

GREEN BOND REPORT

San Francisco Public Utilities Commission

WASTEWATER ENTERPRISE | FY 2018-19



San Francisco
Water
Power
Sewer

**WASTEWATER
ENTERPRISE**

Services of the San Francisco Public Utilities Commission

Image: Wiggle Neighborhood Green Corridor

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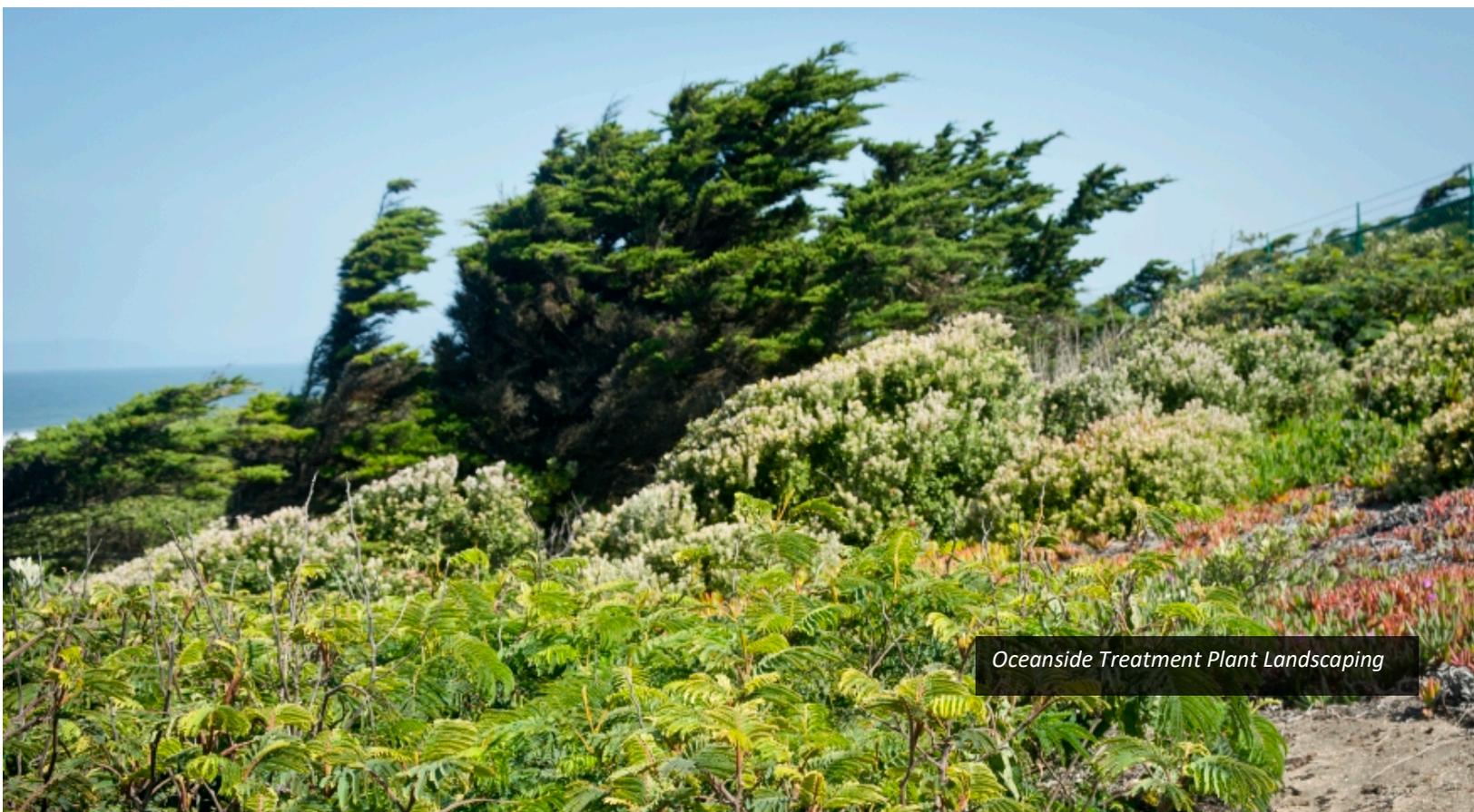
INTRODUCTION

The San Francisco Public Utilities Commission (SFPUC) is a department of the City and County of San Francisco. In 2008, San Francisco set an ambitious goal to reduce greenhouse gas emissions by 25% below 1990 levels by 2017, by 40% below 1990 levels by 2025, and become carbon neutral by 2050.

These goals impact all San Francisco departments, including the SFPUC, and influence operating and capital investment activities. The SFPUC operates within the City of San Francisco as well as the State of California and is governed by several ambitious laws and regulations at the State and City level, as well as policies and programs within the SFPUC, created to achieve additional climate and social inclusion goals.

The SFPUC views green bonds as an important tool to help meet these goals and finance low-carbon, climate-resilient infrastructure. Since issuing its first green bond in 2015, the SFPUC has sold more than \$1.4 billion in certified green bonds through June 30, 2019 for all three of its enterprise utilities: Water, Wastewater, and Power. Impacts from the bonds to date include increased water storage, upgrades to renewable energy generation facilities and the use of green infrastructure to divert stormwater from treatment plants.

In addition to providing project impact information, this report seeks to highlight associated co-benefits as well as describe the context in which climate and social inclusion informs the SFPUC's capital planning decisions. This report reflects activities through June 30, 2019.



Oceanside Treatment Plant Landscaping

1. State and City Regulatory Context

State of California

The State of California has enacted legislation, regulations and executive orders that put the State on course to achieve significant greenhouse gas reductions while also addressing the impacts of climate change. Described below are selected state-level mandates related to the environment and climate that impact the SFPUC's capital planning.

- California Environmental Quality Act (CEQA): Established in 1970, CEQA requires that all projects proposed by state and local agencies undergo an environmental impact review and to avoid or mitigate environmental impacts.
- Assembly Bill 32, the Global Warming Solutions Act of 2006: State Law created to reduce the State's greenhouse gas emissions to 1990 levels by 2020 and to 80% below 1990 levels by 2050.
- Assembly Bill 2800: Requires the California Natural Resources Agency to create a Climate-Safe Infrastructure Working Group, and for state agencies to consider the current and future impacts of climate change when planning, designing, building, operating, maintaining, and investing in State infrastructure.

In August of 2018, California State Treasurer John Chiang signed the [Green Bond Pledge](#), making California the first state to pledge to use 'green' financing to combat climate change.

City and County of San Francisco

San Francisco has long been a leader in the fight against climate change. As of 2017, the City has successfully reduced emissions by 36% compared to 1990 levels, surpassing its 25% target. As part of the Global Climate Action Summit in 2018, Mayor London Breed announced the following climate goals:

- Zero Waste: Reduce waste generation by 15% and landfill disposal by 50% by 2030.
- Decarbonizing Buildings: Net-zero carbon buildings in San Francisco by 2050.
- 100% Renewable Energy: Switch all electricity in San Francisco to renewables by 2030.
- Green Bonds: Issue more green bonds to finance infrastructure and capital projects.

San Francisco's leadership further strengthened the City's commitment to climate action in 2019 when the Board of Supervisors unanimously approved the Climate Emergency Resolution 160-19, aligning San Francisco's climate goals with the Paris Agreement by limiting global warming to 1.5°C above pre-industrial levels.

In addition to the activities described above, the Mayor and Board of Supervisors have led two initiatives described below that require SFPUC capital planning to include climate and social inclusion:

- [Local Hire Ordinance](#) was adopted in December of 2010 by the San Francisco Board of Supervisors. The ordinance requires that local residents perform a minimum 30% of trade hours and 50% for apprenticeship hours and is one of the strongest pieces of legislation in the country to promote the employment of local residents on locally sponsored projects.
- [Guidance for Incorporating Sea Level Rise into Capital Planning](#) also now takes place as part of the City's Capital Planning Review process. All City projects now undergo a sea-level vulnerability assessment and must respond to anticipated consequences through redesign or relocation. SFPUC staff actively participated in the Mayor's Sea Level Rise Coordinating Committee and Working Group to develop the Sea Level Rise Guidance. The objective is to work with other City agencies towards a more holistic, integrated and coordinated response to climate change.



Westside Pump Station

2. San Francisco Public Utilities Commission

Overview

The SFPUC provides retail drinking water and wastewater services to the City of San Francisco, wholesale water to three Bay Area counties (Alameda, San Mateo and Santa Clara), and green hydroelectric and solar power to municipal departments and retail electric customers. Headquartered in San Francisco, the SFPUC has approximately 2,500 employees working in seven counties and has a combined annual operating and capital budget of over \$2 billion. The SFPUC is comprised of three utility enterprises:

- **The Water Enterprise** serves more than 2.7 million people and is responsible for managing the transmission, treatment, storage and distribution of potable water to the City of San Francisco and 27 water agencies in three Bay Area counties – San Mateo, Santa Clara and Alameda.
- **The Wastewater Enterprise** serves San Francisco residents and operates three treatment plants for sewage and stormwater treatment as well as maintains nearly 1,000 miles of combined sewer and stormwater lines.
- **The Power Enterprise** provides green hydroelectric power to municipal customers in San Francisco. The Power Enterprise also operates CleanPowerSF, a program that enables the City to purchase cleaner power on behalf of local residents and support local jobs, stable energy prices and clean energy infrastructure.

Financial Policies

The San Francisco City Charter requires the SFPUC to exercise prudent financial stewardship of SFPUC assets by establishing “rates, fees and charges at levels sufficient to improve or maintain financial condition and bond ratings at or above levels equivalent to highly rated utilities of each enterprise under its jurisdiction, meet requirements and covenants under all bond resolutions and indentures..., and provide sufficient resources for the continued financial health (including appropriate reserves), operation, maintenance and repair of each enterprise, consistent with good utility practice.”

To serve the financial objectives and parameters established by the Commission, the SFPUC has established a [10-Year Financial Plan](#) as well as [Debt Management Policies and Procedures](#) for debt financings associated with the Water, Wastewater and Power Enterprises. In addition, the SFPUC maintains a [Fund Balance Reserve Policy](#), a [Debt Service Coverage Policy](#), and a [Capital Financing Policy](#). Last, the [Debt Policy of The City and County of San Francisco](#), established by the Controller’s Office of Public Finance,

summarizes the City’s existing debt policies and formally establishes them for all future debt.¹

Environmental, Social, and Governance Policies and Programs

With the useful life of capital assets typically extending 30 years or more, climate mitigation and adaptation criteria are included in the SFPUC’s capital planning and project selection process. Described below are SFPUC-level policies and programs that contribute to capital planning decisions informed by climate adaptation and/or mitigation and social inclusion.

The activities below have been organized into three categories: environmental, social, and governance (ESG):

Environmental

- **Community Choice Aggregation**: CleanPowerSF is San Francisco’s Community Choice Aggregation program. Administered by the SFPUC Power Enterprise, CleanPowerSF is a not-for-profit program launched in 2016 with a mission to provide San Francisco electricity customers with the choice of having their electricity supplied from clean, renewable sources at a competitive price. CleanPowerSF is now serving over 376,000 San Francisco customers with 90% renewable energy. Prior to CleanPowerSF, electricity accounted for 29% of the City’s greenhouse gas emissions. Now, that total has dropped to 11%.
- **GoSolarSF**: GoSolarSF is administered by the SFPUC Power Enterprise and provides incentives to help CleanPowerSF and Hetch Hetchy residential and business electric customers install solar panel systems. Together these systems produce 19.9 megawatts of renewable solar electric power.
- **Water Enterprise Stewardship Policy**: The purpose of the Water Enterprise Environmental Stewardship Policy is to establish a long-term management policy for natural resources associated with the operation of the water system within the Tuolumne River, Alameda Creek, and Peninsula watersheds.
- **Green Infrastructure**: Green infrastructure projects divert stormwater from the sewer system while beautifying San Francisco’s neighborhoods, providing ecological function and urban habitat, and contributing to bike and pedestrian friendly design. Green infrastructure technologies include rain gardens, permeable pavement, and rainwater harvesting systems. The SFPUC has completed 272 Green Infrastructure projects which diverts 63 million gallons of stormwater from the sewer system annually.
- **OneWaterSF**: The objective of OneWaterSF is to optimize the use of finite water and energy resources with community and ecosystem needs, creating a more resilient and reliable future for the SFPUC.

