PORT OF SAN FRANCISCO
WATERFRONT PLAN UPDATE

10/26/2016

Environmental Sustainability at the Port of San Francisco

ENVIRONMENTAL SUSTAINABILITY AT THE PORT OF SAN FRANCISCO

Cover Photo

American Avocets at the Pier 94 Salt Marsh by Jerry Ting (Flickr).

1 Background

The Port of San Francisco is an environmentally sensitive area. Most Port lands were created by fill placed in the San Francisco Bay ("Bay") from the mid-1800s through the 1970s, and many areas and facilities also have a long history of intensive commercial and industrial use. The Port's history and Bay-side location present both challenges and opportunities for its environmental performance. Long range planning efforts to adapt to sea level rise and strengthen the historic Seawall provide the City, the Port and the public with critical opportunities to ensure that environmental sustainability principles are prioritized in Port planning and infrastructure projects for decades to come.

The 1997 Waterfront Land Use Plan included goals, policies and development standards throughout the Plan that addressed environmental concerns, but with a relatively light touch. (A summary list is available upon request). Since then, the Port has developed far more detailed environmental policies and programs that today are implemented by a staff of environmental professionals (the Port's "Environmental Coordinating Committee") with diverse expertise in environmental science, industrial hygiene, and regulatory analysis. They are embedded within the Port's Engineering, Maintenance, Real Estate, Maritime, and Planning and Development divisions, ensuring that the Port fully integrates its environmental management function into all Port operations, including facilities maintenance; leasing and redevelopment; shoreline habitat, and public access projects; as well as ongoing efforts to remediate environmental contamination and protect water quality.

As a result, the Port has accomplished significant improvements over the past 20 years, many of which are summarized in this report. But the Port's work is far from done, and staff has recommended developing a new environmental sustainability goal and related policies for the Waterfront Plan Update to elevate environmental stewardship as a key "value" and goal of the Waterfront Plan. This new goal and related policies would also:

- Align with the Port's new 2016-2021 Strategic Plan objectives that address environmental sustainability;
- Guide the Port's land use and planning decisions to ensure that they continue to reflect environmental priorities;

- Make the environmental work regularly carried out by the Port's Environmental Team and Port departments more transparent for the public;
- Align with and reinforce more detailed information about the City and Port's environmental programs and policies that is available on the Port's website.

During the Part 1 Orientation for the Waterfront Plan Update process, Port Staff provided the Working Group and the public with information about many of its environmental efforts in the context of meeting topics on Maritime and Water-Dependent Uses (Pier 27 and 70 Shoreside Power, Hyde Street Harbor Fuel Dock and Water Quality Improvements), Open Space and Urban Design (Pier 94 Wetlands, Heron's Head Park), and Real Estate & Development (leasing policies to ensure environmental protection). The purpose of this Background Report on Environmental Sustainability is to pull all that information together into one report about the work of the Port's environmental team to inform the Working Group and public on the breadth of the Port's environmental work before embarking on Part 2 Subcommittee discussions.

2 Sustainability

Strategic Plan | 0-50-100-Roots | Biodiversity in San Francisco

The Port of San Francisco strives to be a model of port environmental sustainability. This key principle is embedded in the Port's mission statement: The Port of San Francisco manages the waterfront as the gateway to a world-class city, and advances environmentally and financially sustainable maritime, recreational, and economic opportunities to serve the City, Bay Area region, and California. In addition, the Port Commission has identified environmental sustainability as one of 7 goals of its 2016-2021 Strategic Plan:

Port of San Francisco Strategic Plan - Sustainability Goal

> *Limit climate change and employ strong environmental stewardship principles through implementation of Port-wide practices that protect the environment and promote ecological balance.*

Sustainability Objectives

1. Enhance the Port's Climate Action Plan to meet the City's Climate Goals by implementing policies to:
   a. Achieve zero waste in operations and construction throughout the Port by 2020;
   b. Have 50% of trips made by clean transportation for Port operations;
   c. Convert the Port operations to 100% renewable energy through alternative generation, efficiency upgrades, operations, and power purchase; and
   d. Protect the Bay's ecology and other natural environment through sensitive development of open spaces, stormwater management, and management practices.

2. Implement leasing and development policies that support the City's climate goals and protect the Bay's ecology and surrounding natural environment.

3. Employ best environmental practices in Port operations such as green building, fleet management, and other operations.

