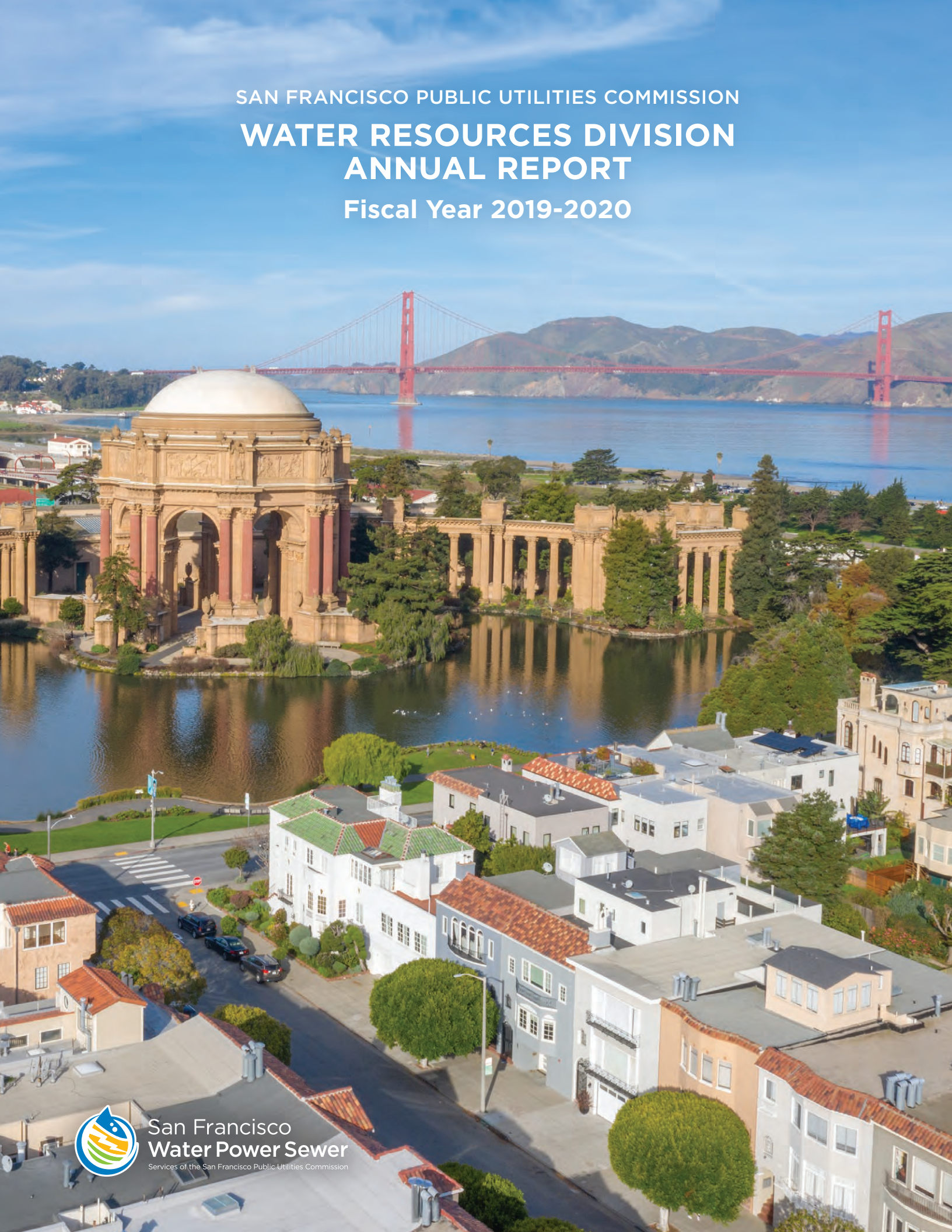
SAN FRANCISCO PUBLIC UTILITIES COMMISSION

WATER RESOURCES DIVISION ANNUAL REPORT

Fiscal Year 2019-2020



San Francisco
Water Power Sewer
Services of the San Francisco Public Utilities Commission

Dear Partners, Customers and Stakeholders:

Our world has changed so drastically this year, but one thing remains the same: The SFPUC continues to provide safe, high-quality drinking water to the 2.7 million people in the San Francisco Bay Area who rely upon it. Through a global pandemic, historic wildfires, social injustice, and so much uncertainty, clean water flows through our taps whenever we need it.

San Franciscans have joined together in adhering to health guidelines, and even with residents sheltering in place, our average per person water use is 42 gallons per person per day, well below the state average. Water is always essential for life, but as we come together to overcome the dueling crises of pandemic and climate change, we are acutely aware of how vital it is to our survival.

A resilient and safe water supply is not possible without a dedicated and experienced workforce showing up every day to keep our system running. As designated Emergency Service Workers, SFPUC employees have joined workers from every other City department to protect and serve our community, with a focus on keeping essential services running and providing care for the most vulnerable San Franciscans.

Our Water Resources team was able to quickly pivot core programs to adjust to the new norms of social distancing. Water-Wise Evaluations are now available via phone or video. We have stringent health and safety protocols in place for essential on-site programs that replace inefficient fixtures with efficient ones. We launched a new alert program to help commercial customers minimize water waste from leaks. Our critical construction work is moving forward, ensuring our investments in infrastructure keep our system reliable.

In these challenging times, we renew our commitment to continue delivering safe and reliable water. Traditional surface water supplies from our up country, East Bay, and Peninsula reservoirs will always be the backbone of our supply. The Water Resources team helps protect and stretch those supplies in many ways - by partnering with the community to help save water through our robust conservation programs; by minimizing the need for additional water to serve new developments through our pioneering onsite water reuse program; by recycling wastewater resources to deliver water for large non-potable uses; by utilizing our local groundwater supplies to supplement our surface water supplies; by investigating new, alternative water supply options such as purified water and desalination to ensure that there is sufficient water for our future needs; and by investing in innovations that allow for creative solutions to meet our diverse needs.

Together, we are meeting the present moment and reimagining the possibilities for our future water supply. Regardless of the challenges we will face - both known and unknown - through thoughtful planning, we will be ready.

Paula Kehoe,
Director of Water Resources

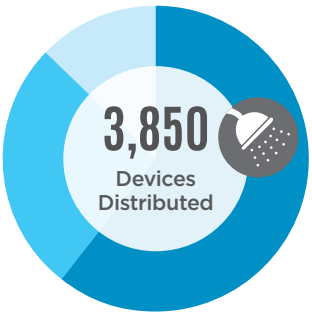
San Francisco Water Power Sewer
Services of the San Francisco Public Utilities Commission

Water Resources Team at a 2019 staff retreat

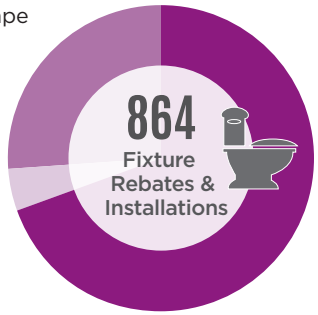
Water Resources Division Accomplishments: FY 2019-20

Water Conservation

2,073 Multi-Family
323 Single-Family
40 Non-Residential
10 Landscape



2,007 Aerators
1,033 Showerheads
810 Spray nozzles, flappers, fill valves, etc.



