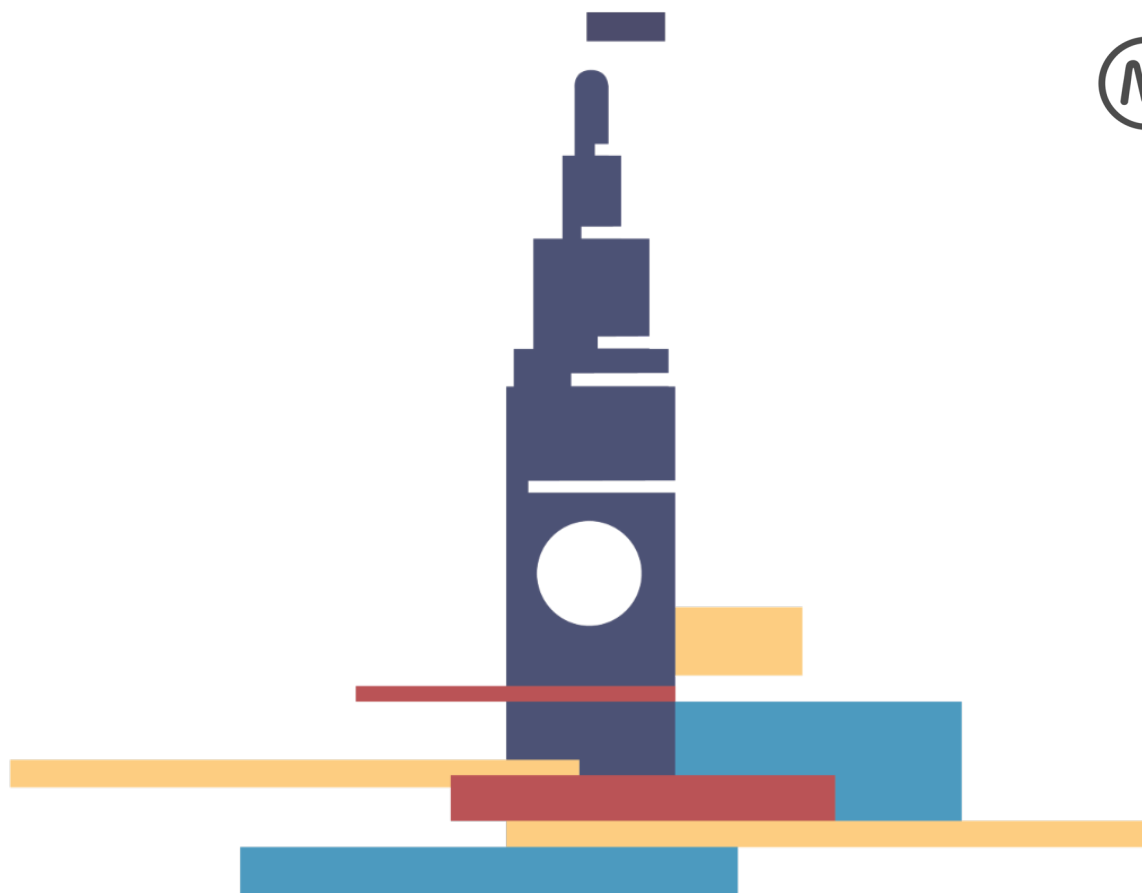




PORT OF SAN FRANCISCO

BLUE ECONOMY INITIATIVE: A ROADMAP

Item 13A
Port Commission
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Prepared by Momentum and GHD in partnership with the Port of San Francisco

PORT OF SAN FRANCISCO BLUE ECONOMY INITIATIVE ROADMAP

1 Executive Summary

1.1 Definition: Blue Economy

The Port of San Francisco defines the Blue Economy as the sustainable use of Bay and coastal resources to deliver economic, environmental, and community benefits for Bay Area residents.

1.2 Objective

The Port of San Francisco will collaborate with blue economy stakeholders to drive innovation, attract investment, and deliver measurable impact along its 7.5-mile waterfront.

1.3 Goal

Identify and support early-stage blue economy organizations by leveraging Port assets and resources to deliver economic, environmental, and community benefits for Bay Area residents while strengthening the Port's long-term portfolio.

1.4 Opportunity Statement

The Port of San Francisco sits at the nexus of a globally recognized innovation ecosystem and one of the nation's most iconic waterfronts. With proximity to venture capital networks, deep-tech talent, and a strong entrepreneurial culture, the Port is uniquely positioned to cultivate a blue economy initiative.

1.5 Port Role

The Port of San Francisco can support the development of a Blue Economy Accelerator through:

1. Partnerships

Cultivating vertically integrated partnerships (people creating supply, investors, demand) with Blue Economy firms from various stakeholders to drive impact for San Francisco.

2. Concierge Services

Providing coordinated, high-touch support to organizations navigating Port and City processes.

3. Strategic Leasing Support & Land

Advancing leasing opportunities for tenants with emphasis on mission-driven blue economy ventures and providing access to physical test environments.

4. Regulatory Liaison

Serving as a connector and advocate with Bay Area regulatory agencies to help streamline information, permitting, and compliance.

5. De-risking for Investment

By providing access to infrastructure, regulatory guidance, and operational partners, the Port reduces technical, regulatory, and market uncertainty for early-stage ventures, making them more attractive to external capital providers.

1.6 Areas of Focus

The Port of San Francisco will prioritize the interconnected focus areas described in the table below to advance a resilient and innovative blue economy.

