



San Francisco
**Water
Power
Sewer**

Services of the San Francisco
Public Utilities Commission

**SEWER
SYSTEM**

IMPROVEMENT PROGRAM
Grey. Green. Clean.



11.07.17

Incorporating Sustainability Issues into SF's \$6.9B Wastewater Capital Program

Karen Kubick, P.E. - Wastewater Enterprise Capital Program Director

San Francisco Public Utilities Commission (SFPUC)

Water



HETCH HETCHY RESERVOIR

Delivering high quality water every day

Power



SOLAR PANELS AT SAN FRANCISCO AIRPORT

Generating clean energy for vital City services

Sewer



OCEANSIDE TREATMENT PLANT

Protecting public health and the environment

Our Combined Sewer System

49 Square Miles in SF
860,000+ SF Population
3 Treatment Facilities
1,000+ Miles of Pipes
40 Billion Gallons Treated/Year
100-Year-Old System

North Point Wet Weather Facility



WESTSIDE

BAYSIDE

Southeast Treatment Plant



Oceanside Treatment Plant





Westside Transport/Storage Structure

OUR RACE AGAINST TIME

Our sewer system is facing a growing number of challenges, and it is crucial that we upgrade our system now, before it becomes a threat to our public health.



AGING INFRASTRUCTURE

Routine repairs are not sufficient to keep pace with our aging and seismically vulnerable infrastructure.



SEISMIC VULNERABILITY

San Francisco's sewer system was not built to withstand a major earthquake.



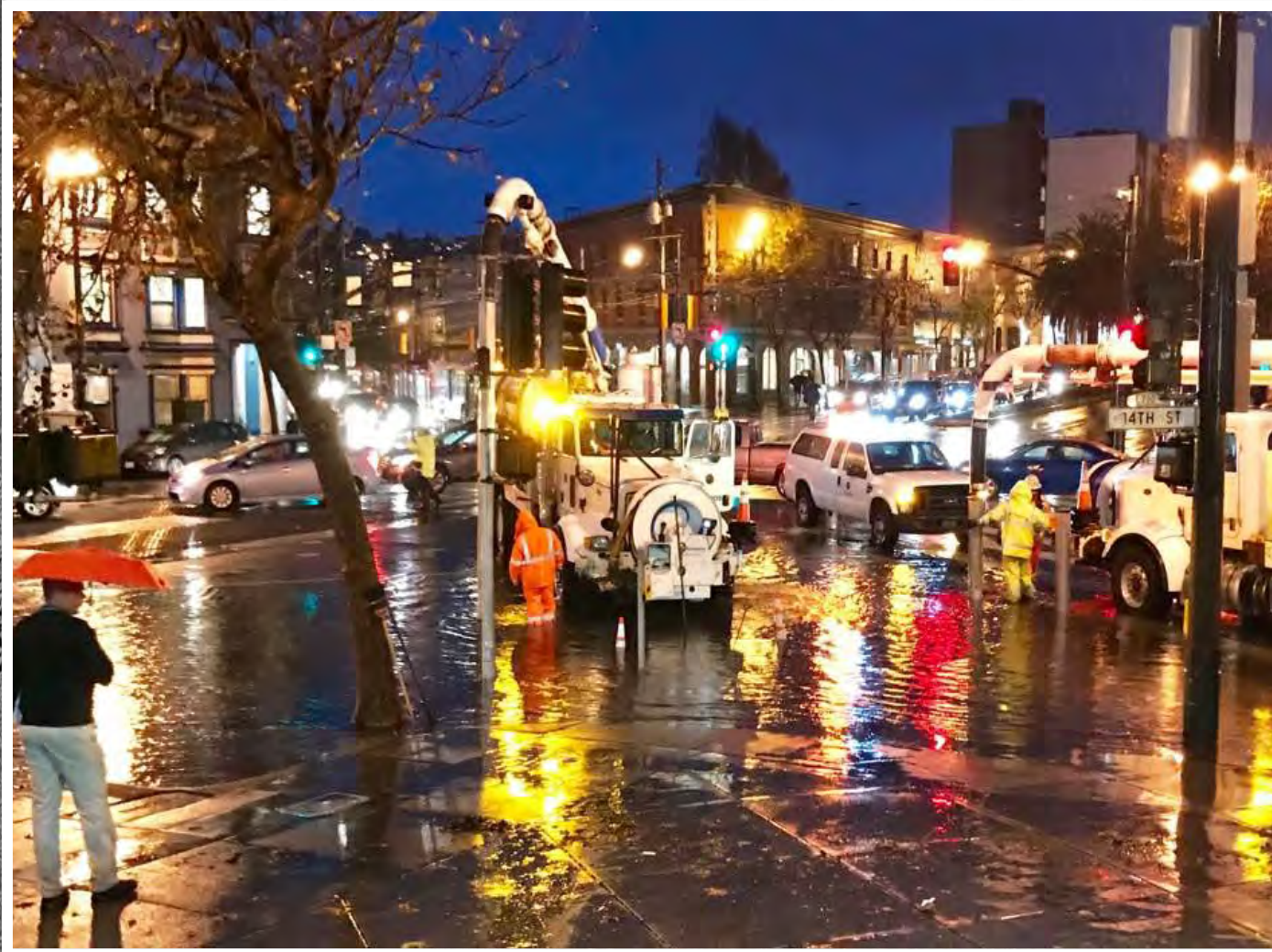
MAINTAINING WATER QUALITY

During large storm events, runoff can contribute to combined sewer discharges into the Bay and Ocean.