565 Toilets
267 Washers
32 Urinals

OUTREACH & EDUCATION

14,356 Leak Alert Notifications
1,378 Conservation Phone Calls
93 Water Waste Reports
21 Field Trips
17 Class Presentations

LANDSCAPE PROGRAMS

284 Rain Barrels
7 Graywater Kits
5 Cisterns
4 Laundry-to-Landscape Workshops

RESULTING IN

186 MILLION GALLONS* SAVED

* Estimated lifetime active and passive water savings over a 30-year period

Local Water Projects

21 New Onsite Water Reuse Projects

6 Groundwater Wells Constructed in San Francisco

2 Recycled Water Construction Projects

Contents

Water Portfolio, Customers, and Water Use

The SFPUC Regional Water System is a public asset that delivers high-quality drinking water to 2.7 million residents and businesses in the Bay Area. The system collects water from the Tuolumne River in the Sierra Nevada and from protected local watersheds in the East Bay and on the Peninsula. The SFPUC delivers water to 27 wholesale customers in Alameda, Santa Clara and San Mateo counties and provides direct retail water service to customers in San Francisco and some customers outside of San Francisco. The Bay Area Water Supply & Conservation Agency (BAWSCA) represents 26 of the 27 wholesale customers and coordinates their water conservation, supply and recycling activities.

The FY 2019-20 deliveries chart on the next page shows how much water we provided on a wholesale and retail basis. The Retail Water Use chart further shows the break down of water sales by retail customer sector.

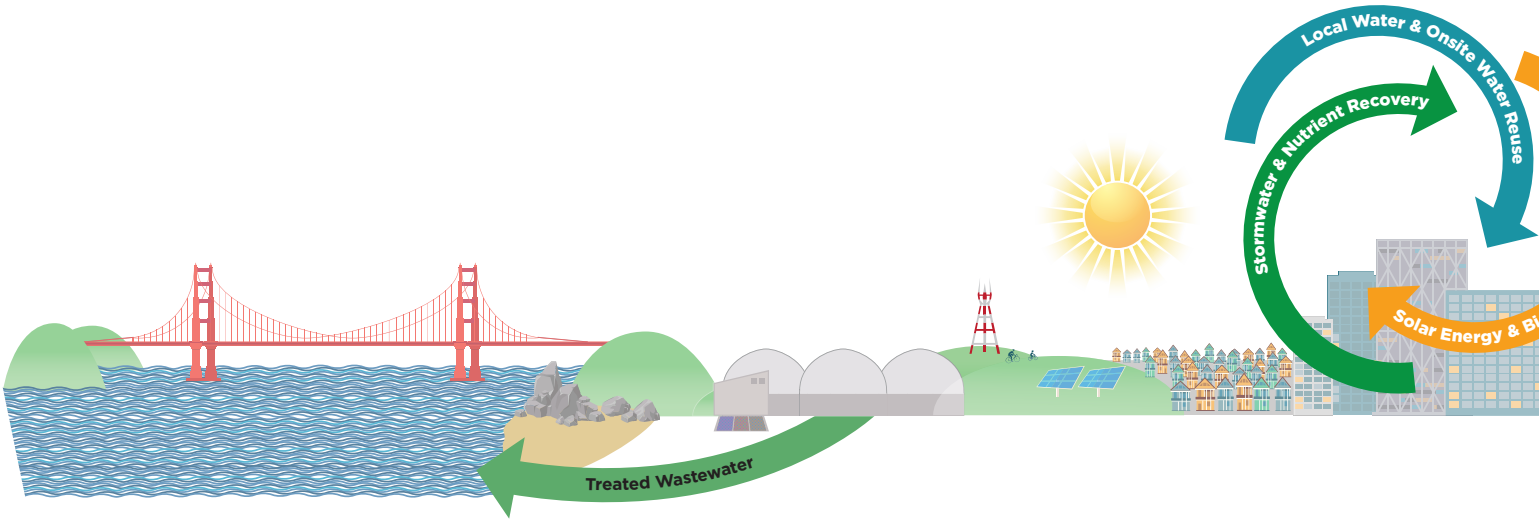
San Franciscans water conservation efforts have helped reduce water demand over the last two decades despite population growth. In 1998, San Francisco had about 754,000 residents and used 82 million gallons every day. Today, with almost 898,000 residents, San Francisco uses 38 million gallons every day. In FY 2019-20, the average residential customer in San Francisco's retail service area used 42 gallons per day. While this water use is among the lowest in the state, the SFPUC remains committed to comprehensive water conservation efforts.

OneWaterSF

In 2016, OneWaterSF was established as a new approach to how we do business at the SFPUC. With a Vision and a set of Guiding Principles, an intra-agency Working Group tested this framework by advancing several initiatives with multiple benefits for our organization and our customers. Over the years, OneWaterSF has continued to grow organically, with more staff across the organization embracing this approach.

In 2019-2020, as we faced unprecedented challenges in our communities confronted with a global pandemic, social injustices, and changing climate patterns, the importance of an integrated resource management approach that can help ensure reliable, safe, and affordable utility services is more important than ever. Through OneWaterSF, we take a holistic view of our priorities and focus on adapting to changes with understanding and creativity.

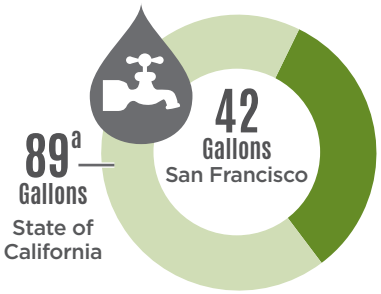
For more information, visit **sfwater.org/onewatersf**.



FY 2019-20 San Francisco Residential Water Use

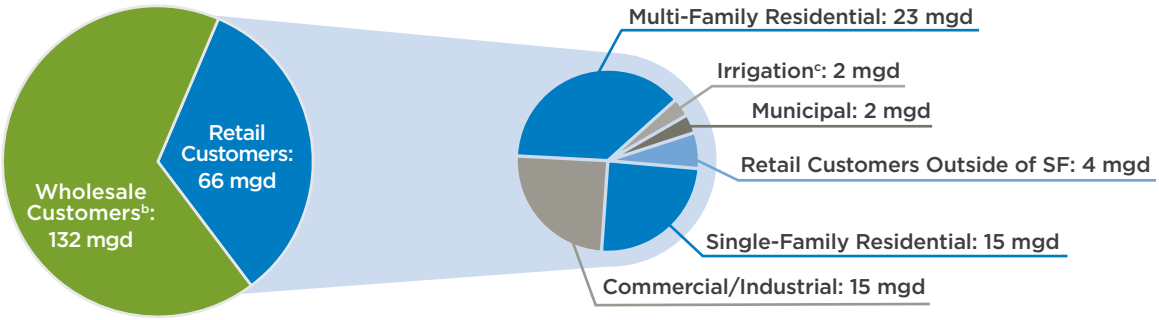
San Francisco Population

Water Used by San Francisco Residential Customers



Residential Water Use Per person, Per day

FY 2019-20 Regional Water System Deliveries and Retail Water Use



Regional Water System Deliveries[d]