Topic	Description
Sustainable Seafood Economy	Support a local, low-impact seafood economy.
Ecotourism	Enhance the waterfront as a destination through environmentally responsible tourism.
Clean Energy	Accelerate the transition to low- and zero-emission maritime operations.
Bay Health	Invest in nature-based solutions and environmental restoration.
Workforce Development	Invest in skill pipeline and workforce development opportunities.
Digital Transformation	Leverage advanced technologies to modernize waterfront operations and enable innovation.
Partnerships & Innovation	Build a robust network of partners to catalyze investment, and community and scalable impact.

2 History

The City has maintained a Climate Action Plan since 2008. This reflects nearly two decades of formalized climate planning and implementation. As stated in the Climate Action Plan, “By supporting climate innovation, piloting emerging technologies, and enabling faster pathways from demonstration to scale, the City can both close the remaining emissions gap and strengthen its role as a global hub for climate solutions” (2026 Climate Action Plan Innovation, p. 35).

The Port has a strong track record of advancing economic growth, sustainability, and resilience initiatives. For over a decade, the Port Strategic Plan has had all three focus areas as goals. The examples highlighted in the following sections illustrate the Port’s experience and capacity to foster innovative, sustainable activities that generate benefits for the people of San Francisco and the broader region.

2.1 Leading California Port Electrification: First to Provide Cruise Ship Shorepower

The Port has led the way in maritime electrification for over fifteen years. In 2010, the Port of San Francisco became the first port in California (and one of the first in the world) to provide shoreside electrical power for cruise ships. By allowing compatible vessels to plug in to the City’s 100% greenhouse gas-free hydroelectric grid (Hetch Hetchy Power) while berthed at the James R. Herman Cruise Terminal located at Pier 27, the Port enables ships to shut down their diesel engines, eliminating nearly all at-berth emissions. This landmark project has since served as a blueprint for statewide shore power regulations and remains a cornerstone of the City’s commitment to improving local air quality and reducing its carbon footprint.

2.2 Waterfront Resilience Program

The Port of San Francisco Waterfront Resilience Program is a long-term initiative to protect and transform the city's 7.5-mile bayside shoreline in the face of climate change, sea level rise, and seismic risk. Centered on strengthening the historic Embarcadero Seawall, the program combines critical infrastructure upgrades with forward-looking urban design to safeguard transportation networks, utilities, historic assets, and public spaces. Beyond flood protection, the program advances phased investments and partnerships through a multi-benefit approach integrating resilience with economic vitality, ecological enhancement, and community access ensuring the waterfront remains a vibrant and inclusive destination.

2.3 Building the Nation's First High Speed Zero Emission Ferry Network

The Port partnered with San Francisco Bay Ferry to support building the first zero-emissions fast ferry network in the country. The Port is specifically supporting efforts to connect Downtown San Francisco and Mission Bay with the emerging waterfront neighborhood on Treasure Island. This new zero-emission network will connect disadvantaged communities served by SF Bay Ferry, including Oakland, Richmond, Vallejo, and Alameda, with high-paying financial and biotech employment centers. These projects serve as a training platform for the Bay Area's maritime workforce development program.

2.4 Pioneer in Incubating Clean Technologies: The Port's Role in Sea Change

The Port is a proud supporter and one of the earliest partners of the *Sea Change* project, the world's first commercial zero-emissions ferry powered 100% by hydrogen fuel cells. The Port supported *Sea Change's* development, facilitating feasibility and optimization studies for its construction. The Port also led the planning and regulatory work for the operation and fueling of the *Sea Change*. This included socializing the project with the community and stakeholders and facilitating training for staff.

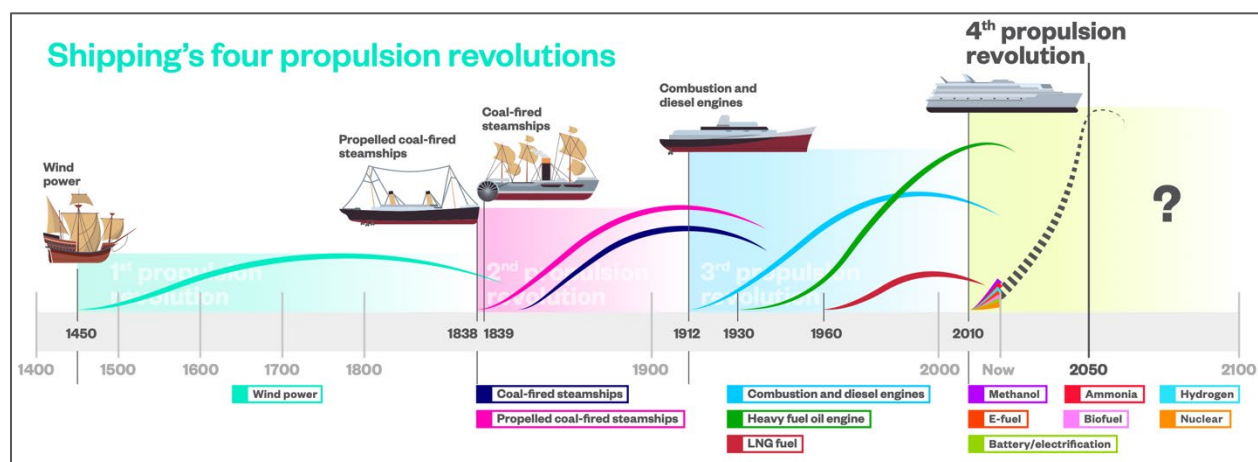


Figure 1. The transition from wind to steam, and now to zero-emission fuels, mirrors the broader shift from a purely extractive economy to a regenerative blue economy.