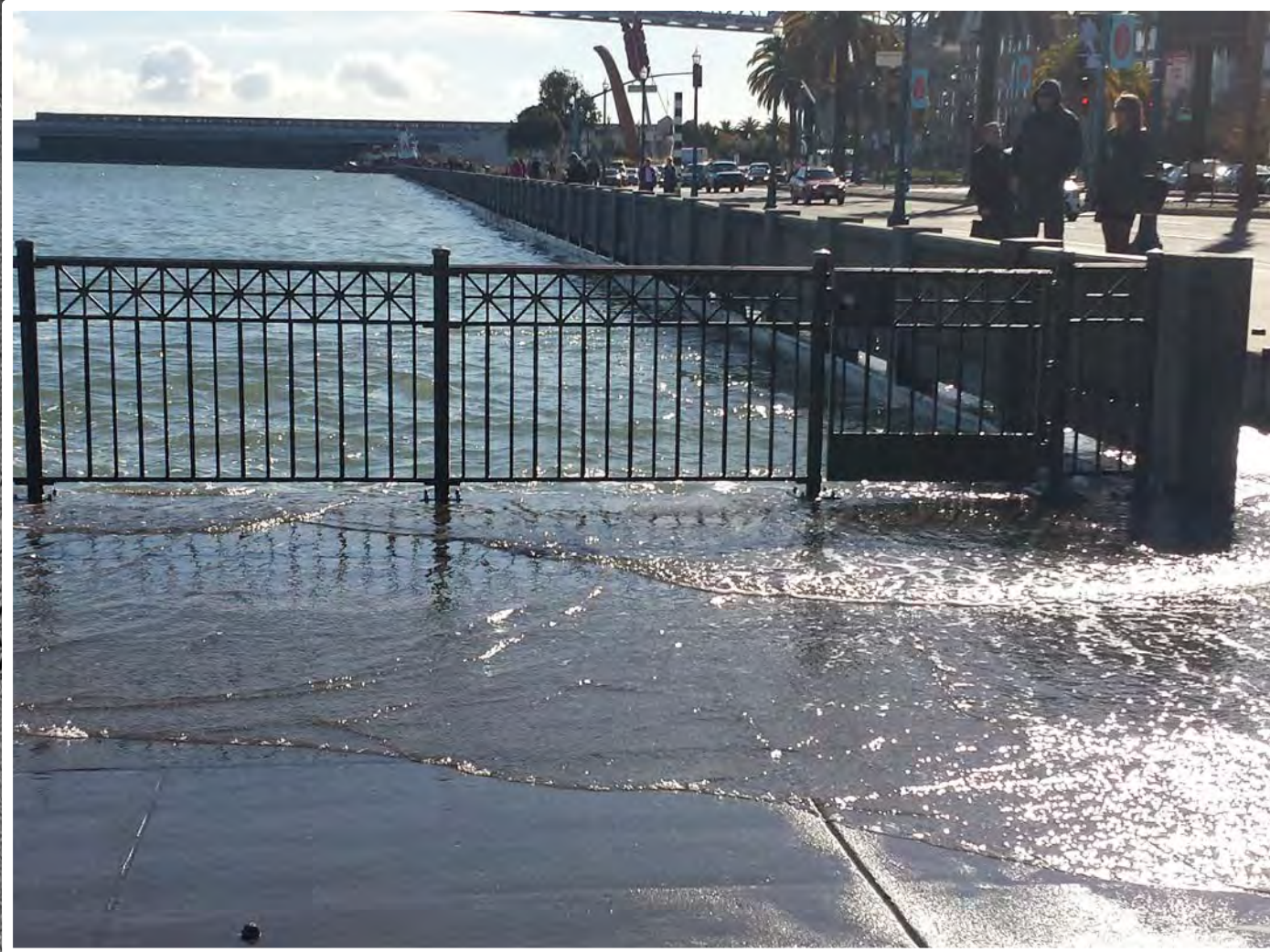
LOCALIZED FLOODING

When the system reaches capacity in heavy rains, we can experience street flooding.



CLIMATE CHANGE

Sea level rise and increasing intensity and frequency of storms can overwhelm our system.



Sewer System Improvement Program (SSIP)

Grey.



**SYSTEM AND SEISMIC
RELIABILITY &
REDUNDANCY**

Green.



**INNOVATIVE
STORMWATER
MANAGEMENT SOLUTIONS**

Clean.



**PROTECTING PUBLIC
HEALTH
& THE ENVIRONMENT**

SSIP's Levels of Service Goals



Provide a Compliant, Reliable, Resilient, & Flexible System that can **Respond to Catastrophic Events**



Integrate Green & Grey Infrastructure to **Manage Stormwater** and **Minimize Flooding**



