2022

State Of The Beach Report

SURFRIDER FOUNDATION

Contents

Introduction

"Either we stop it — or it stops us."

— United Nations Secretary General at COP26"

The Surfrider Foundation's 2021 State of the Beach Report was published last year as world leaders were gathering in Glasgow, Scotland, for the United Nations (UN) Climate Change Conference, COP 26. The meeting brought together more than 200 countries and delegates were charged with fulfilling goals of the Paris Agreement and the UN Framework Convention on Climate Change. COP 26 ended on a high note with the creation of the 'Glasgow Pact,' which focuses on climate action and support. While the pact is a step in the right direction, some climate experts fear much more needs to be done to prevent and adapt to climate change.

Within the past year, since the COP 26 meeting, the world has experienced megadroughts, numerous fires, heatwaves, extreme storms and unprecedented flooding fueled by climate change, impacting millions of people around the globe. Climate studies point to warming in both the atmosphere and ocean as major contributors to extreme weather events. In fact, atmospheric moisture has increased by 5% to 20% since before 1970. As the atmosphere is warming, water vapors increase, which in turn creates more intense storms that last longer, with up to 30% more rain.

How can society halt some of the worst impacts of climate change? By immediately weaning off of fossil fuels. New data suggests that we need to speed up that transition. In June, the National Oceanic and Atmospheric Administration (NOAA) reported that the global concentration of carbon dioxide in Earth's atmosphere is now 50% greater than in pre-industrial times, and is currently at a level of 421 parts per million (ppm). This has not been seen since 4.1 to 4.5 million years ago, when sea levels were between five and 25 meters higher than today. Unfortunately, the United States Supreme Court recently ruled to limit the ability of the Environmental Protection Agency (EPA) to prevent power plants from releasing climate-warming pollution. This decision will stymie the progress that the EPA has made to curb greenhouse gases.

A warmer ocean and climate mean more water in the atmosphere, which fuels stronger, wetter storms.

Climate studies point to warming in both the atmosphere and ocean as major contributors to extreme weather events.

50%

Greater Global Concentration of Carbon Dioxide in Earth's Atmosphere Than in Pre-Industrial Times

As the atmosphere is warming, water vapors increase, which in turn creates more intense storms that last longer.

30%

More Rain Produced by Storms

Swiftly acting on climate change is not only important for the health of the planet and humans, but it also makes economic sense. A 2022 report amplifies how costly climate change can be. The conclusions affirm that if we fail to take significant climate change action, it could cost $14.5 trillion (in present value terms) to the U.S. economy over the next 50 years.

Another report analyzed how the costliness of climate change will impact real estate. By mid-century, more than 648,000 individual tax parcels, totaling as many as 4.4 million acres, are projected to be at least partly below tidal levels. Of those, more than 48,000 properties may be entirely below sea levels. Florida, Louisiana and Texas have the largest numbers of affected parcels. Coastal flooding and sea level rise are decreasing coastal property values in the U.S. – which in turn impacts local property tax bases that fund schools, emergency services and more.

Despite the increasing impacts of climate change and policy setbacks in 2022, positive advancements to rein in the climate crisis were made in the U.S., ranging from the federal level to small townships. Nationally, both the Biden administration and Congress have made progress to uphold climate policies that were rolled back during the previous administration.

For example, two important bills were passed at the federal level, including the bipartisan infrastructure bill and the Inflation Reduction Act. Both pieces of legislation will provide much-needed funding to communities for coastal resilience. They will also help to build resilient infrastructure that can withstand the impacts of climate change and extreme weather. In addition, another important piece of legislation, the Ocean-Based Climate Solutions Act, is still in Congress and it aims to leverage the ocean in the fight against climate change. This bill will improve ocean protection, increase Blue Carbon ecosystems, promote responsible, renewable offshore energy and help communities to adapt to sea level rise. There are several additional pieces of legislation in the House of Representatives that specifically focus on coastal and ocean implications of climate change that Surfrider is monitoring.

Surfrider's 2022 State of the Beach Report reveals that only one state improved its grade from 2021. Florida increased from a D to a C- because the state passed legislation to establish a Statewide Flooding and Sea Level Rise Resilience Office that will set up a grant program to help communities develop and update comprehensive vulnerability assessments. In addition, the state governor added $500 million to his budget to require the Florida Flood Hub for Applied Research and Innovation to provide tidal and storm surge flooding data to counties and municipalities for aspects such as vulnerability assessments.

While two other states improved policies, those efforts did not result in different grades. For example, New Jersey is working to improve its sediment management plan and South Carolina is increasing efforts to assist communities with sea level rise planning. While these efforts are encouraging, both states need to improve development standards.

Swiftly acting on climate change is not only important for the health of the planet and humans, but it also makes economic sense.

$14.5 Trillion

Cost to the U.S. Economy Over the Next 50 Years if We Fail to Take Significant Climate Change Action

Coastal flooding and sea level rise are decreasing coastal property values in the U.S. – which in turn impacts local property tax bases that fund schools, emergency services and more.

The goal of Surfrider's State of the Beach Report is to make the public and decision-makers aware of the ever-growing erosion problems facing our beaches and to improve how municipalities and agencies respond to erosion, coastal preservation and sea level rise. For more information on Surfrider's climate change work, please review our activist toolkit.

SURFRIDER'S COASTAL EFFORTS TO IMPROVE MANAGEMENT

The Surfrider Foundation is a nonprofit environmental organization dedicated to the protection and enjoyment of our world's ocean, waves and beaches for all people through a powerful activist network. For nearly 40 years, Surfrider has helped to improve coastal management and protect important ocean and coastal resources. With more than 200 chapters and student clubs nationwide, Surfrider is working at local, state and national levels to protect our shorelines. We proactively address threats, such as coastal development, shoreline armoring, seawalls and beach 'dredge and fill' projects to support the protection of our coastlines. At the national level, our environmental science, policy and legal experts work with decision-makers to plan for the future of our coasts.

Surfrider has intentionally been increasing our work on climate change mitigation and adaptation to help provide solutions to this crisis. We constantly search for new scientific research and consume in-depth policy ideas to implement solutions.

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While climate change is daunting, Surfrider is working around the country every day to protect our communities, ecological resources and recreational access.

We are implementing a multipronged approach to:

- Educate our supporters, the general public and decision-makers about how climate change is impacting our ocean and coasts.
- Help communities to adapt to climate change impacts by working directly with decision-makers in 30+ different localities across the country to safeguard and pass climate legislation at state and federal levels.
- Lobby the halls of Congress. In 2022, through our Coastal Recreation Hill Day, 160 Surfrider advocates from 26 states met with more than 165 congressional representatives to urge stronger leadership to solve climate change.
- Protect and enhance beach access for the public, including underserved communities.
- Help improve coastal management and planning for sea level rise by publishing this annual State of the Beach Report.
- Restore coastal dunes, create 'living shorelines' and conserve blue carbon ecosystems.
- Partner with universities and federal agencies to better understand ocean acidification, harmful algae blooms and sea level rise.
- Fight offshore oil drilling that is exacerbating climate change.
- Hit the streets. Surfrider has mobilized people to attend global climate marches and strikes.
- Plant Ocean Friendly Gardens to create 'living soils' that trap greenhouse gases and prevent the use of emission-intensive fertilizers.

For more information on Surfrider's coast and climate campaigns and victories, visit surfrider.org. We encourage you to join your nearest chapter, become a member, and get connected and involved in the protection of your local coastline and favorite beach.

COASTAL EROSION IS THREATENING BEACHES

Our nation's beaches are under extreme threat from coastal erosion. According to U.S. Geological Survey studies, about 50% of surveyed coastlines in the nation are either at 'high' or 'very high' risk of coastal erosion. This alarming statistic underscores the importance of strong coastal management to protect these vital resources for the future.

Our nation's beaches are under extreme threat from coastal erosion.

50%

Of Surveyed Coastlines in the Nation Are Either at 'High' or 'Very High' Risk of Coastal Erosion

'Coastal erosion' is the loss of both sandy beaches and land area. It occurs due to several factors, including geological changes in the landscape, sea level rise, high-intensity storms, drought and the disruption of natural sand supply. Developments, such as the paving of watersheds, damming of rivers and construction of shoreline structures that interrupt sand transport, block the flow of sediment to the coastline and prohibit the natural refurbishment of sand on our coasts.

Part of the problem is that the allure of the coasts has prompted individuals and communities to build infrastructure too close to our ocean and waterways. Only after coastal erosion and storm surge threaten properties, many homeowners and land managers conduct expensive protection projects. These short-term approaches include the addition of sand through 'sand replenishment' and the construction of hard stabilization structures with 'coastal armoring.' While applied as a quick-fix, scientists have found that sand replenishment projects can cause environmental damage and unintended ecological consequences. Shoreline armoring actually exacerbates erosion by blocking the natural flow of sand and effectively starving beaches. Additionally, sand is a finite resource, formed from the weathering and erosion of rocks over thousands to millions of years. As the world's demand for sand continues to rise for cement, glass, asphalt, fracking and beach replenishment, to name a few, the global supply of sand is dwindling.

To compound the issues related to beach erosion and sand scarcity, more than 80,000 acres of coastal wetlands are lost annually, which is the equivalent of about seven football fields of wetlands lost each hour of every day. Over the past 200 years, more than half of the wetlands in the U.S. have disappeared due to a combination of natural processes and human engineering. The erosion of coastlines, loss of wetlands and development of watersheds is also taking place in conjunction with rising sea levels and the ongoing effects of climate change.

In February, on the North Shore of O'ahu, a home slid into the waves at the famed Rocky Point surf break, serving as a warning of what's to come as our climate changes and seas rise — especially considering more than 40% of Americans live within a coastal zone.

CLIMATE CHANGE AND SEA LEVEL RISE

Climate change is already here. Many empirical examples of climate change impacts can be seen around the country. Areas in Florida are increasingly experiencing 'sunny day flooding,' in which the ocean regularly creeps into streets and storm drains. In the Pacific Northwest, the shellfish industry has undertaken major efforts to curb acidic ocean water from impacting hatcheries. California, Oregon and Washington witnessed an unprecedented fire season in 2022 as extreme temperatures and drought conditions exacerbated fires along the entire West Coast. The Pacific Ocean off the West Coast also experienced its second-largest marine heat wave ever recorded. The Atlantic also continues to be plagued with more frequent and severe hurricanes that devastate coastal communities.

Over the past few years, the United Nations Intergovernmental Panel on Climate Change released its 2018, 2019 and 2021 reports, concluding that drastic climate change impacts are now estimated to occur much faster than previously predicted – as soon as 2040. Even if humans manage to keep the Earth's temperature from increasing by 2 degrees Celsius, major impacts are expected to happen due to the amount of greenhouse gases already released into the ocean and atmosphere. However, these impacts will be much more severe if we don't curb our global greenhouse gas emissions significantly and urgently.

As extreme weather events and climate change become more consistent and noticeable, it is increasingly important for our nation's decision-makers to take immediate steps and actively plan for climate change impacts. After destructive environmental disasters, the sentiment is often to rebuild in the same place and begin armoring the coast. However, armoring is just a short-term solution and this approach often leads to the overdevelopment of the coast, putting people and homes back in dangerous, high-risk areas. Alternatively, through strategic restoration and planning, shorelines can recover and regenerate to avoid or mitigate erosion. Homes can also be built in a way, and location, that prevents added risks to residents.

As extreme weather events and climate change become more consistent and noticeable, it is increasingly important for our nation's decision-makers to take immediate steps and actively plan for climate change impacts.

We need to proactively and strategically turn the tide now to avoid the loss of beaches, homes, communities, public access, recreation and ecosystems. In terms of coastal erosion, this isn't just about the loss of beaches, it's also about the increasing loss of livable land for our communities. Once these unique and special areas are gone, they're gone for good – permanently lost for current populations and future generations.

As a result of climate change, the Atlantic continues to be plagued with more frequent and severe hurricanes that devastate coastal communities.

Key Findings

Many states have model programs in place to protect our coastal resources. However, this year's report reveals once again that the majority of coastal and Great Lakes states, in addition to Puerto Rico, are doing a mediocre to poor job of responding to coastal erosion and planning for sea level rise. A noticeable trend highlights the fact that states that are the most vulnerable to extreme weather events, including destructive hurricanes, are also the least prepared in terms of state policy to handle coastal erosion and the increasing impacts of climate change.

The overarching results of Surfrider's analysis indicate that the majority of coastal managers and state agencies need to take greater steps to ensure that our nation's beaches and coastlines will be protected for future generations.

Our report makes the case that states will greatly benefit from more consistent policy and financial support from the federal government.

Given the severity of coastal erosion and impending sea level rise, the State of the Beach Report criteria checklist is ambitious and the standards are intentionally set at high levels. The report is intended to be used as a tool to highlight areas that need the most work and provide potential solutions that can be implemented to protect our coasts and coastal communities for the future. In order for states to aim for the ambitious standards set in this report, it is important to increase adaptive capacity and look at each of the four areas assessed in a holistic manner.

A noticeable trend highlights the fact that states that are the most vulnerable to extreme weather events, including destructive hurricanes, are also the least prepared in terms of state policy to handle coastal erosion and the increasing impacts of climate change.

The majority of coastal and Great Lakes states and territories are doing a mediocre to poor job of responding to coastal erosion and planning for sea level rise.

AVERAGE GRADES

West	B
Northeast	B
Mid-Atlantic	C
Islands	C
Southeast	C
Great Lakes	D
Gulf	D

Stronger, wetter hurricanes continue to test the limits of Florida's failing wastewater infrastructure, posing a grave threat to the public health of residents in impacted areas.

Methodology

Surfrider's State of the Beach Report evaluates the performance of states in terms of management of coastal resources and planning for sea level rise. Each state or territory was graded on a set of 12 criteria separated into four major categories: sediment management, development, coastal armoring and sea level rise (Appendix 1). The scoring scale for the four categories is qualitative, based on each state's ability to meet the key criteria.

This set of criteria encapsulates state efforts to meet expectations established in the Coastal Zone Management Act (CZMA). Specifically, states were evaluated on their current laws and policies, in addition to the implementation of these policies. States were also evaluated on recently passed legislation, the 'assessments and strategies form' under Section 309 of the CZMA, communication with coastal zone management agencies and on-the-ground monitoring through Surfrider's network.

For each category, states received a numerical score, from 1 (bad) to 3 (good), based on the presence and strength of their policies. The score for each state was calculated by totaling points from every category and translating scores into letter grades, described in greater detail below. We aimed to provide holistic grading, balancing the point system with the state's policies overall, including the quality of policies and how well they are implemented.

The scoring scale for the four categories is qualitative, based on each state's ability to meet the key criteria.

GRADING SCALE

The overarching grading scale is a standard five-letter grading system from A to F. However, a few states did receive either a plus (+) or minus (-). This exception was made for only a few states because the grade was marginally on the fence when calculating criteria points. In addition, a minus can indicate that a state has strayed from strong policies that are already in place, or it can indicate the state improved a policy but that improvement did not earn a full letter grade improvement. A plus can indicate that while a state is lacking certain criteria, exceptional efforts are being made to improve coastal management.

BAD = 1 POINT

Insufficient. Does not provide adequate protection of coastal resources.

OK = 2 POINTS

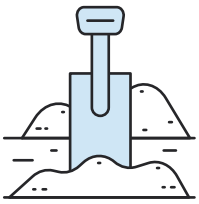
Some robust policies are in place, but need improving to adequately protect the coastline.

GOOD = 3 POINTS

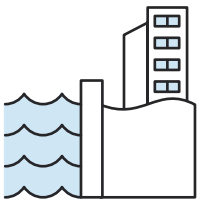
Nice work! Sufficiently protects the coastline.

A = 11-12 POINTS	Excellent policies and implementation.
B = 9-10 POINTS	Good policies but can be improved.
C = 7-8 POINTS	Mediocre policies.
D = 5-6 POINTS	Fairly poor policies, lacking.
F = 4 POINTS	Inadequate protection of coastal communities and resources.

CATEGORIES OF CRITERIA



Sediment Management: Coastal states are encouraged to manage sediment and preserve upland sediment sources to ensure habitats for wildlife and healthy beaches for recreation, tourism and economic opportunities. Adequate sediment management includes protecting and restoring the natural flow of sediment to the coast and along the beach. If necessary, it also includes carefully planning for beach replenishment by establishing clear monitoring requirements before and after sediment projects, and a permitting process to ensure proposed projects meet regional requirements.



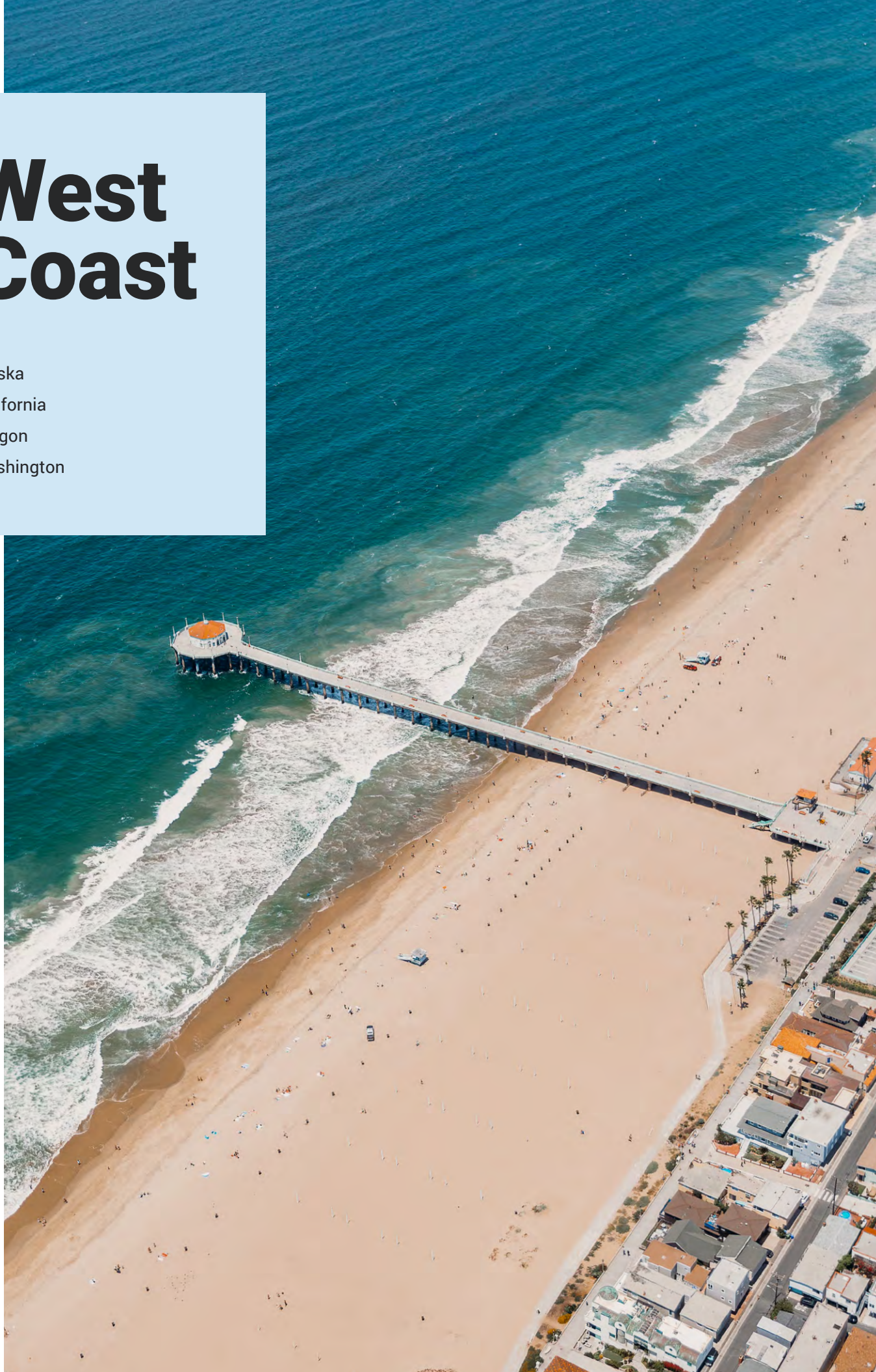
Coastal Armoring: As a result of significant coastal development, many states have permitted methods of coastal armoring to protect structures from hazards, such as extreme tides, storm surge and sea level rise. Coastal armoring is a form of 'structural shoreline stabilization' which prioritizes the short-term protection of developments rather than the long-term health and functional resilience of the coast. This quick-fix approach is intended to reinforce unstable coastlines and create a physical buffer between developments and the waterline. Methods of armoring include the construction of jetties, vertical seawalls and riprap or revetments, which are large rocks, boulders or artificial counterparts placed on the beach. Unfortunately, these armoring techniques are costly, provide only short-term protection, result in the loss of natural coastline and actually exacerbate the rate of erosion. Adequate coastal armoring policies prevent the use of hard armoring, restrict inappropriate construction and repair, prevent or have strict limitations on emergency permitting directly after storms and promote soft stabilization mechanisms that increase coastal resiliency, such as living shorelines that use native vegetation to protect wetlands and coastal areas.