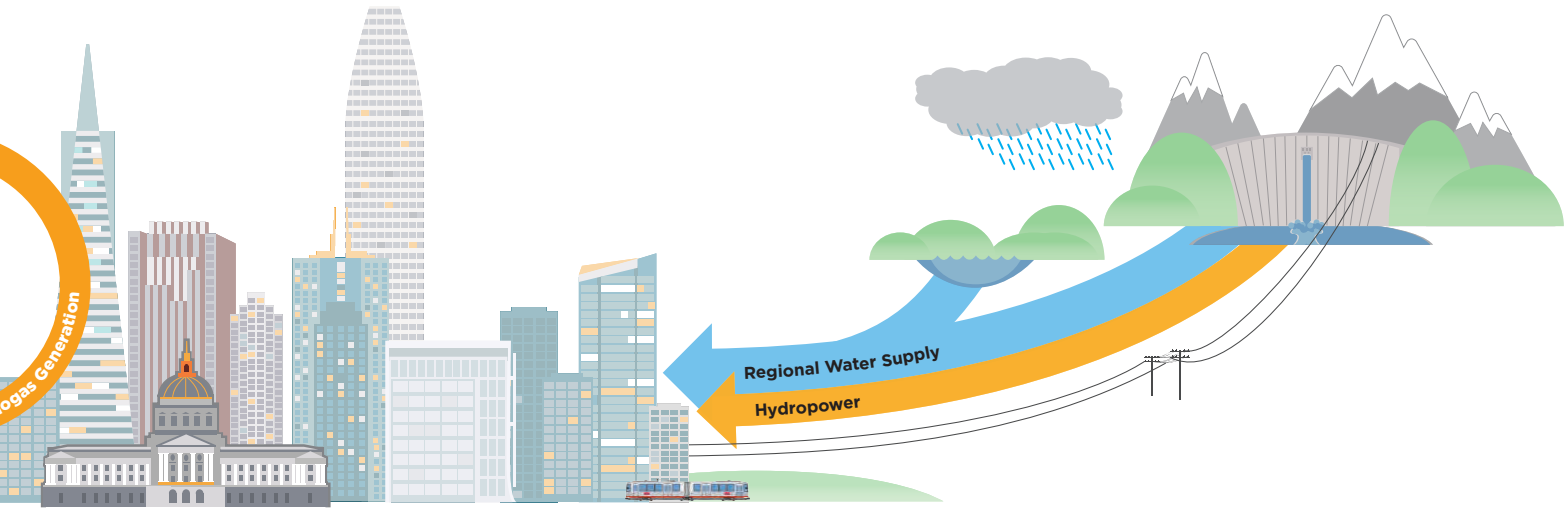
Retail Water Use[d]

a From the State Water Resources Control Board average monthly residential R-GPCD for all hydrologic regions for 2020.

b Deliveries exclude 5.3 mgd delivered in lieu of groundwater to customers participating in the Regional Groundwater Storage and Recovery Project.

c These data are from dedicated irrigation accounts only, and do not include irrigation use from water accounts that jointly serve both indoor and outdoor demands.

d The Retail Water Use chart does not reflect water used for pipe flushing, firefighting, street cleaning, and loss from supply-side main and pipe breaks. The Regional Water System Deliveries chart does include water loss.



Local Water Program

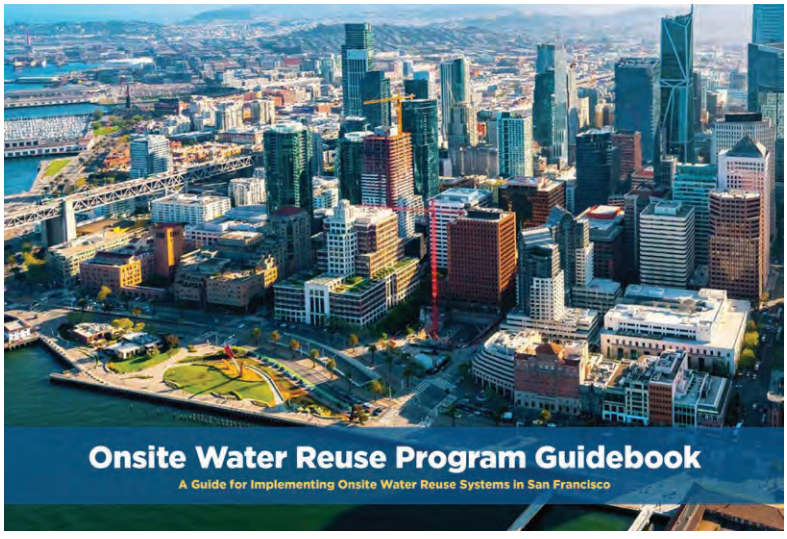
For the past decade, the SFPUC has been implementing a Local Water Program. This Program provides conservation assistance, promotes recycled water to meet the City's most significant irrigation needs, mandates non-potable supplies for toilet flushing and irrigation in new developments and develops local groundwater to enhance the City's drinking water supply sustainably now and into the future.

Onsite Water Reuse Program

In 2012, San Francisco established the Onsite Water Reuse for Commercial, Multi-Family and Mixed-Use Development Ordinance. Commonly known as the Non-potable Water Ordinance, it added Article 12C to the San Francisco Health Code, allowing for the collection, treatment and use of alternate water sources for non-potable uses in buildings. In 2013, the Non-potable Water Ordinance was amended to allow for district-scale projects, where two or more parcels can share alternate water sources. In 2015, Article 12C became mandatory and now requires new development projects of 250,000 square feet or more of gross floor area to install and operate an onsite non-potable water system.

Over the past year, the SFPUC received 21 water budget applications to install onsite water systems. This brings the total number of water budget applications reviewed by the SFPUC to over 100 projects. By 2040, it is expected that the total potable water offset for the Onsite Water Reuse Program will be approximately 2 mgd. Additionally, this past year, the SFPUC coordinated with the SF Department of Public Health to update the Rules and Regulations for the Onsite Water Reuse Program. These modifications are reflected in the updated Onsite Water Reuse Program Guidebook available at **sfwater.org/np**.

The SFPUC has been collaborating with a nationwide group of utilities and public health agencies since 2014 to advance policies and contribute significant research related to onsite water reuse. Today, the National Blue-Ribbon Commission for Onsite Non-potable Water Systems has more than 30 members representing 14 states, the District of Columbia, U.S. Environmental Protection Agency, U.S. Army Engineer Research and Development Center, City of Toronto, and City of Vancouver. Supported by the US Water Alliance, WateReuse Association, and leveraging funding from the Water Research Foundation, the group recently finalized a guidance manual and training modules for designing and permitting onsite water systems. It targets system designers, regulators, program administrators, owners and operators to help with capacity building. Additionally, the group is acknowledged as the leading entity supporting the implementation of onsite water reuse systems in the 2020 U.S. EPA's Water Reuse Action Plan. For more information about the Onsite Water Reuse Program, visit **sfwater.org/np**.



Local Water Program

SFPUC Headquarters Living Machine™

Chase Center (image courtesy of Golden State Warriors)

UBER Office Building (image courtesy of SHoP Architects)

LOCAL ONSITE WATER REUSE PROJECTS

Featured below are three development projects driving innovation by incorporating onsite water reuse systems.

SFPUC HEADQUARTERS

SFPUC headquarters was one of the first buildings in the nation – and the first in California – with onsite treatment of blackwater to be recycled for toilet and urinal flushing. Reducing water use by about 60% each year, the SFPUC's Living Machine™ system recycles about 5,000 gallons of water per day. This system helps avoid using high-quality drinking water for non-drinking purposes, saving about 800,000 gallons of water each year.