Provide **Benefits** to Impacted **Communities**



Modify the System to **Adapt to Climate Change**



Achieve **Economic & Environmental Sustainability**

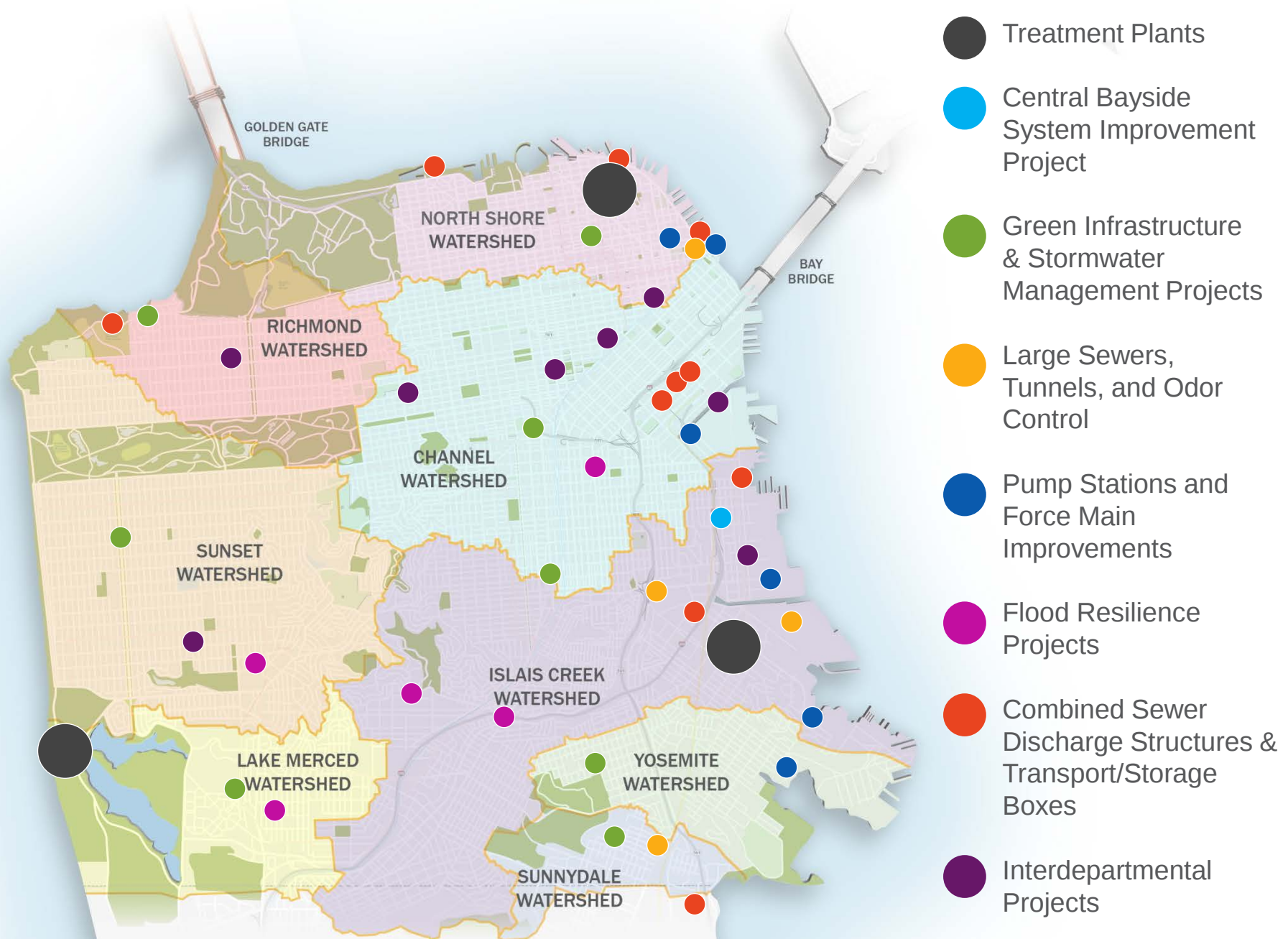


Maintain **Ratepayer Affordability**

Sewer System Improvement Program Budget

	Phase 1 (\$M)	Phase 2 (\$M)	Phase 3 (\$M)	Total Cost (\$M)
Treatment Plants	2,182	1,299	407	3,888
Collection System	505	1,689	476	2,670
Land Reuse	98	-	-	98
Program Management	125	152	43	320
Total SSIP	2,910	3,140	926	6,976