4. Minimize carbon emissions and maximize carbon capture for Port operations, tenants, and developers.

5. Evaluate 'carbon neutrality' as a climate action goal for Port operations by 2017.

City and County of San Francisco Environmental Policies, Programs, and Regulations

The City and County of San Francisco ("City") is exceptionally progressive in its environmental policies and has adopted many policies and regulations that make San Francisco a leader in environmentally sustainable local government. As a City department subject to these requirements, the Port incorporates as standard practice sustainability measures that elsewhere would be considered leading-edge. Some, but by no means all, of the City's environmental sustainability requirements are listed below.

0-50-100-Roots "0-50-100-Roots" is an expression of the City's climate action goals to achieve:

- Zero waste to landfills
- 50% of travel by clean transportation
- 100% renewable energy in operations and new construction
- Carbon sequestration by maximizing composting and creating and maintaining healthy carbon-friendly landscaping.

Mandatory Waste Reduction and Recycling The City's Environment Code mandates that all demolition and construction projects divert at least 65% of demolition and construction debris to recycling, and that City projects divert at least 75%. All City departments must also ensure that City-owned/operated facilities provide adequately sized, convenient and accessible recycling and composting areas.

Energy and Water Conservation The City has adopted specific requirements for energy efficient lighting and water-conserving fixtures in construction, beyond those specified by the State.

Environmentally-Sound Construction City health and building codes require identification of potentially contaminated soil and groundwater prior to construction, dust control during construction to prevent exposure of workers and neighbors to construction-related dust, and stringent controls on air emissions from construction vehicles and equipment at City construction projects.

Use of Environmentally-Preferred Materials The City has a long-standing ban on purchasing tropical hardwoods, requires elimination of lead-containing building materials in new construction, limits use of arsenic-treated wood, and has policies to promote purchase of more sustainable materials such as PVC-free plastics by City Departments. The City requires all City Departments to develop integrated pest management plans and implement measures to minimize use of toxic pesticides in City facilities and operations. The City maintains an active Integrated Pest Management (IPM) task force to support such efforts.

Biodiversity The City has a biodiversity program whose mission is to protect, enhance and restore the biodiversity, habitats and ecological integrity of San Francisco's natural environment - in parks, wildlands, and neighborhoods and in the built environment. Specific goals under the biodiversity policy include:

1. **Biologically Rich Ecosystems** Restore robust and interconnected natural areas, habitats, flora, fauna, and rare species of our indigenous ecosystem and watersheds.
2. **Ecological Planning and Design** Incorporate multi-functional greening into all vertical, horizontal and open space development, with a priority on wildlife habitat creation.
3. **Equitable Access, Awareness and Experience of Nature** Connect all residents, workers, and visitors with green streets, parks, and natural habitats every day.
4. **Community and Ecological Stewardship** Empower people and partnerships to promote, cultivate and restore nature in every neighborhood.
5. **A Resilient, Sustainable and Living City** Leverage local ecological systems to transform San Francisco into a healthy, vital, nature-based city.

The Port supports this policy, incorporating measures to enhance biodiversity in its habitat restoration areas, new development projects, and ongoing maintenance of parks.

Port-Specific Environmental Sustainability

Zero Waste Event Policy

In addition to the City-wide efforts discussed above, the Port has also adopted environmental policies and practices unique to its own operations, including the following:

Port of San Francisco "Portwide Maintenance Manual"

In March 2016, the Port adopted its Portwide Maintenance Manual which includes Best Management Practices ("BMPs") for in-water maintenance and repair. This document compiles many practices that have been in use, and adds others more recently identified as best practices that Port maintenance staff and contractors must implement during Port maintenance, repair, and rehabilitation activities to protect water quality and avoid or minimize impacts to marine life and sensitive shoreline habitat. The Maintenance Manual also includes provisions for ongoing BMP training of Port maintenance staff, documentation of BMP implementation, and updates to the Manual as new information and/or changes to BMPs become known.

Zero Waste Policy

In 2012, the Port Commission adopted a Zero Waste Event Policy that prohibits the sale and distribution of single-use plastic bottles, bags, and foodware, and the intentional release of balloons for large events (5,000+). The policy also requires the use of compostable food ware at such events. This policy informed a new ordinance subsequently passed by the City and County Board of Supervisors that bans the sale and distribution of plastic bottles on City property.