2.5 Living Seawall

The Port of San Francisco Living Seawall is an innovative pilot project that reimagines traditional waterfront infrastructure by integrating ecological design into the city's historic

seawall. Developed in partnership with the Smithsonian Environmental Research Center, the project tests specially engineered, textured tiles that attach to existing seawall surfaces to create habitat for native marine species. Unlike conventional smooth concrete walls—which tend to support limited biodiversity and even favor invasive species—these “living” surfaces are designed to attract organisms such as oysters, crabs, and seaweed, helping restore ecological function along the urban shoreline. Early results from the pilot have shown promising increases in native biodiversity, demonstrating how nature-based approaches can enhance resilience while maintaining critical infrastructure that protects the waterfront from sea level rise, flooding, and seismic risk.

2.6 Pioneering Alternative Fuels

In 2018, the Port concluded a two-year effort that enabled all of the ferry operators in San Francisco Bay to operate with renewable diesel. The initiative was a critical proof-of-concept for the industry, demonstrating that existing maritime infrastructure could be rapidly decarbonized without requiring costly engine overhauls. The effort included original equipment manufacturers, regulators, the US Coast Guard, and research institutions. This collaboration effectively transitioned the regional ferry fleet to a drop-in biofuel that reduces greenhouse gas emissions by up to 60% and significantly lowers particulate matter compared to traditional petroleum diesel.

2.7 Clean Trucking Initiative

The Port is completing a study, funded by the State of California, to assess the feasibility of upgrading infrastructure to support fueling of zero-emission heavy-duty trucks. The study considers both battery-electric and fuel-cell technologies and examines grid capacity and demand through 2040. As part of its Clean Trucking Initiative, the Port has led socialization efforts for zero-emission trucks. The Port hosted a clean truck fair at which manufacturers displayed their trucks, including opportunities to test-drive vehicles. The Port significantly boosted participation by paying the registration fees for tenants, ensuring that local independent truckers could attend at no cost. Many operators live in the neighboring Bayview-Hunters Point community, making the efforts immediately and directly relevant to local air quality concerns. This is an example of the Port’s dedication to making sure the benefits of its sustainability initiatives flow to those most affected and invested in their outcomes.

2.8 Consistent & Ongoing Public Partnership

The Port of San Francisco works closely with stakeholders including residents, community, city agencies, schools, and high-profile organizations like the Exploratorium, and others to build awareness around climate adaptation, sea level rise, and sustainable practices through workshops, public events, and accessible educational materials.

The Port has a successful history of holding public demonstration events and utilizing its long-standing community advisory boards to educate the public, helping demystify new technologies for the local community and industry stakeholders alike. The Port also engages with community leaders from Bayview-Hunters Point through the Southern Waterfront Advisory Committee to ensure that the transition to hydrogen and electric power directly addresses local air quality concerns and health impacts¹. The Port’s Waterfront Resilience Program has reached tens of

¹ <https://www.sfport.com/wrp/community-feedback>

thousands of residents through tours, mixers, and online engagement. The Exploratorium has been a key partner in flooding and sea level rise tours with youth, in partnership with the Port.

3 Similar Efforts

There are over 180 formal blue economy incubators, accelerators, clusters, and other innovation hubs globally, with the majority of these emerging since 2018 (Figure 2). Most incubators and clusters are situated around major ports to provide necessary industrial infrastructure. Below, we present and three successful port-centric blue economy programs as demonstration models the Port of San Francisco could follow. These examples were chosen because they possess elements of an initiative or business model that are particularly aligned with the Port's goals and objectives. Each initiative began with 1-3 full time equivalent staffers or employees in years 1-5; each initiative came to fruition on a long timeline (~3-10 years). Selection criteria for each initiative are unique on programs, assets, and expertise and are necessarily bespoke to the founder(s) and regions they support.

