Strategic Plan to Protect California's Coast and Ocean 2020- 2025

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EXECUTIVE SUMMARY

California is a global leader in innovative, effective ocean and coastal protection, home to state and local agencies and legislative bodies working together with stakeholders and the public toward a shared goal of healthy coastal and marine systems. Created by the California Ocean Protection Act in 2004 (COPA), OPC arose out of the need for a new governance model, one that reflects the integrated nature of the ecosystems being stewarded.

This "*Strategic Plan to Protect California's Coast and Ocean: 2020-2025*" envisions all California communities enjoying thriving ecosystems, clean water, healthy food, secure infrastructure, ready public access to the coast and ocean, meaningful public participation in policymaking processes, and a just transition to an inclusive blue economy that advances ecosystem health, offers meaningful work, and reverses past injustices. In the face of known, significant challenges facing the coast and ocean, this Strategic Plan offers four Cross-Cutting Goals to guide California's efforts over the next five years toward this vision:

- **Goal 1:** Safeguard Coastal and Marine Ecosystems and Communities in the Face of Climate Change
- **Goal 2:** Advance Equity Across Ocean and Coastal Policies and Actions
- **Goal 3:** Enhance Coastal and Marine Biodiversity
- **Goal 4:** Improve Ocean Health through a Blue Economy

Collaborative partnerships with state agencies on the frontlines of regulatory, policy, and financial decision-making and action regarding the coast and ocean will be critical to the success of the targets and actions outlined below to achieve these goals. OPC looks forward to working with state agencies, other governmental partners, tribes and all stakeholders to ensure California advances its global leadership in the protection of the state's world-renowned coast and ocean.

This document is a bold and comprehensive plan made up of objectives, targets and actions in each goal area. The following is a list of proposed targets and actions with achievement due dates:

PROPOSED DATES FOR TARGETS AND ACTIONS

DATE	TARGETS AND ACTIONS
2020	1.4.1: Release scientific report summarizing the ability of California's marine protected areas to provide ecosystem resilience to climate change impacts by 2020 and begin funding identified data gaps in 2021.
	3.1.2: Add California's MPA network to the International Union for Conservation of Nature Green List of Protected and Conserved Areas by 2020; showcase this global recognition at the United Nations Convention on Biological Diversity Conference (COP 15) in late 2020.
	3.2.1: Develop and begin implementation of statewide kelp forest research and restoration plan by 2020.
	3.3.5: Develop a statewide whale and sea turtle protection plan by 2022 with a target of zero mortality. As a component of this overall plan, develop and initiate a funding strategy to reduce the risk of entanglement in California fishing gear by 2020.
	3.4.2: Work to achieve zero trash entering state waters by 2030 (from the State Water Resources Control Board's final compliance deadline with the trash amendments). As one milestone action, adopt an OPC Resolution to ban expanded polystyrene in food serviceware and packaging by 2020; ban implemented by 2022.
2021	1.1.4: Identify pilot projects across the state that demonstrate the efficacy of various sea-level rise and extreme event adaptation strategies by 2021 and begin project implementation immediately thereafter, consistent with existing laws and policies.
	1.1.5: Build on existing planning efforts to ensure adoption of a requirement that, at a minimum, all coastal counties will develop a coastal resilience action plan or element by 2023. Develop template and minimum standards by 2021.
	1.4.1: Release scientific report summarizing the ability of California's marine protected areas to provide ecosystem resilience to climate change impacts by 2020 and begin funding identified data gaps in 2021.
	2.1.1: Develop and begin implementing strategies for effectively engaging and partnering with California's Tribes & Tribal Governments on ocean and coastal resource protection, access, policy and management by 2021.
	2.2.1: Ensure development and adoption by 2021 an Equity Plan that includes but is not limited to equitable convenient and affordable access to coastal natural resources and access and engagement in coastal and marine policymaking.
	3.1.5: Based on CNRA and CalEPA's 2002 Report to the legislature, "Addressing the Need to Protect California's Watersheds", develop a state watershed policy with updated principles by 2021. The policy and principles will be routinely utilized in watershed and coastal management (including planning, policy setting, resource allocation, and project development), by 2022.
	3.4.2: With partners, work to achieve zero trash entering state waters by 2030 (from the State Water Resources Control Board's final compliance deadline with the trash amendments). As one milestone action, work to change state purchasing and service contracts to require reusable food serviceware whenever feasible and reduce the state's reliance on single-use food serviceware by 2021.
	3.4.4: With partners, develop a statewide microplastics strategy by 2021 with implementation of the recommendations starting in 2022. As one milestone action, develop and adopt a California Resolution on Microplastics by 2021.
	3.4.7: Update the state's Desalination Policy by 2021, to address both ocean and coastal groundwater desalination.

	3.6.2: Integrate oceans and coasts into the work of the California Biodiversity Initiative and California Biodiversity Council by 2021.
	4.5.1: Work to identify air pollution sources that contribute to GHG hot spots in and around ports by 2021; by 2023 determine date for California's ports to be decarbonized.
2022	1.1.3: Inventory, characterize and prioritize remediation for toxic sites vulnerable to sea-level rise by 2022.
	1.1.7: Work with partners to ensure an additional 10,000 acres of coastal wetlands will be protected, restored or created by 2025, and that acreage of coastal wetlands in California is increased by 20% by 2030 and 50% by 2040. As one milestone action, with partners, develop a wetland action plan that outlines how to meet protection, restoration and creation targets by 2022.
	1.2.1: Advance state efforts to secure adoption of regulations establishing water quality objectives for ocean acidification and hypoxia that includes, but is not limited to, publicly owner treatment works, stormwater, and non-point source pollution, by 2025, with scientific analysis of the relationship between nutrient inputs and acidification hot spots complete by 2022.
	1.2.3: Establish a target date for phasing out coastal sewage discharge into the ocean by 2022. Work with partners to achieve 80-100% coastal wastewater recycling by 2040.
	3.1.1: With partners, complete ten-year assessment of MPA performance (required adaptive management review), including future monitoring and management recommendations by 2022, with implementation of those recommendations starting in 2023. As two milestone actions, fund and manage statewide ecological and socioeconomic monitoring of the MPA network, in preparation for the ten-year MPA management review in 2022 and identify and fund cost-effective strategies to continue MPA monitoring beyond 2022.
	3.1.3: Develop an action plan for addressing rocky intertidal and beach habitat loss due to SLR by 2023. As one milestone action, complete statewide mapping project by fully mapping rocky intertidal and beach habitat at 2m (or better) resolution by 2022.
	3.1.3: Develop an action plan for addressing rocky intertidal and beach habitat loss due to SLR by 2023. As one milestone action, develop a Beach Resiliency Plan by 2022, in coordination with existing efforts.
	3.3.5: Develop a statewide whale and sea turtle protection plan by 2022 with a target of zero mortality. As a component of this overall plan, develop and initiate a funding strategy to reduce the risk of entanglement in California fishing gear by 2020.
	3.4.2: With partners, work to achieve zero trash entering state waters by 2030 (from the State Water Resources Control Board's final compliance deadline with the trash amendments). As one milestone action, adopt an OPC Resolution to ban expanded polystyrene in food serviceware and packaging by 2020; ban implemented by 2022.
	3.4.4: With partners, develop a statewide microplastics strategy by 2021 with implementation of the recommendations starting in 2022.
	3.4.5: Support modernization of the harmful algal bloom notification network to provide real time data by 2022 and predictions by 2024.
2023	1.1.2: In conjunction with ongoing efforts, develop a site-specific infrastructure resiliency plan focused on state roads, wastewater treatment plants, water supply facilities, ports, and power plants by 2023.
	1.1.5: Build on existing planning efforts to ensure adoption of a requirement that, at a minimum, all coastal counties will develop a coastal resilience action plan or element by 2023. Develop template and minimum standards for the coastal resiliency plan or element by 2021.

	1.2.4: Ensure implementation of California's Ocean Acidification Action Plan by 2023.
	2.5.1: Develop a shared state definition of "healthy oceans" grounded in ecosystem-based science intrinsic value of ecosystems and species by 2023. This will be utilized as part of the State of the Coast and Oceans Report Card completed in 2025.
	3.1.1: With partners, complete ten-year assessment of MPA performance (required adaptive management review), including future monitoring and management recommendations by 2022, with implementation of those recommendations starting in 2023.
	3.1.3: Develop an action plan for addressing rocky intertidal and beach habitat loss due to SLR by 2023.
	3.1.3: Develop an action plan for addressing rocky intertidal and beach habitat loss due to SLR by 2023. As one milestone action, develop robust approach for predicting multi-scale climate-driven changes in rocky intertidal and beach ecosystems, including species range shifts, by 2023.
	3.3.2: Implement scaled management (e.g. Enhanced Status Reports, Fishery Management Plans) as described in the MLMA Master Plan for priority species by 2024.
	3.3.3: Develop rapid response capabilities to unanticipated biodiversity/fisheries emergencies (such as sea star wasting disease, harmful algal blooms, kelp forest collapse) by 2023.
	3.3.4: Develop adaptive management approaches to effectively respond to climate-caused shifts in fisheries by 2023.
	3.4.1: Strengthen water quality protection in MPAs equivalent to Areas of Special Biological Significance or State Water Quality Protection Areas by 2023.
	3.4.3: Advance development of a baseline of plastic pollution monitoring data and a standardized approach to track the state's progress in reducing plastic pollution by 2023.
	3.4.6: Develop a California-specific early detection and response system for marine organism diseases by 2023.
	3.5.1: Develop a recommendation to create a statewide early detection and rapid response program to eradicate or control marine and related inland invasive species when first detected by 2023.
	4.2.1: Develop a statewide aquaculture action plan focused on marine algae and shellfish and land-based/recirculating tank operations of marine algae, shellfish and finfish by 2023. The plan should identify areas of opportunity and avoidance to minimize impacts to habitat, biodiversity and wild fisheries and should include minimum project criteria, including best practices for eliminating detrimental environmental impacts.
	4.5.1: Work to identify air pollution sources that contribute to GHG hot spots in and around ports by 2021; by 2023 determine date for California's ports to be decarbonized.
2024	3.3.1: Use long-term MPA monitoring data to assess the effects of protected areas on fisheries and integrate MPA data into fisheries management consistent with the Marine Life Management Act by 2024.
	3.3.2: Implement scaled management (e.g. Enhanced Status Reports, Fishery Management Plans) as described in the MLMA Master Plan for priority species by 2024.
	3.3.5: Develop a statewide whale and sea turtle protection plan by 2022 with a target of zero mortality. As a component of this overall plan, develop and initiate a funding strategy to reduce the risk of entanglement in California fishing gear by 2020. As one follow-up action, provide funding for the state's drift gillnet transition program and work towards the target of elimination of large mesh drift gillnets off the California coast by 2024.

	3.4.5: Support modernization of the harmful algal bloom notification network to provide real time data by 2022 and predictions by 2024.
	4.4.1: Ensure development of a commercial scale offshore wind project in California that minimizes impacts on marine biodiversity or habitat, currents and upwelling, fishing, cultural resources, navigation, aesthetic/visual, and military operations by 2026.
2025	1.1.7: Work with partners to ensure an additional 10,000 acres of coastal wetlands will be protected, restored or created by 2025, and that acreage of coastal wetlands in California is increased by 20% by 2030 and 50% by 2040.
	1.2.1: Advance state efforts to secure adoption of regulations establishing water quality objectives for ocean acidification and hypoxia that includes, but is not limited to, publicly owner treatment works, stormwater, and non-point source pollution, by 2025, with scientific analysis of the relationship between nutrient inputs and acidification hot spots complete by 2022.
	1.3.1: Identify and continue to fund needed climate-related research, with summary reports issued by 2022 and 2025.
	2.3.1: With leadership from SCC and CCC, develop a "Coastal Access for All" Plan that ensures equitable public access to and along the ocean by 2025, and that includes specific, measurable targets for beaches, physical trails and access points, education, transportation, and recreational opportunities.
	2.4.1: Through the use of public education and management, eliminate involuntary human health risk from unknowing consumption of locally caught contaminated seafood by 2025.
	2.3.3: Ensure all California beaches receive straight A's on the Beach Report Card (fecal indicator bacteria densities) between April 1 – October 31 by 2025.
	2.5.1: Develop a shared state definition of "healthy oceans" grounded in ecosystem-based science intrinsic value of ecosystems and species by 2023. This will be utilized as part of the State of the Coast and Oceans Report Card completed in 2025.
	3.1.4: Work with partners to preserve existing 15,000 acres of seagrass beds and create an additional 1000 acres by 2025.
	3.4.8: Ensure all California beaches receive straight A's on the Beach Report Card (fecal indicator bacteria densities) between April 1 – October 31 by 2025.
	3.5.2: Ensure development of statewide Waste Discharge Requirements to allow in-water cleaning of large vessels to prevent the introduction of non-native species by 2025, consistent with protection of water quality and U.S. EPA regulations.
	3.6.1: Create a California State of the Coast and Ocean Report Card by 2025.
	4.1.1: Develop a statewide sustainable seafood program that includes traceability (local, domestic and import), improving local markets, impacts on biodiversity (including habitat loss or damage), reducing bycatch, pollution and infectious disease by 2025.
	4.1.2: Implement pilot projects statewide to increase fishing communities' resiliency and adaptation to climate impacts by 2025.
2026	Ensure development of a commercial scale offshore wind project in California that minimizes impacts on marine biodiversity or habitat, currents and upwelling, fishing, cultural resources, navigation, aesthetic/visual, and military operations by 2026.
2030	1.1.7: Work with partners to ensure an additional 10,000 acres of coastal wetlands will be protected, restored or created by 2025, and that acreage of coastal wetlands in California is increased by 20% by 2030 and 50% by 2040.
	3.4.2: With partners, work to achieve zero trash entering state waters by 2030 (from the State Water Resources Control Board's final compliance deadline with the trash amendments).