CHASE CENTER

Chase Center, the new sports and entertainment complex in San Francisco's Mission Bay neighborhood, was constructed to collect and treat rainwater, stormwater, graywater, and condensate to supply toilet flushing demands in the arena and two accompanying office buildings. The project is applying an integrated approach by combining the infrastructure needed for both onsite reuse and stormwater management and will offset about 3.7 million gallons of potable water annually.

UBER HEADQUARTERS

UBER's new office buildings will feature 2 separate onsite non-potable water systems, collecting and treating graywater and rainwater separately to meet the building's toilet flushing and irrigation demands. UBER is demonstrating a common approach to meeting onsite reuse and stormwater management goals. The project will offset about 700,000 gallons of potable water each year.

From left to right: Paul Jones, Peter Grevatt, Radhika Fox, Paula Kehoe, and Patricia Sinicropi

2019 President's Award for Excellence at the 34th Annual WateReuse Symposium

A collaborative of water and wastewater utilities and public health agencies from across the nation and chaired by the SFPUC received the President's Award for Excellence for the group's leadership in advancing onsite water reuse.

Local Water Program (continued)

Groundwater Management Program

The SFPUC's groundwater supply comes from the 40-square-mile Westside Basin, an aquifer extending from Golden Gate Park in San Francisco southward through Millbrae. The depths of production wells installed by the SFPUC range from 270 to 750 feet below ground. Because groundwater is stored deep underground, it has the dual benefits of being less vulnerable than surface waters to direct contamination and being naturally filtered through layers of sand and other soils.

The groundwater basin is a vital local drinking water resource for San Francisco and neighboring communities in San Mateo County. To make sure the SFPUC responsibly and sustainably manages and protects the Westside Basin, monitoring of the groundwater quality and its water levels is one of our top priorities. A network of monitoring wells was installed in 2004. We collect data from these wells to assess how the groundwater basin responds to our operations. This allows us to adapt our groundwater pumping, if necessary, in response to changes in the aquifer.

Groundwater is an essential part of the state and nationwide drinking water supply. Eighty percent of Californians depend on groundwater for all or part of their drinking water supply and have been doing so for generations. Our Groundwater Program includes two projects: the San Francisco Groundwater Supply Project and the Regional Groundwater Storage and Recovery Project.

SAN FRANCISCO GROUNDWATER SUPPLY PROJECT

The San Francisco Groundwater Supply Project is a forward-looking project that allows us to supplement our drinking water sources by blending a small amount of groundwater with water from the Regional Water System. The SFPUC has begun ramping up to blend an average of up to 1 mgd of groundwater to our water supply. Over the next several years, we will incrementally build up to an average of 4 mgd of groundwater in San Francisco. For more information about groundwater, or to view our water quality reports, visit **sfwater.org/sfgroundwater**.

REGIONAL GROUNDWATER STORAGE AND RECOVERY PROJECT

The Regional Groundwater Storage and Recovery Project is a partnership between the SFPUC, the California Water Service Company (serving South San Francisco and Colma), the City of Daly City and the City of San Bruno. This project is a sustainable, conjunctive use project that has storage and recovery components. During years of normal or heavy rainfall, the SFPUC provides additional surface water from the Regional Water System to the partner agencies to reduce the amount of groundwater pumped from the South Westside Groundwater Basin.

Over time, the reduced groundwater pumping will result in increased storage of up to 20 billion gallons from recharge. The stored water will serve as an additional water supply during a drought. Construction of Phase 1 of the project consists of the installation of 13 production well stations, 12 of which were completed by 2020.

The project has been in a storage phase since May 2016, and during this time SFPUC had accumulated nearly 8 billion gallons (approximately 24,500 acre-feet) of in-lieu storage through June 2020, as evidenced by groundwater level increases of up to 75 feet.

Recycled Water Program

Water is too precious a resource to use just once. Using recycled water for non-drinking purposes such as landscape irrigation, toilet flushing, street cleaning and cooling helps preserve drinking water supplies from the Regional Water System. We continued to work with our partners at Harding Park, Fleming and Sharp Park Golf Courses so that we can provide recycled water for irrigation.

In San Francisco, construction continues at the Westside Enhanced Water Recycling Project, even during the pandemic. The project includes a new recycled water treatment facility, storage reservoirs, pump stations and pipelines to deliver recycled water. The SFPUC plans to save approximately 2 mgd of water with Westside Enhanced Water Recycling Project. The water produced by this project will be used primarily to irrigate Golden Gate Park, Lincoln Park Golf Course and the San Francisco Zoo. Construction has been completed on approximately 8 miles of recycled water pipelines, with the storage reservoirs and pump stations to follow over the next few years. Recycled water deliveries to customers are expected in 2021. This project will receive loan and grant funds totaling $186 million from the State Water Resources Control Board's Clean Water State Revolving Fund, which will save $123 million for our ratepayers by reducing our debt finance costs. For more information about the Recycled Water Program, visit **sfwater.org/recycledwater.**

Resource Management at Lake Merced

Lake Merced is made up of four interconnected lakes and provides a vital link for wildlife, particularly for migrating birds. The lake also provides a regional recreational venue offering fishing, boating, bicycling and wildlife viewing. In an emergency, Lake Merced water can also be used for firefighting or sanitation purposes if no other sources of water are available. SFPUC aims to maintain water levels in the lake to provide a reliable emergency non-potable water supply. The SFPUC and the City of Daly City are working together to improve the Vista Grande stormwater system, which drains the northwestern portion of Daly City and an unincorporated portion of San Mateo County – areas originally within the watershed of Lake Merced. Project goals include improving stormwater drainage, minimizing flood risk and providing a sustainable water source for Lake Merced. Daly City completed the project environmental review in 2018 and has also completed preparation of the design documents. Daly City is finalizing the 100% design documents and working to acquire needed project funding. Daly City anticipates Bid and Award commencing in fall 2021, with construction potentially commencing in spring/summer 2022.

Westside Enhanced Water Recycling Project

Lake Merced

Water Conservation Program

Even during the pandemic emergency, the SFPUC continues to provide a comprehensive water conservation program open to all residents and businesses in San Francisco. Core services include indoor and outdoor Water-Wise Evaluations, incentives for replacement of old plumbing fixtures, free water-efficient plumbing devices, landscape efficiency programs, tools to monitor water use and public outreach such as gardening classes and presentations. The SFPUC also supports planning and implementing conservation legislation as an effective way to institutionalize water conservation.

Replacing old, water-wasting plumbing fixtures with new efficient models is one of the most significant ways to reduce water use in homes, apartment buildings and non-residential buildings. This helps stretch the SFPUC's water supplies. For more information, visit **sfwater.org/conservation**.

