumption</u>
2016	0.000 %
2021	0.345
2026	0.375
2031	0.375
2036+	0.375

The projection of benefit payments to current members for determining the discount rate includes the payment of anticipated future Supplemental COLAs.

Based on these assumptions, the Retirement System's fiduciary net position was projected to be available to make projected future benefit payments for current members until fiscal year end 2076 when only a portion of the projected benefit payments can be made from the projected fiduciary net position. Projected benefit payments are discounted at the long-term expected return on assets of 7.50% to the extent the fiduciary net position is available to make the payments and at the municipal bond rate of 3.85% to the extent they are not available. The single equivalent rate used to determine the total pension liability as of June 30, 2015 is 7.46%.

The long-term expected rate of return on pension plan investments was 7.50%. It was set by the Retirement Board after consideration of both expected future returns and historical returns experienced by the Retirement System. Expected future returns were determined by using a building-block method in which best-estimate ranges of expected future real rates of return were developed for each major asset class. These ranges were combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation.

Target allocation and best estimates of geometric long-term expected real rates of return (net of pension plan investment expense and inflation) for each major asset class are summarized in the following table.

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

Long- Term Expected Real Rates of Return

<u>Asset Class</u>	<u>Target Allocation</u>	<u>Long-Term Expected Real Rate of Return</u>
Global Equity	40.0 %	5.1 %
Fixed Income	20.0	1.2
Private Equity	18.0	7.5
Real Assets	17.0	4.1
Hedge Funds/Absolute Returns	5.0	3.5
Total	<u>100.0</u>	

Sensitivity of Proportionate Share of the Net Pension Liability to Changes in the Discount Rate – The following presents the Enterprise’s allocation of the employer’s proportionate share of the net pension liability for the Plan, calculated using the discount rate, as well as what the Enterprise’s allocation of the employer’s proportionate share of the net pension liability would be if it were calculated using a discount rate that is 1% lower or 1% higher than the current rate.

Fiscal Year 2017

<u>Employer</u>	<u>1% Decrease Share of NPL @ 6.50%</u>	<u>Share of NPL @ 7.50%</u>	<u>1% Increase Share of NPL @ 8.50%</u>
Wastewater	\$ 188,430	118,907	61,403

Fiscal Year 2016

<u>Employer</u>	<u>1% Decrease Share of NPL @ 6.46%</u>	<u>Share of NPL @ 7.46%</u>	<u>1% Increase Share of NPL @ 8.46%</u>
Wastewater	\$ 106,536	48,177	(766)

(b) Healthcare Benefits

Healthcare benefits for the Enterprise 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 Enterprise’s annual contribution for both active and retired employees was \$11,281 and \$10,509 in 2017 and 2016, respectively. Included in these amounts are \$2,977 and \$2,695 in 2017 and 2016, respectively, to provide post-retirement benefits for the Enterprise’s 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 (OPEB) other than pensions obligations, ARC adjustment, and OPEB cost based upon an actuarial valuation performed in accordance with GASB Statement No. 45, *Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions*, 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.

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

The following table shows the components of the City's annual OPEB allocations for the Enterprise based upon its percentage of citywide payroll costs for the years ended June 30, 2017 and 2016, for the amount contributed to the plan, and changes in the City's net OPEB obligations:

	2017	2016
Annual required contribution	\$ 7,397	6,389
Interest on net OPEB obligations	2,010	2,029
Adjustment to ARC	(813)	(1,650)
Annual OPEB cost	8,594	6,768
Contribution made	(2,977)	(2,695)
Increase in net OPEB obligations	5,617	4,073
Net OPEB obligations - beginning of year	46,053	41,980
Net OPEB obligations - end of year	\$ 51,670	46,053

The City issues a publicly available financial report at a citywide level that includes the complete note disclosures and Required Supplementary Information (RSI) related to the City's post-retirement healthcare 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.

(10) Related Parties

Various common costs incurred by the Commission are allocated among the Enterprise, Hetch Hetchy Water and Power and CleanPowerSF, and the Water Enterprise. The allocations are based on the Commission management's best estimate and may change from year to year depending on the activities incurred by each Enterprise and the information available. The administrative costs of \$26,253 or 31.8% and \$26,057 or 31.8% were allocated to the Enterprise for the years ended June 30, 2017 and 2016, respectively.

The City performs certain administrative services such as maintenance of accounting records and investment of cash for all fund groups within the City. The various funds are charged for these services based on the City's indirect cost allocation plan.

The Enterprise purchases electricity from Hetch Hetchy Power at market rates. This amount, totaling \$10,738 and \$9,915 for the years ended June 30, 2017 and 2016, respectively, has been included in services provided by other departments in the accompanying financial statements.

The Enterprise provides sewer services to other City departments at non-residential rates established by the Commission, and through the Customer Services Department, bills and collects sewer service charges on behalf of the Enterprise.

The City's Department of Public Works provides certain engineering and other services to the Enterprise and charges amounts designed to recover its costs. These services are primarily related to street cleaning, engineering, building repair, and sewer repair. These amounts totaling approximately \$13,586 and \$14,044 for the years ended June 30, 2017 and 2016, respectively, have been included in services provided by other departments in the accompanying financial statements.

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

A variety of other City departments provide services such as purchasing, legal, data processing, telecommunications, and human resources to the Enterprise and charge amounts designed to recover those departments' costs. These charges totaling approximately \$12,508 and \$12,198 for the years ended June 30, 2017 and 2016, respectively, have been included in services provided by other departments in the accompanying financial statements.