	4.3.1: With partners, fully or partially remove and decommission at least one offshore oil platform by 2030.
2040	1.1.7: Work with partners to ensure an additional 10,000 acres of coastal wetlands will be protected, restored or created by 2025, and that acreage of coastal wetlands in California is increased by 20% by 2030 and 50% by 2040.
	1.2.3: Establish a target date for phasing out coastal sewage discharge into the ocean by 2022. Work with partners to achieve 80-100% coastal wastewater recycling by 2040.
2050	1.1.1: Ensure California coast is resilient to at least 3.5 feet of sea-level rise by 2050.

INTRODUCTION

Our Shared Ocean and Coastal Challenges

California is home to one of the most diverse coastal and ocean ecosystems in the world, with over 1,100 miles of coastline, and watersheds originating in the Sierras, traveling through the San Francisco Bay-Delta Estuary and emptying out into the ocean. From sandy beaches, tree-topped bluffs, bay shorelines, and inland salmon runs, to offshore rocky reefs, kelp forests, and whale migration routes, these habitats, and the flora and fauna that reside in them, represent our natural and cultural heritage, and inspire hope for our future. The coast and ocean delights residents and visitors, supports our livelihoods, enriches us through a marine economy of over $44 billion annually.[1]

Yet, climate change and other stressors increasingly threaten the continued health of these coastal and marine systems. The 2019 "Special Report on the Ocean and Cryosphere in a Changing Climate," approved by the 195 Intergovernmental Panel on Climate Change (IPCC) member governments, found that climate change is already "resulting in profound consequences for ecosystems and people." The IPCC report stated that the ocean is "warmer, more acidic and less productive," with effects already being seen in the distribution and abundance of marine life, including reduction in the global fish catch potential.[2]

Here in California, the combination of warmer water temperatures, disease, invasive species, and the collapse of sea star populations statewide has placed California's North Coast kelp forest ecosystems in a state of emergency, with South Coast kelp struggling severely as well. Ocean acidification and oxygen loss in the California Current upwelling system is further impacting biomass production and species composition.[3] And climate change overall exacerbates the effects of numerous other stressors on species populations, such as pollution and habitat destruction.[4]

[1] http://centerfortheblueeconomy.org/2016-noep-report.
[2] https://www.ipcc.ch/site/assets/uploads/sites/3/2019/09/SROCC_PressRelease_EN.pdf.
[3] https://www.ipcc.ch/srocc/download-report/.
[4] *See, e.g.,* https://www.un.org/sustainabledevelopment/blog/2019/05/nature-decline-unprecedented-report/.

The IPCC oceans report adds that sea-level rise will escalate and increase the frequency of extreme events such as storm surges, with significant impacts on coastal communities. Events that used to occur just once per century in the past will be occurring "every year by mid-century in many regions." Here in California, the infrastructure that is so critical to the state's $44 billion annual coastal economy – including roads, rail lines, sewage treatment plants, ports, and power plants - is becoming more vulnerable to increased climate-related flooding.

California's iconic beaches, coastal wetlands, and productive rocky intertidal habitats are also threatened. The state has already lost approximately 90% of its coastal wetlands due primarily to habitat destruction. Coastal wetlands provide critical habitats for numerous endangered and threatened species, nurseries for marine life, flood protection, water quality improvement, and carbon sequestration, and are now also threatened by sea-level rise.

Reducing stressors such as pollution will help marine life better cope with changes in their environment. Our continued reliance on single use plastics, for example, has severely degraded most of our coastal watersheds, beaches and bays. Adoption of strengthened fisheries management and marine protected areas policies will further minimize risks to marine and coastal systems, thereby benefitting all of us who depend on them.

California can strengthen its ability to adapt by understanding the causes of climate-related changes and their resulting impacts, considering other stressors, evaluating options that are available, and acting swiftly on high-priority options. Nature-based strategies to protect coastal and bay shoreline communities, ecosystems, and species are being developed now, and should be accelerated in the near term to ensure coastal safety, protect human health, and safeguard natural marine systems and coastal watersheds.

OPC Advances California's Leadership on Coast and Ocean Policy and Action

California is a global leader in innovative, effective ocean and coastal protection, home to numerous state and local agencies and legislative bodies working together with stakeholders and the public toward a shared goal of healthy coastal and marine systems. OPC works to advance this leadership through a governance model that reflects the integrated nature of the ecosystems being stewarded. Created by the California Ocean Protection Act in 2004 (COPA),

OPC arose out of new, national initiatives to advance marine ecosystem-based management.[5] COPA granted OPC a unique role in coordinating and integrating disparate but related government authorities and initiatives toward a comprehensive, aligned approach for protecting and conserving natural systems. As a Cabinet-level state policy body nested within the California Natural Resources Agency, OPC advances the Governor's priorities for coastal and ocean policy and works broadly to advance healthy coastal and ocean ecosystems for current and future generations. The seven-member Council is chaired by the Secretary for Natural Resources and includes the Secretary for Environmental Protection, the Chair of the State Lands Commission, two public members, and two members of the Legislature – one from the Senate and one from the Assembly (ex-officio members). OPC is led by an Executive Director who also serves as the Deputy Secretary for Oceans and Coastal Policy for the California Natural Resources Agency.

OPC's **Mission** is to protect California's coast and ocean by advancing innovative, science-based policy and management, making strategic investments, and catalyzing action through partnerships and collaboration. These efforts yield significant benefits to the state while providing a global model for ecosystem-based protection and conservation.

Vision and Goals for the Next Five Years

The health of California's people and ecosystems is tied closely to that of our coast and oceans. OPC is charged with safeguarding coastal and ocean ecosystems for the benefit of all Californians, pursuant to a **Vision** of *healthy, resilient and productive coastal and ocean ecosystems in California, for the benefit of current and future generations*.

OPC protects California's coastal and ocean resources by providing best-available science to decision-makers, developing science-based policy recommendations, deploying resources effectively and strategically, and by collaborating across jurisdictional, programmatic, and regional boundaries. In this vein, OPC, OPC's Science Advisory Team, California Ocean Science Trust and California's two Sea Grant Programs are collaborating with California's academic and research institutions in 2020 to understand current scientific research efforts and results that will enhance the state's coast and ocean management and conservation efforts. Also, OPC will become a communications hub on the latest state agency coastal management and scientific efforts and California's progress towards meeting Strategic Plan goals, objectives and targets, so

[5] https://www.pewtrusts.org/en/research-and-analysis/reports/2003/06/02/americas-living-oceans-charting-a-course-for-sea-change.

that the public and decision makers will have easier access to California's extensive coast and ocean information. Appendix 3 describes in more detail OPC's core functions of ecosystem-based governance, science, partnerships, policy, funding, and communications.

Across all its work, OPC is guided by four **Key Principles**:

1. **Leadership.** OPC will identify top coastal and ocean priorities for state action and will act as a global model for strategies that ensure a healthy, accessible coast and ocean that supports thriving communities.
2. **Interdisciplinary action.** OPC will work with other agencies, tribes and stakeholders across issue areas, pulling collaborators together toward cross-cutting solutions in recognition of the deep connections across land and sea, and between people and natural systems.
3. **Accountability.** OPC commits to monitoring the status of ocean and coastal health, assessing the results of agency actions, reporting back to the public and decisionmakers regularly, and adapting as needed.
4. **Inclusivity.** OPC will work to ensure ready public access to the coast and ocean, offer meaningful participation in state ocean policymaking processes, seek correction of environmental injustices, and advance a just transition to a blue economy that offers good jobs and advances ecosystem health.

Consistent with these values and OPC's mandate under COPA, and in the face of known challenges facing the coast and ocean, this Strategic Plan highlights California's ocean and coastal priorities for statewide action. Four **Cross-Cutting Goals** – addressing Climate Change, Equity, Biodiversity, and a Blue Economy – guide OPC's efforts over the next five years to collaboratively catalyze, coordinate, and align key statewide policies, plans and targets:

- **Goal 1:** Safeguard Coastal and Marine Ecosystems and Communities in the Face of Climate Change
- **Goal 2:** Advance Equity Across Ocean and Coastal Policies and Actions
- **Goal 3:** Enhance Coastal and Marine Biodiversity
- **Goal 4:** Improve Ocean Health through a Blue Economy

These four Goals reflect the broad importance of a healthy coast and ocean, and help guide California towards tangible, quantifiable change. This document is a five-year Strategic Plan to protect California's coast and ocean. Development of the goals, objectives, targets and actions

in this Strategic Plan was informed by OPC member comments, extensive public comments, existing state agency planning and technical documents, and numerous discussions with state agency staff. The targets are necessarily ambitious to inspire action, confront the impacts of a changing climate and successfully adapt. The included actions are those that most effectively set a pathway in the next five years towards the longer-range targets.

OPC alone does not have the capacity or resources to ensure full implementation of this bold strategic vision for California's coast and ocean. Collaborative partnerships with state agencies on the frontlines of regulatory, policy, and financial decision-making and action around the coast and coastal watersheds, are absolutely critical.

OPC collaborates with federal, state, and local government, universities, research institutions, non-profits, tribes, educators, ports, industry, and others to advance shared goals for the state's ocean, coast, bays, and coastal watersheds. State agencies partners include the California Department of Fish and Wildlife (CDFW), California Fish and Game Commission (FGC), California Department of Parks and Recreation (State Parks), State Lands Commission (SLC), Governor's Office of Planning and Research (OPR), California Coastal Commission (CCC), the State Coastal Conservancy (SCC), the San Francisco Bay Conservation and Development Commission (BCDC), State Water Resources Control Board (SWRCB), Regional Water Quality Control Boards (RWQCBs), California Energy Commission (CEC), California Air Resources Board (ARB), California Department of Transportation (Caltrans), Governor's Office of Emergency Services (CalOES), Department of Water Resources (DWR), Delta Stewardship Council (DSC), California Department of Food and Agriculture (CDFA), Department of Toxic Substances Control (DTSC), Office of Environmental Health Hazard Assessment (OEHHA), and the Department of Public Health (DPH). Together, OPC and agency partners will work to achieve shared goals through specific targets and actions that ensure accountability and track progress. Without the leadership and expertise of these agencies and the Legislature – as well as action and support from all partners external to state government listed above – the state's audacious vision for its coast and ocean cannot be fully realized.

Ultimately, OPC envisions California communities enjoying thriving ecosystems, clean water, healthy food, secure infrastructure, and an inclusive "blue economy" that significantly advances

ecosystem health, offers meaningful local work, and supports a system of environmental justice that enhances empowerment and reverses the human and environmental damage of past policies.

GOAL ONE: SAFEGUARD COASTAL AND MARINE ECOSYSTEMS AND COMMUNITIES IN THE FACE OF CLIMATE CHANGE

The world's oceans absorb roughly one-third of the total carbon dioxide emitted by human activities each year.[6] Simultaneously, they have absorbed over 90 percent of the warming caused by humans since the 1970s.[7] As a result, scientists have observed biological, chemical, and physical changes that include sea-level rise, coastal erosion, ocean acidification, warming seas, changing ocean currents, and shifting species distributions. Such impacts currently, and will continue to, threaten California's communities for decades to come.

