

2020

# State Of The Beach Report



Photo by Luke Shadbolt



An aerial photograph of a beach with turquoise waves crashing onto the shore, creating white foam. The sand is a light tan color.

# Contents

## **03 Introduction**

## **09 Key Findings**

## **10 Methodology**

## **13 West Coast**

14 California

16 Oregon

18 Washington

20 Alaska

## **22 Southeast**

23 Florida

25 Georgia

27 North Carolina

29 South Carolina

## **31 Mid-Atlantic**

32 Delaware

34 Maryland

36 New Jersey

38 New York

40 Virginia

## **42 Northeast**

43 Connecticut

45 Maine

47 Massachusetts

49 New Hampshire

51 Rhode Island

## **53 Gulf States**

54 Alabama

56 Louisiana

58 Mississippi

60 Texas

## **62 Great Lakes**

63 Illinois

65 Indiana

67 Michigan

69 Minnesota

71 Ohio

73 Pennsylvania

75 Wisconsin

## **77 Islands**

78 Hawai'i

80 Puerto Rico

## **82 Conclusion**



# Introduction

## In the middle of difficulty lies opportunity.

— Albert Einstein

2020 has been an exceptionally challenging year. Between the COVID-19 pandemic, civil unrest due to racial tensions, and increased problems associated with climate change, our global community is grappling with existential problems that require immediate solutions. While few solutions are readily available or easily implemented, our collective society must have laser focus on solutions in order to turn the tide of the climate crisis.

During 2020, wildfires, hurricanes, severe rains, oppressive heat waves and weird weather whiplashed across our planet, particularly impacting the U.S. While being at the mercy of forceful events is

unnerving, these terrible calamities have also *helped people better see and understand the current climate crisis* — the connection between ‘extreme events’ and climate change has never been clearer. And these events are only a glimpse of what is to come as our climate continues to drastically change.

2020's hurricane season (which is not quite over yet), has been so active that the U.S. National Hurricane Center ran out of alphabet letters to ‘name storms’ and has now turned to using Greek letters to label new storms. The fire season along the west coast (which is also not quite over yet) has been equally devastating, burning over 6.6 million acres and costing over \$1.7 billion. Australia, and even the Arctic circle, have also experienced precedent-setting fires in 2020. In the Arctic, a phenomenon known as ‘zombie fires’ is exceptionally worrisome because when these fires burn permafrost, greenhouse gases are released that can exacerbate global warming. Climate scientists think permafrost is melting “70 years earlier than predicted.”



Orange sky over the San Francisco Bay Bridge due to the west coast wildfires.



Our warming planet is melting ice sheets and glaciers at unseen rates. A new [study](#) found that Greenland's melting ice sheet, which is the largest contributor to global sea level rise, *has melted 'past the point of no return.'* And speaking of sea level rise, according to the National Oceanic and Atmospheric Administration (NOAA), the Atlantic and Gulf coasts have experienced a [100-150% increase in annual days of high-tide flooding](#) in the last two decades.

A new mapping effort conducted by the [First Street Foundation](#) shows that in the future, the U.S. will experience drastically more flooding than previously calculated by the Federal Emergency Management Agency (FEMA). The new calculations analyze sea level rise, rainfall and flooding along creeks not federally mapped. The conclusions are daunting, and estimate that 14.6 million properties are at risk from a '100-year flood,' far more than the 8.7 million properties estimated by FEMA.

The new mapping effort also uncovered that 70% more buildings in the U.S. are vulnerable to flood risk than previously thought; with most of the flooding impacting low-income neighborhoods. For example, in Florida unmapped flood risks disproportionately impact low income and minority communities. A community in Fort Lauderdale, which is 80% African-American, has nearly 42% of its properties located in flood zones, while FEMA estimated only 6.5% of these homes are in peril due to flooding.

**The connection between 'extreme events' and climate change has never been clearer.**

**6,600,000**

Acres burned along the west coast in a devastating wildfire season.

**100-150%**

Increase in annual days of high tide flooding in the last two decades.

**70%**

More buildings in the U.S. are vulnerable to flood risk than previously thought.



Greenland's melting ice sheet, which is the largest contributor to global sea level rise, has melted 'past the point of no return.'

Addressing environmental impacts to low-income and underserved communities is known as "environmental justice." *And, while 2020 has been fraught with awful circumstances and events, one silver lining is that environmental justice has become a critical priority that can no longer be ignored.* Fortunately, many communities and environmental advocates are raising awareness and providing solutions to help solve this growing problem; and some elected officials are doubling efforts to work on this systemic issue.

Before presenting the findings in this *State of the Beach Report*, we'd like to point out additional positive news that occurred during 2020. Fortunately, this summer, both the House and Senate Select Committees on the Climate Crisis released lengthy reports about solving climate change. Later in this *State of the Beach Report* we touch on the recommendations from those reports.

In other good news at the federal level, [FEMA](#) is looking to spend [\\$500 million](#) on a new program that will relocate vulnerable infrastructure and homes out of harm's way. The Department of Housing and Urban Development also established a program to spend \$16 billion in the future on relocation projects. Relocating infrastructure as proposed by these federal programs is called 'managed retreat.'

Managed retreat has traditionally been a convenient lightning rod in the coastal zone management world; however, recently it has been utilized more due to increasing climate change impacts, and thus is becoming more palatable to people around the world. Last summer, [Columbia University](#) hosted a managed retreat conference that was attended by people from across the globe. This summer, Georgetown University published a managed retreat toolkit that aids decision making with adaptation planning. The university also released an important [Equitable Adaptation](#) toolkit that focuses on environmental justice problems in relation to climate change.



**Finally, several positive developments in sea level rise planning took place in 2020 such as:**

- North Carolina is working on implementing an [Executive Order](#) signed in 2018. In 2020, the state published a plan that requires the state to develop, implement, and evaluate programs that support statewide climate mitigation and adaptation practices. This important step improved the state's grade from a D to a C-. In order to maintain its new grade in 2021, the state must fully implement proposed adaptation measures.
- New Jersey's Governor also signed a new [Executive Order](#) in 2020 that will require that builders take climate change impacts into account during development. While this is a positive step, the adaptation policies will not be implemented until 2022. We will continue to monitor development and implementation of this order.
- Florida adopted [legislation](#) that requires sea level impacts to be analyzed for 'publicly funded coastal construction projects.' While this is a powerful step in the right direction, it does not immediately change current regulations and the formal rulemaking, and adoption will not be done until 2021.
- Maryland already had robust sea level rise planning policies, but they went even further in 2020 when they passed [legislation](#) that authorizes local governments to establish and fund a Resilience Authority under local law.
- Though not at the state level, Boston's Mayor implemented a new [ordinance](#) to boost the city's wetlands resilience.
- Louisiana's Governor [announced](#) the state will improve climate resilience over the next four years. While it doesn't change their grade for this year, this is good news for the future.
- Michigan produced a thorough [Adaptive Management Plan for Lake Erie](#) based on 6 steps: setting goals, planning and prioritizing, implementing, monitoring, evaluating, and adjusting.
- Oregon's Governor signed an [Executive Order](#) that directs the Department of Land Conservation and Development and 14 other state agencies and commissions to identify potential actions within their current authority that reduce greenhouse gas emissions and mitigate climate change impacts.
- California [continues](#) to lead the charge with planning for climate change. In 2020, the Coastal Commission pushed for increasing setbacks to keep infrastructure safe from future coastal erosion and is requiring local communities to look at complicated issues like managed retreat, including examining moving vulnerable train tracks. In 2020, Governor Newsom signed two executive orders to aggressively help the state [mitigate](#) and [adapt](#) to the climate crisis with an emphasis on using nature based solutions to combat climate change impacts.



Managed retreat can be a complicated process, but it is one of the best strategies to adapt for future sea level rise.

While great strides were made with sea level rising planning in 2020, the updated *State of the Beach Report* found that once again most coastal states need to improve coastal management practices and advance better sea level rise policies. This *State of the Beach Report* assesses the performance of 31 U.S. coastal and Great Lakes states, and the territory of Puerto Rico, against key beach management indicators, grouped into four main categories. These indicators provide a lens to evaluate state policies and efforts to protect our nation's beaches from high risk coastal development, beach fill, sea level rise and shoreline structures.

The resulting grades indicate that 74% of states assessed (23 out of 31), are doing a mediocre to poor job of responding to coastal erosion and sea level rise planning, especially in areas that are most impacted by extreme weather events. As in past years, a noticeable trend highlights the fact that states that are the most vulnerable to extreme weather events, such as destructive hurricanes, have inadequate coastal policies and are therefore the least prepared to handle coastal erosion and increasing climate change impacts. The highest-scoring states had strong policies regarding sea level rise planning, building standards, coastal armoring and prohibitions against rebuilding in coastal hazard areas.

**Most coastal states need to improve coastal management practices and advance better sea level rise policies.**

**74%**

Of states assessed are doing a mediocre to poor job of responding to coastal erosion and sea level rise planning.



The goal of Surfrider's *State of the Beach Report* is to make the public and decision makers aware of the ever-growing erosion problem 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. Over the past 35 years, Surfrider has helped to improve coastal management and protect important ocean and coastal resources. With more than 170 chapters and student clubs nationwide, Surfrider is working at the 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 coasts. At the national level, our environmental science, policy and legal experts work with decision makers to plan for the future of our coasts.



With more than 170 chapters and student clubs nationwide, Surfrider is working at the local, state and national levels to protect our shorelines.

Over the past five years, Surfrider has intentionally been increasing our work on climate change mitigation and adaptation because we want to [help bring about solutions](#). We constantly hunt for new scientific research and consume in-depth policy ideas about implementing solutions. While the climate crisis is daunting, Surfrider is working around the country to protect coastal communities, ecological resources, and recreational access in light of the climate crisis.

### We have implemented a multipronged approach to:

- Educate our supporters, the general public, and decision makers about how the climate crisis is impacting our ocean and coasts.
- Safeguard and pass climate legislation at the state and federal levels.
- Help improve coastal management and development standards by publishing this annual *State of the Beach Report*.
- Work directly with decision makers in 25 different localities across the country to develop sea level rise plans.
- Participate in dune restoration and 'living shoreline' projects that can withstand rising seas.
- Partner with universities and federal agencies to better understand ocean acidification and sea level rise. Recently we partnered with video producers on a [short virtual reality film](#) that synthesizes data from the United States Geological Survey to illustrate the effects of future sea level rise in Capitola, California.
- Advocate for greenhouse gas reductions by supporting 'Community Choice Energy' programs.
- Plant Ocean Friendly Gardens to create "living soils" that trap greenhouse gases and prevent the use of emission-intensive fertilizers.
- Hit the streets. Surfrider mobilizes people to attend global climate marches and strikes.
- Lobby the halls of Congress. Through our Coastal Recreation Hill Day, 150 Surfrider advocates met with over 130 Congressional representatives urging stronger leadership to solve the climate crisis.
- Protect and enhance beach access for the public, including underserved communities.

For more information on Surfrider's coastal preservation campaigns and victories, visit [surfrider.org](https://surfrider.org). We encourage you to join your nearest chapter to 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 U.S. coastlines 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.

'Coastal erosion' is the loss of both sandy beaches and land area. It occurs due to several factors, including geologic changes in the landscape, sea level rise, high-intensity storms 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. Coastal erosion typically does not pose a noticeable problem until structures become threatened and beaches diminish.

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

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

# 50%

Of surveyed U.S. coastlines are either at 'high' or 'very high' risk of coastal erosion.

consequences, while 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 these 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 lost during 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. This erosion of coastlines, wetlands and watersheds is also taking place in conjunction with rising sea levels and the ongoing effects of climate change, severely impacting our nation's coasts.



Only after coastal erosion and storm surge threaten properties, many homeowners and land managers conduct expensive protection projects. Photo by Scott Eastman



Coastal armoring is a short-term solution that often leads to overdevelopment of the coast, putting people and homes back in dangerous, high-risk areas.

## 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 2020, with extreme temperatures and drought conditions exacerbating the 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 continues to be plagued with more frequent and severe hurricanes that are devastating coastal communities.