Water-Wise Evaluations

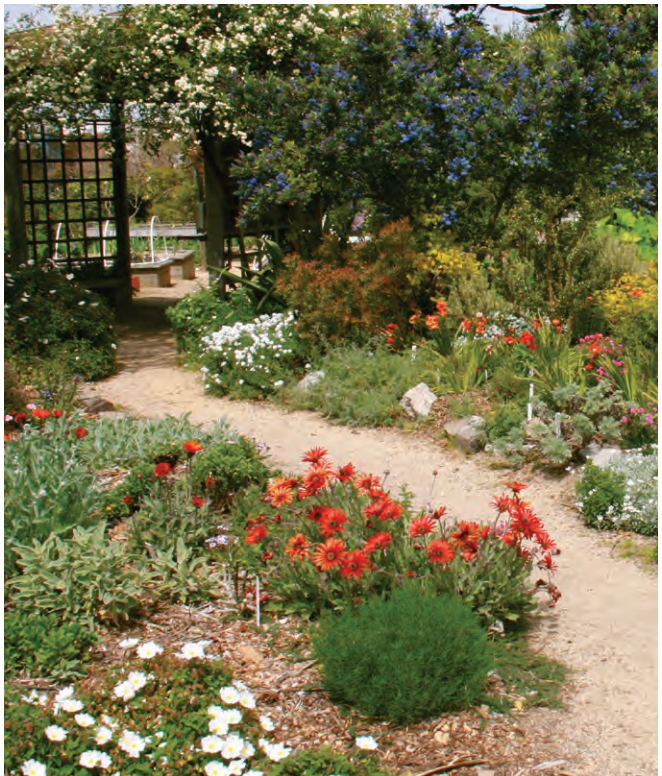
In FY 2019-20, the SFPUC conducted 2,446 in-person, site-specific evaluations for residential and commercial properties. These evaluations helped customers to identify leaks and maximize their water efficiency. Outdoor evaluations identified irrigation efficiency improvements and plant recommendations for customers looking to improve water efficiency and reduce irrigation runoff. Field inspection staff manually ran irrigation systems, observed operation, flagged areas needing repairs, reconnected loose drip irrigation fittings and showed customers their sprinkler timer programming features.

Indoor evaluations helped customers identify old plumbing fixtures that qualify for financial replacement incentives and provided free water-efficient plumbing devices, including showerheads, aerators and toilet leak repair parts. Customers who received Water-Wise Evaluations were provided comprehensive reports including estimated water and cost savings from recommended improvements.

In March 2020, spurred by Covid-19 restrictions, the SFPUC launched a new program to provide virtual Water-Wise Evaluations by phone and video; between March and the end of June, we conducted 166 phone consultations.

Suzanne Pampanin, Water Conservation Inspector

Garden for the Environment



Water Conservation Program

Free High-Efficiency Plumbing Devices

In FY 2019-20, the SFPUC provided over 3,850 water-efficient showerheads, faucet aerators, garden spray hose nozzles, soil moisture meters, and toilet leak repair parts to help residential and commercial properties achieve immediate water savings. All retail customers are eligible to receive free plumbing devices after they complete a free phone consultation to determine their eligibility.

Plumbing Fixture Replacement Program (PREP)

To help accelerate the replacement of old, water-wasting fixtures, the SFPUC continued the Plumbing Fixture Replacement Program (PREP), a toilet and urinal replacement program to help residences and businesses retrofit some of the last inefficient fixtures in our retail service area. During this fiscal year, 574 efficient toilets were installed through the PREP program, bringing the overall program total to 4,462 efficient toilets and urinals since the program launched in 2016. This year, we put new Covid-19 health and safety protocols in place to ensure our customers could continue to save water and money safely.

PREP Case Study

We partnered with an older Homeowner's Association (HOA) building that had outdated plumbing fixtures and needed additional work to bring the plumbing up to code. Our contractor worked closely with the building plumbers and residents to ensure the installations went seamlessly.

68 participating units
replaced 118 inefficient toilets

Water use was reduced 20%
(1.5 million gallons in one year)

Total saved on water bill after one year:
$34,000.00

Water-Efficient Fixture Improvement Program (WeFix)

The SFPUC continued to partner with San Francisco Public Works to complete final replacements of inefficient toilets and urinals in City Department facilities that had applied to the WeFix program before 2017. Over 700 fixtures in 60 municipal buildings have been replaced since the program started in 2015.

Clothes Washer Rebates

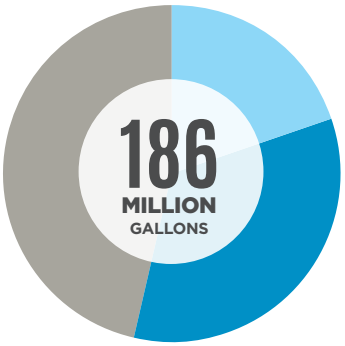
The SFPUC provided rebates of $100 per washer for the purchase and installation of qualifying residential ENERGYSTAR efficient clothes washers in our retail service areas, and rebates of $500 per washer to customers installing qualifying coin-operated, high-efficiency, commercial-style clothes washers. In FY 2019-20, 267 rebates were processed.

Customer considers high-efficiency clothes washer

Water Conservation Program (continued)

FY 2019-20 San Francisco Retail Water Conservation Program Performance & Savings

FY 2019-20 water conservation program activities are estimated to have a potential 30-year lifetime water savings of 186 million gallons, roughly equal to 571 acre-feet of water. One acre-foot is equivalent to a football field covered by one foot of water.



Water Conservation Savings Achieved by Sector

Millions of Gallons

37 Single-Family
63 Non-Residential
86 Multi-Family

Water Conservation Program Activity from 2009-2020

WATER-WISE EVALUATIONS

46,814

INCENTIVES

187,256 Devices Distributed[2]
54,707 Showerheads
48,674 Toilets
28,292 Clothes Washers
1,855 Urinals
1,540 Rain Barrels, Cisterns and Graywater Kits[1]
371 Landscape[3]
9 Commercial Equipment Grants[4]

WATER MANAGEMENT TOOLS

83,193 MyAccount REGISTRATIONS[1]

28,158 LEAK ALERTS[1]

OUTREACH & EDUCATION

17,678 Conservation Info Line Calls[5]
14,990 Top User Letters[1]
2,624 Waste of Water Alerts[1]
1,726 Presentations & Field Trips

1 Tracking of participation in measure started later than 2009
2 Aerators, toilet flappers, fill valves, pre-rinse spray valves, nozzles, soil moisture meters
3 Landscape includes Water Efficient Irrigation Ordinance projects, landscape audits, community irrigation grants and rebates
4 Includes ice machines, industrial dishwashers, sterilization equipment
5 Doesn't include calls to the SFPUC's Call Center regarding conservation

Rainwater Harvesting Program

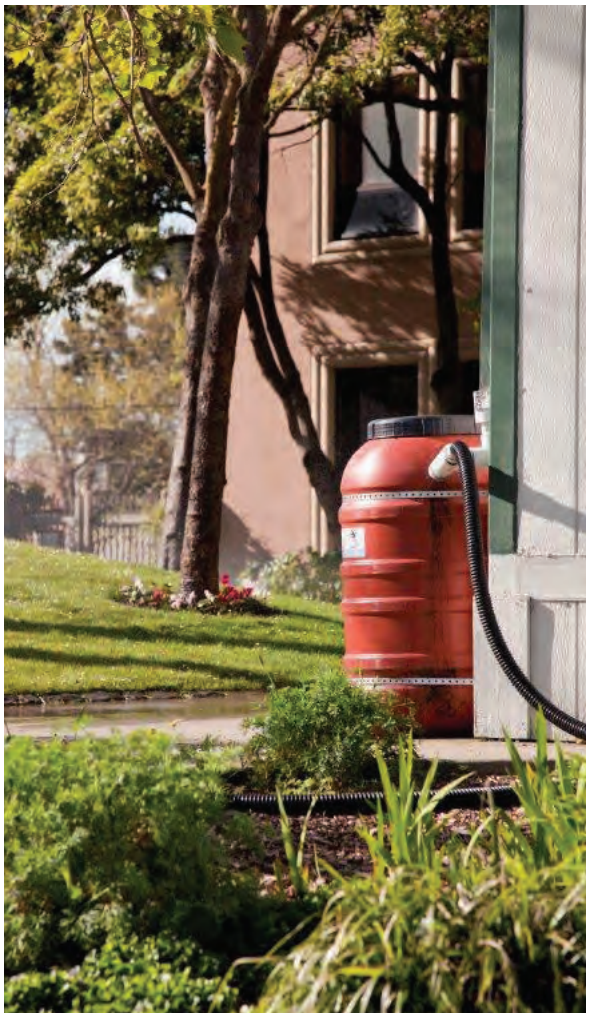
The SFPUC continued its Rainwater Harvesting Program, providing discounts off the purchase of up to two rain barrels or one cistern per customer. Capturing rainwater at homes and businesses can reduce potable water used for irrigation and reduce flows to the SFPUC's combined sewer system during storm events. The SFPUC's Rainwater Harvesting Program provided residents and businesses with 454 rain barrels and 11 cisterns.