¹ For information about SFPUC’s Investor Relations and Financial Reports, see: <https://www.sfwater.org/index.aspx?page=164>

Social

- [Community Benefits](#): The SFPUC’s Community Benefits Program focuses on Workforce Development, Education, Art, Environmental Justice/Land use, Neighborhood Partnerships, and Small Business Opportunities. The SFPUC is the first utility in the nation to adopt a [Community Benefits Policy](#).
- [Social Impact Partnership Program](#): The SFPUC is the first public utility in the country to implement a social impact program that advances corporate social responsibility as a part of its competitive bidding process. If awarded a contract, pre-identified “Community Benefit Commitments” become a binding contract term that must be delivered at no cost to the City. To date, these commitments have supported scholarships for college students, mentorship for middle-school students, internships for youth and young adults, child care for working parents, mentorship for small businesses, urban greening and access to healthy food. Since 2011, 74 contracts have included commitments totaling \$34 million in financial, volunteer and in-kind contributions.

Governance

- [SFPUC Commission](#): The SFPUC Commission consists of five members, nominated by the Mayor and approved by the Board of Supervisors. Their responsibility is to provide operational oversight in areas such as rates and charges for services, approval of contracts and organizational policy. Seat 1 of the commission is reserved for a member with experience in environmental justice policy and an understanding of environmental justice issues.
- [Citizens’ Advisory Committee](#): The Citizens’ Advisory Committee (CAC) provides recommendations to the General Manager of the SFPUC, the Commission itself and the San Francisco Board of Supervisors regarding the agency’s long-term strategic, financial and capital improvement plans. Comprised of 17 appointees, the CAC includes a member appointed by the mayor who represents a regional or statewide environmental organization and a member appointed by the President of the Board of Supervisors who represents an environmental justice organization.
- [2020 Strategic Plan](#): In August 2016, the SFPUC Strategic Planning Steering Committee identified Environmental Stewardship as one of six goals to guide its work through the year 2020. Within Environmental Stewardship, the 2020 Strategic Plan specifies the goal to sustainably manage the resources entrusted to its care to ensure environmental and community health. This includes the following objectives:
 - Sustainably manage natural resources and physical systems to protect impacted people, water, land and ecosystems.
 - Develop, coordinate and communicate a comprehensive and consistent approach to mitigate and adapt to climate change.
 - Be resource efficient in all business operations.
 - Investigate the feasibility of implementing an environmental management system.

United Nations Sustainable Development Goals

With increased interest in the United Nations Sustainable Development Goals (SDGs) among investors and other stakeholders, impacts from SFPUC projects financed by Green Bonds are also aligned with several (SDGs). To determine project impact, the SFPUC relied on the International Capital Market Association (ICMA) “Green and Social Bonds: A High-Level Mapping to the Sustainable Development Goals” (June 2019). See Appendix A: SFPUC Program Impacts Aligned to the United Nations Sustainable Development Goals (SDGs) and Appendix C: SSIPP Green Bond Funded Project Impacts aligned with the United Nations Sustainable Development Goals (SDGs).



Southeast Treatment Plant, Digesters

3. SFPUC Green Bond Program

Since 2015, the SFPUC has issued more than \$1.4 billion in green bonds to finance Water, Wastewater, and Power capital projects that advance climate change mitigation or adaptation, making the SFPUC one of the largest municipal issuers of green bonds in the United States. In 2017, the SFPUC was recognized by the Climate Bonds Initiative at its annual conference for being the first issuer worldwide to sell bonds under its water criteria. In 2018, the SFPUC became among the first signatories of the Green Bond Pledge. In 2019, the combined green bond programs of the City of San Francisco and the SFPUC were recognized as a global leader in the C40 report [Cities100](#). Finally, the SFPUC was awarded the 2019 US Municipal Green Bond of the Year by Environmental Finance.



The SFPUC adheres to the International Capital Market Association's Green Bond Principles four core components:

- **Use of Proceeds**: The SFPUC issues Green Bonds to finance projects with clear environmental benefits. Project categories include sustainable water and wastewater management, climate change adaptation and renewable energy.
- **Process for Project Evaluation and Selection**: San Francisco's numerous policies and programs described herein ensure sustainable capital planning and project selection. Further, the SFPUC engages third-party verifiers to validate selected projects meet the required criteria. As part of the certification process, the SFPUC retained Sustainalytics to provide third-party verification that the bonds are aligned with the Climate Bonds Initiative.
- **Management of Proceeds**: The SFPUC records Green Bond proceeds in separate capital project funds available only to eligible projects. Non-eligible projects cannot access proceeds generated from green bonds.
- **Reporting**: The SFPUC publishes annually a project spending and management of proceeds report for each green bond issued throughout project construction. Beginning with the FY 2018-19 reports, in addition to project spending, the reports will also include project impacts as well as additional information in connection with the climate and sustainability activities of the SFPUC.

4. Wastewater Enterprise Green Bond Impact Report

Wastewater Enterprise green bonds issued to date have been used to fund the Sewer System Improvement Program (SSIP). The SFPUC has embarked on a comprehensive \$6.4 billion SSIP to be implemented 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. The SSIP is a series of major capital improvement projects that are necessary to bring San Francisco's wastewater and stormwater system into a state of good repair, and to meet the Commission-endorsed goals and levels of service, which include the following:

- Provide a compliant, reliable, resilient and flexible system responsive to catastrophic events;
- Integrate grey and green infrastructure to manage stormwater and minimize flooding;
- Provide benefits to impacted communities;
- Modify the system to adapt to climate change;
- Achieve economic and environmental sustainability; and
- Maintain ratepayer affordability.

Program Scope

The SSIP is broken into three major subprograms: Treatment Plants, Collection System, and Land Reuse. Projects are continuously prioritized and advanced into to the program based on criticality of need and risk. The SSIP project development will also consider environmental benefits, sustainability, and community benefits in addressing the long-term wastewater needs. These projects include but are not limited to:

Wastewater Treatment Projects

- Replacing existing, aged, and failing solids handling facilities with new state-of-the-art Biosolids Digester Facilities
- Improving the level of screening and grit removal in existing facilities
- Replacing the antiquated oxygen generation plants
- Condition assessment and rehabilitation of building structures
- Replacing mechanical and electrical equipment
- Seismic retrofitting

Sewer Collection System Improvement Projects

- Enhancing conveyance in the Channel and Islais Creek watershed to provide reliability and redundancy, and increase capacity to manage storm events
- Rehabilitating and replacing interceptors, tunnels, pump stations, force mains and Transport/Storage (T/S) boxes

- Rehabilitating Combined Sewer Discharge (CSD) structures and preventing backflow of bay water through CSDs due to sea level rise

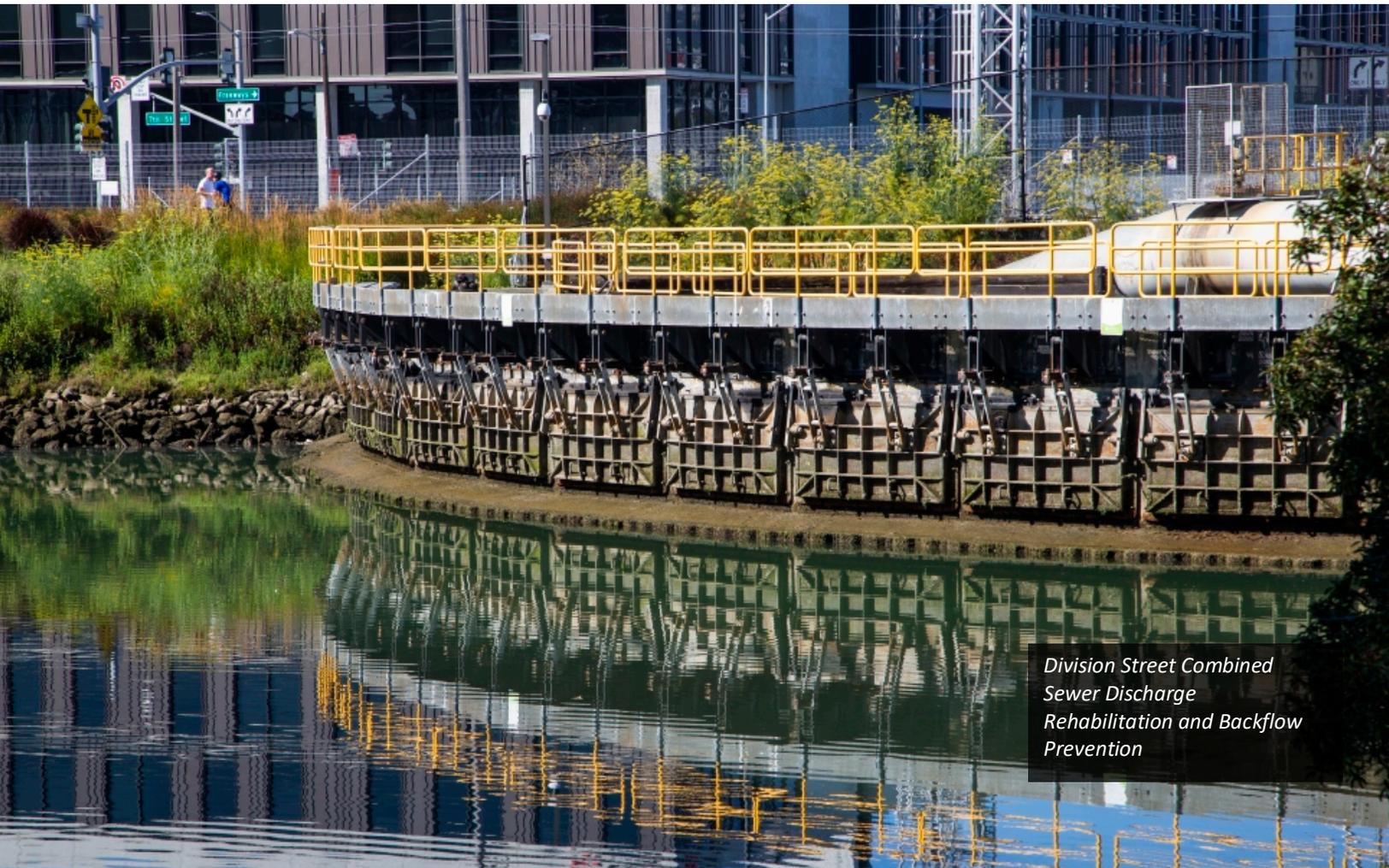
Stormwater Management/Flood Control Improvement Projects

- Green infrastructure (bioretention planters for stormwater runoff, permeable paving)
- Flood resilience (analysis of flooding risks, stormwater detention and conveyance concepts, flood barriers)
- Hydraulic and drainage sewer improvements in flood prone neighborhoods
- Advanced rainfall and operational decision systems (automated real time forecasts with increased accuracy)

Green Bond Spending Details

The proceeds from the green bond issuance are separately tracked and allocated to designated eligible projects. Spending by bond and eligible project is detailed in Appendix B SSIP Bond Proceeds.

The proceeds have been allocated to finance or refinance projects within the SSIP and Sustainalytics determined that all SSIP projects are eligible to be financed with green bonds, See Appendix D: Green Bond Verification Report.



Division Street Combined Sewer Discharge Rehabilitation and Backflow Prevention

Appendix A: SFPUC Climate and Social Inclusion Impacts Aligned to the United Nations Sustainable Development Goals (SDGs)



SDG 4: Quality education

Ensure inclusive and equitable quality education and promote lifelong learning opportunities

SFPUC Program: [Education](#)

Impact:

- SFPUC partners with community organizations, local school districts and city departments to teach youth about science, technology, engineering and math (STEM) and the role they can play to sustain our natural resources. Through ecoliteracy programs and field trips, students experience the outdoors and learn about STEM careers while gaining a greater appreciation for the environment. Since 2012, SFPUC has partnered with 216 schools and organizations on 11 education programs serving over 77,000 youth.
- SFPUC provides [special curricula](#) and resources like [Big Ideas](#), a book providing teachers with a guide to teach Grades K-12 about SFPUC's water, power and sewer systems or [The Story of Poo](#), an animated video following a six-year old girl from San Francisco who learns about what takes place after she flushes the toilet.
- SFPUC and partners hold [classroom presentations](#) providing more than 2,500 kids with the opportunity to learn about how SFPUC systems operate and what they can do to conserve our natural resources.
- Through the SPARK Program, SFPUC staff and private sector partners serve as mentors to socio-economically disadvantaged students, volunteering more than 600 hours to collaborate with them on STEM projects while helping them explore real career opportunities.
- The [College Hill Learning Garden](#) provides children in primary school with an interactive garden equipped with curriculum-based tools. Since 2016, the Garden has partnered with 28 schools and organizations serving over 2,400 youth.