Over the next five years, California will prioritize improved scientific understanding, increased resilience, raising of awareness, and integration of changing coastal and ocean conditions into California's state government policies, planning, and operations. Collaborating closely with other state agencies and supporting active coordination, OPC will catalyze, facilitate, and align agency action toward objectives and specific targets that demonstrate activity milestones. A key component of this work will be investment in multi-benefit projects that provide nature-based climate resilience. For example, properly designed MPAs can simultaneously sequester and store carbon, protect wildlife, and enhance adjacent fisheries, achieving co-benefits across multiple sectors while contributing to climate goals.[8]

Objective 1.1: Build Resiliency to Sea-Level Rise, Coastal Storms, Erosion and Flooding

Targets:

- **1.1.1 (cross-cutting – covers more than one goal area):** Ensure California's coast is resilient to at least 3.5 feet of sea-level rise by 2050, consistent with the statewide average projection for sea-level rise under a high emissions scenario and low risk aversion.[9]

Partners: OPR, CCC, BCDC, SCC, SLC, State Parks, Caltrans, SWRCB, CalOES, DWR

[6] https://www.noaa.gov/education/resource-collections/ocean-coasts-education-resources/ocean-acidification.
[7] https://www.climate.gov/news-features/understanding-climate/climate-change-ocean-heat-content.
[8] C.M. Roberts et al., Proc. Natl. Acad. Sci. U.S.A. 114, 167 (2017).
[9] http://www.opc.cav/webmaster/ftp/pdf/agenda_items/20180314/Item3_Exhibit-A_OPC_SLR_Guidance-rd3.pdf

Actions:

- Develop and adopt a California Resolution on Sea-Level Rise, outlining broad state commitments over the next ten years to completing coastal climate adaptation research, funding, policymaking, and pilot project implementation.
- Continue to lead a multiagency effort on sea-level rise that recognizes and acts on the urgency of this issue (including developing recommended policies, resolutions, actions and projects), the breadth of its impact, and the severity of anticipated harm.
- Fund and promote nature-based infrastructure adaptation measures and projects, including living shorelines, eelgrass beds, wetland and beach restoration, and other adaptation strategies such as managed retreat, where feasible.

- **1.1.2:** In conjunction with ongoing efforts, develop a site-specific infrastructure resiliency plan focused on state roads, wastewater treatment plants, water supply facilities, ports, and power plants by 2023.

  Partners: OPR, CCC, BCDC, SCC, SLC, State Parks, Caltrans, SWRCB, CalOES, DWR

  Actions:

  - Adopt an OPC Infrastructure Resiliency Resolution aligned with existing efforts that sets out a proactive approach to sea-level rise planning for state properties, facilities, and investments and other key infrastructure elements, and that prioritizes natural infrastructure solutions and regional coordination.
  - Prioritize development of a dependable, adequate source of state funding for planning grants, technical assistance, and project implementation support for state and local governments and non-profits leading on sea-level rise response.
- **1.1.3 (cross-cutting):** Inventory, characterize and prioritize remediation for toxic sites vulnerable to sea-level rise by 2022.

  Partners: OPR, CCC, BCDC, SCC, SLC, DTSC, Caltrans, SWRCB
- **1.1.4:** Identify pilot projects across the state that demonstrate the efficacy of various sea-level rise and extreme event adaptation strategies by 2021 and begin project implementation immediately thereafter, consistent with existing laws and policies.

  Partners: OPR, CCC, BCDC, SCC, SLC, State Parks, Caltrans, SWRCB
- **1.1.5:** Build on existing planning efforts to ensure adoption of a requirement that, at a minimum, all coastal counties will develop a coastal resilience action plan or element by 2023. Develop template and minimum standards for the coastal resiliency plan or element by 2021.

  Partners: CCC, OPR, BCDC, CalOES, SCC

Actions:

- Aid local governments in completing or updating Local Coastal Programs to integrate sea-level rise and other climate impacts into local planning, consistent with the California Coastal Act.

- **1.1.6:** Update the State of California's Sea-Level Rise Guidance every five years to incorporate best available science and projections.

Partners: CCC, BCDC, SCC, DSC, SLC, State Parks

- **1.1.7 (cross-cutting):** Work with partners to ensure an additional 10,000 acres of coastal wetlands[10] will be protected, restored or created by 2025, and that acreage of coastal wetlands in California is increased by 20% by 2030 and 50% by 2040.

Partners: CCC, BCDC, SCC, DSC, DFW

Actions:

- With partners, develop a wetland action plan that outlines how to meet protection, restoration and creation targets by 2022.
- Develop a standardized approach for optimizing wetland climate resilience, carbon sequestration, flood control, and biodiversity benefits by 2022.

Objective 1.2: Minimize Causes and Impacts of Ocean Acidification and Hypoxia

Targets:

- **1.2.1 (cross-cutting):** Advance state efforts to secure adoption of regulations establishing water quality objectives for ocean acidification and hypoxia that includes, but is not limited to, publicly owner treatment works, stormwater, and non-point source pollution, by 2025, with scientific analysis of the relationship between nutrient inputs and acidification hot spots complete by 2022.

Partners: SWRCB, RWQCBs, ARB

Actions:

- Provide scientific guidance to the State Water Resources Control Board to inform new nutrient loading standards that minimize biological and chemical impacts including ocean acidification, hypoxia, and harmful algal blooms.

[10] The wetland targets were developed based on extensive consultation with partnering agencies and review of numerous state and NGO wetland planning documents.

- Fund research and monitoring to assess changes in chemical and biological ocean conditions caused by the absorption of airborne emissions, including carbon dioxide.

- **1.2.3 (cross-cutting):** Establish a target date for phasing out coastal sewage discharge into the ocean by 2022. Work with partners to achieve 80-100% coastal wastewater recycling by 2040.

Partners: SWRCB, RWQBCs

- **1.2.4 (cross-cutting):** Ensure implementation of California's Ocean Acidification Action Plan by 2023.

Partners: CDFW, FGC, SWRCB, RWQCBs, CCC, SCC, BCDC

Objective 1.3: Improve Understanding of Climate Impacts on California's Coast and Ocean

Targets:

- **1.3.1(cross-cutting):** Identify and continue to fund needed climate-related research, with summary reports issued in 2022 and 2025.

Partners: SWRCB, CDFW, SCC, SLC, FGC, BCDC, CCC

Actions:

- Research and assess current and future impacts to California's ecosystems, species, communities, cultural resources, and economies due to climate change and changing ocean conditions.
- Invest in long-term climate monitoring, modeling, and mapping of data at both the statewide and regional scales, to better reduce or mitigate climate change impacts.
- Better quantify the evolving role of aquatic vegetation in mitigating ocean acidification and storing carbon;
- Map current inventory of and projected future habitat space for seagrass meadows and kelp forests along the California coast; identify data gaps and set targets for restoration as needed.

Objective 1.4: Understand the Role of California's Marine Protected Areas in Conferring Climate Resilience

- **1.4.1 (cross-cutting):** Release scientific report summarizing the ability of California's marine protected areas to provide ecosystem resilience to climate change impacts by 2020 and begin funding identified data gaps in 2021.

Partners: CDFW, FGC

GOAL TWO: ADVANCE EQUITY ACROSS OCEAN AND COASTAL POLICIES AND ACTIONS

The California Constitution, the Coastal Act and the McActeer-Petris Act guarantee the public's right to access the coast and bay shoreline. However, ongoing direct and indirect barriers to access, combined with rising sea levels and impacts to biodiversity and ecosystem health, continue to prevent the public from enjoyment of this world-renowned expanse of ocean, beach, forests, and wetlands.

Equitable coastal and ocean access also includes access to decision-making around management of our shared coast and ocean. Tribal communities have been exemplary stewards of California's coastal resources for thousands of years and the state has much to learn from their experience and traditional knowledge. California is committed to actively engaging with tribes, underserved[11] and frontline communities to ensure that our work benefits all Californians. The state prioritizes accessibility and inclusiveness in engagement, including through policy and funding opportunities for disproportionately impacted or historically disenfranchised communities.

Finally, equity spans both human and ecological systems. California recognizes the intrinsic value of coastal and ocean ecosystems and species, rather than their characterization as simply a "resource" for human use. In active collaboration and coordination with other state agencies, OPC seeks to advance scientific research, policies, and restoration projects that reflect the interdependence of people and natural systems as a shared community.

Objective 2.1: Enhance Engagement with Tribes

Targets:

Partners: OPR, CCC, BCDC, SCC, SLC, Caltrans, CDFW, FGC, State Parks

- **2.1.1(cross-cutting):** Develop and begin implementing strategies for effectively engaging and partnering with California's Tribes & Tribal Governments on ocean and coastal resource protection, access, policy and management by 2021.

[11] Underserved communities are inclusive of disadvantaged communities defined in California Water Code Section 79505.5 as "a community with an annual median household income that is less than 80% of the statewide median household income."

Actions:

- Increase meaningful and equitable collaboration with California's tribal governments and tribal communities, including through development and adoption of a Tribal Engagement Strategy.
- Support coastal and ocean access for tribes to enhance connections to their ancestral lands and waters.
- Support sea-level rise vulnerability assessments of tribal resources.
- Develop and implement a tribal ocean and coastal monitoring program based on priorities shared between the state and California's Tribes.
- Develop and implement a trusted pathway for the consideration of Indigenous Traditional Knowledge/Traditional Ecological Knowledge in ocean and coastal management decisions.
- Partner with coastal tribal communities to ensure sensitive or sacred areas are protected from potentially deleterious access and use by the public
- Provide grant technical assistance to tribes.

Objective 2.2: Enhance Engagement with Underserved Communities

- **2.2.1 (cross-cutting):** Ensure development and adoption by 2021 an Equity Plan that includes but is not limited to equitable convenient and affordable access to coastal natural resources and access and engagement in coastal and marine policymaking.

Partners: OPR, CCC, BCDC, SCC, SLC, State Parks, Caltrans, SWRCB, CEC

- **2.2.2(cross-cutting):** Develop and begin implementing strategies for effectively engaging and partnering with underserved communities on ocean and coastal resource protection, access, policy and management by 2021.

Partners: OPR, CCC, BCDC, SCC, SLC, State Parks, Caltrans, SWRCB

  - Identify and implement actions to assist frontline and underserved communities in addressing the impacts of climate change, including sea-level rise and coastal flooding.
  - Translate and communicate information about climate change risks, vulnerabilities, and potential interventions to underserved communities to facilitate needed local action to improve adaptation and resiliency.
  - Support projects that directly benefit underserved communities, including workforce training in funded projects.

- Develop a funding approach to ensure that underserved communities receive an equitable proportion of funding for habitat restoration and protection projects by 2020 that will include a grant technical assistance component.
- Provide grant technical assistance to underserved communities.

Objective 2.3 Improve Coastal Access

Targets:

- **2.3.1:** With leadership from SCC and CCC, develop a "Coastal Access for All" Plan that ensures equitable public access to and along the ocean by 2025, and that includes specific, measurable targets for beaches, physical trails and access points, education, transportation, and recreational opportunities.

  Partners: CCC, BCDC, SCC, State Parks, SLC

  Actions:
  - Partner with relevant agencies on a coordinated approach to ensuring equitable public access to the coast, including adoption and implementation of low-cost or free transportation, reduced cost accommodations, and free recreational and educational programming.
  - Support completion of the California Coastal Trail, through grants and technical assistance.

Objective 2.4: Enhance Healthy Human Use of the Coast and Ocean

Targets:

- **2.4.1 (cross-cutting):** Through the use of public education and management, eliminate involuntary human health risks from unknowing consumption of locally caught contaminated seafood by 2025.

  Partners: SWRCB, RWQCBs, CDFW, FGC, DPH, OEHHA,

  Actions:
  - Coordinate with fishermen, agencies, and scientists to minimize the impacts of harmful algal blooms and ensure effective seafood testing and timely and effective public health notifications.
- **2.4.2(cross-cutting):** Identify and reduce the ecological and human health risks posed by emerging contaminants that threaten coastal watershed, estuarine and ocean water quality.

  Partners: SWRCB, RWQCBs, CDFW

Actions:

- Fund scientific research to identify sources, pathways, composition, ambient concentrations, and potential human and ecological health impacts of emerging contaminants in marine, coastal, and estuarine waters.
- Advise the Governor and Legislature of regulatory gaps that should be addressed to minimize water quality and marine ecosystem impacts from emerging contaminants.