Development: Much of our nation's coastline is already developed. Waterfront residences, tourism opportunities and public infrastructure, such as roads, wastewater treatment plants and power plants, line our coasts. In addition, coastal development in a time of climate change exacerbates impacts on wildlife, habitats and coastal recreation, which all depend on healthy coasts. Adequate coastal development management includes implementing strong building codes to ensure that developments can withstand severe storms, restrictions on the repair or development of new structures in high hazard areas, ample 'setback' buffers that require developments to be built a certain distance from the coast (either from the mean high tide line or first line of vegetation) and clear protection for environmentally-sensitive habitat areas.

Sea Level Rise: Previous and ongoing greenhouse gas emissions have altered the chemical composition of the Earth's atmosphere and ocean, causing the phenomenon known as climate change. Many expected impacts are already evident from this change in global processes, with coastal effects becoming more visible. There is a strong scientific consensus that climate change will result in more frequent and severe storms, increased sea levels from warming water molecules and melting continental ice sheets, and exacerbated erosion of the shoreline. Coastal states must be proactive in increasing the resilience of their communities and coastlines. Adequate sea level rise policies include conducting thorough sea level rise vulnerability assessments, directing ample outreach to coastal communities and jurisdictions, and developing comprehensive adaptation plans to prepare for and respond to sea level rise.

West Coast

Alaska
California
Oregon
Washington



WEST COAST

Alaska

Alaska is home to the country's longest coastline, amassing 6,640 miles of mountainous shores that are home to many Native Alaska communities. The abundant wildlife and natural resources draw visitors from near and far as they search for remote adventures, plentiful fishing and wildlife watching. With such a vast coastline to protect, it is surprising that Alaska has opted out of NOAA's CZMA Enhancement Grant funding, which could provide necessary resources to protect this spectacular shoreline.

	Bad	OK	Good	
Sediment Management				**1**
Coastal Armoring				**1**
Development				**1**
Sea Level Rise				**2**
			Total	**5**

BEACH GRADE

D

Fairly poor policies, lacking.

BAD

Sediment Management: Alaska is lacking sand replenishment policies and regional sediment management plans. While some municipalities have their own sediment management plans, it's not a common practice. In fact, beach fill projects are rather uncommon, with no identified policy overseeing or guiding those that do occur. In lieu of any state regulations, dredge and fill efforts are only required to meet federal standards. However, large-scale construction projects, such as natural gas pipelines, are required to submit an erosion and sedimentation control plan with their development application.

BAD

Coastal Armoring: While Alaska lacks concrete policies regarding coastal armoring, agencies are encouraged to consider alternatives prior to constructing hard structures. Unfortunately, there are no restrictions on the use of hard shoreline structures on private property and grants are even available for constructing and repairing hard stabilization structures. Instead of the state taking the lead on managing erosion, many federal agencies are involved in various aspects of erosion management.

BAD

Development: Development standards are largely created at the municipal level and are relatively lackluster. Alaska does not have a statewide setback policy and does not place restrictions on the rebuilding of structures near the coast, even after they have been damaged by flooding. According to Alaska's Coastal Assessment and Strategy document, only six coastal districts and five communities have approved state comprehensive management plans. However, the state does protect certain sensitive habitats from development, including 32 established critical habitat areas, wildlife sanctuaries and game refuges along the coast.

OK

Sea Level Rise: Alaska continues to make some progress in planning for climate change. In 2020, Alaska and federal agencies announced plans for extensive mapping of the coastline and nearshore bathymetry. The Climate Change Impact Mitigation Program provides technical assistance and funding to communities imminently threatened by climate-related natural hazards, such as erosion, flooding, storm surge and thawing permafrost. In 2019, the program also released a Threat Assessment that includes mapping. Alaska has codified protections for riparian areas, and the Department of Natural Resources frequently advances stream and land restoration efforts. There are, however, conflicting actions at play, with the state's recognition of climate change, coastal hazards and the need for sensitive habitat protection at odds with the state's ongoing support of oil and gas drilling, even in the Arctic National Wildlife Refuge.

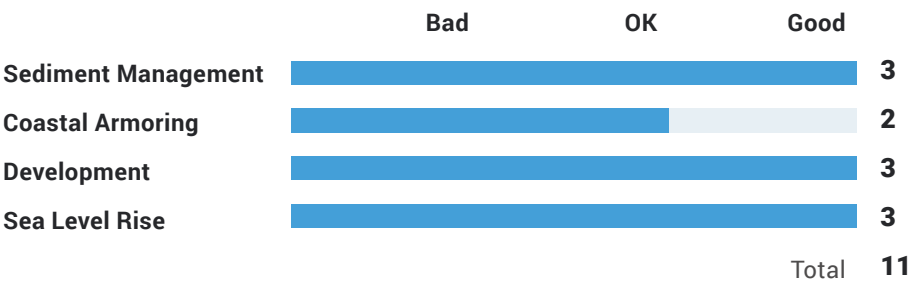
RECOMMENDATIONS

- **Develop coastal zone management enhancement plans and rejoin the Coastal Zone Management Program, which works with states to address coastal issues.**
- **Develop and/or require the local development of adaptation plans for coastal communities.**
- **Establish more thorough policies on relocation and managed retreat of structures prone to erosion and sea level rise.**
- **Develop strategies that limit or prohibit shoreline armoring.**
- **Create regional sediment management and replenishment plans that require the consideration of environmental impacts and extensive monitoring.**
- **Prohibit drilling and fossil fuel extraction in National Wildlife Refuges.**
- **Establish coastal development setback policies.**

WEST COAST

California

With nearly 1,100 miles of rocky cliffs, seal-lined beaches and booming coastal economies, California demands policies that are as powerful as its coastline. The state leads the country in coastal management with policies, such as the iconic 1976 California Coastal Act, as well as the Coastal Commission's extensive work regarding sea level rise. In 2022, California passed nearly 40 climate change laws aimed at slashing greenhouse gas emissions. The state governor is also committing $1.5 billion in nature-based solutions that can buffer climate impacts and store carbon.



BEACH GRADE

A

Excellent policies and implementation.

GOOD

Sediment Management: California has a Sediment Master Plan and a California Sediment Management Workgroup composed of local and state agencies to establish regional plans. While California does a better job than most states with efforts to avoid unnecessary beach fill, expensive beach fill projects still occur frequently. Fortunately, projects are strictly reviewed under the Coastal Act and stringent permit conditions require extensive environmental analysis and monitoring plans. The state considers progressive measures, such as the reuse of dredged sand, and is analyzing the removal of obsolete dams. Multiple agencies also provide extensive resources and studies related to sediment.

OK

Coastal Armoring: Advancing coastal resilience is a clear priority for California, with the state's Ocean Protection Council recently approving 15 grant projects that prioritize 'nature-based' adaptation efforts. Local Coastal Programs approved by the California Coastal Commission (CCC) also put restrictions on new armoring and the repair of existing seawalls. Unfortunately, the CCC continues to administer emergency permits for temporary stabilization structures and many become permanent. The CCC backs awayfrom permit conditions that require the removal of seawalls and rock revetments.Fortunately, California agencies and local municipalities have increased efforts to fund and implement living shorelines and other natural mechanisms.

GOOD

Development: Recently, the CCC improved setback standards, proving once again that California takes its coastal development law seriously. When compared to many other coastal states and urban areas, California has managed to limit unnecessary development, leaving the coastline less impacted in most locations (with the exception of large metropolitan areas). The Coastal Act has clear requirements about development and redevelopment. The state also does a good job of protecting environmentally-sensitive areas and often applies additional protections to prevent degradation, both onshore and offshore. In addition, the state has sought to increase tribal-led management of the coastline. For example, its Ocean Protection Council has dedicated $3.6 million to support tribal-led coastal land management.

GOOD

Sea Level Rise: Every year, the state reflects seriously on its sea level rise laws and policies. A total of 16 state agencies contributed to a joint sea level rise action plan detailing their plans to work together on various tasks. While already leading in sea level rise response, the state passed even more pieces of proactive legislation in 2022. New policy additions include: improving and streamlining nature based solution permits; requiring state agencies to conduct a sea level rise analysis before approving public funds for new or expanded infrastructure projects along the coast; providing a fiscally prudent investment in the long-term protection and vitality of California's coast; and enhancing the CCC's ability to better enforce the Coastal Act and penalize violations.

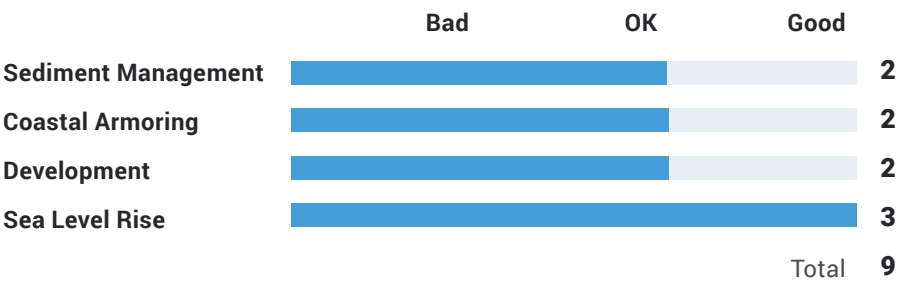
RECOMMENDATIONS

- **Prohibit the use of emergency seawalls and hard stabilization devices.**
- **If hard stabilization is absolutely necessary, only offer emergency permitting with strict time limits for removal, in addition to a legal commitment by the property owner to remove the seawall and implement an alternative stabilization method or conduct managed retreat.**
- **Increase efforts to restore natural sediment flow to the coastline.**
- **Enhance development setback standards to incorporate current sea level rise and erosion projections.**
- **Establish firm requirements to use soft stabilization methods, such as 'living shorelines' and managed retreat, before using hard stabilization devices or sand replenishment.**
- **Offer local municipalities and homeowners legal advice on managed retreat that maintains and protects public access through rolling easements and incentivizes rezoning in light of sea level rise.**
- **Bolster efforts of the California Sediment Management Workgroup to revamp regional sediment management plans.**
- **Include sandy beaches as an ecosystem to be monitored and preserved through the state's 30x30 process.**

WEST COAST

Oregon

Oregon's 362 miles of coastline are lined with more than 80 state parks, gorgeous green landscapes and fierce currents. For well over 100 years, Oregonians have fought to maintain public access to their coast, highlighting their unwavering love for the outdoors. The Oregon Beach Bill of 1967 ultimately secured public access to the coast, allowing Oregonians to freely enjoy fishing, beach access and countless coastal adventures. Recently, the state passed several bills that protect sensitive habitats and increase efforts to combat climate change impacts and ocean acidification.



BEACH GRADE

B-

Good policies but can be improved.

OK

Sediment Management: Oregon has permitting requirements for beach fill projects under the Oregon Parks and Recreation Department but the state is lacking in monitoring processes and plans. Fortunately, unlike some East Coast states, Oregon doesn't rely on beach fill for erosion control. However, Statewide Planning Goal 18, which is designed to protect beaches and dunes, allows for 'dune grading' for 'view enhancement,' among other sand management activities, which are provided for by local management plans.

OK

Coastal Armoring: Under the Ocean Shore Permit Application Review Process, Oregon requires alternative analysis for protective structures that includes "an analysis of hazard avoidance alternatives, including relocation of existing buildings or other infrastructure." This is a strong measure that's effective at limiting armoring on the majority of Oregon's shoreline. The state also maintains a geospatial inventory of coastal armoring and over the years, the trend for approving armoring has declined. However, similar to other states, Oregon could improve its 'emergency' permits requirement, in addition to definitions and standards for approved structures.

OK

Development: Oregon does not have a standardized setback system for development and recently removed some important restrictions on new development in high hazard areas. While the state does provide a model development policy and has established beneficial restrictions on repair and redevelopment, it is up to the local governments to fully establish, implement and enforce local interpretations of Goal 18 to protect beaches and sand dunes. In 2019, the Department of Land Conservation and Development (DLCD) began convening stakeholders to explore ways to further fine-tune language within Goal 18. That process resulted in a number of recommendations. In 2021, DLCD launched a rule advisory committee to address oceanfront road infrastructure related to those recommendations.

GOOD

Sea Level Rise: Oregon continues to be a leader in climate change adaptation planning, encouraging local communities to proactively plan for climate change impacts through its Climate Ready Communities program. Oregon is far ahead of other states in protecting public access in light of future sea level rise and has even established a rolling easement policy. In 2021, the state began working on a sea level rise guidance document for local planners and municipalities to ensure proper sea level rise analysis and subsequent planning.

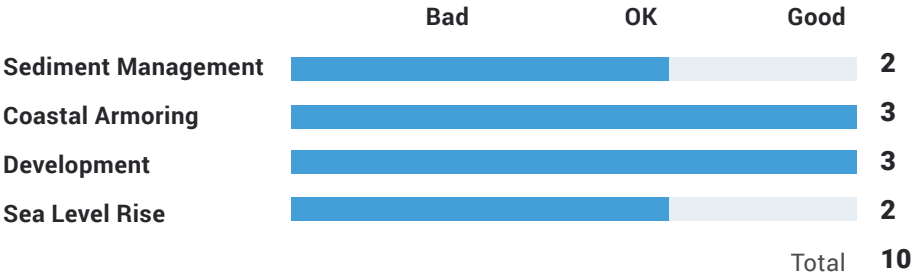
RECOMMENDATIONS

- **Ensure language changes to Goal 18 further protect coastal resources by limiting development in hazardous and sensitive areas, requiring 'soft' alternatives to coastal armoring and setting a minimum development setback policy.**
- **Establish repair and rebuilding restrictions for infrastructure that has been damaged by coastal hazards.**
- **If hard stabilization is absolutely necessary, only offer emergency permitting with strict time limits for removal and restoration. In addition, it would be beneficial to require a legal commitment by the property owner to remove the seawall and implement an alternative stabilization method.**
- **Develop and require local governments to implement sand management plans that analyze environmental and recreational impacts prior to project approval. Also, the state can institute a monitoring program that reviews the long-term effectiveness of replenishment projects.**
- **Ensure that local agencies and coastal managers communicate with community members about climate change issues and guidance.**
- **Close loopholes for preemptive armoring and adhere consistently to coastal preservation and erosion policies.**

WEST COAST

Washington

Washington's shorelines are rich in geological features and vast bodies of water. The beautifully rugged Pacific coast is home to the world-renowned Olympic National Park, many diverse ecosystems and several sovereign tribal reservations. More than 68% of Washingtonians, or 4.6 million people, live along or near the state's 3,026 miles of coastline. Considering that Washington's coastal and marine environments are vital economic engines, it is imperative that the state continues to prepare for sea level rise. While Washington is doing a good job preparing for climate change impacts and reducing greenhouse gas emissions, the state would benefit from requiring local municipalities to incorporate sea level rise into local land use plans. In 2022, a bill failed in the legislature that would have required sea level rise analysis be incorporated into local Shoreline Master Plans.



BEACH GRADE

B

Good policies but can be improved.

OK

Sediment Management: Washington's statewide sediment management policy is lacking a holistic approach because it narrowly focuses on dredging and does not explicitly provide beach fill regulations. As an important note however, the state does not heavily rely on beach fill and even has a decent permitting process for replenishment projects.

GOOD

Coastal Armoring: Similar to California, Washington has established local plans, known as Shoreline Master Programs. The plans clearly provide policies to avoid the installation of new shoreline armoring, unless determined necessary under highly specific conditions. Washington has also made concerted efforts to remove coastal armoring projects to help restore ecological functions. In addition, Washington is ahead of other West Coast states in terms of implementing living shorelines and restoration projects.

GOOD

Development: The Shoreline Management Act, passed in 1971, requires local municipalities to establish robust development standards. These include setback requirements, limitations on new development and redevelopment, and the protection of public access related to development. Washington also does a good job of protecting sensitive habitats, such as wetlands and dunes, from poorly-planned development.

OK

Sea Level Rise: The Department of Ecology continues to work with academia and other stakeholders to evaluate the latest sea level rise data. While Washington has taken proactive measures to analyze climate change, such as creating vulnerability assessment and risk maps, 'Washington State's Integrated Climate Response Strategy' only provides recommendations for adaptation. The state needs to create a long-term adaptation plan for the region and require local communities to update local Shoreline Master Programs (SMPs) to include adaptation implementation. In the Quinault Indian Nation, plans are underway for relocating the villages of Taholah and Queets, where more than a thousand people face increased tsunami risk as the sea rises inch by inch, year by year. In 2022, an important bill failed that would have required sea level rise analysis in Shoreline Master Plans.

RECOMMENDATIONS

- **Require all counties and municipalities to incorporate sea level rise into regional Shoreline Master Plans.**
- **The state legislature should bolster financial support to local communities to plan for sea level rise and other climate change impacts.**
- **Establish explicit regulations for beach dredge and fill projects to ensure coastal resource protection.**
- **Develop a coastal resiliency plan to comprehensively address the challenges of coastal erosion, sediment management and sea level rise.**
- **Explore mechanisms for managed retreat and infrastructure relocation.**

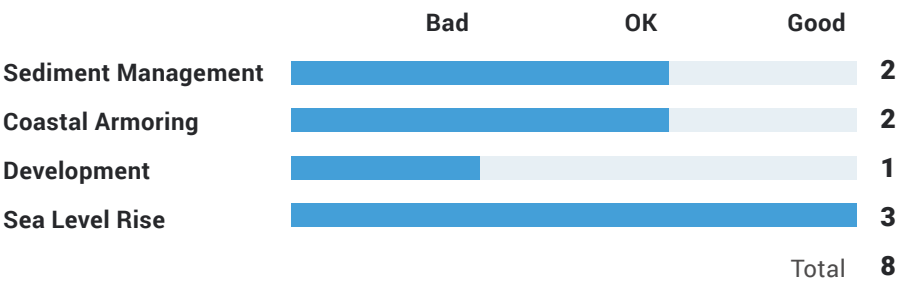
Northeast

Connecticut
Maine
Massachusetts
New Hampshire
Rhode Island

NORTHEAST

Connecticut

Connecticut's 96 miles of coastline provide beauty and endless recreational opportunities to its residents and visitors. In 2021, the state made tremendous progress with improving sea level rise planning efforts by passing extensive legislation. In addition, the state also implemented the final version of the Blue Plan, which improved tools and standards for planning and permitting activities in offshore waters. However, the state must continue to update its coastal development policies in flood risk zones.



BEACH GRADE

C+

Mediocre policies.

OK

Sediment Management: In May 2021, Governor Lamont formally signed the Blue Plan into effect. The statutes within the Blue Plan focus on offshore waters and will also assist the state in nearshore efforts to discourage new uses that accelerate slope erosion, alter essential patterns and obstruct natural rates of erosion or supply of sediments. While beach nourishment is encouraged as an alternative to coastal armoring, the state grapples with extensive armoring and development that occurred prior to the establishment of its Coastal Zone Management program in 1980. This hinders its ability to protect natural flows of sediment. Connecticut would benefit by conducting a more thorough 'sediment budget' analysis than it previously has.

OK

Coastal Armoring: There are strong policies preventing hard stabilization methods, which require all proposed projects to obtain a permit from the Department of Energy and Environmental Protection (DEEP) before any work is done. Shoreline flood and erosion control structures proposed landward of the state's regulatory jurisdiction must also be referred by municipal land use authorities to the Commissioner of DEEP for review. Armoring is only permitted in extremely limited circumstances, and then only if there are no possible alternatives with less harmful impacts. There is clear language that homeowners are not entitled to build structures to expand or preserve property boundaries. Managed retreat is being actively discussed and while the state has some successful examples of buyouts, no formal policy has been established. The state also allows emergency permits for armoring. However, it is only temporarily, for 30 days or less, which helps to prevent misuse and maladaptation.

BAD

Development: In 2019, Zillow and Climate Central reported that Connecticut is developing in 'risk zones' three times faster than safer locations. Although statewide setback minimums are not established, local jurisdictions can develop their own setback guidelines, in addition to restrictions on repair and rebuilding in hazard areas. Some towns continue to allow development near coastal hazard areas and the Connecticut Coastal Management Act requires state oversight of local decision-making. This allows the DEEP to appeal any decisions that are inconsistent with this policy. Fortunately, properties in a clearly delineated 'coastal zone' require additional permitting and review

GOOD

Sea Level Rise: In 2021, the Governor signed HB 6441 into law, which helps local communities to respond more proactively by implementing climate change adaptation measures. In addition, the bill promotes nature-based solutions and living shorelines over coastal armoring when responding to sea level rise. The bill creates authorities that will improve coastal resilience and address stormwater pollution and flooding impacts. The bill also allows municipalities to adopt a 'conveyance fee' to fund land conservation, stewardship and adaptation strategies. Finally, the bill expands the scope of the Connecticut Green Bank, allowing it to invest in water recycling, climate adaptation, land conservation and environmental markets. The Green Bank would be allowed to utilize its authority to seek federal funding.