SSIP Phase 1 Projects | \$2.9 Billion



SFPUC'S UNIQUE APPROACH TO IMPLEMENTING THE SSIP

Urban Watershed Assessment

Inter-Agency Coordination and Involvement

Watershed
Characterization

Watershed
Opportunities

Develop
Watershed
Alternatives

Evaluate
Watershed
Alternatives

Recommended
Projects,
Programs &
Policies and
Implementation
Strategy

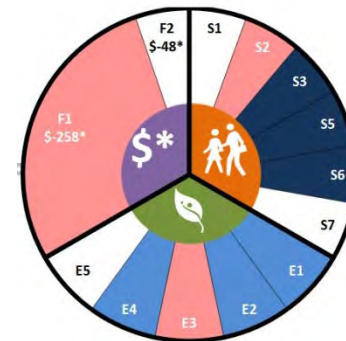
Public Outreach and Engagement



CHARACTERIZATION

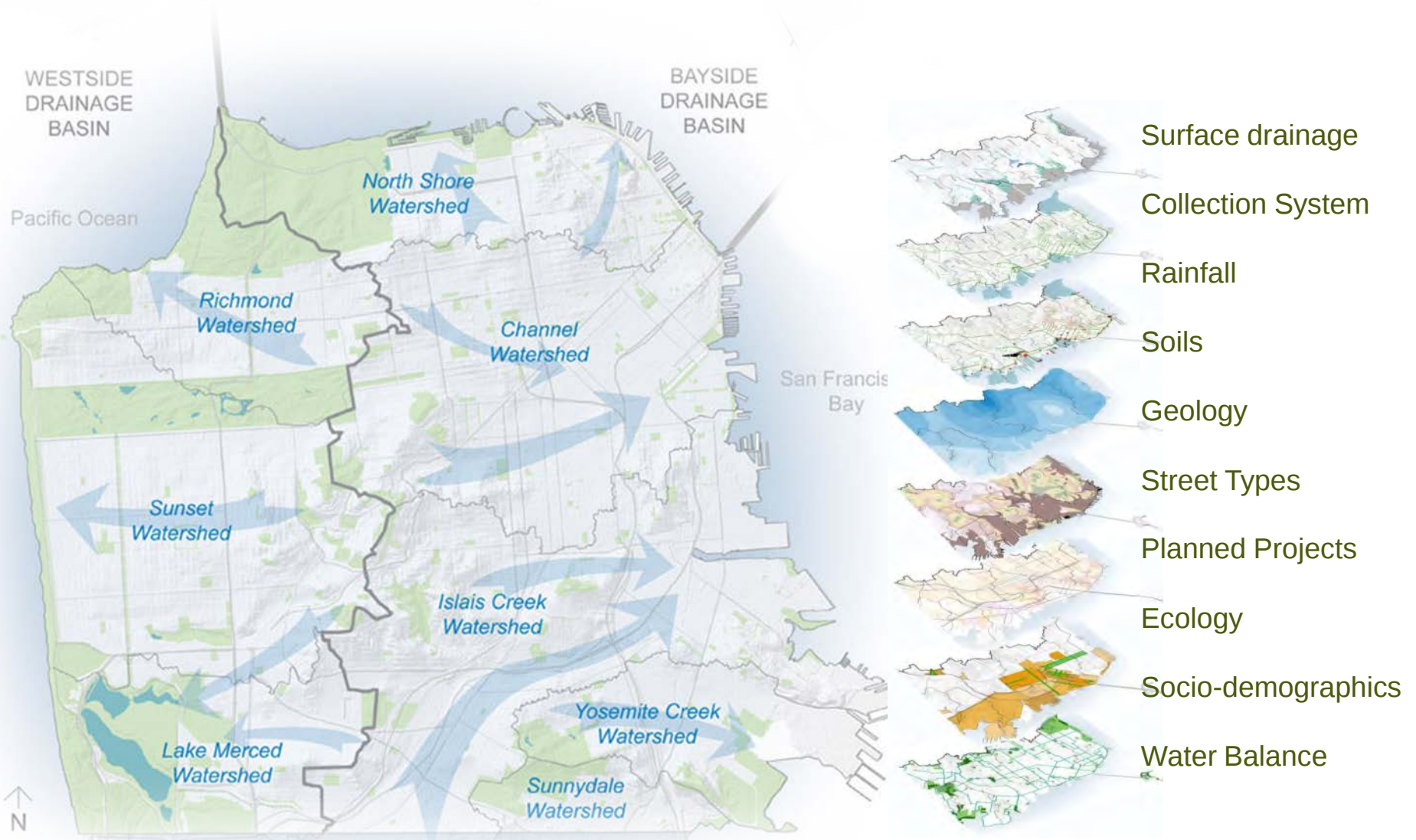


PUBLIC OUTREACH



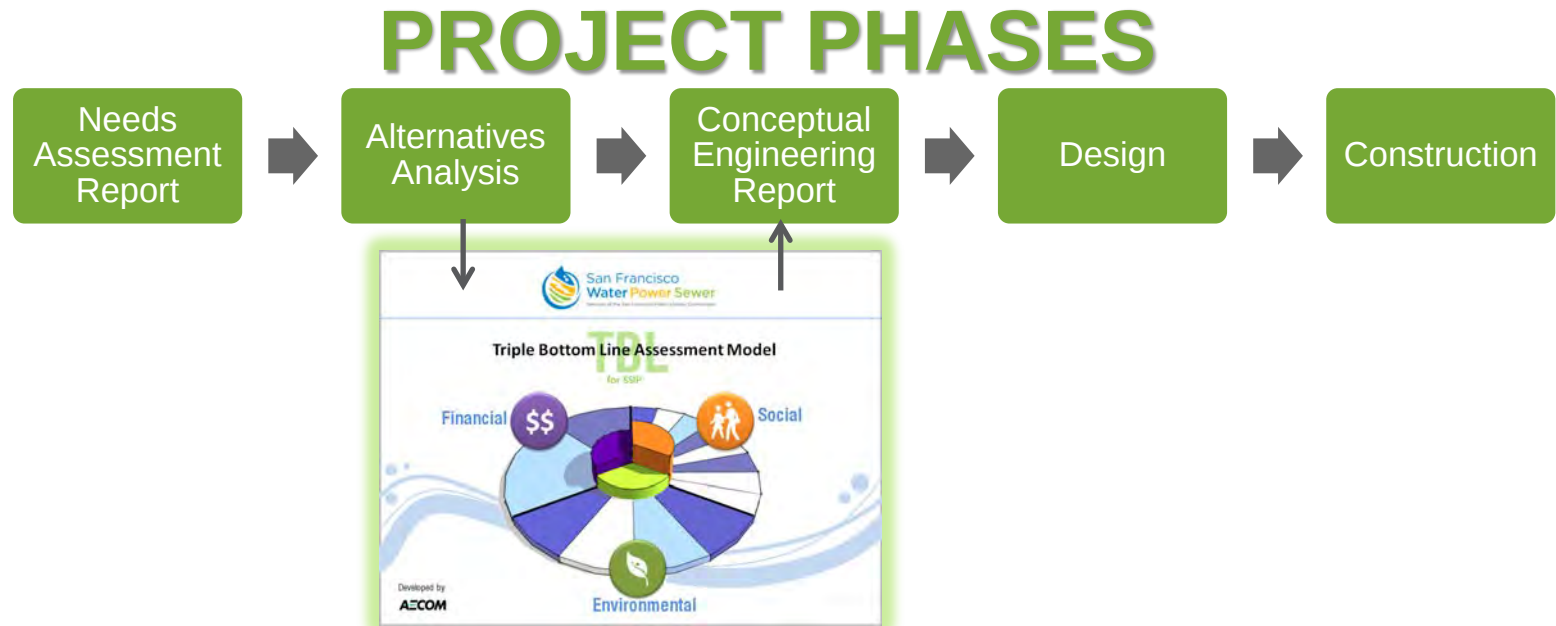
TRIPLE BOTTOM LINE
ANALYSIS

Urban Watershed Assessment

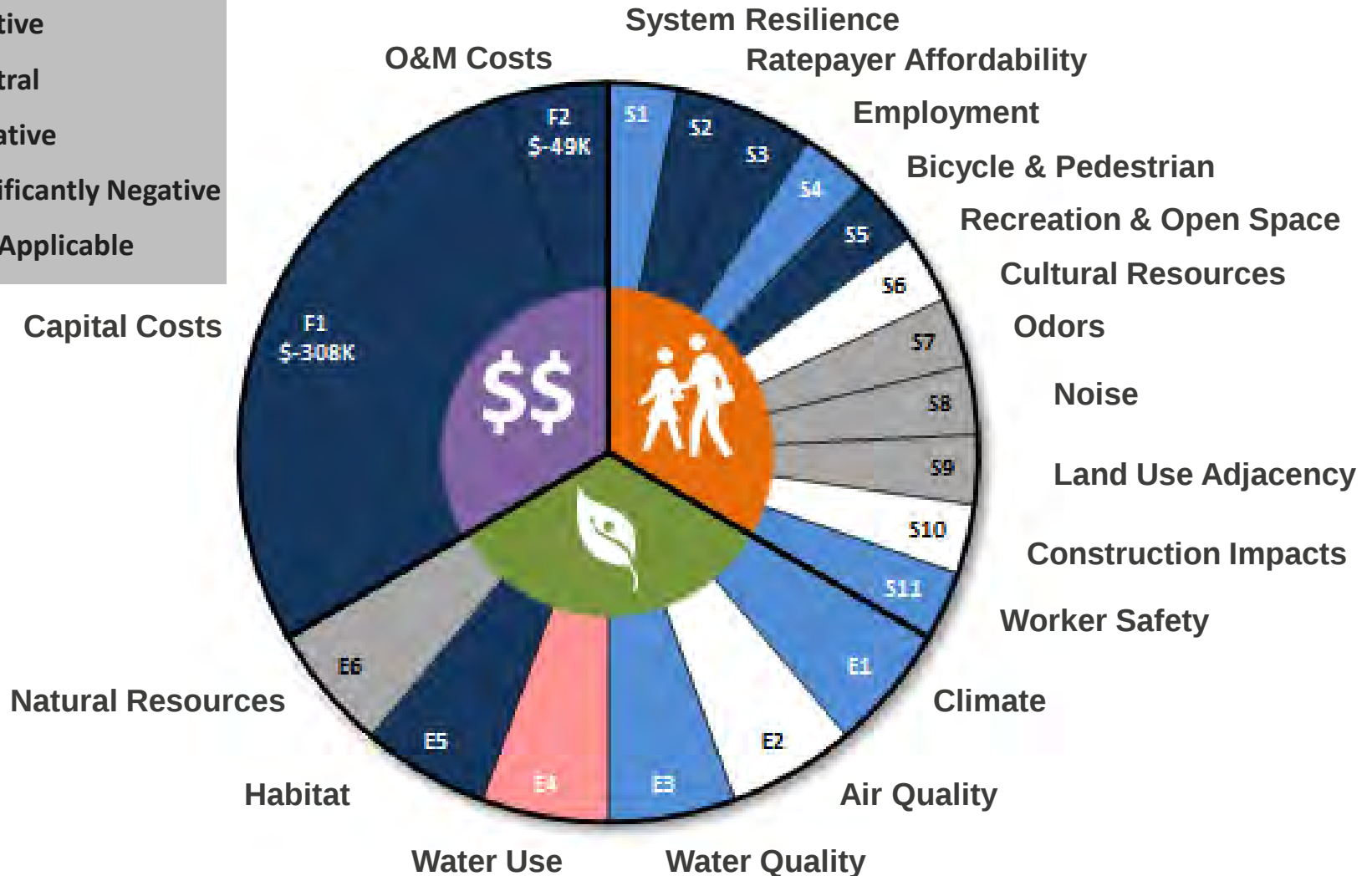


Triple Bottom Line for the SFPUC

