



THE BIGGER PICTURE

MARCH 2021

Five Ideas for Transforming the San Francisco Waterfront

How to protect communities from climate change, restore shoreline ecology and improve waterfront access — for everyone

AECOM

Contents

Introduction: The Bigger Picture	3
Our Vision for the San Francisco Waterfront	4
The San Francisco Waterfront Today	5
Why This Place Matters	7
Five Ideas for Transforming the San Francisco Waterfront	9
Case Studies	12

This report is a component of the SPUR Regional Strategy, a vision for the future of the San Francisco Bay Area

spur.org/regionalstrategy

This report was adopted by the SPUR San Francisco Board on May 20, 2020.



AECOM

Acknowledgements

Authors:

Benjamin Grant, SPUR
Michelle Huttenhoff, SPUR
Stephen Engblom, AECOM
Cristian Bevington, AECOM
Hugo Errazuriz, AECOM

Contributors:

Joy Woo, AECOM
Radhya Adityavarman, AECOM

Special thanks to:

Allison Albericci, Marc Babsin, Peter Bacic, Drew Becher, Brad Benson, Michael Boland, Tilly Chang, Anne Chen, Diane Cowin, Mike Degregorio, Tamsen Drew, Joel Engardio, Tyra Fennell, Shannon Fiala, Lisa Fisher, LeAnn Flesher, Patricia Fonseca, Jean Fraser, Morgan Galli, Ed Harrington, Rich Hillis, Ariane Hogan, Paolo Ikezoe, Doug Johnson, Sarah Jones, Jonathan Kass, Eugene Lew, Ellen Lou, Hugh Louch, Lindy Lowe, Jacinta McCann, Ron Miguel, George Miller, Maren Moegel, Karen Murray, Adam Noelting, Diane Oshima, Ryan Park, Sebastian Petty, Anne Roche, Blake Sanborn, Heidi Sotocolosky, Brian Stokle, Josh Switzky, Katy Tang, Gary Tsagme, Adam Varat

Thank you to the funders of the SPUR Regional Strategy:

Chan Zuckerberg Initiative
Clarence E. Heller Charitable Foundation
Curtis Infrastructure Initiative
Dignity Health
Facebook
Genentech
George Miller
Hellman Foundation
John S. and James L. Knight Foundation
Marin Community Foundation
Sage Foundation
Silicon Valley Community Foundation
Stanford University

Additional funding provided by Fund for the Environment and Urban Life, Microsoft, Seed Fund, Stripe, Uber Technologies, Wells Fargo and AECOM.

The Bigger Picture

SPUR's Bigger Picture series proposes ideas for key locations in San Francisco, San Jose and Oakland, the Bay Area's three largest cities. Each exploration represents an opportunity to tackle major regional challenges through local planning processes. And, conversely, each suggests how big investments in infrastructure can — if planned carefully — bring about positive transformation for the immediate neighborhood.

This series is part of the SPUR Regional Strategy, an aspirational 50-year vision for the Bay Area and a roadmap to creating an equitable, sustainable and prosperous future. We partnered with AECOM to identify and explore locations that have important implications for the future of the region. We see them as great urban places that can uplift both the local community and the greater Bay Area — if decision makers keep that bigger picture in mind.

Rather than starting with a blank slate, these ideas build on the best efforts already underway, proposing bold new ways to make the most of existing plans and ensure that they work with — not against — one another. We also shine a light on some lesser-known proposals that we think deserve consideration. These ideas are not policy prescriptions but possibilities — offering one vision of what a more sustainable, equitable and prosperous future might look like.

Our second exploration in the series looks at San Francisco's waterfront, where plans for new infrastructure to protect the city from climate change are providing an opportunity to improve access to the waterfront and restore the natural ecology.