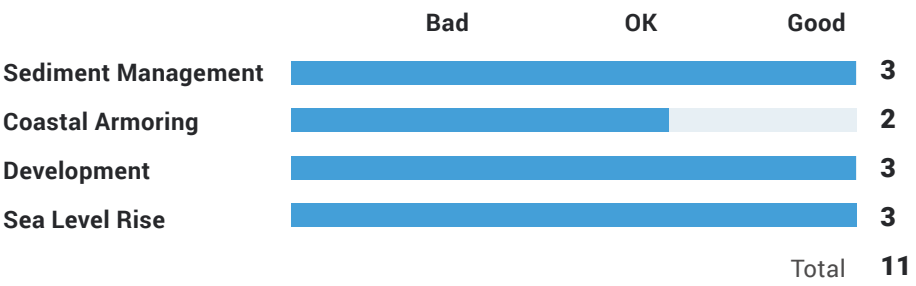
RECOMMENDATIONS

- **Strengthen the Coastal Structures Act to increase restrictions on structural modifications.**
- **Provide more consistent protections of coastal resources from development.**
- **Codify a plan for managed retreat and buyouts.**
- **Thoroughly analyze the state's 'sediment budget.'**
- **Codify a strong statewide setback law that is based on erosion rates and future sea level rise projections. Weak setbacks limit the ability to regulate coastal hazard areas accurately and effectively respond to sea level rise.**
- **Limit beach fill activities and protect the natural flow of sediment.**

NORTHEAST

Maine

Lined with rocky shores, remote islands and picturesque lighthouses, Maine's quintessential New England coast nurtures a rugged coastline and lifestyle. Dubbed 'Vacationland' for its lovely shores and mountains, coastal tourism is being impacted, in part, by ocean warming and acidification. Fortunately, Maine's policies are as robust as its environment, as the state is now evenly matched with California in leading the country's coastal management practices.



BEACH GRADE

A

Excellent policies and implementation.

GOOD

Sediment Management: Maine greatly updated their recent 309 Enhancement Strategies based on studies implemented in the last cycle. The changes resulted in improved beach dredge and fill policies and permitting. While Maine already has impressive sediment management plans, the state acknowledges the need to understand changing sediment flow by periodically updating regional bathymetry and sediment maps. The state plans to update and expand the Maine Beach Scoring System by integrating new data sets that aim to continue to improve beach fill policies. In recent years, the state updated Chapter 418 - Solid Waste Management Rules: Beneficial Use of Solid Wastes, which explicitly provides procedures for the beneficial reuse of sediment.

OK

Coastal Armoring: About 38 of Maine's 96 miles of sandy beaches in the southern half of the state are armored. Maine implemented a relatively strong armoring policy in 1978 that prohibits new seawalls on any beach or dune and allows for the repair and maintenance of 'grandfathered' seawalls with a permit. Existing seawalls may be altered only if they are proven to be 'less damaging' to the coastal sand dune system, including the beach. Maine prioritizes the use of living shorelines in the beach and dune system. In 2020, Maine worked with the U.S. Army Corps of Engineers to update its Maine General Permit to include language on living shorelines.

GOOD

Development: During this 309 Enhancement Strategies cycle, the state made strides to improve the management of development in hazard areas. It also worked to advance development policies and regulations in order to reduce threats and limit development and redevelopment in high-hazard areas. The population of Maine's coastal zone has steadily increased over the last 10 years and is expected to continue. In order to better prepare for growth and future development, the state is improving statutory language and mapping to better define "coastal hazard areas" to purposefully guide development away from high hazard areas. In addition, Maine will expand key coastal hazard decision support products and encourage municipalities to implement living shorelines.

GOOD

Sea Level Rise: In 2021, Governor Mills signed HB 1572 into law, which requires state agencies to incorporate 1.5 feet of relative sea level rise by 2050 and 4 feet by 2100 into the administration of those laws and rules. The law also implements a strategy designated as 'Strategy F3' in the state climate action plan to enhance community resilience to flooding and other climate impacts. Once again, the state used this 309 Strategies cycle to improve its already excellent sea level rise policies and continues to educate and assist local communities to improve risk preparedness. In 2020, the Maine Climate Council's Equity Assessment Committee also outlined strategies for building justice and equity into coastal climate projects and decision-making, with bold recommendations for blue carbon optimization and climate-adaptive ecosystem planning and management.

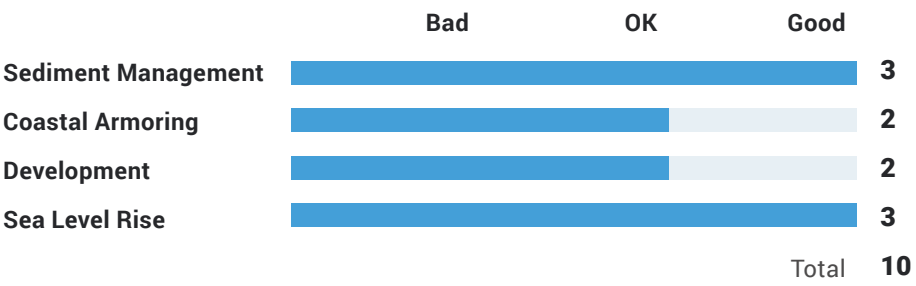
RECOMMENDATIONS

- **Develop a repetitive flood loss policy that codifies plans for managed retreat and buyouts.**
- **Thoroughly analyze state's 'sediment budget' in order to protect the natural flow of sediment.**
- **Quantify the effect of dune loss and beach area loss on loss of ecosystem services value.**
- **Identify funding to staff the Chapter 355 enforcement of violations.**
- **Evaluate and plan for beach access and causeway vulnerability in relation to sea level rise and storm surge.**
- **Continue to work with and implement recommendations from the Maine Climate Council.**

NORTHEAST

Massachusetts

Bordered by the Atlantic Ocean, the Commonwealth of Massachusetts' coast provides a stunning destination for migratory birds, and increasingly, sharks. For recreational users, the state also boasts dozens of excellent breaks, beaches and gorgeous kite and stand-up paddleboard spaces. While Massachusetts leads most states in coastal management, there is room for improvement regarding the state's development and coastal armoring restrictions.



BEACH GRADE

B

Good policies but can be improved.

GOOD

Sediment Management: In this 309 Strategies cycle, Massachusetts continued to improve its already outstanding sediment management policies. The state aims to conduct significant sediment mapping and analyses. The new data and best management practices will be developed to assist coastal managers in determining the best times and locations for using potential sand donor sites for beach nourishment. The state already has developed best management practices for beach fill projects, which must: 1) assess proximity to shellfish, eelgrass and endangered species habitat; 2) survey beach profiles; 3) include a thorough monitoring and maintenance plan that identifies sensitive resources; and 4) report annually or biannually.

OK

Coastal Armoring: Armoring is only allowed on coastal banks if developed prior to 1978 and if an alternative isn't feasible. Wetland protection regulations detail requirements that must be met when constructing groins. The state also keeps an impressive inventory of nearly all shoreline stabilization structures. In addition, the state allocates funds for a Dam and Seawall Repair or Removal program to address failing structures. In this 309 Strategies cycle, the state unfortunately references rebuilding armoring by stating, "When failing seawalls are rebuilt, they are frequently rebuilt to a higher elevation (i.e. taller) so there is more vertical face that can reflect / redirect a greater amount of wave energy, which increases scour and erosion of the fronting beaches."

OK

Development: While there is no statewide development setback standard, Massachusetts has taken a strong stance on avoiding the permitting of construction in high hazard areas. In this 309 Strategies cycle, the state will review Designated Port Area Boundaries to ensure that they accurately reflect the criteria outlined in regulations, including criteria for adequate land and water connections and compatible land use development patterns. While policies against new developments in hazard areas are strong, there are not strong policies to restrict the repair of frequently damaged properties in hazard areas. The state does have policies to protect barrier beaches and dunes, in addition to a manual that addresses the regulatory prohibition on new development in coastal dunes.

GOOD

Sea Level Rise: Massachusetts is an innovative leader with climate change mitigation and adaptation. A statewide climate change assessment is underway that will update the state's Hazard Mitigation and Climate Adaptation Plan, which provides funds to municipalities for climate adaptation efforts, such as the restoration of wetlands and migration. The state has produced numerous documents, including a climate change adaptation report, coastal infrastructure inventory, resources for local communities to assess vulnerability and increase resilience, a state hazard mitigation and adaptation plan and sea level rise flood maps. Exposure to sea level rise and coastal flooding is being assessed using the Massachusetts Coast Flood Risk Model. The state passed a law advancing smart offshore wind and environmental justice to achieve its 2030 and 2050 climate goals.

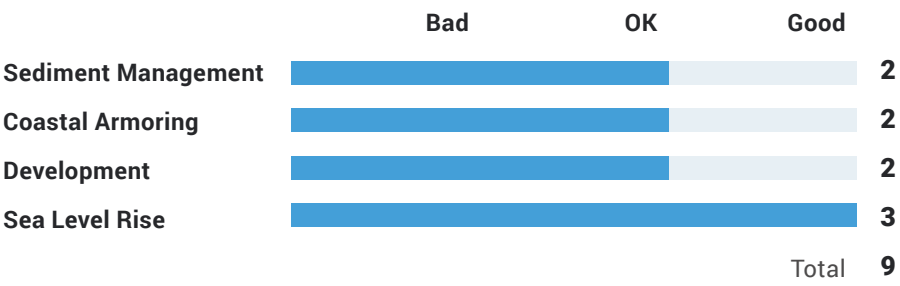
RECOMMENDATIONS

- **Restrict repairing developments in coastal hazard areas.**
- **Create policies for managed retreat, relocation, buyouts and retrofitting.**
- **Establish statewide minimum setback standards to provide a safe buffer between coastal hazard areas and coastal developments.**
- **Prohibit coastal armoring or limit it by including conditions, such as sunset clauses.**
- **Remove allowances for emergency permitting or strengthen the policy by requiring structures to be temporary with strict timelines for removal, restoration and the implementation of an alternative stabilization method.**

NORTHEAST

New Hampshire

The 'Granite State' has 18 miles of both rocky and sandy shores with vibrant communities scattered in between. The state continues to employ strong laws and policies related to coastal armoring and sea level rise planning. While the state has demonstrated great leadership with coastal management, it would benefit from strengthening regulations that govern beach fill projects, coastal development and redevelopment.



BEACH GRADE

B

Good policies but can be improved.

GOOD

Sediment Management: Although it is not a regional sediment management plan, New Hampshire participated in a federal project to assess offshore sources of sand and gravel. Replenishment projects require modeling and detailed assessment for the planning, transport and disposal of sediments from tidal dredge and fill projects. Unfortunately, there is no explicit requirement for monitoring ecological impacts.

OK

Coastal Armoring: Living shorelines are promoted over armoring and the state has completed several 'Smart Shorelines' projects to protect against erosion. In order to improve the management of erosion along the 'Seacoast,' the state has developed a Living Shoreline Site Suitability Assessment and Mapping Tool to provide information about the potential suitability of shoreline segments for living shoreline approaches. The state won't approve seawalls unless the applicant has proven that no other option is practical. While emergency permitting for coastal armoring is available, the policy is designed in a way that avoids misuse. Most tidal shoreline stabilization projects are permitted with conditional monitoring requirements to ensure proper construction and successful establishment of vegetation where applicable.

OK

Development: New Hampshire has a statewide setback requirement of 50 feet for all new primary structures in the coastal zone and near protected surface waters, in addition to a setback standard of 20 feet for accessory structures. Rules require the assessment of coastal functions and values (including the upland tidal buffer zone). Unfortunately, the state allows for the repair and rebuilding of any structure (buildings and armoring) in coastal areas instead of requiring that structures are moved or built to a higher standard. On the plus side, legislation that was passed in 2021 encourages the "management of coastal development to minimize the loss of life and property caused by improper development in flood-prone, storm surge, geological hazard, and erosion-prone areas and in areas likely to be affected by or vulnerable to sea level rise, ground water rise, and saltwater intrusion, and by the destruction of natural protective features such as beaches, sand dunes, and wetlands."

GOOD

Sea Level Rise: As the state passed SB 146 in 2021, the recent legislation will help improve climate change planning. The state has several reports focusing on sea level rise that include estimated inundation maps. It is also required to update coastal flooding trends every five years. Much of the state's progress is due to bipartisan legislation that established a committee to develop policy guidance and make recommendations to manage and prepare for coastal hazards. State agencies are required to conduct an audit of laws governing coastal regions to enable authorities to take appropriate actions. A Climate Risk in the Seacoast Vulnerability Assessment was completed for Great Bay and Hampton / Seabrook estuary communities. Applicants are required to reference updated science for guidance on all potentially affected activities and describe how the project will consider and address selected sea level rise within the project design life, including in the design plans.

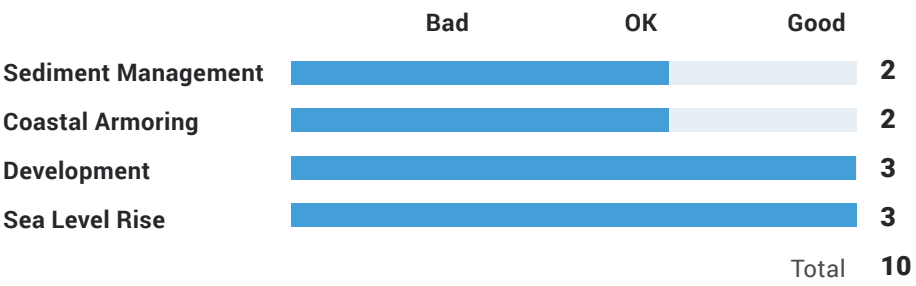
RECOMMENDATIONS

- **Improve redevelopment standards for both buildings and coastal armoring projects.**
- **Create policies and regulatory incentives for buyouts and relocation for development facing repetitive coastal damage.**
- **Develop plans for managed retreat.**
- **Adopt the University of New Hampshire's recommendations regarding forest management in riparian areas to help with future coastal migration inland during sea level rise.**
- **Develop a regional sediment management plan and include required environmental monitoring before and after beach nourishment projects.**

NORTHEAST

Rhode Island

Rhode Island's more than 400 miles of coast is lined with over 100 fresh and saltwater beaches, breathtaking breaks, cliff walks and nooks galore. Similar to its New England counterparts, the state surpasses much of the country in regard to sustainable coastal management, especially when it comes to development standards, sea level rise planning and passing strong climate change laws.



BEACH GRADE

B

Good policies but can be improved.

GOOD

Sediment Management: Similar to several states along the Eastern Seaboard, dredge and beach fill projects in Rhode Island are commonly used for coastal erosion. In fact, the state allows and encourages beach replenishment. The state requires nourishment projects to have a permit and public notice after the review of several agencies. Impacts to sedimentation and public access are assessed prior to any project. Rhode Island can improve sediment management by requiring the monitoring of ecological impacts from sand nourishment and by developing regional sediment management plans.

OK

Coastal Armoring: In 2021, the state passed SB 35. While the majority of the legislation is geared toward climate adaptation and resilience, it also contains provisions that new state funds cannot be used for shoreline protection structures. This legislation buttresses the state's policies of discouraging coastal armoring and requires the analysis of non-structural erosion methods, including relocation. Applicants must have the structure certified by a registered engineer, ensure that any armoring is not likely to exacerbate erosion and provide a long-term maintenance and funding program. The only downfall is that there is an exemption for emergency permitting of coastal armor without explicit requirements that armor must be temporary and later replaced with living shorelines.

GOOD

Development: This 309 Strategies cycle improved development standards to ensure that the state is "working with municipalities to update local zoning ordinances to minimize development in areas at risk from coastal hazards." This effort helped to increase the state's grade and we will monitor implementation. Regardless, the state has established coastal buffer zones and significant statewide mandatory setbacks. All development within 200 feet of shoreline features, such as beaches, wetlands, bluffs and rocky shores, require a permit. Development on dunes is prohibited.

GOOD

Sea Level Rise: As mentioned, the state passed SB35, which establishes the Ocean State Climate Adaptation and Resilience Fund. This allows municipalities to apply for grants to "improve public safety and community climate resilience for coastal habitats, as well as river and stream floodplains." The legislation promotes adaptation and resilience projects, including managed retreat and coastal restoration. Funds can only be used for adaptation and resilience projects and cannot be used for "elevating, repairing or replacing infrastructure, or constructing new infrastructure, in its existing location that is experiencing climate change impacts." It also cannot be used for "constructing new, or repairing existing shoreline protection structures; provided, however, that existing shoreline protection structures on public parks may be repaired." The state has some of the strongest coastal adaptation policies and laws in the nation.

RECOMMENDATIONS

- **Place time limits on seawalls and develop a policy to remove or require property owners to take away derelict structures.**
- **Remove allowances for emergency permitting or strengthen the policy by requiring structures to be temporary with strict timelines for removal, restoration and the implementation of an alternative stabilization method.**
- **Develop regional sediment management plans.**
- **Include thorough analysis of sand replenishment projects and monitor ecological impacts in permitting requirements.**
- **Refer to seawalls as a temporary solution while property owners make long-term plans for erosion preparation.**

Southeast

Florida

Georgia

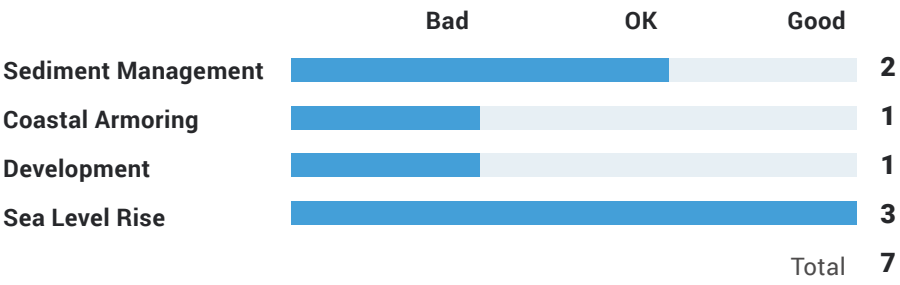
North Carolina

South Carolina

SOUTHEAST

Florida

The Sunshine State has some of the most remarkable coasts in the world, with mangrove forests, the Everglades and stunning beaches. In 2022, the state established important sea level rise policies that will help local communities to update vulnerability assessments. The state is also requiring certain agencies to develop resilience action plans. While Florida has recently made serious headway planning for sea level rise, the state continues to rely too heavily on beach fill, which is often short-lived and extremely expensive. The state also continues to have weaker development and coastal armoring standards. Without updating development and redevelopment standards, Florida's coast will be increasingly impacted by the effects of climate change.



BEACH GRADE

C-

Mediocre policies.

OK

Sediment Management: Florida recently updated its beach management plan to consider sediment budgets, inlet management and beach replenishment projects. The Florida Department of Environmental Quality tracks sand movement with a regional offshore sand source inventory. However, the state relies heavily on sand replenishment, often at the expense of more progressive alternatives to erosion response. The state would benefit from drastically increasing funding to implement living shoreline projects and dune restoration to lessen its need for beach fill.

BAD

Coastal Armoring: While a statewide policy restricts armoring within 50 feet of the mean high-water line in certain areas, the Beach and Shore Preservation Act explicitly allows exemptions and does not require the property to be a 'habitable structure' in order to obtain a shoreline protection structure permit. Furthermore, the repair of private seawalls and riprap does not require a permit. The state is also lenient on giving out emergency permits. On a positive note, the state has living shoreline resources listed on the Department of Environmental Protection website with good permit requirements.

BAD

Development: While Florida has decent regulations to guide development, the state allows loopholes for new construction to match the existing 'line of construction' if current structures have not shown any significant signs of erosion. The state also allows any new single-family home to be built seaward of the line of construction. As such, it is no surprise that a Zillow and Climate Central report found that Florida has allowed the construction of more than 9,000 homes in flood risk areas since 2010.

GOOD

Sea Level Rise: Over the past two years, Florida has passed a handful of bills that directly deal with sea level rise. In 2020, a new law requiring sea level impact projection studies for publicly funded construction projects was passed and the state promptly proceeded with rulemaking. In 2022, through the state governor's budget, a grant program was established that will help communities to develop and update comprehensive vulnerability assessments. The state also passed legislation that will establish a Statewide Office of Resilience and require the Department of Transportation to develop a resilience action plan. It will also require the Department of Environmental Protection to complete a comprehensive statewide flood vulnerability and sea-level rise data set and assessment. These new policies brought the state's grade up to a C- from a D.