1. Informs and supports the analytical process for *developing alternatives*.
2. Provides *decision-making support* for project leaders.
3. Increases *project selection transparency* and *facilitates a reporting-out* of expected project benefits.

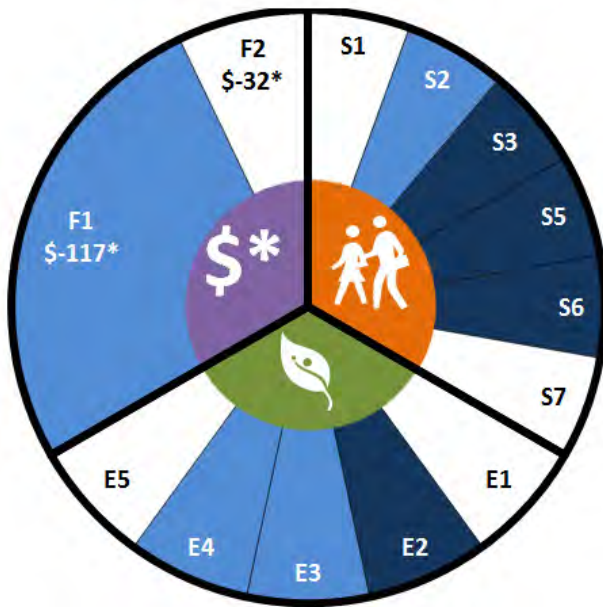


Triple Bottom Line Analysis

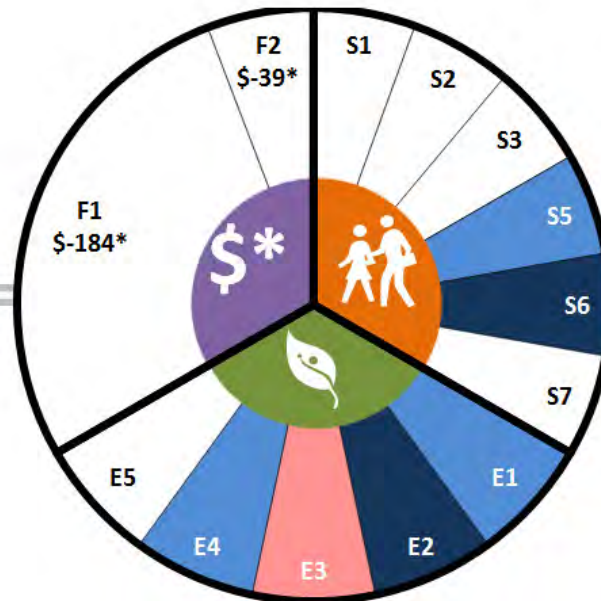


Sunset Watershed Alternatives Analysis

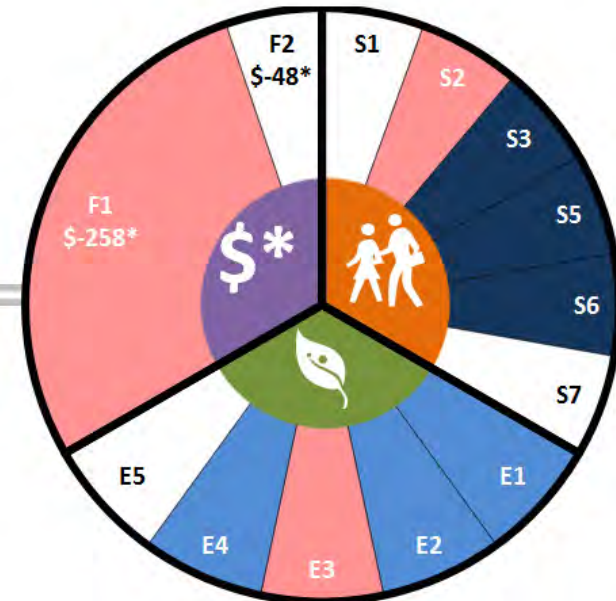
Sunset Boulevard Green Retrofit



Sloat/W Potral Green Retrofit



Irving Street



Social	
S1	System Resilience
S2	Ratepayer Affordability
S3	Bicycle & Pedestrian Environment
S4	Odors
S5	Recreation & Open Space Amenities
S6	Employment
S7	Cultural Resources
S8	Noise
S9	Construction Impacts