Over the past two years, the United Nations Intergovernmental Panel on Climate Change released its 2018 and 2019 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 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 risk to residents.

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.

**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.**



# 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 and territories 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 indicate that the majority of coastal managers and state agencies need to take greater steps to ensure our nation's beaches and coastlines will be protected for future generations. This national trend also denotes a clear need for increased federal leadership. While it is evident that states

would greatly benefit from more consistent policy and financial support from the federal government, the current administration is rolling back important policies, and key federal agencies are lacking in leadership and strategic planning.

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.

**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	D
● Great Lakes	D
● Gulf	D



States that are the most vulnerable to extreme weather events, including destructive hurricanes, are also the least prepared.

# Methodology

Surfrider's *State of the Beach Report* evaluates the performance of states in terms of management of their coastal resources. Erosion responses were analyzed by researching available information from the nation's Great Lakes and coastal states, in addition to Puerto Rico. Researched information included regulations on state-funded engineering studies, erosion maps and permits granted for development and beach replenishment projects.

Each state or territory was graded on its response to erosion and sea level rise based on a set of twelve 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, which encapsulates state efforts regarding essential policies and management practices, is consistent with the expectations of the Coastal

Zone Enhancement Program through the federal Coastal Zone Management Act. The states were evaluated on their policies, regulations, planning and implementation based on existing literature, online resources, communication with coastal zone management agencies and Surfrider's local network. Additional content gathered by each state to assess grades is also [available to view](#) for more in-depth information.

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 quality of policies and how well they are implemented.



Morro Bay, CA



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

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 a minus 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**

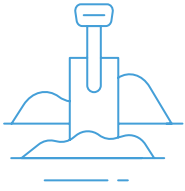
Inadequate protection of coastal communities and resources.



Portland Head Lighthouse, Cape Elizabeth, ME

# Categories Of Criteria

## SEDIMENT MANAGEMENT



Coastal states are encouraged to manage sediment and preserve upland sediment sources to ensure habitat 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 that ensure developments can withstand severe storms, restrictions on the repair or development of new structures in high hazard areas, ample 'setback' buffers that require developments be built a certain distance from the coast (be it from 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, and caused the phenomenon known as climate change. Many expected impacts are already evident from this change in global processes, with coastal effects becoming ever 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

California

Oregon

Washington

Alaska





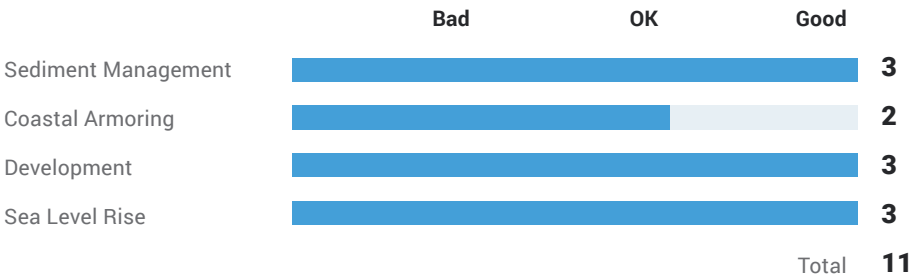


Trestles, CA | Photo by Geoff Glenn

WEST COAST

# California

The 1,100-mile long California coastline contains an incredible array of habitats from rocky reefs to sandy beaches and boasts the nation’s only network of marine protected areas (MPAs). In addition to leading in ocean protection, the state remains at the forefront of trailblazing coastal management policies focused on preservation. These include the 1976 California Coastal Act, which set the stage for balancing development demands and the need for coastal preservation. In 2020, the state furthered its reputation as being a leader in coastal management and planning for sea level rise.

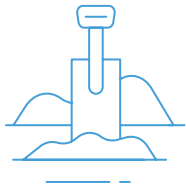


BEACH GRADE

A

Excellent policies and implementation.





## SEDIMENT MANAGEMENT: GOOD

California developed a Sediment Master Plan and a California Sediment Management Workgroup composed of local and state agencies to establish regional plans. California does a better job than most states with efforts to avoid unnecessary beach fill. Beach fill 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.



## COASTAL ARMORING: OK

The Local Coastal Programs approved by the California Coastal Commission (CCC) often put restrictions on new armoring and the repair of existing seawalls. *Unfortunately, the CCC continues to administer emergency permits for temporary shoreline stabilization structures, and many of these seawalls become permanent.* The CCC seems to back away from 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 as alternatives to seawalls.



## DEVELOPMENT: GOOD

In 2020 the Coastal Commission improved set back standards, proving once again 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.



## SEA LEVEL RISE: GOOD

Every year, the state reflects seriously on its Sea Level Rise (SLR) laws and policies. In 2020, the California Coastal Commission (CCC) continued to reinforce its SLR planning policies by stressing 'proactively planning,' including controversial issues like managed retreat. The CCC is requiring local communities to analyze extremely vulnerable homes and infrastructure. In fact, the CCC made a bold move by stating the train tracks in San Diego are extremely vulnerable and *will* need to be moved. Outside of the CCC, all state agencies (the Ocean Protection Council, California Resources Agency, the California Department of Transportation, among others), in addition to the Governor, continue to be progressive on climate change adaptation planning.

## 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.
- Increase efforts to restore natural sediment flow to the coastline.
- Enhance development setback standards to incorporate current sea level rise 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 develop established regional sediment management plans.

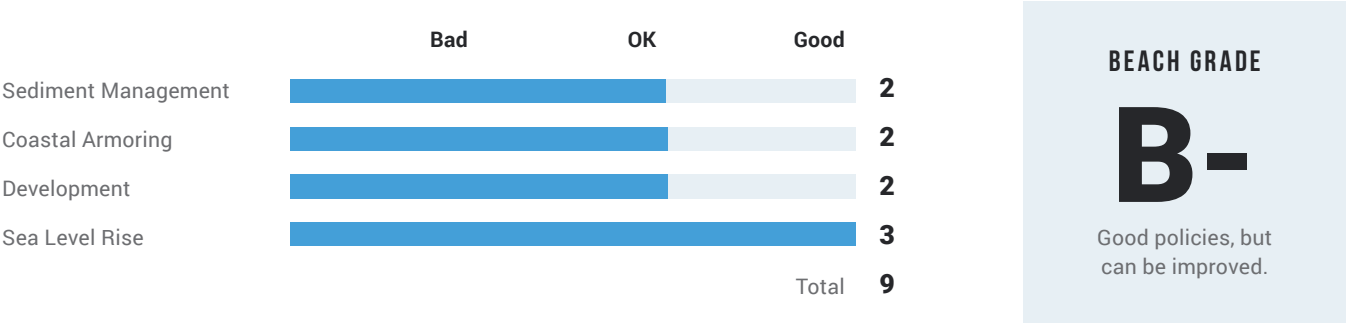


Gold Beach, OR

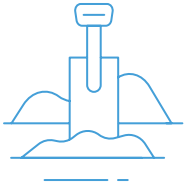
WEST COAST

# Oregon

Oregon’s 362 miles of isolated beaches, dramatic rock formations, and quaint coastal towns make for an outdoor enthusiast’s dream. Thanks to the Oregon Beach Bill, passed in 1967, this entire coastline remains free and public. Oregon’s recreational playground offers an abundance of activities for all levels of adventurers, from whale watching in Coos Bay, hiking along the coastlines, or salmon fishing along Gold Beach. In 2020, the state increased its focus on Goal 18, and how to improve efficiency by working with stakeholders and conducting public workshops.

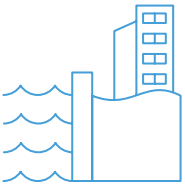






## SEDIMENT MANAGEMENT: OK

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.



## COASTAL ARMORING: OK

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.



## DEVELOPMENT: OK

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 began convening stakeholders to explore ways to further fine-tune language within Goal 18.



## SEA LEVEL RISE: GOOD

In March 2020, Governor Kate Brown signed an executive order that directs the Department of Land Conservation and Development, as well as 14 other state agencies and commissions, to identify potential actions within their current authority that reduce greenhouse gas emissions and mitigate climate change impacts. 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.

## 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, in addition to requiring 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, 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.

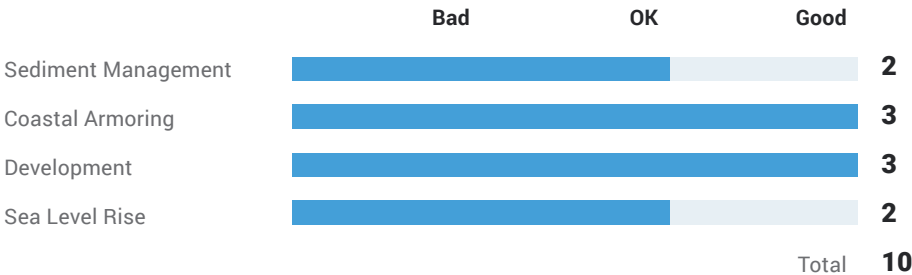


Olympic National Park, WA

WEST COAST

# Washington

The Washington shoreline is rich with diverse geological features and vast bodies of water. The Pacific coast is wild and diverse and includes several sovereign tribal reservations and the coastal section of Olympic National Park. The Strait of Juan de Fuca separates the U.S. from Canadian waters and is the entrance to the Salish Sea and Puget Sound basin, an estuary with thousands of miles of coastline, home to both small communities and the urban centers of Seattle and Tacoma. In July 2020, the Department of Ecology approved Grays Harbor’s updates to its Shoreline Master Program, an effort that took seven years, and started with strong stakeholder input on sea level rise policies; unfortunately, important sea level rise policies were removed at the end of the process.

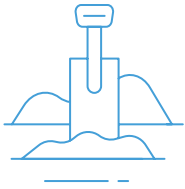


BEACH GRADE

**B**

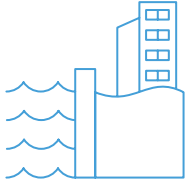
Good policies, but  
can be improved.





### SEDIMENT MANAGEMENT: OK

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.



### COASTAL ARMORING: GOOD

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 in order to help restore ecological functions. In addition, Washington is ahead of other West Coast states in terms of implementing living shorelines and restoration projects.



### DEVELOPMENT: GOOD

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.



### SEA LEVEL RISE: OK

In July 2020, the Department of Ecology worked with academic and other stakeholders to produce a new [guide to help coastal planners use 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 over a thousand people face increased tsunami risk as the sea rises inch by inch, year by year.

## RECOMMENDATIONS

- Establish explicit regulations for beach replenishment projects to ensure coastal resource protection and avoid expensive projects that can burden taxpayers.
- Develop a coastal resiliency plan to comprehensively address the challenges of coastal erosion, sediment management and sea level rise.
- Require all counties and municipalities to incorporate sea level rise into regional Shoreline Master Plans.
- Explore mechanisms for managed retreat and infrastructure relocation.

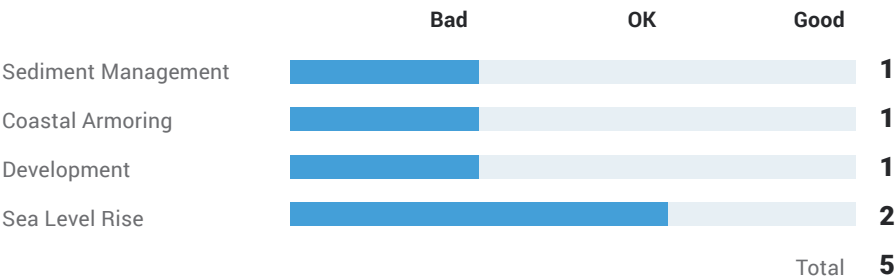


Juneau, AK

WEST COAST

# Alaska

Because of its remote location and large land mass, Alaska has more ocean coastline than all other U.S. states combined, with a total of 6,640 miles of coast. This vast shoreline makes it unique in that it is largely undeveloped with multitudes of fish and wildlife species that are directly relied upon by numerous tribal communities. Due to its distinct characteristics, there is pressure to preserve these habitats that are often recognized as “The Last Frontiers.”