As of June 30, 2017, the Enterprise has payables in the amount of \$1,250, of which \$1,166 is associated with the SFPUC Headquarters Living Machine system and \$84 to the Department of Public Works for the street repairs and maintenance of the Southeast Wastewater Treatment Plant and Community Center.

SFPUC's 75-year lease agreement with the San Francisco Recreation and Parks Department, for the use of parking spaces for its fleet of vehicles at the Civic Center Garage, commenced on February 1, 2011. Total payment under this agreement is \$6,274, which was fully made as of fiscal year 2015. The expenses and prepayments among the three SFPUC Enterprises are based on 525 Golden Gate occupancy. As of June 30, 2017, the Enterprise's allocable shares of expenses and prepayment were \$21 and \$1,254, respectively, and as of June 30, 2016 were \$19 and \$1,275, respectively.

(11) Risk Management

The Enterprise's Risk Management program includes both self-insured (i.e., self-retention) and insured exposures at risk. Risk assessments and purchasing of insurance coverage are collaboratively coordinated by SFPUC Risk Management and the City's Office of Risk Management. With certain exceptions, the City and the Enterprise's general approach is to first evaluate the exposure at risk for self-insurance. Based on this analysis, internal mitigation strategies and financing through a self-retention mechanism is generally more economical as the SFPUC in coordination with the City Attorney's Office administers, adjusts, settles, defends, and pays claims from budgeted resources (i.e., pay-as-you-go fund). When economically more viable or when required by debt financing covenants, the Enterprise obtains commercial insurance. At least annually, the City actuarially determines general liability and workers' compensation risk exposures. The Enterprise does not maintain commercial earthquake coverage, with certain minor exceptions, such as a sub-limit for fire-sprinkler leakage due to earthquake under the SFPUC Property Insurance program.

Primary Risks	Typical Coverage Approach
General liability	Self-Insured
Property	Purchased Insurance and Self-Insured
Electronic data processing	Purchased Insurance and Self-Insured
Workers' compensation	Self-Insured through Citywide Pool
Other Risks	Typical Coverage Approach
Surety bonds	Purchased and Contractually Transferred
Errors and omissions	Combination of Self-Insured and Contractual Risk Transfer
Professional liability	Combination of Self-Insured and Contractual Risk Transfer
Public officials liability	Purchased Insurance
Employment practices liability	Purchased Insurance
Builders' risk	Contractually Transferred
Crime	Purchased Insurance

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

(a) General Liability

Through coordination with the Controller and the City Attorney’s Office, the general liability risk exposure is actuarially determined and is addressed through pay-as-you-go funding as part of the budgetary process. Associated costs and estimates are booked as expenses as required under GAAP for financial statement purposes for both the Enterprise and the City and County of San Francisco’s Comprehensive Annual Financial Report. The claim expense allocations are determined based on actuarially determined anticipated claim payments and the projected timing of disbursement.

The changes for the general liability (damage claims) for the years ended June 30, 2017 and 2016 were as follows:

<u>Fiscal years</u>	<u>Beginning of year</u>	<u>Claims and changes in estimates</u>	<u>Claims paid</u>	<u>End of year</u>
2017	\$ 16,633	365	(2,849)	14,149
2016	13,467	6,586	(3,420)	16,633

(b) Property and Electronic Data Processing

The Enterprise’s property risk management approach varies depending on whether the facility is currently under construction, the property is part of revenue-generating operations, the property is of high value, or is mission-critical in nature. During the course of construction, the Enterprise requires each contractor to provide its own insurance, while ensuring the full scope of work be covered with satisfactory levels to limit the Enterprise’s risk exposure. Once construction is complete, the Enterprise performs an assessment to determine whether liability/loss coverage will be obtained through the commercial property policy or self-insurance. The majority of property scheduled in the insurance program is for either: (1) revenue generating facilities, (2) debt financed facilities, (3) mandated coverage to meet statutory requirements for bonding of various public officials, or (4) high-value, mission-critical property or equipment. The Electronic Data Processing policy protects selected high-value electronic property in case of damage or loss.

(c) Workers’ Compensation

The City actuarially determines and allocates workers’ compensation costs to the Enterprise according to a formula based on the following: (i) the dollar amount of claims; (ii) yearly projections of payments based on historical experience; and (iii) the size of the Enterprise’s payroll. The administration of workers’ compensation claims and payouts are handled by the Workers’ Compensation Division of the City’s Department of Human Resources. Statewide workers’ compensation reforms have resulted in budgetary savings in recent years. The City continues to develop and implement improved programs, such as return-to-work programs, to lower or mitigate the growth of workers’ compensation costs. Programs include accident prevention, investigation, and duty modification for injured employees with medical restrictions so return to work can occur as soon as possible.

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

The changes in the liabilities for workers' compensation for the years ended June 30, 2017 and 2016 were as follows:

<u>Fiscal years</u>	<u>Beginning of year</u>	<u>Claims and changes in estimates</u>	<u>Claims paid</u>	<u>End of year</u>
2017	\$ 5,658	1,112	(1,190)	5,580
2016	5,520	1,626	(1,488)	5,658

(d) Surety Bonds

Bonds are required in most phases of the public utilities 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.

(e) Errors and Omissions, Professional Liability

Errors and omissions and professional liability are commonly 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. Examples of such contracts are inclusive of services provided by engineers, architects, design professionals, and other licensed or certified professional service providers.