- **2.4.3(cross-cutting):** Ensure all California beaches receive straight A's on the Beach Report Card (fecal indicator bacteria densities) between April 1 – October 31 by 2025.

Partners: SWRCB, RWQCBs

Actions:

- Partner with the State Water Resources Control Board on their efforts with the research community, Regional Water Boards, the Beach Water Quality Working Group, and the NGO community to initiate and complete critical research, share and agree on effective beach management and public health notification approaches, and identify and abate sources of fecal indicator bacteria to beaches that do not make the grade.

Objective 2.5: Advance "Healthy Oceans" Policy and Science

Targets:

- **2.5.1 (cross-cutting):** Develop a shared state definition of "healthy oceans" grounded in ecosystem-based science intrinsic value of ecosystems and species by 2023. This will be utilized as part of the State of the Coast and Oceans Report Card completed in 2025 (see target 3.6.1).

Partners: SWRCB, RWQCBs, CDFW, SCC, FGC, SLC, CCC, BCDC

GOAL THREE: ENHANCE COASTAL AND MARINE BIODIVERSITY

California's iconic coastal and marine ecosystems inspire a sense of wonder and provide food, cultural opportunities and recreation to tens of millions of Californians. Through collaborative leadership, strategic investments, and policy development, OPC is committed to safeguarding our coastal and underwater ecosystems, habitats and biodiversity.

California has been a world leader in protecting these invaluable ecosystems. For example, the state's unique and globally significant network of 124 marine protected areas (MPAs) have been designed to enhance biodiversity and fisheries sustainability, and by protecting marine life and

habitats in 16% of the state's marine waters. The state supports coastal and marine habitat restoration, which helps preserve delicate ecological balances, increases climate resilience, and stewards sensitive fish nurseries.

California will continue to advance the sustainability of its marine fisheries and ensure biodiverse fish populations through science-based, collaborative management. Advancing the long-term sustainability of these fisheries offers co-benefits of protecting marine ecosystems, port communities, and coastal economies, particularly in the face of a changing climate.

Coastal and marine biodiversity also depends on clean water. Plastic pollution, harmful algal blooms, nutrient runoff, chemical pollutants, and marine invasive species harm ecosystems and species, and trigger significant health and economic costs for Californians, including costs related to litter cleanup, contaminated beaches, and fisheries closures. California recognizes the connection between our actions on land and the vitality of our ocean, and the state acts to support significant reduction of our trail of pollution that leads to the sea.

Objective 3.1: Protect and Restore Coastal and Marine Ecosystems

Targets:

- **3.1.1:** With partners, complete ten-year assessment of MPA performance (required adaptive management review), including future monitoring and management recommendations by 2022, with implementation of those recommendations starting in 2023.

  Partners: CDFW, FGC, SWRCB, State Parks, CCC, SLC

  Actions:
  - Fund and manage statewide ecological and socioeconomic monitoring of the MPA network, in preparation for the ten-year MPA management review in 2022.
  - Identify and fund cost-effective strategies to continue MPA monitoring beyond 2022.
  - Develop and implement effective, consistent, and precautionary policies for activities in MPAs not explicitly covered by existing regulations.
  - Ensure long-term MPA monitoring and performance evaluations are placed in the context of changing ocean conditions.
  - Mitigate the impacts of power plants using once-through cooling technology by funding projects that increase marine life associated with MPAs.
  - Support enforcement needs locally and statewide to ensure effective protection and maximize ecological benefits conferred by MPAs.

- **3.1.2:** Add California's MPA network to the International Union for Conservation of Nature Green List of Protected and Conserved Areas by 2020; showcase this global recognition at the United Nations Convention on Biological Diversity Conference (COP 15) in late 2020.

Partners: CDFW, FGC,

- **3.1.3 (cross-cutting):** Develop an action plan for addressing rocky intertidal and beach habitat loss due to sea-level rise by 2023.

Partners: CDFW, FGC, CCC, BCDC, SCC, State Parks

Actions:

  - Identify the most endangered rocky intertidal habitats and beaches by completing a statewide mapping project of these habitats at 2-meter (or better) resolution by 2022.
  - Develop robust approach for predicting multi-scale climate-driven changes in rocky intertidal and beach ecosystems, including species range shifts, by 2023.
  - Develop a Beach Resiliency Plan by 2022, in coordination with existing efforts.

- **3.1.4 (cross-cutting):** Work with partners to preserve existing 15,000 acres of seagrass beds and create an additional 1,000 acres by 2025.

Partners: SCC, CDFW

- **3.1.5(cross-cutting):** Based on the California Natural Resources Agency (CNRA) and CalEPA's 2002 Report to the legislature, "Addressing the Need to Protect California's Watersheds", develop a state watershed policy with updated principles by 2021. The policy and principles will be routinely utilized in watershed and coastal management (including planning, policy setting, resource allocation, and project development), by 2022.

Partners: SCC, CDFW, CCC, BCDC, State Parks, Caltrans, SWRCB, DWR, DSC

Actions:

  - Fund coastal habitat restoration projects, including those that support anadromous fish, that provide multi-benefits.
  - Promote policies that facilitate and increase the scale of coastal habitat restoration and conservation, including ecosystems across the land-sea interface, such as dunes and coastal bluffs.
  - Prioritize habitat restoration projects designed to account for sea-level rise projections and able to adapt to sea-level rise through natural sediment accretion processes.
  - Fund research and projects that address critical coastal watershed pollution problems, such as the Tijuana River, that have widespread impacts on public trust lands, resources, uses, and values such as impaired environmental quality and habitat destruction,

reduced public access, threats to public health and safety, and reduced recreational opportunities.

- **3.1.6 (cross-cutting):** Increase opportunities for the beneficial reuse of sediment along the coast and in San Francisco Bay and Estuary.

  Partners: CCC, BCDC, SCC, SLC, State Parks, Caltrans, SWRCB, OPR, DSC

  Actions:
  - o Fund coastal habitat restoration projects (*e.g.*, beaches, wetlands) that incorporate the environmentally beneficial reuse of sand and other sediment.
  - o Support the federal-state Coastal Sediment Management Workgroup efforts to implement the California Sediment Master Plan and regional approaches to coastal sediment management.
  - o Work with partners and the California Congressional Delegation on federal Water Resources Development Act reauthorizations to include language that promotes the beneficial reuse of sediment from U.S. Army Corps dredging projects and provides funding for coastal restoration projects.
  - o Develop potential amendments to CEQA guidelines to include consideration of impacts to coastal sand and sediment supply for all projects and activities within the coastal zone and coastal watersheds.
  - o Work with local, state and federal agencies to develop guidelines to ensure that beach replenishment be considered and utilized as part of sediment removal efforts for debris basins and dams, as appropriate.

Objective 3.2: Restore and Protect Kelp Ecosystems

Targets:

- **3.2.1:** Develop and begin implementation of statewide kelp forest research and restoration plan by 2020.

  Partners: CDFW, FGC

  Actions:
  - o Fund research and monitoring to investigate critical knowledge gaps regarding kelp forest ecosystem protection and recovery.
  - o Support and coordinate local science projects and volunteer restoration efforts.
  - o Develop a cost-effective and robust strategy to map the current extent of kelp forests.
  - o Develop a state policy for kelp management with the California Department of Fish and Wildlife and California Fish and Game Commission.

- Fund science-based pilot projects to explore kelp forest ecosystem restoration and management approaches.

Objective 3.3: Support Sustainable Marine Fisheries and Thriving Fish Populations

Targets:

- **3.3.1(cross-cutting):** Use long-term MPA monitoring data to assess the effects of protected areas on fisheries and integrate MPA data into fisheries management consistent with the Marine Life Management Act (MLMA) by 2024.

  Partners: CDFW, CFGC

- **3.3.2:** Implement scaled management (*e.g.,* Enhanced Status Reports, Fishery Management Plans) as described in the MLMA Master Plan for priority species by 2024.

  Partners: CDFW, FGC

  Actions:
  - Fund scientific studies to inform fisheries and fish population management, including population dynamics, the effects of changing ocean conditions, and socioeconomic considerations.
  - Coordinate with state agencies and stakeholders to implement the MLMA Master Plan for Fisheries.
  - Fund science-based innovative tools and approaches to advance the MLMA Master Plan.
  - Fund scientific research on the ecological and socioeconomic impacts of climate change on priority state-managed fisheries by 2023.
- **3.3.3:** Develop rapid response capabilities to unanticipated biodiversity/fisheries emergencies (such as sea star wasting disease, harmful algal blooms, kelp forest collapse) by 2023.

  Partners: CDFW, FGC
- **3.3.4 (cross-cutting):** Develop adaptive management approaches to effectively respond to climate-caused shifts in fisheries by 2023.

  Partners: CDFW, FGC

  Actions:
  - Support science-based experimental fishery efforts in partnership with members of California's fishing communities and research entities to identify innovative approaches to fishery management (*e.g.* box crab emerging fishery).
- **3.3.5:** Develop a statewide whale and sea turtle protection plan by 2022 with a Vision Zero target of zero mortality. As a

  Partners: CDFW, FGC

component of this overall plan, develop and initiate a funding strategy to reduce the risk of entanglement in California fishing gear by 2020.

Actions:

- Collaborate with the California Dungeness Crab Fishing Gear Working Group to reduce the risk of whale entanglement in California fishing gear; fund priority projects recommended by the Working Group to address data gaps and enhance results.
- Provide funding for the state's drift gillnet transition program (consistent with SB 1017) and work towards the target of elimination of large mesh drift gillnets off the California coast by 2024.
- Support research and analysis of impacts of whale strikes from the shipping industry and other sources of whale and turtle mortality, including noise and marine debris from land-based sources.

Objective 3.4: Improve Coastal and Ocean Water Quality

Targets:

- **3.4.1:** Strengthen water quality protection in MPAs equivalent to Areas of Special Biological Significance or State Water Quality Protection Areas by 2023.

Partners: SWRCB, CDFW, FGC

- **3.4.2:** Work to achieve zero trash entering state waters by 2030 consistent with the State Water Resources Control Board's final compliance deadline with the trash amendments.

Partners: SWRCB, RWQCBs,

Actions:

- Adopt an OPC Resolution to ban expanded polystyrene in food serviceware and packaging by 2020; ban implemented by 2022.
- Work to change state purchasing and service contracts to require reusable food serviceware whenever feasible and reduce the state's reliance on single-use food serviceware by 2021.
- Catalyze innovation in products, business practices, and policies through competitive funding opportunities, emphasizing scalability and innovation, and targeting source reduction, microplastics, and abandoned fishing gear.[12]

[12] http://www.opc.ca.gov/webmaster/_media_library/2018/06/2018_CA_OceanLitterStrategy.pdf.

- With the National Oceanic and Atmospheric Administration's Marine Debris Program, facilitate the implementation of the California Ocean Litter Strategy.

- **3.4.3:** Advance development of a baseline of plastic pollution monitoring data and a standardized approach to track the state's progress in reducing plastic pollution by 2023.

Partners: SWRCB, RWQCBs

- **3.4.4:** Develop a statewide microplastics strategy by 2021 with implementation of the recommendations starting in 2022.

Partners: SWRCB, RWQCBs

Actions:

- Fund scientific research to assess microplastics risks, sources, and pathways and to develop standardized monitoring methods.
- Develop and adopt a California Resolution on Microplastics by 2021.
- Coordinate with agencies and stakeholders to implement solutions, consistent with this Resolution.

- **3.4.5 (cross-cutting):** Support modernization of the harmful algal bloom notification network to provide real time data by 2022 and predictions by 2024.

Partners: SWRCB, RWQCBs, CDFW, DPH, OEHHA

Actions:

- Fund monitoring and research to increase understanding of the impacts of harmful algal blooms and improve the state's ability to prevent, predict and respond to events.
- Collaborate with California's Coastal Ocean Observing Systems to communicate harmful algal bloom conditions in real time.

- **3.4.6:** Develop a California-specific early detection and response system for marine organism diseases by 2023.

Partners: SWRCB, RWQCBs, CDFW, FGC

- **3.4.7:** Update the state's Desalination Policy by 2021 to address both ocean and coastal groundwater desalination.

Partners: SWRCB, RWQCBs

Objective 3.5: Control and Eradicate Marine Invasive Species

Targets:

- **3.5.1:** Develop a recommendation to create a statewide early detection and rapid response program to eradicate or control marine invasive and related inland species when first detected by 2023.

