

State-Led Coastal Resilience: Lessons from California

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Introduction

The dismantling of climate science programs at the National Oceanic and Atmospheric Administration (NOAA) and the cancellation of disaster preparedness grants at the Federal Emergency Management Agency (FEMA), including the Building Resilient Infrastructure and Communities (BRIC) program, represent an alarming withdrawal of federal support for coastal resilience. As a result, states have been forced into leadership roles traditionally held by the federal government.

California, with significant institutional, financial, and technical resources, alongside a longstanding public commitment to environmental protection, has become a powerful testing ground for climate adaptation at scale. While not without its challenges, the state's ability to experiment, iterate, and invest in coastal resilience solutions has yielded hard-won lessons that can inform other states' approaches, particularly those facing similar climate vulnerabilities that must be more strategic with limited resources.

Gathering insights from interviews with local, regional, and state leaders, this memo identifies **three key strategies** in California's coastal resilience approach that offer valuable lessons for other states:

Strategy 1: Institutionalize and fund coastal resilience

- Build a governance backbone with regulatory and non-regulatory state agencies
- Secure sustainable funding through dedicated revenue streams
- Reduce resource gaps through technical assistance and targeted support for under-resourced communities

Strategy 2: Align state priorities with local, civic, and regional partners

- Create a shared vision that links local policy to state priorities like environmental justice
- Leverage regional networks for coordination, knowledge sharing and grant support
- Balance state leadership with local flexibility to respond to emerging issues

Strategy 3: Equip local governments with climate data and tools

- Standardize state climate data on open-access platforms
- Translate climate science into action through expert engagement and practical guidance
- Boost practitioner uptake with outreach, training, and user-centered design

Although no state can provide a one-size-fits all model for coastal resilience, California's experience underscores that bold public policy and sustained investment can meaningfully advance resilience efforts and inspire a broader shift in how states across the country approach adaptation.

Lessons Learned

1 Institutionalize and fund coastal resilience

Stretching over 1,100 miles, California's coastline demands a coordinated and sustained approach to management. The state has a strong institutional foundation that was shaped by public activism to environmental crises. Grassroots opposition to infilling San Francisco Bay and the 1969 Santa Barbara oil spill led to the creation of enduring coastal governance structures.

Build a governance backbone

Four primary state entities form the backbone of California's coastal resilience infrastructure:

- The California Coastal Commission (CCC) and the San Francisco Bay Conservation and Development Commission (BCDC) serve as regulatory agencies and together oversee implementation of the state's federally approved Coastal Management Program, under the Coastal Zone Management Act (CZMA). They regulate development in the coastal zone and ensure alignment with long-term resilience goals.
- The California State Coastal Conservancy (Conservancy), a non-regulatory agency, provides funding and technical support for coastal adaptation, restoration and land acquisition projects.
- The Ocean Protection Council (OPC) serves as a coordinating body, advancing statewide ocean and coastal policy, and ensuring agencies and local governments have access to the best available science and planning tools.

Since 2006, the state has conducted climate assessments addressing issues from mitigation to vulnerability. The California Climate Change Assessments, codified by Senate Bill 1320 in 2020—now in their fifth iteration—provide open-access data and actionable strategies, offering a consistent evidence base for practitioners navigating hazards like sea level rise. These assessments continue to inform statewide policies, including the Climate Adaptation Strategy, which highlights the unique risks facing coastal communities and offers a framework for climate adaptation solutions.

More recently, Senate Bill 1 (SBI), approved in 2021, created two initiatives:

- The California Sea Level Rise State and Regional Support Collaborative, a taskforce that convenes 17 state agencies and local leaders to provide sea level rise planning guidance.
- The SBI Grant Program, which offers both non-competitive, rolling funding for sea level rise adaptation planning and competitive implementation funding.

Secure sustainable funding

The SBI Grant Program is funded through California Climate Investments, the statewide initiative that directs cap-and-trade revenues to climate action, with 35 percent earmarked for disadvantaged communities and low-income households. This pairing of policy mandates with accessible funding makes it easier for under-resourced jurisdictions to meet state compliance.

Other legislation builds on this momentum. Senate Bill 272 (2023) requires coastal municipalities to develop sea level rise plans by 2034, with CCC or BCDC approval unlocking priority implementation funding. In 2024, California voters passed Proposition 4 (Prop 4) a \$10 billion bond measure that includes \$1.2 billion for sea level rise adaptation, coastal restoration, and ocean and marine wildlife protection efforts.