Environmental Financial Assurance Policy

In 2007, the Port Commission adopted an environmental risk management policy to ensure that financial resources are available to address environmental risks related to Port tenants' operations. Pursuant to the policy, every new lease and property agreement is reviewed to determine applicability of the Port financial assurance requirements, which may include an environmental oversight and/or performance deposit to reimburse Port expenses incurred in the event of regulatory violation, enforcement action, or other costs should a tenant fail to meet its environmental obligations. In addition to ensuring that the Port has resources to respond to an environmental incident, the Port and its tenants benefit from review and consideration of potential environmental risks and, where appropriate, development of risk reduction measures.

3 Air

The Port works to improve Bay Area air quality through programs aimed at reducing emissions. For example, with each addition to its vehicle fleet the Port endeavors to purchase electric and hybrid passenger vehicles. The Port's Maintenance Division increasingly relies on alternative fuels such as renewable diesel for its heavy trucks and equipment. The Port also participates in San Francisco's transit-first programs, encouraging Port employees to use alternate modes of transportation for working and commuting. As a result, the Port's 2012 survey of employees indicated that more than 75% of Port employees commuted to work by a sustainable form of transportation

The Port also works closely with its maritime and commercial tenants to improve air quality. Air emissions from the Port of San Francisco's maritime operations have decreased sharply over the past eight years according to a study that compared maritime air emissions inventoried for 2013 to those inventoried for 2005. The comparison shows that annual particulate matter (PM10) emissions, primarily produced by diesel engines and of concern due to direct health effects, have been reduced by more than half (56%).

The 2013 inventory report does not reflect the additional contributions of the new shoreside power projects at Pier 27 or Pier 70. A 2014 estimate of the additional effects of these projects indicates that PM10 emissions likely have been reduced 61% from 2005 to 2014. Shoreside power is expected to reduce greenhouse gas emissions by over 6,000 tons of CO2 equivalents per year.

Pier 27 Shoreside Power

In 2010, the Port completed the $5.2 million Pier 27 Shoreside Power project, providing high voltage shoreside power to cruise ships calling at Pier 27. Under an agreement with the San Francisco Public Utilities Commission, zero-emission hydropower is supplied to the cruise ships calling at Pier 27. The project was the first shoreside power project for cruise ships to come online in California.

Pier 70 Shoreside Power

In 2012, the Port completed the $5.7 million Pier 70 shoreside power project, upgrading high voltage power supplied to the Port's shipyard under a memorandum of understanding with the San Francisco Public Utilities Commission. This system allows large ocean-going military, government, and commercial ships with heavy electrical load requirements to plug into onshore power and forego use of ship-board diesel generators.

4 Climate

Climate Action Plan

The Port completed its first Climate Action Plan in 2009 and was designated the City's first Climate Champion in 2010 for its efforts to measure and reduce its greenhouse gas emissions. Every year since then, Port staff has analyzed activities that generate greenhouse gas emissions Port-wide. This annual analysis includes measuring consumption of electricity, natural gas, vehicle fuels and converting these measurements into GHG emissions. This calculation examines all Port operations and consumption for which the Port is the account holder (e.g. full service buildings).

But much work remains. Changes in temperature, precipitation, and ocean acidity are placing stresses on ecosystems of all scales. The Port experiences the negative impacts of sea level rise with special clarity because of its daily pier operations and unique role in maintaining the seawall. The impacts of climate change demand the Port's very best efforts to manage greenhouse gas emissions, secure capital for infrastructure, and develop alternative strategies for managing Port finger piers and development overall. The most recent update of the Climate Action Plan is available at: Climate Action Plan 2012-2013.

5 Water

Urban stormwater runoff is a leading cause of water pollution in California and, in recent decades, has become subject to evolving Federal, State, and local regulations designed to reduce environmental impact to receiving waters such as San Francisco Bay. At the Port, stormwater runoff either discharges directly to the Bay, potentially carrying with it pollutants from the urban environment, or to the City's combined stormwater and sanitary sewer system. All such runoff is subject to State regulations designed to minimize pollutants in stormwater runoff as well as the City's Stormwater Management Requirements for new construction and/or Erosion and Sediment Control requirements during construction. The Port's Stormwater Management Program is aimed at reducing stormwater pollutants and implements standards set by the California State Water Resources Control Board and the United States Environmental Protection Agency.