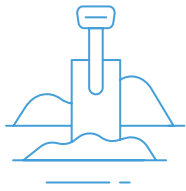


BEACH GRADE

D

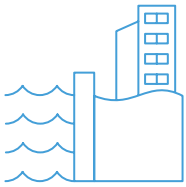
Fairly poor policies, lacking.





### **SEDIMENT MANAGEMENT: BAD**

Alaska is lacking sand replenishment and regional sediment management plans. Unfortunately, one of the only policies that deals with sediment management is the Sediment Quality Guideline Options policy, which essentially prescribes recommendations on how to process contaminated sediment. Fortunately, large-scale construction projects, such as natural gas pipelines, are required to submit an erosion and sedimentation control plan with their development application.



### **COASTAL ARMORING: BAD**

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. Instead of the state being the lead on managing erosion, many federal agencies are involved in various aspects of erosion management.



### **DEVELOPMENT: BAD**

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 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 a good job of protecting sensitive habitat from development.



### **SEA LEVEL RISE: OK**

Alaska has made enormous strides in planning for climate change. In September 2018, at the request of the governor, members of the Climate Action for Alaska Leadership Team were tasked with creating climate change policy recommendations and a climate action plan for Alaska. The Division of Community and Regional Affairs created the Alaska Climate Change Impact Mitigation Program to provide technical assistance and funding to communities imminently threatened by climate-related natural hazards, such as erosion, flooding, storm surge and thawing permafrost. While many of the recommendations deal with curbing emissions, the intent of the program is to help impacted communities develop a planned approach to shoreline protection, building relocation and/or eventual relocation of the entire community.

## **RECOMMENDATIONS**

- Develop coastal zone management enhancement plans and rejoin the Coastal Zone Management Program, which works with states to address coastal issues.
- Develop 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.

# Southeast

Florida

Georgia

North Carolina

South Carolina





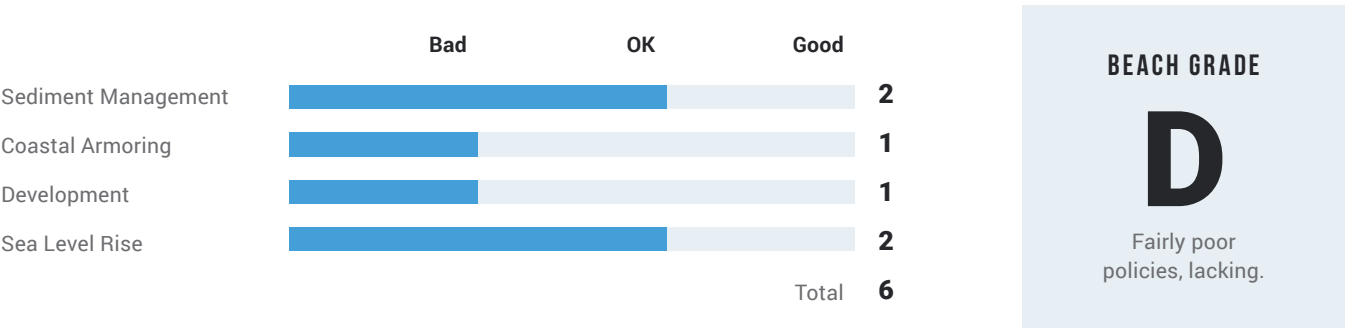


Miami, FL

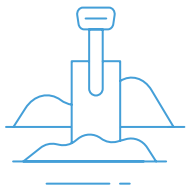
SOUTHEAST

# Florida

Florida’s coastline is home to roughly 825 miles of sandy beaches, interspersed by mangrove forests and salt marshes. Much of Florida’s coastline is heavily developed, and nearly 1,000 new people are moving to Florida every day. Regrettably, Florida is one of the most vulnerable states to sea level rise and the state has failed to adopt sufficient policies to mitigate these urgent threats to the economy, environment, and the welfare of Floridians. The 2020 legislative session ended with mixed results. Legislation to create the “Statewide Office of Resiliency and the Statewide Sea-Level Rise Task Force” failed, but a law requiring sea level impacts be analyzed for ‘publicly funded’ construction projects passed. While this is a powerful step in the right direction, it does not immediately change current regulations.

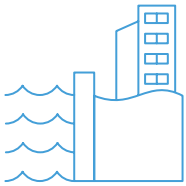






## SEDIMENT MANAGEMENT: OK

Florida has a beach management plan, updated in May 2018, that considers 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.



## COASTAL ARMORING: BAD

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.



## DEVELOPMENT: BAD

Florida has decent regulations to guide development; yet again, 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. Some municipalities even allow expedited permits to build a seawall for the newly constructed 'vulnerable' property. As such, it is no surprise that a [2019 Zillow and Climate Central report](#) found that Florida has allowed the construction of over 9,000 homes in flood risk areas since 2010.



## SEA LEVEL RISE: OK

The Florida Legislature made some progress in 2020 by passing a new law requiring sea level impact projection studies for publicly funded construction projects. At the same time, the legislature failed to pass other important climate bills, including one to establish a "Statewide Office of Resiliency and the Statewide Sea-Level Rise Task Force." Florida is already experiencing climate change impacts, such as 'sunny day flooding', intensified hurricanes, algal blooms, coral bleaching (in the Keys), and extreme King Tides throughout the year. Much of the work to plan for climate change is happening locally (the Southeast Florida Regional Climate Change Compact). The state has also taken some important steps to increase coastal resilience in 2019, as it allocated \$75 million of federal funds to buy out flood-damaged homes, and developed a grant program to help 17 coastal counties plan for sea level rise.

## RECOMMENDATIONS

- Significantly improve 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.
- Remove exemptions that allow any development seaward of the minimum setback line.
- Create new policies that incentivize the landward siting of new coastal development.
- 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).
- 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.

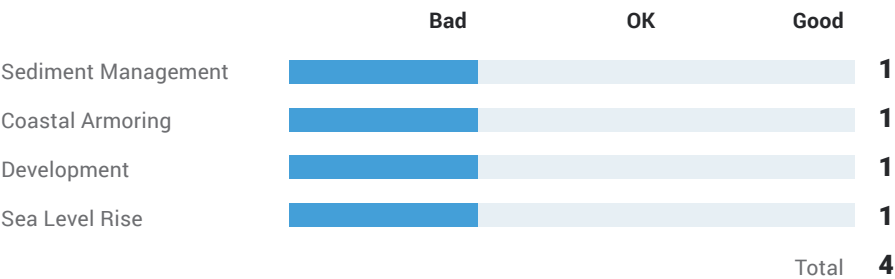


Jekyll Island, GA

SOUTHEAST

# Georgia

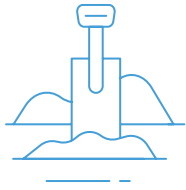
Georgia's shoreline consists of roughly 110 miles of coast with rich cultural history, nature, and 15 nearby barrier islands. The state's coastal habitats are stock full of unspoiled natural escapes. Since celebrating their 20-year anniversary in 2018, Georgia's coastal management program has made small steps towards modernized coastal policies, such as signing amendments to their Shore Protection Act just last year to improve coastal development setback policies. However, significantly more action is needed to fully manage the current threats along their coastline. In 2020, the state released a new disaster handbook but ignored extreme weather related to climate change.



BEACH GRADE

**F+**

Inadequate protection  
of coastal communities  
and resources.



### SEDIMENT MANAGEMENT: BAD

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 ecological impacts. While sand replenishment projects must have a Shore Protection Act permit, the requirements for approval are rather lenient.



### COASTAL ARMORING: BAD

Groins and jetties are included as a 'first alternative' method of coastal armoring, along with dune restoration and nourishment. In 2020, Sea Island completed a groin installation that is still subject to litigation. 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. All hard stabilization structures may only be temporary and developers are required to completely restore the area after they are removed.



### DEVELOPMENT: BAD

The Shore Protection Act offers some protection for coastal habitats and infrastructure. Amendments to the Act were signed into law in May 2019, strengthening Georgia's setbacks for coastal development. The original boundary, determined by trees that are 20 feet high along the coast, will now be determined by a set distance of 25 feet landward from the high water mark for private property and 100 feet landward for state property. Yet the state would benefit from stronger development standards.



### SEA LEVEL RISE: BAD

Georgia's Hazard Mitigation Plan dismisses sea level rise as 'not an immediate natural hazard,' despite the fact that nearly 40% of its coast is currently exposed to increased coastal hazards. The state does not have a climate change adaptation plan or vulnerability assessment. Only Tybee Island has developed an adaptation plan, which focuses on retrofitting, establishing repetitive loss policies, and elevating structures; however, these recommendations do not have an implementation plan.

## 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.
- Acknowledge climate change as an immediate threat and provide information on government websites.
- Conduct additional sea level rise vulnerability assessments for coastal areas outside of Tybee Island and develop a climate adaptation plan.
- 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.



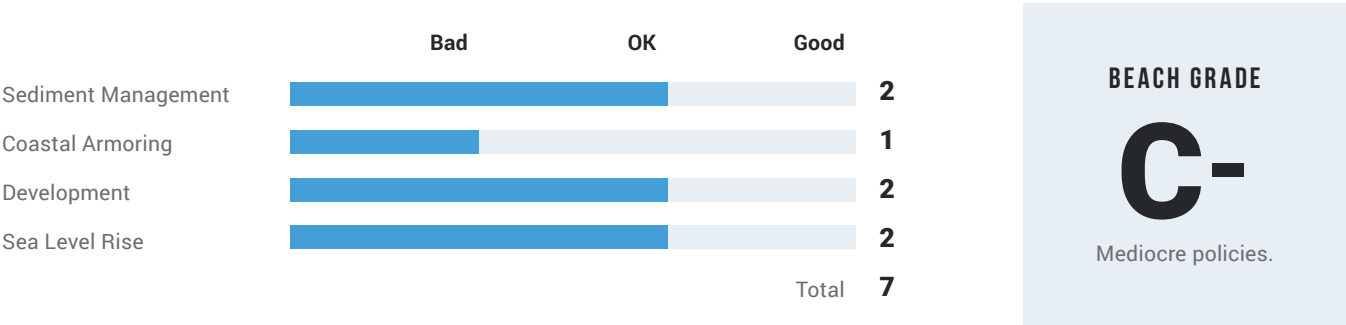


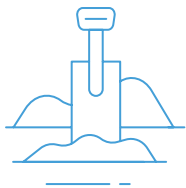
Ocean Isle Beach, NC

SOUTHEAST

# North Carolina

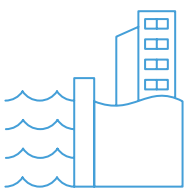
North Carolina’s coastline is a top tourist destination for the state, with rich seashores from the Outer Banks to the Crystal Coast. The state is no stranger to environmental impacts, such as annual hurricanes, coastal erosion, and increasing sea level rise. Unfortunately, the state continues to allow development in vulnerable areas as noted in this [Zillow](#) study. Yet, in 2020, the state made significant strides to update sea level rise planning, earning them a change in grade from a D to a C-.





## SEDIMENT MANAGEMENT: OK

North Carolina's thorough Beach and Inlet Management Plan, last updated in December 2016, 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 mitigate issues of erosion and sedimentation. While the state has strong policies to evaluate and monitor beach fill projects, the state relies too heavily on sand replenishment.



## COASTAL ARMORING: BAD

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 permanent placement of sandbags which conditrics the statewide policy of banning 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.



## DEVELOPMENT: OK

North Carolina does a good job of protecting coastal hazard zones in terms of protecting natural resources, such as wetlands and estuaries. The state also bases their setback policies 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 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.