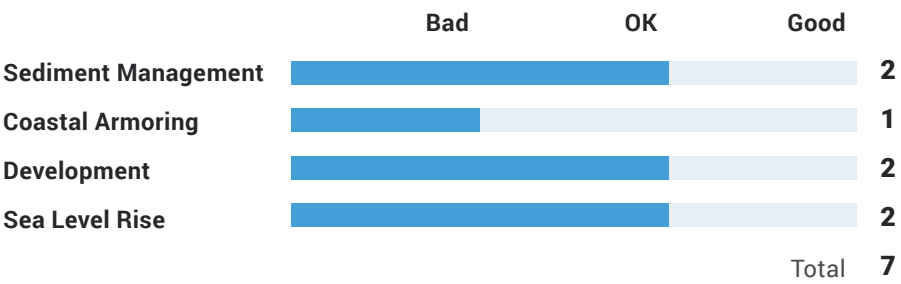
RECOMMENDATIONS

- **Ratify the Florida Beaches Habitat Conservation Plan to protect endangered coastal wildlife and prevent unnecessary development of Florida's beaches and shorelines.**
- **Ensure proper and thoughtful implementation of new climate change laws and policies.**
- **Reduce reliance on and frequency of sand replenishment.**
- **Establish statewide restrictions on shoreline armoring and remove exemptions from the rule.**
- **Prohibit seawalls or coastal armoring for new developments.**
- **Update and implement inlet management plans so there is no net loss of sand (as most coastal erosion is caused by the state's many engineered navigational inlets).**
- **Remove exemptions that allow any development seaward of the minimum setback line.**
- **Create new policies that incentivize the landward siting of new coastal development.**
- **Implement post-disaster redevelopment policies that prohibit building in the same vulnerable locations after storms.**
- **Expand and fully fund coastal land acquisition programs through direct purchase or conservation easements.**
- **Reform the state's 25-year-old coastal development laws that allow development on the frontal dunes of critically eroding beaches.**

SOUTHEAST

Georgia

Georgia's coastline and its barrier islands are rich in culture, history and beautiful landscapes. In recent years, Georgia's coastal management program made impressive steps toward improving efforts to plan for sea level rise, significantly raising their grade. The state has committed to conducting more sea level rise vulnerability assessments and providing adaptation policy guidance for local communities to improve coastal resilience. In addition, the state improved coastal policies to protect wetlands.



BEACH GRADE

C-

Mediocre policies.

OK

Sediment Management: Georgia encourages the development of sediment management plans but only Tybee Island has completed a comprehensive plan. Although the plan provides guidelines for careful beach nourishment practices, these are only recommendations. While there is a five-year monitoring program after each nourishment, the focus is more on efficacy and not on ecological impacts. While sand replenishment projects must have a Shore Protection Act permit, the requirements for approval are rather lenient.

BAD

Coastal Armoring: Groins and jetties are included as a 'first alternative' method of coastal armoring, along with nourishment. In 2020, Sea Island completed a groin installation following litigation over the project. While there are statutory requirements and policies for limiting hard structures, smaller stabilization projects are allowed without a permit. During state-declared emergencies, the construction of coastal armoring can occur immediately and without a permit. Fortunately, the state participates in dune restoration.

OK

Development: The Shore Protection Act offers some parameters for ensuring thoughtful coastal development. However, the state would benefit from stronger standards by restricting development and redevelopment in coastal hazard areas. Fortunately, amendments to the Shore Protection Act were signed into law in May 2019, strengthening Georgia's setbacks for coastal development. Also, the Georgia Coastal Marshlands Protection Act protects marshlands from development and 80% of the barrier islands' lands are protected by federal, state and land trust conservation.

OK

Sea Level Rise: Georgia has made considerable advancements to develop sea level rise vulnerability and adaptation policies; however, continued implementation of these policies is necessary. In order to further its sea level rise planning efforts, the state should carve out concrete policies and strategies to protect habitats that accommodate landward creep of coasts for sea level rise and extreme weather. As the state is currently focused on sea level rise, this would be an opportune moment to implement effective regulations that protect such habitats.

RECOMMENDATIONS

- **Only allow armoring if all other methods have been attempted, including managed retreat, dune restoration, berms, living shorelines and wetland protection.**
- **Prohibit development on unstable dunes.**
- **Require permits for any redevelopment of damaged structures in known hazard areas and require rebuilds to construct to a higher resiliency standard farther back from the shoreline.**
- **Develop regional sediment plans for Savannah and the minor outlying islands.**
- **Codify the beach nourishment guidelines identified in the Tybee Island Beach Management Plan.**
- **Include ecological monitoring, including species distribution and counts, during the five-year monitoring program conducted after each nourishment on Tybee Island.**
- **Conduct more research on the use of living shorelines for stabilization as a preferred alternative to shoreline armoring and pursue the development of living shorelines performance standards.**

SOUTHEAST

North Carolina

With North Carolina's sandy beaches and grassy marshes, the state remains a highly sought-after tourist destination or area to plant roots. Unfortunately, the 300 miles of this low-lying coast face growing environmental concerns, including increased extreme weather events and sea level rise that threaten the well-being of the state's coastal residents. In 2021, the state improved sea level rise planning by further analyzing risks and vulnerabilities.

	Bad	OK	Good	
Sediment Management				**2**
Coastal Armoring				**1**
Development				**2**
Sea Level Rise				**2**
			Total	**7**

BEACH GRADE

C

Mediocre policies.

OK

Sediment Management: North Carolina's thorough Beach and Inlet Management Plan includes the evaluation of beach and inlet function to the coastal ecosystem, identification of regionally specific needs, and the development of management strategies to protect the socioeconomic value of the coastline and to mitigate issues of erosion and sedimentation. While North Carolina has strong policies to evaluate and monitor beach fill projects, the state relies too heavily on sand replenishment.

BAD

Coastal Armoring: North Carolina law prohibits the construction of permanent shoreline stabilization structures on the ocean shoreline, including seawalls, groins, bulkheads, jetties and revetments. Unfortunately, recent changes in policy allow the permanent placement of sandbags, which contradicts the statewide ban on new permanent erosion control structures. In addition, a few terminal groin projects have been proposed and a permit was issued for a groin in Ocean Isle Beach. Currently, litigation is pending to stop this groin project due to the fact that it undermines the statewide policy of restricting shoreline erosion structures.

OK

Development: North Carolina has strong setback policies based on erosion rates and structure size, with a minimum setback of 60 feet, providing more accuracy in their mitigation measures. Unfortunately, according to a Zillow and Climate Central report, the state has continued to build in coastal hazard zones that are at risk of significant sea level rise and flood damages. Recommendations from the Resiliency Plan need to be implemented to incorporate sea level rise assessments into development restrictions.

OK

Sea Level Rise: North Carolina has made significant strides with sea level rise planning in the past few years. Following Executive Order 80, the North Carolina Climate Risk Assessment and Resiliency Plan was published as of June 2020. The plan includes projected changes in sea level rise and requires state agencies to analyze climate change impacts and integrate climate change adaptation measures into state programs and operations. However, the risk assessment is lacking vulnerability maps produced by the state and other current policies limit sea level rise adaptation.

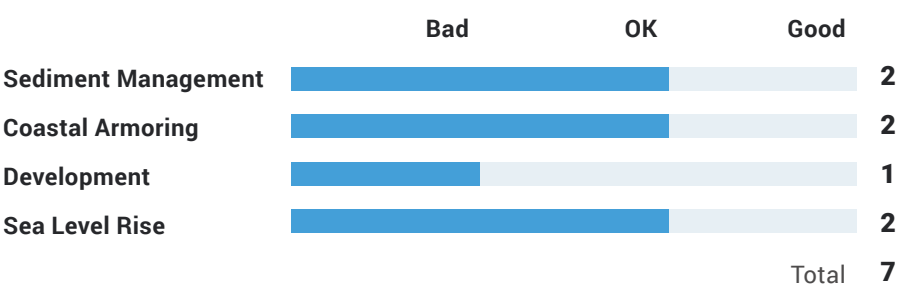
RECOMMENDATIONS

- **Continue to work with communities to implement the Climate Change Risk Assessment and Resilience Plan.**
- **Support the integration of sea level rise planning into local and regional plans.**
- **Amend 113A-107.1 of the Environmental Policy Act to mandate planning for sea level rise.**
- **Establish a state policy that prohibits local jurisdictions from allowing developments on coastal sand dunes.**
- **Enforce prohibitions on groins and jetties.**
- **Implement strict monitoring requirements to determine efficacy and ecological impacts of beach replenishment.**
- **Prohibit temporary sandbag placement from becoming long-term or permanent armoring.**
- **Implement stronger environmental management policies, both inland and at the coast.**

SOUTHEAST

South Carolina

Visitors flock to South Carolina to enjoy its renowned beaches and the charm of historical coastal cities. The state is doing a decent job of coastal management and continues to implement strong policies mitigating beach nourishment and restricting coastal armoring. Despite having good policies in place to manage sand and erosion, the state needs to limit all new development in flood zones and advance sea level rise planning work.



BEACH GRADE

C

Mediocre policies.

OK

Sediment Management: South Carolina requires that coastal municipalities complete beach management plans. These plans include monitoring requirements and analysis of nourishment projects. The state does an effective job of analyzing physical and ecological implications of beach nourishment, including protecting critical turtle habitat, spawning seasons and migratory movements of important marine species.

OK

Coastal Armoring: South Carolina has included living shorelines in its coastal management strategies for 20 years and has solid policies restricting armoring. Regarding living shorelines, the South Carolina Department of Health and Environmental Control issued new regulations defining and setting performance standards for living shorelines to help support their effective implementation. The state completely prohibits the use of new seawalls and mandates that coastal towns adopt a '40-year retreat policy' in their local management plans. In addition, the state prohibits rebuilding or increasing previously built seawalls. Severely damaged seawalls must be removed at the owners' expense. Unfortunately, groins are allowed.

BAD

Development: The state has good setback standards, which are 40 times the average annual erosion rate and no less than 20 feet from the top of the main sand dune at ocean coastlines. Setback lines are also revisited every seven to 10 years. Unfortunately, the rebuilding of structures located seaward of setback lines that are destroyed due to natural hazards is allowed. The state recognizes the coastal dunes as important buffers for development; however, the state would benefit from codified policies to ensure the protection of these buffers.

OK

Sea Level Rise: Within the past few years, the state has worked to improve sea level rise planning. While the state has a sea level rise vulnerability assessment, it is fairly broad. The 'Climate Change Impacts to Natural Resources in South Carolina' contains good adaptation methods. However, none of these adaptation recommendations have been implemented or codified. In addition, minimal community awareness or educational resources about climate change and sea level rise are provided on state websites.

RECOMMENDATIONS

- **Prohibit the rebuilding of coastal structures seaward of the setback line that were destroyed due to natural hazards.**
- **Remove coastal armoring exceptions currently in place.**
- **Develop and implement an adaptation plan using outlined policies and management recommendations in the Adapting to Shoreline Change report.**
- **Establish stronger restrictions on developments in coastal hazard areas and locations seaward of the baseline.**
- **Conduct a thorough sea level rise vulnerability assessment.**
- **Require that repairs of coastal structures from storms are restricted, retreated or built to higher standards.**
- **Develop state websites with educational resources and guidelines for coastal communities to prepare for climate change and sea level rise.**
- **Remove exemptions for golf courses to build in coastal hazard areas.**
- **Ensure that management agencies have jurisdiction to adequately enforce regulations.**

Islands

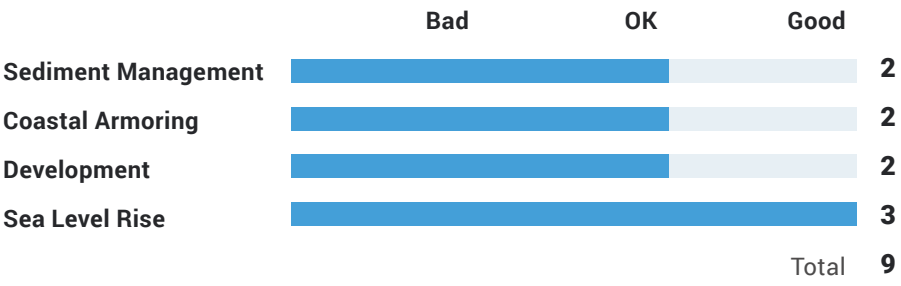
Hawai‘i

Puerto Rico

ISLANDS

Hawai‘i

The acclaimed biodiversity, rich culture and dynamic topography of Hawai‘i allures admirers from around the world. The state is progressively improving its coastal management practices. In recent years, several important pieces of legislation were passed, including an innovative law requiring real estate disclosures regarding sea level rise. In addition, the state passed legislation that requires interagency cooperation to protect coastal resources in light of climate change and ensure the protection of ‘landward areas’ that will better accommodate future sea level rise.



BEACH GRADE

B

Good policies but can be improved.

OK

Sediment Management: In 2021, the Board of Land and Natural Resources approved a controversial proposal to streamline the permitting process for beach fill projects. This is concerning as Hawai'i has extensive permitting requirements in place that could be severely undermined. Unfortunately, the state continues to rely on sand replenishment as a means of erosion control. While the state encourages regional sediment management plans, only a few counties currently have robust plans in place. Maui, in particular, is far ahead of the curve because the county has conducted a 'sediment budget' analysis and a beach management plan.

OK

Coastal Armoring: Hawai'i has regulations that prohibit erosion protection structures but the state is lackadaisical about enforcement. Hopefully, new legislation will resolve issues with local homeowners constructing illegal seawalls. The state also needs to improve restrictions on rebuilding and repairing a shoreline protection device. In addition, the state allows emergency permits for coastal armoring, including sand bags and tarps. While the state needs to improve its management of coastal armoring projects, the Ocean Resources Management Plan outlines important measures to avoid armoring, such as managed retreat and restoration.

OK

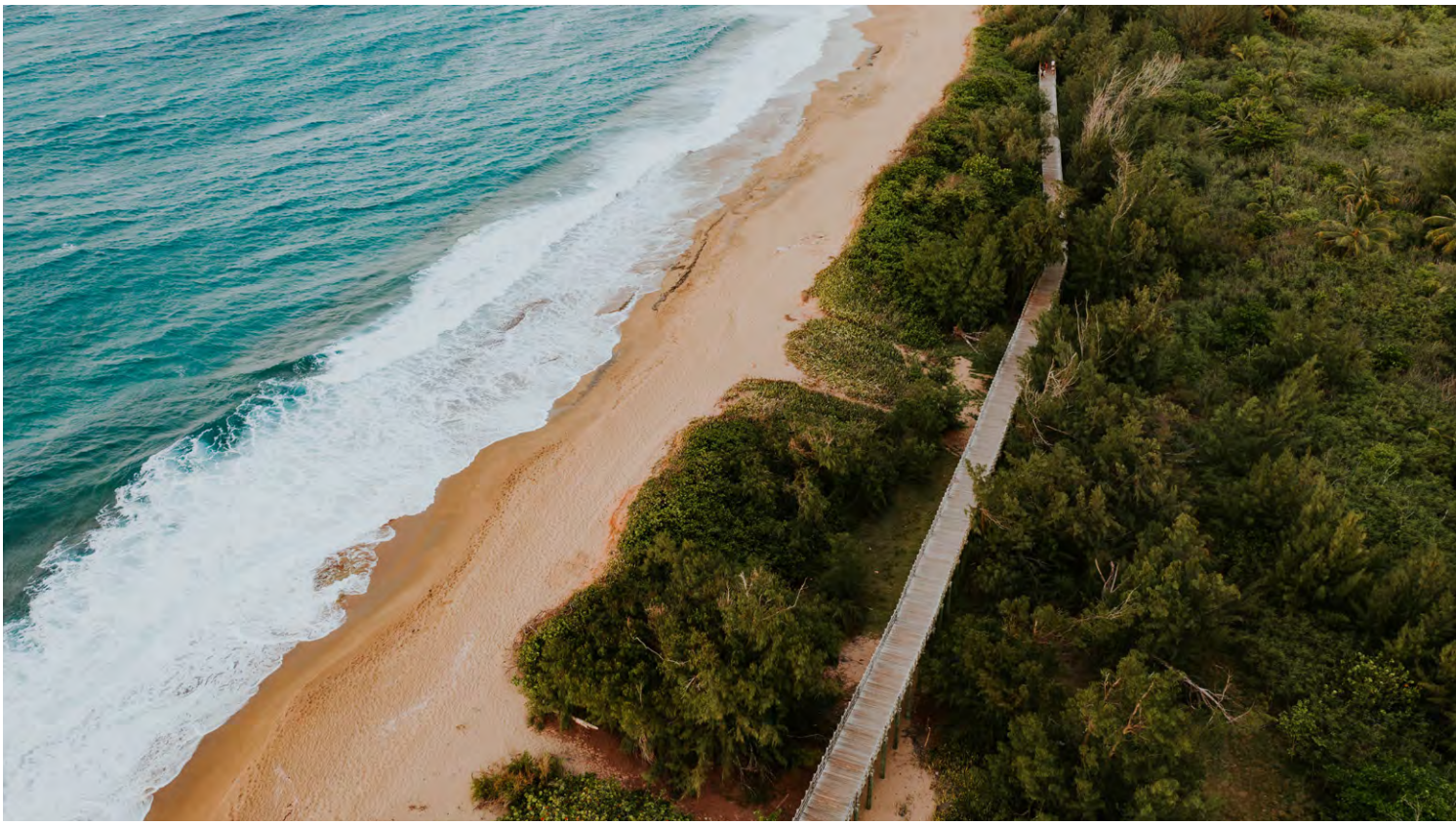
Development: While the state has a minimum coastal development setback line, it is unfortunately only 40 feet from the shoreline and provides minimal protection from coastal hazards. Both Kaua'i and Maui counties have Beach Management Plans and have established a development setback line of 70 times the erosion rate, plus a range of 40 to 400 feet from sandy shorelines, depending on the development type. Hawai'i has policies to protect natural resources, such as dunes, wetlands, watersheds and reefs, that 'provide coastal hazard mitigation' benefits. However, the state primarily focuses on reefs, while other protections are based on support from the federal government.

GOOD

Sea Level Rise: The state has greatly increased its sea level rise planning work to ensure that all state agencies are analyzing climate change impacts and working to protect coastal buffers that will allow for landward creep of rising seas. The state has done a good job of conducting vulnerability assessments, maps and the establishment of the enforceable Climate Change Adaptation Priority Guidelines.

RECOMMENDATIONS

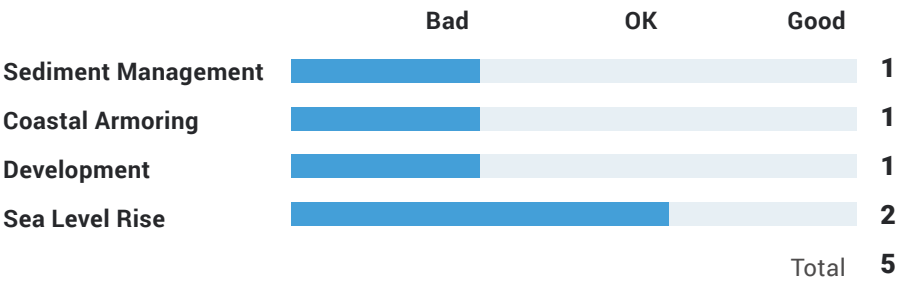
- **All counties should increase setback policies and create plans modeled after Maui and Kaua'i for development setbacks.**
- **Reduce the permitting of emergency shore protection with seawalls and hard armoring.**
- **Restrict large-scale development in rural areas.**
- **Dedicate increased funding to the development of climate adaptation plans that incorporate beach and coastal conservation principles.**
- **Establish concrete policies and funds for managed retreat.**



ISLANDS

Puerto Rico

The beautiful Caribbean island of Puerto Rico is home to mangrove forests, nesting turtles and a vibrant heritage. As the island is a highly sought-after destination, tourism-based infrastructure often displaces local communities and wildlife. There are currently multiple development projects, including the construction of a housing development in Marina Reserva Tres Palmas, that are polluting coastal wetlands. It is imperative that the island strengthens its developing regulations, as once the resources are gone, the tourism industry that is currently being catered to will be gone as well. Within the past six years, permits granted for new construction increased by 239 percent.



BEACH GRADE

D

Fairly poor policies, lacking.

BAD

Sediment Management: Puerto Rico still does not have a sand management plan, despite years of attempting to develop one. The last documented regional sediment management meeting was in 2016. Strong sediment management is severely needed as the island struggles with illegal sand mining at river mouths, beaches and sand dunes, in addition to natural erosion of the ecologically-important sandy coastline. While local researchers and scientists are working to try and restore dunes and beach sand at 21 beaches on the northside, this is not an island-wide effort.