In 2016, the Port and the San Francisco Public Utilities Commission jointly published the "San Francisco Stormwater Management Requirements and Design Guidelines" (SMR; an update to the 2009 "San Francisco Stormwater Design Guidelines") in response to a Clean Water Act requirement. Developed jointly over a multi-year process with extensive public participation, the SMR applies to areas of San Francisco served by separate storm sewers that discharge directly to local lakes or San Francisco Bay. The SMR describes methods of designing new and redevelopment projects to reduce both the volume and potential pollutants in stormwater runoff by emphasizing low impact design and green infrastructure (e.g., permeable pavement, vegetated roofs, etc.). The SMR also offer practical, environmentally beneficial, and aesthetic design strategies to meet regulatory requirements and address the unique design challenges posed by the Port's piers and over-water structures. Port projects ranging in size from the 330,000 sf Exploratorium at Pier 15 to the 4,900 sf Joint Operations Service building at Hyde Street Harbor have implemented stormwater control methods to attractive and educational effect.

Other water quality initiatives are of Port or City origin. For example, the Port's Zero Waste Event Policy aims to keep plastics out of the Bay and ocean, The Port also proactively prepares for oil spills that might affect the Bay. The Port has procured and strategically placed along the waterfront more than two miles of containment boom and related oil spill response equipment and, with grant assistance from the California Department of Fish and Wildlife, has trained more than 100 employees in oil spill response on the water, and practices oil spill response activities on the water annually.

Water conservation is also a critical initiative at the Port of San Francisco as the entire state adapts to the severity of recurring drought and climate change. The Port's Water Conservation Task Force ensures that water is used wisely and efficiently. This means installing efficient fixtures, planting native and drought-tolerant plants, monitoring water consumption, and making timely repairs of leaking pipes.

Pier 45 Drainage Improvement Project

The $1.8 million Pier 45 Drainage Project in Fisherman's Wharf successfully addressed poor water quality that contributed to high bacterial loadings at the adjacent Aquatic Park public beach. The industrial fish processing facility at Pier 45 lacked sufficient infrastructure to contain industrial wastewater discharges to the Bay. The Port developed plans for infrastructure upgrades that would direct these discharges to the sanitary sewer system, and secured funding from the Clean Beaches Initiative grant program of the Regional Water Quality Control Board. After construction 2010, the Port monitored water quality for 12 months; findings confirmed improved water quality in the vicinity of Aquatic Park.

Under-Pier Utilities Repair Program (initiated 2010)

The Port maintains a sizable expanse of under-pier utility infrastructure to serve 80 marginal wharves and 39 piers, many of which extend almost 1,000 feet over water. Under-pier infrastructure encompasses several miles of water, wastewater, fire service, electrical, and communications lines. Under-pier utilities must endure a harsh marine environment, including the corrosive effects of bay water and damage inflicted by tidal debris. Damage and deterioration of under-pier utilities can result in the direct discharge of sewage and water into the Bay. The Port has developed a comprehensive strategy to address this infrastructure, including regular inspections, timely maintenance, and relocation of utilities above pier decks when feasible. After completing a condition assessment of these utility systems, the Port initiated an annual under-pier inspection program in 2013. Each year Port plumbers conduct inspections and repairs of wet utilities (water / wastewater) under every pier. The Port also requires its tenants with master leases to ensure compliance with utility maintenance responsibility obligations included in their leases.

Fill Removal

Since 2001, the Port has removed over 300,000 square feet of dilapidated piers, improving water quality in the Bay and enhancing the necklace of public access and open spaces along the water's edge.

Pier 24 Removal

In 2000, BCDC and the Port approved amendments to their respective plans to reflect a plan-based strategy for removal of dilapidated piers and construction of new parks in conjunction with new waterfront development projects. Pursuant to these Plan amendments, in 2003 the Port completed the $650,000 Pier 24 Removal project, removing 83,500 square feet of bay fill adjacent to the Pier 22 Fireboat station and Rincon Park.

Pier 34 and Pier 36 Fill Removal

Similarly, the Port removed Piers 34 (89,600 square feet) and 36 (133,000 square feet) in 2001 and 2012, respectively, creating more open water and making room for construction in 2013 of the $36 million Brannan Street Wharf public park located south of the Bay Bridge in the South Beach neighborhood.