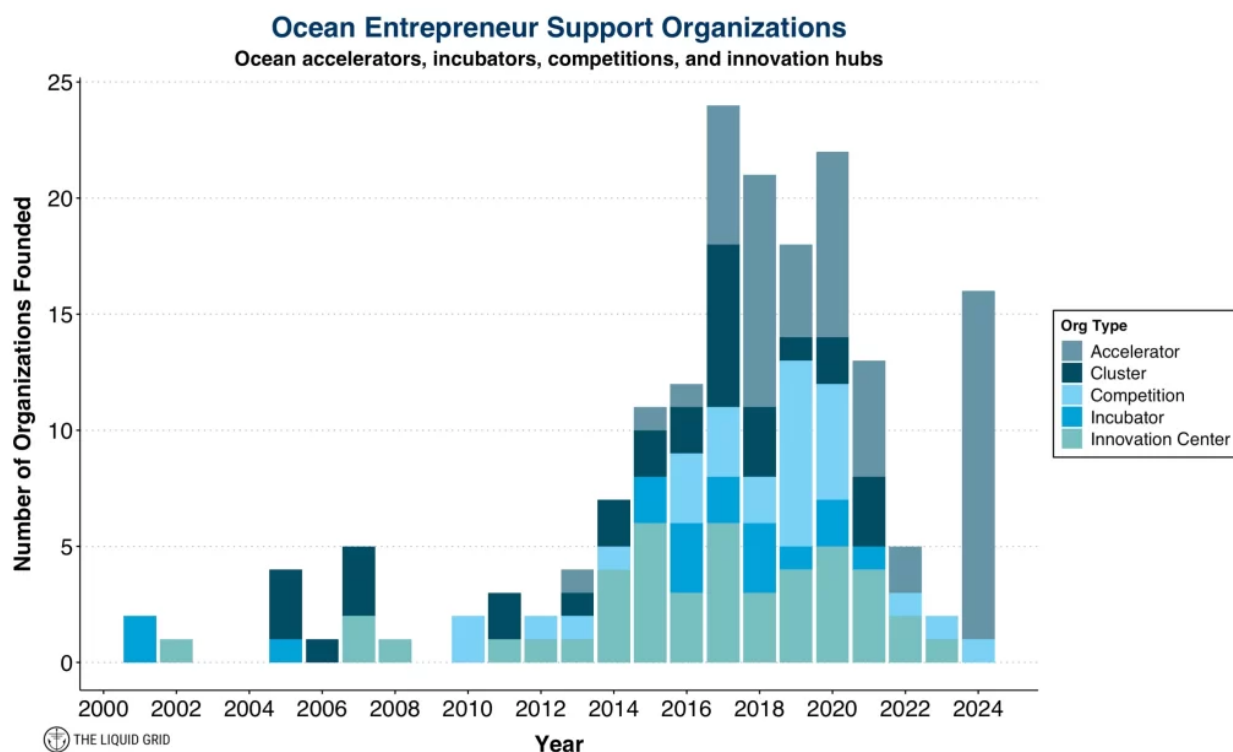


Figure 1. Growth of ocean entrepreneur support organizations over time; the spike in 2024 is due to NOAA's Ocean Accelerator program's 16 awards made to organizations across the US. Figure credit: The Liquid Grid. Incubators represent a smaller share of the total, relative to accelerators and innovation centers.

3.1 Blue Economy Incubator (Port of San Diego)

The Port of San Diego (POSD) launched its Blue Economy Incubator (BEI) in 2016. The POSD BEI is widely cited as the first of its kind to offer a port-based, social enterprise model for startups. As late as August 2025, it was still the only port-led incubator in the world. The POSD BEI's primary goal is to transform San Diego Bay into a "Blue Tech Bay" by acting as a real-world testing ground for startups focusing on sustainable ocean technologies. To participate, applicants submit their pilot projects for review in a four-stage process, including an initial

screening, deep dive review by Port leadership and subject matter experts, executive review, and Board review. If a project passes the application process, the POSD BEI functions as a partnership where the Port provides in-kind and financial support for pilot projects and access to the Port's 34 miles of tidelands, piers, and water for real-world deployment. POSD BEI also offers assistance with the complex permits (state and federal) required to put anything in the ocean. In exchange, the Port of San Diego receives data, pilot results, and/or a share of future revenue from the companies piloting the project through a Simple Agreement for Future Equity (SAFE).

As of February 2026, the BEI has supported 13 pilot projects in six focus areas: 1) Nature-based Solutions, 2) Environmental Protection and Remediation, 3) Coastal Resiliency, 4) Maritime Decarbonization, 5) Shellfish and Seaweed Aquaculture, and 6) Ocean Data. Table 1 summarizes some of the POSD BEI pilot projects; projects often span multiple focus areas.

Table 1. Key pilot projects from the POSD BEI program.

Company	Innovation/Product	Impact
ECONcrete	Bio-enhancing concrete tide pools.	Replaces traditional "rip-rap" rock with structures that promote marine life.
Sunken Seaweed	Seaweed aquaculture pilot.	Produces 600 lbs of seaweed weekly and helps clean bay water through bioremediation.
VoltSafe	Magnetic shore power connectors.	Eliminates the risk of electrical shock and corrosion in marinas.
Lux Bio	Biodegradable, bioluminescent glow sticks.	Created a non-toxic, biodegradable alternative to chemical lighting used in fishing.
MarineLabs	AI Coastal Intelligence.	Provides real-time wave and wind data to improve port safety and climate resilience.

To date, POSD has committed ~\$2.95 million in funding for its BEI pilot projects; this in turn has attracted over \$5.8 million in outside funding including federal and state dollars for blue economy initiatives. The BEI was launched to advance triple-bottom-line outcomes: economic, environmental, and community benefits. It does this by addressing interconnected challenges at the POSD and in and around San Diego Bay. Over time, the program matured from concept-level support into a more structured, implementation-oriented platform. By 2017, the Port established its competitive application process open to external companies, consisting of the four-step formal intake and review process described above. This made it easier for startups to engage with the Port and was an improvement over earlier ad hoc approaches to pilot approval.

POSD's strengths lie in permitting, risk management, and procedural rigor, even though this approach differs substantially from venture-capital norms (e.g., grants and ROI framing). Rather than equity ownership (which the Port is prohibited from taking), the POSD BEI adapted existing Port revenue models, particularly from real estate and maritime portfolios. The approach mirrors ground-lease and gross-revenue royalty structures (e.g., percentage of sales), applied post-pilot based on the Port's level of investment.

POSD's BEI did not happen overnight; the aquaculture program alone has been in development for over 10 years.

3.2 Maritime Blue Ventures

Maritime Blue Ventures (Blue Ventures) is the entrepreneurship arm of Maritime Blue, a non-profit central coordinating body for the Pacific Northwest's maritime sector. Maritime Blue operates as a strategic alliance and innovation cluster model, bringing together industry, government, research institutions, and community groups to collaborate on large-scale maritime challenges. Its scope also extends beyond startups into Workforce Development, creating career launch programs and internships to ensure the next generation of workers is trained for maritime tech jobs, specifically.