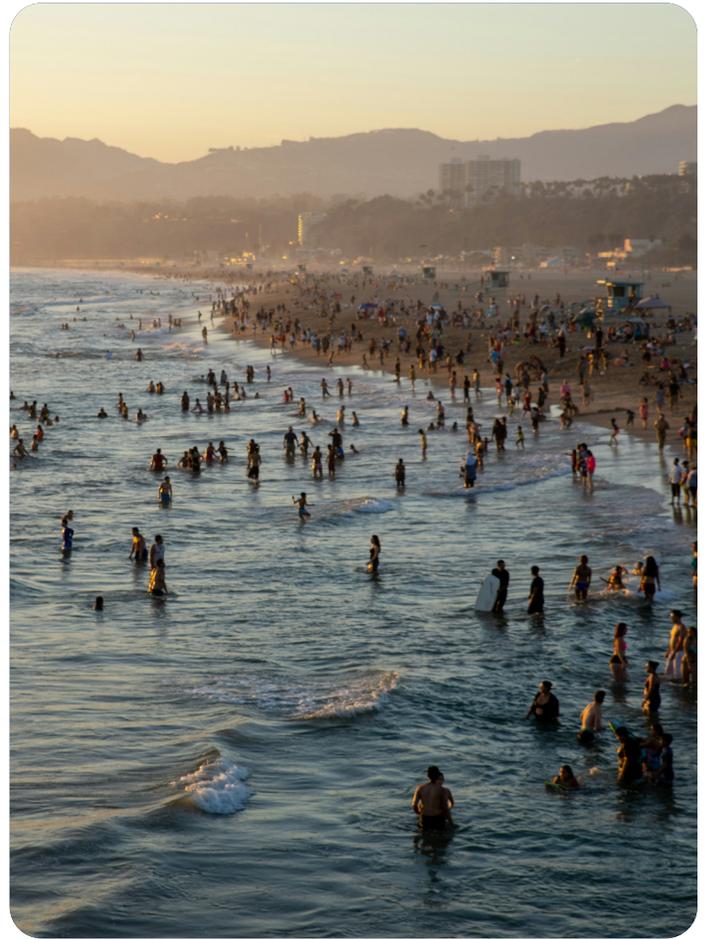
Reduce resource gaps

While California's layered governance and financing model has helped the state scale coastal resilience efforts, it also presents challenges. Many interviewees highlighted the SBI Grant Program—particularly its non-competitive planning funds tied to regulatory mandates—as a standout. However, they noted that overlapping requirements and multiple funding sources can strain limited local capacity. Local jurisdictions with fewer staff or with projects already underway sometimes experienced the new planning requirements as burdensome rather than supportive. Well-resourced jurisdictions, by contrast, are better positioned to secure funding and meet compliance, giving them an advantage in competing for implementation funds. To help close these gaps, the state provides technical assistance programs like the OPC's partnership with the non-profit Coastal Quest, to support under-resourced communities in applying for SBI funding.



California is working to protect the San Diego-Los Angeles rail line, where coastal erosion is destabilizing the Del Mar bluffs. Photo © Sarah Sheedy

California's approach illustrates how long-term institutional investment, through dedicated agencies, codified mandates, and the strategic use of cap-and-trade revenues, can help insulate coastal resilience efforts from federal rollbacks. As national programs like FEMA's BRIC grant and NOAA's CZMA support have been cut, California's institutional infrastructure has allowed it to maintain continuity. However, that positioning is not guaranteed. Even with climate investments and voter-approved bonds, state leaders and local officials alike recognize the pressing need for dedicated, sustained, and scalable funding to meet the scope of coastal threats ahead. Expanding grant programs, identifying ongoing revenue sources, and ensuring smaller or disadvantaged communities can access support will be critical to delivering resilience equitably and effectively. California's experience offers both a model and a lesson: even the best-prepared states must constantly evolve to keep pace with a shifting federal role and accelerating climate risk.