SDG 5: Gender equality

Achieve gender equality and empower all women and girls

SFPUC Program: [Small Business Opportunities](#)

Impact:

- SFPUC partners with the National Association of Women in Construction and the Women's Business National Council to host the Annual Women in Construction Exposition. The Expo provides multiple benefits to attendees, from supporting women in the construction industry by sharing information on pre-apprenticeship programs to beginning a career in the industry. Other advantages include strengthening professional skills, growing successful companies and navigating the contract bidding process. Through the Expo, participants also have the opportunity to learn about construction opportunities with the SFPUC.
- SFPUC is a member of the Tuolumne Community Collaborative, group of more than 25 entities including education institutions, local contractors, professional service firms, and government agencies that support a pipeline of local workers in the construction industry. The Collaborative features a Pre-Apprenticeship Construction Training Program, and it recently celebrated an inaugural all-female class.



SDG 6: Clean water and sanitation

Ensure availability and sustainable management of water and sanitation for all

SFPUC Program: [Water System Improvement Program \(WSIP\)](#)

Impact:

- Water system provides water supply, treatment and distribution services to 890,000 residents in San Francisco and to 1.8 million wholesale customers in surrounding Bay Area communities
- Improve the system to provide high-quality water that reliably meets all current and foreseeable local, State, and Federal requirements.
- Reduce vulnerability of the water system to damage from earthquakes.
- Increase system reliability to deliver water by providing the redundancy needed to accommodate outages.
- Provide improvements related to water supply/drought protection.
- Enhance sustainability through improvements that optimize protection of the natural and human environment.

SFPUC Program: [Sewer System Improvement Program \(SSIP\)](#)

Impact:

- Wastewater system provides sewer and stormwater collection and treatment services to 890,000 residents in San Francisco.
- Provide a reliable and resilient system that can respond to catastrophic events. Ensuring treatment of flows within 72 hours of a major earthquake.
- Integrate green and grey infrastructure to manage stormwater and minimize flooding. Reducing stormwater impacts on neighborhoods and the sewer system.
- Provide benefits to impacted communities by alleviating odors and other impacts while providing both economic and job opportunities.
- Modify the system to adapt to Climate Change. Building facilities with climate change design criteria to respond more effectively to the rising sea level and other impacts.
- Achieve economic and environmental sustainability. Reusing and conserving the by-products of our wastewater and stormwater treatment systems.
- Maintain ratepayer affordability. Keeping customer bills less than 2.5% of an average household income for a single-family residence.



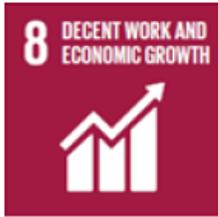
SDG 7: Affordable clean energy

Ensure access to affordable, reliable, sustainable and modern energy for all

SFPUC Program: [Power](#)

Impact:

- The Power system serves 80% of the electricity consumed in San Francisco with minimum 90% renewable energy.
- Hetch Hetchy Power is San Francisco's full-service, publicly owned electric utility. As SFPUC drinking water flows downhill from Yosemite to the Bay Area, SFPUC harnesses the natural force of gravity to generate 100% greenhouse gas-free hydroelectric power.
- CleanPowerSF is San Francisco's official Community Choice Energy program which buys electricity from renewable sources like solar and wind, and puts that clean electricity on the power grid.



SDG 8: Decent work and economic growth

Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

SFPUC Program: [Workforce Development](#)

Impact:

- 1,400 local young people participate in [work-based learning opportunities and industry-related internships](#).
- The [Project Learning Grant](#) partnerships with 25-30 local community organizations provide youth with work-based learning opportunities related to water, power and sewer.
- Opened in 2013, the [Contractor's Assistance Center](#) is a free community resource that provides local, small businesses with the tools and resources to adequately get access to, compete for, and perform on the many contracting opportunities that come from SFPUC.
- SFPUC's Sewer System Improvement Program and Water System Improvement Program are possible through [project labor agreements](#) (PLAs). These are formal agreements with local labor unions which ensure that local workers and residents impacted by these capital projects have access to construction training and job opportunities. Over the years, PLAs have brought thousands of critically needed jobs to San Francisco, while building healthier, more reliable water and sewer systems. SFPUC's PLAs help to:
 - Provide access to a study supply of skilled union workers
 - Pay family-sustaining prevailing wages and benefits
 - Harmonize safety protocols at work sites
 - Create careers in construction
- Project Pull, a paid internship program, pairs local high school students and incoming college freshmen with City staff who introduce them to job skills and technical careers. Since its inception in 1996, the program has provided more than 1,500 students with summer employment. Since 2012, students from the area of Southeast Treatment Plant, District 10, have had paid jobs and mentorships from the SFPUC and private engineering firms working on our SSIP through the [SSIP Cityworks Internship Program](#).
- Through [CityBuild Academy](#), an 18-week citywide construction program, SFPUC trains and connects local workers to job opportunities with our capital programs, creating more than 1,000 placements since 2006. Program participants are also able to access CityBuild's Women Leadership and Mentor Group.

- As a founding member of [BAYWORK](#) – a consortium of 29 water and wastewater Bay Area agencies—SFPUC collaboratively holds career fairs for hundreds of students and job seekers while providing workshops that keep existing workers up-to-date on skills and industry trends.

SFPUC Program: [Social Impact Partnership Program](#)

Impact:

- The SFPUC is the first public utility in the country to implement a social impact program that advances corporate social responsibility as a part of its competitive bidding process.
- For Requests for Proposals valued at \$5 million and above, firms can receive up to 5 points (out of 100) for what they are willing to give-back to the local community in the areas of education, environmental justice, workforce and small business development and social innovation.
- To date, these commitments have supported scholarships for college students, STEM mentorship for middle-school students, paid internships for youth and young adults, pre-job barrier removal like providing child care, small business mentorship, and supporting urban greening and access to healthy food.



SDG 9: industry, innovation and infrastructure

Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

SFPUC Program: [Water System Improvement Program \(WSIP\)](#)

Impact:

- Water system provides water supply, treatment and distribution services to 890,000 residents in San Francisco and to 1.8 million wholesale customers in surrounding Bay Area communities
- Reduce vulnerability of the water system to damage from earthquakes.
- Increase system reliability to deliver water by providing the redundancy needed to accommodate outages.
- Provide improvements related to water supply/drought protection.
- Enhance sustainability through improvements that optimize protection of the natural and human environment.

SFPUC Program: [Sewer System Improvement Program \(SSIP\)](#)

Impact:

- Wastewater system provides sewer and stormwater collection and treatment services to 890,000 residents in San Francisco.
- Provide a reliable and resilient system that can respond to catastrophic events. Ensuring treatment of flows within 72 hours of a major earthquake.
- Integrate green and grey infrastructure to manage stormwater and minimize flooding. Reducing stormwater impacts on neighborhoods and the sewer system.
- Modify the system to adapt to Climate Change. Building facilities with climate change design criteria to respond more effectively to the rising sea level and other impacts.
- Achieve economic and environmental sustainability. Reusing and conserving the by-products of our wastewater and stormwater treatment systems.
- Maintain ratepayer affordability. Keeping customer bills less than 2.5% of an average household income for a single-family residence.



SDG 10: Reduce Inequalities

Reduce inequality within and among countries

SFPUC Program: [Environmental Justice and Land Use](#)

Impact:

- SFPUC's [Environmental Justice Policy](#) affirms and commits to the goals of environmental justice to prevent, mitigate, and lessen disproportionate impacts of SFPUC activities on communities. The SFPUC is the first public utility in the nation to adopt an Environmental Justice Policy.
- Located on six-acres of SFPUC land, [Hummingbird Farm](#) makes affordable produce available to communities disproportionately impacted by SFPUC operations. The farm services as a community hub, providing a space for individuals of all ages and abilities to participate in farming, educational activities and cultural celebrations.
- Through the [Urban Watershed Stewardship Program](#), SFPUC partners with the City's Community Challenge Grant program to provide grants that support community projects that harvest and use rainwater, remove impervious surfaces, or implement green stormwater management facilities. Since the program's inception in 2009, SFPUC has removed more than 20,000 square feet of impervious concrete; planted more than 70 trees and 5,500 plants; installed cisterns capturing 25,000 gallons of rainwater; and engaged the community to provide more than 5,300 volunteer hours.

SFPUC Community Benefits Program: [Neighborhood Revitalization](#)

Impact:

- Based in the historic Bayview Hunters Point Neighborhood, the [Southeast Community Facility Commission](#) provides guidance to the SFPUC and the San Francisco Board of Supervisors regarding strategic, financial and capital improvement plans, programming and operations for the Southeast Community Facility and Greenhouses. Southeast Investments have included:
 - 1,400 young people participate in internships and other work-based learning opportunities each year
 - Access to clean drinking water at three public schools in the neighborhood.
 - Nearly 50 contractors have completed a green infrastructure construction training program.



SDG 11: Sustainable Cities and Communities

Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development

SFPUC Program: [Power](#)

Impact:

- The Power system serves 80% of the electricity consumed in San Francisco with minimum 90% renewable energy.
- Hetch Hetchy Power is San Francisco's full-service, publicly owned electric utility. As SFPUC drinking water flows downhill from Yosemite to the Bay Area, SFPUC harnesses the natural force of gravity to generate 100% greenhouse gas-free hydroelectric power.
- CleanPowerSF is San Francisco's official Community Choice Energy program which buys electricity from renewable sources like solar and wind, and puts that clean electricity on the power grid.

SFPUC Program: [Water System Improvement Program \(WSIP\)](#)

Impact:

- Water system provides water supply, treatment and distribution services to 890,000 residents in San Francisco and to 1.8 million wholesale customers in surrounding Bay Area communities.
- Improve the system to provide high-quality water that reliably meets all current and foreseeable local, State, and Federal requirements.
- Reduce vulnerability of the water system to damage from earthquakes.
- Increase system reliability to deliver water by providing the redundancy needed to accommodate outages.
- Provide improvements related to water supply/drought protection.
- Enhance sustainability through improvements that optimize protection of the natural and human environment.

SFPUC Program: [Sewer System Improvement Program \(SSIP\)](#)

Impact:

- Wastewater system provides sewer and stormwater collection and treatment services to 890,000 residents in San Francisco.
- Provide a reliable and resilient system that can respond to catastrophic events. Ensuring treatment of flows within 72 hours of a major earthquake.

- Integrate green and grey infrastructure to manage stormwater and minimize flooding. Reducing stormwater impacts on neighborhoods and the sewer system.
- Provide benefits to impacted communities by alleviating odors and other impacts while providing both economic and job opportunities.
- Modify the system to adapt to Climate Change. Building facilities with climate change design criteria to respond more effectively to the rising sea level and other impacts.
- Achieve economic and environmental sustainability. Reusing and conserving the by-products of our wastewater and stormwater treatment systems.
- Maintain ratepayer affordability. Keeping customer bills less than 2.5% of an average household income for a single-family residence.



SDG 12: Responsible Consumption and Production

Ensure sustainable consumption and production patterns

SFPUC Program: [Power](#)

Impact:

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- CleanPowerSF is San Francisco's official Community Choice Energy program which buys electricity from renewable sources like solar and wind, and puts that clean electricity on the power grid.

SFPUC Program: [Water System Improvement Program \(WSIP\)](#)

Impact:

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- Enhance sustainability through improvements that optimize protection of the natural and human environment.

SFPUC Program: [Sewer System Improvement Program \(SSIP\)](#)

Impact:

- Wastewater system provides sewer and stormwater collection and treatment services to 890,000 residents in San Francisco.
- Provide a reliable and resilient system that can respond to catastrophic events. Ensuring treatment of flows within 72 hours of a major earthquake.