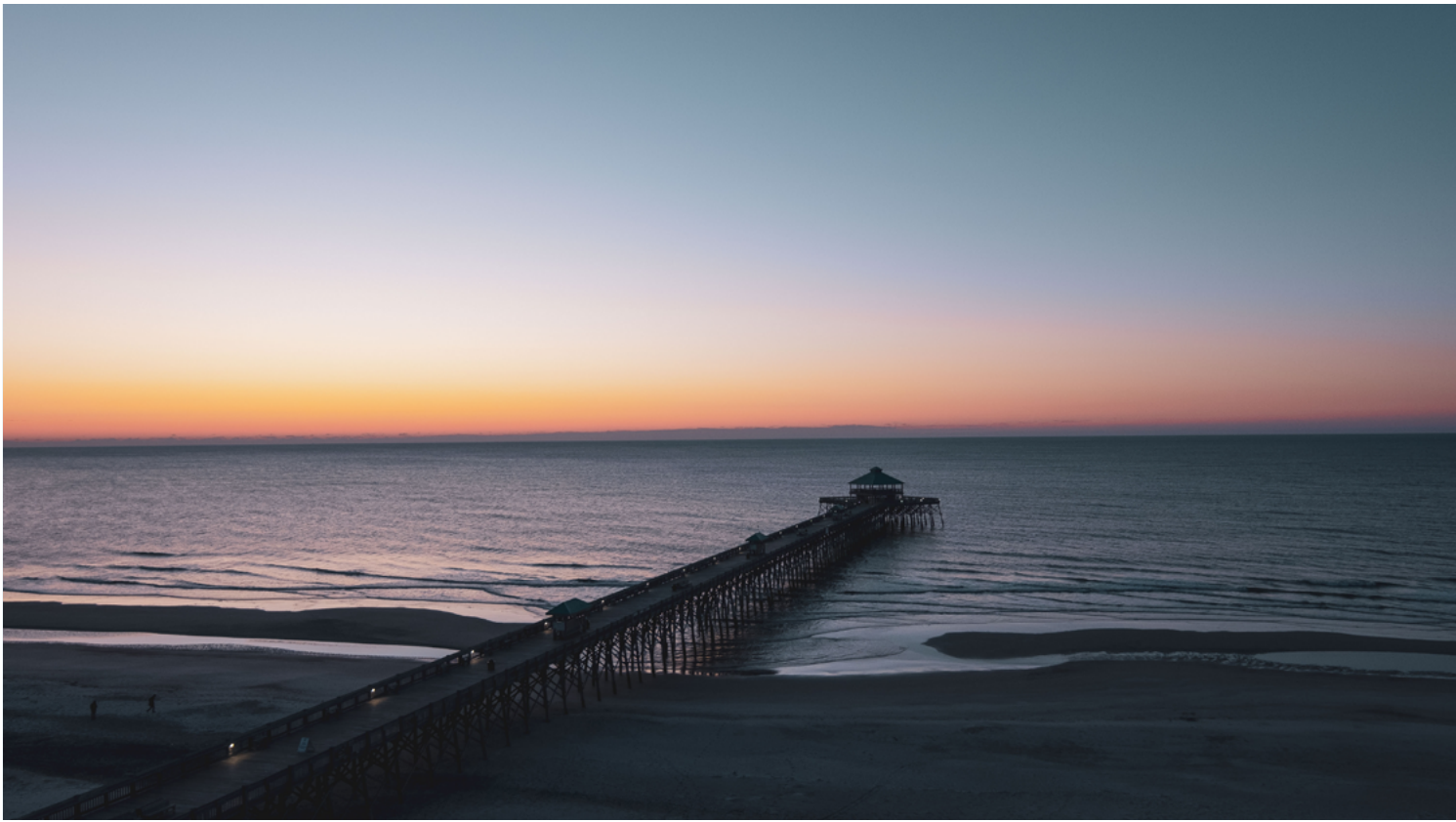


## SEA LEVEL RISE: OK

North Carolina has made great strides with sea level rise planning. Following Executive Order 80, signed in 2018, 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 state policies limit sea level rise adaptation. For example, language in the [Environmental Policy Act](#), makes it clear that the state government will not mandate any sea level policy or plans, although the act does not prohibit local governments from making local plans or policies. Next year, we will review if the state has actually implemented adaptation measures and if so, the grade could change.

## RECOMMENDATIONS

- Implement recommendations from the *2020 Climate Change Risk Assessment and Resilience Plan*, including development of Agency Resilience Strategies for agencies that manage coastal resources.
- Support integration of climate change considerations and projections into local and regional plans.
- Amend § 113A-107.1 of the Environmental Policy Act to mandate planning for sea level rise.
- Better enforce prohibitions on groins and jetties.
- Establish a state policy that prohibits local jurisdictions from allowing developments on coastal sand dunes.
- 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.

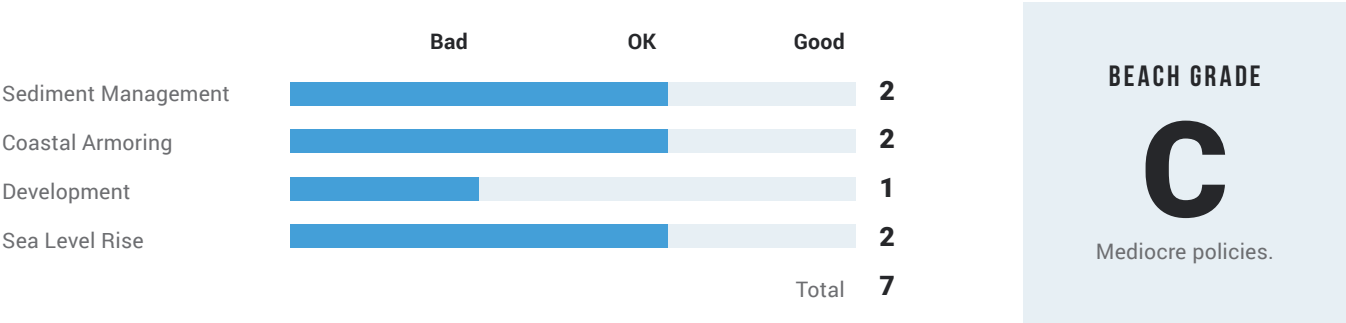


Folly Beach, SC

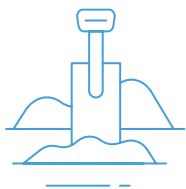
SOUTHEAST

# South Carolina

The South Carolina coastal zone is filled with what many consider some of the best beaches on the East Coast, making it an important economic and environmental resource. Efforts have been made to enhance beachfront management; unfortunately though, many solutions being used today are outdated and insufficient, such as relying on coastal armoring projects and allowing for poorly planned development. In 2020, the Army Corps of Engineers put forth a plan to build an eight mile wall around Charleston’s peninsula for flood control. Some state residents advocated for a longer public comment period due to the enormity of the proposal.

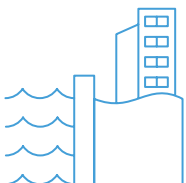






### SEDIMENT MANAGEMENT: OK

South Carolina requires that all coastal municipal governments complete beach management plans. These plans include monitoring requirements and extensive analysis of nourishment projects. Beach replenishment is promoted but must be 'carefully planned' and adhere to the standards established in each management plan. The state considers physical as well as ecological implications of beach nourishment, such as spawning seasons and migratory movements of important marine species.



### COASTAL ARMORING: OK

South Carolina has some strong policies against armoring. 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. The governor also vetoed a bill in May that denied the replacement of a bulkhead which would have only protected 17 homes. Unfortunately, groins are still allowed as long as they have a sediment management plan. However, strengthening, rebuilding or increasing previously built seawalls are prohibited. Severely damaged seawalls must be removed at the owner's expense.



### DEVELOPMENT: BAD

The development setback standard is 40 times the average annual erosion rate and no less than 20 feet from the top of the main sand dune at ocean coastlines. The revision of setback lines must occur every 7 to 10 years. At inlets, the setback requirement is the most landward 40-year erosion point. Unfortunately, the rebuilding of structures that are destroyed due to natural hazards and are also located seaward of setback lines, is allowed. Coastal dunes and vegetation are recognized as important buffers between developments and coastal hazards; however, the state would benefit from codified policies to ensure the protection of buffers.



### SEA LEVEL RISE: OK

The state has a sea level rise vulnerability assessment, although the assessment is fairly broad. The 2010 *Climate Change Impacts to Natural Resources in South Carolina* report has good methods to adapt along a changing shoreline. The county of Beaufort also has an adaptation report of their own. However, none of these adaptation recommendations have been implemented or codified. In addition, minimal community awareness or educational resources are provided on state websites.

## RECOMMENDATIONS

- Reevaluate the proposal to build a seawall around Charleston's peninsula.
- 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 2010 *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.

# Mid-Atlantic

Delaware  
Maryland  
New Jersey  
New York  
Virginia





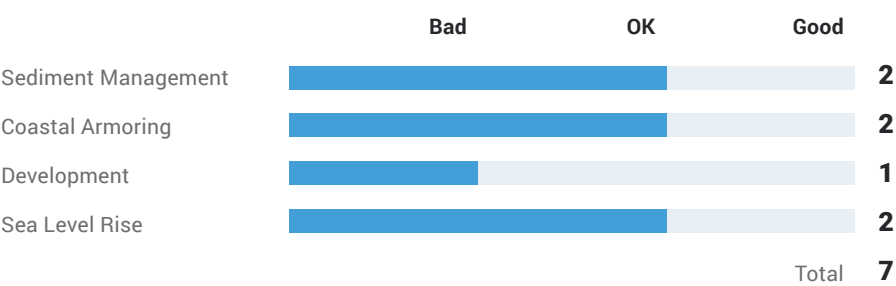


Rehoboth Beach, DE

MID-ATLANTIC

# Delaware

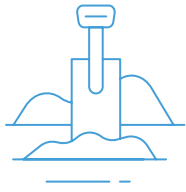
The Delaware coastline and river shorelines provide for numerous recreational activities such as deep sea fishing, kayaking, and lounging. The state approved the Delaware Coastal Management Program in 1979 to initiate coastal regulation, though many policies are currently outdated. Updated coastal regulation policies are needed to ensure the state is not counterproductive in their environmental sustainability practices.



BEACH GRADE

C

Mediocre policies.



### SEDIMENT MANAGEMENT: OK

While the state does not have a statewide sediment management plan, there are some localized plans, including a thorough plan for Delaware Bay Beaches. The Division of Soil and Water Conservation assesses beach replenishment needs by monitoring beaches statewide and measuring sand loss. While the state requires permits for beach fill, there is a lack of codified policy around beach nourishment and the ecological implications that surround it.



### COASTAL ARMORING: OK

Permits are required for armoring projects and the state encourages alternative stabilization methods, including retreat. In addition, illegal seawalls must be removed and fines are administered; however, Delaware has vague policies on repairing seawalls and allows for emergency permitting in severe conditions. While policies mention that agency staff can require removal of emergency permitting at a later date, this practice is not mandated for all. Fortunately, Delaware prioritizes ‘living shorelines.’



### DEVELOPMENT: BAD

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 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.



### SEA LEVEL RISE: OK

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 the document to help communities to prepare for sea level rise. The state has also been active with adaptation – 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

- Develop a statewide beach management plan to clarify requirements for beach replenishment permit applications, in addition to the monitoring of ecological impacts from projects.
- Clearly state armoring permit requirements.
- Develop a more thorough and enforceable policy that promotes non-structural alternatives for shoreline stabilization.
- Establish time limits on seawalls.
- Prohibit any weakening of development setback requirements.
- Use dynamic reference points for development setback requirements.
- Establish strict regulations that prohibit the construction and repair of properties located seaward of the building line.

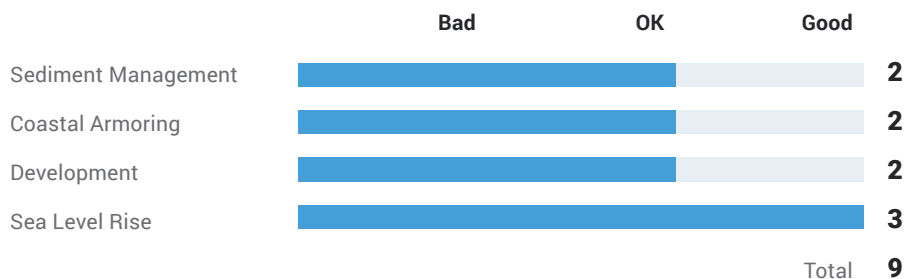


Assateague Island National Seashore, MD

## MID-ATLANTIC

# Maryland

The Maryland coastline contains many different environments, from colonial fishing towns along the many inlets of the Chesapeake Bay, to glorious beach resorts, to the wild, untrammelled lands of Assateague Island National Seashore. The state has taken initiative to protect these resources from climate change and development pressures by enforcing regulations such as the Maryland Coastal Zone Management Program. The state has been a leader with sea level rise planning, and in May 2020, the state passed climate change legislation that authorizes local governments to establish, and fund, a “Resilience Authority” under local law.