Laundry-To-Landscape Program

The SFPUC continued its Laundry-to-Landscape (L2L) Program, which offers residents a $125 discount off the purchase of a graywater kit to direct water from the clothes washing machine into the garden for irrigation. This year, 7 discounted graywater kits were provided to residential customers. Program participants received training, access to a free installation tool kit and technical assistance to help design, install and maintain their graywater systems. The SFPUC also updated its comprehensive guide to graywater systems. In March, due to Covid-19 restrictions, the SFPUC switched the format for the required training from in-person to online, and conducted 4 trainings, reaching approximately 25 residents this fiscal year. To learn more, visit **sfwater.org/landscape**.

Commercial Equipment Retrofit Rebate Program

The Commercial Equipment Retrofit Rebate Program continued to provide funding for businesses to implement equipment efficiency upgrades. In FY 2019-20, the Hotel Nikko San Francisco partnered with the SFPUC to increase the water efficiency of their dish washing machines. Due to the high-water consumption of the old equipment, all four existing machines onsite were replaced. The new dish machines are estimated to save over 1.8 million gallons of water over the next 10 years.



Installed rain barrel system

Commercial dishwasher

Water Conservation Program (continued)

Large Landscape Grant Program

The Large Landscape Grant Program provides financial assistance to customers with large landscapes and who implement irrigation and planting improvement projects that reduce potable water use. In FY 2019-20, the SFPUC updated the program requirements, including lowering the eligible size threshold from half an acre to 10,000 square feet. This year, the following two projects were completed:

WASHINGTON SQUARE PARK

Washington Square Park re-opened in December 2019; the SFPUC's Large Landscape Grant funded Rec and Park's water-saving upgrades to the site's antiquated, 65-year-old irrigation and drain system and replaced perimeter areas of lawn with climate-appropriate plantings. These upgrades are estimated to reduce water usage over 60%. Additional funding from a park bond and Supervisor Peskin's office covered replacement of pathways and other improvements.

Washington Square Park Ribbon Cutting

FOREST HILL MUNI STATION

The landscaping around the Forest Hill Muni station re-opened in summer 2020; the SFPUC's grant to SFMTA helped to fund replacement of the 40-year-old irrigation system and installation of new drought-tolerant and native plantings. These improvements will reduce water use by 40%.

Forest Hill MUNI Station

Community Garden Grants

We continued to issue monthly informational water use reports to 10 sites that participated in our Community Garden Grant Program. The program waives the cost of irrigation meters to help customers better monitor and efficiently manage water use. The reports show how their actual water use aligns with estimated efficient water use – aka a "water budget" - for the size and use of their site.

Innovations Programs

The Innovations Program promotes exploration of new ways in which we can conserve and reuse water, recover resources, and diversify our water supply. The Program facilitates testing of forward-thinking ideas, technologies and research to help meet San Francisco's long-term potable and non-potable water needs. It is also an opportunity to develop partnerships with the community, industry, developers, technology vendors and others to ensure long-term water resources sustainability in San Francisco. Through the Innovations Program, the SFPUC continues to explore several cutting-edge ideas, including the following:

Atmospheric Water Generation

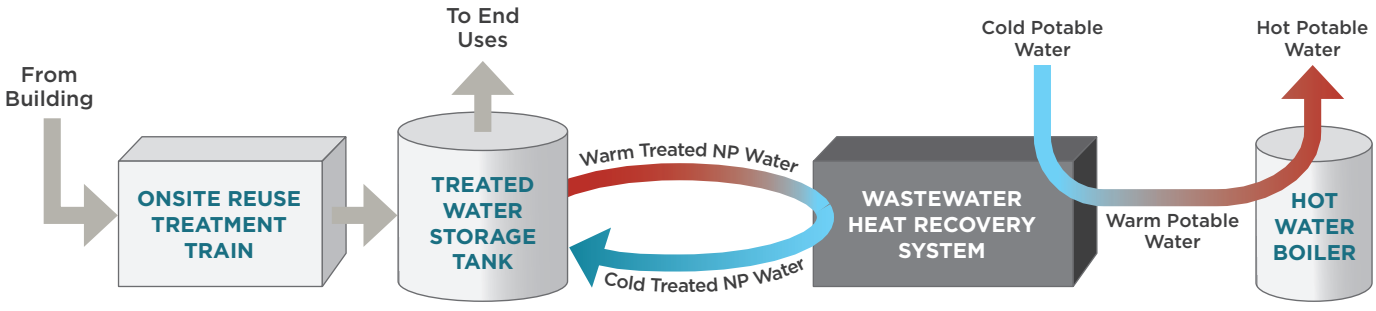
The SFPUC is exploring new ways to produce water by piloting an atmospheric water generation (AWG) project in San Francisco. AWG is the process of extracting water from ambient air. The goals for the SFPUC's AWG project include testing the ability to produce water for irrigation purposes in a community garden setting, testing the ability to produce water that meets drinking water standards, engaging the community about water, and understanding the value of AWG for the SFPUC's future water supply portfolio. The SFPUC plans to partner with the SF Botanical Garden and Hummingbird Farm to install the AWG technology next year.

San Francisco Botancial Garden

Wastewater Heat Recovery

The SFPUC offers grants through its Onsite Water Reuse Grant Program to encourage retail water users to reduce SFPUC water supply usage by collecting, treating, and reusing water onsite. The SFPUC recently modified its Onsite Water Reuse Grant Program to incorporate a wastewater heat recovery component. Wastewater heat recovery refers to the extraction of thermal energy from warm wastewater, or treated non-potable water, and subsequent beneficial use of this energy to offset existing energy requirements. By integrating wastewater heat recovery with onsite water reuse, there is potential to offset some or all the energy needed for onsite wastewater treatment.

Wastewater Heat Recovery & Onsite Water Reuse: Example Configuration



Innovations Programs (continued)

Expanded Leak Detection

Through its City Distribution Division, the SFPUC has established a Water Loss Reduction Program to reduce water lost from pipe and main breaks in our infrastructure. Key aspects of the program include preparing annual water loss audits and developing a Water Loss Master Plan. That plan will analyze existing water loss reduction practices and provide guidance for ongoing and new practices to provide cost-effective water loss reduction over the next 15 years. SFPUC staff continued to provide input on the State Water Resources Control Board's efforts to develop volumetric water loss standards and other water loss performance measures. To date, the SFPUC has conducted pilot studies of the efficacy of several different supply-side leak detection technologies, including acoustic-based systems, satellite imagery, and continuous high-sample pressure monitoring with immediate pressure transient reporting.