- Integrate green and grey infrastructure to manage stormwater and minimize flooding. Reducing stormwater impacts on neighborhoods and the sewer system.
- Provide benefits to impacted communities. Alleviating odors and other impacts while providing both economic and job opportunities.
- Modify the system to adapt to Climate Change. Building facilities with climate change design criteria to respond more effectively to the rising sea level and other impacts.
- Achieve economic and environmental sustainability. Reusing and conserving the by-products of our wastewater and stormwater treatment systems.
- Maintain ratepayer affordability. Keeping customer bills less than 2.5% of an average household income for a single-family residence.



SDG 13: Climate Action

Take urgent action to combat climate change and its impacts

SFPUC Program: [Power](#)

Impact:

- The Power system serves 80% of the electricity consumed in San Francisco with minimum 90% renewable energy.
- Hetch Hetchy Power is San Francisco's full-service, publicly owned electric utility. As SFPUC drinking water flows downhill from Yosemite to the Bay Area, SFPUC harnesses the natural force of gravity to generate 100% greenhouse gas-free hydroelectric power.
- CleanPowerSF is San Francisco's official Community Choice Energy program which buys electricity from renewable sources like solar and wind, and puts that clean electricity on the power grid.

SFPUC Program: [Water System Improvement Program \(WSIP\)](#)

Impact:

- Water system provides water supply, treatment and distribution services to 890,000 residents in San Francisco and to 1.8 million wholesale customers in surrounding Bay Area communities.
- Improve the system to provide high-quality water that reliably meets all current and foreseeable local, State, and Federal requirements.
- Reduce vulnerability of the water system to damage from earthquakes.
- Increase system reliability to deliver water by providing the redundancy needed to accommodate outages.
- Provide improvements related to water supply/drought protection.
- Enhance sustainability through improvements that optimize protection of the natural and human environment.

SFPUC Program: [Sewer System Improvement Program \(SSIP\)](#)

Impact:

- Wastewater system provides sewer and stormwater collection and treatment services to 890,000 residents in San Francisco.
- Provide a reliable and resilient system that can respond to catastrophic events. Ensuring treatment of flows within 72 hours of a major earthquake.

- Integrate green and grey infrastructure to manage stormwater and minimize flooding. Reducing stormwater impacts on neighborhoods and the sewer system.
- Provide benefits to impacted communities by alleviating odors and other impacts while providing both economic and job opportunities.
- Modify the system to adapt to Climate Change. Building facilities with climate change design criteria to respond more effectively to the rising sea level and other impacts.
- Achieve economic and environmental sustainability. Reusing and conserving the by-products of our wastewater and stormwater treatment systems.
- Maintain ratepayer affordability. Keeping customer bills less than 2.5% of an average household income for a single-family residence.



SDG 14: Life below water

Conserve and sustainably use the oceans, seas and marine resources for sustainable development

SFPUC Program: [Water System Improvement Program \(WSIP\)](#)

Impact:

- Water system provides water supply, treatment and distribution services to 890,000 residents in San Francisco and to 1.8 million wholesale customers in surrounding Bay Area communities
- Provide improvements related to water supply/drought protection.
- Enhance sustainability through improvements that optimize protection of the natural and human environment.

SFPUC Program: [Sewer System Improvement Program \(SSIP\)](#)

Impact:

- Wastewater system provides sewer and stormwater collection and treatment services to 890,000 residents in San Francisco.
- Provide a reliable and resilient system that can respond to catastrophic events. Ensuring treatment of flows within 72 hours of a major earthquake.
- Integrate green and grey infrastructure to manage stormwater and minimize flooding. Reducing stormwater impacts on neighborhoods and the sewer system.
- Modify the system to adapt to Climate Change. Building facilities with climate change design criteria to respond more effectively to the rising sea level and other impacts.
- Achieve economic and environmental sustainability. Reusing and conserving the by-products of our wastewater and stormwater treatment systems.
- Maintain ratepayer affordability. Keeping customer bills less than 2.5% of an average household income for a single-family residence.



SDG 15: Life on land

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification and halt and reverse land degradation and halt biodiversity loss

SFPUC Program: [Power](#)

Impact:

- The Power system serves 80% of the electricity consumed in San Francisco with minimum 90% renewable energy.
- Hetch Hetchy Power is San Francisco's full-service, publicly owned electric utility. As SFPUC drinking water flows downhill from Yosemite to the Bay Area, SFPUC harnesses the natural force of gravity to generate 100% greenhouse gas-free hydroelectric power.
- CleanPowerSF is San Francisco's official Community Choice Energy program which buys electricity from renewable sources like solar and wind, and puts that clean electricity on the power grid.

SFPUC Program: [Water System Improvement Program \(WSIP\)](#)

Impact:

- Water system provides water supply, treatment and distribution services to 890,000 residents in San Francisco and to 1.8 million wholesale customers in surrounding Bay Area communities.
- Improve the system to provide high-quality water that reliably meets all current and foreseeable local, State, and Federal requirements.
- Reduce vulnerability of the water system to damage from earthquakes.
- Increase system reliability to deliver water by providing the redundancy needed to accommodate outages.
- Provide improvements related to water supply/drought protection.
- Enhance sustainability through improvements that optimize protection of the natural and human environment.

SFPUC Program: [Sewer System Improvement Program \(SSIP\)](#)

Impact:

- Wastewater system provides sewer and stormwater collection and treatment services to 890,000 residents in San Francisco.
- Provide a reliable and resilient system that can respond to catastrophic events. Ensuring treatment of flows within 72 hours of a major earthquake.

- Integrate green and grey infrastructure to manage stormwater and minimize flooding. Reducing stormwater impacts on neighborhoods and the sewer system.
- Provide benefits to impacted communities by alleviating odors and other impacts while providing both economic and job opportunities.
- Modify the system to adapt to Climate Change. Building facilities with climate change design criteria to respond more effectively to the rising sea level and other impacts.
- Achieve economic and environmental sustainability. Reusing and conserving the by-products of our wastewater and stormwater treatment systems.
- Maintain ratepayer affordability. Keeping customer bills less than 2.5% of an average household income for a single-family residence

Appendix B: SSIP Bond Proceeds

Projects	Wastewater Series 2016 A As of June 30, 2019			
	Estimated Use of Proceeds	Prior Year Spending	FY 18-19 Spending*	Remaining
Collection System Improvements	\$62,076,000	\$36,333,460	(\$21,765,196)	\$47,507,736
Central Bayside System Improvements	19,800,000	16,864,011	(11,135,381)	14,071,370
Biosolids-digester Project	--	--	21,247,548	(21,247,548)
Stormwater Management	49,417,066	37,525,821	(18,923,837)	30,815,082
Northshore To Channel Force Main	20,270,000	6,702,481	(2,261,789)	15,829,308
SSIP Program-Wide Management	94,000,000	111,746,806	(60,179,717)	42,432,911
Treatment Plant Improvement	--	--	102,646,827	102,646,827
Urban Watershed Assessment	13,000,000	12,957,461	(53,123)	95,662
Total	\$258,563,066	\$222,130,040	\$9,575,332	\$26,857,694

* Negative amounts reflect accounting reallocations.

Wastewater Series 2018 A
As of June 30, 2019

Projects	Estimated Use of Proceeds	FY 18-19 Spending	Remaining
Collection System Improvements	\$61,266,279	\$34,947,763	\$26,318,516
Central Bayside System Improvements	16,057,426	8,883,830	7,173,596
Biosolids-digester Project	--	30,693,773	(30,693,773)
Stormwater Management	16,965,926	6,383,760	10,582,166
Flood Resilience-hydraulic	34,937,916	267,630	34,670,286
Northshore To Channel Force Main	--	3,276,156	(3,276,156)
SSIP Program-Wide Management	19,225,481	41,733,460	(22,507,979)
Treatment Plant Improvement	92,560,028	82,233,348	10,326,680
Urban Watershed Assessment	--	1,052,289	(1,052,289)
Total	\$241,013,056	\$209,472,009	\$31,545,846

Wastewater Series 2018 C
As of June 30, 2019

Projects	Estimated Use of Proceeds	FY 18-19 Spending	Remaining
Collection System Improvements	\$43,397,563	\$13,674,905	\$29,722,658
Central Bayside System Improvements	11,374,171	838,453	10,538,718
Biosolids-digester Project	--	29,072,875	(29,072,875)
Stormwater Management	12,017,701	1,381,355	10,636,346
Flood Resilience-hydraulic	24,748,041	--	24,748,041
Northshore To Channel Force Main	--	973,503	(973,503)
SSIP Program-Wide Management	--	2,654,829	(2,654,829)
Treatment Plant Improvement	13,618,242	29,229,084	(15,610,842)
Urban Watershed Assessment	65,564,282	--	65,564,282
Total	\$170,720,000	\$77,825,004	\$92,894,996

Appendix C: SSIP Project Environmental Impacts Aligned with UN Sustainable Development Goals (SDGs)

Project Name	Project Number	United Nations Sustainable Development Goals	Environmental Impact Description	California Environmental Quality ACT (CEQA)
Biosolids-Digester Project				
SEP Biosolids Digester Facilities Project	CWWSIPDP01		<p>Plan, design and construct new digestion and solids handling processes to replace existing aged failing systems at the Southeast Treatment Plant, which treats 80% of waste flows for a population of 890,000. The new facilities include state-of-the art treatment processes producing biogas and Class A biosolids that can be reused for beneficial purposes. Additional improvements include satisfying seismic requirements and minimizing odor and visual impacts on the surrounding community.</p>	Draft Environmental Impact Report
Central Bayside System Improvements				
Central Bayside System Improvement Project - Phase 1	CWWSIPCT01		<p>Enhance collection system for two of eight watersheds including a new gravity Channel Tunnel. Other collection system enhancements, including infrastructure improvements to sewers and pump stations near the Southeast Treatment Plant, which has rainstorm capacity of 250MGD.</p>	N/A
Urban Watershed Assessment				
Urban Watershed Assessment and Planning Initiation	CWWSIPUW00		<p>Evaluate and recommend alternatives that balance the use of grey versus green infrastructure for improvements to watershed surface drainage and collection system management at each of San Francisco's eight drainage basins.</p>	N/A

Project Name	Project Number	United Nations Sustainable Development Goals	Environmental Impact Description	California Environmental Quality ACT (CEQA)
Urban Watershed Assessment and Planning	CWWSIPUW01		<p>Evaluate and recommend alternatives that balance the use of grey versus green infrastructure for improvements to watershed surface drainage and collection system management at each of San Francisco's eight drainage basins. Evaluation utilizes a comprehensive "Triple Bottom Line" tool that employs societal and environmental benefits and costs with the goal of delivering more holistic investment decisions.</p>	N/A
Flood Resilience-hydraulic				
17th and Folsom Permanent Barriers	CWWSIPFCDB15		<p>Install durable custom aluminum or steel barriers to mitigate flooding until a permanent solution, Folsom Area Stormwater Improvement Project, can be implemented</p>	Categorical Exemption
Hydraulic and Drainage Sewer Improvements	CWWSIPFCDB16		<p>Implement small stormwater capture and conveyance improvements at critical flood-prone neighborhoods. This includes improvement of drainage features, expansion of sewer pipes and surface grading modifications.</p>	Categorical Exemption

Project Name	Project Number	United Nations Sustainable Development Goals	Environmental Impact Description	California Environmental Quality ACT (CEQA)
17th and Folsom Wet Weather Storage	CWWSIPFCDB07		Provide interim flood mitigation to a neighborhood experiencing over a foot of water on streets, sidewalks and homes.	N/A
Wawona St and 15th Ave Stormwater Detention Project	CWWSIPFCDB12		Convert a natural area to a flood water detention basin to divert significant volumes of overland flow causing flooding and property damage during large storms.	In Progress
Cayuga Ave Stormwater Detention Project	CWWSIPFCDB13		Improve stormwater detention to a neighborhood that has been susceptible to recurring flooding associated with moderate to heavy storms.	In Progress