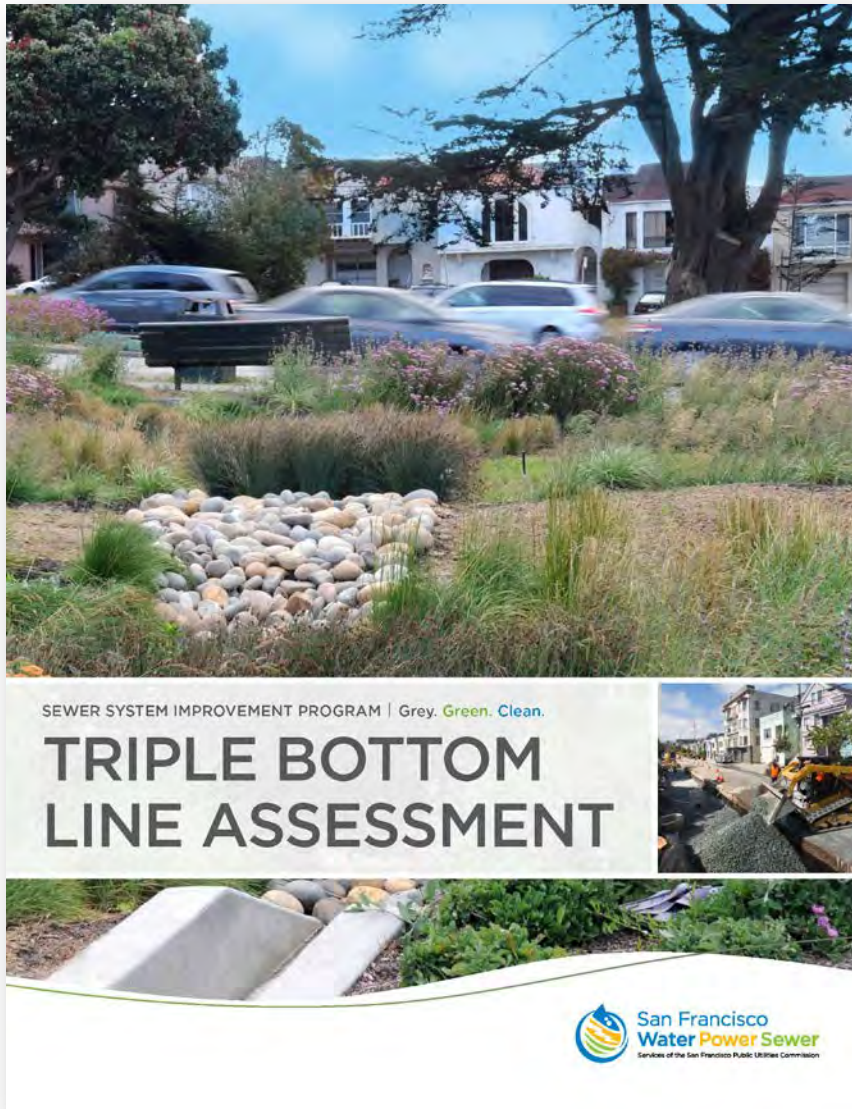
Environmental	
E1	Climate
E2	Habitat
E3	Water Use
E4	Water Quality
E5	Air Quality
E6	Natural Resource Inputs

Financial	
F1	Annualized Capital Costs
F2	Annualized Other Costs

Note: Financial criterion ratings are based on cost effectiveness (annualized cost per annual CSD volume reduction) and select projects only.

SFPUC's TBL Executive Summary

[Sfwater.org/ssip/TBL](https://sfwater.org/ssip/TBL)



Public Outreach & Engagement

- Stakeholder Outreach Meetings
- Community Open Houses
- Interactive Online MetroQuest Surveys
- Community Group Presentations
- Community Events
- In-person Surveys
- Learning Lab Design Meetings
- Supervisor Coordination