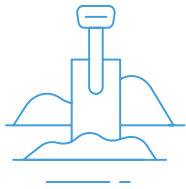


### BEACH GRADE

# B

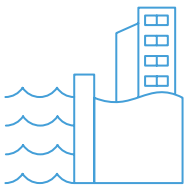
Good policies, but  
can be improved.





### SEDIMENT MANAGEMENT: OK

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. While there is no regional sediment management plan, sedimentation is prevented through an inland-focused soil erosion and sediment control plan. Unfortunately, pre- and post-beach fill monitoring is not required for each project, as it is only encouraged. A permit must be obtained from the Department of the Environment for any fill and dredge activities in wetlands.



### COASTAL ARMORING: OK

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 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.



### DEVELOPMENT: OK

Maryland has a statewide minimum setback 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.



### SEA LEVEL RISE: GOOD

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 empowering local communities.

## RECOMMENDATIONS

- Encourage the use of regional sediment management plans.
- Require the monitoring of sand replenishment projects for effectiveness and ecological impacts.
- 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.
- Develop policies that ensure stronger protection for coastal dunes.
- 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.

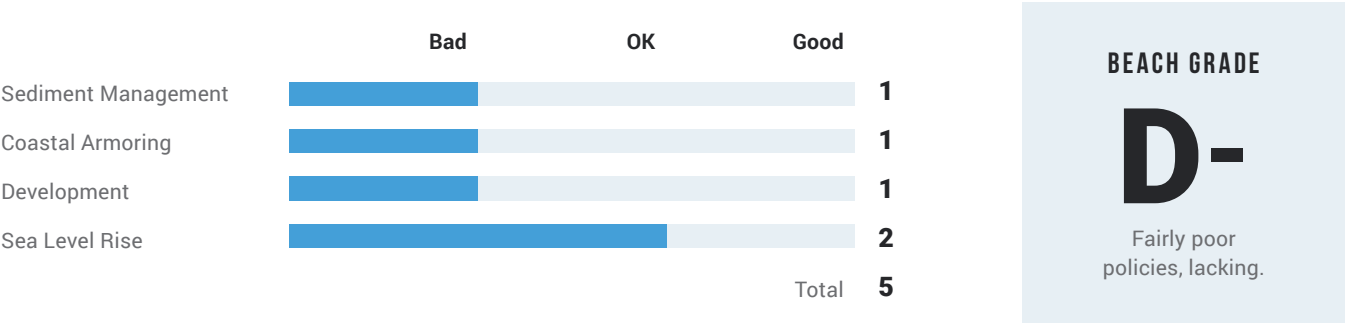


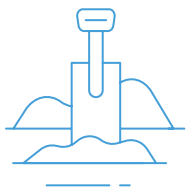
Bradley Beach, NJ

MID-ATLANTIC

# New Jersey

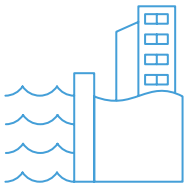
The state of New Jersey is well known for its 130 miles of sandy beaches and beautiful barrier islands. Unfortunately, much of the state has been overdeveloped, and new development continues in flood prone areas. Fortunately, in 2020 New Jersey greatly improved its approach to future sea level rise planning and is attempting to improve past haphazard development standards by requiring builders to analyze climate change impacts when developing along the coastline. While this is a powerful step in the right direction, it does not immediately change current regulations and the formal rulemaking and adoption will not be done until 2022.





### SEDIMENT MANAGEMENT: BAD

New Jersey lacks any regional sediment management plans and relies far too heavily on beach fill. New Jersey has some policies that dictate beach fill, such as matching grain size and ensuring that sand comes from clean sources. However, for the most part, the state regulates fill as a 'non-structural shoreline protection measure' without strict permit requirements and monitoring plans. Like many states, the Army Corps of Engineers plays a significant role in funding and permitting nourishment projects for New Jersey.



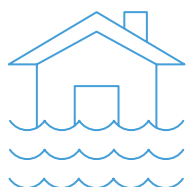
### COASTAL ARMORING: BAD

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.



### DEVELOPMENT: BAD

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 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 10 feet setback required from the crest of coastal bluffs. To improve, the state should consider developing setback requirements based on local erosion rates.



### SEA LEVEL RISE: OK

Over the past two years, New Jersey has made progress on climate change planning. A recent Executive Order will require development projects to analyze climate change however this will not take place for a few years. While New Jersey doesn't have a statewide sea level rise policy, the state has conducted vulnerability assessments and produced resources for local communities to evaluate their vulnerability. New Jersey's *Blue Acres Buyout Program* is a positive example of a program that will help with sea level rise planning. The state plans to use \$300 million to purchase homes in coastal hazard areas.

## RECOMMENDATIONS

- Ensure fast implementation of Executive Order 100.
- 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.
- Acknowledge the negative effects of shoreline armoring and prohibit or severely limit their use.
- Prohibit new developments in known hazard areas.
- 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.
- Develop sea level rise adaptation plans.
- Establish managed retreat policies.



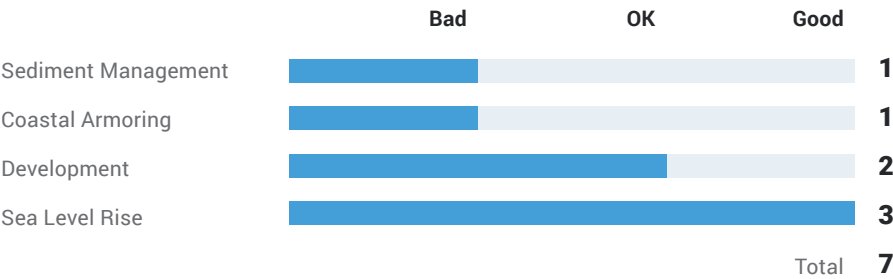


Montauk Point, NY

MID-ATLANTIC

# New York

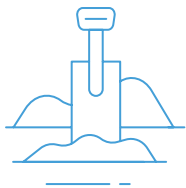
New York consists of over 1,800 miles of coastline, and is home to popular and iconic beaches such as Coney Island, the Rockaways, Long Island, Fire Island, and Montauk. While the state has succeeded with sea level rise planning, the state has been falling short in the past few years by allowing several coastal armoring projects to go forward. In 2020 alone, the state approved several massive armoring projects, both on the coast and Lake Erie, to build new groins and rebuild other hard structures. Efforts to armor the coast fly in the face of the work the state has done using nature to combat coastal flooding. For example, the Billion Oyster Project is an innovative project that is both improving water quality and helping the shoreline adapt to rising seas and extreme weather.



BEACH GRADE

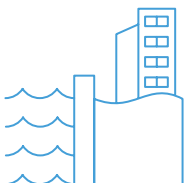
C

Mediocre policies.



### SEDIMENT MANAGEMENT: BAD

New York does not have a statewide sediment management plan. Instead, it relies heavily on replenishment as the go-to shoreline stabilization method, despite the practice being both costly and short-term. While the state has a beach replenishment policy, it lacks necessary rigor to sufficiently protect coastal habitats. Fortunately, 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.



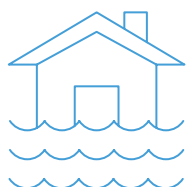
### COASTAL ARMORING: BAD

While the state has policies on limiting shoreline stabilization structures in sensitive areas and promoting soft or natural approaches to shoreline stabilization, there are no policy restrictions on rebuilding coastal armoring. In the near future, a 5-mile long seawall will be built around Staten Island. Additionally, state authorities and the Army Corps are considering building a floodgate across New York Harbor. In 2020 alone, the state approved several coastal and lake armoring projects instead of exhausting natural erosion control measures. The state needs to replicate innovative projects like building oyster reefs and restoring dunes.



### DEVELOPMENT: OK

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 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.



### SEA LEVEL RISE: GOOD

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.

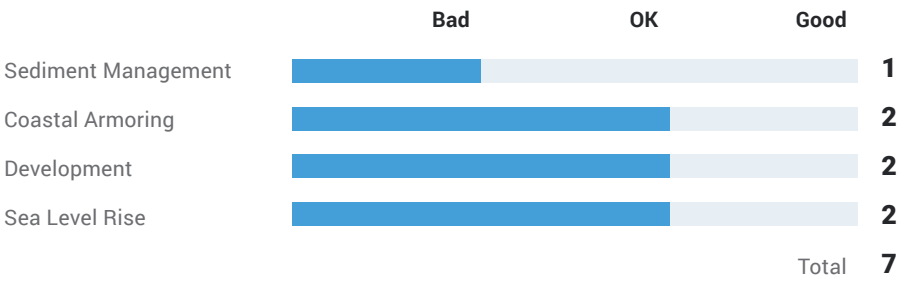


Virginia Beach, VA

MID-ATLANTIC

# Virginia

Virginia’s coastline is well known for famous Virginia Beach and its sandy shores of the Atlantic Ocean. With over 5 million of Virginia’s citizens living in the coastal zone, the state has uniquely developed what they refer to as a “network program,” which is contingent on state and local authorities to enforce the program’s policies. This has led to strong policies that have protected coastal communities, though additional aspects such as sediment management, climate change and development policies should be further addressed.

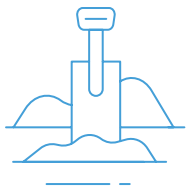


BEACH GRADE

C

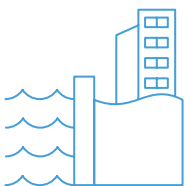
Mediocre policies.





### SEDIMENT MANAGEMENT: BAD

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.



### COASTAL ARMORING: OK

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.



### DEVELOPMENT: OK

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.



### SEA LEVEL RISE: OK

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, already resulting 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. However, the state has still not conducted a thorough sea level rise vulnerability assessment, which will be necessary to guide coastal adaptation efforts and the eventual development of an adaptation plan.

## RECOMMENDATIONS

- Develop regional sediment management plans to prevent runoff and sedimentation of waterways.
- Develop beach nourishment policies that thoroughly assess ecological impacts.
- Establish a statewide minimum development setback standard.
- Reestablish the Climate Change Commission.
- Conduct a statewide sea level rise vulnerability assessment to identify management priorities.
- Review each individual replenishment project before permitting.
- 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.



# Northeast

Connecticut

Maine

Massachusetts

New Hampshire

Rhode Island





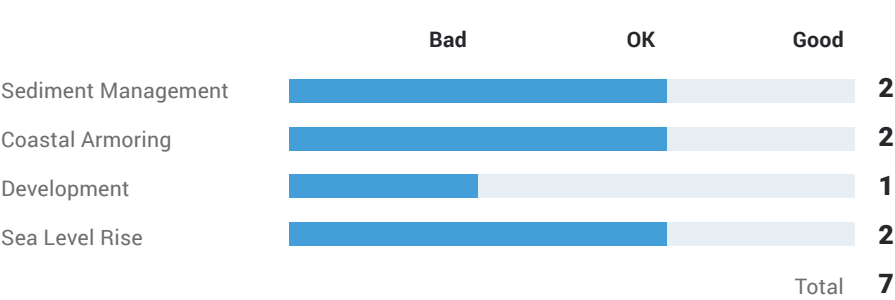


Madison, CT

NORTHEAST

# Connecticut

Connecticut’s picturesque coastline is where people go to enjoy calm waters and less-crowded beaches. In order to promote the longevity of this serene shoreline, it is important that the state increases its involvement at the local level and continues to improve its climate change legislation. The state’s coastal development policies require significantly more rigor, as a 2019 report uncovered that Connecticut is building in flood risk zones three times faster than in safer areas – despite the Coastal Management Act restricting development that would increase risk to life and property in coastal hazards areas, and the Flood Management Act that restricts development through state actions or funding in flood zones.