Project Name	Project Number	United Nations Sustainable Development Goals	Environmental Impact Description	California Environmental Quality ACT (CEQA)
Flood Resilience Analysis (Planning Phase Only)	CWWSIPFCDB10		<p>Develop a framework for identifying multiple storm scenarios; quantifying risks and cost implications associated with mitigating flooding across storm scenarios and defining the extent of City responsibility based on consequences of extreme storms. This will also develop program and policies beyond collection systems to make recommendations on minimizing flood risks citywide.</p>	N/A
Flood Resilience - Early Projects (Planning Phase Only)	CWWSIPFCDB11		<p>Plan and develop stormwater detention and conveyance concepts to three critical areas have faced flooding over the past decade as a result of multiple significant storms.</p>	N/A
SSIP Program-Wide Management				
SSIP Program Management	CWWSIPPL01, RPL01		<p>Program management for the Sewer System Improvement Program, responsible for three treatment plants, more than a thousand miles of pipes, with 70 MGD on non-rainy days and 575 MGD for rainy days for a population of 890,000. This effort identifies and prioritizes the capital improvement needs of the wastewater system.</p>	N/A
SSIP Sewer Improvements Projects	CWWSIPCSSR_N02		<p>This project implements the recommendations from the Collection System Condition Assessment project. Rehabilitate and/or replace sewers the most critical major sewers, impacting</p>	N/A

Project Name	Project Number	United Nations Sustainable Development Goals	Environmental Impact Description	California Environmental Quality ACT (CEQA)
			the entire wastewater enterprise, impacting a population of 890,000.	
Biofuel Alternative Energy	CWWBAE01		Determine if it is feasible and cost-effective for the SFPUC to generate bioenergy (e.g. biofuel or cogenerated power) as a byproduct of processing fats, oil, grease and/or food waste collected throughout the City of San Francisco, a population of 890,000	N/A
Stormwater Management				
Operational Decision System Phase 1	CWWSSIPFCRP02		Integrate available data in the collection system with rainfall prediction data. The rainfall prediction data will help project the likely impact of approaching storms and generate specific operational recommendations for managing flows.	N/A
Operational Decision System Phase 2	CWWSSIPFCRP03		Integrate available data in the collection system with rainfall prediction data. The rainfall prediction data will help project the likely impact of approaching storms and generate specific operational recommendations for managing flows.	N/A

Project Name	Project Number	United Nations Sustainable Development Goals	Environmental Impact Description	California Environmental Quality ACT (CEQA)
Advanced Rainfall Prediction - Part 1	CWWSIPFCRP01		Provide rainfall forecast information to SFPUC wastewater staff automatically in real-time.	Mitigated Negative Declaration
Watershed Stormwater Management (Planning Only)	CWWSIPFCGI01		Address long term Green Infrastructure development.	N/A
Folsom Area Stormwater Improvement Project	CWWSIPFCDB14		Plan and design improvement to stormwater conveyance to minimize flooding in the event of moderate to heavy storms.	In Progress

Project Name	Project Number	United Nations Sustainable Development Goals	Environmental Impact Description	California Environmental Quality ACT (CEQA)
Richmond Green Infrastructure	CWWSIPFCDB05		<p>Completion of a new pedestrian crosswalk, sixteen terraced rain gardens (including debris traps at the inlets to capture abundant vegetative litter), subsurface infiltration galleries, soil stabilization techniques in selected locations, sewer main upsizing and upgrading existing crosswalks to support individuals with disabilities. Additional improvements include adding permeable pavement, rain garden bulb outs at the end of the pavement, a flow-through rain garden, traditional (infiltrative) rain garden bulb-outs, improved catch basins, and a traditional rain garden.</p>	<p>Categorical Exemption</p>
Channel Green Infrastructure	CWWSIPFCDB08		<p>Implement low impact stormwater management along a popular bike route. The project is designed to manage runoff from 4 acres, removing 1.1 million gallons of stormwater in a typical year.</p>	<p>Categorical Exemption</p>
North Shore Green Infrastructure	CWWSIPFCDB02		<p>Route stormwater to flow-through bioretention planters. In addition, new street surfacing and furnishing will provide improved community space for local residents and visitors</p>	<p>Categorical Exemption</p>

Project Name	Project Number	United Nations Sustainable Development Goals	Environmental Impact Description	California Environmental Quality ACT (CEQA)
Yosemite Green Infrastructure	CWWSIPFCDB06		<p>Daylight creek and divert flows from the sewer using swales, vegetated channels, rain gardens, piped sections and a constructed wetland, detention basin and bio-swale system. This will provide plant establishment and/or monitoring of other Green Infrastructure projects.</p>	In Progress
Sunnydale Green Infrastructure	CWWSIPFCDB04		<p>Create a large terraced bioretention facility that will capture, store, and infiltrate runoff from the impervious roadway and adjacent vegetated slope area which will also provide community benefits by enhancing an adjacent community vegetable garden and a pedestrian connection to a park. Additional work includes creation of large bioretention planters to create a small urban plaza and pleasant community space designed to manage runoff from 1.8 acres, removing 0.8 million gallons of stormwater in a typical year.</p>	Categorical Exemption
Lake Merced Green Infrastructure	CWWSIPFCDB03		<p>Install several bioretention planters to manage runoff from 2.1 acres, removing 1 million gallons of stormwater in a typical year.</p>	In Progress

Project Name	Project Number	United Nations Sustainable Development Goals	Environmental Impact Description	California Environmental Quality ACT (CEQA)
Cesar Chavez Green Infrastructure	CWWLID01		<p>Improve safety, aesthetics, infrastructure and transit efficiency onto heavily trafficked street. This project turned the street into a sustainable "green street" by increasing the number of street trees, implementing Low Impact Development practices, upgrade the street lighting to LED, and installing stormwater planters to add green landscaping pockets and provide for stormwater management. Permeable paving and bioretention were also integrated into the street design.</p>	<p>Mitigated Negative Declaration</p>
Islais Creek Green Infrastructure	CWWLID02/FCDB09		<p>Incorporate green stormwater management into an urban design to meet stormwater performance goals, specifically manage the first .75 inch of rainfall for a 5-year, 3-hour storm event within the 2.2 acre drainage management area. This project also creates new plazas that can serve as neighborhood gathering spaces, greening of the neighborhood and curb bulb-outs to enhance pedestrian and bicyclist safety.</p>	<p>Mitigated Negative Declaration</p>
Sunset Green Infrastructure	CWWSSIPFCDB01		<p>Construct a series of tiered bioretention rain gardens in the western stretch of landscaped parcels along 12 blocks. The rain gardens will manage stormwater runoff and will incorporate a "Learning Lab" to supplement elementary school curriculum.</p>	<p>Categorical Exemption</p>

Project Name	Project Number	United Nations Sustainable Development Goals	Environmental Impact Description	California Environmental Quality ACT (CEQA)
Treatment Plant Improvement				
Land Reuse of 1800 Jerrold Avenue	CWWSIPPRPL91		Purchase of properties, with jurisdictional transfer, of a 6 acre site located adjacent to the Southeast Plant. The site is currently being considered for construction of the new Southeast Plant biosolids facilities, which treat 80% of flows for a population of 890,000	Categorical Exemption
Land Reuse of 1801 Jerrold Avenue	CWWSIPPRPL92		Negotiate a transfer, demolish old facilities and remediate the site based on geotechnical and environmental hazardous materials investigations. The site is currently being considered for construction of the new Southeast Plant biosolids facilities, which treat 80% of flows for a population of 890,000.	Categorical Exemption
SEP New Headworks (Grit) Replacement	CWWSIPSE02		New all-weather 250 MGD facility consisting of state of the art screening, grit removal and odor control technologies in addition to other upgrades that, among other things, improve visual aesthetics of the Southeast Treatment Plant which supports treatment of 80% of waste flows for a population of 890,000.	Mitigated Negative Declaration

Project Name	Project Number	United Nations Sustainable Development Goals	Environmental Impact Description	California Environmental Quality ACT (CEQA)
SEP Oxygen Generation Plant	CWWSIPSE01		<p>Replace antiquated oxygen plants with two technologically advanced 45 tons per day oxygen generation plants at the Southeast Plant.</p>	<p>Categorical Exemption</p>
SEP Primary and Secondary Clarifier Upgrades	CWWSIPSE04		<p>Upgrade the mechanical, structural and electrical components to address operational reliability and compliance with regulatory requirements for liquid treatment at the Southeast Plant, which is responsible for treatment of 80% of flows for a population of 890,000.</p>	<p>Categorical Exemption</p>
SEP 521/522 and Disinfection Upgrades (SEP Building 521 Replacement)	CWWSIPSE05		<p>Upgrades to current wastewater disinfection facility and construction of new, seismically reliable, effluent disinfection facility at the Southeast Treatment Plant, which treats 80% of waste flows for a population of 890,000.</p>	<p>Categorical Exemption</p>
SEP Seismic Reliability and Condition Assessment Improvements	CWWSIPSE08		<p>Immediate seismic, conditional and operational improvements to the Southeast Treatment Plant, treating 80% of wastewater for population of 890,000 people</p>	<p>Categorical Exemption</p>

Project Name	Project Number	United Nations Sustainable Development Goals	Environmental Impact Description	California Environmental Quality ACT (CEQA)
SEP Existing Digester Gas Handling Improvements	CWWSIPSE09		Upgrades to critical digester gas processing equipment at the Southeast Plant, which serves 80% of waste flows for a population of 890,000. Improvements include equipment upgrades to odor control, ventilation and gas monitoring	Categorical Exemption
SEP Power Feed and Primary Switchgear Upgrades	CWWSIPSE10		Address deficiencies in current power system, obtain redundant power and plan for the need for emergency power for critical processes at the Southeast Treatment Plant to ensure continued operation in the event of seismic or extreme weather related event.	Categorical Exemption
SEP Oxygen Generation Plant 01	CWWSIPSE11		Replacement of facility within to Southeast Plant to improve safety and redundancy of critical equipment, impacting treatment and processing for 80% of waste flows for population of 890,000	Categorical Exemption
Northpoint Outfall Refurbishment	CWWSIPTPNP01		Rehabilitation of the discharge point of waste stream including removal of debris, repairs to existing systems and improvements to protect against extreme corrosive marine environment and strengthen the ability to withstand operating and hydrodynamic loads at the facility	Categorical Exemption

Project Name	Project Number	United Nations Sustainable Development Goals	Environmental Impact Description	California Environmental Quality ACT (CEQA)
			responsible for processing 150 MGD of wastewater during wet weather events.	
North Shore Pump Station Wet Weather Improvements	CWWSIPTPNP02		Provide redundant pumping capacity during wet weather so that 3 of 4 pumps are capable of pumping 75 MGD during wet weather. This project will improve operational reliability and regulatory compliance.	Categorical Exemption
Westside Pump Station Reliability Improvements	CWWSIPTPOP02		Improve reliability and redundancy to pump station serving the Oceanside Treatment Plant, which provides all-weather wastewater collection to 20% of flows for population of 890,000.	Categorical Exemption
OSP Digester Gas Utilization Upgrade	CWWSIPTPOP03		Replace and improve equipment to comply with regulatory air board requirements as well as upgrades to maximize process efficiency within the energy recovery building at the Oceanside Treatment Plant, which treats 20% of flows for population of 890,000.	Categorical Exemption
OSP Odor Control Optimization	CWWSIPTPOP06		Upgrades to inefficiencies identified in odor control including the completion of an odor control study that may identify opportunities for reducing energy consumption while maintaining	Categorical Exemption

Project Name	Project Number	United Nations Sustainable Development Goals	Environmental Impact Description	California Environmental Quality ACT (CEQA)
			effective performance and meeting offsite odor limits.	
OSP Condition Assessment Repairs	CWWSIPTPOP05		Address reliability of existing assets and extending the service life of buildings that must remain in operation for 30 years or more to support treatment of up to 65 MGD in wet weather.	In Progress
SEP Existing Digester Roof Repairs	CWWSIPSE03		Maintain existing facilities to produce Class B biosolids until new facilities are available for service, allowing Southeast Plant to continue to operate and treat 80% of flows for a population of 890,000	Notice of Exemption
SEP Facility-wide Distributed Control System Upgrade	CWWSIPSE07		Upgrades within the Southeast Treatment Plant to improve wastewater treatment performance and reliability as well as planning and design of upgrades to other wastewater treatment facilities to ensure system-wide consistency, impacting flows for entire population of 890,000.	N/A
Collection System Improvements				
Hudson Ave Pump Station and Outfall Improvements	CWWSIPCSPS01		Elimination of the pump station near the Southeast Treatment Plant, resulting in more reliable flow conveyance and energy savings.	N/A