Partners: SWRCB, SLC, CDFW

Actions:

- Invest in research, prevention and response strategies that minimize introduction, improve detection, increase effectiveness in combatting marine invasive species, and eradicate marine invasive species where possible (*e.g.,* invasive Spartina in San Francisco Bay).

- **3.5.2:** Ensure development of statewide Waste Discharge Requirements to allow in-water cleaning of large vessels to prevent the introduction of non-native species by 2025, consistent with protection of water quality and U.S. EPA regulations.

Partners: SWRCB, SLC

Objective 3.6: Accelerate Collaborative Accountability

Partners: OPR, CCC, BCDC, SCC, Caltrans, CEC, SLC, State Parks, SWRCB, RWQCBs, CDFW, CFGC, SLC

- **3.6.1 (cross-cutting):** Create a California State of the Coast and Ocean Report Card by 2025.
- **3.6.2:** Integrate oceans and coasts into the work of the California Biodiversity Initiative and California Biodiversity Council by 2021.

Partners: CDFW, CDFA

- **3.6.3:** Work with OPR and other state agencies to integrate coasts and oceans into California's 5th Climate Assessment.

Partners: OPR, CNRA

GOAL FOUR: IMPROVE OCEAN HEALTH THROUGH A BLUE ECONOMY

Focused support for a new "blue economy" can create powerful, long-term solutions to the escalating challenges faced by human and ecological communities. The ocean economy represents 2%, of California's GDP, spanning tourism, recreation, commercial and recreational fishing, shipping, and other industries, and with aquaculture and offshore renewable energy becoming growing sectors.

For example, blue economy strategies can accelerate California's policy to make the state carbon neutral by 2045 through development of coastal and offshore wind systems, decommissioning of offshore oil and gas rigs, and decarbonization of ports and eventually shipping fleets, as

recommended by international leaders.[13] Further, sustainable[14] marine aquaculture can support coastal livelihoods, provide a local, low-carbon food source for California communities, help buffer effects of ocean acidification, and improve local water quality. Through close agency collaboration and active support for agency coordination, California will advance a blue economy that nets positive ocean health results.

Objective 4.1: Advance Sustainable Seafood and Thriving Fishing Communities

Targets:

- **4.1.1:** Develop a statewide sustainable seafood program that includes traceability (local, domestic and import), improving local markets, impacts on biodiversity (including habitat loss or damage), reducing bycatch, pollution and infectious disease by 2025.

  Partners: CDFW, FGC, CDFA, OEHHA, SWRCB

- **4.1.2 (cross-cutting):** Implement pilot projects statewide to increase fishing communities' resiliency and adaptation to climate impacts by 2025.

  Partners: CDFW, FGC, CCC, SLC, State Parks

  Actions:

  - Assess and synthesize projected climate change impacts on working harbors and fisheries-dependent infrastructure statewide, to support development of pilot projects.
  - Develop a comprehensive strategy to support adaptation of fishing ports, harbors and communities to impacts from changing ocean conditions, including innovative financing.
  - Fund projects to adapt shoreside fisheries infrastructure to climate change impacts.
  - Fund pilot projects that minimize negative impacts on the marine environment and ecosystems, such as new gear types or technologies.
  - Continue to support the California Fisheries Fund revolving loan fund, which provides loans to California fishermen, seafood businesses, ports and communities to support sustainable commercial fishing.

[13] http://dev-oceanpanel.pantheonsite.io/sites/default/files/2019-09/19_HLP_Report_Ocean_Solution_Climate_Change_final.pdf.

[14] "Sustainable" here refers to aquaculture that presents only de minimus potential impacts, if any, to marine habitats and species.

Objective 4.2: Promote Sustainable Aquaculture

Targets:

Partners: CDFW, FGC, CCC, SLC

- **4.2.1:** With the California Department of Fish and Wildlife and others, develop a statewide aquaculture action plan focused on marine algae and shellfish and land-based/recirculating tank operations of marine algae, shellfish and finfish by 2023. The plan should identify areas of opportunity and avoidance to minimize impacts to habitat, biodiversity and wild fisheries and should include minimum project criteria, including best practices for eliminating detrimental environmental impacts.

Actions:

- Fund scientific studies to advance understanding of the impacts of, and opportunities for, aquaculture in state marine waters.
- Support the development and piloting of innovative tools and approaches to inform sustainable aquaculture management in California.

Objective 4.3: Evaluate Oil Platform Decommissioning

Targets:

Partners: CDFW, FGC, SWRCB, RWQCBs, SLC, CEC, CCC

4.3.1 (cross-cutting): With partners, fully or partially remove and decommission at least one offshore oil platform by 2030.

Actions:

- Develop and fund studies and projects that investigate the effect of decommissioning and reuse of oil and gas platforms on the marine environment.
- Coordinate with State Lands Commission to identify lessons learned and recommendations from ongoing decommissioning efforts related to Platform Holly and Lease 421 facilities.

Objective 4.4: Guide Sustainable Renewable Energy Projects

Targets:

Partners: CDFW, FGC, SWRCB, RWQCBs, CEC, SLC, CCC

- **4.4.1 (cross-cutting):** Ensure development of a commercial scale offshore wind project in California that minimizes impacts on marine biodiversity or habitat, currents and upwelling,

fishing, cultural resources, navigation, aesthetic/visual, and military operations by 2026.

Actions:

- With partners, develop statewide policy to facilitate responsible implementation of projects and develop criteria for offshore wind projects by 2024.
- Fund research and baseline data collection to assess the environmental impacts of potential offshore wind projects.

Objective 4.5: Decarbonize Ports and Shipping

Targets:

- **4.5.1 (cross-cutting):** Work to identify air pollution sources that contribute to greenhouse gas hot spots in and around ports by 2021, and by 2023 determine date for California's ports to be decarbonized.

Partners: ARB, SLC

CONCLUSION

California's coastline and marine resources are second to none. And state agency leadership and stewardship – driven by implementation of groundbreaking laws - serves as a global model for ocean conservation. However, despite California's tremendous efforts to protect our coast and ocean, the threats of climate change, pollution and habitat loss are growing and have already put our precious coastal resources at risk.

This Strategic Plan for California's coast and ocean is bold because it must be. Climate change impacts are contributing to devastating ecosystem collapse, as seen in North Coast kelp forests, and the specter of the impacts of sea-level rise and ocean acidification on our beaches, bays. subtidal marine ecosystems, tidepools, and wetlands is daunting. The need for immediate strategic action to stem these threats, build in coastal resiliency, and provide access and equity to the coast and ocean for all Californians has never been greater. Implementation of this Strategic Plan will drive California toward achieving the vision of a healthy, resilient, productive coast and ocean, providing benefits to current and future generations.

APPENDIX 1: GOALS, TARGETS, ACTIONS, AND POTENTIAL COLLABORATORS

TARGETS	ACTIONS	POTENTIAL GOVERNMENT ACTORS
SAFEGUARD COASTAL AND MARINE ECOSYSTEMS AND COMMUNITIES IN THE FACE OF CLIMATE CHANGE		
Obj. 1.1: Build Resiliency to Sea-Level Rise, Coastal Storms, and Flooding		
1.1.1: Ensure California coast is resilient to 3.5 feet of sea-level rise by 2050	● Develop and adopt a California Resolution on Sea-Level Rise, outlining broad state commitments over the next ten years to completing coastal climate adaptation research, funding, policymaking, and pilot project implementation. ● Continue to lead a multiagency effort on sea-level rise that recognizes and acts on the urgency of this issue (including developing recommended policies, resolutions, actions and projects), the breadth of its impact, and the severity of anticipated harm. ● Fund and promote nature-based infrastructure adaptation measures and projects, including living shorelines, eelgrass beds, wetland and beach restoration, and other adaptation strategies such as managed retreat, where feasible.	OPR, CCC, BCDC, SCC, SLC, State Parks, Caltrans, SWRCB, CalOES, DWR, DSC
1.1.2: In conjunction with ongoing efforts, develop a site-specific infrastructure resiliency plan focused on state roads, wastewater treatment plants, water supply facilities, ports, and power plants by 2023.	• Adopt an OPC Infrastructure Resiliency Resolution aligned with existing efforts that sets out a proactive approach to sea-level rise planning for state properties, facilities, and investments and other key infrastructure elements, and that prioritizes natural infrastructure solutions and regional coordination. • Prioritize development of a dependable, adequate source of state funding for planning grants, technical assistance, and project implementation support for state and local governments and non-profits leading on sea-level rise response.	OPR, CCC, BCDC, SCC, SLC, State Parks, Caltrans, SWRCB, CalOES, DWR, DSC

1.1.3: Inventory, characterize and prioritize remediation for toxic sites vulnerable to sea-level rise by 2022.		OPR, CCC, BCDC, SCC, SLC, DTSC, Caltrans, SWRCB
1.1.4: Identify pilot projects across the state that demonstrate the efficacy of various sea-level rise adaptation strategies by 2021 and begin project implementation immediately thereafter, consistent with existing laws and policies.		OPR, CCC, BCDC, SCC, SLC, State Parks, Caltrans, SWRCB
1.1.5: Build on existing planning efforts to ensure adoption of a requirement that, at a minimum, all coastal counties will develop a coastal resilience action plan or element by 2023. Develop template and minimum standards for the coastal resiliency plan or element by 2021.	● Aid local governments in completing or updating Local Coastal Programs to integrate sea-level rise and other climate impacts into local planning, consistent with the California Coastal Act.	CCC, OPR, BCDC, CalOES, SCC
1.1.6: Update the State of California's Sea-Level Rise Guidance every five years to incorporate best available science and projections.		CCC, BCDC, SCC, SLC, DSC, State Parks
1.1.7: Work with partners to ensure an additional 10,000 acres of coastal wetlands will be protected, restored or created by 2025, and that acreage of coastal wetlands in California is increased by 20% by 2030 and 50% by 2040.	● With partners, develop a wetland action plan that outlines how to meet protection, restoration and creation targets by 2022. ● Develop a standardized approach for optimizing wetland climate resilience, carbon sequestration, flood control, and biodiversity benefits by 2022.	CCC, BCDC, SCC, CDFW, DSC
Objective 1.2: Stem Ocean Acidification and Hypoxia		
1.2.1: Advance state efforts to secure adoption of regulations establishing water quality objectives for ocean acidification and hypoxia that includes, but is not limited to, publicly owner treatment works, stormwater, and non-	● Provide scientific guidance to the State Water Resources Control Board to inform new nutrient loading standards that minimize biological and chemical impacts including ocean acidification, hypoxia, and harmful algal blooms. ● Fund research and monitoring to assess changes in chemical and biological ocean	SWRCB, RWQCBs, ARB

point source pollution, by 2025, with scientific analysis of the relationship between nutrient inputs and acidification hot spots complete by 2022.	conditions caused by the absorption of airborne emissions, including carbon dioxide.	
1.2.3: Establish a target date for phasing out coastal sewage discharge into the ocean by 2022. Work with partners to achieve 80-100% coastal wastewater recycling by 2040.		SWRCB, RWQCBs
1.2.4: Ensure implementation of California's Ocean Acidification Action Plan by 2023.		CDFW, FGC, SWRCB, RWQCBs, CCC, SCC, BCDC
Objective 1.3: Improve Understanding of Climate Impacts on California's Coast and Ocean		
1.3.1: Identify and continue to fund needed climate-related research, with summary reports issued by 2025.	● Research and assess current and future impacts to California's ecosystems, species, communities, cultural resources, and economies due to climate change and changes in ocean chemistry. ● Invest in long-term climate monitoring, modeling, and mapping of data at both the statewide and regional scales, to better reduce or mitigate climate change impacts. ● Better quantify the evolving role of aquatic vegetation in mitigating ocean acidification and storing carbon. ● Map current inventory of and projected future habitat space for seagrass meadows and kelp forests along the California coast; identify data gaps and set targets for restoration as needed.	SWRCB, CDFW, SCC, SLC, FGC, BCDC, CCC
Obj. 1.4: Understand the Role of California's Marine Protected Areas in Conferring Climate Resilience		
1.4.1: Release scientific report summarizing the ability of California's marine protected areas to provide ecosystem resilience to climate change impacts by 2020 and begin		CDFW, FGC