(f) Public Officials Liability, Employment Practices Liability

All Enterprise public officials with financial oversight responsibilities are provided coverage through a commercial Public Officials Liability Policy. An Employment Practices Liability Policy is retained to protect against employment-related claims and liabilities.

(g) Builders' Risk

Builders' risk policies of insurance are required to be provided by the contractor on all construction projects for the full value of construction.

(h) Crime

The Enterprise also retains a Commercial Crime Policy, in lieu of bonding its employees, to provide coverage against liabilities or losses due to third-party crime or employee fraud.

(12) Commitments and Litigation

(a) Commitments

As of June 30, 2017 and 2016, the Enterprise has outstanding commitments with third parties of \$229,714 and \$190,743, respectively, for various capital projects and other purchase agreements for materials and services.

(b) Grants

Grants that the Enterprise received are subject to audit and final acceptance by the granting agency. Current and prior year costs of such grants are subject to adjustment upon audit.

SAN FRANCISCO WASTEWATER ENTERPRISE

Notes to Financial Statements

June 30, 2017 and 2016

(Dollars in thousands, unless otherwise stated)

(c) *Litigation*

The Enterprise is a defendant in various legal actions and claims that arise during the normal course of business. The final disposition of these legal actions and claims is not determinable. However, in the opinion of management, the outcome of any litigation of these matters will not have a material effect on the financial position or changes in net position of the Enterprise.

(d) *Environmental Issue*

As of June 30, 2017 and 2016, the Enterprise recorded \$2,711 and \$2,621 in pollution remediation liability, respectively. This increase of \$90 in pollution remediation liability in fiscal year 2017 is due to higher cleanup cost estimate for hazardous materials at the Southeast Wastewater Treatment Plant. As of June 30, 2017, the pollution remediation liability of \$2,711 consisted of \$2,000 for the Yosemite Creek, \$611 penalties and fines to the State of California Regional Water Board, and \$100 for the Southeast Wastewater Treatment Plant hazard materials. As of June 30, 2016, the pollution remediation liability of \$2,621 consisted of \$2,000 for the Yosemite Creek, \$611 penalties and fines to the State of California Regional Water Board, of which \$380 for the discharge of chlorinated treated wastewater at Southeast Wastewater Treatment Plant and \$231 for the discharge of partially treated wastewater at Oceanside Treatment Plant, and \$10 for the Southeast Wastewater Treatment Plant.

(13) Subsequent Event

(a) *CWSRF Loans*

In September 2017, the SFPUC entered into Installment Sale Agreements with the State Water Resources Control Board for three Clean Water State Revolving Fund (“CWSRF”) Loans to fund certain projects of the Enterprise’s Sewer System Improvement Program. The aggregate amount of the CWSRF loans is \$94,651. They will each bear an interest rate equal to one-half of the State of California’s most recent 30-year General Obligation Bond true interest cost. The CWSRF loans will each have a 30-year term, with loan repayment beginning one year after substantial completion of each project’s construction. The CWSRF loans are secured on a parity lien basis with the Enterprise’s outstanding revenue bonds.



KPMG LLP
Suite 1400
55 Second Street
San Francisco, CA 94105

Independent Auditors' Report on Internal Control over Financial Reporting and on Compliance and Other Matters Based on an Audit of Financial Statements Performed in Accordance with *Government Auditing Standards*

The Honorable Mayor and Board of Supervisors
City and County of San Francisco:

We have audited, in accordance with the auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States, the financial statements of the San Francisco Wastewater Enterprise (the Enterprise), an enterprise fund of the City and County of San Francisco, California (the City), which comprise the statement of financial position as of June 30, 2017, and the related statements of revenues, expenses, and changes in net position, and cash flows for the year then ended, and the related notes to the financial statements, and have issued our report thereon dated November 8, 2017.

Internal Control over Financial Reporting

In planning and performing our audit of the financial statements, we considered the Enterprise's internal control over financial reporting (internal control) to determine the audit procedures that are appropriate in the circumstances for the purpose of expressing our opinion on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of the Enterprise's internal control. Accordingly, we do not express an opinion on the effectiveness of the Enterprise's internal control.

A deficiency in internal control exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A material weakness is a deficiency, or combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected on a timely basis. A significant deficiency is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

Compliance and Other Matters

As part of obtaining reasonable assurance about whether the Enterprise's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.



Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the Enterprise's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the Enterprise's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

KPMG LLP

San Francisco, California
November 8, 2017



San Francisco Public Utilities Commission
A Department of the City and County of
San Francisco, California

Photos by: Robin Scheswohl

如果您需要中文翻譯, 請致電: (415) 554-3289.

Si necesita una traducción o asistencia en
español llame al: (415) 554-3289.

Communications Division

Date of Publication: November 2017

OUR MISSION

To provide our customers with high-quality, efficient and reliable water, power and sewer services in a manner that values environmental and community interests and sustains the resources entrusted to our care.