Purified Water Program

The SFPUC is investing in research to assess the potential to transform wastewater into a supply source that can meet drinking water standards through a robust treatment process that includes ultrafiltration, reverse osmosis, and disinfection with ultraviolet light and advanced oxidation. In June 2018, the SFPUC installed a temporary treatment train to the existing constructed wetland system that treats blackwater and rainwater for toilet flushing at the office headquarters building in San Francisco. This research project, called PureWaterSF, was completed in two parts. First, a treatment and monitoring system was designed and installed. This system was tested, and monitoring data were recorded through February 2019. From June through October of 2019, analytical samples were collected, and outreach was conducted. Third-party laboratory analyses of water quality parameters were conducted to understand the wastewater, treatment process, and finished water characteristics. After analysis, all the treated water was recombined and returned to the building's toilet flushing system. The research concluded this year demonstrating that the advanced water treatment system produces consistently high-quality water, even at the building scale. The project highlighted future areas of research, design considerations, operations and maintenance needs, and the need for extended outreach and engagement. As the SFPUC continues to research purified water opportunities, we are also collaborating with utilities around California who are engaged in similar efforts.

PureWaterSF research treatment system

Alternative Water Supply Program

The Regional Water System has served the San Francisco Bay Area for almost 100 years and will continue to be the cornerstone of our water supply for San Francisco as well as our suburban retail and wholesale customers in the region. But issues such as climate variability, droughts, earthquakes, regulatory changes and population growth require that we consider new water supplies and creative solutions to plan for our future needs. These new water supply options such as expanding storage, groundwater banking, transfers, purified water, and desalination are being evaluated as part of a new Alternative Water Supply Program, that was established under the Water Resources Division this year. Most alternative water supplies being considered by the SFPUC involve two or more regional partners.

Bay Area Regional Reliability Partnership

The SFPUC is part of the Bay Area Regional Reliability (BARR) Partnership. Through BARR, the SFPUC is working with Alameda County Water District, Bay Area Water Supply and Conservation Agency, Contra Costa Water District, East Bay Municipal Utility District, Marin Municipal Water District, Santa Clara Valley Water District and Zone 7 Water Agency to identify and develop opportunities for collaboration to improve water supply reliability throughout the region. With grant support from the U.S. Bureau of Reclamation, the SFPUC is engaged in one of two pilot studies to evaluate opportunities to share and convey water supplies among partners.

Aerial photo of the San Francisco Bay Area

Daly City Recycled Water Expansion Project

Daly City operates a recycled water treatment facility which serves several irrigation users. The SFPUC is working with Daly City and Cal Water to assess the feasibility of building a new facility that would provide an additional 1.25 mgd of average annual treatment capacity to serve cemeteries and other irrigation areas. New pipelines, pump stations and offsite storage would be constructed to complete the recycled water distribution system and deliver water to new customers for irrigation purposes. The purpose of the project is to reduce irrigation reliance on the groundwater basin; provide local, sustainable and drought resistant water supply; and preserve available groundwater supplies for drinking water. The SFPUC is currently initiating an alternatives analysis for the project.

Holy Cross Cemetery, Colma
Photo: BrokenSphere @ Wikimedia Commons

Alternative Water Supply Program (continued)

Purified Water Opportunities

The SFPUC is currently evaluating two opportunities to develop new purified water supplies to augment surface water supply for the Regional Water System: the Crystal Springs Purified Water Project concept, and a second partnership with Alameda County Water District and Union Sanitary District. Feasibility studies are currently underway that will demonstrate how much new water supply can be made available, the timing of such availability, and how this new supply might interact with existing supplies.

Storage Expansion

The Calaveras Reservoir Expansion Project and the Los Vaqueros Reservoir Expansion Project would provide new storage opportunities. In both cases, greater storage capacity can provide flexibility for water supply during droughts. Water supply for storage and conveyance of the water to our customers remain the key components of the current evaluation.

Crystal Springs Reservoir

Calveras Reservoir

SFPUC Prepares for New Water Efficiency Requirements

In FY 19-20, the SFPUC continued to prepare for new state urban water use requirements. The requirements will set new water use targets for urban water providers, which go beyond the state's goal of 20% reduction in per capita urban water use by 2020 per Senate Bill X7-7 and include:

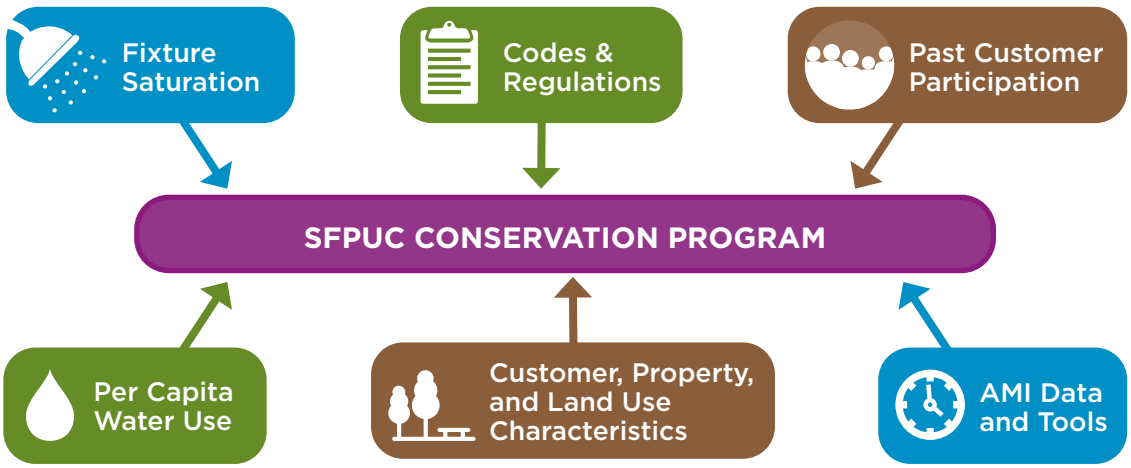
- Legislation currently directs a standard for indoor residential water use of 55 gallons per person, per day, dropping incrementally to 50 gallons by 2030, but studies are underway that could propose a lower standard.
- A standard for outdoor water use based upon the amount of irrigable landscaped area for residential and dedicated irrigation commercial accounts and the community's climate.
- A standard for water loss due to leaks in a water utility's pipe infrastructure.

2020 Urban Water Management Plan (UWMP)

During this fiscal year, the SFPUC began work on its 2020 UWMP, a detailed assessment of our efforts to ensure long-term water reliability and efficient use of supplies that urban water providers are required to provide the California Department of Water Resources every five years. The UWMP provides information on our retail and wholesale water systems, our current and future water supplies and customer demands, our compliance with state water conservation requirements and our procedures for handling potential water shortages during drought. The 2020 UWMP also describes how the SFPUC will address new statewide water efficiency requirements and include an updated Water Shortage Contingency Plan. To support development of its 2020 UWMP, the SFPUC is also updating its retail demand forecast model. The SFPUC will share the draft UWMP with stakeholders early 2021. The report is due to the state by July 2021.