BAD

Coastal Armoring: In 2019, the Department of Natural and Environmental Resources co-hosted a two-day public workshop on living shorelines and released a call for proposals to fund green infrastructure and coastal restoration projects. However, despite encouraging the use of soft structures, Puerto Rico does not have any codified statutes that restrict the construction or repair of hard stabilization structures. After Hurricane Maria, emergency permits for additional armoring were readily available. While Puerto Rico has made progress in promoting more proactive adaptation methods, explicit policies limiting armoring are needed.

BAD

Development: Surprisingly, within the past six years, (from 2015-2021) permits granted for new developments increased by 239 percent. In addition to rampant development, setback waivers and exemptions are given allowing infrastructure to be located in coastal hazard areas. In addition, the territory allows for the repairing of structures in coastal hazard areas, instead of rebuilding infrastructure out of harm's way. Fortunately, Puerto Rico has implemented strong programs to mitigate damage from coastal hazards. Codified policies to further protect these areas would be beneficial.

OK

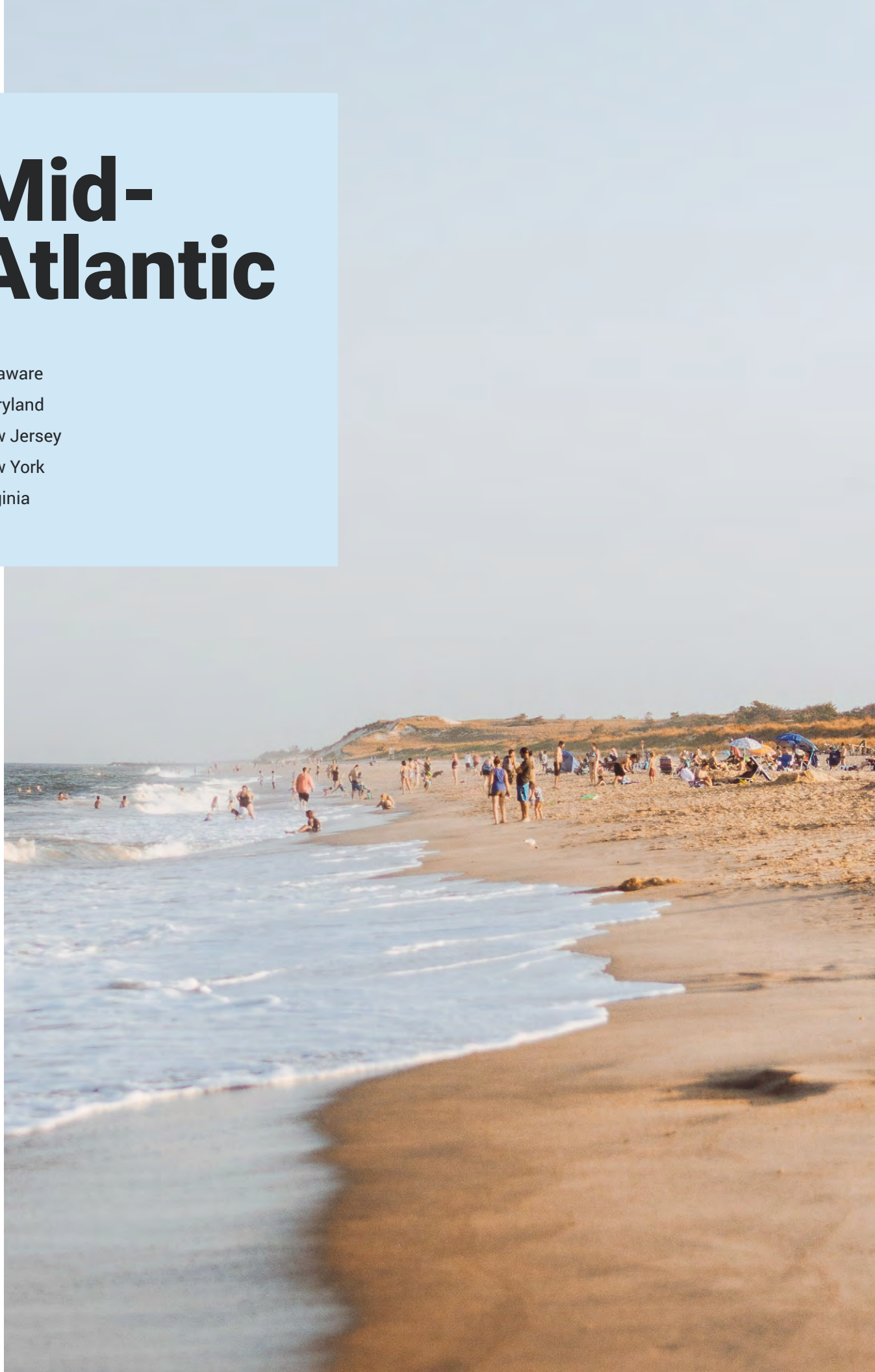
Sea Level Rise: In 2020, Puerto Rico made progress by supporting the development of the collaborative Coastal Resilience Assessment, a rather robust analysis of community exposure, fish and wildlife exposure and the identification of 'resilience hubs' to prioritize for protection and restoration. The report includes mapping and assesses risks from both sea level rise and flooding. Puerto Rico's Climate Change Council has also made good strides toward addressing climate change, establishing topic-specific working groups and developing an assessment of socio-ecological vulnerabilities to climate change. There is ample community outreach and there are even requirements for local communities to develop their own adaptation plans.

RECOMMENDATIONS

- **Develop a sediment management plan that includes strict requirements for beach replenishment and restores natural sediment flows to the coastline.**
- **Prohibit waivers and exemptions to the development setback buffer.**
- **Require structures damaged by storms or flooding to be reconstructed to higher standards of resilience, built farther inland from the coastline, and/or employ additional property management to reduce flood risk, erosion and runoff.**
- **Prohibit the development and repair of hardened shorelines.**
- **Ensure that sea level rise vulnerability assessments and drafted adaptation plans are thorough and promote soft stabilization measures and managed retreat.**
- **Develop a policy that thoroughly protects and restores coastal dunes and riparian areas.**
- **Prohibit repairs on buildings not conforming with setback standards.**
- **Identify a funding source and plan for protecting and restoring identified 'resilience hubs' in the 2020 Resilience Assessment.**

Mid-Atlantic

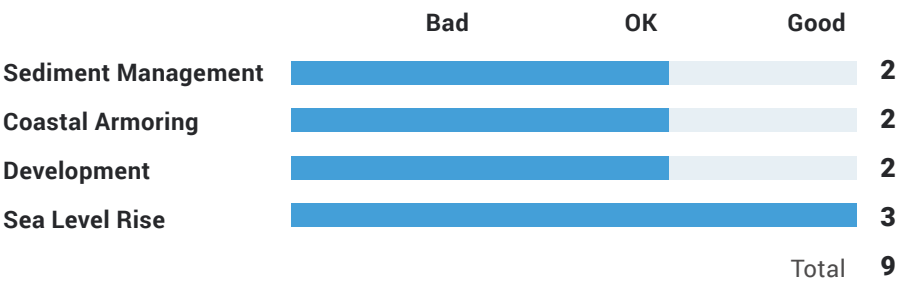
Delaware
Maryland
New Jersey
New York
Virginia



MID-ATLANTIC

Delaware

Decorated by dunes and beachgrass, Delaware's coastline is beloved by visitors who experience its beauty. In 2021, Delaware's grade increased from a 'C' to a 'B' because the state improved coastal policies to protect sensitive habitats and increased sea level rise planning efforts. While the state made positive strides this past year, Delaware needs to update coastal policies to avoid development in harm's way.



BEACH GRADE

B

Good policies but can be improved.

OK

Sediment Management: Like many states along the Eastern Seaboard, Delaware heavily relies on beach renourishment. Fortunately, Delaware's Wetlands and Subaqueous Lands Act has strong policies and regulations aimed at minimizing the ecological impacts of beach fill in wetlands and beaches. The Division of Watershed Stewardship assesses beach replenishment needs by monitoring beaches statewide and measuring sand loss. Delaware also has a rigorous permitting process for beach fill projects.

OK

Coastal Armoring: Delaware has strong permitting requirements for armoring projects and the state encourages alternative stabilization methods, including relocation and living shorelines. In addition, illegal seawalls must be removed and fines are administered. Delaware should discourage the rebuilding of seawalls, which trap the natural flow of sediment, and focus on removal of coastal armoring where feasible. Like most coastal states, Delaware allows for emergency permitting of seawalls. Oftentimes, emergency seawalls are meant to be temporary structures and are rarely removed.

OK

Development: While the state has a development setback line, the 1979 policy needs updating. Delaware has minimal restrictions on coastal development. Homes can also be constructed near 'building lines.' While construction seaward of the building line is prohibited, property owners are able to get a permit, as long as development is as landward as possible. Delaware also allows the rebuilding of seaward structures with a permit. A report found Delaware is constructing new developments in flood risk zones 2.5 times faster than in safer areas.

GOOD

Sea Level Rise: Despite having lackluster development standards, Delaware has made good strides to address sea level rise. The state produced a sea level rise vulnerability assessment, which identifies at-risk properties. In addition, the state developed a document to help communities to prepare for sea level rise. The state has also been active with adaptation and under an Executive Order, agencies developed 155 recommendations for climate adaptation. Unfortunately, development is still occurring in flood-prone coastal areas that will be impacted by rising seas.

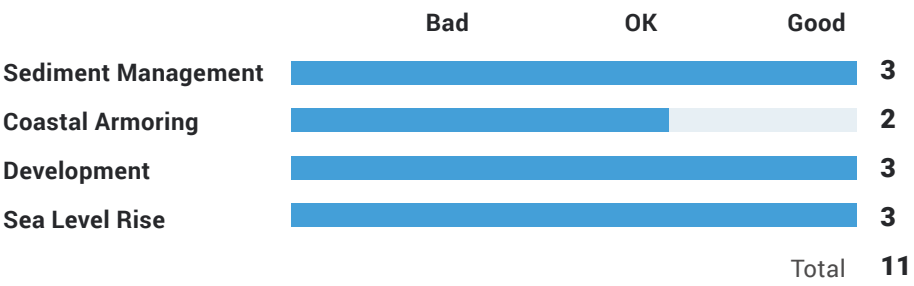
RECOMMENDATIONS

- **Update development setback requirements based on historical rates of erosion and future sea level rise projections.**
- **Develop a more thorough and enforceable policy that promotes non-structural alternatives for shoreline stabilization.**
- **Establish strict regulations that prohibit the construction and repair of properties located seaward of the building line.**
- **Prohibit new development in flood-prone areas.**

MID-ATLANTIC

Maryland

Maryland's unique coastal environment contains various inlets and bays with rich biodiversity. The state has substantive coastal laws and policies already in place. In 2021, the state made additional strides to update policies to improve sediment management and protect environmentally sensitive habitats. It also passed progressive legislation to deal with sea level rise.



BEACH GRADE

A

Excellent policies and implementation.

GOOD

Sediment Management: Maryland is one of the few states that promotes the use of relocation before considering beach fill. It also has strict requirements to ensure that fill projects can only occur if there is proper sediment grain size, evidence of erosion, and it is determined that at-risk species will not be adversely affected. In 2021, the state committed to working on regional sediment management plans. In addition, the Department of the Environment has strong permit requirements for fill and dredge activities in wetlands.

OK

Coastal Armoring: Coastal armoring is discouraged in general, and even prohibited seaward of the dune line on Maryland's Atlantic coast. Non-structural shoreline stabilization measures, including living shorelines, are codified requirements for addressing shoreline erosion in the state's Living Shorelines Protection Act. In fact, Maryland's Department of Natural Resources (DNR) awarded over $30 million to local entities for projects that included living shorelines. Waivers must be obtained for armoring projects and an approved sediment and erosion control plan may also be required. Unfortunately, there are no time limits on approved seawalls or revetments, even for those constructed with an emergency permit. Property owners are also allowed to repair bulkheads without a permit.

GOOD

Development: In 2021, Maryland worked to improve its efforts to protect sensitive habitats from poorly-planned development. The state has a solid setback policy of 100 feet from tidal waters and wetlands, and a minimum setback of 200 feet in undeveloped coastal areas. There is a thorough permitting process to construct near the shore, including strict policies that restrict the repair of residential and commercial structures in the 100-year flood zone. There are also seemingly strong policies to maintain the natural coastal environment, including the protection of wildlife corridors and the clustering of development. However, new developments can unfortunately be permitted in Resource Conservation Areas.

GOOD

Sea Level Rise: Maryland has been proactive at assessing coastal climate change impacts and developing adaptation strategies to increase coastal resiliency. The state conducted a thorough vulnerability assessment, a Sea Level Rise Response Strategy, a Coast Smart Construction guidebook and a Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change. The strategy has good policy recommendations and an adaptation and response toolbox to help local governments with implementation. Many of the recommendations have already been implemented by the state. Maryland also has enforceable policies that require buffers around critical areas in parts of the Chesapeake Bay. In 2020, the state passed resilience legislation that empowers local communities.

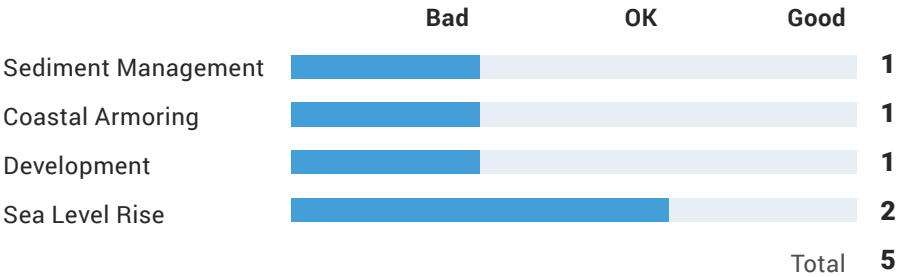
RECOMMENDATIONS

- **Ensure that regional sediment management plans are effectively implemented.**
- **Establish clear time limits and removal requirements for any approved seawalls or revetments.**
- **Develop a repetitive flood loss policy (including plans for buyouts and relocation) in case of extreme weather events.**
- **Discourage the repair of bulkheads and, when necessary, require permits for repair.**
- **Remove allowances for emergency permitting or strengthen the policy by requiring structures to be temporary, with strict timelines for removal, restoration and implementation of an alternative stabilization method.**

MID-ATLANTIC

New Jersey

Known for its long, sandy beaches and bustling boardwalks, New Jersey's coast is a highly visited region. While the state has recently made strides to update its sea level rise planning efforts, the implementation of new legislation languishes due to an extended rule-making process. In 2021, New Jersey launched a resilience strategy that contains policy guidance for state agencies and municipalities. New Jersey's efforts to improve sea level rise planning brought their grade from a 'D-' to a 'D.' In order to continue improving its grade, the state needs to speed up rule-making for legislation and update the resilience strategy to require legal or legislative approaches to implement adaptation measures.



BEACH GRADE

D

Fairly poor policies, lacking.

BAD

Sediment Management: In 2021, the New Jersey Legislature is aiming to pass legislation that would double the amount of money that the state puts toward beach replenishment each year, from $25 million to $50 million. Considering that New Jersey lacks any regional sediment management plans and relies far too heavily on beach fill, legislation like this will allow the state to continue to rely on a short-term and extremely expensive solution to coastal erosion. While New Jersey has some policies that dictate beach fill, such as matching grain size and ensuring that sand comes from clean sources, the state regulates beach fill as a 'non-structural shoreline protection measure' without strict permit requirements and long-term monitoring plans.

BAD

Coastal Armoring: Seawalls and other hard structures are considered 'essential' to protect the shoreline and urbanization. In addition, restrictions on repairing or replacing armoring should be strengthened. The state is lenient with emergency permits and requires very few restrictions. For example, a permit request can be done over the phone. While living shoreline projects could be used instead of armoring, the state has not offered local communities resources or funding.

BAD

Development: Over the past decade, the state and local municipalities have approved a significant amount of new development. In fact, a recent report by Zillow concludes new home development in the state was nearly three times higher in the 'coastal risk zones' than in safer areas. This type of development is clearly skirting requirements of the Coastal Area Facility Review Act. While the state requires the elevation of homes destroyed in a flood zone, the permitting process is lenient and elevation requirements are only one foot above a flood area. In addition, New Jersey needs to improve its setback policies. There is only a setback of 10 feet from the crest of coastal bluffs that is required. To improve, the state should consider developing setback requirements based on local erosion rates.

OK

Sea Level Rise: Over the past few years, New Jersey has made progress on climate change planning. In 2021, the state released a Climate Change Resilience Strategy document that provides guidance on vulnerability studies and adaptation planning. However, the document is mere guidance and does not require municipalities to codify efforts through local statutes or land use plans. While legislation also passed in 2020 that requires developers to analyze sea level rise, the rule-making process was extended and will not be implemented until 2022. New Jersey's Blue Acres Buyout Program continues to be a positive example of a plan that will help with sea level rise planning. In 2021, legislation was passed to continue funding this important program.

RECOMMENDATIONS

- **Ensure thorough implementation of new sea level rise legislation and resilience strategies.**
- **Improve compliance with the Coastal Area Facility Review Act.**
- **Reduce the reliance on, and use of, sand replenishment and consider other methods of beach preservation.**
- **Prohibit new developments in known hazard areas.**
- **Acknowledge the negative effects of shoreline armoring and prohibit or severely limit their use.**
- **Improve rebuilding standards after storms and increase home elevation in flood zones.**
- **Prohibit the use of armoring for new or repaired buildings.**
- **Establish larger setback standards.**
- **Establish managed retreat policies.**

MID-ATLANTIC

New York

Renowned for its New York City skyline and iconic beaches, such as Coney Island, the Rockaways, Long Island, Fire Island and Montauk, the state of New York continues to be a leader for climate change planning. While the state has succeeded with sea level rise planning, New York relies on beach fill and coastal armoring. However, in late 2021, the state and the Army Corps of Engineers put forth a plan that would raise 14,000 homes and businesses in Nassau County instead of building large floodgates.

	Bad	OK	Good	
Sediment Management	■			**1**
Coastal Armoring	■			**1**
Development	■	■		**2**
Sea Level Rise	■	■	■	**3**
			Total	**7**

BEACH GRADE

C

Mediocre policies.

BAD

Sediment Management: New York needs to develop a comprehensive statewide sediment management plan. Instead, it relies heavily on replenishment as the go-to shoreline stabilization method, despite the fact that the practice is both costly and short-term. While the state has a beach replenishment policy, it lacks necessary rigor to sufficiently protect coastal habitats. Fortunately, the material placed on beaches must come from a clean source and be of equivalent grain size. While the state is working with the Army Corps to establish erosion management policies and regional plans, there has been little progress.

BAD

Coastal Armoring: Fortunately, the state has policies on limiting shoreline stabilization structures in sensitive areas and promoting soft or natural approaches to shoreline stabilization. However, there are no policy restrictions on rebuilding coastal armoring and the state continues to approve coastal and lake armoring projects instead of exhausting natural erosion control measures. The state should replicate innovative projects, such as building oyster reefs and restoring dunes.

OK

Development: New York has policies to protect natural resources that provide coastal hazard mitigation benefits, such as dunes, wetlands and reefs. The state prohibits the excavation or mining of dunes, in addition to vehicle traffic and certain types of foot traffic. Unfortunately, the state allows for the restoration of damaged structures without a permit. Since Hurricane Sandy impacted the area in 2012, some development standards have been improved. However, New York allows exemptions to setback policies during the permitting process for new construction.

GOOD

Sea Level Rise: New York has always been progressive about acknowledging climate change and planning for future sea level rise. The state has conducted a vulnerability assessment and has sea level rise mapping. There is also a Coastal New York Future Floodplain Mapper that is available to the public. In addition, the state encourages adaptation planning and aims to protect habitats that will allow for potential sea level rise. After Hurricane Sandy, several commissions were created to study impacts from climate change and sea level rise. Finally, the Buyout and Acquisitions Program increases coastal resiliency by purchasing infrastructure and land to create natural coastal buffers that can better weather future storms.

RECOMMENDATIONS

- **Encourage regional sediment management plans.**
- **Strengthen the beach replenishment policy to require strict monitoring requirements and a maximum on the amount of times replenishment can occur in a certain time period.**
- **Require rigorous permits for the reconstruction of damaged homes.**
- **Avoid exceptions to setback requirements.**
- **Develop policy restrictions regarding rebuilding coastal armoring and remove the General Permit for coastal armoring in Long Island and New York City.**
- **Develop stronger funding mechanisms for 'buyout' programs.**
- **Do not build a floodgate across New York Harbor as proposed by the USACE.**

MID-ATLANTIC

Virginia

Virginia's stunning coastline consists of sandy shores, coastal communities and the remarkable Volgenau Virginia Coast Reserve. The state's 'network program' confers much of the responsibility on municipalities and individuals to actively protect their coast, encouraging a strong sense of autonomy among coastal residents. In 2021, the state made great strides in updating sea level rise planning efforts.