Blue Ventures is designed to support startups at different stages of maturity, from a rough idea to a venture-scale company ready to expand globally. Founders can apply to three distinct tracks based on their business stage and goals (Table 2).

Table 2. Summary of the three program tracks under the Blue Ventures umbrella.

Program	Designed For...	Key Benefits
Innovation Accelerator	High-growth, venture-scale startups ready to scale quickly.	\$100,000 equity investment (via Simple Agreement for Future Equity: SAFE), 4 months of intensive mentorship, and investor access.
Seattle & Tacoma Incubators	Early-stage, place-based founders validating their technology or market.	10–12 months of support, free office space for up to two years, and access to the Blue Hub.
One Ocean Accelerator	International startups looking for a "soft landing" in the U.S. market.	Focuses on U.S. fundraising, local expansion, and building North American customer relationships.

Blue Ventures' cluster model and programs function like a venture capitalist model, with the organization serving to de-risk investments for multiple maritime stakeholders simultaneously. Regardless of track, participants in the program must align with one of its five core blue economy pillars:

1. Sustainable Fishing and Seafood: Traceability tools and "whale-safe" fishing gear.
2. Healthy Ocean Ecosystems: Solutions for cleaning plastic or reducing underwater noise.
3. Digital Transformation: AI and 5G for port logistics and supply chain efficiency.
4. Maritime Decarbonization: Zero-emission fuels and electrification for ships.
5. Renewable Ocean Energy: Offshore wind and wave energy technologies.

Since its inception in 2018, Blue Ventures graduates have raised over \$450 million in follow-on capital.



Figure 2. Conceptual rendering of the Maritime Innovation Center at the Port of Seattle - Fishermen's Terminal.

The Maritime Innovation Center at the Port of Seattle has served as the foundational facility vision that set the stage for Maritime Blue's programming. Starting in 2013, the concept was written into former Governor Inslee's jobs plan. In 2016 maritime incubator development was identified as part of Fisherman Terminal's plan at the Port of

Seattle. The Port funded business plan for the Maritime Innovation Center and design charrette work began in parallel with the Washington State Department of Commerce's yearlong stakeholder-driven process to develop the State Strategy for the Blue Economy. The Port of Seattle decided to move forward simultaneously with supporting venture programming through Marine Blue, as well as capital facility funding to build-out the Maritime Innovation Center.

Built in 1914, the historic Ship Supply Building is being restored and modernized into a 15,000 square foot facility with a mix of working space for incubators, accelerators, and anchor tenants along with fabrication and event space. The Port of Seattle will operate the Maritime Innovation Center in partnership with Maritime Blue, and host emerging companies that are working to solve maritime industry problems, increase the maritime workforce, as well as advance blue economy opportunities around the world. With 8 years of venture and other cluster programs well underway, Maritime Blue has built an ecosystem across the region. They are in a good position to fill the innovation center with partners that can work collaboratively to scale Blue Economy innovations.

3.3 AltaSea at the Port of Los Angeles

AltaSea is a public-private non-profit that redeveloped historic port infrastructure into a dedicated ocean innovation campus. Located on a 35-acre site at the Port of Los Angeles (POLA), it functions as a centralized hub where university researchers, green-tech startups, and established maritime businesses share space and resources. A research- and engineering-focused blue economy hub, AltaSea serves as a model for large-scale adaptive reuse of obsolete waterfront assets.

AltaSea operates primarily as a landlord and ecosystem coordinator, generating revenue through long-term leases and securing large-scale public and private grants to fund common infrastructure. It also serves as a shared research base for major institutions, including UCLA and USC, facilitating the commercialization of university-led breakthroughs in marine carbon removal and regenerative aquaculture.

The AltaSea model illustrates how the value of a blue economy initiative lies not only in the technology it produces, but also in its ability to revitalize historic infrastructure and regional workforces. AltaSea organizes its tenants into three primary clusters, each addressing specific climate and economic goals:

1. **Regenerative Aquaculture:** Developing sustainable food systems, such as kelp and shellfish farming, that improve water quality while producing commercial crops.
2. **Renewable Energy:** Testing wave, tidal, and offshore wind technologies, such as the Eco Wave Power pilot, which is the first wave energy project of its kind in a U.S. port.
3. **Blue Technology:** Advancing the use of Remotely Operated Vehicles and Autonomous Underwater Vehicles for ocean exploration and environmental monitoring.

AltaSea is best understood not as a traditional incubator, but as an ecosystem developer that combines place-based infrastructure, mission-aligned partnerships, and practical commercialization support. In an interview, AltaSea’s leaders emphasized that its model depends on a clear value proposition, disciplined focus, and a strong partner network (including regional incubators) rather than trying to provide every startup service in-house. In practice, AltaSea engages companies once they are ready to demonstrate and scale, helps broker access to permitting and pilot environments, and complements that work with education and workforce programming that broadens funding options and strengthens public value. For Port of San Francisco, the key lesson is that an AltaSea-type model would require more than real estate: it would require the Port (and/or an ecosystem partner) to define a focused role, secure the right operating partners, and treat the waterfront as a test bed where blue economy ventures can move from concept to demonstration. The interview also underscored several practical considerations relevant to San Francisco: mission creep can dilute impact, and implementation typically takes more time and capital than expected, including a diversity in funding resources. AltaSea also emphasized that workforce and education activities are often easier to fund than business incubation alone.