Pier ½ Removal

Pier ½ was a 21,000 square foot pier located between the Ferry Building and Pier 1 that had been used as a parking lot for the Ferry Building until red-tagged by the Chief Harbor Engineer. In 2012, the Port completed the $1.7 million Pier ½ Removal project as part of the package of public benefits delivered by the 34th America's Cup project.

Wharf J-10 Demolition

In 2007, the Port demolished Wharf J-10 in Fisherman's Wharf, removing 24,000 square feet of bay fill. This $1.2 million project was conducted under the review of the Regional Water Quality Control Board to prevent potential pollutant discharge to the Bay. In addition, the project site was subject to an existing clean-up order to ExxonMobil, the former owner/operator of a petroleum storage and distribution terminal at the site that had contaminated underlying soil and groundwater. After the demolition, ExxonMobil, under Port and Regional Water Quality Control Board oversight, completed extensive remediation of the shoreline and adjacent upland in 2011.

6 Land

Parks & Open Space | Pier 70 Environmental Plan | Wetland Restoration | Heron's Head Park

> *"The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land."*- Aldo Leopold

The Port's commitment to the land ethic is demonstrated by its ongoing maintenance and expansion of waterfront parks, open spaces, and habitat restoration projects on Port lands. These areas provide habitat for native plants and wildlife, improve water quality, and protect the shoreline from increasing high tides and storm surges.

Habitat Enhancement and Stewardship

Although opportunities for habitat restoration seem limited by the Port's urban setting, the Port has successfully protected and improved natural shoreline habitats in a handful of southern waterfront areas with unique geography and development history. Restoration projects along the banks of Mission Creek, the northeast shoreline of Pier 94, and the rocky shorelines and tidal salt marsh at Heron's Head Park offer habitat to plants and wildlife in the San Francisco Bay and recreation and educational opportunities to San Francisco residents and visitors from throughout the region. Each of these habitat areas is supported by dedicated partners who actively support the Port's habitat improvement efforts and serve as stewards of the shoreline habitat, including the California State Coastal Conservancy, Mission Creek Conservancy, Golden Gate Audubon Society, San Francisco Recreation and Parks Department, and the non-profit Bay.org.

Heron's Head Park

In partnership and with funding from the San Francisco Public Utilities Commission, the California Coastal Conservancy, and the San Francisco Bay Trail Project, the Port was able to undertake a major site cleanup and restoration effort that transformed the formerly fenced off "Pier 98" fill site into the Port's largest open space and public park. Heron's Head Park, named for the site's resemblance to the head of a heron when viewed from the air, opened to the public in 2000. Since then, community organizations have continued to partner with the Port to nurture physical and program improvements at Heron's Head Park. As a result, the Park now includes trails and

native coastal upland plant habitat and healthy tidal salt marsh that is home to 100 species of birds, and an active environmental education program that serves thousands of students and visitors each year.

In 2012, the Port further expanded Heron's Head Park, turning an asphalt-paved parking lot into a landscaped entrance, creating an off-leash dog play area, and installing additional park amenities such as picnic tables, seating, restrooms and bicycle parking.

Pier 94 Wetlands

Pier 94 Wetlands is a salt marsh that emerged where a portion of the original Pier 94 fill subsided. It provides rare and valuable habitat in a highly industrialized portion of the Bay shoreline, in full view of adjacent maritime shipping and construction materials operations. In 2006, the Port removed debris, expanded and improved tidal circulation, and placed native bay sand to protect the tidal marsh from storm impacts. This project was funded by the Port, the San Francisco Bay Natural Resources Trust and the California Coastal Conservancy. The Golden Gate Audubon Society has "adopted" the wetlands at Pier 94, hosting regular volunteer work days and wildlife viewing events, and working with volunteers to remove trash and weeds, monitor plants and wildlife, and establish upland native plant habitat adjacent to the wetlands.

Brownfields

"Real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant." U.S. Environmental Protection Agency (EPA)

Like many waterfronts throughout the nation, most of San Francisco's eastern waterfront and virtually all of the Port's shoreline is comprised of fill that was placed in the Bay beginning in the mid-1800s to create new land for industrial Port operations. Because historic and more recent use of filled and other Port lands often involved hazardous materials, the Port today must clean up a legacy of environmental contamination or, in some cases, manage contamination in place with appropriate environmental protections.