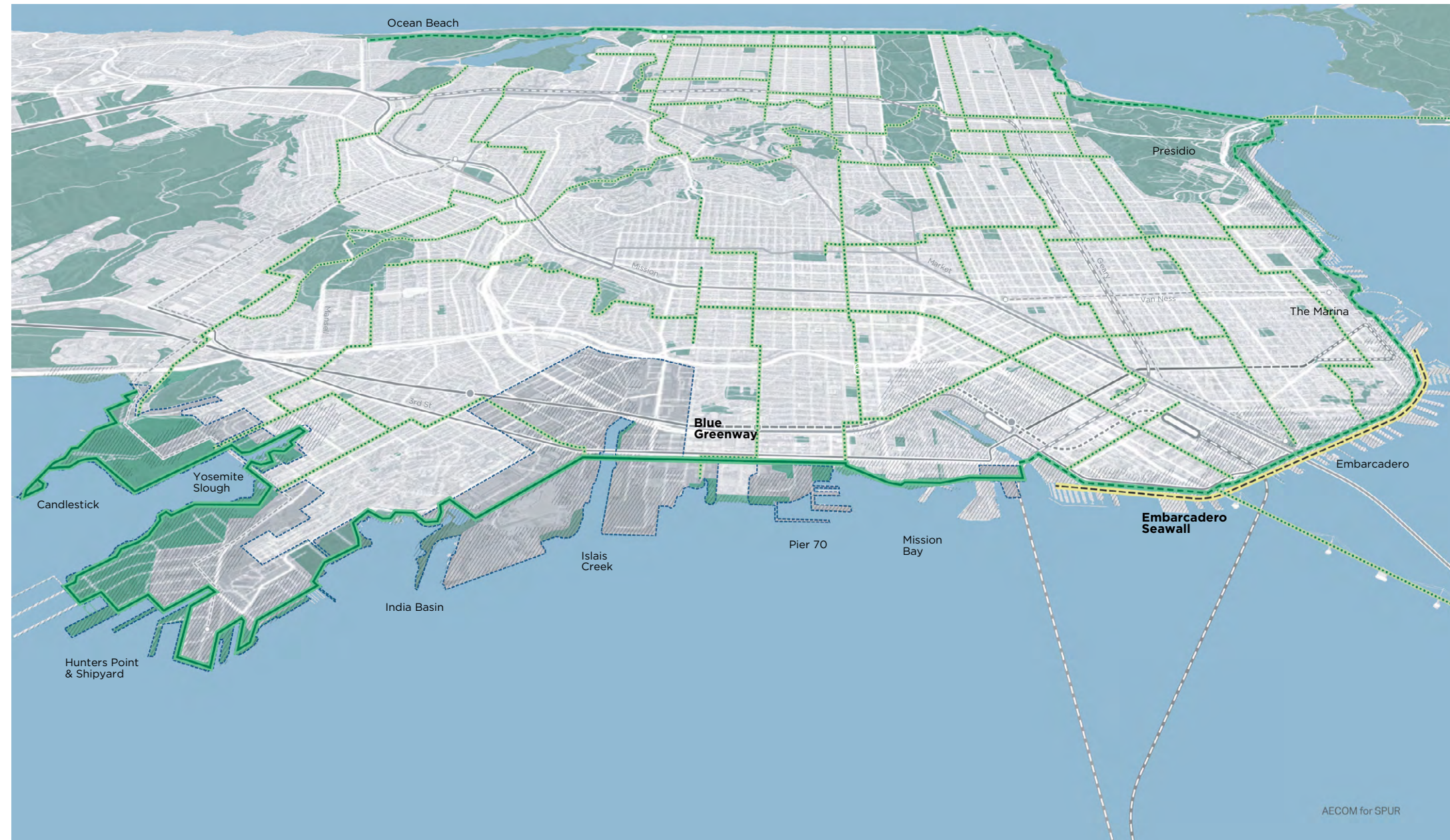
Our Vision for the San Francisco Waterfront

In 2070, life in San Francisco is more tied to the waterfront than ever. From Yosemite Slough in the southeast, north along the Embarcadero and Presidio, westward to Ocean Beach and south to Fort Funston, continuous public access welcomes everyone to see and enjoy one of the world's greatest urban waterfronts. Neighborhoods that suffered from disinvestment and were cut off from their waterfronts now offer residents direct connections to the water's edge without the need for a car. Significant investments have been made in multi-function infrastructure that balances competing needs to respond to sea-level rise, improve urban ecosystems and enhance living conditions for local communities. Restoration projects have returned the waterways to their natural state and repaired their ecological health.

Over the last few decades, major redevelopment in the southeast part of the city has brought new housing for people of all income levels, along with new open space that integrates recreational opportunities into the daily lives of residents. The waterfront now offers swimming classes, marine science programs and low-cost boat rentals that are affordable and welcoming to people of all income levels, races and ethnicities. Everyone who lives in or visits San Francisco is able to see and connect with nature in a new way.

