Position Statement

California Ocean Protection Council Science Advisory Team

The Ocean Will Help California Recover:

Science-based opportunities for making California's economy equitable and resilient

The mission of the California Ocean Protection Council (OPC) is to ensure that California maintains healthy, resilient, and productive ocean and coastal ecosystems for the benefit of current and future generations. As the COVID-19 crisis continues, rebuilding the economy and supporting marginalized and vulnerable communities are major priorities of the state.

This statement was developed by the Ocean Protection Council's Science Advisory Team,[1] a body of 29 expert scientists from a range of ocean- and coastal-relevant disciplines and research institutions, working to ensure that the best available science supports state policy and funding decisions. The goal of this statement is to emphasize that 1) climate change remains a significant threat to California's marine ecosystems; 2) climate change impacts have the potential to exacerbate existing social inequalities, based on race, culture, or economic status; 3) coastal and ocean climate mitigation, adaptation, and resilience investments can contribute to overall economic recovery - California's short-term economic rebuilding must work in conjunction with the state's long-term climate change or environmental justice goals; and 4) investments that increase the resilience of California's most vulnerable communities, in addition to being equitable, can improve the entire state's ability to adapt to climate change.

Coastal communities and environments are vital to our state's economy and identity

California's coastal and ocean regions have long supplied food and other vital resources to society, beginning and continuing with indigenous peoples who have inhabited and stewarded the California coast for over 10,000 years. Today, with almost 75% of the state's population living along the coast,[2] this region includes critical infrastructure, real estate, and jobs. California's ocean supports such valuable economic sectors as tourism and recreation,[3] as well as commercial and recreational fishing industries that supply seafood to the state and for export. Each of these sectors is vulnerable to a changing climate.

Climate change continues to threaten California's coasts and ocean

California is now experiencing, and will increasingly experience, a multitude of impacts resulting from climate change. These impacts harm human health, businesses, tourism, and ecosystem functions.

[1] www.opc.ca.gov/science-advisory-team

[2] Kildow, J., C. Colgan, and P. Johnston. 2016. Coastal and Ocean Economic Summaries of the Coastal States - Update 2016. National Ocean Economics Program, Center for the Blue Economy, Middlebury Institute of International Studies at Monterey.

[3] Sievanen, L., Phillips, J., Colgan, C., Griggs, G. Finzi-Hart, J., Hartge, E., Hill, H., Kudela, R., Mantua, M., Nielsen, K., and Whiteman, L. 2018. California's Coast and Ocean Summary Report. California's Fourth Climate Change Assessment.

Because socioeconomic factors may exacerbate the impacts of climate change, these impacts disproportionately fall upon vulnerable communities[4] — including Indigenous, Black and other people of color, immigrants, low-income families and people in rural areas. The legacy of systemic, largely racialized inequity amplifies adverse effects on the lives, livelihoods, environmental quality, and economic opportunities in these communities.

Some impacts of climate change are already clear. For example, the 2014–2016 marine heat wave impacted high-value fisheries and contributed to a rapid decline in kelp forests. Coastal regions are seeing the early impacts of a rising sea level,[5] which is projected to cost California tens of billions in damage to coastal property and infrastructure through both flooding of low-lying areas and increased erosion rates of coastal cliffs and bluffs.[6] As these impacts increase in frequency and severity over time, they will further disrupt the environment and human communities.

Oceans play a critical role in climate change resilience

While ocean and coastal regions face increasing impacts from a changing climate, they also offer significant solutions, with growing evidence of their critical role in climate mitigation, adaptation and resiliency. Habitats in our coastal and ocean environments can provide nature-based protections from coastal hazards like storm surges, coastal flooding, and erosion. These environments also provide critical habitat and nursery areas for iconic and culturally important California species, including Dungeness crab, market squid, salmon, eel, and prawns, as well as important subsistence, ceremonial, commercial and recreational fishing opportunities. Existing and restored coastal wetland habitats that draw down and store carbon, especially salt marshes and seagrass beds, contribute to the state's carbon reduction and sequestration objectives, in addition to many other valuable ecosystem co-benefits.