Since adoption of the Waterfront Land Use Plan almost 20 years ago, the Port has worked with parties responsible for pollution or with new development partners to clean up contaminated property. For example:

- PG&E is cleaning up contaminated soil, groundwater and sediment at Pier 70;
- PG&E is investigating contaminated sediment at Pier 39;
- The Port's public/private development projects at Pier 70 and Mission Rock (SWL337) will implement risk management measures that enable redevelopment of Port land impacted by historic operations in a manner that protects human health and the environment from legacy contamination.
- ExxonMobil cleaned up contaminated shoreline fill and groundwater in the Fisherman's Wharf area and entered into a reimbursement agreement with the Port to fund any future costs related to the cleanup action that may be incurred by the Port or others maintaining existing infrastructure or undertaking new construction in the area.

Pier 70 Environmental Risk Management Plan

From 2010 through 2013, the Port undertook a comprehensive environmental investigation and remedial action plan for the Pier 70 Master Plan Area with a $2.2 million grant from the U. S. Department of Commerce - Economic Development Administration and 10% matching funds from the Port. This work culminated in an Environmental Risk Management Plan that was approved by the San Francisco Bay Regional Water Quality Control Board, in consultation with the San Francisco Department of Public Health. The Environmental Risk Management Plan provides the Port and its development partners with a pre-approved "road map" for measures to implement prior to, during, and after development in the area to eliminate or minimize environmental risks from contaminants in the soil and groundwater and facilitate safe and sustainable development in the area.

The Piers 80-96 Maritime Eco-Industrial Center

One objective of the Port's Strategic Plan is to sustain construction material industry operations at the Port, including bulk aggregate cargo shipping and concrete and asphalt batch plants, using state-of-the-art technologies to reduce air emissions and promote reuse and recycling of materials. Since 2000, the Port has supported over $88 million in public and private investments on Port piers and upland properties that today comprise the southern waterfront's Maritime Eco-Industrial Center. At the Maritime Eco-Industrial Center, the Port co-locates maritime industrial tenants, cement and other construction material providers, and recycling business operators, among other compatible tenants, to enable product exchanges, optimize the use of resources, incorporate green design and green technologies on-site, foster resource recovery and reuse, provide economic opportunities that employ local residents, minimize environmental impacts and incorporate public open space for enjoyment and habitat.

7 Community

Greenagers | Youth Stewardship Program | Audubon Society

The Port partners with the San Francisco Recreation and Parks Department and other organizations to provide environmental education, volunteer, and other public participation opportunities for a variety of school, youth, and adult groups and community programs , free of charge.

Second Saturday Community Stewardship at Heron's Head Park

From 9 am to noon on the second Saturday of each month, volunteers of all ages are caretakers of Heron's Head Park, planting natives, weeding out invasive species, and maintaining the wild areas of the Park.

Greenagers at Heron's Head Park

The Greenagers Program is another joint program of the Port and San Francisco Recreation & Parks Department. It offers high school students who live or go to school in San Francisco's southeastern neighborhoods an opportunity to get involved in environmental efforts through field trips and volunteering in parks. Teens work with their peers gaining skills in leading workshops, public speaking, teamwork, and habitat restoration. For more information contact Greenagers.

San Francisco Recreation and Parks Department Youth Stewardship Program

The Youth Stewardship Program offers free environmental education and service learning programs to K-12 schools, community organizations, and volunteers of all ages. For more information contact ysp@sfgov.org.

Habitat Stewardship at Pier 94 Wetlands

The Port and Golden Gate Audubon Society continue to work together to maintain salt marsh and adjacent upland habitat within industrial land near Pier 94 on San Francisco's southern waterfront. Volunteer work parties remove invasive plants and trash and plant hundreds of native plants. Golden Gate Audubon Society leads school programs and volunteer work days at Pier 94, generally the first Saturday of each month 9 am -12 noon. Contact the Audubon to learn about volunteer opportunities.

8 Energy

The Port benefits greatly from the clean, renewable hydro-electricity provided by the San Francisco Public Utilities Commission. The Port also has a solar generating capacity of 1.8 megawatts distributed over several sites including Pier 15, Pier 1, Pier 96, AT&T Park, and the EcoCenter at Heron's Head Park. The Port plans to increase this by 1 megawatt by 2021. As mentioned previously, the Port also provides shoreside power at Pier 27 and Pier 70, allowing large ocean going vessels at berth or in dry-dock to run their auxiliary power from the electric grid rather than diesel engines. Natural gas is a potent source of carbon emissions and, in 2010, the Port replaced or upgraded three of its four boilers as part of an improved boiler maintenance program. Energy conservation and energy efficiency are also key strategies towards a greener energy future for the Port.