Project Name	Project Number	United Nations Sustainable Development Goals	Environmental Impact Description	California Environmental Quality ACT (CEQA)
North Shore to Channel F M Drainage Improvement	CWWSIPNC01		Upgrades to the force main responsible for providing critical conveyance of combined sewage and stormwater flows from the northeastern quadrant of San Francisco to the Southeast Treatment Plant.	Mitigated Negative Declaration
CSD Backflow Prevention and Monitoring	CWWSIPCSCD04		Develop and implement a Combined Sewer Discharge and conveyance monitoring plan to gather data on saltwater intrusion in the entire collection network. This also includes installation of backflow preventers at select locations to prevent Bay water from entering the system during extreme tides and sea level rise.	Categorical Exemption
5th, North 6th and Division Street CSD Rehabilitation	CWWSIPCSCD05		Rehabilitate Combined Sewer Discharge for three structures, which were selected based on their age, structural conditions, and amount of discharge and sensitivity of the receiving water body in addition to other operational deficiencies. This project also includes the installation of backflow preventers to keep Baywater from entering the system due to extreme tides and sea level rise.	Categorical Exemption
Mariposa Dry-Weather Pump Station & Force Main Improvements	CWWSIPCSPS03		Increase the current dry weather capacity of a dry-weather pump station and dry-weather force main to accommodate the peak design flow rate of 5.0 MGD. This project will construct a new pump station to serve an area of growth in the City. It will be seismically resilient and adaptive to sea level rise.	Categorical Exemption

Project Name	Project Number	United Nations Sustainable Development Goals	Environmental Impact Description	California Environmental Quality ACT (CEQA)
Marin Street Sewer Replacement	CWWSIPCSPS05	   	Upsize existing sewers, from 24-inch diameter to 30-inch diameter, to handle additional dry-weather flows projected from a tributary area	Categorical Exemption
Griffith Pump Station Improvements	CWWSIPCSPS06	   	Refurbish and extend service life of pump station in addition to upgrading most instrumentation and control systems, which would reduce energy use and future maintenance requirements.	Categorical Exemption
Geary BRT Sewer Improvements - Phase 2	CWWSIPCSSR_N03	   	Plan and design for sewer relocation, rehabilitation or replacement to allow for a Bus Rapid Transit lane to operate above existing sewer lines.	Categorical Exemption
Geary BRT Sewer Improvements Phase 1	CWWSIPCSSR06	   	Replace approximately 1.5 miles of aging sewers and other changes to support a Bus Rapid Transit lane to improve bus service, accessibility and pedestrian safety.	Categorical Exemption
Collection System Condition Assessment	CWWSIPCSSR02	   	There are over 80 miles of sewers that are over 100 years old. This project will assess the condition of up to 13 miles of the most critical major sewers in the system, and determine whether rehabilitation or replacement is necessary.	N/A

Project Name	Project Number	United Nations Sustainable Development Goals	Environmental Impact Description	California Environmental Quality ACT (CEQA)
Beach and Sansome Street CSD Rehabilitation	CWWSIPCSCD03		Clean and conduct a specific condition assessment of Combined Sewer Discharge structures. Install backflow prevention devices to protect against Bay water entering the system due to extreme high tides and sea level rise.	Categorical Exemption
Rutland Sewer Improvements	CWWSIPCSSR12		Increase the hydraulic capacity of part of sewer system including replacing the existing sewer with a larger reinforced pipe, constructing a wet weather diversion structure and improving pipe performance during a large storm event, resulting in increased system reliability.	Minor Project Modification
Drumm and Jackson Streets Sewer System Improvement	CWWSIPCSSR09		Rehabilitate 800 linear-feet of a box sewer and 200 linear feet of another box sewer which will increase the reliability of these major assets and to maximize flows to the wastewater treatment plant.	Categorical Exemption
Richmond Transport Modeling	CWWSIPCSSR01		Review of two models to identify recommendations for improving the system and addressing issues of hydraulics and odor control.	N/A

Project Name	Project Number	United Nations Sustainable Development Goals	Environmental Impact Description	California Environmental Quality ACT (CEQA)
Masonic Avenue Sewer Improvements	CWWSIPCSSR10		<p>Rehabilitate and realign approximately 4,700 linear feet of sewers as well as construct new sewer mains, manholes, side sewers and catch basins to support the improvement of the street above including bicycle lane additions, construction of a small park and incorporation of public art elements along the corridor.</p>	<p>Categorical Exemption</p>
Cargo Way Sewer Box Odor Reduction	CWWSIPCSSR11		<p>Identify odor control opportunities in collection system including identification of flow sources, potential infiltration and inflow issues. This project will install a flushing system to alleviate odor issues in the collection system.</p>	<p>Categorical Exemption</p>
Taraval Sewer Improvements	CWWSIPCSSR13		<p>Relocate approximately 19,000 linear feet of existing sewer facilities to allow for ease of maintenance and repair/replacement without impacting municipal transit operations.</p>	<p>Categorical Exemption</p>
Kansas and Marin Streets Sewer Improvements	CWWSIPCSSR03		<p>Increase wet-weather flow conveyance for a minor drainage basin to manage stormwater in one of San Francisco's 8 watersheds, including construction of 900 linear feet of 8-foot diameter tunnel.</p>	<p>Categorical Exemption</p>

Project Name	Project Number	United Nations Sustainable Development Goals	Environmental Impact Description	California Environmental Quality ACT (CEQA)
Van Ness BRT Sewer Improvements	CWWSIPCSSR04	   	Replace and relocate existing sewer utilities to allow for future sewer service maintenance and repair/replacement without impacting Bus Rapid Transit operations.	Environmental Impact Report
Richmond Transport/Storage Tunnel Rehabilitation	CWWSIPCSCD01	   	Evaluate rehabilitation methods for storage tunnel to resolve historical surge issues such as geysering through vent holes and dislodged manhole covers in addition to odor solutions.	In Progress
Cesar Chavez Pump Station	CWWSIPCSPS04	   	Collect stormwater and groundwater from under a heavily trafficked freeway underpass and convey to the Southeast Treatment Plant.	In Progress
Force Main Rehab at Embarcadero and Jackson Streets	CWWSIPCSPS02	   	Rehabilitate or replace 240 linear feet of the North Shore Force Main that is most susceptible to failure. This project will provide redundancy and reliability for conveyance of flows to the Southeast Treatment Plant.	Minor Project Modification
Better Market Street Sewer Improvements - Phase 1	CWWSIPCSSR05	   	Replace aging sewer infrastructure beneath a central San Francisco street, especially brick sewers that are over 100 years old. This phase will help advance several key City policies: Transit First, Complete Streets, the SF Pedestrian Strategy/Walk First and the SF Bicycle Plan.	Various
Central Subway Sewer Improvements	CWWSIPCSSR07	   	Sewer improvements to system underneath a planned project to extend public rail service. Improvements will help avoid conflicts with rail service construction and minimize future repair and replacement impacts.	Various

Project Name	Project Number	United Nations Sustainable Development Goals	Environmental Impact Description	California Environmental Quality ACT (CEQA)
Mission Bay Loop Sewer Improvement	CWWSIPCSSR08	   	Relocate or replace existing gravity sewers and force mains to avoid future conflicts with light rail operations.	Various

SAN FRANCISCO PUBLIC UTILITIES COMMISSION GREEN BOND

FRAMEWORK OVERVIEW
AND SECOND OPINION
BY SUSTAINALYTICS

May 2016



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1. PREFACE

Sustainalytics has been retained by San Francisco Public Utilities Commission (SFPUC) to support, review, and provide an opinion on its green bond framework and its alignment with the Green Bond Principles 2015 and compatibility with the draft Water Climate Bonds Standard requirements. As part of this engagement, Sustainalytics reviewed relevant public and internal documents, and held conversations with SFPUC's legal, finance, operational and sustainability teams to understand the planned use of proceeds, project selection process, and management and reporting for its green bond.

This document contains two sections:

- 1) Framework Overview, which includes a summary of SFPUC's green bond framework; and
- 2) Sustainalytics' Opinion, which is a second party opinion on the framework.

2. INTRODUCTION

The SFPUC, a public utility, is a department of the City of San Francisco, and provides drinking water to the City of San Francisco and wholesale water agencies located in three Bay Area counties, wastewater services to the City of San Francisco, and green hydroelectric and solar power to retail customers and the City's municipal departments. The SFPUC's Wastewater Enterprise maintains a combined sewage and stormwater collection, treatment and disposal system, and operates and maintains 993 miles of combined sewers for homes, businesses, and street runoff. Three treatment plants treat sewage and stormwater, reducing pollution in the bay and ocean.¹

SFPUC has decided to issue a green bond to finance sustainable stormwater management and wastewater projects in San Francisco. The following framework outlines the alignment of the bond to the water climate bonds standard, outlines the eligibility criteria for the use of proceeds, describes the project selection process and management of proceeds, and finally describes how the impact of the bond will be reported by SFPUC.

3. FRAMEWORK OVERVIEW

For this green bond issued by SFPUC a framework has been created that follows the four key pillars of the Green Bond Principles ("GBP"):

- Use of Proceeds
- Project Selection Process
- Management of Proceeds
- Reporting

3.1 Use of Proceeds

To be eligible for the green bond proceeds, the projects funded must meet one or more of the following business activity criteria:

¹ SFPUC About Us <http://www.sfwater.org/index.aspx?page=6>

3.1.1 Eligibility Criteria

To be eligible for the green bond proceeds, the projects funded must meet one or more of the following business activity criteria:

1. Wastewater treatment upgrades
2. Sewer collection system improvements
3. Stormwater management/flood control improvements

The context: The San Francisco sewer system was not constructed to withstand major earthquakes or the impacts of climate change, such as sea level rise and intense rainstorms that could overwhelm the sewer system, as it treats both sewage and stormwater runoff. Currently, more than 300 miles of sewers are more than 100 years old. SFPUC recognizes the significant challenge of operating an aging sewer system, and states that it is crucial that the system be updated before it becomes a threat to public health. The SFPUC has therefore identified wastewater treatment, sewer collection system improvements, and stormwater management as vital to climate change adaptation and to ensure the effectiveness and sustainability of the sewer system.

Use of proceeds: SFPUC has identified numerous projects under the Sewer System Improvement Program (SSIP) aimed at improving and strengthening wastewater treatment and sewer collection systems. These projects include, but are not limited to:

Wastewater treatment projects

- Replacing existing and aged and failing facilities with new Biosolids Digester Facilities
- Improving the level of screening and grit removal in existing facilities
- Replacing the antiquated oxygen generation plants
- Condition assessment and rehabilitation of building structures
- Replacing mechanical and electrical equipment
- Seismic retrofitting

Sewer collection system improvements projects

- Enhancing conveyance in the Channel and Islais Creek watershed to provide redundancy and increase capacity to manage storm events
- Rehabilitating and replacing interceptors, tunnels, pump stations, force mains and Transport/Storage (T/S) boxes
- Rehabilitating Combined Sewer Discharge (CSD) structures and preventing backflow of bay water through CSDs due to sea level rise

Stormwater management/flood control improvements projects

- Green infrastructure (bioretention planters for stormwater runoff, permeable paving)
- Flood resilience (analysis of flooding risks, stormwater detention and conveyance concepts, flood barriers)
- Hydraulic and drainage sewer improvements in flood prone neighborhoods

- Advanced rainfall and operational decision systems (automated real time forecasts with increased accuracy)

Any project that meets the business activity criteria listed above, including the new and ongoing developments of such projects, are eligible to be funded in whole or in part by an allocation of the green bond proceeds. SFPUC has selected the projects listed in Appendix A for the allocation of green bond proceeds.

3.2 Project Evaluation and Selection Process

The projects included in the bond sale are part of the Sewer System Improvement Program (SSIP) Phase 1. The SSIP is a multi-billion and multi-year capital program to upgrade the City of San Francisco's aging sewer system. The program will not only modernize the system but also takes into account changes related to storm intensity and sea level rise. The projects in this bond sale are part of the \$2.9B SSIP Phase 1 and has been approved by the Commission.