	Bad	OK	Good	
Sediment Management	■			**1**
Coastal Armoring	■	■		**2**
Development	■	■		**2**
Sea Level Rise	■	■	■	**3**
			Total	**8**

BEACH GRADE

C

Mediocre policies.

BAD

Sediment Management: The state conducts sand replenishment projects without any regional sediment management or beach nourishment plans. In fact, Virginia includes nourishment funding in the annual budget. Permit requirements for replenishment projects are unclear and differ by city. The state would benefit from the review of replenishment projects and the development of regional sediment management plans that thoroughly assess ecological impacts.

OK

Coastal Armoring: The Coastal Primary Sand Dune and Beach Act seemingly offers strong protection for coastal beaches and dunes. Shoreline hardening is prohibited. However, exemptions for the Sandbridge Beach Subdivision and emergency permits allow the construction and repair of armoring, which reduces the effectiveness of what would be an excellent armoring policy. As an alternative method, the state promotes living shorelines and more recently, buyout programs. In 2015, a legislative decision allowed for loans to be distributed to local municipalities for the purpose of establishing living shorelines.

OK

Development: Virginia has the foundations for a strong coastal development policy, including codified protections for sand dunes, restrictions on development in coastal areas and restrictions on the repair of buildings damaged from coastal storms. However, state policy allows development in wetlands that are considered to be of 'lesser' ecological significance. Under the Dune Act, repairs require a new permit. If structures are unsalvageable, they must be removed and the area restored. In addition, coastal developments adjacent to dunes are limited to single-family dwellings to facilitate the ability of dunes to migrate inland. However, there is no statewide minimum development setback standard, as these are determined on a case-by-case basis during permitting.

GOOD

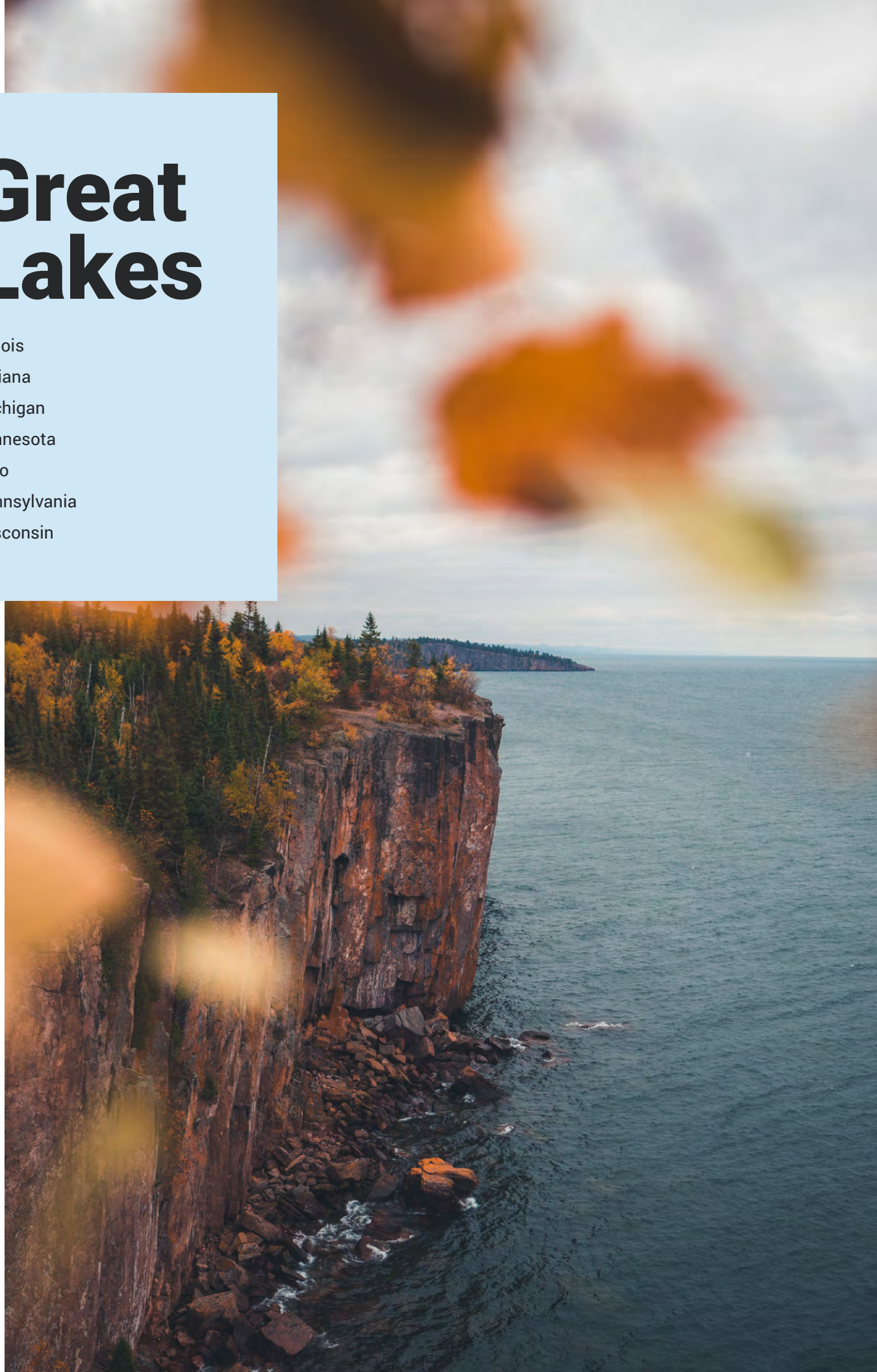
Sea Level Rise: The state is working on implementing its Coastal Resilience Master Plan. In addition, Virginia completed a Hazard Mitigation Plan to identify coastal risks. The plan establishes an impressive property acquisition program to move people out of flood zones, which has already resulted in the removal of 400 properties. The Resilient Virginia program offers good public outreach and communication about climate change. The state has also been proactive in protecting habitat connectivity and wildlife corridors.

RECOMMENDATIONS

- **Develop regional sediment management plans to prevent runoff and sedimentation of waterways.**
- **Develop beach nourishment policies that thoroughly assess ecological impacts.**
- **Review each individual replenishment project before permitting.**
- **Establish a statewide minimum development setback standard.**
- **Reestablish the Climate Change Commission.**
- **Generate a comprehensive and specific adaptation plan with clear actionable items and policy recommendations.**
- **Promote the use of managed retreat plans and expand the buyout and/or relocation program for repetitive loss due to coastal hazards.**
- **Strengthen policies protecting riparian buffers, wetlands and wildlife corridors.**

Great Lakes

Illinois
Indiana
Michigan
Minnesota
Ohio
Pennsylvania
Wisconsin



GREAT LAKES

Illinois

Illinois' urbanized coast, which is the most densely populated in the Great Lakes region, spans 63 miles. The dynamic shoreline, subject to fluctuating lake levels and erosion, has certainly felt the effects of expansive development and relies heavily on programs, such as the Illinois Coastal Management Program, to protect its residents, resources and livelihoods. As of November 2022, the state has not submitted an Assessment and Strategies Coastal Plan to the federal government.

	Bad	OK	Good	
Sediment Management				**2**
Coastal Armoring				**1**
Development				**1**
Lake Level Rise				**2**
			Total	**6**

BEACH GRADE

D

Fairly poor policies, lacking.

OK

Sediment Management: Although Illinois does not have a regional sediment management plan, the state has established a Sand Management Working Group. The state conducts and encourages beach fill on its lakefront areas and permits for beach fill are streamlined. Without strong standards for sand quality or requirements to conduct monitoring, the environmental impacts are minimally understood. Fortunately, permits for beach fill projects are required from various coastal management and water quality agencies.

BAD

Coastal Armoring: In recent years, Illinois has increased its shoreline armoring practices, despite having a policy that acknowledges how armoring disrupts sand transport along shorelines. Seawalls, groins and breakwaters are regulated by permits and must include a 28-day public notice. However, the state continues to expedite emergency permits with little to no conditions that require time limits, monitoring, removal of derelict armoring or redevelopment. Non-structural shoreline stabilization techniques, such as living shorelines, are also not adequately encouraged or used.

BAD

Development: Much of the natural shoreline of Illinois has been developed. Unfortunately, the state lacks setback requirements or shoreline development restrictions. While the coastline is experiencing continued erosion, severe coastal hazard areas have been defined. The Coastal Management Program and the Natural Areas Preservation Act aim to protect the remaining undeveloped areas. However, there are still minimal policies in place to protect shoreline resources.

OK

Lake Level Change: While the Illinois Department of Transportation made progress by releasing a Hazards Plan, the state has been slow to address climate change. The plan includes a section on climate change but doesn't provide vulnerability maps or policy recommendations. Fortunately, local governments are encouraged to conduct mitigation planning and the state also has some adaptation and shoreline management tools available. While the Illinois Wildlife Action Plan encourages better protection of coastal habitats, it is outlined more as guidance rather than as an official policy.

RECOMMENDATIONS

- **Require that non-structural shoreline stabilization measures, such as living shorelines, dune restoration and the conservation of shoreline areas, are considered before sand replenishment projects are approved.**
- **Establish statewide minimum development setback requirements.**
- **Prohibit the use of hard stabilization structures, such as seawalls, groins, and breakwaters. If hard stabilization must occur, require conditions that set time limits, monitoring, removal of derelict armoring and permitting for repairs.**
- **Require the monitoring of ecological impacts and efficacy of sand replenishment projects.**
- **Generate construction restrictions in erosion or flood-prone areas, in addition to the completion of a coastal climate change vulnerability assessment and adaptation plan.**
- **Provide coastal hazard and lake level rise mapping in the Illinois Geospatial Data Clearinghouse.**
- **Direct state shoreline managers supporting the development of the Great Lakes Coastal Resiliency Study to prioritize natural shorelines and enhanced coastal buffers.**

GREAT LAKES

Indiana

Recognized for incredible sand dunes, Indiana's Lake Michigan shores are highly sought-after among beachgoers and adventurers alike. The dunes, many of which are protected by the Indiana Dunes National Park and the Indiana Dunes State Park, were formed as glaciers that began to melt during the last ice age and can now be observed alongside impressive wetlands and beloved fisheries. Unfortunately, these invaluable resources have greatly diminished due to human intervention and development. To make matters worse, the state governor signed a law in 2021 that repeals the majority of Indiana's state-regulated wetlands law.

	Bad	OK	Good	
Sediment Management				**1**
Coastal Armoring				**1**
Development				**1**
Lake Level Rise				**1**
			Total	**4**

BEACH GRADE

F

Inadequate protection of coastal communities and resources.

BAD

Sediment Management: Indiana promotes the use of beach fill and encourages the beneficial reuse of sediment from dredge projects. While policies require that sand is free of contaminants, the test criteria is not standardized so harmful pollutants that enter Lake Michigan may be ending up on Indiana's beaches. The oversight of these projects is minimal and applicants are to assume that their beach fill project is approved if there is no response from the agency.

BAD

Coastal Armoring: Hard structures used for coastal armoring require a permit from the Indiana Department of Natural Resources. However, they are accepted for use along the coastline on private property, which has been determined by state courts to be above the ordinary high water mark. Standards for the design, components and the placement of new or repaired hard structures are dictated by the type of lakefront 'category,' such as a developed area or significant wetland. While they also often require some element of 'bioengineered materials,' repairs are not restricted in general. Non-structural shoreline stabilization alternatives are not encouraged.

BAD

Development: One-third of the Indiana lakeshore is protected by the Indiana Dunes National Park. While this ensures the ability of dunes to provide natural coastal hazard mitigation benefits, the development policies outside of this protected area are lacking. There are no statewide minimum development setbacks requirements, even in hazardous areas. While there is a geodatabase of the Indiana Lake Michigan Shoreline, which is intended to identify and encourage future development away from hazardous areas, it doesn't require developments to avoid those areas.

BAD

Lake Level Change: Although academic and nonprofit institutions in the state have made advancements to provide guidance and planning for climate change adaptation, Indiana lacks state policies that address climate change. In fact, there is not a state website dedicated to the topic and there are no state-level climate change adaptation plans. While the state encourages local planning efforts and provides resources for flooding and coastal hazard planning, efforts to address coastal issues tend to be short-term and reactionary rather than planned and long-term. The state should consider climate change vulnerabilities in coastal management efforts and establish clear climate change adaptation plans.

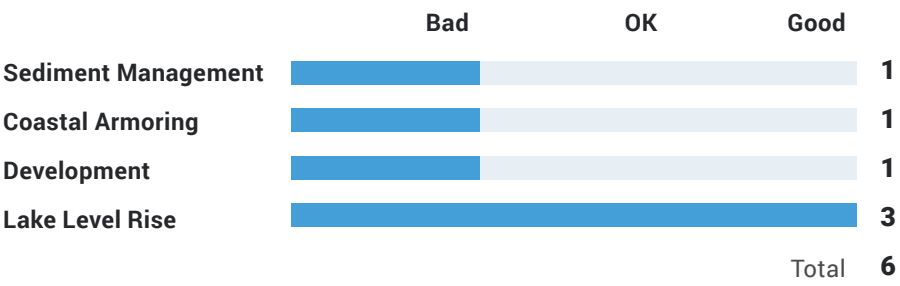
RECOMMENDATIONS

- **Repeal the new law that eliminates wetland law protections.**
- **Strengthen permitting and authorization requirements for sand replenishment projects, including the review and written notification of approval or disapproval by state agencies.**
- **Develop sediment management plans and sediment monitoring protocols.**
- **Prohibit armoring in sensitive habitat areas and also implement time restrictions and removal requirements of approved stabilization structures.**
- **Require that living shorelines and soft stabilization methods are considered prior to coastal armoring.**
- **Establish statewide mandated development setback requirements and managed retreat regulations.**
- **Prohibit new construction and repairs in identified hazard areas.**
- **Develop a state-managed website to provide information on climate change and potential impacts to coastal areas of the state.**
- **Conduct a climate change vulnerability assessment and develop a coastal adaptation plan.**
- **Secure federal funds to complete the Great Lakes Coastal Resiliency Study.**

GREAT LAKES

Michigan

With 3,288 miles of coastline, Michigan has one of the largest shorelines in the U.S., second only to the state of Alaska, and borders four of the five Great Lakes. There are numerous natural and historic treasures along the coast, including stunning rock formations, popular beaches and scenic hikes. While the state is making strides in community outreach regarding shoreline adaptation, the state should improve its efforts to protect shoreline resources, especially in light of climate change.



BEACH GRADE

D

Fairly poor policies, lacking.

BAD

Sediment Management: The state does not have any regional sediment plans or policies regulating private sand replenishment landside of the water line. In addition, there is essentially no beach fill policy. Testing of sediment is only required if it is collected from areas known or suspected to be contaminated. Even though Michigan provides protection of sand dunes with the 'Critical Dunes Area Program,' the state should establish a sand replenishment policy that requires thorough analysis of impacts and encourages coastal regions to develop regional sediment management plans.

BAD

Coastal Armoring: The Michigan Department of Environment, Great Lakes and Energy (EGLE) accurately recognizes that hard shoreline structures exacerbate erosion and reduce water quality. However, seawalls can still be allowed with a general permit. Without clear requirements for monitoring or removal, the policies can enable seawalls to be routinely reinforced. While the state encourages the use of natural stabilization treatments, the consideration of alternatives is not mandated.

BAD

Development: Michigan has robust setback regulations based on the rate of erosion, plus an additional 15 foot buffer. Most areas have updated their erosion rates, although some are still using rates that were calculated 20 years ago. 'High Risk Erosion Areas' are well-defined and permits are required. However, new developments in 'protected' dunes and wetlands have also recently been permitted. The lack of clear regulations on the repair of developments may also lead to unnecessary damage or loss of properties.

GOOD

Lake Level Change: Michigan continues to proactively work on climate change impacts and also encourages local jurisdictions to follow through on establishing climate goals and commitments. The state of Michigan has also created a thorough Community Resilience Handbook, which touches on coastal hazards and lake level changes. Broad adaptation methods are discussed but the state has not developed an approved coastal adaptation plan. While the state does a good job of assessing future risks and developing adaptation plans for ensuring habitat connectivity and the protection of natural environments, it needs to mitigate impacts from continued development.

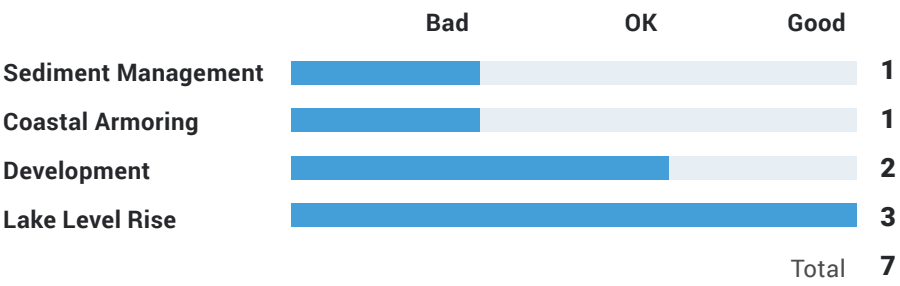
RECOMMENDATIONS

- **Prohibit construction on protected dune areas and in wetlands.**
- **Establish a sand replenishment policy that requires thorough analysis of potential impacts.**
- **Encourage coastal regions to develop sediment management plans.**
- **Prohibit the use of seawalls, or if necessary, require clear conditions of monitoring and removal.**
- **Limit construction, repair and/or reconstruction of existing coastal development in hazard areas.**
- **Direct state shoreline managers supporting the development of the Great Lakes Coastal Resiliency Study to prioritize natural shorelines and enhanced coastal buffers.**
- **Conduct a statewide climate change vulnerability assessment.**
- **Implement recommended actions and suggestions described in the 2012 Adaptation Plan.**

GREAT LAKES

Minnesota

Minnesota's North Shore hugs nearly 200 miles of the world's largest freshwater lake, Lake Superior. The notoriously clear waters of Lake Superior offer an abundance of fish, beauty and adventure to the Minnesota coast. Though the state has participated in NOAA's Enhancement Grant program for years, Minnesota has decided to not participate in the 2021-2025 grant cycle, leaving uncertainty for how coastal management projects will be funded and implemented over the next five years.



BEACH GRADE

C

Mediocre policies.

BAD

Sediment Management: In 2021, the state and the Army Corps partnered together on a beach fill project in Duluth, Park Point. Unfortunately, the sediment was not properly tested prior to placement and rusty metals were placed on the beach. However, the Army Corps has since taken actions to address this retroactively. Additionally, the state does not have regional sediment management plans, making it challenging to plan for erosion and understand the natural flow of sediment. Small-scale fill projects, such as 'sand blankets,' do not need a permit if they meet a fairly short list of conditions, including the use of 'clean, inorganic sand or gravel, free of pollutants.' Unfortunately, as there are no explicit testing, monitoring or reporting requirements, there is no assurance that conditions have actually been met.

BAD

Coastal Armoring: Minnesota has been lenient with allowing hard shoreline stabilization structures without a permit. While there are guidelines for the installation of riprap and other structures, a thorough permitting process should be instituted to ensure the protection of shoreline resources and habitats. In addition, the state should establish explicit policies for the repair or removal of armoring.

OK

Development: There are substantial statewide setback standards for coastal developments, with minimum setbacks ranging from 50 to 200 feet from the shoreline. In addition, there are more stringent standards in erosion hazard areas. Repairs and rebuilding after storm damage in coastal hazard areas may also be permitted but it depends on the local authority. While Minnesota has a proactive mitigation plan for preventing landslides through bluff protection, mapping and native vegetation, there is minimal protection of important coastal habitats, such as wetlands and dunes.

GOOD

Lake Level Change: Minnesota is one of the few states to complete a comprehensive Climate Change Vulnerability Assessment and there is an abundance of resources and information available on the Climate Change Web Portal. While the Interagency Climate Adaptation Team regularly updates a state adaptation report, the North Shore Climate Group found that local adaptation and hazard mitigation plans lack congruence and effectiveness. Regarding habitat protection, Minnesota has a proactive riparian connectivity program, which could be vital to local wildlife in a changing climate.