Financial Services

525 Golden Gate Avenue, 4th Floor
San Francisco, CA 94102-3220
sfwater.org



APPENDIX C

PROPOSED FORM OF OPINION OF CO-BOND COUNSEL

Upon issuance of the Bonds, Stradling Yocca Carlson & Rauth, a Professional Corporation, and Curls Bartling P.C., Co-Bond Counsel, propose to render their final approving opinions in substantially the following form:

August 9, 2018

Public Utilities Commission of the City and County of San Francisco
525 Golden Gate Avenue
San Francisco, California 94102

\$229,050,000
Public Utilities Commission
of the City and County of San Francisco
Wastewater Revenue Bonds,
2018 Series A (Green Bonds)

\$185,950,000
Public Utilities Commission
of the City and County of San Francisco
Wastewater Revenue Bonds,
2018 Series B

\$179,145,000
Public Utilities Commission
of the City and County of San Francisco
Wastewater Revenue Bonds,
2018 Series C (Green Bonds)

Members of the Commission:

We have acted as co-bond counsel to the Public Utilities Commission of the City and County of San Francisco (the "Commission"), a commission duly constituted under the Charter (the "Charter") of the City and County of San Francisco (the "City"), in connection with the issuance of the Commission's Wastewater Revenue Bonds, 2018 Series A (Green Bonds) (the "2018 Series A Bonds"), in the aggregate principal amount of \$229,050,000, its Wastewater Revenue Bonds, 2018 Series B (the "2018 Series B Bonds"), in the aggregate principal amount of \$185,950,000, and its Wastewater Revenue Bonds, 2018 Series C (Green Bonds) (the "2018 Series C Bonds"), in the aggregate principal amount of \$179,145,000 (the 2018 Series A Bonds, the 2018 Series B Bonds and the 2018 Series C Bonds being collectively referred to as the "Bonds").

The 2018 Series A Bonds and the 2018 Series B Bonds are being issued pursuant to authority granted by the Charter of the City, and an Indenture, dated as of January 1, 2003, as amended and supplemented, including as amended and supplemented by the Sixth Supplemental Indenture, dated as of July 1, 2018 (as amended and supplemented, the "Original Indenture"), and as further supplemented by a Seventh Supplemental Indenture, dated as of August 1, 2018 (the "Seventh Supplemental Indenture"), each by and between the Commission and U.S. Bank National Association, as trustee (the "Trustee"). The 2018 Series C Bonds are being issued pursuant to authority granted by the Charter of the City and the Original Indenture, as further supplemented by an Eighth Supplemental Indenture, dated as of August 1, 2018 (the "Eighth Supplemental Indenture"), by and between the Commission and the Trustee. The Original Indenture, as supplemented by the Seventh Supplemental and the Eighth Supplemental is referred to herein as the "Indenture." Capitalized terms not otherwise defined herein shall have the respective meanings ascribed thereto in the Indenture.

In our capacity as co-bond counsel, we have reviewed the Indenture, ordinances and resolutions of the Commission and the City, certifications of the Commission, the Trustee and others, opinions of counsel to the Commission, the City and the Trustee, and such other documents, opinions and instruments as we deemed necessary to render the opinions set forth herein. We have assumed, but have not verified, that the signatures on all documents, certificates and opinions that we have reviewed are genuine. In our examination, we have assumed, but have not verified, the legal capacity of all natural persons, the authenticity of all documents submitted to us as originals, the

conformity to original documents of all documents submitted to us as certified or photostatic copies or by facsimile or other means of electronic transmission or which we obtained from sites on the internet, and the authenticity of the originals of such latter documents. As to facts and certain other matters and the consequences thereof relevant to the opinions expressed herein and the other statements made herein, we have relied without investigation or verification upon, and assumed the accuracy and completeness of certificates, letters (including opinion letters), and oral and written statements and representations of public officials, officers and other representatives of the Commission and the City, counsel for the Commission and the City, and others.

Our services as co-bond counsel were limited to such examination and to rendering the opinions set forth below. Furthermore, we have assumed compliance with all covenants and agreements compliance with which is necessary to assure that future actions, omissions or events will not cause the interest on the Bonds to be included in gross income for federal income tax purposes. With respect to the opinions expressed herein, we call attention to the fact that the enforceability of the rights and obligations under the Bonds and the Indenture are subject to bankruptcy, insolvency, reorganization, moratorium, fraudulent conveyance and other similar laws affecting creditors' rights, to the application of equitable principles if equitable remedies are sought, to the exercise of judicial discretion in appropriate cases and to limitations on legal remedies against cities and counties in the State of California. In addition, the imposition of certain fees and charges by the Commission relating to the Enterprise is subject to the provisions of the Charter and Articles XIII C and XIII D of the California Constitution.

Based upon the foregoing and subject to the limitations and qualifications herein specified, we are of the opinion, as of the date hereof and under existing law, that:

(1) The Bonds have been duly authorized, issued by, and constitute the valid and binding limited obligations of, the Commission.

(2) The Seventh Supplemental Indenture and the Eighth Supplemental have been duly authorized, executed and delivered by the Commission, and the Indenture constitutes the valid and binding obligation of the Commission. The Indenture creates a valid pledge of the Net Revenues of the Enterprise to secure the payment of the principal of and interest on the Bonds, as and to the extent set forth in the Indenture and subject to the provisions of the Indenture permitting the application thereof for the purposes and on the terms and conditions set forth therein.

(3) The Bonds are limited obligations of the Commission and are payable exclusively from and are secured by a pledge of the Net Revenues of the Enterprise. The general fund of the City is not liable and the credit or taxing power of the City is not pledged for the payment of the Bonds or the interest thereon. The Commission has no taxing power. The 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 Commission or any of their income or receipts, except the Net Revenues.