San Francisco Waterfront, 2070

In our future vision, a continuous bike and pedestrian trail rings the entire San Francisco shoreline. Major investments in infrastructure have protected the city from sea level rise and provided opportunities for improving access to the waterfront without a car.



The San Francisco Waterfront Today

Within the last generation, San Francisco has turned to embrace its waterfront. The removal of the Embarcadero Freeway was transformative, creating a beloved public promenade at the heart of the city. This set the template for many other waterfront open spaces — including Crissy Field, Heron’s Head Park, Crane Cove Park and the Blue Greenway — and was the start of a refocus of investment in marginalized and disinvested communities. Today, significant opportunities remain to close gaps that make waterfront access difficult without a car.

Now the increased threat of climate change is forcing San Francisco to once again redefine its relationship to the waterfront. The city has analyzed the impacts of physical vulnerabilities, such as sea level rise, stormwater flooding and liquefaction during earthquakes, overlaying analysis of community vulnerabilities, such as the number of renters, low-income residents and people of color, to better understand San Francisco’s overall climate resilience. The findings show that, in many cases, the communities with the least resources for adapting to climate change are located in the areas most vulnerable to sea level rise and flooding, especially within the southeastern neighborhoods.

Right: San Francisco Ferry Building

Below: King tide at the Embarcadero

Photos by Sergio Ruiz



Climate change scenarios predict that sea levels will rise as much as 108 inches by 2100. This would put more than 6% of the city's land at risk of flooding, with major implications for the waterfront. Already, new development projects are incorporating adaptation strategies into their designs, but older development, infrastructure and open space will become increasingly vulnerable. Much of the 3.5-mile stretch of shoreline from Fort Point (under the Golden Gate Bridge) to Aquatic Park is at high risk from sea level rise, with flooding forecast to occur as early as 2030.

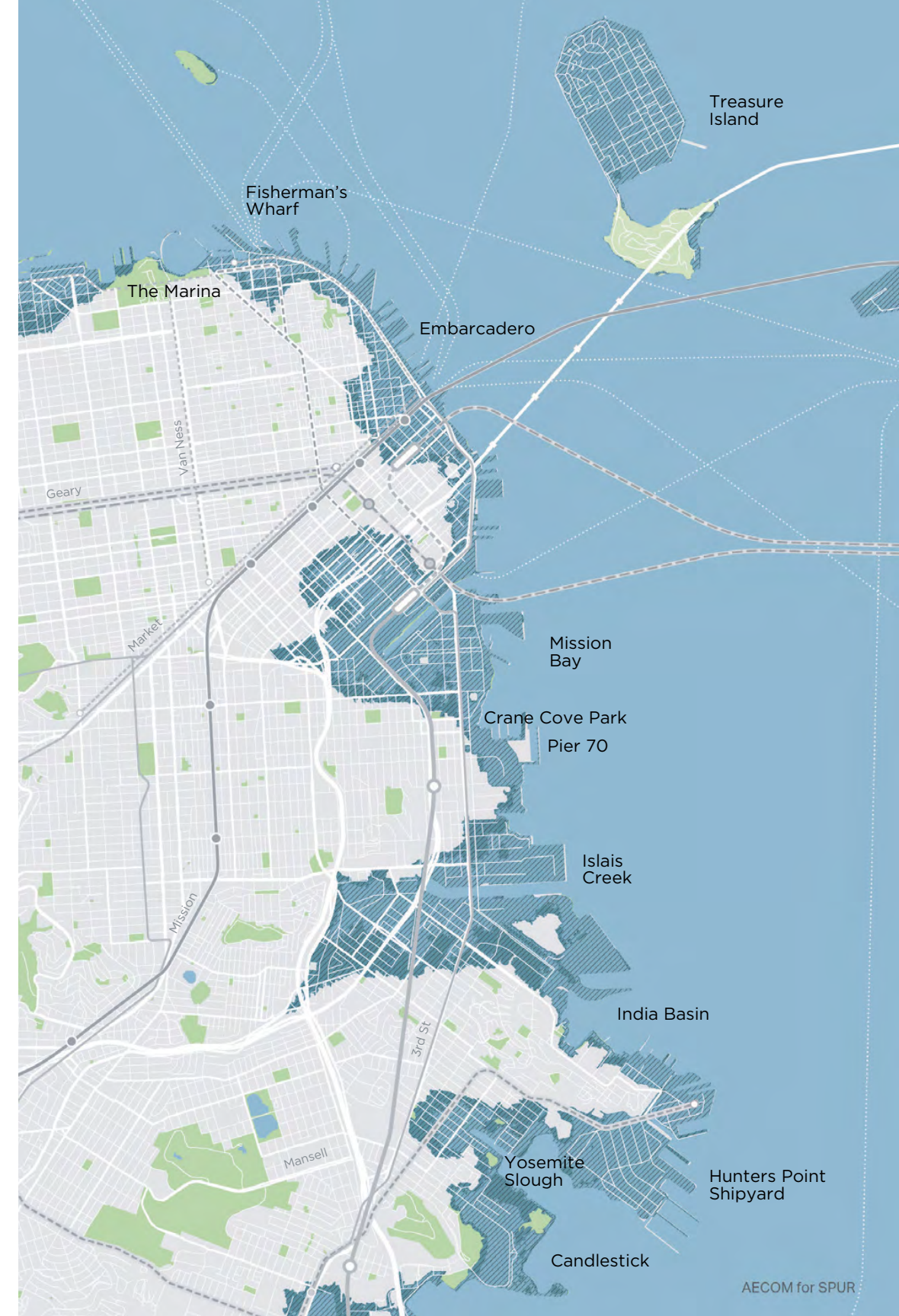
Any improvements made to the waterfront would be enhanced by proactive coordination and cooperation across multiple agencies, including the Port of San Francisco, the San Francisco Public Utilities Commission, the National Park Service, the Bay Conservation and Development Commission, the California State Lands Commission, the California Coastal Commission and numerous city agencies. Each agency has its own jurisdiction over land and its own distinct vision for the future.