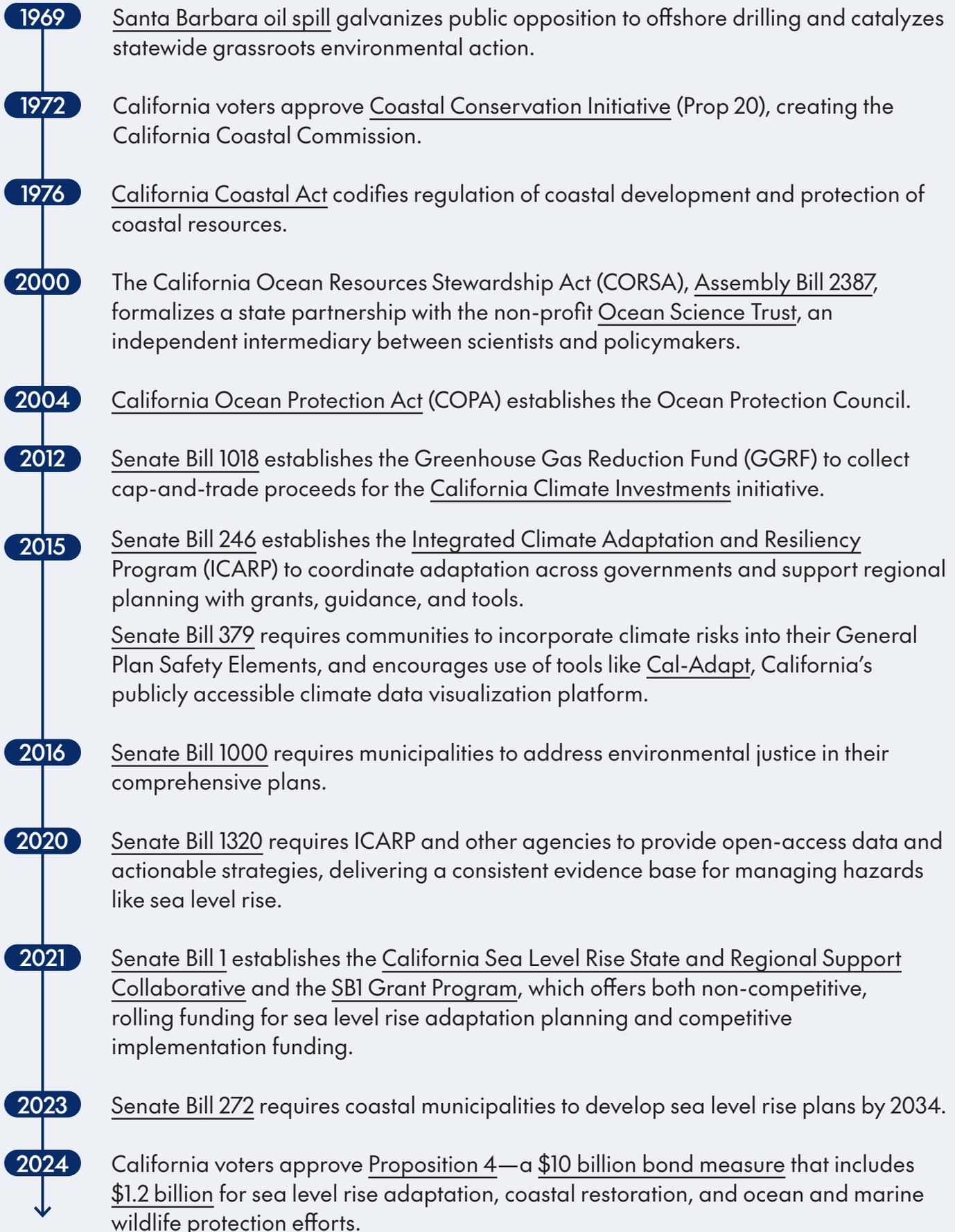


Public access to the coast is protected by the California Coastal Act. Photo © Getty Images

Interview Insights

- All interviewees identified funding for coastal resilience, especially for implementation, as a primary concern. Many interviewees emphasized the effectiveness of the SB1 Grant Program because its rolling funding structure provides predictability and reduces competition, making it easier for under-resourced jurisdictions to comply with state sea level rise planning requirements. Other states may benefit from pairing top-down regulations with supportive, non-competitive grants to help jurisdictions, especially under-resourced ones, comply and move toward implementation.
- Although all interviewees recognized the value of mandating sea level rise planning at the state level, local jurisdictions felt ahead of planning requirements and noted a mismatch between mandates and existing project timelines, creating challenges in sequencing and prioritizing work. Because many jurisdictions had plans addressing sea level rise prior to SB272, interviewees desired more support for implementation, rather than planning. Other states may benefit from early engagement with local jurisdictions to ensure mandates align with existing efforts and direct support where most needed.

California Coastal Resilience Policy Milestones



2 Align state priorities with regional, local, and civic partners

California’s coastal resilience strategy prioritizes statewide alignment, supported by strong partnerships with regional and local actors. While this model highlights state leadership, it also demonstrates the crucial role non-state actors like regional networks play in driving progress on the ground.