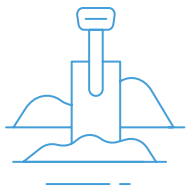


BEACH GRADE

C

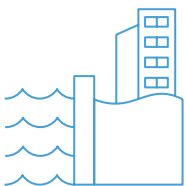
Mediocre policies.





## SEDIMENT MANAGEMENT: OK

In 2020, CT began developing guidance to reduce open water disposal of sediments by stressing alternative beneficial uses. The CT Coastal Management Act has enforceable policies to protect coastal resources, public access and coastal recreational use that are applied to beach nourishment and other activities through regulatory programs. Nourishment is encouraged as an alternative to structural plans and to augment beaches where existing permitted groins are adversely affecting beach conditions. Detailed permit reviews are required to examine the potential effect on the area's natural and human resources. The State also adopted The Blue Plan, which is a marine spatial plan for Long Island Sound that, among other things, identifies dredged material disposal sites in Significant Human Use Areas.



## COASTAL ARMORING: OK

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 before any work is done. Armoring is only permitted 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 the state has some successful examples of buyouts, but no formal policy has been established. The state allows emergency permits for armoring, but only temporarily (30 days or less), which helps to prevent misuse and maladaptation.



## DEVELOPMENT: BAD

In July of 2019, Zillow and Climate Central reported that Connecticut is developing in 'risk zones' 3 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. However, some towns continue to allow development near coastal hazard areas. Fortunately, properties in a clearly delineated 'coastal zone' require additional permitting and review.



## SEA LEVEL RISE: OK

Governor Lamont signed an executive order in September 2019, calling for a revised statewide Adaptation and Resilience Plan for Connecticut. This led to websites and materials being updated, including information on a Beach and Dune Hazard Guide and Living Shorelines. While this is a step in the right direction, current SLR resources on the website are fairly out of date, and a thorough SLR vulnerability assessment needs to be conducted. On the plus side, the state developed a SLR model that assesses vulnerability for coastal roads and wetlands. The Governor's Council on Climate Change is updating the Climate Preparedness Plan to account for coastal hazards.

## RECOMMENDATIONS

- Require extensive monitoring of ecological impacts from replenishment projects.
- Only offer emergency permitting if the property owner implements an alternative stabilization method after the 30 days are complete.
- Develop stronger policies to ensure habitat connectivity protection throughout the state.
- Strengthen the Coastal Structures Act to increase restrictions on structural modifications.
- Conduct a thorough statewide SLR vulnerability assessment and set a timeline for the requirements of local jurisdictions to develop adaptation plans.
- Encourage regional sediment management plans for beaches and associated inlets.
- Provide more consistent minimum protections of coastal resources from development, including setbacks.
- Codify a plan for managed retreat and buyouts.

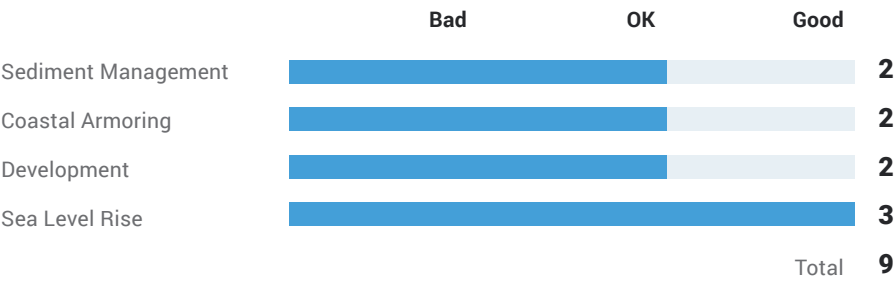


Acadia National Park, ME

NORTHEAST

# Maine

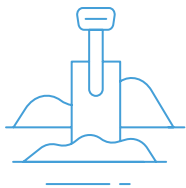
Maine’s spectacular 5,400 miles of tidally influenced coastline is made up of rugged, rocky shoreline and a few sand beaches, boasting 4,600 offshore islands. Unfortunately, only a small portion of beaches are publicly owned, with access rights continually debated in court. The sea level at Bar Harbor has risen by 6.5 inches since 1947, and the rate of rise has accelerated over the last 25 years and is now rising by about 1.3 inches per decade. Fortunately, the state advances a progressive agenda planning for climate change impacts.



BEACH GRADE

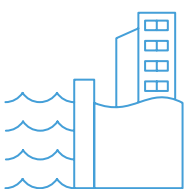
**B**

Good policies, but  
can be improved.



## SEDIMENT MANAGEMENT: OK

The state collects annual shoreline positions and calculates dune, beach and dry beach width changes each year. This data is used to help understand sand migration along Maine's beaches and in the vicinity of dredging and beach fill projects. Maine also monitors beach and nearshore placement of dredged material projects associated with the three most commonly dredged rivers and is working with the US Army Corps of Engineers to better understand the fate of placed materials at these locations. Solid Waste Rules (Ch. 418) were amended to improve beach nourishment permitting using marine sands while holding sample testing criteria to strict EPA standards.



## COASTAL ARMORING: OK

About 38 miles 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 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 US Army Corps of Engineers to update its Maine General Permit to include language on living shorelines.



## DEVELOPMENT: OK

Maine has statewide setback regulations and allows local municipalities to establish additional land use controls, building elevations and setbacks. The state requires managed retreat when structures are storm damaged, modified more than 50% of their value or are inundated by tides for six months or more. Unfortunately, a policy enacted in 2013 allows residential buildings to be moved seaward on a select few frontal dune lots. In the event that development occurs in sand dune areas, the entity applying for a permit must demonstrate that the disturbance to the resource is minimized to the greatest extent and large structures must demonstrate site stability during a 100-year storm after 2 feet of sea level rise.



## SEA LEVEL RISE: GOOD

The state is doing a good job of planning for SLR and is also educating local communities about risk and preparedness. The state offers a self-assessment tool for communities to use for SLR and flood hazard planning. Maine completed an assessment on the vulnerability of culverts in coastal areas to SLR, and their DOT incorporates SLR planning into all of its coastal bridge designs. The Maine Climate Council held its first meeting in October 2019, and is now in the process of finalizing statewide recommendations on mitigation and adaptation strategies for the built and natural environments, including new standards for SLR adaptation. Their draft findings are open for public comment and will be submitted to the legislature for consideration by 12/1/20. Also in 2020, the state released a "cost of doing nothing" analysis that demonstrated the dire need for proactive planning and action.

## RECOMMENDATIONS

- Establish a formal sediment management plan and require monitoring for ecological impacts of replenishment projects.
- Quantify the effect of dune loss and beach area loss on loss of ecosystem services value.
- Identify funding to staff Chapter 355 enforcement of violations.
- Revoke the section of the 2013 Act that allows coastal development to occur in dune ecosystems.
- Develop a repetitive flood loss policy.
- Evaluate and plan for beach access and causeway vulnerability in relation to sea level rise and storm surge.
- Ensure that regions develop thorough adaptation plans that promote managed retreat and soft stabilization methods that increase coastal resiliency.
- Implement recommendations from the Maine Climate Council.



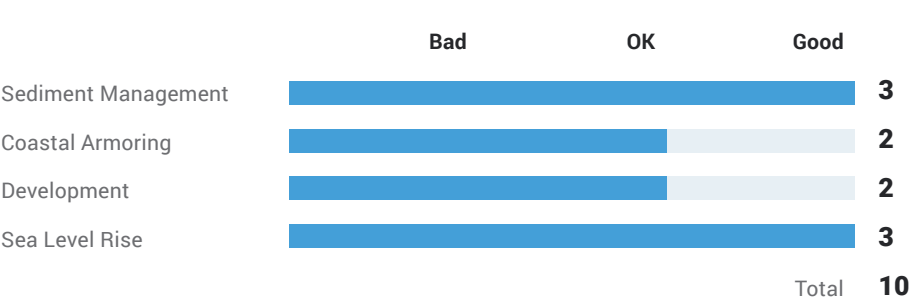


Hull, MA

NORTHEAST

# Massachusetts

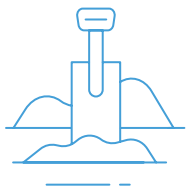
Massachusetts’ dynamic coastline is sprinkled with numerous beaches where locals and tourists can find fine art and historical attractions. The tidal ecosystem of Massachusetts is a mix of salt marshes, tidal flats, barrier islands, and estuaries that are well protected through the state’s detailed sedimentation management regulation and climate change policies. With the addition of updated coastal development regulations, Massachusetts would be well on track for a sustainable future.



BEACH GRADE

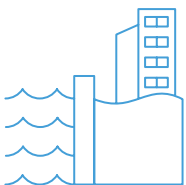
B

Good policies, but  
can be improved.



### **SEDIMENT MANAGEMENT: GOOD**

Massachusetts 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. The state's Department of Environmental Protection clearly explains permitting requirements and provides links to applications online.



### **COASTAL ARMORING: OK**

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. The state also allocates funds for a Dam and Seawall Repair or Removal program to address failing structures. The state would benefit from more measures to help to guide emergency permits.



### **DEVELOPMENT: OK**

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 addition, proposed developments in coastal resource regions are reviewed by local and state agencies. While policies against new developments in hazard areas are strong, there are not strong policies to restrict repair of frequently damaged properties in hazard areas. The state does have policies to protect barrier beaches and dunes, and a manual that addresses the regulatory prohibition on new development in coastal dunes.



### **SEA LEVEL RISE: GOOD**

Massachusetts is a leader in planning for climate change. 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. In 2019, Governor Baker filed legislation to support and protect municipalities from the adverse effects of climate change through a modest increase in the excise on real estate transfers. This is estimated to generate \$1.3 billion over 10 years and be a sustained investment in climate change adaptation, such as relocation and retrofitting, and addressing climate-related risk. The state also provides climate change planning grants to local communities. This fall, look for a new hydrodynamic flood risk database for the entire coast.

## **RECOMMENDATIONS**

- Create policies for managed retreat, relocation, buyouts and retrofitting; include limits on the amount of repairs permitted.
- Codify relocation and managed retreat as enforceable policies.
- 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.

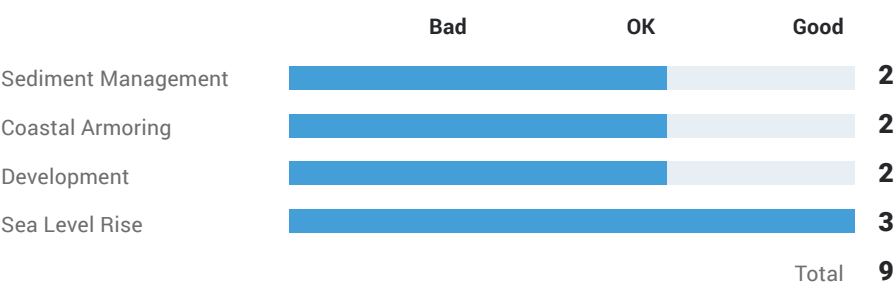


Great Island Common, NH

NORTHEAST

# New Hampshire

New Hampshire’s 18 mile coastline is small but stunning, and moves from the hip city of Portsmouth to quaint coastal towns, a marine science center and bustling tourist beaches. The state has confronted climate change issues with strong educational and public outreach efforts, although many issues remain, such as outdated development and reconstruction policies. Mitigation of these issues is necessary for long-term protection of the Seacoast’s environmental health and economy.

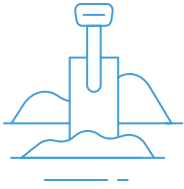


BEACH GRADE

**B**

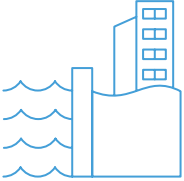
Good policies, but  
can be improved.





### **SEDIMENT MANAGEMENT: OK**

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 planning, transport and disposal of sediments from tidal dredge and fill projects. Unfortunately, there is no explicit requirement for monitoring ecological impacts.



### **COASTAL ARMORING: OK**

Living shorelines are promoted over armoring and the state has completed several 'Smart Shorelines' projects to protect against erosion. In order to improve 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.