(4) Under existing statutes, regulations, rulings and judicial decisions, the interest on the Bonds is excluded from gross income for federal income tax purposes and is not an item of tax preference for purposes of calculating the federal alternative minimum tax imposed on individuals.

(5) The interest on the Bonds is exempt from State of California personal income tax.

(6) The difference between the issue price of a Bond (the first price at which a substantial amount of the Bonds of a maturity is to be sold to the public) and the stated redemption price at maturity with respect to such Bond (to the extent the redemption price at maturity is greater than the issue price) constitutes original issue discount. Original issue discount accrues under a constant yield method, and original issue discount will accrue to a Bond owner before receipt of cash attributable to such excludable income. The amount of original issue discount deemed received by a Bond owner will increase the Bond owner's basis in the applicable Bond. Original issue discount that accrues for the Bond owner is excluded from the gross income of such owner for federal income tax purposes, is not an item of tax preference for purposes of calculating the federal alternative minimum tax imposed on individuals (as described in paragraph 4 above) and is exempt from State of California personal income tax.

(7) The amount by which a Bond owner's original basis for determining loss on sale or exchange in the applicable Bonds (generally, the purchase price) exceeds the amount payable on maturity (or on an earlier call

date) constitutes amortizable premium, which must be amortized under Section 171 of the Code (as defined below); such amortizable premium reduces the Bond owner's basis in the applicable Bonds (and the amount of tax-exempt interest received), and is not deductible for federal income tax purposes. The basis reduction as a result of the amortization of Bond premium may result in a Bond owner realizing a taxable gain when a Bond is sold by the owner for an amount equal to or less (under certain circumstances) than the original cost of the Bond to the owner.

The opinions expressed herein as to the exclusion from gross income of interest on the Bonds are based upon certain representations of fact and certifications made by the Commission and others and are subject to the condition that the Commission complies with all requirements of the Internal Revenue Code of 1986, as amended (the "Code"), that must be satisfied subsequent to the issuance of the Bonds to assure that such interest will not become includable in gross income for federal income tax purposes. Failure to comply with such requirements of the Code might cause the interest to be included in gross income for federal income tax purposes retroactive to the date of issuance of the Bonds. The Commission has covenanted to comply with all such requirements.

The opinions expressed herein may be affected by actions taken (or not taken) or events occurring (or not occurring) after the date hereof. We have not undertaken to determine, or to inform any person, whether any such actions or events are taken or do occur. The Indenture and the Tax Certificate permit certain actions to be taken or to be omitted if a favorable opinion of co-bond counsel is provided with respect thereto. No opinion is expressed herein as to the effect on the exclusion from gross income of interest for federal income tax purposes with respect to any Bonds if any such action is taken or omitted based upon the opinion or advice of counsel other than ourselves. Other than expressly stated herein, we express no other opinion regarding tax consequences with respect to the Bonds.

The opinions expressed and the statements made herein are based on an analysis of existing laws, regulations, rulings and judicial decisions and cover certain matters not directly addressed by such authorities. Such opinions and statements may be adversely affected by actions taken or events occurring, including a change in law, regulation or ruling (or in the application or official interpretation of any law, regulation or ruling) after the date hereof. We have not undertaken to determine, or to inform any person, whether such actions are taken or such events occur, and we have no obligation to update this letter in light of such actions or events or for any other reason.

No opinion is expressed herein on the accuracy, completeness or sufficiency of the official statement relating to the Bonds or other offering material relating to the Bonds and we expressly disclaim any duty to advise the owners of the Bonds with respect to matters contained in such official statement or other offering material.

This opinion is limited to the laws of the State of California and the federal laws of the United States. We assume no responsibility with respect to the applicability or the effect of the laws of any other jurisdiction. The opinions in this letter are expressed solely as of the date hereof for your benefit and may not be relied upon in any manner for any purposes by any other person.

Respectfully submitted,

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APPENDIX D

FORM OF CONTINUING DISCLOSURE CERTIFICATE

\$594,145,000
Public Utilities Commission
of the City and County of San Francisco
Wastewater Revenue Bonds

\$229,050,000
2018 Series A (Green Bonds)

\$185,950,000
2018 Series B

\$179,145,000
2018 Series C (Green Bonds)

August 9, 2018

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 wastewater revenue bonds captioned above (collectively, the “**2018 Series ABC Bonds**”). The 2018 Series ABC Bonds are being issued pursuant to an Indenture dated as of January 1, 2003, between the SFPUC and U.S. Bank National Association, as trustee (the “**Trustee**”), as amended and supplemented, including as amended and supplemented by a Seventh Supplemental Indenture, dated as of August 1, 2018, and an Eighth Supplemental Indenture, dated as of August 1, 2018, each 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 2018 Series ABC 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 2018 Series ABC Bonds (including persons holding 2018 Series ABC Bonds through nominees, depositories or other intermediaries) including, but not limited to, the power to vote or consent with respect to any 2018 Series ABC Bonds or to dispose of ownership of any 2018 Series ABC Bonds; or (b) is treated as the owner of any 2018 Series ABC 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 2018 Series ABC Bonds, or, if the 2018 Series ABC 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 July 18, 2018, prepared in connection with the sale and offering of the 2018 Series ABC Bonds.

“**Participating Underwriters**” shall mean any of the original underwriters or purchasers of the 2018 Series ABC Bonds required to comply with the Rule in connection with the offering of the 2018 Series ABC 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 nine months after the end of the SFPUC’s Fiscal Year (which currently ends June 30), commencing March 31, 2019, with the report for Fiscal Year 2017-18, 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(b).