Create a shared vision

The state invests in both statewide coordination and local capacity-building to advance a unified yet locally responsive approach to coastal resilience:

- The Ocean Protection Council (OPC) leads coordinated state action on sea level rise planning, vulnerability assessments, and funding distribution.
- Agencies such as the San Francisco Bay Conservation and Development Commission (BCDC) and the California Coastal Commission (CCC) provide technical guidance and regulatory oversight to ensure alignment with state coastal management requirements.
- In 2024, BCDC adopted guidelines to help local jurisdictions meet state-mandated sea level rise planning requirements and align local shoreline projects under the agency’s One Bay Vision and regional priorities.
- The CCC offers a Local Coastal Program (LCP) Local Assistance Grant Program that provides rolling and non-competitive support to help jurisdictions meet state coastal planning mandates. In addition, the CCC engages local governments, convening officials from the League of Cities and the California State Association of Governments in workshops such as the Local Government Sea Level Rise Working Group.

California codified its emphasis on statewide coordination and alignment with Senate Bill 246 (2015), which established the Integrated Climate Adaptation and Resiliency Program (ICARP), housed within the Governor’s Office of Planning and Research. ICARP coordinates adaptation efforts across levels of government and supports regional planning through grantmaking, guidance, and tools. The program has funded major coastal resilience efforts, including the North Coast Regional Climate Resilience Plan, which tackles uneven climate impacts—such as sea level rise—on vulnerable communities.

Importantly, climate equity is a priority shared across state agencies like the OPC, BCDC, CCC, and ICARP. On a local level, municipalities are mandated by Senate Bill 1000 to address environmental justice in their comprehensive plans. Governmental alignment across principles reinforces a statewide approach to coastal resilience centered on equity and justice.

Staying the Course: Local Climate Justice in an Era of Federal Rollbacks

Learn more about how coastal cities are continuing to drive climate justice forward, even in the face of major federal rollbacks, by investing in frontline communities, building local data infrastructure, and embedding equity into city governance.

Leverage regional networks

A key partner in advancing statewide coordination is the Alliance of Regional Collaboratives for Climate Adaptation (ARCCA), a network of eight regional collaboratives. ARCCA's regional collaboratives facilitate peer-to-peer learning among municipalities, connect local leaders with state agencies such as the Governor's Office of Land Use and Climate Innovation and the Strategic Growth Council, and support knowledge-sharing around funding opportunities and planning strategies. Within each regional collaborative, members also partner with community-based organizations, non-profits, universities, and local businesses, broadening the reach and grounding state and regional strategies in local context.

The Alliance of Regional Collaboratives for Climate Adaptation (ARCCA) represents 80 percent of the state's population.

Balance state leadership with local flexibility

Despite its strengths, extensive state coordination is not without its complications. Interviewees praised the value of proactive state mandates and engagement with regulatory agencies. However, some interviewees, especially from smaller cities with limited staff or cities already implementing sea level rise projects, found that stringent standards could hinder rather than support progress. They expressed frustration with overlapping agency mandates and planning requirements that felt duplicative or disconnected from local timelines. Several interviewees desired more support from county governments. Other interviewees emphasized the need for more consistent dialogue with regulatory agencies. In general, state coordination that paired regulatory requirements with funding or technical assistance, such as the SBI grant program, were more positively received than those that imposed new expectations without sufficient support.



California's experience shows how top-down state coordination provides much needed support and direction for local jurisdictions, particularly in the absence of strong federal leadership. However, stringent state mandates can stress local governments' capacity and resources. The state's focus on supporting under-resourced communities, combined with strong partnerships with regional networks like ARCCA's collaboratives and community engagement efforts such as the CCC's workshops, may provide relief by facilitating dialogue between state and local actors and building local capacity. California's proactive state coordination demonstrates that advancing coastal resilience relies not only on interagency collaboration but also on networks of support spanning all levels of government.

Interview Insights

- Many interviewees acknowledged the state's proactive role in coastal regulation but spoke more favorably about the instrumental role regional collaboratives within the state play in advancing coastal adaptations on the ground. California's top-down approach is made more effective by its strong regional networks, its institutional and financial capacity to provide technical assistance, and a clear commitment to equity. Other states may need to take a more collaborative or supportive approach if there is less statewide coordination of civic organizations.
- Interviewees noted that in many regions, counties have the capacity and local reach to coordinate funding and foster collaboration among cities, suggesting that state programs could better leverage this role. In California, counties are well-positioned to coordinate funding and foster interjurisdictional collaboration. Some interviewees pointed to OneShoreline in San Mateo County—the state's first countywide government agency dedicated to regional coastal resilience—as a leading example of proactive county planning. Other states with county-based governance may benefit from incentivizing counties to lead or support regional coastal resilience planning.