The pages that follow make recommendations to overcome these challenges and create a resilient 21st century waterfront.

This map shows the range of projected sea level rise on San Francisco's eastern waterfront by the year 2100, highlighting the importance of a waterfront-wide approach to sea level rise resilience. Without action, many of San Francisco's most vulnerable communities and key infrastructure assets, as well as the region's primary economic hub, would be inundated.

As is typical for adaptation planning projects, we included the impacts of a 100-year storm on top of expected sea level rise to understand the worst-case scenario. In alignment with guidance from the State of California Office of Planning and Research, we have represented both medium-high risk (5.5 feet of sea level rise) and extreme risk (8.25 feet of sea level rise) for the 2100 timeframe.

- Scenario: 5.5 feet of sea level rise plus 100-year storm 2100 timeframe
- Scenario: 8.25 feet of sea level rise plus 100-year storm 2100 timeframe



Why This Place Matters

In the coming decades, up to 75,000 homes and 150,000 jobs are planned for the southeastern neighborhoods of San Francisco, mostly along the waterfront. Several major development projects are transforming underutilized port and industrial lands to modern employment districts, while other areas are evolving as new residential neighborhoods with enhanced open spaces.

Southeast San Francisco has historically been home to communities of color, who have been impacted by systemic racism including disproportionate environmental injustice. For decades, these residents have been exposed to industrial pollution, underserved by parks and open space, and cut off from access to the Bay. Waterfront open spaces on the southeast shore are not easy to access by walking or biking from nearby neighborhoods, creating a feeling of unwelcomeness for longtime residents. With increased interest and new development on the horizon, San Francisco has a once-in-a-generation opportunity to rethink how people connect with the waterfront. Master planning processes for the proposed developments in this area are underway, presenting a new opening to connect with community organizations and existing residents. Public input will be invaluable in shaping plans for green space and routes that connect adjoining neighborhoods and in extending a safe, comfortable and culturally relevant signal of welcome to the water.

The increasingly urgent need to build safeguards against sea level rise also presents the city with a chance to improve the waterfront for residents through infrastructure upgrades, such as retrofitting and replacing the seawall, bulkhead buildings, wharves, piers and other critical facilities. The roughly 3.5-mile stretch of shoreline from Fort Point to Fisherman's Wharf suffers from traffic congestion, unsafe streets and a lack of public transit options, which creates barriers to accessing other parts of the city without a car.