Urban Watershed Assessment

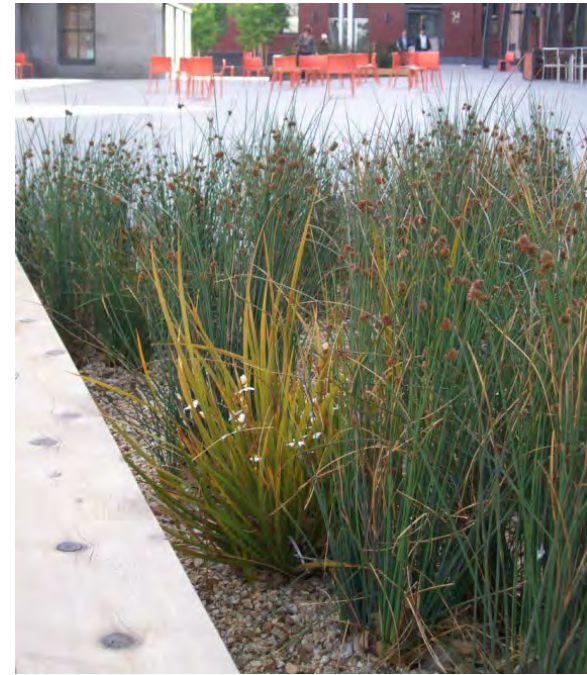
Projects + **Programs** + **Policies**



Green and Grey
Infrastructure



Education, Grants,
and Incentives



Stormwater Design
Guidelines

Green Infrastructure Stormwater Management Projects **\$57M**



Completed Green Infrastructure Projects

Wiggle Neighborhood Green Corridor – Phase 1



Sunset Blvd Greenway: Pilot Block



Completed Green Infrastructure Projects

Cesar Chavez Streetscape



Holloway Green Street



Mission & Valencia Streets Green Gateway



Upper Yosemite Creek Daylighting

Soft Edge



Current

Upper Yosemite Creek Daylighting

Soft Edge



Baker Beach Green Street

El Camino Del Mar



Current

Baker Beach Green Street

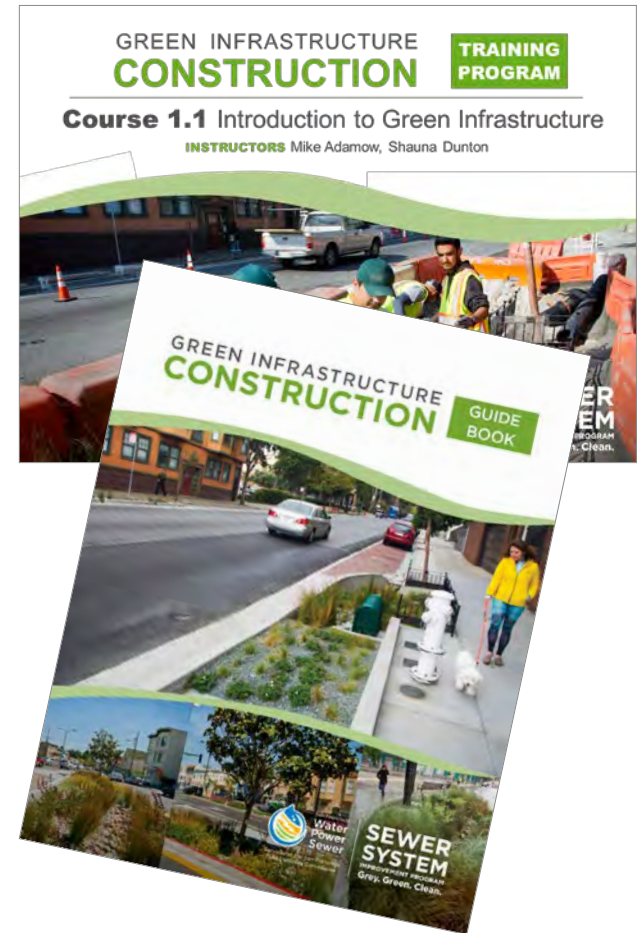
El Camino Del Mar



Proposed

Green Infrastructure Construction Contractor Training

- Prepare contractors for upcoming GI projects:
 - SSIP
 - Redevelopment areas
 - Stormwater Management Ordinance (SMO)
- Improve quality and cost effectiveness of construction
- Provide standardized GI national certification



UPDATE Guidance for Incorporating Sea Level Rise

Year	Projections	Ranges
2030	6 in	2 to 12 in
2050	11 in	5 to 24 in
2100	36 in	17 to 66 in



66" SLR + 100-Year Storm Surge for San Francisco's Bayside



New Technology



Alternative Project Delivery

A More Efficient Way To Deliver Projects:

- Design Build
- Progressive Design/Build
- Construction Manager/General Contractor

1. Select the best firms for the projects



Using a Qualification Based Selection of a Design Builder

2. Integrate as One Team to deliver projects



Through Stakeholder Engagement Partnering

3. Work collaboratively together as a team



With a Structured Collaborative Partnering Program

Stakeholder Engagement

- Public Awareness Campaign
- Community Presentations
- Urban Watershed Game
- Tours & Workshops
- E-Newsletters
- Social Media

Countdown to the Waste Emergency

The majority of San Francisco's sewer pipes were built before 1975, and the city is trying to replace them before they fail.

Nuala Sawyer / Wed May 10th, 2017 10:58pm / [Feature](#)



S.F.'s public sewer system dates back to the Gold Rush. This brick-lined sewer is more than 100 years old. (Photo by SFPUC/Photographer Carmen Magana)

Community Benefits & Economic Inclusion

Priority Areas

- Workforce Development
 - Exceeding Local Hire Requirements
 - SSIP CityWorks Internship
- Education
- Arts
- Land Use & Environmental Justice
 - EJ Analysis for Biosolids project
- Neighborhood Revitalization
- Small Business Opportunities
 - Contractors Assistance Center
 - Over \$3M Committed via contracts



SSIP Jobs & Contracts Report

sfwater.org/ssip/jobsreport



About the Sewer System Improvement Program

The owner and operator of San Francisco's sewer system, the San Francisco Public Utilities Commission (SFPUC), has embarked upon the Sewer System Improvement Program (SSIP), a 20-year, multi-billion dollar citywide investment, necessary to upgrade our aging sewer infrastructure to ensure a reliable and seismically safe system now and for generations to come. An investment in sewer infrastructure of this magnitude presents a once in a lifetime opportunity to:

- upgrade our aging sewer system to sustainably support all who live, work, and visit our amazing City;
- provide training and support services for the community to access, and meaningfully participate, on projects being constructed in their neighborhoods;
- create job opportunities and access to careers that provide living wages and benefits; and
- provide opportunities for the startup or growth of small businesses.



Nyzenia has always been a fixer. "I like to put stuff together, fix stuff. I like to build stuff for my son and play with him," said Nyzenia Eberhart, now an apprentice industrial painter with the International Union of Painters and Allied Trades, Local 913. "Even though I've always been a prissy girl, I still really like to build stuff."

Nyzenia's journey from building blocks to union painter is a lesson to anyone wanting to get into construction. A Treasure Island community based organization was Nyzenia's path to getting a foot in the construction door. They referred her to an all-women's construction pre-apprenticeship program run by Rising Sun Energy located in Berkeley.

Training at Rising Sun began early. "I got up at 4:30AM to catch three separate busses to get to my training classes by 7:00AM. But I am a survivor," boasted Nyzenia. "I had support from Tradeswomen Inc." They help get women into trades, and Nyzenia had the opportunity to be one of the first women to participate in this training, which kept her motivated. Trainings like these are important to help enable women access and succeed on construction job sites because currently, there is only 1 woman for every 30 men working in the trades.

The Office of Economic and Workforce (OEWD) Development sees the City's building boom as a prime time to get more people like Nyzenia in the local construction workforce. OEWD and the SFPUC support community based organizations to work in the City's neighborhoods.

Continued on back cover

Making a Lasting Investment

With our current and upcoming infrastructure investments, the SFPUC has an opportunity to support San Francisco's ongoing economic vitality by strengthening its neighborhoods, businesses, and workforce through:

JOBS: Our projects are covered by the San Francisco Local Hiring Policy for Construction and have a goal of 30% at this time, meaning these hours must be worked by San Francisco residents. For apprenticeships (entry-level jobs) this goal is 50%.