State Support: More than Just Mandates – ICARP's Plan Alignment Toolkit

Many interviewees expressed frustration with the state's numerous planning requirements. But support for cities can take other forms. The Integrated Climate Adaptation and Resiliency Program's (ICARP) Plan Alignment Toolkit offers a creative, practical response to local feedback. To streamline planning, ICARP launched the Coastal Resilience Compass in 2023, which helps jurisdictions navigate overlapping requirements across planning documents. Its companion platform, the Climate Resilience Plan Alignment Toolkit, enables users to identify points of alignment across climate plans, hazard mitigation strategies, and sea level rise policies, and was developed in collaboration with local, regional, state, and federal agencies to address their needs.

3 Equip local governments with state climate data and tools

California has made sustained, strategic investments in climate data and scientific capacity to support coastal resilience planning and decision-making. This commitment has allowed the state to maintain access to high-quality information and modeling, even as federal data systems are threatened.

Standardize state climate data

To support coordinated climate action and centralized data access, the Integrated Climate Adaptation and Resiliency Program, as mandated by Senate Bill 246, developed the Adaptation Clearinghouse, an online hub for climate adaptation data, research, and tools for state agencies, local governments and practitioners. Within the Clearinghouse, coastal resilience is a key focus, with agencies like the Natural Resources Agency (CNRA) and the Ocean Protection Council (OPC) mandated to create and update sea level rise planning tools and data for the resource hub every two years.



Translate climate science into action

State laws continue to emphasize data-informed planning. Senate Bill 379 (2015) requires communities to incorporate climate risks into the safety elements of their General Plan, and encourages use of tools like Cal-Adapt, California's publicly accessible climate data visualization platform.

Scientific advisory bodies further strengthen the state's capacity to translate data into action. The California Ocean Science Trust, established by the Ocean Resources Stewardship Act (2000) (Assembly Bill 2387) and a longstanding partner of the OPC, serves as an independent intermediary between scientists and policymakers. In recent years, ICARP formed the Scientific Advisory Group (SAG) to coordinate statewide climate science and provide actionable guidance for resilience planning, addressing emerging issues through expert collaboration and interagency working groups.

Stemming from public opposition to infilling in the San Francisco Bay in 1972, a group of activists established an immersive environmental education program for young children. The EcoCenter in the Palo Alto Baylands originates from this effort, fostering generations of young environmental stewards. Photo © Blair Morris

Boost practitioner uptake

California's investments have placed the state in a relatively strong position, as the federal government removes national climate data and defunds research agencies. Several local leaders described feeling cautiously optimistic about the quality and availability of data to support their planning, particularly when compared to experiences in other states. However, many interviewees also noted gaps in awareness, training, and usability. Even well-developed tools like Cal-Adapt and the Adaptation Clearinghouse were underutilized by local staff unfamiliar with how to integrate them into day-to-day planning.

This highlights a key lesson: building reliable data infrastructure is only half the challenge. Local governments must also have the capacity, support, and incentives to use it. California's example suggests that dedicated outreach, partnerships with regional collaboratives, and user-centered design are critical to making climate data actionable on the ground.

Interview Insights

→ Although data tools like Cal-Adapt are recognized by state leaders as valuable resources for coastal planning, some interviewees from city governments suggested that proactive outreach, targeted training, and demonstration projects could help increase the use of state data tools in local planning. Other states could benefit from more proactive engagement—including investing in outreach, partnering with regional networks, and demonstrating how data tools can support local decision-making in practice.



California is collecting data and developing solutions to protect parks like Montaña de Oro State Park from sea level rise and erosion. Photo © Rodrigo Kammer

Conclusion

California's leadership on coastal resilience stems not just from its economic and political power, but from decades of institutional commitment to managing climate risk. By embedding coastal resilience across multiple agencies, investing in inclusive planning processes, and maintaining a strong science-policy interface, the state has built a durable framework that enables adaptation, even in the face of federal retreat.

Other states may not have California's scale or resources, but they can adopt key elements of its model. This may include pairing regulatory requirements with accessible, non-competitive funding; fostering regional networks for peer support and coordination; investing in user-friendly climate data tools; and codifying equity into adaptation policies and funding decisions.

As federal uncertainty continues, California's experience shows that states can—and must—play a more central role in securing the future of coastal communities. The challenge ahead is ensuring these lessons are shared, adapted, and scaled to meet the diverse needs of coastlines across the country.

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