funding identified data gaps in 2021.		
ADVANCE EQUITY ACROSS OCEAN AND COASTAL POLICIES AND ACTIONS		
Obj. 2.1: Enhance Engagement with Tribes		
2.1.1: Develop and begin implementing strategies for effectively engaging and partnering with California's Tribes & Tribal Governments in ocean and coastal management by 2021.	● Increase meaningful and equitable collaboration with California's tribal governments and tribal communities, including through development and adoption of a Tribal Engagement Strategy. ● Support coastal and ocean access for tribes to reconnect to their ancestral lands and waters. ● Support sea-level rise vulnerability assessments of tribal resources. ● Develop and implement a tribal ocean and coastal monitoring program based on priorities shared between the state and California's Tribes. ● Develop and implement a trusted pathway for the consideration of Indigenous Traditional Knowledge (ITK)/Traditional Ecological Knowledge (TEK) in ocean and coastal management decisions. ● Partner with coastal tribal communities to ensure sensitive or sacred areas are protected from potentially deleterious access by the public, in consideration of goal of ensuring continued or improved access to underserved. ● Provide grant technical assistance to tribes.	OPR, CCC, BCDC, SCC, Caltrans, CDFW, FGC, State Parks
Obj. 2.2: Enhance Engagement with Underserved Communities		
2.2.1: Ensure development and adoption by 2021 an Equity Plan that includes but is not limited to equitable convenient and affordable access to coastal natural resources and access and engagement in		OPR, CCC, BCDC, SCC, SLC, State Parks, Caltrans, SWRCB

coastal and marine policymaking.		
2.2.2 Develop and begin implementing strategies for effectively engaging and partnering with underserved communities on ocean and coastal resource protection, access, policy and management by 2021.	● Identify and implement actions to assist frontline and underserved communities in addressing the impacts of climate change, including sea-level rise and coastal flooding. ● Translate and communicate information about climate change risks, vulnerabilities, and potential interventions to underserved communities to facilitate needed local action to improve adaptation and resiliency. ● Support projects that directly benefit underserved communities, including workforce training in funded projects. ● Develop a funding approach to ensure that underserved communities receive an equitable proportion of funding for habitat restoration and protection projects by 2020 that will include a grant technical assistance component. ● Provide grant technical assistance to underserved communities.	OPR, CCC, BCDC, SCC, SLC, State Parks, Caltrans, SWRCB
Obj. 2.3: Improve Coastal Access		
2.3.1: With leadership from SCC and CCC, develop a "Coastal Access for All" Plan that ensures equitable public access to and along the ocean by 2025, and that includes specific, measurable targets for beaches, physical trails and access points, education, transportation, and recreational opportunities.	● Partner with relevant agencies on a coordinated approach to ensuring equitable public access to the coast, including adoption and implementation of low-cost or free transportation, reduced cost accommodations, and free recreational programming. ● Support completion of the California Coastal Trail, through grants and technical assistance.	CCC, BCDC, SCC, CA State Parks, SLC
Obj. 2.4: Enhance Healthy Human Use of the Coast and Ocean		
2.4.1: Through the use of public education and management, eliminate involuntary human health risk from unknowing consumption of locally caught contaminated seafood by 2025.	● Coordinate with fishermen, agencies, and scientists to minimize the impacts of harmful algal blooms and ensure effective seafood testing and public health notifications.	SWRCB, RWQCBs, CDFW, FGC, DPH, OEHHA
2.4.2: Identify and reduce the ecological and human health	● Fund scientific research to identify sources, pathways, composition, and potential	SWRCB, RWQCBs, CDFW

risks posed by emerging contaminants that threaten coastal watershed, estuarine and ocean water quality.	human and ecological health impacts of emerging contaminants in marine, coastal, and estuarine waters. ● Advise the Governor and Legislature of regulatory gaps that should be addressed to minimize water quality and marine ecosystem impacts from emerging contaminants.	
2.4.3: Ensure all California beaches receive straight A's on the Beach Report Card (fecal indicator bacteria densities) between April 1 – October 31 by 2025.	● Partner with the State Water Resources Control Board on their efforts with the research community, Regional Water Boards, the Beach Water Quality Working Group, and the NGO community to initiate and complete critical research, share and agree on effective beach management and public health notification approaches, and identify and abate sources of fecal indicator bacteria to beaches that do not make the grade.	SWRCB, RWQCBs
Obj. 2.5: Advance "Healthy Oceans" Policy and Science		
2.5.1: Develop a shared state definition of "healthy oceans" grounded in ecosystem-based science intrinsic value of ecosystems and species by 2023. This will be utilized as part of the State of the Coast and Oceans Report Card completed in 2024.		SWRCB, RWQCBs, CDFW, SCC, FGC, SLC, CCC, BCDC
ENHANCE COASTAL AND MARINE BIODIVERSITY		
Obj. 3.1: Protect and Restore Coastal and Marine Ecosystems		
3.1.1: With partners, complete ten-year assessment of MPA performance (required adaptive management review), including future monitoring and management recommendations by 2022, with implementation of those recommendations starting in 2023.	● Fund and manage statewide ecological and socioeconomic monitoring of the MPA network, in preparation for the ten-year MPA management review in 2022. ● Identify and fund cost-effective strategies to continue MPA monitoring beyond 2022. ● Develop and implement effective, consistent, and precautionary policies for activities in MPAs not explicitly covered by existing regulations. ● Ensure long-term MPA monitoring and performance evaluations are placed in the context of changing ocean conditions.	CDFW, FGC, SWRCB, State Parks, CCC, SLC

	● Mitigate the impacts of power plants using once-through cooling technology by funding projects that increase marine life associated with MPAs. ● Support enforcement needs locally and statewide to ensure effective protection and maximizing ecological benefits conferred by MPAs.	
3.1.2: Add California's MPA network to the International Union for Conservation of Nature Green List of Protected and Conserved Areas by 2020; showcase this global recognition at the United Nations Convention on Biological Diversity Conference (COP 15) in late 2020.		CDFW, FGC
3.1.3: Develop an action plan for addressing rocky intertidal and beach habitat loss due to SLR by 2023.	● Identify the most endangered rocky intertidal habitats and beaches by completing a statewide mapping project of these habitats at 2-meter (or better) resolution by 2022. ● Develop robust approach for predicting multi-scale climate-driven changes in rocky intertidal and beach ecosystems, including species range shifts, by 2023. ● Develop a Beach Resiliency Plan by 2022, in coordination with existing efforts.	CDFW, CFGC, CCC, BCDC, SCC, State Parks
3.1.4: Work with partners to preserve existing 15,000 acres of seagrass beds and create an additional 1000 acres by 2025.		SCC, CDFW
3.1.5: Based on CNRA and CalEPA's 2002 Report to the legislature, "Addressing the Need to Protect California's Watersheds", develop a state watershed policy with updated principles by 2021. The policy and principles will be routinely utilized in watershed and coastal management (including planning, policy setting, resource allocation, and project development), by 2022.	● Fund coastal habitat restoration projects, including habitats that support anadromous fish, that provide multi-benefits. ● Promote policies that facilitate and increase the scale of coastal habitat restoration and conservation, including ecosystems across the land-sea interface, such as dunes and coastal bluffs. ● Prioritize habitat restoration projects designed to account for sea-level rise projections and able to adapt to sea-level rise through natural sediment accretion processes.	SCC, CDFW, CCC, BCDC, State Parks, Caltrans, SWRCB, DFW, DSC

3.1.6: Increase opportunities for the beneficial reuse of sediment along the coast and in San Francisco Bay.	● Fund coastal habitat restoration projects (e.g., beaches, wetlands) that incorporate the environmentally beneficial reuse of sand and other sediment. ● Support the federal-state Coastal Sediment Management Workgroup efforts to implement the California Sediment Master Plan and regional approaches to coastal sediment management. ● Work with partners and the California Congressional Delegation on federal Water Resources Development Act reauthorizations to include language that promotes the beneficial reuse of sediment from U.S. Army Corps dredging projects and provides funding for coastal restoration projects. ● Work with OPR and others to develop potential amendments to CEQA guidelines to include consideration of impacts to coastal sand and other sediment supply for all projects and activities within the coastal zone and coastal watersheds. ● Work with local, state and federal agencies to develop guidelines to ensure that beach replenishment be considered and utilized as part of sediment removal efforts for debris basins and dams, as appropriate.	OPR, CCC, BCDC, SCC, SLC, State Parks, Caltrans, SWRCB
Obj. 3.2: Restore and Protect Kelp Ecosystems		
3.2.1: Develop and begin implementation of statewide kelp forest research and restoration plan by 2020.	● Fund research and monitoring to investigate critical knowledge gaps regarding kelp forest ecosystem protection and recovery. ● Support and coordinate local science projects and volunteer restoration efforts. ● Develop a cost-effective and robust strategy to map the current extent of kelp forests. ● Develop a state policy for kelp management with the California Department of Fish and Wildlife and California Fish and Game Commission ● Fund science-based pilot projects to explore kelp forest ecosystem restoration and management approaches.	CDFW, FGC
Obj. 3.3: Support Sustainable Marine Fisheries and Thriving Fish Populations		

3.3.1: Use long-term MPA monitoring data to assess the effects of protected areas on fisheries and integrate MPA data into fisheries management consistent with the Marine Life Management Act by 2024.		CDFW, FGC
3.3.2: Implement scaled management (e.g., Enhanced Status Reports, Fishery Management Plans) as described in the MLMA Master Plan for priority species by 2024.	● Fund scientific studies to inform fisheries and fish population management, including population dynamics; the effects of changing ocean conditions, and socioeconomic considerations. ● Coordinate with state agencies and stakeholders to implement the Marine Life Management Act (MLMA) Master Plan for Fisheries. ● Fund science-based innovative tools and approaches to advance the MLMA Master Plan. ● Fund scientific research on the ecological and socioeconomic impacts of climate change on priority state-managed fisheries by 2023. ● Support public processes to facilitate stakeholder input and support.	CDFW, FGC
3.3.3: Develop rapid response capabilities to unanticipated biodiversity/fisheries emergencies (such as sea star wasting disease, harmful algal blooms, kelp forest collapse) by 2023.		CDFW, FGC
3.3.4: Develop adaptive management approaches to effectively respond to climate-caused shifts in fisheries by 2023.	● Support science-based experimental fishery efforts in partnership with members of California's fishing communities and research entities to explore innovative approaches to fishery management (*e.g*, box crab emerging fishery).	CDFW, FGC
3.3.5: Develop a statewide whale and sea turtle protection plan by 2022 with a target of zero mortality. As a component of this overall plan, develop and initiate a funding strategy to reduce the risk of entanglement in California fishing gear by 2020.	● Collaborate with the California Dungeness Crab Fishing Gear Working Group to reduce the risk of whale entanglement in California fishing gear; fund priority projects recommended by the Working Group to address data gaps and enhance results. ● Provide funding for the state's drift gillnet transition program and work towards the	CDFW, FGC

	target of elimination of large mesh drift gillnets off the California coast by 2024. ● Support research and analysis of impacts of whale strikes from the shipping industry and other sources of whale and turtle mortality, including noise and marine debris from land-based sources.	
Obj. 3.4: Improve Coastal and Ocean Water Quality		
3.4.1: Strengthen water quality protection in MPAs equivalent to Areas of Special Biological Significance or State Water Quality Protection Areas by 2023.		SWRCB, CDFW, FGC
3.4.2: Work to achieve zero trash entering state waters by 2030 (from the State Water Resources Control Board's final compliance deadline with the trash amendments).	● Adopt an OPC Resolution to ban expanded polystyrene in food serviceware and packaging by 2020; ban Implemented by 2022. ● Collaboratively work to change state purchasing and service contracts to require reusable food serviceware whenever feasible and reduce the state's reliance on single-use food serviceware by 2021. ● Collaboratively develop comprehensive waste management approaches, policies, and changes in state institutional purchasing to encourage reusable goods. ● Catalyze innovation in products, business practices, and policies through competitive funding opportunities, emphasizing scalability and innovation, and targeting source reduction, microplastics, and abandoned fishing gear. ● With the National Oceanic and Atmospheric Administration's Marine Debris Program, facilitate the implementation of the California Ocean Litter Strategy.	SWRCB, RWQCBs
3.4.3: Advance development of a baseline of plastic pollution monitoring data and a standardized approach to track the state's progress in reducing plastic pollution by 2023.		SWRCB, RWQCBs
3.4.4: Develop a statewide microplastics strategy by 2021 with implementation of the	● Fund scientific research to assess microplastics risks, sources, and pathways and to develop standardized monitoring methods.	SWRCB, RWQCBs

recommendations starting in 2022.	● Develop and adopt a California Resolution on Microplastics by 2021. ● Coordinate with agencies and stakeholders to implement solutions, consistent with this Resolution.	
3.4.5: Support modernization of the harmful algal bloom notification network to provide real time data by 2022 and predictions by 2024.	● Fund monitoring and research to increase understanding of the impacts of harmful algal blooms and improve the state's ability to prevent, predict and respond to events. ● Collaborate with California's Coastal Ocean Observing Systems to communicate harmful algal bloom conditions.	SWRCB, RWQCBs, CDFW, DPH, OEHHA
3.4.6: Develop a California-specific early detection and response system for marine organism diseases by 2023.		SWRCB, RWQCBs, CDFW, FGC
3.4.7: With the SWRCB, update the state's Desalination Policy by 2021, to address both ocean and coastal groundwater desalination.		SWRCB, RWQCBs
Obj. 3.5: Control and Eradicate Marine Invasive Species		
3.5.1: Develop a recommendation to create a statewide early detection and rapid response program to eradicate or control marine and related inland invasive species when first detected by 2023.	● Invest in research, prevention and response strategies that minimize introduction, improve detection, and increase effectiveness in combatting marine invasive species.	SWRCB, SLC, CDFW
3.5.2: Ensure development of statewide Waste Discharge Requirements to allow in-water cleaning of large vessels to prevent the introduction of non-native species by 2025, consistent with protection of water quality and U.S. EPA regulations.		SWRCB, SLC
Obj. 3.6: Accelerate Collaborative Accountability		
3.6.1: Create a California State of the Coast and Ocean Report Card by 2025.		OPR, CCC, BCDC, SCC, Caltrans, CEC, SLC, State Parks, SWRCB, RWQCBs, CDFW, CFGC, SLC
3.6.2: Integrate oceans and coasts into the work of the		CDFW, CDFA