RECOMMENDATIONS

- **Develop sand replenishment policies that look at the long-term effectiveness and impacts of beach replenishment projects.**
- **Require robust chemical and manual testing of the sand and ensure the grain size matches existing sand.**
- **Establish restrictions on the construction and repair of hard shoreline protection structures.**
- **Encourage the use of non-structural alternatives, such as living shorelines and restoration.**
- **Clarify guidelines for local adaptation plans to ensure better congruence and effectiveness.**
- **Direct state shoreline managers supporting the development of the Great Lakes Coastal Resiliency Study to prioritize natural shorelines and enhanced coastal buffers.**

GREAT LAKES

Ohio

Ohio's public beaches along Lake Erie and nearby islands are hotspots for tourism and recreational activities in the summer months. Much of Ohio's shoreline is developed, privatized or inaccessible, with only 20% of the shoreline accessible to the public. While the state's Coastal Management Program has made progress to promote coastal resiliency, Ohio's laws and policies to preserve healthy, accessible coastlines and adapt to a changing climate are lagging. In 2022, the Ohio Department of Natural Resources awarded more than $400,000 in coastal management grants to improve Lake Erie's resilience and access through coastal planning, education programs, land acquisition, research, and habitat restoration.

	Bad	OK	Good	
Sediment Management				**1**
Coastal Armoring				**1**
Development				**1**
Lake Level Rise				**1**
			Total	**4**

BEACH GRADE

F

Inadequate protection of coastal communities and resources.

BAD

Sediment Management: Each year, rivers and harbors on Ohio's North Shore must be dredged to keep the navigation channels open. Nearly two million tons of material are dredged annually. Historically, much of the dredged material has been dumped in the open waters of Lake Erie. However, as of mid-2020, other placement sites and uses must be found so the state and local jurisdictions are working to identify disposal alternatives and potential beneficial uses. The Lake Erie Protection and Restoration Plan also prioritized activities to reduce harbor sedimentation. There is no state-level plan to guide sediment management.

BAD

Coastal Armoring: In 2021, the state made improvements to explore non-structural shoreline stabilization alternatives to armoring. However, much of Ohio's coastline is already hardened and armoring is still used as the first line of defense. Although there is a stated preference for natural erosion control measures, there are no requirements that compel homeowners to implement them. While Ohio started offering a 'free expedited permit' in 2018 for temporary shore structures, which apply to new emergency structures or repairs to existing unpermitted structures, temporary structures must obtain a standard permit after two years. The state even offers a low-cost loan program to subsidize shoreline armoring. Without an explicit requirement to remove these structures, this policy could have severe impacts on the aquatic environment and the future of a natural coastline.

BAD

Development: The state does not have a standard minimum shoreline setback policy. Although permits are required to build and redevelop permanent structures in identified Coastal Erosion Areas, there are not clear restrictions on the repair of developments in these sensitive areas. Fortunately, there are some efforts to protect coastal ecosystems, including a National Estuarine Research Reserve, coastal wetland restoration projects and designations of wild, scenic and recreational river areas.

BAD

Lake Level Change: As a state, Ohio is significantly lacking in terms of climate change planning, which has left local governments in the position of developing their own plans. This failure to proactively prepare for lake level changes is resulting in destructive, short-sighted policies, such as the recently implemented temporary armoring policy. Ohio needs a statewide policy to address climate change impacts along the Lake Erie shoreline. While a broad vulnerability assessment regarding coastal erosion was conducted in 2011, it was with minimal outlook toward future vulnerabilities.

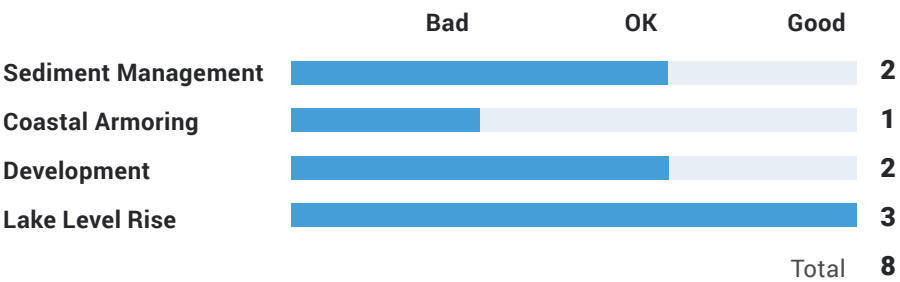
RECOMMENDATIONS

- **Establish minimum setback requirements on coastal developments.**
- **Revise regulatory procedures for reviewing applications for Shore Structure Permits and prohibit new developments from installing hard structural erosion control measures.**
- **Prohibit development in Coastal Erosion Areas that will require coastal armoring within its economic lifespan. In addition, require that implemented erosion control measures employ low-impact development techniques.**
- **Conduct a statewide coastal climate change vulnerability assessment.**
- **Reconsider the Temporary Shore Structure Permit program to incentivize proactive planning and thoughtful, engineered solutions aligned with the state's preference for natural solutions.**
- **Develop a coastal climate change adaptation plan.**
- **Complete the Great Lakes Coastal Resiliency Study.**
- **Ensure the sand management plan includes policies on beach replenishment projects, including the consideration of other soft structures first, in addition to monitoring requirements and permits for waterside and landside sand placement.**

GREAT LAKES

Pennsylvania

While Pennsylvania's coastline totals more than 100 miles, the coastal regions are split almost equally between Lake Erie and the Delaware Estuary. Between these two waterways, Pennsylvania, also known as the Keystone State, is favorably positioned to dispatch and receive cargo ships. As a result, it is essential that the state successfully implements their 2018 Climate Change Adaptation and Mitigation Plan that focuses on the resiliency of coastal communities and infrastructure.



BEACH GRADE

C

Mediocre policies.

OK

Sediment Management: The state already spends an estimated $3 million annually for beach fill. It is unclear if permits or monitoring protocols are required for small fill projects. The state relies heavily on beach fill and in June 2018, it secured $1.5 million in federal funds to conduct a fill on Pesque Island. While there is a comprehensive regional sediment plan for the Delaware Estuary, there is no equivalent plan in place for the Lake Erie shoreline. The state would benefit from more comprehensive, proactive sediment plans that focus on restoring natural sediment movement and protecting beach ecology.

BAD

Coastal Armoring: Pennsylvania does not have restrictions on the construction, repair or replacement of hard shoreline devices. There is no indication that seawalls and other hard structures require monitoring or removal after they are no longer useful. There need to be more informational resources on living shorelines, in addition to codified requirements to use living shorelines as the first line of defense, such as creating and protecting riparian buffers, before reverting to armoring.

OK

Development: Pennsylvania has a development setback rate of a minimum of 25 feet in established Coastal Hazard Erosion Areas based on the average rate of bluff recession and type of structure. Unfortunately, municipalities can modify setback requirements if they are able to prove low-erosion risk. Repairs resulting in a substantial improvement to structures beyond the setback is prohibited. For waterfront areas, new developments can occur close to the water's edge, between the Ordinary High and Low Water marks, and only require federal and state permits.

GOOD

Lake Level Change: Pennsylvania has taken proactive efforts to address climate change impacts. Climate change research and planning are required by state law. The Department of Conservation and Natural Resources recently finalized the Climate Change Adaptation and Mitigation Plan, which encourages adaptation methods that protect natural areas, including the protection and restoration of floodplains and riparian areas, the removal of old dams and the avoidance of constructing and rebuilding in hazard areas. Unfortunately, like other Pennsylvania climate reports, this plan lacks information about the state's vulnerability and adaptation options for coastal erosion.

RECOMMENDATIONS

- **Develop more explicit policies to protect coastal and environmentally-sensitive habitat areas.**
- **Develop policies and regulations on hard shoreline protection structures and their repair and replacement.**
- **Codify requirements to consider non-structural methods before armoring is allowed.**
- **Remove the policy that allows municipalities to reduce minimum development setback standards.**
- **Allocate federal funds to complete the Great Lakes Coastal Resiliency Study.**
- **Conduct a vulnerability assessment and develop adaptation plans for sea level rise and lake level change.**
- **Improve sand replenishment management through the thorough analysis of environmental impacts and effectiveness, and develop regional sediment and inlet management plans.**
- **Require the consideration of alternative stabilization, such as the restoration and protection of dunes and coastal vegetation, in addition to the restoration of natural sediment flow, before permitting beach fill.**

GREAT LAKES

Wisconsin

Wisconsin's 1,000 miles of coastline border two major bodies of water, which are Lake Michigan and Lake Superior. Throughout the expansive region are impressive bluffs, wetlands, inviting beaches, forested shorelines and urban environments. In 2021, Wisconsin did not make any significant changes to its coastal program or pass legislation to strengthen development standards, beach nourishment, armoring practices or planning for sea level rise.

	Bad	OK	Good	
Sediment Management				**1**
Coastal Armoring				**1**
Development				**1**
Lake Level Rise				**2**
			Total	**5**

BEACH GRADE

D

Fairly poor policies, lacking.

BAD

Sediment Management: Wisconsin lacks regional sediment management plans and needs to improve policies and practices to better analyze and avoid the environmental impacts of beach nourishment. While permits are required if a fill project is below the Ordinary High Water Mark, each municipality has local discretion on issuing permits for dry sand. Finally, the state should require robust, long-term monitoring of beach fill projects.

BAD

Coastal Armoring: Permits are required for armoring and are generally only granted in 'high energy sites.' Unfortunately, small riprap projects are exempt. While some river basins do not have to meet permit requirements, other natural areas, such as the Lower St. Croix National Scenic Riverway, are more strict and require an erosion control plan and vegetation management plan. Emergency armoring permits are also available. While there are explicit conditions that must be met, temporary structures can become permanent as removal requirements are not clearly stated. The state provides guidance for soft structures, such as brush layering and biodegradable breakwaters, but it doesn't require consideration of these methods first.

BAD

Development: While the state has a minimum setback requirement of 75 feet, there are many loopholes. After a storm, homes and structures can be rebuilt to the same size. Wet boathouses can also be repaired in a way that extends the lifespan and increases value. Recent provisions weaken the protection of the coastline, including regulations that prevent counties from having more robust setbacks, allow unlimited maintenance and repair of coastal developments, and reduce protections for man-made wetlands.

OK

Lake Level Change: Wisconsin has an extensive amount of resources on climate change, likely due to the Wisconsin Initiative on Climate Change Impacts (WICCI). WICCI aims to clarify climate change impacts and identify vulnerabilities. Reports include important state resources, climate change vulnerability assessments of shorelines and wetlands, and recommended adaptation measures. Unfortunately, there is minimal focus on the protection of riparian areas for coastal adaptation. In addition, the state reduced protections for artificial wetlands in 2017.

RECOMMENDATIONS

- **Create an inventory of nourishment projects and develop regional sediment management plans.**
- **Require replenishment projects above the high water mark to be properly permitted and include mitigation requirements.**
- **Require permitting and monitoring for beach nourishment projects.**
- **Prohibit maintenance and repair of developments that do not conform to current development standards.**
- **Allow municipalities to establish policies that are more stringent than statewide minimums.**
- **Develop and implement climate change adaptation plans.**
- **Strengthen the state's policy on repairing and rebuilding houses and other buildings that were destroyed or damaged in natural disasters.**
- **Add more specific language to coastal policies for conserving natural land and water resources to give protection to resources and provide coastal hazard mitigation benefits.**
- **Direct state shoreline managers supporting the development of the Great Lakes Coastal Resiliency Study to prioritize natural shorelines and enhanced coastal buffers.**

Gulf States

Alabama
Louisiana
Mississippi
Texas

GULF STATES

Alabama

The Alabama coast is known for its white, sandy beaches and inviting waters. It should come as no surprise, then, that much of the region's economy depends on the tourism industry, which generates billions of dollars each year. Unfortunately, Alabama is positioned to lose its valuable coastal resources if the state does not take bold action to improve shoreline management and proactively plan for sea level rise.

	Bad	OK	Good	
Sediment Management				**1**
Coastal Armoring				**1**
Development				**1**
Sea Level Rise				**1**
			Total	**4**

BEACH GRADE

F

Inadequate protection of coastal communities and resources.

BAD

Sediment Management: With rapid erosion and wetland loss, exacerbated by years of dredging, the state encourages the use of beach fill to combat land loss. While regional sediment management plans are encouraged by the state, only Mobile Bay has produced one, which was largely completed by the federal Army Corps. A permit is required for sand replenishment projects and must be consistent with the Alabama Coastal Area Management Plan. However, this management plan does not provide clear guidelines on replenishment practices or ecological monitoring and review.

BAD

Coastal Armoring: In Alabama, property owners must first consider managed retreat and other soft stabilization methods to protect properties on Gulf beaches and primary dunes. There are quite a few resources produced by the state on living shorelines, including a guide for property owners and an ordinance manual. However, if soft, alternative options are deemed 'infeasible,' property owners can refer to armoring. Alabama has been doing a lot of work on living shorelines, especially as a remediation tactic after the 2010 Deepwater Horizon oil spill. Although shoreline stabilization policies promote the use of soft and living structures, hard stabilization techniques are still the most prevalent mechanisms, signifying that the state is using a fairly lenient definition of 'infeasible.'

BAD

Development: The state has setback policies and uses the Coastal Construction Line to give the coastal state agency jurisdiction over controlling seaward structures. Unfortunately, the line hasn't been updated since 1979 and a hard line on a dynamic shoreline has resulted in areas where the line is actually underwater. Policies surrounding the Construction Line are also conflicting as the Coastal State Management Program states seaward construction is prohibited, while Division 8 specifies that seaward construction just requires a permit. While Alabama has identified a goal to eliminate development in high hazard areas, progress or implementation of this goal is not evident. Fortunately, the state strives to protect its wetlands and deltas. While the state assessed a Joint Resolution that recognizes the importance of access to and protection of the Mobile-Tensaw Delta this year, it lacks enforceable policies on these protections.

BAD

Sea Level Rise: In recent years, the state made progress in preparing for climate change by developing a draft Hazard Mitigation Plan. The plan includes an extensive section on sea level rise and coastal land changes. It also takes into account different rise rates, land change and king tides. Unfortunately, the state still does not have a statewide adaptation plan and it is not actively encouraging local municipalities to plan for future sea level rise. While the recently released Coastal Area Management Program includes some good goals, including the development of a riparian structure database and best practices for resilient construction techniques, it continues to lack current resources and plans.

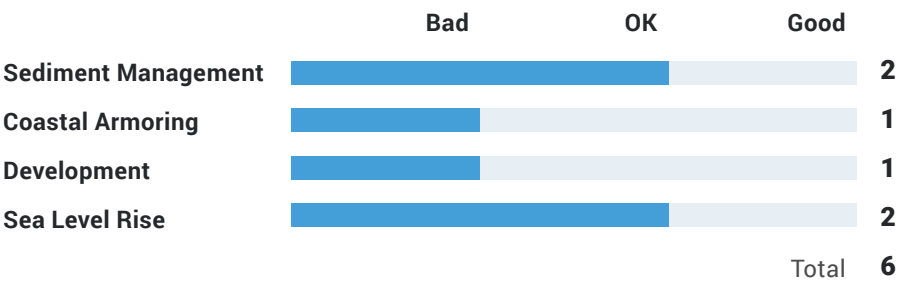
RECOMMENDATIONS

- **Provide clear policies on replenishment practices, in addition to ecological monitoring in the Coastal Area Management Plan.**
- **Clarify policies regarding new developments and repairs seaward of the Coastal Construction Line.**
- **Address sea level rise and climate change in coastal policies and hazard mitigation plans.**
- **Amend the location of the Coastal Construction Line and make the line relative to the sea level, allowing it to move with the dynamic coastline.**
- **Develop a robust sea level rise vulnerability assessment with mapping and an adaptation plan that prioritizes wetland protection and soft stabilization structures.**

GULF STATES

Louisiana

Louisiana is home to some of the most fragile and profitable wetlands in the country. The region, which is used for agriculture, seafood production and recreational activities, is responsible for 90% of the nation's coastal marsh loss, leaving the state essentially unprotected against rising sea levels and hurricanes.



BEACH GRADE

D

Fairly poor policies, lacking.

OK

Sediment Management: As Louisiana is in a vulnerable position due to its location in relation to the Mississippi River, it is imperative to have a thorough sediment management plan in place. While the state is part of the Gulf of Mexico Alliance Regional Sediment Management Master Plan, no recent strides have been made to finalize this initiative. Permits are required for fill projects but there is minimal review of ecological impacts or long-term monitoring. Fortunately, as a result of the state's passage of the recent Fiscal Year (FY22) Coastal Annual Plan, the state is in the process of developing and funding several sediment diversion projects. This is a positive step as long as the projects are carefully designed.

BAD

Coastal Armoring: There are no statewide policies on stabilization structures and their repair, replacement or removal. For example, Louisiana's coastal construction rules do not require permits for the repair of existing structures as long as dredging and fill are not involved. This is likely because the river shoreline has been fortified by levees since the 1930s. While encouraged over armoring, there are no enforceable policies that require non-structural stabilization alternatives. Fortunately, this legislative session passed the Capital Outlay Bill, which will help to further promote non-stabilization methods through funding availability.

BAD

Development: There are no statewide minimum setback standards for coastal development and permits are not required to repair or maintain existing structures in hazard areas. Louisiana even has a guidance document for coastal development that helps communities to 'build safely' near the edge of water bodies. That said, Louisiana has a Planning Appendix with great recommendations to increase the resilience of the coastline, yet many are not yet implemented. Coastal zone development continues to be encouraged for economic benefits, despite safety risks.

OK

Sea Level Rise: Louisiana suffers from losing land to both subsidence and sea level rise, which is a dangerous combination that is exacerbated by a complex network of levees and sediment barriers. To combat these losses and growing threats of stronger coastal storms, Louisiana has made notable improvements in sea level rise planning in recent years. These include the creation of the Climate Initiatives Task Force and the release of a Regional Adaptation Plan, which documents flood risks and suggests optional buyout programs. This year, the state made even more progress by passing the Coastal Annual Plan and the Capital Outlay Bill to establish dedicated funding to coastal resilience and restoration projects that reduce flood risk, help with land acquisition and support non-structural stabilization.

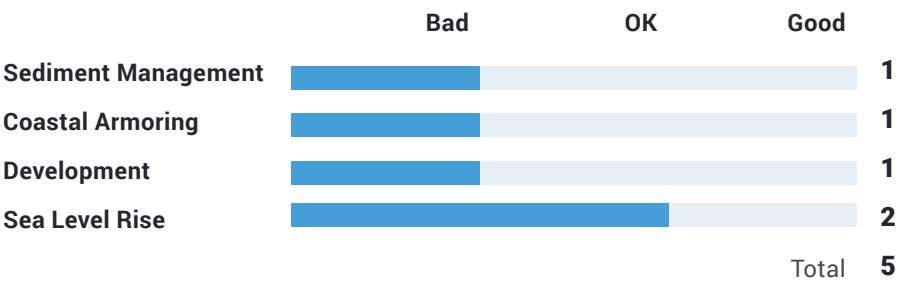
RECOMMENDATIONS

- **Develop regional sediment management plans to help restore natural sediment flows.**
- **Conduct monitoring to track any long-term impacts to coastal ecology from sand replenishment projects.**
- **Prohibit shoreline armoring or strictly require that non-structural stabilization methods, such as living shorelines, are used first.**
- **Ensure that development standards in hazard areas are enforced.**
- **Limit repair and replacement of damaged developments in high hazard areas or require them to be rebuilt to higher resilience standards.**
- **Prioritize retrofitting and protecting critical city infrastructure.**
- **Conduct a thorough sea level rise vulnerability assessment and develop an adaptation plan.**

GULF STATES

Mississippi

Similar to its Gulf neighbors, Mississippi's stunning beaches and coastal waters make it a beloved tourist destination. Unfortunately, the state also shares the same threats as its fellow Gulf states. In the face of extreme weather events, sea level rise and coastal erosion, the Mississippi coast is at exceedingly high risk due to a lack of setback regulations and the promotion of harmful management practices, such as coastal armoring.



BEACH GRADE

D

Fairly poor policies, lacking.

BAD

Sediment Management: This year, Mississippi declared plans to develop stronger beneficial reuse and fill policies on sediment testing, handling and more. The state is also in the planning stages of an interactive map to better plan for and document beach fill and beneficial reuse projects. Mississippi is part of the Gulf of Mexico's Regional Sediment Master Plan and Gulf Coast Ecosystem Restoration Task Force. This group has outlined strong recommended actions to protect coastal resources. However, Mississippi agencies heavily promote beach fill. Without currently established and clear requirements for testing sand quality, assessing ecological impacts, conducting post-project monitoring or even obtaining a permit if filling outside of a wetland, Mississippi's sediment management is still lacking.

BAD

Coastal Armoring: Mississippi seems to promote all erosion stabilization methods, both soft and hard. While their living shoreline resources are helpful, the state also unfortunately uses a gas tax to provide dedicated funding to seawalls and armoring of coastal highways. A general permit is required for hard structures, and at times, neighbor approval is as well. However, as continual repair and replacement are automatically permitted, the limitations on armoring are weak overall and are likely to result in permanent structures. As remediation for the 2010 oil spill, the Deepwater Horizon Restoration Project is helping to repair damaged shorelines. This project is also funding large-scale wetland and reef restoration projects, which should help alleviate the need for additional armoring.