Ocean and coastal investments can simultaneously support climate change resilience and economic rebuilding

With the economic crisis and the calls for racial equity following the onset of the COVID-19 pandemic, California's priorities have suddenly and dramatically shifted. Many coastal communities are struggling with unprecedented unemployment and economic turmoil as demand plummets for goods and services such as seafood and tourism. Vulnerable communities, already facing the most severe threats from climate change, have been hit the hardest by both the virus itself and the resulting economic crisis. The economic crisis has spawned, in turn, a budget crisis, triggering calls for greatly reduced government spending. Any cuts must be made carefully, and should not stand in the way of economic stimulus needed to promote equitable recovery.

[4] Roos, M. (E4 Strategic Solutions). 2018. Climate Justice Summary Report. California's Fourth Climate Change Assessment
[5] Griggs, G, Árvai, J, Cayan, D, DeConto, R, Fox, J, Fricker, HA, Kopp, RE, Tebaldi, C, Whiteman, EA (California Ocean Protection Council Science Advisory Team Working Group). Rising Seas in California: An Update on Sea-Level Rise Science. California Ocean Science Trust, April 2017.
[6] E., J. Payne, W. Sweet, M. Craghan, J. Haines, J.F. Hart, H. Stiller, and A. Sutton-Grier, 2018: Coastal Effects. In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 322–352.

Many of California's previously planned climate change resilience investments in the coastal zone have the potential to serve as an economic stimulus.[7] For example, infrastructure investment historically leads to job creation, provides income to those employed across multiple sectors, and stimulates the economy during economic recessions. Infrastructure investment, especially in nature-based and environmentally sound coastal structures and habitat restoration[8] are sorely needed to support coastal adaptation and resilience. Climate-safe infrastructure investments, if focused in underserved communities that have been systemically ignored, can also begin to rebuild California where rebuilding is needed most.[9] Such investments include those aimed at:

- Improving coastal water and air quality, including technology and infrastructure upgrades to reduce air pollution and nutrient discharges to streams, estuaries, and coastal waters, which can also help reduce drivers of ocean acidification and hypoxia.[10]
- Enhancing California's coastal resilience, predominantly through the construction of nature-based solutions, to protect and/or provide jobs for vulnerable and marginalized communities.
- Continuing to enhance the climate-readiness of the State's fisheries and seafood industries, which provide food and income for coastal and inland communities.[11]
- Expanding the state's environmental change monitoring, modeling and forecasting programs to offer better predictions and risk assessments to help direct investments to the most vulnerable communities and ecosystems.
- Supporting leading-edge technologies for blue economy expansion in the sectors of sustainable tourism, aquaculture, fisheries, transportation and energy, simultaneously supporting climate goals and economic recovery and resilience.
- Meaningful engagement of disadvantaged and vulnerable communities in building information, understanding and equitable approaches for addressing the complex climate, sociocultural and economic challenges (at hand and to come).
- Supporting the development of a socially, culturally and economically diverse ocean science workforce.
- Fostering greater alignment of Local, State, Tribal, and Federal regulatory, planning, and resilience priorities.

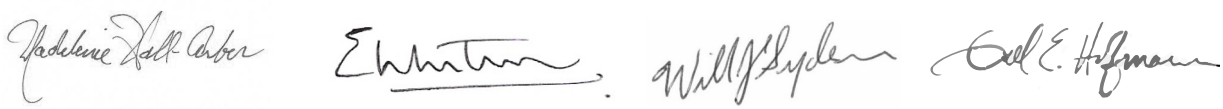
The time of maintaining the status quo has passed, and the time for action is now. The savings associated with investing in climate solutions now are likely to substantially outweigh the costs of deferring action. For example, a dollar invested on providing coastal resilience today will save $6