Right: Mission Rock, one of several major development projects underway along San Francisco's waterfront.

Below: San Francisco's southeastern shoreline is undergoing rapid transformation, with opportunity to reimagine how people can access the waterfront without a car.

Photos by Sergio Ruiz



Street closures during shelter in place have transformed the Great Highway into an active bike and pedestrian corridor, unlocking miles of new public space.

Photo by Sergio Ruiz



Five Ideas for Transforming the San Francisco Waterfront

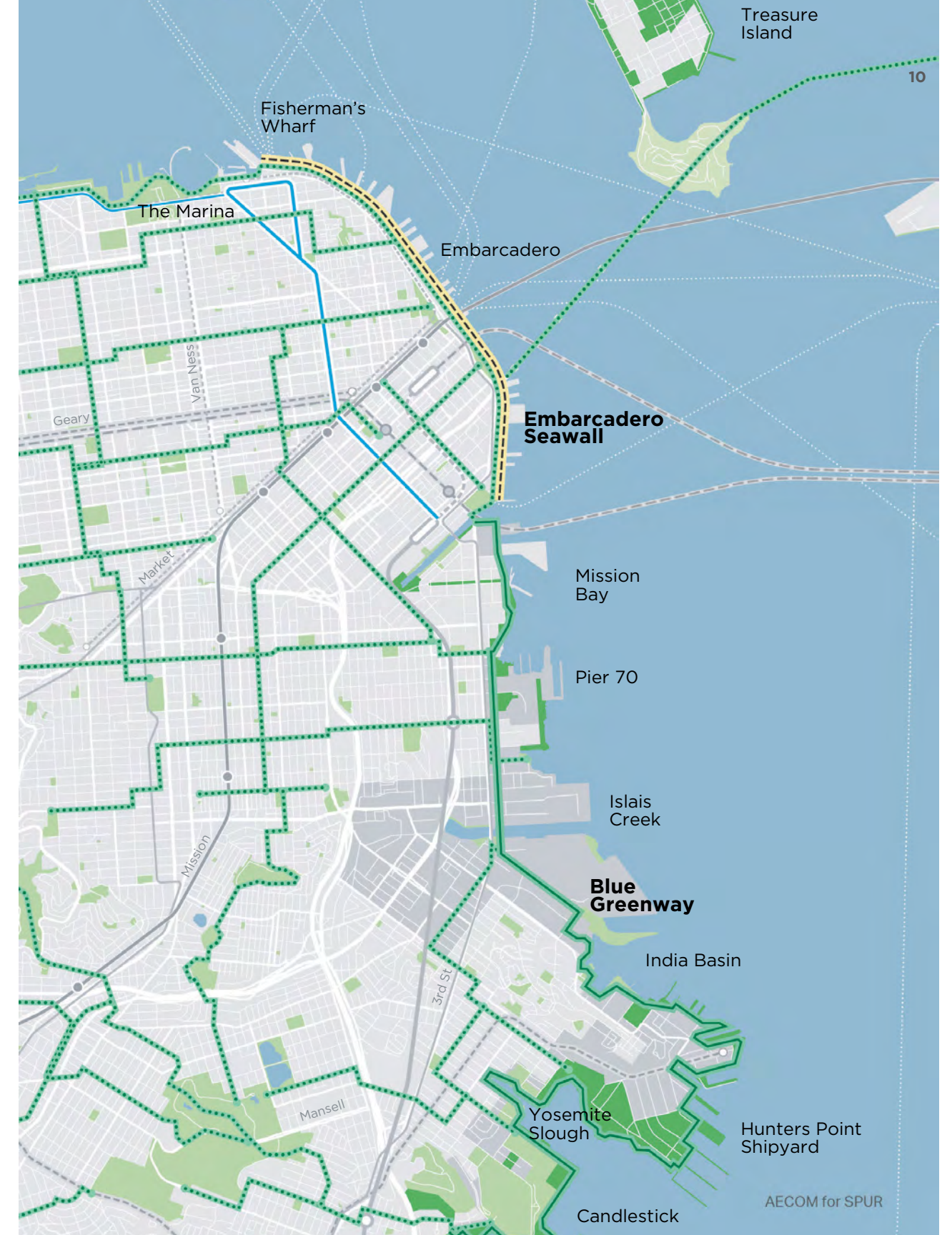
In the following pages, we propose a series of coordinated investments for the San Francisco waterfront that would upgrade the city's aging infrastructure to respond to sea level rise while also making it easier to access, navigate and enjoy the waterfront on foot or bike. This set of ideas is not the only solution, but it illustrates the scale of transformation and integration that is possible.