Beginning in 2003, the SFPUC staff assessed the need for wastewater collection and treatment system improvements to help the SFPUC continue to meet its core mission and Wastewater Enterprise specific goals for climate change adaptation, regulatory permit compliance, system reliability and functionality, and sustainable operations. From 2009-2010 seven intensive workshops were held with the Commission that culminated in the endorsement of the Goals and Levels of Service provided in the Sewer System Improvement Program Report. In 2011 there was a presentation and discussion of the SSIP, 10-year Capital Request, and Associated Rate Impacts where the Commission authorized staff to move forward with the procurement of a Program Management Consultant (PMC) to validate the proposed program scope, schedule, and budget. The PMC started work in 2011 and conducted a detailed validation effort of the proposed SSIP projects. Three Commission validation workshops were conducted in 2012 to update both the Commission and the public on the proposed treatment and collection system projects' scope, schedule, and budget; as well as, revisions to the SSIP Goals and Levels of Service. The Program Validation workshops resulted in endorsement of the 2012 SSIP Goals and Levels of Service, validation of the staff's project scope and phased implementation process, and authorization for staff to proceed with planning and developing the proposed Phase 1 projects of the SSIP.

Over the past three years since the Commission has endorsed Phase 1 of the program, significant progress in program planning and project development of both the treatment and collection systems have occurred. The baselining efforts included a thorough review of the Goals and Levels of Service; prioritization of project scopes and costs to determine if deferral or elimination of scope was acceptable; refinement of projects, namely as a result of the receiving water model results; and, Central Bayside System Improvement Project tunnel sizing.

This effort has resulted in updated 2016 Goals, Levels of Service, Program and Phase 1 Strategies that will inform and guide project teams and a revised Program Baseline that contains better definition of project scopes, refinement of costs, and updated project schedules. In addition, other collection system needs (for example, climate change adaption to sea level rise and intense storms) and opportunities have arisen that have triggered the inclusion of Interdepartmental and Flooding projects to the SSIP. To best capture

and reflect all of these changes, SSIP staff has revised the overall Program Baseline Cost Summary and Phase 1 Project Schedules.

3.3 Management of Proceeds

The amount raised through the issuance of the green bond will be equal to or less than amounts budgeted for the eligible projects listed in Appendix A.

The proceeds of the bond will be held in a dedicated bond sub-fund set up to manage and track the disbursements of the bond proceeds for eligible green projects. All the funding and disbursement for each project is recorded in an accounting system – FAMIS (Financial Accounting Management Information System), managed by the City of San Francisco.

3.4 Reporting

Funds: SFPUC plans to report on an annual basis the amount funds allocated to eligible project and the balance remaining.

Climate Mitigation: SFPUC plans to report on the following KPIs at an aggregate level by facility:

- Energy generated (kW) through the new Biosolids Digester Facilities Project at the Southeast Plant and upgrades to the digester gas improvements at Oceanside Treatment Plant
- Energy saved (kW) per unit of biosolids treated to measure efficacy of energy-reducing equipment and system upgrades
- Energy saved (kW) per gallon of liquids treated to measure efficacy of energy-reducing equipment and system upgrades
- Volume of wastewater treated
- Volume of recycled water used from the new recycled water pump station at Southeast Plant

Climate Change Adaptation Plans: As one of the projects listed in Appendix A, SFPUC is undertaking a comprehensive climate change vulnerability and risk assessment related to the wastewater and stormwater assets, culminating in an SSIP Climate Change Adaptation Plan. Part of this plan has been applied to Phase 1 SSIP projects by providing insight to inform design and operation strategies and manage climate change risks. SFPUC may provide descriptions and details of climate change adaptation plans and strategies, and which projects will be implemented to achieve them.

Examples include:

- Reduce climate change impacts by constructing and modifying facilities to meet sea level rise projections, as well as modifying combined sewer discharges to prevent backflow due to sea level rise.
- Address water diversion/navigation, flood management, and stormwater runoff by upgrading the system to meet the Level of Service storm. These systems include conveyance (tunnels, sewers, pump stations, force mains), green infrastructure, stormwater detainment, and rainfall prediction. Combined sewer reductions and flooding reduction impacts are computer-modeled as part of project planning.

For a detailed list of reporting commitments, please refer to Appendix B

4 SUSTAINALYTICS’ OPINION

Impact of climate change on wastewater management: According to the Intergovernmental Panel on Climate Change (IPCC), wastewater management is “an important sustainable development goal because it can lead directly to improved health, productivity of human resources, and better living conditions.”² In its 2007 Annual Report, the IPCC stated that improving wastewater treatment and storm water management can provide multiple benefits for climate change mitigation and adaptation, including GHG emissions reduction through the use of energy-efficient facilities, conservation of water resources and water and soil pollution reduction.³

Wastewater treatment and storm water management are projected to become even more difficult due to climate change and the associated changes in temperatures, precipitation patterns, sea level rise and storm-related damages. Climate conditions in the San Francisco Bay Area will change over the next century, posing a unique challenge. Changes in precipitation patterns may result in severe rainfall events, which, together with sea level rise, may overwhelm stormwater run-off systems and impact water qualities or result in localized flooding. Inadequate storm-proofing will likely cause significant risk to life, damage to property, infrastructure and environment.

To address these challenges, the sewer improvement projects financed under the San Francisco Public Utilities Commission green bond are expected to provide multiple opportunities for climate mitigation and adaptation. New “green” facilities will help reduce GHG emissions, contributing climate mitigation. Treatment and reuse of wastewater and storm water, as well as storm-proofing will serve as effective climate adaptation measures in the coastal environment, which is also prone to severe droughts and water scarcity.

Water Climate Bond Certified: In issuing the green bond aligned with the Water Climate Bonds Standard, the SFPUC is demonstrating its commitment to addressing the climate change risks on water infrastructure and a strong commitment to transparency. The bond has been verified against criteria that examined SFPUC’s vulnerability assessment and climate change adaptation plan, and is the first bond to receive certification under this new water standard.

Alignment with Green Bond Principles:

Principle	In line with GBP 2015?	Comments
Use of Proceeds	Yes	The Use of Proceeds of this bond are clearly described in the public offering statement. Furthermore, sustainable water management is one of the broad categories recognized by the GBP as offering clear environmental benefits. Based on Sustainalytics’ review, these projects help in mitigating climate change impacts by GHG emissions reduction through the use of energy-

² https://www.ipcc.ch/pdf/assessment-report/ar4/wg3/ar4_wg3_full_report.pdf
³ https://www.ipcc.ch/pdf/assessment-report/ar4/wg3/ar4_wg3_full_report.pdf

		efficient facilities and conservation of water resources. In addition, all these project have been evaluated against climate change risks with emphasis on climate change adaptation and projects adjusted or modified to deal with long-term impacts of climate changes such as sea level rise.
Project selection process	Yes	The projects selected for the bond are part of SSIP Phase1. The current SSIP program was a result of a multi-year assessment that included, among other things, climate change mitigation and adaptation considerations.
Management of Proceeds	Yes	A sub-account specific to the bond will be set up and the disbursement to corresponding project will be tracked in the FAMIS system.
Reporting	Yes	SFPUC will report the KPIs mentioned in the reporting section above on an aggregate level and where possible at a project level. In addition, SFPUC will share details about climate change adaptation plans for the eligible projects. Providing such detailed reporting on climate change mitigation and adaptation is a best practice within water green bond issuances.

Conclusion

By financing projects in wastewater treatment and stormwater management, SFPUC aims to reduce GHG emissions in its facilities, improve water conservation, and manage climate change risks by addressing system vulnerabilities, actions recognized by the Intergovernmental Panel on Climate Change as effective climate mitigation and adaptation measures.

SFPUC’s approach to selecting projects and managing green bond proceeds is robust, and its reporting on the use of proceeds, with KPIs that capture energy and water impacts, is transparent. SFPUC’s green bond follows the guidance provided by the Green Bond Principles 2015 and is in alignment with its four pillars – the use of proceeds, process of project evaluation and selection, management of proceeds and reporting. Furthermore, the SFPUC’s Green Bond has been certified according to the Water Climate Bond Standard, the first green bond to achieve this certification. Based on the above considerations, Sustainalytics is of the view that SFPUC’s green bond is robust and credible.

APPENDICES

Appendix A: Eligible projects examples

Wastewater Bonds Series 2016 - Project List			
PROJECT	TITLE		2016 Bonds
Sewer System Improvement Program (SSIP)			
CWWSIPCS	COLLECTION SYSTEM IMPROVEMENTS		62,076,000
CWWSIPCT	CENTRAL BAYSIDE SYSTEM IMPROVEMENTS		19,800,000
CWWSIPDP	SSIP BIOSOLIDS/DIGESTER PROJECT		65,600,000
CWWSIPFC	STORMWATER MANAGEMENT		61,770,000
CWWSIPNC	NORTHSHORE TO CHANNEL FORCE MAIN		20,270,000
CWWSIPPR	SSIP PROGRAM-WIDE MANAGEMENT		94,000,000
CWWSIPSE	TREATMENT PLANT IMPROVEMENTS-SOUTHEAST		104,920,000
CWWSIPTP	TREATMENT PLANT IMPROVEMENTS		55,200,000
CWWSIPUW	URBAN WATERSHED ASSESSMENT PROJECT		11,900,000
CWWBAE00	BIOFUEL ALTERNATIVE ENERGY PROJECT		5,000,000
TOTAL			500,536,000

Appendix B: Reporting Details

	CLIMATE MITIGATION				CLIMATE ADAPTATION					
<i>Phase 1 only</i>	Energy generation	Energy efficiency	Wastewater storage / treatment	Water supply/ treatment	Water diversion/ navigation	Reduce climate change impacts	Flood management	Rainwater harvesting	Watershed protection	Stormwater/ runoff management
Sewer System Improvement Program										
Program Wide Efforts						<i>Sea level rise adaptation plan</i>				
Land Reuse										
Treatment Facilities										
Southeast Plant	<i>kW of biogas created</i>	<i>kW of energy saved per unit of biosolids treated (before vs. after)</i> <i>kW of energy saved per gallon of liquids treated (before vs. after)</i>	<i>Volume of wastewater treated</i>	<i>Volume of recycled water used at new W3 Pump Station</i>		<i>GHG offset from production and use of biogas</i>				
North Point Facility		<i>kW of energy saved per gallon of influent wastewater pumped (before vs. after)</i>	<i>Volume of wastewater treated</i>							

	CLIMATE MITIGATION				CLIMATE ADAPTATION					
<i>Phase 1 only</i>	Energy generation	Energy efficiency	Wastewater storage / treatment	Water supply/ treatment	Water diversion/ navigation	Reduce climate change impacts	Flood management	Rainwater harvesting	Watershed protection	Stormwater/ runoff management
Westside Pump Station and Force Main		<i>kW of energy saved per gallon of influent wastewater pumped (before vs. after)</i>	<i>Volume of wastewater treated</i>							
Oceanside Plant	<i>kW of biogas created</i>	<i>kW of energy saved for odor control and per cubic feet of biogas produced</i>	<i>Volume of wastewater treated</i>							
Sewer/Collection System										
Central Bayside System Improvements					✓		✓			✓
Collection System - Interceptors/Tunnels/Odor Control					✓					✓
Transport/Storage & Combined Sewer Discharge Structures					✓	✓				✓
Pump Stations / Force Main Improvements					✓					✓

	CLIMATE MITIGATION				CLIMATE ADAPTATION					
<i>Phase 1 only</i>	Energy generation	Energy efficiency	Wastewater storage / treatment	Water supply/ treatment	Water diversion/ navigation	Reduce climate change impacts	Flood management	Rainwater harvesting	Watershed protection	Stormwater/ runoff management
Stormwater Management/Flood Control										
Drainage Basin / Early Implementation Projects		<i>kW of energy saved from new street light fixtures (before vs. after)</i>					✓	✓	✓	✓
Flood Resilience							✓		✓	✓
Collection System - Hydraulic Improvements							✓		✓	✓
Low Impact Design Program		<i>kW of energy saved from new street light fixtures (before vs. after)</i>					✓	✓	✓	✓
Green Infrastructure Projects							✓		✓	✓
Advance Rainfall Predictions & Operational Decision System							✓		✓	✓

DOCUMENTS REVIEWED

Sustainalytics reviewed the following documents for the purposes of writing this report.