4 Market Landscape Assessment

In the sections that follow, we present a high-level market assessment of the areas of particular interest for the Bay Area’s blue economy ecosystem and the Port of San Francisco’s blue economy initiative. These areas were chosen for their overlap with the market placement of active Port of San Francisco tenants, with the Port of San Francisco’s Strategic and Waterfront Plans, and with the Port’s blue economy priority focus areas. We then present a summary of existing Key Port Assets in order to draw lines between the market opportunities and resources the Port will be able to leverage for their initiative, in order to capture the opportunities in these spaces.

4.1 Overview of Bay Area Maritime and Waterfront Economy

The San Francisco Bay Area boasts one of the most innovative, diverse, and competitive economic landscapes in the world. Within this region, the blue economy bridges traditional maritime operations with cutting-edge environmental innovation. This landscape encompasses historic commercial fisheries, marine industrial services, and logistics networks, which operate

alongside emerging blue tech startups, nonprofit, academic institutions, and established venture-capital firms dedicated to regenerative ocean investments. Markets in the Bay Area regularly set new design standards and introduce transformative technology. Along with California more broadly, the region is helping drive the transition toward sustainable industries and net-zero operations.

The ocean economy contributes about \$44 billion to California's GDP. Updated NOAA data² show that California's marine economy remains one of the largest in the country, with more recent datasets indicating continued growth in jobs and wages through 2024. In the most recent fully reported baseline year (2021), California's marine economy employed roughly 511,000 workers, generated about \$26.7 billion in wages, and accounted for approximately \$51.3 billion in goods and services³. While county-level updates are more limited, earlier NOAA estimates placed San Francisco County's ocean economy at about \$3.5 billion in GDP, and more recent datasets confirm steady growth trends across coastal counties. Maritime jobs in the Bay Area typically offer starting salaries around \$50,000 annually, with strong pathways to six-figure earnings, and current wage data show average marine-related pay in California around \$57,000 per year with higher earnings for specialized roles⁴. The region also continues to host some of the largest ship repair and maintenance facilities on the West Coast, supporting ongoing demand for skilled workers.

Despite this, blue economy activities account for a small percentage of total ocean economy activities in San Francisco County (and the U.S. more broadly). However, this is changing, as heightened awareness of the risks posed by climate change, pollution, and aquatic ecosystem degradation are driving increased attention to, and investment in, more sustainable ocean-based industries and resources.

4.1.1 Investment Landscape

The Bay Area represents one of the largest concentrations of climate investment and philanthropy. However, blue economy ventures often struggle to attract capital due to limited access to real-world testing environments, regulatory complexity, and long commercialization timelines.

The Port of San Francisco is uniquely positioned to address these barriers by serving as a bridge between early-stage companies and investors. By enabling pilot deployments and validation in a complex regulatory and operational environment, the Port can help transform early-stage companies into investment-ready opportunities.

² National Oceanic and Atmospheric Administration (NOAA), Economics: National Ocean Watch (Open ENOW) [dataset news release](#), March 18, 2026, noting continued national and state-level growth in marine economy employment and wages through 2024

³ NOAA Office for Coastal Management, California Marine Economy Report (2024 edition; 2021 baseline data), reporting 511,324 workers, \$26.7 billion in wages, and \$51.3 billion in GDP.

⁴ Workforce Development Board of Contra Costa County, Marine Trades Skills Training Program (2023–2024), and ZipRecruiter salary data (January 2026), reporting typical starting salaries around \$50,000 and average marine wages near \$57,000 in California.

4.1.2 Sustainable Seafood Economy

With the key hubs of Pier 45 and Fisherman’s Wharf, San Francisco is home to the largest fishing industry center along the California coast. In 2022 alone, San Francisco’s commercial fish landings were valued at over \$22 million, with Dungeness crab consistently accounting for approximately half of this total. The economic activity generated by these landings supports not only the fishers but also a broader supply chain that includes processors, distributors, restaurants, and exporters. More broadly, the Port of San Francisco’s maritime sector sustains over 4,400 jobs and contributes \$117 million in state and local tax revenue each year.

Fishing is a volatile business, and the environmental challenges of drought and climate change are very disruptive to the industry. The Port works closely with its fishing industry tenants to respond to these types of economic and operational challenges, and maintain harbor services including the fuel dock, utilities, refrigerated storage, ice production, and maritime parking facilities to support key industry needs.

4.1.3 Ecotourism

Recreation is the largest blue economy-adjacent market segment in California and one of the most visible on the San Francisco waterfront. NOAA estimates that tourism and recreation account for 67% of California’s marine economy employment and 47% of its marine economy GDP, underscoring how strongly waterfront visitation, leisure activity, and public access shape the state’s ocean economy. In San Francisco, the broader visitor economy welcomed roughly 24 million visitors in 2025, generating approximately \$8.8 billion in spending. The region expects continued growth through conventions, Super Bowl 50, the 2026 World Cup, arts and cultural attractions, increased cruise activity, and more. On the waterfront specifically, Fisherman’s Wharf remains the city’s top visitor district and drew approximately 14 million visitors in 2025, while 35% of those visitors Bay Area residents. Fisherman’s Wharf now receives ~1 million visitors per month, in a return to pre-pandemic levels. Water transit is also part of this recreation market: San Francisco Bay Ferry carried 2.6 million passengers in 2024, up 16% year over year, and weekend ridership reached 115% of 2019 levels. Taken together, these indicators show that recreation is not a peripheral use of the Bay waterfront but a major demand driver with strong linkages to hospitality, excursion services, passenger ferries, retail, public space activation, and waterfront small businesses.