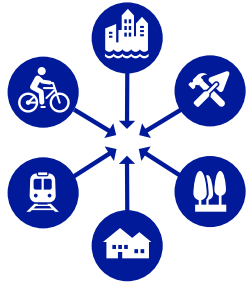
Unlocking the potential of this area will require visionary leadership. First, many of the projects listed are already in the works: How they're executed could make or break the future of this place. The decisions that shape these projects should prioritize the area's potential and its importance to the region. Second, leaders should consider some bold ideas for making the most of this place and the investments being made here.

What Should Happen Here

1. Complete Planned Projects with the Bigger Picture in Mind
2. Provide Waterfront Access From Every Neighborhood
3. Plan, Budget and Deliver Long-Term Climate Protection
4. Invest in Resilient Shoreline and Watershed Restoration
5. Create a Seamless, Car-Free Public Waterfront

- Planned Trail Network and Green Connections Projects
- Potential New Open Space
- Existing Open Space
- Central Subway Expansion





IDEA 1

Complete Planned Projects with the Bigger Picture in Mind

A number of plans currently underway will be critical to the future of San Francisco’s waterfront. The vision outlined on page 4 depends on the following projects moving forward without delay:

- Climate change and resilience:
 - Embarcadero Seawall resilience program
 - Yosemite Slough restoration
 - Islais Creek restoration and access improvements
- Transportation and access:
 - Central Subway extension to Fisherman’s Wharf
 - E Embarcadero streetcar line extension to Aquatic Park
 - Blue Greenway project — improvements to the Southeast San Francisco segment of the Bay Trail
 - Green Connections — plan to increase access to open spaces by making it safer to walk and bike to them
- Bay Area Trails Collaborative — a proposed 2,700-mile regional trail network to connect the Bay Area with safe biking and walking routes
- Rerouting Great Highway traffic to retreat from erosion south of Sloat Boulevard and converting the former route to a coastal trail
- Housing and development:
 - SF City Planning’s Housing Affordability Strategies report
 - Housing developments and associated open space: Pier 70, Mission Rock, India Basin, Shipyard, Candlestick



IDEA 2

Provide Waterfront Access From Every Neighborhood

San Francisco is 7 miles wide by 7 miles long and surrounded by water on three sides. This means every neighborhood is just a few miles from the shoreline. The city should invest in a network of clear, safe and welcoming bike and walking routes that directly connect all San Francisco neighborhoods — especially historically excluded communities — to the waterfront. Public transportation investments such as the Central Subway Extension will enhance city-wide and regional access.



IDEA 3

Plan, Budget and Deliver Long-Term Climate Protection

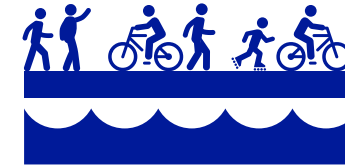
To ensure seismic safety and long-term resilience to sea level rise, San Francisco must invest in projects such as retrofitting and replacing the city's 100-year-old seawall, as well as bulkhead buildings, wharves and piers. Voters passed a \$425 million bond for safety retrofits to the Embarcadero Seawall in 2018, but the port must raise an additional \$4.5 billion to fully fund all needed improvements to the seawall. Though costly, this program is essential to protecting downtown and other low-lying parts of the city. Over time, the port should continue seismic safety measures along the rest of the waterfront, integrating green and natural approaches. These infrastructure upgrades also present an opportunity to redesign streets and limit car traffic along the Embarcadero, which will allow greater biking and walking access.



IDEA 4

Invest in Resilient Shoreline and Watershed Restoration

Much of San Francisco's shoreline consists of conventional physical infrastructure such as seawalls, which need to be modified and upgraded over time. These structures keep people safe from flooding, but they don't integrate well with the Bay's natural habitats and are not designed to accommodate rapid sea level rise. Natural infrastructure and nature-based protection measures — such as tidal marshes, ecotone levees and nearshore reefs — have the ability to continuously adjust to storm surge and rising sea levels. There are significant opportunities to develop adaptation strategies and modify the shorelines to incorporate natural and nature-based measures, which can provide both flood risk and ecological benefits as sea levels rise.