No.	Document Name
1	2016 Revised SSIP Goals and Phase 1 Strategies
2	2016 SSIP Summary Project Descriptions
3	Climate Water Bond SSIP (Excel file)
4	Wastewater Enterprise Capital Improvement Program Quarterly Report Q2 2015-2016
5	2016 SSIP Phase 1 Summary of Proposed Cost
6	2016 SSIP Phase 1 Proposed Project-Level Schedules
7	Wastewater Enterprise FY 2017-2026 Ten Year CIP (Excel file)
8	2014- SFPUC Incorporating Sea Level Rise into Capital Planning
9	2014- City of San Francisco Sea Level Rise Report

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SUSTAINALYTICS

Sustainalytics is the largest independent provider of sustainability research, analysis, and services to investors. We serve over 250 institutional investors which include some of the world's largest asset owners and asset managers. Through over 20 years of experience serving the responsible investment (RI) market, we have gained a reputation for providing high-quality ESG research solutions and excellent client service.

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Sustainalytics now has a staff of 250 employees globally, including over 120 analysts, with operations in Amsterdam, Boston, Bucharest, Frankfurt, New York, Paris, London, Singapore, Sydney, Timisoara, and Toronto, and representation in Brussels and Washington DC.



In 2015, Sustainalytics was named the Best SRI or Green Bond Research Firm by GlobalCapital. In December 2014, for the third year in a row, Sustainalytics was named best sustainable and responsible investment research firm in the Independent Research in Responsible Investment (IRRI) Survey, conducted by Thomson Reuters and SRI-CONNECT.

SUSTAINALYTICS At a Glance

Our Team

Michael Jantzi, CEO

More than 200 staff members, including over 120 analysts with multidisciplinary and industry expertise

Shareholders: ABN AMRO MeesPierson, Michael Jantzi and senior staff, Mooncrest Holdings Limited, PGGM, Renewal Partners, Silver Box Holdings Limited and Triodos

Board Members:
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Melissa Brown, Partner, Daobridge Capital

Michael Jongeneel, COO and Managing Director, Triodos Investment Management

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The Opinion was drawn up with the aim to explain why the analyzed bond is considered sustainable and responsible. Consequently, this Opinion is for information purposes only and Sustainalytics will not accept any form of liability for the substance of the opinion and/or any liability for damage arising from the use of this Opinion and/or the information provided in it.

As the Opinion is based on information made available by the client, Sustainalytics does not warrant that the information presented in this Opinion is complete, accurate or up to date.

Nothing contained in this Opinion shall be construed as to make a representation or warranty, express or implied, regarding the advisability to invest in or include companies in investable universes and/or portfolios. Furthermore, this Opinion shall in no event be interpreted and construed as an assessment of the economic performance and credit worthiness of the bond, nor to have focused on the effective allocation of the funds’ use of proceeds.

The client is fully responsible for certifying and ensuring its commitments` compliance, implementation and monitoring.

San Francisco Public Utilities Commission

PROGRAMMATIC POST-ISSUANCE VERIFICATION LETTER

WATER INFRASTRUCTURE CRITERIA OF THE CLIMATE BONDS STANDARD

Type of engagement: Assurance Engagement

Period engagement was carried out: September 2019

Approved verifier: Sustainalytics

Contact address for engagement: 125 Maiden Lane, Suite 602, New York NY 10038, U.S.A

Post-Issuance Engagement Leader: Ankita Shukla, ankita.shukla@sustainalytics.com, + 1 (617) 603 3329

Post-Issuance Engagement Support: Tina Ghaemmaghami, tina.ghaemmaghami@sustainalytics.com, + 1 (647) 264 6680

Scope and Objectives

In 2016, San Francisco Public Utilities Commission (“SFPUC”) issued green bonds aimed at financing green infrastructure projects within the Sewer System Improvement Program (SSIP). In September 2019, SFPUC engaged Sustainalytics to review the projects funded through the issued green bonds and provide an assessment as to whether the projects met the Post-Issuance Requirements (Part A, Part B and Part C) of the Climate Bonds Standard.¹

Green bond projects include:²

- Wastewater Revenue Bonds Series 2016 A (Green Bonds)

Schedule 1 provides details of the green bond projects and Disbursement of Proceeds.

Compliance Evaluation Criteria

Post-issuance requirements under Climate Bonds Standards Version 2.1:

- Part A: General Requirements - All the requirements in Part A shall be met to be eligible for post-issuance certification.
- Part B: Eligible Projects & Assets - Part B requirements shall be met based on the projects & assets associated with the bond and the specified eligibility criteria.
- Part C: Requirements for Specific Bond Types - Part C requirements shall be met to be eligible for post-issuance certification and are used selectively, depending on the type of bond in question.

Issuing Entity’s Responsibility

SFPUC is responsible for providing accurate information and documentation relating to the details of the projects that have been funded, including description of projects, total development cost of each projects, and disbursed amounts.

Independence and Quality Control

Sustainalytics, a leading provider of ESG and corporate governance research and ratings to investors, conducted the verification of SFPUC’s green bond, issued to finance eligible projects, and provided an independent opinion informing SFPUC as to the conformance of the green bond with the Post-Issuance requirements and Water Infrastructure criteria of the Climate Bonds Standard.

¹ Pre-Issuance Verification Letter available here:

<https://www.climatebonds.net/files/files/SF%20PUC%20Green%20Bond%20May%202016%20Sustainalytics%20pre%20issuance%20letter.pdf>

² Wastewater Enterprise Green Bonds Annual Report available here:

<https://sfwater.org/modules/showdocument.aspx?documentid=13672>

Sustainalytics has relied on the information and the facts presented by SFPUC with respect to the Nominated Projects. Sustainalytics is not responsible nor shall it be held liable if any of the opinions, findings, or conclusions it has set forth herein are not correct due to incorrect or incomplete data provided by SFPUC.

Sustainalytics makes all efforts to ensure the highest quality and rigor during its assessment process and enlisted its Sustainability Bonds Review Committee to provide oversight over the assessment of the bond.

Verifier’s Responsibility

Sustainalytics conducted the verification in accordance with the Climate Bonds Standard Version 2.1 and with International Standard on Assurance Engagements 3000 (ISAE 3000) – Assurance Engagements other than Audits or Reviews of Historical Information.

The work undertaken as part of this engagement included conversations with relevant SFPUC employees and review of relevant documentation to confirm the conformance of SFPUC’s green bonds with the Programmatic Post-Issuance Requirements (Part A, Part B and Part C) of the Climate Bonds Standard Version 2.1.

Exceptions

No exceptions were identified.

All projects aligned with the Post-Issuance requirements of the Climate Bonds Standard and were in conformance to the Water Infrastructure criteria.

Conclusion

Based on the limited assurance procedures conducted, nothing has come to Sustainalytics’ attention that causes us to believe that, in all material respects, the allocation of the following SFPUC green bonds, issued to fund eligible green wastewater enterprise projects, is not in conformance with the Post-Issuance requirements of the Climate Bonds Standard.

- USD 258,563,066 from 2016 Series A

Detailed Findings

Eligibility Criteria	Procedure Performed	Factual Findings	Error or Exceptions Identified
Compliance to Part A: General Requirements	Verification of 6 projects funded by the 2016 Wastewater Series A green bond to determine if Part A: General Requirements were met (See Schedule 2A and 2B).	All 6 projects reviewed complied with the General Requirements.	None
Compliance to Part B: Eligible Projects & Assets	Verification of 6 projects funded by the green bond in 2016 Wastewater Series A green bond to determine if projects fall into (i) one of the investment areas of the Climate Bonds Taxonomy (ii) meet the Water Infrastructure technical criteria.	All 6 projects fall under the Water Infrastructure criteria and meet the requirements of the Water Infrastructure technical criteria.	None
Compliance to Part C: Requirements for Specific Bond Types	Bond Type Applicable: Use of Proceeds Bond.	The requirements of Project Holding, Settlement Period and Earmarking have been met.	None

Schedule 1: Detailed Overview of Nominated Projects and Assets

San Francisco Public Utilities Commission Green Series Snapshot (as of June, 2018)	
2016 Series A Projects	
Project ³	Total Bond Amount
Collective System Improvements	\$62,076,000
Central Bayside System Improvement	\$19,800,000
Stormwater Management/Flood Control (SIPFC)	\$49,417,066
Northshore To Channel Force Main	\$20,270,000
SSIP Program-Wide Management	\$94,000,000
Urban Watershed Assessment Project	\$13,000,000
2017 Series A Total	\$258,563,066

³ Eligible projects include all SSIP Projects, subset only listed

Schedule 2A: Post-Issuance General Requirements of the Climate Bonds Standard

Nominated Projects & Assets	<p>4.1 Statement on the environmental objectives of the bond</p> <p>4.2 Nominated Projects meet the Climate Bonds criteria</p> <p>4.3 Confirmation that Nominated Projects and Assets will not be nominated to other Climate Bonds</p>
Use of Proceeds	<p>5.1 Net Proceeds of the bond allocated to the Nominated Projects</p> <p>5.2 Funds allocated to Nominated Projects within 24 months of issuance of the bond</p> <p>5.3 Estimate of the share of the Net Proceeds used for financing and re-financing</p> <p>5.4 Net Proceeds of the bond shall be tracked by the Issuer following a formal internal process</p> <p>5.5 Net Proceeds of the bond shall be no greater than the total investment or the total Fair Market Value of the Nominated Projects & Assets at the time of issuance</p>
Non-Contamination of Proceeds	<p>6.1 Tracking of proceeds</p> <p>6.2 Managing of unallocated proceeds</p> <p>6.3 In the case of a Force Majeure, the Issuer may apply to the Climate Bonds Standard Board for an extension to the asset allocation period</p>
Confidentiality	<p>7.1 Information about the Nominated Projects & Assets provided to the Verifier and to the Climate Bonds Standard Board</p> <p>7.2 Issuer should disclose information about the bond and the Nominated Projects & Assets to the market</p>
Reporting Post-Issuance	<p>8.1 Report containing the list of Nominated Projects & Assets to which proceeds of the bond have been allocated</p>

Schedule 2B: Conformance to the Post-Issuance Requirements of the Climate Bonds Standard

Procedure Performed	Factual Findings	Error or Exceptions Identified
Verification of Nominated Projects & Assets	<p>4.1 The objective of the bond is to primarily use proceeds to finance projects within the Sewer System Improvement Program (SSIP).</p> <p>4.2 SFPUC's management confirms that the nominated projects meet the Eligibility Criteria.</p> <p>4.3 SFPUC's management confirms that the projects shall not be nominated to other Climate Bonds.</p>	None
Verification of requirements specified under Use of Proceeds	<p>5.1 Net Proceeds of the bond have been allocated to the 6 Nominated Projects.</p> <p>5.2 SFPUC's management has confirmed that funds have been allocated to Nominated Projects within 24 months of the issuance.</p> <p>5.3 SFPUC's management has confirmed that all Net Proceeds of the bond were used for financing only.</p> <p>5.4 SFPUC's management has confirmed that Net Proceeds of the bond shall be tracked by the Issuer following a formal internal process.</p> <p>5.5 SFPUC's management has confirmed that the Net Proceeds of the bond shall be no greater than the total investment in the Nominated Projects or the Total Development Cost of the Nominated Projects.</p>	None
Verification of requirements specified under Non-Contamination of Proceeds	<p>6.1 SFPUC's management confirms that the proceeds have been segregated and tracked in a systematic manner and were exclusively used to finance Nominated Projects.</p> <p>6.2 SFPUC's management confirms that pending the investment of proceeds, they shall be held in temporary investment instruments (i) that are cash, or cash equivalent instruments, within a Treasury function; or (ii) that do not include greenhouse gas intensive projects which are inconsistent with the delivery of a low carbon and climate resilient economy.</p> <p>6.3 N/A</p>	None
Verification of requirements specified under Confidentiality	<p>7.1 SFPUC's management confirms that all relevant information about the Nominated Projects has been provided to the Verifier and to the Climate Bonds Standard Board to support the assessment of conformance with the Climate Bonds Standard.</p>	None

	<p>7.2 SFPUC’s management confirms that all relevant information about the bond and the Nominated Projects has been disclosed to the market.</p>	
<p>Verification of requirements specified under Reporting Post-Issuance</p>	<p>8.1 SFPUC’s management has provided a report containing the list of Nominated Projects to which proceeds of the bond have been allocated (See Schedule 1).</p>	<p>None</p>

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