California Biodiversity Initiative and California Biodiversity Council by 2021.		
3.6.3: Work with OPR, the California Natural Resources Agency and other state agencies to integrate coasts and oceans into California's 5th Climate Assessment.		OPR, CNRA
IMPROVE OCEAN HEALTH THROUGH A BLUE ECONOMY		
Obj. 4.1: Advance Sustainable Seafood and Thriving Fishing Communities		
4.1.1: Develop a statewide sustainable seafood program that includes traceability (local, domestic and import), improving local markets, impacts on biodiversity (including habitat loss or damage), reducing bycatch, pollution and infectious disease by 2025.		SWRCB, CDFW, CFGC, CDFA, OEHHA
4.1.2: Implement pilot projects statewide to increase fishing communities' resiliency and adaptation to climate impacts by 2025.	● Assess and synthesize projected climate change impacts on working harbors and fisheries-dependent infrastructure statewide, to support development of pilot projects. ● With the California Fish and Game Commission and other partners to develop a comprehensive strategy to support adaptation of fishing ports, harbors and communities to impacts from changing ocean conditions, including innovative financing. ● Fund projects to adapt shoreside fisheries infrastructure to climate change impacts. ● Fund pilot projects that minimize negative impacts on the marine environment, such as new gear types or technologies. ● Continue to support the California Fisheries Fund revolving loan fund, which provides loans to California fishermen, seafood businesses, ports and communities to support sustainable commercial fishing.	SCC, CDFW, FGC, CCC, SLC, State Parks

Obj. 4.2: Promote Sustainable Aquaculture		
4.2.1: Develop a statewide aquaculture action plan focused on marine algae and shellfish and land-based/recirculating tank operations of marine algae, shellfish and finfish by 2023. The plan should identify areas of opportunity and avoidance to minimize impacts to habitat, biodiversity and wild fisheries and should include minimum project criteria, including best practices for eliminating detrimental environmental impacts.	● Fund scientific studies to advance understanding of the impacts of, and opportunities for, aquaculture in state marine waters. ● Support the development and piloting of innovative tools and approaches to inform sustainable aquaculture management in California.	CDFW, FGC, CCC, SLC
Obj. 4.3: Evaluate Oil Platform Decommissioning		
4.3.1: With partners, fully or partially remove and decommission at least one offshore oil platform by 2030.	● Develop and fund studies and projects that investigate the effect of decommissioning and reuse of oil and gas platforms on the marine environment. ● Coordinate with State Lands Commission to identify lessons learned and recommendations from ongoing decommissioning efforts related to Platform Holly and Lease 421 facilities.	CDFW, CFGC, SWRCB, RWQCBs, SLC, CEC, CCC
Obj. 4.4: Guide Sustainable Renewable Energy Projects		
4.4.1: Ensure development of a commercial scale offshore wind project in California that minimizes impacts on marine biodiversity or habitat, currents and upwelling, fishing, cultural resources, navigation, aesthetic/visual, and military operations by 2026.	● With partners, develop statewide criteria for offshore wind projects by 2024.	CDFW, FGC, SWRCB, RWQCBs, CEC, SLC
Obj. 4.5: Decarbonize Ports and Shipping		
4.5.1: Work to identify air pollution sources that contribute to GHG hot spots in and around ports by 2021; by		ARB, SLC

2023 determine date for California's ports to be decarbonized.		

APPENDIX 2: PROPOSED DATES FOR TARGETS AND ACTIONS

DATE	TARGETS AND ACTIONS
2020	1.4.1: Release scientific report summarizing the ability of California's marine protected areas to provide ecosystem resilience to climate change impacts by 2020 and begin funding identified data gaps in 2021.
	3.1.2: Add California's MPA network to the International Union for Conservation of Nature Green List of Protected and Conserved Areas by 2020; showcase this global recognition at the United Nations Convention on Biological Diversity Conference (COP 15) in late 2020.
	3.2.1: Develop and begin implementation of statewide kelp forest research and restoration plan by 2020.
	3.3.5: Develop a statewide whale and sea turtle protection plan by 2022 with a target of zero mortality. As a component of this overall plan, develop and initiate a funding strategy to reduce the risk of entanglement in California fishing gear by 2020.
	3.4.2: Work to achieve zero trash entering state waters by 2030 (from the State Water Resources Control Board's final compliance deadline with the trash amendments). As one milestone action, adopt an OPC Resolution to ban expanded polystyrene in food serviceware and packaging by 2020; ban implemented by 2022.
2021	1.1.4: Identify pilot projects across the state that demonstrate the efficacy of various sea-level rise and extreme event adaptation strategies by 2021 and begin project implementation immediately thereafter, consistent with existing laws and policies.
	1.1.5: Build on existing planning efforts to ensure adoption of a requirement that, at a minimum, all coastal counties will develop a coastal resilience action plan or element by 2023. Develop template and minimum standards by 2021.
	1.4.1: Release scientific report summarizing the ability of California's marine protected areas to provide ecosystem resilience to climate change impacts by 2020 and begin funding identified data gaps in 2021.
	2.1.1: Develop and begin implementing strategies for effectively engaging and partnering with California's Tribes & Tribal Governments on ocean and coastal resource protection, access, policy and management by 2021.
	2.2.1: Ensure development and adoption by 2021 an Equity Plan that includes but is not limited to equitable convenient and affordable access to coastal natural resources and access and engagement in coastal and marine policymaking.
	3.1.5: Based on CNRA and CalEPA's 2002 Report to the legislature, "Addressing the Need to Protect California's Watersheds", develop a state watershed policy with updated principles by 2021. The policy and principles will be routinely utilized in watershed and coastal management (including planning, policy setting, resource allocation, and project development), by 2022.
	3.4.2: With partners, work to achieve zero trash entering state waters by 2030 (from the State Water Resources Control Board's final compliance deadline with the trash amendments). As one milestone action, work to change state purchasing and service contracts to require reusable food serviceware whenever feasible and reduce the state's reliance on single-use food serviceware by 2021.

	3.4.4: With partners, develop a statewide microplastics strategy by 2021 with implementation of the recommendations starting in 2022. As one milestone action, develop and adopt a California Resolution on Microplastics by 2021.
	3.4.7: Update the state's Desalination Policy by 2021, to address both ocean and coastal groundwater desalination.
	3.6.2: Integrate oceans and coasts into the work of the California Biodiversity Initiative and California Biodiversity Council by 2021.
	4.5.1: Work to identify air pollution sources that contribute to GHG hot spots in and around ports by 2021; by 2023 determine date for California's ports to be decarbonized.
2022	1.1.3: Inventory, characterize and prioritize remediation for toxic sites vulnerable to sea-level rise by 2022.
	1.1.7: Work with partners to ensure an additional 10,000 acres of coastal wetlands will be protected, restored or created by 2025, and that acreage of coastal wetlands in California is increased by 20% by 2030 and 50% by 2040. As one milestone action, with partners, develop a wetland action plan that outlines how to meet protection, restoration and creation targets by 2022.
	1.2.1: Advance state efforts to secure adoption of regulations establishing water quality objectives for ocean acidification and hypoxia that includes, but is not limited to, publicly owner treatment works, stormwater, and non-point source pollution, by 2025, with scientific analysis of the relationship between nutrient inputs and acidification hot spots complete by 2022.
	1.2.3: Establish a target date for phasing out coastal sewage discharge into the ocean by 2022. Work with partners to achieve 80-100% coastal wastewater recycling by 2040.
	3.1.1: With partners, complete ten-year assessment of MPA performance (required adaptive management review), including future monitoring and management recommendations by 2022, with implementation of those recommendations starting in 2023. As two milestone actions, fund and manage statewide ecological and socioeconomic monitoring of the MPA network, in preparation for the ten-year MPA management review in 2022 and identify and fund cost-effective strategies to continue MPA monitoring beyond 2022.
	3.1.3: Develop an action plan for addressing rocky intertidal and beach habitat loss due to SLR by 2023. As one milestone action, complete statewide mapping project by fully mapping rocky intertidal and beach habitat at 2m (or better) resolution by 2022.
	3.1.3: Develop an action plan for addressing rocky intertidal and beach habitat loss due to SLR by 2023. As one milestone action, develop a Beach Resiliency Plan by 2022, in coordination with existing efforts.
	3.3.5: Develop a statewide whale and sea turtle protection plan by 2022 with a target of zero mortality. As a component of this overall plan, develop and initiate a funding strategy to reduce the risk of entanglement in California fishing gear by 2020.
	3.4.2: With partners, work to achieve zero trash entering state waters by 2030 (from the State Water Resources Control Board's final compliance deadline with the trash amendments). As one milestone action, adopt an OPC Resolution to ban expanded polystyrene in food serviceware and packaging by 2020; ban implemented by 2022.
	3.4.4: With partners, develop a statewide microplastics strategy by 2021 with implementation of the recommendations starting in 2022.
	3.4.5: Support modernization of the harmful algal bloom notification network to provide real time data by 2022 and predictions by 2024.

2023	1.1.2: In conjunction with ongoing efforts, develop a site-specific infrastructure resiliency plan focused on state roads, wastewater treatment plants, water supply facilities, ports, and power plants by 2023.
	1.1.5: Build on existing planning efforts to ensure adoption of a requirement that, at a minimum, all coastal counties will develop a coastal resilience action plan or element by 2023. Develop template and minimum standards for the coastal resiliency plan or element by 2021.
	1.2.4: Ensure implementation of California's Ocean Acidification Action Plan by 2023.
	2.5.1: Develop a shared state definition of "healthy oceans" grounded in ecosystem-based science intrinsic value of ecosystems and species by 2023. This will be utilized as part of the State of the Coast and Oceans Report Card completed in 2025.
	3.1.1: With partners, complete ten-year assessment of MPA performance (required adaptive management review), including future monitoring and management recommendations by 2022, with implementation of those recommendations starting in 2023.
	3.1.3: Develop an action plan for addressing rocky intertidal and beach habitat loss due to SLR by 2023.
	3.1.3: Develop an action plan for addressing rocky intertidal and beach habitat loss due to SLR by 2023. As one milestone action, develop robust approach for predicting multi-scale climate-driven changes in rocky intertidal and beach ecosystems, including species range shifts, by 2023.
	3.3.2: Implement scaled management (*e.g.,* Enhanced Status Reports, Fishery Management Plans) as described in the MLMA Master Plan for priority species by 2024.
	3.3.3: Develop rapid response capabilities to unanticipated biodiversity/fisheries emergencies (such as sea star wasting disease, harmful algal blooms, kelp forest collapse) by 2023.
	3.3.4: Develop adaptive management approaches to effectively respond to climate-caused shifts in fisheries by 2023.
	3.4.1: Strengthen water quality protection in MPAs equivalent to Areas of Special Biological Significance or State Water Quality Protection Areas by 2023.
	3.4.3: Advance with partners development of a baseline of plastic pollution monitoring data and a standardized approach to track the state's progress in reducing plastic pollution by 2023.
	3.4.6: Develop a California-specific early detection and response system for marine organism diseases by 2023.
	3.5.1: Develop a recommendation to create a statewide early detection and rapid response program to eradicate or control marine and related inland invasive species when first detected by 2023.
	4.2.1: Develop a statewide aquaculture action plan focused on marine algae and shellfish and land-based/recirculating tank operations of marine algae, shellfish and finfish by 2023. The plan should identify areas of opportunity and avoidance to minimize impacts to habitat, biodiversity and wild fisheries and should include minimum project criteria, including best practices for eliminating detrimental environmental impacts.
	4.5.1: Work to identify air pollution sources that contribute to GHG hot spots in and around ports by 2021; by 2023 determine date for California's ports to be decarbonized.
2024	3.3.1: Use long-term MPA monitoring data to assess the effects of protected areas on fisheries and integrate MPA data into fisheries management consistent with the Marine Life Management Act by 2024.