IDEA 5

Create a Seamless, Car-Free Public Waterfront

Completing a continuous bike and pedestrian trail around the San Francisco Bay has been a regional goal since the development of the Bay Trail Plan in the late 1980s. San Francisco has made progress toward a seamless public waterfront, but a few stubborn gaps remain and investment has been uneven. The Blue Greenway project aims to improve the city's southern portion of the Bay Trail, where investment has lagged, and to bridge gaps, such as at Bayview and Hunters Point. This and other trail improvements should be prioritized to provide a consistent, coherent experience with an excellent standard of design and a high quality of open space management across the entire city shoreline.

Case Studies

Lower Manhattan Coastal Resiliency Project

New York City, New York

The Lower Manhattan Coastal Resiliency Project aims to reduce flood risk due to coastal storms and sea level rise along Manhattan's southeastern waterfront, from the Two Bridges neighborhood to Battery Park City. A collaborative design process prioritized implementable projects and different types of multi-purpose infrastructure, realizing long-term resilience opportunities and engaging with the community.

In the Two Bridges neighborhood, the project incorporates passive flood defenses with deployable flood barriers that lie flush with the sidewalk on sunny days and flip-up to protect the neighborhood during a 100-year storm surge. The design protects the community from flooding and integrates infrastructure into the existing fabric of the neighborhood, while allowing for continued public access to the waterfront.

Key Idea for San Francisco: Large-scale infrastructure changes are needed across the San Francisco waterfront to respond to climate change projections. As these plans come to fruition, it's important to understand their impact on the surrounding area to ensure that residents retain access to waterways. Planned projects also present an opportunity to engage residents in dialogue about their vision for the future and how they would like to access the waterfront.



Photo courtesy New York City Economic Development Corporation

Port of Los Angeles

Los Angeles, California

The waterfront areas surrounding the Port of Los Angeles have undergone major transformation over the last 15 years through a joint effort between the port and LA Waterfront, a community group made up of investors and stakeholders. The LA Waterfront area consists of a series of residential and commercial developments and community enhancement projects on nearly 400 acres of port property in the communities of San Pedro and Wilmington. The project's success is largely due to the adoption of the Public Access Investment Plan, which provides a clear and transparent 10-year investment plan for the waterfront as a whole. Different districts along the waterfront provide opportunities to experience the life of the port and to be at the water's edge, which was not previously available.

Key Idea for San Francisco: The transformation of the Port of LA is a result of a comprehensive, long-range planning effort that outlines a clear vision and implementation plan. The plan prioritizes community benefit and emphasizes the importance of access to and throughout the waterfront properties. San Francisco should create a comprehensive implementation plan that seeks to connect the individual parcels and developments together to increase ways for people to interact with the waterfront and access local businesses.



Photo courtesy of AECOM

Madrid Río Project

Madrid, Spain

In 2008, the Madrid City Council recognized the need to invest in river and waterfront revitalization along the Manzanares River, which runs through the city's western neighborhoods. The project required undergrounding more than 6 miles of the M30 highway to remove a significant access barrier to the river, create space for a new park and restore natural habitats. The project opened in 2015, creating an 820-hectare park that mixes natural river ecology with publicly accessible open spaces and walkways. Bringing rehabilitated ecology back into the city involved restoration of the river's hydraulic architectural heritage, including dams and three historic bridges.

Key Idea for San Francisco: A core goal for this project was to improve the integration between the city center and the districts to the south and west by providing new opportunities for neighborhoods to connect through shared public spaces. This required deep citizen participation throughout the development of the project sites. The City of Madrid ensured continuous communication with residents and businesses to provide updates on the projects and how to navigate the sites during construction. As the San Francisco waterfront transforms over the next decade, it will be important to engage residents throughout the process to inform them of key updates and solicit feedback.



Photo by Jeroen Musch, City of Madrid



SPUR

San Francisco | San José | Oakland

Through research, education and advocacy, SPUR works to create an equitable, sustainable and prosperous region.

We are a member-supported nonprofit organization. Join us.

Ideas + action for a better city
spur.org