Trans Bay Cable

In 2007, the Port negotiated an agreement with Trans Bay Cable LLC (TBC) to use 9.4 miles of submerged lands and a small portion of 23rd Street shoreline to install a 53 mile long 400 MW high voltage trans-Bay transmission line between Pittsburg, CA and the Potrero Switchyard. This project captures excess electric energy capacity in Pittsburgh for use in San Francisco. This new transmission capacity, coupled with other transmission upgrades by PG&E, allowed for the permanent closure of the Potrero Power Plant immediately south of Pier 70. TBC also substantially improved a 5 acre site immediately south of Port property between 23rd and 24th Streets, including new landscaped pedestrian public space along Illinois Street and 24th Street, and a new converter station to connect with the Potrero Switchyard.

Embarcadero-Potrero 230kV Cable

In 2014, the Port negotiated an agreement with PG&E for use of 3.5 miles of submerged lands to install the ZA-1 Embarcadero-Potrero 230kV Transmission Project. This new transmission capacity provides seismically safe, redundant transmission service to downtown San Francisco and interconnects the City's 230 kV and 115 kV transmission grids. Together with the Trans Bay Cable project, this project has the potential to complete the conversion of the central waterfront away from its predominant history as a heavy industrial power generation and distribution site and into an area that can be developed for mixed uses.

9 Transportation

SF Department of the Environment | Envision Solar

Because transportation is a major source of energy consumption and carbon emissions, the Port is transforming its fleet with each vehicle purchase, relying increasingly on hybrid vehicles and alternative fuels. The Port recently completed a pilot study that demonstrated the benefits of renewable diesel, a fuel that is derived from non-sequestered carbon. Renewable diesel powers the Port and City fleets of trucks and heavy duty vehicles, resulting in a significantly reduced carbon footprint. The Port partnered with the San Francisco Department of the Environment and Charge across Town to demonstrate the EV ARC™, a solar powered electric vehicle charger made by Envision Solar. An EV ARC™ is available for public use at Sea Wall Lot 330 at the corner of Bryant and the Embarcadero.

The Port also supports the City's Transit First policy by encouraging the use of alternate modes of transportation for working and commuting. Many Port staff bicycle, walk, and use public transit throughout the work day, and more than 75% of Port staff commute to work by some form of cleaner transportation. The Port also supports several tenant efforts to promote clean transportation, including the production of biodiesel and the development of SF Breeze, a research project to develop a hydrogen fuel cell technology for ferry service.

10 Buildings

James R. Herman Cruise Terminal | EcoCenter at Heron's Head Park | The Exploratorium

With 25 million square feet of leasable space, the Port manages close to 200 buildings along the 7.5 miles of San Francisco waterfront under its jurisdiction. Some buildings date back to the 1920s such as the historic Pier 29. Others are new additions such as the neighboring James R. Herman Cruise Terminal at Pier 27, which received LEED Gold Certification. Through the renovation and construction processes for Port projects, the Port implements the latest technologies that are suitable for each project, and LEED Gold Certification is required for new construction projects.

All of the Port's projects also comply with the environmental measures mandated by the City of San Francisco's leading edge standards for environmental sustainability, generally implemented through the Health and Environmental Codes. As rehabilitation of existing buildings and new development at the Port proceed, Port facilities will become increasingly "green" as they comply with the City's Green Building requirements and Port policy.

EcoCenter at Heron's Head Park

The EcoCenter is owned by the Port and operated by the non-profit organization Bay.org. The Eco-Center provides classroom and community gathering space for residents and children citywide and is the home for environmental education programs provided by Bay.org and its partners, including the Port and the San Francisco Recreation and Parks department, among others.

Nearly every feature of this 1,500-square-foot facility demonstrates renewable energy, pollution and greenhouse gas reduction, wastewater treatment, "green" building materials, and the green economy. It is San Francisco's first LEED Platinum, zero net energy building, and serves as a demonstration of green building technology. Its features include a 4.6 kilowatt solar installation, a living roof, rainwater capture in 4,800 gallon tanks, a Living Machine to treat wastewater on-site, and native plant landscaping.