BAD

Development: Coastal development policies are extremely relaxed in Mississippi. There are no statewide minimum development setback requirements or limitations on repairing developments in coastal hazard areas. A 2019 report by Zillow and Climate Central uncovered that Mississippi is building in high flood risk zones three times faster than in safer locations. In addition, the construction of a building, fishing camp or 'similar structure' is allowed in coastal wetlands on private property, even without a permit. Fortunately, there have been increased efforts to protect natural resources that provide hazard mitigation benefits, including the Coastal Stream and Habitat Initiative, the DMR Artificial Reef Program and state acquisition of more than 2,400 acres of wetlands for long-term protection and restoration. However, development policies must be updated to ensure stronger wetland and coastline protection.

OK

Sea Level Rise: Mississippi completed a sea level rise vulnerability assessment in 2011 and the state continues to piece together reports and research papers on sea level rise projections for the area. Although it is not a fully comprehensive assessment, it adequately considers negative impacts of various hard structures and identifies adaptation and retreat options. These resources are planned to inform the future development of a land management plan. However, this effort would benefit from an updated and truly comprehensive vulnerability assessment and adaptation plan, in addition to the required consideration of sea level rise and climate change in local hazard mitigation plans and a stronger attempt to disseminate information to local communities and jurisdictions.

RECOMMENDATIONS

- **Establish a statewide development setback minimum requirement.**
- **Prohibit development in wetlands or require that developments are designed to prevent ecological impacts.**
- **Implement a strategy of managed retreat for state-owned infrastructure, such as highways, and repurpose the gas tax to help in this endeavor.**
- **Establish policies that limit the use of coastal armoring and require eventual removal and restoration.**
- **Require that sediment replenishment projects prove a need, use best practices to avoid negative ecological impacts and conduct physical and ecological monitoring.**
- **Conduct a thorough sea level rise vulnerability assessment and develop an adaptation plan.**

Photo: Kenny Braun

GULF STATES

Texas

Texas's 367 miles of coastline, which are part of the Texas Coastal Plain, consist of marshes, bays, estuaries and barrier islands. Home to incredible biodiversity, including the most rare Kemp's ridley sea turtles, the state is responsible for protecting valuable natural resources along its coastline. This is a task that is becoming increasingly more difficult as the climate crisis persists. While the state has begun to address coastal resiliency through its Texas Coastal Resiliency Master Plan, the state is pursuing a large-scale project, nicknamed the "Ike Dike" that relies too heavily on coastal armoring and beach fill. In 2022, the U.S. Senate approved a bill that would authorize federal agencies to plan for an estimated $31 billion for the Ike Dike.

	Bad	OK	Good	
Sediment Management				**1**
Coastal Armoring				**2**
Development				**2**
Sea Level Rise				**2**
			Total	**7**

BEACH GRADE

C-

Mediocre policies.

BAD

Sediment Management: Beach replenishment is frequently used in Texas, especially for large-scale fill projects. These projects cost more than half of the $22.5 million of state and federal funds that are allocated every two years to combat coastal erosion in Texas. As part of the Coastal Texas Protection and Restoration Feasibility Study, one of the primary protection and restoration strategies is dune building but there's no clear indication of where the vast amounts of appropriate sediment will be sourced. The state has a sediment management plan and collects beach erosion and sediment source data to help inform beach replenishment programs. Unfortunately, beach nourishment standards, permit requirements and environmental monitoring are severely lacking.

OK

Coastal Armoring: While Texas management strategies prioritize soft stabilization methods, such as dune and wetland restoration, the state continues to view seawalls and breakwaters as justifiable practices. For example, over the past decade, the state has continued to evaluate seawalls in the Coastal Resilience Plan and pursue other hard structures for storm surge barriers, such as the massive floodgate projects in Galveston Bay. In addition, the state allows emergency permitting of coastal armoring.

OK

Development: Texas delegates development and erosion responsibilities to local municipalities. While the state requires local governments to establish setback requirements landward of the first line of vegetation or 200 feet from the mean low tide line, the setback distance beyond that varies locally. State-mandated local dune protection lines preserve dunes up to 1,000 feet from the mean high tide line and require proposed development within that space to get a permit and mitigate impacts to dunes. Beachfront construction also requires the completion of a beach construction certificate and dune protection permit. Removal of structures that end up seaward of the first line of vegetation can be contentious and not always enforced. The state's major issue seems to be the lack of zoning restrictions as Texas allows developments in flood-prone areas, such as filled wetlands and floodplains.

OK

Sea Level Rise: In 2022, the state did not make any headway in terms of planning for sea level rise, despite the fact that Texas's coastlines are extremely vulnerable to rising seas. While the state has not implemented concrete sea level rise policies, some agencies have done sea level rise mapping. The Community Health and Management Resource Mapping application does provide methods to engage and educate local communities. The Texas Coastal Resiliency Master Plan, which contains climate change adaptation measures, is an important step. However, the state uses low-end sea level rise projections, encourages the use of hard structures, such as breakwaters and seawalls, and continues to rely on beach fill for erosion control.

RECOMMENDATIONS

- **Use stronger sea level rise projections in the adaptation plan.**
- **Conduct a thorough sea level rise vulnerability assessment.**
- **Require that abandoned homes on the coastline must be removed.**
- **Establish more consistent implementation of minimum development setback policies.**
- **Clearly delineate high risk areas (for both flooding and erosion) for use during buyout programs.**
- **Continue to support and invest in living shorelines and other soft structures, or buyouts, over expensive and short-term sand replenishment and seawalls.**
- **Require zoning that prohibits new development in high hazard areas and limits repair and maintenance of existing infrastructure in those areas.**
- **Require that homeowner assistance and reimbursement funds are only used for building homes outside of high-risk areas or for rebuilding homes to higher structural standards.**

Conclusion

During the past two years, several climate change reports, including the United Nations Intergovernmental Panel on Climate Change and National Oceanic and Atmospheric Administration, have highlighted the need for stronger and more proactive coastal resiliency initiatives to protect coastal infrastructure, vulnerable communities, coastal habitats and marine life. These resiliency efforts go hand-in-hand with the policies sought after and recommended by the Surfrider Foundation's State of the Beach Report. One of our goals with this report is for our nation's state and federal leaders to double down on commitments to reduce greenhouse gas emissions and bolster coastal adaptation mechanisms in the upcoming year. After all, time is of the essence and humanity can no longer idly sit by as climate impacts barrel down on our coastal communities.

Surfrider's State of the Beach Report brings to light the essential need for improved coastal management practices at the state level to mitigate and reduce the impacts of erosion and sea level rise. This report is intended to help states identify gaps in their current coastal management policies and provide clear recommendations for policy changes that can be taken to better protect coastal resources. Surfrider's findings indicate that many states are not addressing these important issues adequately enough to sufficiently protect our nation's coasts.

The policy criteria that prove to be the most difficult for coastal states to achieve include avoiding emergency permits for hard armoring, restricting the repair of hard armoring structures and avoiding beach fill by restoring the natural flow of sediment to the coastline. Alternatively, proactive policies, or essentially the 'low-hanging fruit' that seem to be the most frequently accomplished by state agencies, include encouragement of the use of living shorelines and coordinating with municipalities to develop local plans and community outreach. Below is a summary of a few problematic trends and highlighted approaches that coastal communities can adopt to improve shoreline management.

This report is intended to help states identify gaps in their current coastal management policies and provide clear recommendations for policy changes that can be taken to better protect coastal resources.

In Puerto Rico, Surfrider is leading efforts to implement nature-based solutions to climate change by restoring mangrove forests.

COMMONLY USED INEFFECTIVE POLICIES AND PROGRAMS

Emergency Permits for Coastal Armoring and Redevelopment: Emergency permits are problematic because 'temporary' seawalls often become permanent and rushed redevelopment permits allow for poor development standards. It is shocking how many local and state agencies hand out 'emergency' permits without any requirement for removal and restoration. Even California, with one of the best grades in the report, appears to indiscriminately give away emergency permits when these situations are the result of a lack of advance planning. While some emergency permits may be needed in the future, they must only be allowed temporarily, with strict requirements for removal after an established time frame (such as six months, or a definitive length of time). In addition, requirements should include restoration of the area after removal and a longer-term, proactive effort by the landowner to prevent the need for future armoring projects, either through the use of living shorelines or managed retreat. Instead of being used solely as a tool to incentivize properties to stay in harm's way, emergency permitting should be used for immediate protection against storms and as a mechanism to advance longer-term, proactive action to enhance coastal resilience. If only short-term approaches continue, these developments will continually be threatened by coastal hazards and our natural coasts will disappear under perpetual armoring and increased rates of erosion.

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Improvement of Guidance for Local Municipalities: Ideally, the best type of governance comes from the local level, which is ultimately where shoreline planning should take place. Local agencies know how to best protect their coastlines and implement policies most effectively. However, it is also imperative that statewide policies are created and applied locally (this is especially true with development and coastal armoring standards). The ultimate goal for coastal preservation should be to have statewide policies that are implemented and adapted at the local level, as currently modeled by the states of California and Washington. Without proper policies, and most importantly, guidance from state agencies, local decision-makers appear to not always adhere to core statewide policies.

The loss of property at Rocky Point stands as a stark warning that we must immediately develop proactive management plans and a resiliency strategy not only for Hawai'i, but for vulnerable shorelines and properties across coastal states.

EXAMPLES OF EFFECTIVE POLICIES AND PROGRAMS

Going It Alone – the Flip Side of Delegating Local Authority: As some states have not codified important statewide policies, resourceful and determined local municipalities have taken it into their own hands to better protect their coastlines. This is especially true for climate change and sea level rise in states such as Florida and Illinois. For example, five counties in Florida have joined forces to create the Southeast Florida Regional Climate Change Compact to address and prepare for climate change impacts and sea level rise. Chicago is similarly taking the initiative to respond to climate change erosion, despite the lack of statewide planning. Without clear statewide policies in place, local jurisdictions establish their own, creating a patchwork of policies that is not beneficial to the state as a whole.

Specific Legislation That Bolsters Coastal Protection: Oregon, Washington and California each have clear laws that were established to protect coastal resources and guide shoreline management. In 1976, California passed the Coastal Act. This state law explicitly spells out how local communities should implement coastal policies, set development standards, respond to coastal hazards and improve public access, among many other progressive policies. The Coastal Act is regarded as one of the strongest environmental laws in the nation and has captured international attention for effectively protecting California's coastline. This type of comprehensive, proactive legislation would bolster the ability of many other coastal states to take action and protect coastal resources.

The Need for Consistent Federal Policies and Financial Support: As mentioned in the introduction, many states would likely be further along in establishing effective coastal management policies if they received consistent policy and financial support from the federal government.

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Comprehensive legislation, such as the Coastal Act in California, would bolster the ability of many other coastal states to proactively protect coastal resources.

GENERAL RECOMMENDATIONS

The following recommendations will increase our coastlines' natural resilience to coastal hazards, better protect coastal developments and help to ensure that future generations have access to our nation's favorite beaches. These recommendations will benefit all states, regardless of their current score. They focus on the importance of long-term planning and the need to avoid short-term fixes for larger, pervasive problems.

- Coastal and Great Lakes states must create a uniform minimum 'setback' policy that allows for future sea level rise. Coastal managers need to adapt and implement those setback policies based on current and projected local erosion rates.
- All permits for new developments should include building restrictions in coastal hazard areas and sensitive habitats.
- Coastal armoring projects should have limitations on repairs and be restricted, especially in sensitive habitats, removed after an established time period and restored to the prior state after removal. When sand is lost due to erosion from a private armoring project, a 'mitigation fee' should be charged to the landowner.
- States should encourage the use of soft approaches to erosion, such as living shorelines and strategic sand replenishment paired with the restoration of natural sediment flows. Armoring should only be allowed as a last resort option. In addition, states should invest in 'Blue Carbon' projects by protecting, restoring and planting mangroves, seagrass and kelp to help absorb greenhouse gases and provide a natural buffer against coastal hazards.
- As sea levels are projected to rise by six feet or more by 2100, states should establish statewide managed retreat policies that provide guidance on relocating infrastructure out of harm's way, especially for coastal properties that are frequently damaged or flooded.
- In order to protect coastal resources and taxpayers, states should establish clear procedures and policies about how to prepare for and respond to 'extreme weather events.'

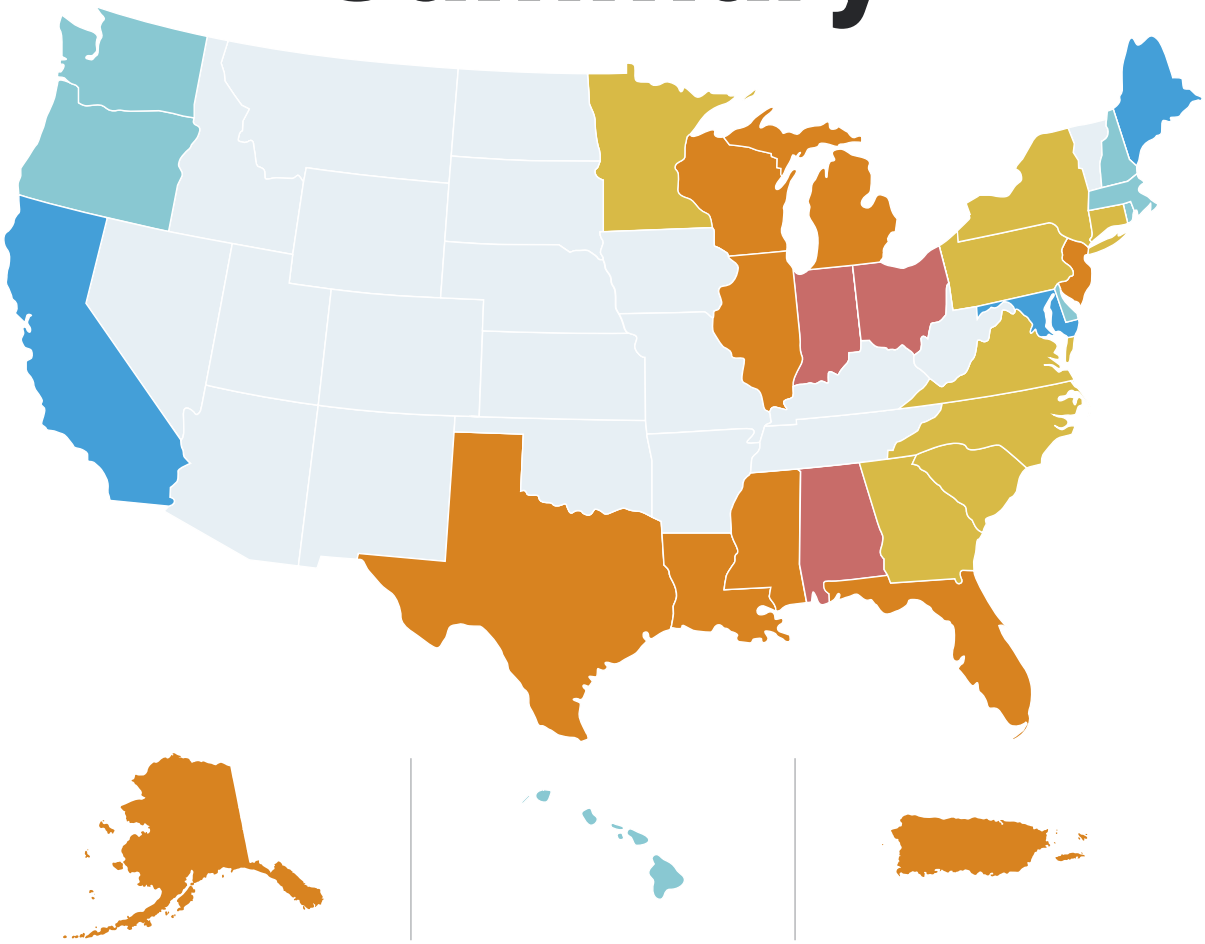
These recommendations will benefit all states, regardless of their current score.

- States should research cutting-edge climate change adaptation measures, including 'buyout' programs where local and state governments purchase at-risk homes, leaving the land vacant or restored to coastal wetlands (if applicable) to accommodate rising seas. 'Lease back' programs are other innovative adaptation approaches where at-risk properties are acquired by local governments and then leased back to the homeowner until the property is no longer habitable and must be removed. In addition, communities can pass local taxes to establish a fund to purchase homes in harm's way. Because extreme weather events and sea level rise are more prevalent, local planners and governments are eager to explore new mechanisms to help local homeowners.
- Considering that sea level rise will inevitably be an issue for coastal states, it is imperative that statewide policies are crafted to explicitly instruct local municipalities to plan ahead and develop climate change adaptation measures.
- The granting of 'emergency' permits for areas and structures subject to coastal hazards and flooding needs to be curtailed. If a permit must be granted, it should require plans to remove armoring in the future and stringent conditions should be placed on how long the armoring is allowed to stay in place and what monitoring and reporting will need to occur. Any approval for an emergency armoring project should also require a longer-term, proactive effort by the landowner to prevent the need for future armoring projects, either by using living shorelines or managed retreat.
- The federal government needs to provide more consistent financial and policy support to states. It is abundantly clear that many states would be further along with coastal management programs if federal partners strategically committed more time and resources to assisting local efforts, and to establishing mandated climate change and coastal resilience policies.

Planning for coastal erosion and sea level rise not only makes sense in terms of land-use planning, but it also saves taxpayers' money in the long run. According to the National Institute of Building Sciences, every dollar invested in preparedness and resilience saves four dollars in costs down the road. American taxpayers and our valuable coastlines deserve conscious decisions to be made to proactively preserve our coasts – which inevitably protects our communities, ecosystems, habitats and natural landscapes. With the results and recommendations provided by Surfrider's State of the Beach Report, we must work together to drive awareness of the increasing challenges facing our nation's coasts. Ultimately, our combined efforts can lead to improved local, state and federal government responses to erosion and sea level rise to protect our ocean, waves and beaches for all people.

Ultimately, our combined efforts can lead to improved local, state and federal government responses to erosion and sea level rise to protect our ocean, waves and beaches for the future.

2022 Grade Summary



GRADING SCALE

- **A** 11-12 points
- **B** 9-10 points
- **C** 7-8 points
- **D** 5-6 points
- **F** 4 points

WEST COAST

Alaska	5	D
California	11	A
Oregon	9	B-
Washington	10	B
Average		B

GULF STATES

Alabama	4	F
Louisiana	6	D
Mississippi	5	D
Texas	6	D
Average		D

MID-ATLANTIC

Delaware	9	B
Maryland	11	A
New Jersey	5	D
New York	7	C
Virginia	8	C
Average		C

SOUTHEAST

Florida	6	D
Georgia	7	C-
North Carolina	7	C
South Carolina	7	C
Average		C

NORTHEAST

Connecticut	8	C+
Maine	11	A
Massachusetts	10	B
New Hampshire	9	B
Rhode Island	10	B
Average		B

GREAT LAKES

Illinois	6	D
Indiana	4	F
Michigan	6	D
Minnesota	7	C
Ohio	4	F
Pennsylvania	8	C
Wisconsin	5	D
Average		D

ISLANDS

Hawai'i	9	B
Puerto Rico	5	D
Average		C

APPENDIX 1.

2022 State Criteria Checklist

MANAGEMENT POLICY AND PLAN CRITERIA	Y | N	NOTES
Sediment Management		
1. State encourages regional sediment and inlet management plans.		
2. State avoids beach fill projects by promoting and protecting natural sediment flow.		
3. State has sand replenishment policies that thoroughly analyze impacts to coastal resources and efficacy of replenishment.		
4. State requires permits for replenishment, dredge and fill projects.		
Coastal Armoring		
1. State restricts or prohibits construction of hard stabilization structures.		
2. State restricts repair and encourages removal of hard stabilization structures.		
3. State encourages non-structural shoreline stabilization alternatives.		
4. State avoids emergency permitting of hard stabilization structures.		
Development		
1. State has effective development setback policies.		
2. State restricts new developments in coastal hazard areas.		
3. State restricts repairing developments in coastal hazard areas.		
4. State has policies that protect natural resources that provide coastal hazard mitigation benefits (e.g. dunes, wetlands, reefs).		
Sea Level Rise and Coastal Hazard		
1. State encourages regional and/or local SLR vulnerability assessment with mapping.		
2. State encourages regional and/or local SLR adaptation plan and implementation plan.		
3. State protects habitat that provide landward creep for wildlife (e.g. riparian areas, habitat connectivity).		
4. State coordinates with municipalities and encourages community outreach.		

Click Here For The Scorecard Of Each State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