(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. The 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 6, SUMMARY OF ACTIVE SEWER ACCOUNTS BY USER TYPE;”

(c) An update for the prior Fiscal Year of the table in the Official Statement entitled “TABLE 12, HISTORICAL SINGLE-FAMILY RESIDENTIAL SEWER RATES”;

(d) An update for the prior Fiscal Year of the table in the Official Statement entitled “TABLE 13, HISTORICAL MULTI-FAMILY RESIDENTIAL SEWER RATES”;

(e) An update for the prior Fiscal Year of the table in the Official Statement entitled “TABLE 14, ADOPTED SINGLE-FAMILY AND MULTI-FAMILY RESIDENTIAL SEWER RATES”;

(f) An update for the prior Fiscal Year of the table in the Official Statement entitled “TABLE 15, HISTORICAL AND ADOPTED NON-RESIDENTIAL DISCHARGE RATES”;

(g) An update for the prior Fiscal Year of the tables in the Official Statement in the sections entitled “OBLIGATIONS PAYABLE FROM NET REVENUES—Outstanding Parity Revenue Bonds” and “—Parity Loans” showing all bonds and other obligations of the SFPUC secured by Net Revenues; and

(h) An update for the prior Fiscal Year of the table in the Official Statement entitled “TABLE 21, HISTORICAL REVENUE, OPERATING & MAINTENANCE EXPENSE AND DEBT SERVICE COVERAGE FOR FISCAL YEARS ENDED JUNE 30.”

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 2018 Series ABC 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 2018 Series ABC Bonds, or other material events affecting the tax exempt status of the 2018 Series ABC 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 2018 Series ABC 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 Event described in subsection (a)(8) 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 2018 Series ABC Bonds under the Indenture.

(c) For purposes of this Disclosure 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.

(d) The SFPUC shall give, or cause to be given, notice of the occurrence of the receipt by the SFPUC of a written statement by the Climate Standards Board to the effect that the Public Utilities Commission of the City and County of San Francisco Wastewater Revenue Bonds, 2018 Series A (Green Bonds) or 2018 Series C (Green Bonds) are no longer “Climate Bond Certified.” The SFPUC shall, or shall cause the Dissemination Agent (if not the SFPUC) to, file a notice of such occurrence with the MSRB, in electronic format as prescribed by the MSRB, in a timely manner not in excess of 30 days after the receipt by the SFPUC of such written statement

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 2018 Series ABC Bonds. If such termination occurs prior to the final maturity of the 2018 Series ABC Bonds, the SFPUC shall give notice of such termination in the same manner as for a Listed Event under Section 5(b).

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), 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 2018 Series ABC 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 2018 Series ABC 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 2018 Series ABC 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 2018 Series ABC 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 2018 Series ABC Bonds, and shall create no rights in any other person or entity.

PUBLIC UTILITIES COMMISSION OF THE
CITY AND COUNTY OF SAN FRANCISCO

By: _____
Harlan L. 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: WASTEWATER REVENUE BONDS, 2018 SERIES A (GREEN BONDS),
WASTEWATER REVENUE BONDS, 2018 SERIES B,
WASTEWATER REVENUE BONDS, 2018 SERIES C (GREEN BONDS)

Date of Issuance: August 9, 2018

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 August 9, 2018. 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 E

BOOK-ENTRY ONLY SYSTEM AND GLOBAL CLEARANCE PROCEDURES

The information set out below is subject to any change in or reinterpretation of the rules, regulations and procedures of DTC, Euroclear Bank S.A./N.V. (“Euroclear”) or Clearstream Banking SA (“Clearstream”) (DTC, Euroclear and Clearstream together, the “Clearing Systems”) currently in effect. The information in this section concerning the Clearing Systems has been obtained from sources that we believe to be reliable, but none of us, the Bond Trustee or the Underwriters take any responsibility for the accuracy, completeness or adequacy of the information in this section. Investors wishing to use the facilities of any of the Clearing Systems are advised to confirm the continued applicability of the rules, regulations and procedures of the relevant Clearing System. We will not have any responsibility or liability for any aspect of the records relating to, or payments made on account of, beneficial ownership interests in the Series ABC Bonds held through the facilities of any Clearing System or for maintaining, supervising or reviewing any records relating to such beneficial ownership interests.

Clearing Systems

DTC Book-Entry Only System. DTC, New York, New York, will act as securities depository for the Series ABC Bonds. The Series ABC Bonds will be issued as fully registered securities registered in the name of Cede & Co., DTC’s partnership nominee. One fully registered Series ABC Bond certificate will be issued for each maturity of the Series ABC Bonds, each in the aggregate principal amount of such maturity, and will be deposited with DTC.

DTC, the world’s largest securities depository, 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 3.6 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 (which we refer to as “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 (which we refer to as “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 (which we refer to as “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.

Purchases of Series ABC Bonds under the DTC system must be made by or through Direct Participants, which will receive a credit for the Series ABC Bonds on DTC’s records. The ownership interest of each actual owner of a Series ABC Bond (which we refer to as a “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 beneficial ownership interests in the Series ABC Bonds 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 the Series ABC Bonds, except in the event that use of the book entry only system for the Series ABC Bonds is discontinued.