### **DEVELOPMENT: OK**

New Hampshire has a statewide setback requirement of 50 feet for all new primary structures in the coastal zone and near protected surface waters. It has a setback standard of 20 feet for accessory structures. The use of a dynamic reference line ensures that the buffer is receptive to changing sea levels. New rules require assessment of coastal functions and values (including the upland tidal buffer zone), plus a vulnerability and risk assessment per projected SLR. Unfortunately, the state allows for the repair and rebuilding of any structure damaged 'accidentally' in coastal hazard areas, instead of requiring that structures be moved or built to a higher standard. On the plus side, policies provide coastal hazard benefits by including rules that offer protection for wetlands and dunes.



### **SEA LEVEL RISE: GOOD**

The state prepared a report looking at future SLR that includes estimated coastal inundation maps, and is required to update coastal flooding trends every five-years. Much of the state's progress is due to bipartisan legislation establishing 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 communities in 2017. Agencies are required to reference updated science for guidance on all potentially affected activities, including transportation projects.

## **RECOMMENDATIONS**

- Develop a statewide climate change adaptation plan (or require each region to develop their own).
- Create policies and regulatory incentive 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 SLR.
- Develop a regional sediment management plan, and include required environmental monitoring before and after beach nourishment projects.

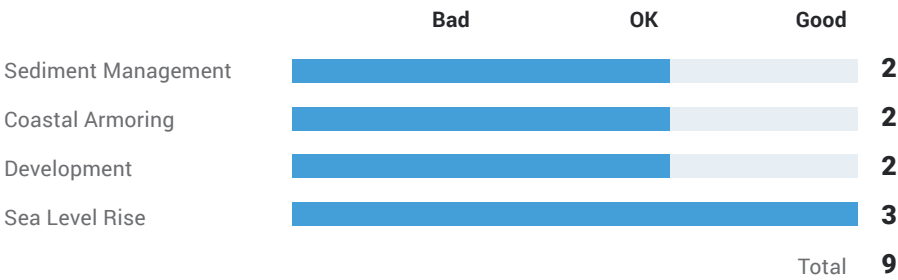


Beavertail State Park, RI

NORTHEAST

# Rhode Island

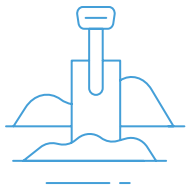
Rhode Island is known as “The Ocean State” due to the fact that the state is a mere 37 miles wide and 48 miles long, yet packs in close to 400 miles of coastline, counting its many coves and inlets. The state has focused on coastal sustainability in recent years with a thorough management plan outlining coastal hazard mitigation and recovery, as well as funding several habitat restoration projects. Statewide setbacks and coastal buffers are some of the great ways the state has taken initiative to protect its coast.



BEACH GRADE

**B**

Good policies, but  
can be improved.



### **SEDIMENT MANAGEMENT: OK**

Beach replenishment projects are allowed and encouraged. The state requires nourishment projects to have a permit and public notice after 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.



### **COASTAL ARMORING: OK**

Rhode Island has strong policies to discourage coastal armoring and require analysis of non-structural erosion methods, including relocation. Applicants must ensure that any armoring is not likely to exacerbate erosion, have the structure certified by a registered engineer, 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.



### **DEVELOPMENT: OK**

Coastal land in Rhode Island is well protected with 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. A new permit is required if more than 50% of the structure is damaged. However, new construction in coastal hazard areas is not prohibited, and a 2019 report found Rhode Island is building in risk zones two times faster than in safer locations.



### **SEA LEVEL RISE: GOOD**

The state developed the Shoreline Change Special Area Management Plan (SAMP), including a suite of tools designed to help plan for SLR. STORMTOOLS provides maps to understand risk from coastal flooding and inundation, using different storm scenarios and detailed data. The Coastal Environmental Risk Index is an objective, quantitative assessment of risk to structures, infrastructure, and public safety from storm surge coupled with SLR and coastal erosion, and uses modeling tools to predict storm surge and wave action, combined with shoreline change maps to predict damage. The Coastal Hazard Application worksheet and viewer is a requirement for certain shoreline development applications, notifying applicants of potential coastal hazards to consider.

## **RECOMMENDATIONS**

- Place time limits on seawalls and develop a policy to remove or require property owners to remove 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.
- Require local jurisdictions to implement the adaptation plan using the beach SAMP guidelines.
- 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.



# Gulf States

Alabama

Louisiana

Mississippi

Texas





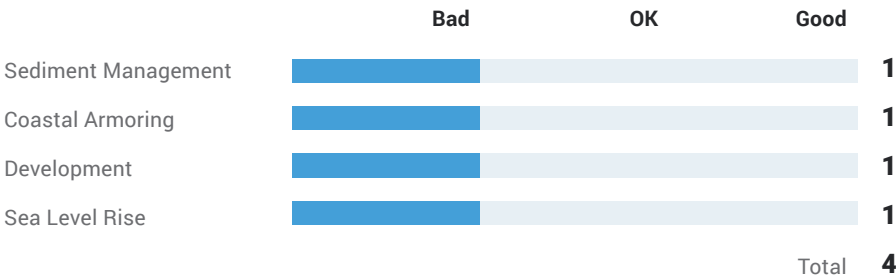


Orange Beach, AL

GULF STATES

# Alabama

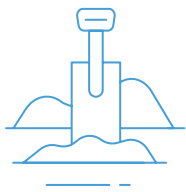
Alabama's beloved white sand beaches, stretching for 60 miles along the Gulf of Mexico, make up one of the states greatest economic and environmental assets. The unique appearance of these shorelines comes from grains of quartz crystal that have washed down from the Appalachian Mountains, making this a top tourist destination. Unfortunately though, sea level fluctuations, waves, erosion, paired with out-of-date coastal mitigation strategies, such as excessive seawalls and dredging for ship channels, have shaped the modern Alabama coastline. Coastal management policies will need to be updated in order to sustain the state's treasured natural beaches.



BEACH GRADE

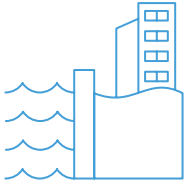
F

Inadequate protection  
of coastal communities  
and resources.



### SEDIMENT MANAGEMENT: BAD

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. 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.



### COASTAL ARMORING: BAD

In Alabama, property owners must first consider managed retreat and other soft stabilization methods to protect properties on Gulf beaches and primary dunes. However, if alternate 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; therefore, it's likely that the state is using a fairly lenient definition of 'infeasible.'



### DEVELOPMENT: BAD

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. A hard line on a dynamic shoreline has resulted in areas where the line is actually underwater, causing the state agency to lose jurisdiction over controlling, preventing or permitting coastal structures and repairs. While Alabama has also identified a goal to eliminate development in high hazard areas, progress or implementation of this goal is not evident.



### SEA LEVEL RISE: BAD

The state has 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 does not have a statewide adaptation plan, nor is the state actively encouraging local municipalities to plan for future sea level rise.

## RECOMMENDATIONS

- Provide clear policies on replenishment practices, in addition to ecological monitoring and review in the Coastal Area Management Plan.
- Amend the location of the Coastal Construction Line and potentially make the line relative to the sea level, allowing it to move with the dynamic coastline.
- Address sea level rise and climate change in coastal policies and hazard mitigation plans.
- Put pressure on the Alabama state government to track and ensure achieving the goal to eliminate development that is in progress in high hazard areas.
- Revive the natural flow of sediment sources where possible.
- Conduct thorough sea level rise vulnerability assessments and adaptation plans that promote the use of living shorelines and natural sediment flow.



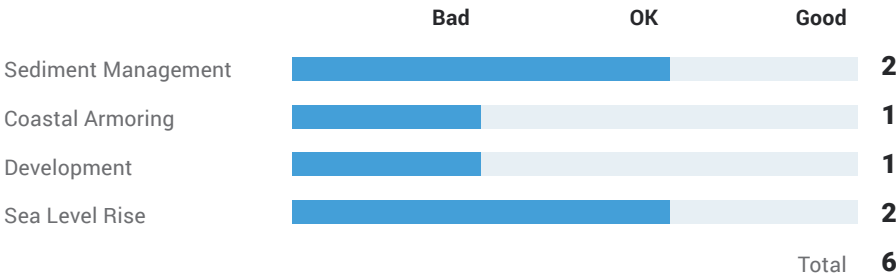


Grand Isle State Park, LA

GULF STATES

# Louisiana

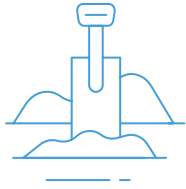
Louisiana's coastline is a mix of sandy beaches between coastal wetlands, extensive inlets, and well-known bayous that support sectors such as the state's \$1 billion dollar seafood industry. Industries like this are at high risk of collapse though, as Louisiana's coasts have experienced a steady depletion of wetlands and shoreline due to increasing erosion and development. It is imperative for the state to improve its coastal management plans to protect its important coastal ecosystems. Fortunately, in 2020 Governor Edwards signed an Executive Order to improve coastal resilience by establishing a Climate Initiatives Task Force.



BEACH GRADE

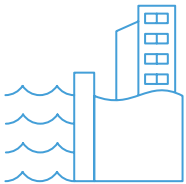
D

Fairly poor  
policies, lacking.



## SEDIMENT MANAGEMENT: OK

Louisiana is in a vulnerable position due to its location in relation to the Mississippi River, so 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. While permits are required for fill projects, there is minimal review of ecological impacts or long-term monitoring. Fortunately, the state is in the process of developing several sediment diversion projects, which is positive as long as they are carefully designed.



## COASTAL ARMORING: BAD

There are no statewide policies on stabilization structures, 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. There are no enforceable policies that promote non-structural stabilization alternatives over armoring.



## DEVELOPMENT: BAD

There are no statewide minimum setback standards for coastal development and permits are not required to repair or maintain existing structures in hazard areas. Unfortunately, Louisiana 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 resiliency of the coastline, yet many of the recommendations are not yet implemented.



## SEA LEVEL RISE: OK

In 2020, the Governor signed an Executive Order to establish a Climate Initiatives Task Force. Louisiana made a significant improvement on sea level rise planning by releasing a *Regional Adaptation Plan* in April 2019. The document includes a flood risk series and detailed recommendations to prepare for coastal hazards, including the suggestion of optional buyout programs. The state is also making substantial efforts to encourage local jurisdictions to build beyond National Flood Insurance Program requirements with the recently released *Community Rating System*. The state could still benefit from improving its rules to protect vital riparian areas.

## RECOMMENDATIONS

- Quickly implement Executive Order JBE 2020-18.
- Develop regional sediment management plans to help restore natural sediment flows.
- Conduct monitoring to track any long-term impacts to coastal ecology for sand replenishment.
- Prohibit shoreline armoring, or strictly require that non-structural stabilization methods, such as living shorelines, are used first.
- Ensure 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.

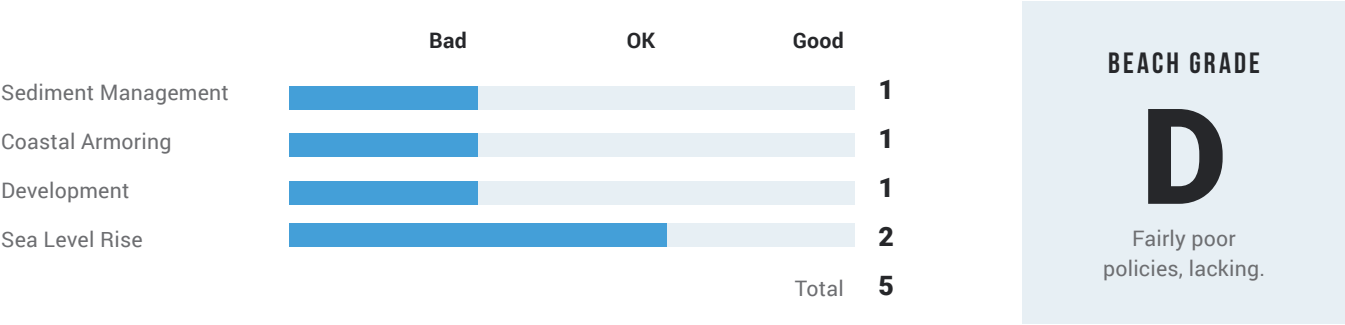


Biloxi, MS

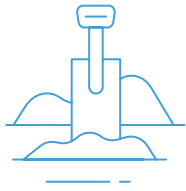
GULF STATES

# Mississippi

The Mississippi Gulf, also known as the “Secret Coast” encompasses quaint southern coastal communities. This 62 mile coast runs along the Mississippi Sound and Gulf of Mexico, providing locals and visitors ample opportunity to boat, fish, swim or lounge on the beaches. Because the state’s coastal zone resides in a low-lying area, it is becoming increasingly necessary that state management revisit coastal protection policies to protect their natural coastal resources.