Priority opportunities include low- and zero-emission passenger vessels, marina and small-craft electrification, digital wayfinding and reservation platforms, water-quality and safety monitoring tools, resilient shoreline recreation infrastructure, and habitat-positive tourism experiences that connect public access with environmental education. Compared with capital-intensive cargo or industrial ventures, recreation-oriented pilots can often be demonstrated more visibly and at smaller scale, allowing the Port to test new business models while improving visitor experience and advancing climate goals. In this sense, the recreation market offers the Port an accessible entry point for incubating technologies and services that generate public benefit, support local operators, and reinforce the Port’s identity as both an economic engine and a civic waterfront destination.

4.1.4 Clean Energy

The Bay Area is emerging as a practical test bed for maritime decarbonization and renewable energy deployment, with growing demand for infrastructure that reduces emissions from vessels, terminals, and waterfront operations. For the Port of San Francisco, this market is especially relevant in four connected areas identified earlier in this roadmap: shoreside power infrastructure for cruise and other maritime vessels; electrification of ferry fleets and terminals, including Mission Bay; deployment of electrified docking infrastructure; and exploration of clean energy generation that can support maritime and waterfront uses, including offshore wind-related infrastructure and supply-chain activity. These point to a market that is not limited to just fuel switching, it also includes the physical systems, grid connections, and waterfront facilities needed to support low- and zero-emission operations over time.

This market is being shaped by a mix of regulatory pressure, public investment, and infrastructure demand. California shore power requirements continue to push ports and vessel operators toward at-berth electrification, while regional ferry expansion is increasing demand for charging-ready terminals, vessel support systems, and related waterfront upgrades. For the Port of San Francisco, this creates a clearer set of blue economy pathways that complement its own implementation activities: expanding shore power capacity for maritime vessels, supporting electrified ferry and terminal infrastructure, preparing berths and docking facilities for low- and zero-emission operations, and positioning waterfront sites to support clean energy and offshore wind-related activity as those markets mature.

4.1.5 Healthy Bay Ecosystems: Scientific Research

The San Francisco waterfront increasingly serves as a living laboratory for environmental research, ecological resilience, and marine science. A prominent current initiative is the Living Seawall Pilot, an innovative study led by the Port and the Smithsonian Environmental Research Center. This research tests ecologically friendly seawall tiles designed to boost biodiversity, showing early success in attracting native oysters, crabs, and seaweed. The Port also collaborates on long-term ecological research with organizations like the San Francisco Estuary Institute for regional water quality monitoring and habitat restoration. There is significant room for strategic partnerships and market growth in this sub-sector.

4.1.6 Education, Public Sector, and Workforce Development

Several Bay Area programs provide a foundation from which the Port of San Francisco's program can build. Cal Poly Maritime Academy, the only degree-granting maritime academy on the West Coast, enrolled roughly 820 students in fall 2025 and offers a direct pipeline into maritime transportation, engineering, logistics, and waterfront operations. Working Waterfront Coalition is a newer regional trades pathway: it launched in 2024 with state workforce funding for a marine trades training course designed for about 30 students per cohort, and participating partners note that maritime jobs often start around \$50,000 annually with pathways to higher earnings as workers gain experience. The Port Rising T.I.D.E.S serves San Francisco residents ages 15 to 25 and includes a paid summer maritime internship program. These efforts reflect the beginnings of a workforce pipeline.

For the Port, the opportunity is less about creating an entirely new workforce system and more about strengthening these existing pathways, aligning them to future blue economy needs, and increasing the number of paid, work-based learning opportunities tied to waterfront operations. In the public sector, a major priority for local government is ensuring the workforce can equitably transition to support climate resilience and a decarbonized economy. San Francisco utilizes established pipeline initiatives alongside educational tools like Project Learning Grants and the Teacher Externship Program, to expose youth to clean energy and building decarbonization careers. Private foundations can also play a role; for example, the [Euphotic Foundation](#) issues grants specifically to small-scale fishing and aquaculture companies to help them overcome hardship and/or financial barriers to compliance-related equipment upgrades.

The regional blue economy is years behind the green economy in terms of dedicated educational investments. Currently, there are very few post-secondary certificate or degree programs explicitly focused on the blue economy⁵. Further, blue economy employers highly value candidates with practical experience, but very few companies actually offer the internships or job-shadowing programs necessary to build that experience. This creates blue economy market and networking opportunities in micro-credentialing, adapting existing curriculum for climate-resilient maritime training, and expanding paid internships, fellowships, and pre-apprenticeships.

4.1.7 Digital Innovation

Digital innovation and blue tech represent a broad and fast-evolving market that spans software, sensors, communications infrastructure, robotics, data platforms, and applied analytics for maritime and waterfront use. This market draws strength from the Bay Area's concentration of engineering talent, research institutions, venture capital, and climate technology activity; it also overlaps with many other focus areas for the blue economy initiative. There is growing demand for tools that improve operational efficiency, visibility, safety, coordination, asset management, environmental monitoring, and regulatory compliance in the maritime sector. As a result, the market is not limited to any single technology category. It includes digital connectivity, smart logistics systems, navigation and situational awareness tools, ocean and infrastructure sensing, autonomous and remotely operated systems, and shared data platforms that help maritime users make better decisions in real time.