To facilitate subsequent transfers, all Series ABC Bonds deposited by Direct Participants with DTC are registered in the name of DTC’s partnership nominee, Cede & Co. or such other nominee as requested by an authorized representative of DTC. The deposit of Series ABC Bonds with DTC and their registration in the name of

Cede & Co. or such other nominee as requested by an authorized representative of DTC effect no change in beneficial ownership. DTC has no knowledge of the actual beneficial owners of the Series ABC Bonds. DTC's records reflect only the identity of the Direct Participants to whose accounts such Series ABC Bonds 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.

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 Series ABC Bonds may wish to take certain steps to augment transmission to them of notices of significant events with respect to the Series ABC Bonds, such as redemptions, defaults and proposed amendments to the security documents.

Redemption notices will be sent to DTC. If less than all of the Series ABC Bonds are being redeemed, DTC's practice is to determine by lot the amount of the interest of each Direct Participant to be redeemed.

Neither DTC nor Cede & Co. (nor any other DTC nominee) will consent or vote with respect to Series ABC Bonds unless authorized by a Direct Participant in accordance with DTC's procedures. Under its usual procedures, DTC mails an "Omnibus Proxy" to us 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 the Series ABC Bonds are credited on the record date identified in a listing attached to the "Omnibus Proxy."

Principal, premium and interest payments on the Series ABC Bonds will be made to Cede & Co. or such other nominee as 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 the Bond Trustee or us on each payable date in accordance with their respective holdings shown on DTC's records. Payments by Direct and Indirect 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 Direct and Indirect Participant and not of us, DTC, DUHS or the Bond Trustee, subject to any statutory or regulatory requirements as may be in effect from time to time. Payment of principal, premium and interest to Cede & Co. (or such other nominee as requested by an authorized representative of DTC) is the responsibility of the Bond Trustee. 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 the Direct Participants and Indirect Participants.

DTC may discontinue providing its services as depository with respect to the Series ABC Bonds at any time by giving reasonable notice to the Bond Trustee and us. Under such circumstances, in the event that a successor depository is not obtained, Series ABC Bond certificates are required to be printed and delivered. We may decide to discontinue use of the system of book-entry-only transfers through DTC (or a successor securities depository). In that event, Series ABC Bond certificates will be printed and delivered to DTC.

Euroclear and Clearstream. Euroclear and Clearstream have advised us as follows:

Euroclear and Clearstream each hold securities for their customers and facilitate the clearance and settlement of securities transactions by electronic book-entry transfer between their respective account holders. Euroclear and Clearstream provide various services including safekeeping, administration, clearance and settlement of internationally traded securities and securities lending and borrowing. Euroclear and Clearstream also deal with domestic securities markets in several countries through established depository and custodial relationships. Euroclear and Clearstream have established an electronic bridge between their two systems across which their respective participants may settle trades with each other.

Euroclear and Clearstream customers are worldwide financial institutions, including underwriters, securities brokers and dealers, banks, trust companies and clearing corporations. Indirect access to Euroclear and Clearstream is available to other institutions that clear through or maintain a custodial relationship with an account holder of either system, either directly or indirectly.

Clearing and Settlement Procedures

General. The Series ABC Bonds sold in offshore transactions will be initially issued to investors through the book-entry facilities of DTC, or Euroclear and Clearstream in Europe if the investors are participants in those systems, or indirectly through organizations that are participants in the systems. For any of such Series ABC Bonds, the record holder will be DTC's nominee. Euroclear and Clearstream will hold omnibus positions on behalf of their participants through customers' securities accounts in Euroclear's and Clearstream's names on the books of their respective depositories.

The depositories, in turn, will hold positions in customers' securities accounts in the depositories' names on the books of DTC. Because of time zone differences, the securities account of a Euroclear or Clearstream participant as a result of a transaction with a participant, other than a depository holding on behalf of Euroclear or Clearstream, will be credited during the securities settlement processing day, which must be a business day for Euroclear or Clearstream, as the case may be, immediately following the DTC settlement date. These credits or any transactions in the securities settled during the processing will be reported to the relevant Euroclear participant or Clearstream participant on that business day. Cash received in Euroclear or Clearstream as a result of sales of securities by or through a Euroclear participant or Clearstream participant to a DTC Participant, other than the depository for Euroclear or Clearstream, will be received with value on the DTC settlement date but will be available in the relevant Euroclear or Clearstream cash account only as of the business day following settlement in DTC.

Transfers between participants will occur in accordance with DTC rules. Transfers between Euroclear participants or Clearstream participants will occur in accordance with their respective rules and operating procedures. Cross-market transfers between persons holding directly or indirectly through DTC, on the one hand, and directly or indirectly through Euroclear participants or Clearstream participants, on the other, will be effected in DTC in accordance with DTC rules on behalf of the relevant European international clearing system by the relevant depositories; however, cross-market transactions will require delivery of instructions to the relevant European international clearing system by the counterparty in the system in accordance with its rules and procedures and within its established deadlines in European time. The relevant European international clearing system will, if the transaction meets its settlement requirements, deliver instructions to its depository to take action to effect final settlement on its behalf by delivering or receiving securities in DTC, and making or receiving payment in accordance with normal procedures for same day funds settlement applicable to DTC. Euroclear participants or Clearstream participants may not deliver instructions directly to the depositories.

We will not impose any fees in respect of holding the Series ABC Bonds; however, holders of book-entry interests in the Series ABC Bonds may incur fees normally payable in respect of the maintenance and operation of accounts in the Clearing Systems.