	3.3.2: Implement scaled management (*e.g*., Enhanced Status Reports, Fishery Management Plans) as described in the MLMA Master Plan for priority species by 2024.
	3.3.5: Develop a statewide whale and sea turtle protection plan by 2022 with a target of zero mortality. As a component of this overall plan, develop and initiate a funding strategy to reduce the risk of entanglement in California fishing gear by 2020. As one follow-up action, provide funding for the state's drift gillnet transition program and work towards the target of elimination of large mesh drift gillnets off the California coast by 2024.
	3.4.5: Support modernization of the harmful algal bloom notification network to provide real time data by 2022 and predictions by 2024.
	4.4.1: Ensure development of a commercial scale offshore wind project in California that minimizes impacts on marine biodiversity or habitat, currents and upwelling, fishing, cultural resources, navigation, aesthetic/visual, and military operations by 2026.
2025	1.1.7: Work with partners to ensure an additional 10,000 acres of coastal wetlands will be protected, restored or created by 2025, and that acreage of coastal wetlands in California is increased by 20% by 2030 and 50% by 2040.
	1.2.1: Advance state efforts to secure adoption of regulations establishing water quality objectives for ocean acidification and hypoxia that includes, but is not limited to, publicly owner treatment works, stormwater, and non-point source pollution, by 2025, with scientific analysis of the relationship between nutrient inputs and acidification hot spots complete by 2022.
	1.3.1: Identify and continue to fund needed climate-related research, with summary reports issued by 2022 and 2025.
	2.3.1: With leadership from SCC and CCC, develop a "Coastal Access for All" Plan that ensures equitable public access to and along the ocean by 2025, and that includes specific, measurable targets for beaches, physical trails and access points, education, transportation, and recreational opportunities.
	2.4.1: Through the use of public education and management, eliminate involuntary human health risk from unknowing consumption of locally caught contaminated seafood by 2025.
	2.3.3: Ensure all California beaches receive straight A's on the Beach Report Card (fecal indicator bacteria densities) between April 1 – October 31 by 2025.
	2.5.1: Develop a shared state definition of "healthy oceans" grounded in ecosystem-based science intrinsic value of ecosystems and species by 2023. This will be utilized as part of the State of the Coast and Oceans Report Card completed in 2025.
	3.1.4: Work with partners to preserve existing 15,000 acres of seagrass beds and create an additional 1000 acres by 2025.
	3.4.8: Ensure all California beaches receive straight A's on the Beach Report Card (fecal indicator bacteria densities) between April 1 – October 31 by 2025.
	3.5.2: Ensure development of statewide Waste Discharge Requirements to allow in-water cleaning of large vessels to prevent the introduction of non-native species by 2025, consistent with protection of water quality and U.S. EPA regulations.
	3.6.1: Create a California State of the Coast and Ocean Report Card by 2025.
	4.1.1: Develop a statewide sustainable seafood program that includes traceability (local, domestic and import), improving local markets, impacts on biodiversity (including habitat loss or damage), reducing bycatch, pollution and infectious disease by 2025.
	4.1.2: Implement pilot projects statewide to increase fishing communities' resiliency and adaptation to climate impacts by 2025.
2026	Ensure development of a commercial scale offshore wind project in California that minimizes impacts on marine biodiversity or habitat, currents and upwelling, fishing, cultural resources, navigation, aesthetic/visual, and military operations by 2026.

2030	1.1.7: Work with partners to ensure an additional 10,000 acres of coastal wetlands will be protected, restored or created by 2025, and that acreage of coastal wetlands in California is increased by 20% by 2030 and 50% by 2040.
	3.4.2: With partners, work to achieve zero trash entering state waters by 2030 (from the State Water Resources Control Board's final compliance deadline with the trash amendments).
	4.3.1: With partners, fully or partially remove and decommission at least one offshore oil platform by 2030.
2040	1.1.7: Work with partners to ensure an additional 10,000 acres of coastal wetlands will be protected, restored or created by 2025, and that acreage of coastal wetlands in California is increased by 20% by 2030 and 50% by 2040.
	1.2.3: Establish a target date for phasing out coastal sewage discharge into the ocean by 2022. Work with partners to achieve 80-100% coastal wastewater recycling by 2040.
2050	1.1.1: Ensure California coast is resilient to at least 3.5 feet of sea-level rise by 2050.

APPENDIX 3: OPC'S CORE FUNCTIONS

As directed by the California Ocean Protection Act (COPA), OPC protects California's coastal and ocean resources by effectively and strategically providing best-available science to decision-makers, supporting targeted initiatives to protect and restore coastal and marine systems, collaboratively advance policy, and coordinating relevant agency activities across jurisdictional, programmatic, and regional boundaries. OPC uses each of the following diverse categories of tools to identify and implement solutions that improve ocean governance, increase stewardship, and advance scientific understanding necessary to protect and conserve coastal and marine resources and the communities that rely on them.

ECOSYSTEM-BASED GOVERNANCE

California currently faces environmental stressors in a highly siloed manner, often undertaking management approaches for one type of ecosystem, habitat, or geographic area without considering their interconnected nature. For example, our forests are part of watersheds that drain into streams and rivers, which then flow into our estuaries, bays and coastal waters.

Through COPA, the state charged OPC with providing a unifying lens to preserve, protect and manage California's unparalleled wildlands and natural resources, from land to sea. OPC accordingly provides guiding principles for ecosystem-based ocean and coastal management, in recognition of the fundamental interconnectedness of humans and natural systems. OPC advances these system-based governance responsibilities through leadership, integration, and coordination of relevant state laws, policies, and institutions.

Sample Actions:

- Convene quarterly meeting of state agency heads with jurisdiction over ocean and coast to ensure coordination and prompt action on pressing issues.
- Ensure ecosystem and biodiversity conservation approaches provide multi-use benefits where feasible, including climate resilience, ecosystem health, carbon sequestration, and public health benefits. Optimize the economic benefits of various biodiversity conservation approaches, with a particular focus on green jobs and the blue economy.

SCIENCE

Science is critical to informed decision-making and is a foundational component of California's initiatives to protect and enhance the health of the coast and ocean. California houses many of the leading environmental researchers and institutions on the planet, with tools including remote sensing, conservation genomics, climate and ecological modeling, and others that, when utilized optimally, help California make more effective policy and management decisions. Consistent with its charge under COPA, OPC ensures that the best available science is applied to adaptive conservation and management of the state's natural systems.

OPC works to integrate science into California's policy and management decisions by:

1) funding applied scientific research and monitoring that increases our understanding of ecological, economic and social vulnerability to potential impacts and the efficacy of various conservation and management approaches;
2) convening scientific experts to synthesize information and develop findings that can root policy development in cutting-edge science;
3) coordinating with agency, academic and other partners to identify and address critical data gaps; and
4) ensuring that conservation and habitat restoration projects use the latest science and restoration techniques, especially with regard to climate resiliency.

Two important partners support OPC in these efforts. First, the OPC Science Advisory Team (OPC-SAT), a statutorily created, interdisciplinary team of distinguished scientists, supports OPC's science-based actions and decisions. The OPC-SAT identifies emerging environmental and scientific challenges related to the ocean and coast; evaluates the scientific underpinnings and technical merit of state actions and decisions; provides advice and translates scientific knowledge related to state priorities; and acts as a broader conduit to the scientific community.

Second, the California Ocean Science Trust (OST), a statutorily created, independent non-profit, serves as OPC's Science Advisor and administers the OPC-SAT on behalf of OPC. OST's collaborative team helps lead projects and initiatives that draw together diverse perspectives to synthesize, interpret, and share science towards sound policy, funding, and management efforts.

In addition to prioritizing increased understanding of coastal and ocean ecosystems, OPC recognizes the importance of ensuring data from state-funded research projects are available and readily accessible for use by scientists, decisionmakers, stakeholders, and the public.

Sample Actions:

- Complete scientific analysis of existing monitoring data to determine the ability of California's marine protected areas to provide ecosystem resilience in the face of climate change. Identify data gaps and fund additional research; recommend management actions to enhance the role of MPAs in improving ocean health and building resilience to climate-driven impacts.

PARTNERSHIPS

In drafting COPA, the California Legislature identified a need for the state to coordinate governance and stewardship of the state's coastal and ocean systems, particularly given the corresponding - and oftentimes overlapping - mandates and jurisdictions of relevant state regulatory, planning and conservation agencies. OPC plays a leading role in coordinating the policy direction and efforts of these state agencies to increase efficiency and effectiveness. Among other actions, OPC works to establish and maintain strong relationships with agency leadership and staff, convene needed interagency working groups, collaboratively identify and address data gaps, share fiscal and human resources, and help establish a strategic and ecosystem-based vision for protecting California's coast and ocean.

In addition, OPC leverages state efforts with those of local, federal, and tribal governments; tribal communities; academic and research institutions; non-profits; community groups; fishermen; and other stakeholders. Through working groups, advisory bodies, and collaborative projects, OPC integrates state activities with the broader management, stewardship, and research efforts of partners outside state government who have professional, personal, and cultural expertise and are equally invested in protecting coastal and ocean health in California.

Sample Actions:

- Coordinate and align state agencies, in collaboration with local governments, to provide universal and equitable access to the coast, including consideration of ease and convenience of travelling to and within natural areas, and the quality, health benefits, and educational value of the experience.

POLICY

OPC works closely with the Governor's office, the Legislature, and agency partners to craft and implement science-based policies, identify gaps in policy and law, and inform legislation at both the state and federal levels. Consistent with the state's leadership in integrated ocean governance, OPC seeks to align decision-making to protect ocean health by: developing guidance documents and actions plans, mobilizing and coordinating state policy action against threats facing our coast, collaborating with partner agencies to ensure policy decisions are consistent and grounded in the precautionary principle, and identifying and recommending needed changes in state policy and law to the Legislature and the Governor.

OPC is also actively engaged in driving policy at the international level, not only by taking action that provides a model for global efforts, but by establishing goals and guidance to accelerate ocean conservation and adaptation action around the world. One example is the Ocean-Climate Action Agenda,[15] developed collaboratively by OPC and non-profit partners to increase ocean-related climate policy ambitions at California's 2018 Global Climate Action Summit.

Sample Actions:

- Research law and policy approaches in other states and countries related to climate resilience approaches to land, water and ocean policy and management decision making, and make recommendations for changes in state and federal law and policy as appropriate.

FUNDING

OPC collaboratively manages various funding sources towards efficient support of strategic investments in scientific research and monitoring, collaborative policy development, and restoration and other projects that will improve conditions for ocean and coastal ecosystems and California communities. Funding sources include bond funds, General Fund monies, special funds, and Once-Through Cooling Interim Mitigation Funds.

Sample Actions:

[15] https://www.oceanclimateaction.org/wp-content/uploads/Ocean-Climate-Action-Agenda_FINAL_8.16.18-2.pdf.

- In collaboration with local governments, support pilot projects along the coast that demonstrate the efficacy of various climate adaptation strategies, including nature-based solutions as a preferred approach to building coastal resilience to climate change impacts.

COMMUNICATION

Regularly updated, relevant data and data products build public and decisionmaker stewardship over our shared coast and ocean. OPC strives to be a leader in open, clear, responsive, communication partners and stakeholders, and prioritizes inclusive public engagement in all initiatives.

Sample Actions:

- Create a California State of the Coast and Ocean Report Card that will provide regular information and accountability to the public.
- Research and implement communications approaches and tools that help reach a wider audience and constituency, such as outreach in other languages.

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