[7] Dundas, S. J., Levine, A. S., Lewison, R. L., Doerr, A. N., White, C., Galloway, A. W., ... & Spalding, A. (2020). Integrating oceans into climate policy: Any green new deal needs a splash of blue. Conservation Letters, e12716.
[8] Samonte, G., Edwards, P., Royster, J., Ramenzoni, V., and Morlock, S. 2017. Socioeconomic Benefits of Habitat Restoration. NOAA Tech. Memo. NMFS-OHC-1, 66 p.
[9] Climate-Safe Infrastructure Working Group (CSIWG). 2018. Paying it forward: The Path Toward Climate-Safe Infrastructure in California. Report of the Climate-Safe Infrastructure Working Group to the California State Legislature and the Strategic Growth Council. Sacramento, CA
[10] Chan, F., Boehm, A.B., Barth, J.A., Chornesky, E.A., Dickson, A.G., Feely, R.A., Hales, B., Hill, T.M., Hofmann, G., Ianson, D., Klinger, T., Largier, J., Newton, J., Pedersen, T.F., Somero, G.N., Sutula, M., Wakefield, W.W., Waldbusser, G.G., Weisberg, S.B., and Whiteman, E.A. 2016. The West Coast Ocean Acidification and Hypoxia Science Panel: Major Findings, Recommendations, and Actions. California Ocean Science Trust, Oakland, California, USA.
[11] Chavez, F. P., Costello, C., Aseltine-Neilson, D., Doremus, H., Field, J. C., Gaines, S. D., Hall-Arber, M., Mantua, N. J., McCovey, B., Pomeroy, C., Sievanen, L., Sydeman, W., and Wheeler, S. A.(California Ocean Protection Council Science Advisory Team Working Group). 2017. Readying California Fisheries for Climate Change. California Ocean Science Trust, Oakland, California, USA.

responding to the growing threat of sea level rise.[12] As California responds to the current economic crisis, we cannot ignore the fact that climate change continues and will exacerbate social and economic impacts experienced thus far. In evaluating the portfolio of options available to support economic recovery, California must continue to invest in meeting its ambitious climate goals while centering justice and equity, and these climate investments can in turn provide an important source of economic stimulus. Investments should be tailored to local needs, prioritizing vulnerable communities in coastal areas equipped with fewer resources to recover or adapt. We urge consideration of the best available science to guide investments in economic recovery that simultaneously stimulate coastal and inland economies while building critical climate resilience and promoting equitable and environmentally sustainable development practices.

As members of the state's ocean and coastal science advisory body, we stand ready to provide further scientific guidance and recommendations, as such investments will need to carefully evaluate the trade-offs between climate, equity and economic and environmental benefits alongside any associated challenges in implementation. While science is often described as an objective pursuit independent of the values and views of scientists, we know that the problems seen, questions asked, and answers considered depend on who is at the table, who asks the questions, and who funds the answers. The most legitimate science advice will come from a community of scientists that reflects California's diversity and elevates equity and inclusion. We acknowledge the need for self-assessment and we are committed to taking actions that promote diversity, equity, and inclusion within our membership, our leadership, California's ocean science community, and our work.

Chairs of the OPC Science Advisory Team



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[12] Multi-Hazard Mitigation Council (2019.). Natural Hazard Mitigation Saves: 2019 Report. Principal Investigator Porter, K.; Co-Principal Investigators Dash, N., Huyck, C., Santos, J., Scawthorn, C.; Investigators: Eguchi, M., Eguchi, R., Ghosh., S., Isteita, M., Mickey, K., Rashed, T., Reeder, A.; Schneider, P.; and Yuan, J., Directors, MMC. Investigator Intern: Cohen-Porter, A. National Institute of Building Sciences. Washington, DC. www.nibs.org

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About the Ocean Protection Council Science Advisory Team

The California Ocean Protection Council (OPC) aims to ensure that California maintains healthy, resilient, and productive ocean and coastal ecosystems for the benefit of current and future generations. OPC was established by the California Ocean Protection Act of 2004, and is chaired by the Secretary of the Natural Resources Agency. Central to OPC is a commitment to science informing policy; OPC together with Ocean Science Trust (OST) established a Science Advisory Team (OPC SAT) consisting of 29 expert scientists from across a range of ocean- and coastal-relevant disciplines and research institutions. OST serves as Secretariat of the OPC SAT. The OPC SAT takes on a range of topics with emphasis on state priorities to address issues impacting coastal and marine ecosystems in California, and works to ensure that the best available science supports OPC policy and funding decisions. www.opc.ca.gov/science-advisory-team