California awarded \$27 million in 2024 to improve port data interoperability across its containerized ports⁶, while federal and industry sources continue to highlight digital systems, process automation, and real-time data exchange as core enablers of safer, more efficient, and more resilient port operations.

5 Key Port Assets

The Port of San Francisco's ability to support a blue economy initiative rests not only on regional market opportunity, but on a distinct set of assets the Port already controls, convenes, or influences. These assets include strategic waterfront real estate, water access, working maritime

⁵ LAEDC, <http://smc.edu/academics/workforce-economic-development/becap/documents/BECAP-Report-Feb25.pdf>

⁶ California Governor's Office of Business and Economic Development (GO-Biz), "California Invests \$27 Million in Innovative, First-in-the-Nation Port Data System Development," July 11, 2024

infrastructure, long-standing tenant relationships, institutional knowledge, and a strong position within the Bay Area's broader innovation, policy, and capital ecosystem. Taken together, these advantages give the Port a practical foundation for attracting pilot projects, supporting early-stage companies, and connecting market opportunities to real waterfront deployment. The sections below summarize the key physical, operational, and network assets that could be leveraged for the program and support the Port of San Francisco's role in it.

5.1 Strategic Leasing Support & Concierge Services

The Port's physical assets are valuable because they provide scarce and strategic waterfront conditions that are difficult to replicate elsewhere in San Francisco and other parts of the world. San Francisco office and residential rents are expensive and with a Blue Economy Initiative, the Port of San Francisco can provide incentives and relief to small, start-up ventures. These assets include deployable shoreline sites, water access, deep-water berths, maritime industrial facilities, and public-facing waterfront locations that could support pilot projects, early deployment, and tenant growth at the appropriate scale.

At the same time, the Port's physical value proposition depends on matching ventures to realistic site conditions. The Port notes safety concerns related to Bay water movement and vessel traffic, limitations on use at Port-owned properties, lease conditions, and the building-code implications of changing a space from storage to more intensive uses such as R&D, industrial, or office; all affect what can be hosted and where. For a blue economy initiative, this suggests that physical assets should be understood less as generic available space and more as a portfolio of test environments: some suited to short-term demonstrations, some to operational pilots, and some to longer-term tenancy if market demand materializes. This portfolio approach is a strength, because it allows the Port to offer companies a progression from initial proof of concept to waterfront deployment without requiring every project to fit a single facility model.

The Port also brings operational assets that can materially lower barriers for blue economy pilots and early-stage companies in the form of concierge services. This includes things like coordinating across Port and City departments; explaining site constraints, lease options, and allowed uses; connecting ventures and companies to pilot sites and timelines, and acting as a single point of contact or guide for startups, small businesses, and partner organizations trying to work on Port property.

5.2 Regulatory Liaising

The Port of San Francisco has long-standing relationships with most major regulatory and permitting agencies in the Bay Area and can serve as a liaison as companies navigate local, regional, state, and federal processes. This convening and translation role is especially valuable for ventures operating in highly regulated environments such as vessel electrification, alternative fuels, shoreline infrastructure, environmental monitoring, and Bay-based research. The Port also has practical experience helping tenants and partners navigate use limitations on Port property, understand what types of improvements are feasible, and work through City and Port processes that can otherwise be difficult for outside organizations to interpret.

5.3 Partnerships and Networks

The Port's network assets may be among its most important advantages for a port-centered accelerator or incubator model. The existing tenant base already touches multiple blue economy-adjacent sectors, including fisheries, excursion services, passenger transportation, construction materials, resilience, and broader maritime operations. The Port has strong partnerships across maritime, planning, real estate and development, city, and public, partners and more. This means the Port is not starting from a blank slate; it already sits in the middle of a working waterfront network that can help define market needs, provide demonstration partners, and validate whether a proposed pilot solves a real operational problem or serves a broader sustainability goal.

This network extends beyond tenants to include advisory, civic, and capital relationships that could make a Port-centered initiative more effective than a site-only real estate strategy. The Maritime Commerce Advisory Committee provides an existing forum for surfacing maritime business needs and discussing how innovation can be balanced with broader public trust objectives. Long-standing tenant relationships give the Port a practical channel for identifying unmet demand, such as requests related to sustainability, climate resilience, and clean energy for vessels.

6 Recommendations

We know from other models that this initiative will take time to establish and develop. Accordingly, we recommend the Port of San Francisco's Blue Economy Initiative have a phased approach. The phases recommended below are grounded in research of blue economy implementation pathways from other initiatives.

	Phase 1	Phase 2	Phase 3
Focus	Launch initiative	Grow ecosystem	Build capacity
Duration	2026-27	2028-30	2031
Milestones:	Commissioner support Resolution passed	Positions/programs included in Port budget. Facility planning.	Strive for brick and mortar facility
	Port interdivisional program management established	Sources of external funding established	Diverse revenue streams secured

	Phase 1	Phase 2	Phase 3
	Leasing incentives approval by Commission	50+ member ecosystem established	100+ member ecosystem established
	Market research and procurement for third party administrator	Grow program offerings	Multiple tracks of programming established
	Three (3) transactions deployed by end of 2027	5-7 transactions launched	10 transactions, including investment returns

The Port of San Francisco is well positioned to advance a Blue Economy Initiative that combines waterfront access, strategic coordination, and targeted partnership development to help blue economy ventures succeed. With phased execution and continued alignment with Port and City goals, this effort can build momentum in delivering climate, workforce, and community benefits while creating promising opportunities for San Francisco.