2020 Retail Water Conservation Plan

The SFPUC conducted a thorough review of its conservation measures and updated fixture market saturation estimates and other data to support development of its 2020 Water Conservation Plan, a voluntary report we prepare every five years that describes our retail water conservation program, including what measures we undertake and why; estimated water savings; how these savings effect customer demand; and where we anticipate continued and future water savings. The 2020 Conservation Plan will be shared with stakeholders and is slated for completion in early 2021.



Community Outreach & Education

The SFPUC values the long-standing partnerships that we have established over decades with the diverse communities we serve. We have strived to engage our stakeholders and share important agency updates in a transparent and timely fashion. We have used both traditional and innovative outreach channels, whether they be print newsletters, social posts, public hearings, community events or educational campaigns.

This year, due to the global pandemic, we had to reimagine some of our in-person engagement activities. Large scale events like the Water Conservation Showcase pivoted to online webinars, and in person tours became virtual. Innovative technology tools such as My Account or automated leak alerts became even more important in making sure our customers had information they could use, even when we weren't able to be together in person.

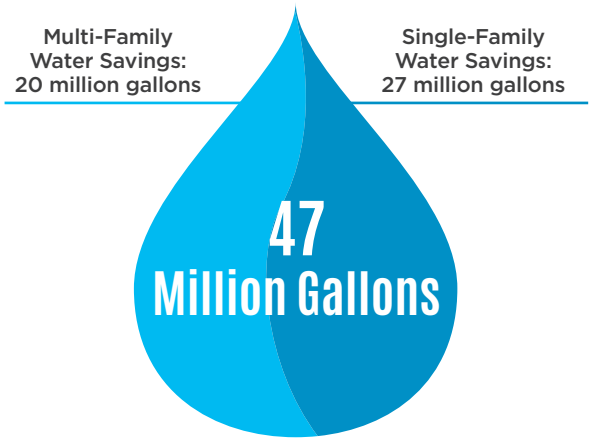
Leak Alert Program

Since 2014, the Leak Alert Program has helped many customers fix leaks promptly by notifying them of continuous water consumption at their property, saving them significant amounts of wasted water and money. Utilizing SFPUC's automated water meter infrastructure, the SFPUC Leak Alert Program continued to alert single family, small multi-family, and irrigation customers with three days of constant water use by phone, text message, email and letter. In FY 2019-20, 14,635 leak alert notifications were issued.

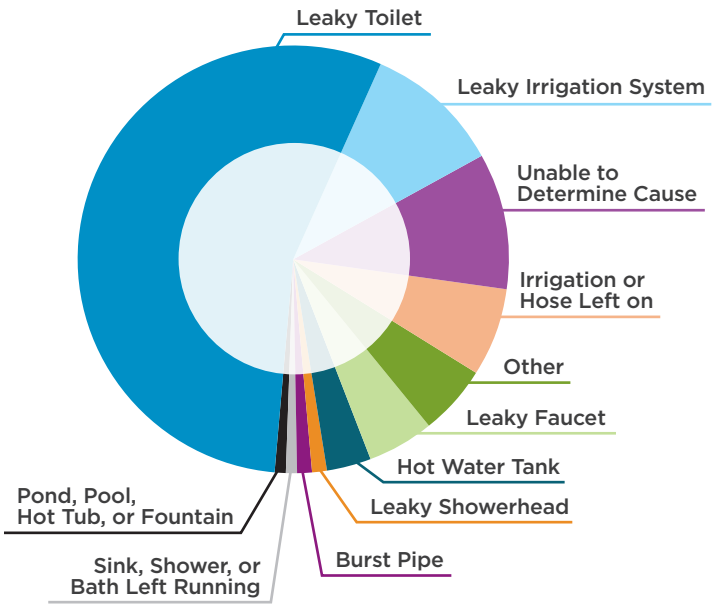
In April 2020, to help businesses closed or at reduced capacity avoid water waste from leaks during the Covid emergency, we launched a new alert to commercial sites with constant use that represented a significant increase compared to their pre- shelter in place consumption.

The SFPUC completed an analysis of the estimated water savings from its single family and multi-family leak alerts. Reviewing hourly AMI water use data from July 2014 to June 2019, the SFPUC was able to compare consumption before and after leak alert implementation. Our alert program is estimated to save approximately 27.8 million gallons per year across all single-family accounts and approximately 20.2 million gallons per year across all small multi-family accounts.

Estimated Leak Alert Program Water Savings in FY 2019-20



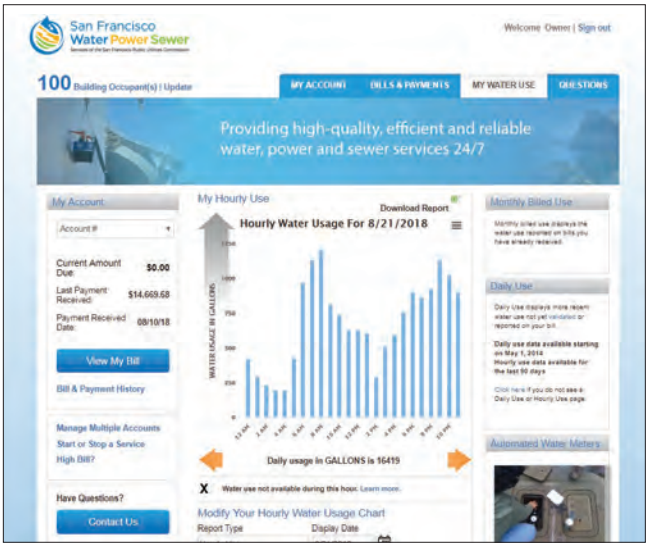
Cause of Leaks Reported by Customers in FY 2019-20



Community Outreach & Education

My Account Customer Portal

SFPUC's My Account web portal allows customers to easily pay and view their water bills online and to see their hourly, daily, weekly and monthly water use, which can help identify water use patterns and unusual spikes. Since its launch in 2014, registration for My Account has steadily increased to over 83,000 users, 40% of the retail customer base. Residential My Account users can also track how their water use aligns with a conservation target of daily use under 50 gallons per person per day. Account holders can register at **myaccount.sfwater.org**.



My Account customer portal

Water Conservation in Schools

The SFPUC is committed to fostering the next generation of environmental stewards by providing the communities we serve with educational resources. In FY 2019-20, we continued to offer free teacher resources, including curriculum designed to teach 3rd to 5th grade students how they can help protect our natural resources and prevent pollution. In total, there were 17 classroom presentations and 21 field trips to water-wise demonstration gardens. Due to Covid restrictions and distance learning, the SFPUC is reimagining how we reach our students with virtual tours and presentations.

Students at Garden for the Environment in 2019

Looking Ahead

The SFPUC is committed to maintaining a reliable water supply today and into the future. In keeping with SFPUC's history of innovation, our staff has continued to reimagine the possibilities of our future water supply, while working hard to maintain the quality and reliability we have come to depend on. We are able to bring new energy and imagination to address the most critical and complex challenges we face. The future calls on us to continue inspiring each other to share bold ideas, pursue creative solutions, and seek synergies that add value to our work in new ways.

Water Resources Division
525 Golden Gate Avenue, 10th Floor
San Francisco, CA 94102

sfwater.org/localwater

November 2020

San Francisco
Water Power Sewer
Services of the San Francisco Public Utilities Commission