Percentage of hours worked (required vs. actual)

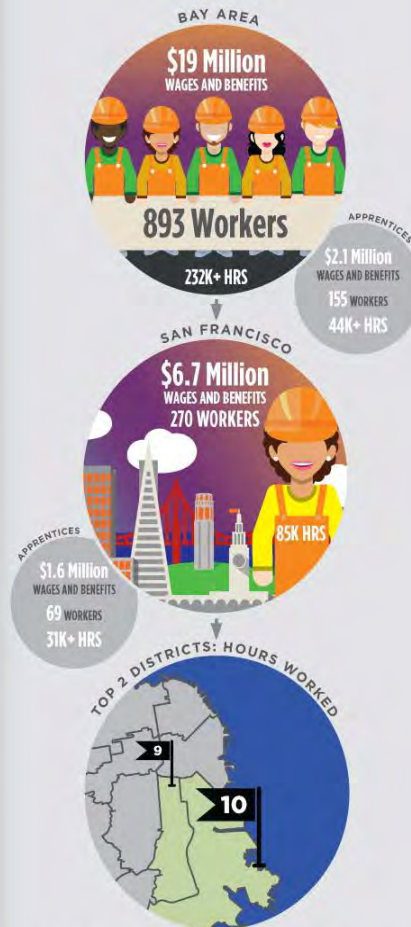


CONTRACTS: The City also has a mandate for local community contractors to participate. Although the goals vary per contract the SFPUC is committed to maximizing local participation on every project.

THIS REPORT is designed to provide a biannual snapshot of the jobs and contracts provided by the SSIP and serve as a resource guide for those looking to get involved with this once in a generation opportunity. The data in this report is as of June 30, 2017.

HOW ARE WE DOING SO FAR...?

JOBS



ALL WORKERS D9 Mission 18% | D10 Bayview 29%
APPRENTICES D9 Mission 18% | D10 Bayview 41%

CONTRACTS



D3 Chinatown 23% | D10 Bayview 40%

- Develop qualified candidates for mission-critical jobs
- Provide staff with the information needed to do quality work
- Modify work to optimize use of staff available
- Maximize cost-effectiveness of investments through collaboration

baywork.org/resources

Mission-Critical Job Categories



Electrician



Wastewater
Treatment
Operator



Engineer



Electronic
Maintenance
Technician



Machinist
/Mechanic



Water
Treatment
Operator



Water
Distribution
Operator



Wastewater
Collections
Operator

OUR WASTEWATER TREATMENT PLANTS ARE BECOMING RESOURCE RECOVERY FACILITIES

Resource Recovery



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

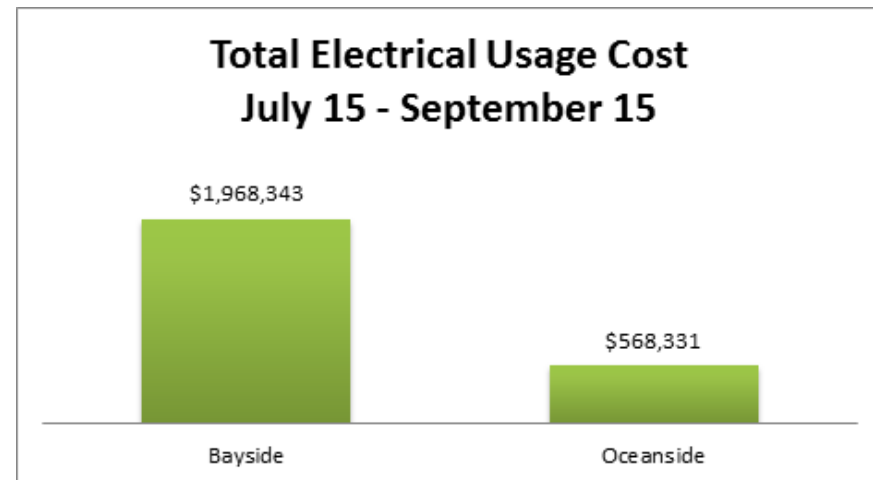
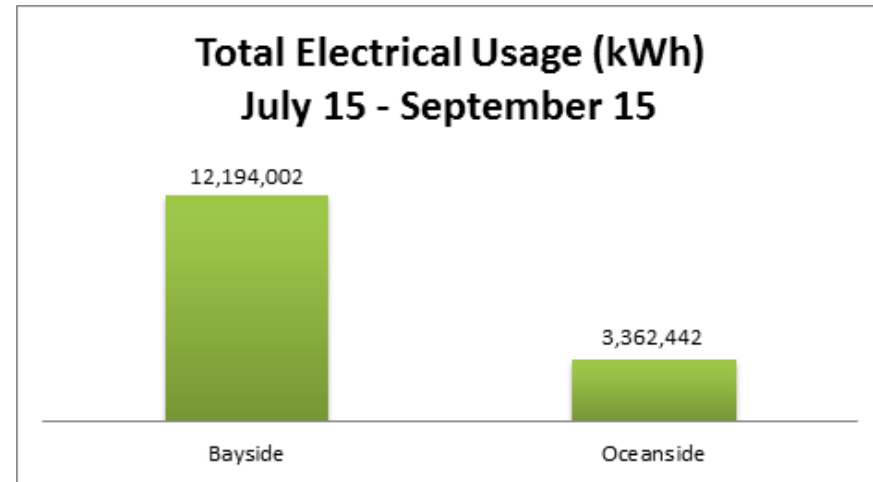


Recycled Water

A Reliable and
Sustainable Choice



Green Energy Production and Conservation



SFPUC Headquarters: 525 Golden Gate



Solar Panels



Wind Turbines

SFPUC Headquarters: The Living Machine



Saves 800,000 gallons of drinking water per year!

Recycles approximately 5,000 gallons of water per weekday.

Reduces total water use by about 65%.

Treated water is only used for toilet & urinal flushing.



THANK YOU.



sfwater.org/ssip
ssip@sfwater.org
sfwater.org