Initial Settlement. Interests in the Series ABC Bonds will be in uncertified book-entry form. Purchasers electing to hold book-entry interests in the Series ABC Bonds through Euroclear and Clearstream accounts will follow the settlement procedures applicable to conventional Eurobonds. Book-entry interests in the Series ABC Bonds will be credited to Euroclear and Clearstream participants' securities clearance accounts on the business day following the date of delivery of the Series ABC Bonds against payment (value as on the date of delivery of the Series ABC Bonds). DTC participants acting on behalf of purchasers electing to hold book-entry interests in the Series ABC Bonds through DTC will follow the delivery practices applicable to securities eligible for DTC's Same Day Funds Settlement system. DTC participants' securities accounts will be credited with book-entry interests in the Series ABC Bonds following confirmation of receipt of payment to us on the date of delivery of the Series ABC Bonds.

Secondary Market Trading. Secondary market trades in the Series ABC Bonds will be settled by transfer of title to book-entry interests in the Clearing Systems. Title to such book-entry interests will pass by registration of the transfer within the records of Euroclear, Clearstream or DTC, as the case may be, in accordance with their respective procedures. Book-entry interests in the Series ABC Bonds may be transferred within Euroclear and within Clearstream and between Euroclear and Clearstream in accordance with procedures established for these purposes by Euroclear and Clearstream. Book-entry interests in the Series ABC Bonds may be transferred within DTC in accordance with procedures established for this purpose by DTC. Transfer of book-entry interests in the Series ABC Bonds between Euroclear or Clearstream and DTC may be effected in accordance with procedures established for this purpose by Euroclear, Clearstream and DTC.

Special Timing Considerations. You should be aware that investors will only be able to make and receive deliveries, payments and other communications involving the Series ABC Bonds through Euroclear or Clearstream on days when those systems are open for business. In addition, because of time-zone differences, there may be complications with completing transactions involving Euroclear and/or Clearstream on the same business day as in the United States. U.S. investors who wish to transfer their interests in the Series ABC Bonds, or to receive or make a payment or delivery of Series ABC Bonds, on a particular day, may find that the transactions will not be performed until the next business day in Brussels if Euroclear is used, or Luxembourg if Clearstream is used.

Clearing Information. We expect that the Series ABC Bonds will be accepted for clearance through the facilities of Euroclear and Clearstream. The international securities identification numbers, common codes and CUSIP numbers for the Series ABC Bonds are set forth on the inside cover page of this Official Statement.

General. None of Euroclear, Clearstream or DTC is under any obligation to perform or continue to perform the procedures referred to above, and such procedures may be discontinued at any time.

Neither us nor any of our agents will have any responsibility for the performance by Euroclear, Clearstream or DTC or their respective direct or indirect participants or account holders of their respective obligations under the rules and procedures governing their operations or the arrangements referred to above.

The information in this Appendix E concerning the Clearing Systems has been obtained from sources that the Underwriters believe to be reliable, but the Underwriters take no responsibility for the accuracy thereof.

Limitations

For so long as the Series ABC Bonds are registered in the name of DTC or its nominee, Cede & Co., we and the Bond Trustee will recognize only DTC or its nominee, Cede & Co., as the registered owner of the Series ABC Bonds for all purposes, including payments, notices and voting. So long as Cede & Co. is the registered owner of the Series ABC Bonds, references in this offering memorandum to registered owners of the Series ABC Bonds shall mean Cede & Co. and shall not mean the beneficial owners of the Series ABC Bonds.

Because DTC is treated as the owner of the Series ABC Bonds for substantially all purposes under the Trust Agreement, beneficial owners may have a restricted ability to influence in a timely fashion remedial action or the giving or withholding of requested consents or other directions. In addition, because the identity of beneficial owners is unknown to us, the Bond Trustee or DTC, it may be difficult to transmit information of potential interest to beneficial owners in an effective and timely manner. Beneficial owners should make appropriate arrangements with their broker or dealer regarding distribution of information regarding the Series ABC Bonds that may be transmitted by or through DTC.

Under the Trust Agreement, payments made by the Bond Trustee to DTC or its nominee shall satisfy the obligations of us and the other members of the Combined Group under Obligation No. 46 to the extent of the payments so made.

Neither we nor the Bond Trustee have any responsibility or obligation with respect to:

- the accuracy of the records of DTC, its nominee or any Direct Participant or Indirect Participant with respect to any beneficial ownership interest in any Series ABC Bonds;
- the delivery to any Direct Participant or Indirect Participant or any other person, other than a registered owner as shown in the bond register kept by the Bond Trustee, of any notice with respect to any Series ABC Bond including, without limitation, any notice of redemption with respect to any Series ABC Bond;
- the payment to any Direct Participant or Indirect Participant or any other person, other than a registered owner as shown in the bond register kept by the Bond Trustee, of any amount with respect to the principal of, premium, if any, or interest on, any Series ABC Bond; or

- any consent given by DTC or its nominee as registered owner.

Prior to any discontinuation of the book entry only system hereinabove described, we and the Bond Trustee may treat Cede & Co. (or such other nominee of DTC) as, and deem Cede & Co. (or such other nominee) to be, the absolute registered owner of the Series ABC Bonds for all purposes whatsoever, including, without limitation:

- the payment of principal, premium, if any, and interest on the Series ABC Bonds;
- giving notices of redemption and other matters with respect to the Series ABC Bonds;
- registering transfers with respect to the Series ABC Bonds; and
- the selection of Series ABC Bonds for redemption.

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