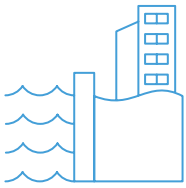






### SEDIMENT MANAGEMENT: BAD

Mississippi is part of the Gulf of Mexico's *Regional Sediment Master Plan and Gulf Coast Ecosystem Restoration Task Force*. This group has outlined excellent recommended actions to protect coastal resources; however, Mississippi agencies heavily promote beach fill and encourage the reuse of all 'suitable' dredged sand. Without 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 sorely lacking.



### COASTAL ARMORING: BAD

Mississippi seems to promote all erosion stabilization methods, both soft and hard. The state requires a general permit for hard structures, and at times may require neighbor approval. However, the limitations are weak overall and are likely to result in permanent structures, as continual repair and replacement are automatically permitted. 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 future armoring.



### DEVELOPMENT: BAD

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* and *DMR Artificial Reef Program*.



### SEA LEVEL RISE: OK

Mississippi completed a sea level rise vulnerability assessment by piecing together 11 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. The state would benefit from a comprehensive vulnerability assessment and adaptation plan, in addition to the required consideration of sea level rise and climate change in local hazard mitigation plans, along with stronger attempts 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 robust armoring policies.
- Require that sediment replenishment projects prove a need, and consider and monitor ecological impacts.
- Consider other methods to preserve coastal beaches instead of just replenishment.
- Conduct a thorough sea level rise vulnerability assessment and develop an adaptation plan.

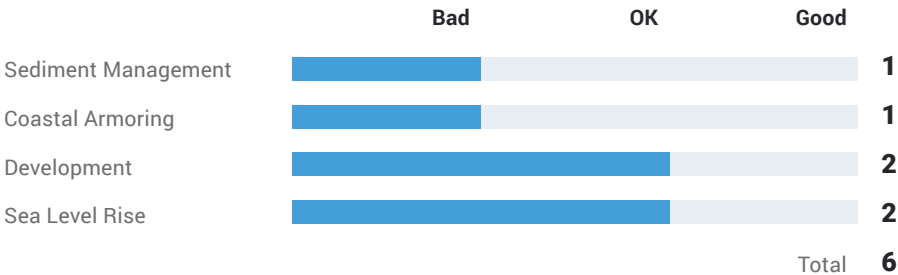


Coastline, TX | Photo by Kenny Braun

GULF STATES

# Texas

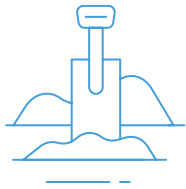
Texas’ coastal communities reside along 300 miles of the Gulf of Mexico, with beautiful sandy beaches that shelter rare Kemp’s ridley sea turtles, over 380 different bird species, and many of the state’s most popular attractions. Sadly, Texas was overwhelmed by damage due to Hurricane Harvey in 2018, with major flooding overtaking many coastal communities. Since then, the state’s Land Commissioner updated the Texas Coastal Resiliency Plan in response to this drastic event, but more anticipatory regulations are necessary as climate risks increase.



BEACH GRADE

D

Fairly poor policies, lacking.



### SEDIMENT MANAGEMENT: BAD

Beach replenishment is frequently used in Texas, especially for large-scale fill projects. These projects cost over half of the \$22.5 million of state and federal funds allocated every two years to combat coastal erosion in Texas. The state has a sediment management plan, and does a thorough job of collecting beach erosion and sediment source data to help inform beach replenishment programs. Unfortunately, there are no identified policies about beach nourishment standards, permit requirements or environmental monitoring.



### COASTAL ARMORING: BAD

While Texas tries to prioritize soft stabilization methods, such as dune and wetland restoration, the state often reverts back to seawalls and breakwaters. For example, larger-scale coastal armoring projects, including a 17-foot tall, 60-mile long seawall outside of Houston and Galveston, are being proposed. After Hurricane Harvey, the state started to allow emergency permitting for the immediate construction of coastal armoring.



### DEVELOPMENT: OK

Texas delegates development and erosion responsibilities to local municipalities. While there is a suggested minimum development setback of 1,000 feet, it is optional and many localities choose to use different standards. Fortunately, dunes are protected by state law. Beachfront construction also requires the completion of a beach construction certificate and dune protection permit. 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.



### SEA LEVEL RISE: OK

Texas does not have a statewide sea level rise policy; however, state agencies have done some sea level rise mapping. The *Community Health and Management Resource Mapping* application also provides a great method with which to engage and educate local communities. The *Texas Coastal Resiliency Master Plan*, which contains climate change adaptation measures, was released in March 2017 and was updated in 2019. While the updated version includes a greater emphasis on living shorelines, the plan still uses conservative sea level rise projections, encourages the use of hard structures, such as breakwaters and seawalls, and fails to put responsibility on human activity.

## 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.
- 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.
- Clearly delineate high risk areas (for both flooding and erosion) for use during buyout programs.
- 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.



# Great Lakes

Illinois

Indiana

Michigan

Minnesota

Ohio

Pennsylvania

Wisconsin





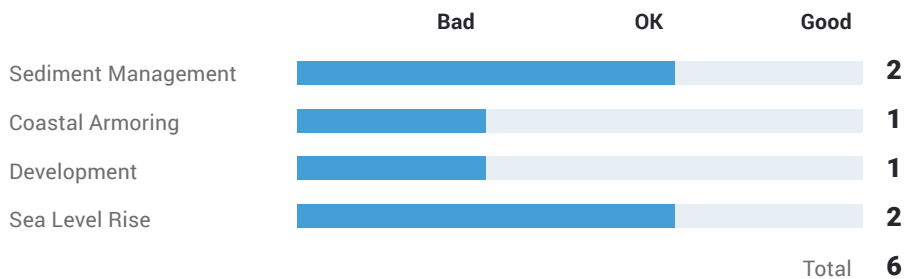


Chicago, IL

## GREAT LAKES

# Illinois

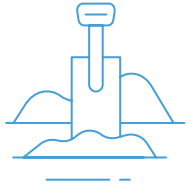
The Illinois coast has enormous social and economic importance, as it runs along the most inhabited parts of the state with the highest valued real estate and most populated coastal area of the entire Great Lakes region. The coastline is most known for its complex geological settings, with a record dating back 14,000 years. This dynamic geography is responsible for historical development and the extensive urbanization of well-known municipalities, such as Chicago and Waukegan. With this, though, comes ever-fluctuating erosion that calls for thoughtful policies to find balance between development and healthy coastal ecosystems.



### BEACH GRADE

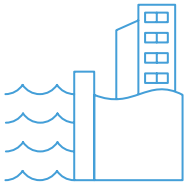
# D

Fairly poor  
policies, lacking.



### SEDIMENT MANAGEMENT: OK

The state conducts and encourages beach fill on their lakefront areas, and permits for beach fill are also streamlined. Without strong standards for sand quality or requirements to conduct monitoring, the environmental impacts are minimally understood; however, permits for building a beach are required from various coastal management and water quality agencies. Although Illinois does not have a regional sediment management plan, the state is in the process of developing one by establishing the North Shore Regional Sand Management Working Group.



### COASTAL ARMORING: BAD

While Illinois policy implies that projects that are able to disrupt sand transport along beaches and nearshore areas are not approved, much of the coastline is somehow armored. Seawalls, groins and breakwaters are permitted, but must include a 28-day public notice and maladaptive emergency permits can be expedited. There is no indication of conditions that set time limits, monitoring, removal of derelict armoring, or required permitting for repairs. Non-structural shoreline stabilization techniques and living shorelines are also not adequately encouraged or used.



### DEVELOPMENT: BAD

Much of the natural Illinois coastline has been developed. There are no statewide mandated setback requirements or construction restrictions on the shoreline. While the coastline is experiencing continued erosion, no coastal hazard areas have been defined. The *Coastal Management Program* indicates a priority to protect the few undeveloped areas, and the state has The *Illinois Natural Areas Preservation Act* to provide authority to local agencies to protect these natural areas. However, there are still minimal policies in place to protect coastal resources.



### SEA LEVEL RISE: OK

Illinois has been relatively slow in addressing climate change; however, the Department of Transportation made progress by releasing the *All Hazards Plan*. While the plan includes a section on climate change, it doesn't provide vulnerability maps or policy recommendations. Local governments are encouraged to conduct mitigation planning and the state has some adaptation and coastal management tools available. In addition, the *Illinois Wildlife Action Plan* encourages better protection of coastal habitats; however, it is outlined more as guidance than as an official policy.

## RECOMMENDATIONS

- Require that non-structural shoreline stabilization measures, such as living shorelines, dune restoration, and the protection of coastal 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.
- Identify and map coastal hazard areas.
- 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 mapping in the *Illinois Geospatial Data Clearinghouse*.



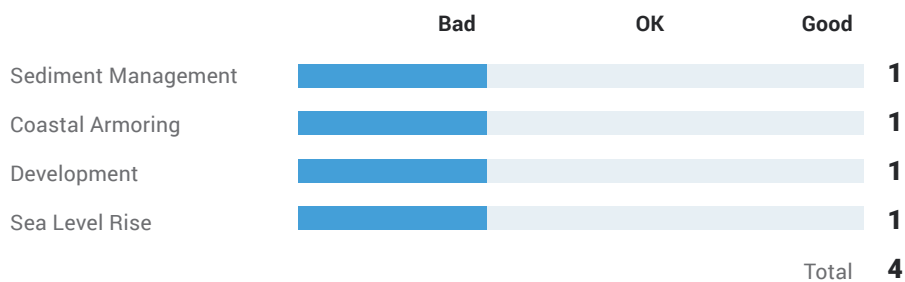


Indiana Dunes National Park, IN

## GREAT LAKES

# Indiana

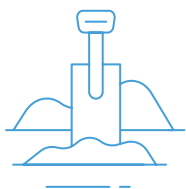
The state of Indiana holds 40 miles of Lake Michigan coastline and is most recognized for its remarkable sand dunes. 15 out of 40 of these coastal miles are preserved within the Indiana Dunes National Lakeshore, which is home to 15,000 acres of woodlands, beaches, and the state's tallest sand dune. Outside of this national park, the coastline is largely developed property and lacks protective management strategies.



### BEACH GRADE

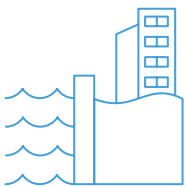
# F

Inadequate protection  
of coastal communities  
and resources.



### **SEDIMENT MANAGEMENT: BAD**

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 getting placed on Indiana's beaches. The oversight of these projects is minimal and applicants are to assume that their beachfill project is approved if there is no response from the agency.



### **COASTAL ARMORING: BAD**

Hard structures used for coastal armoring require a permit from the Indiana Department of Natural Resources; however, they are widely accepted for use across the coastline, even in wetlands. Standards for the design, components and the placement of new or repaired hard structures are dictated by the type of lakefront 'category,' (e.g. developed area, significant wetland, etc.). They also often require some element of 'bioengineered materials,' but in general, repairs are not restricted. Non-structural shoreline stabilization alternatives are not encouraged.



### **DEVELOPMENT: BAD**

Almost half of the Indiana lakeshore is protected by the Indiana Dunes National Lakeshore. 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 setback requirements, even in hazardous areas. While there is a geodatabase of the 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.



### **SEA LEVEL RISE: BAD**

Indiana lacks policies that address climate change, with no climate change adaptation plan or state website dedicated to the topic. The state encourages local planning efforts and provides resources for flooding and coastal hazard planning, but 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**

- 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 implement time restrictions and removal requirements on 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 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.
- Allocate federal funds to complete the Great Lakes Coastal Resiliency Study.



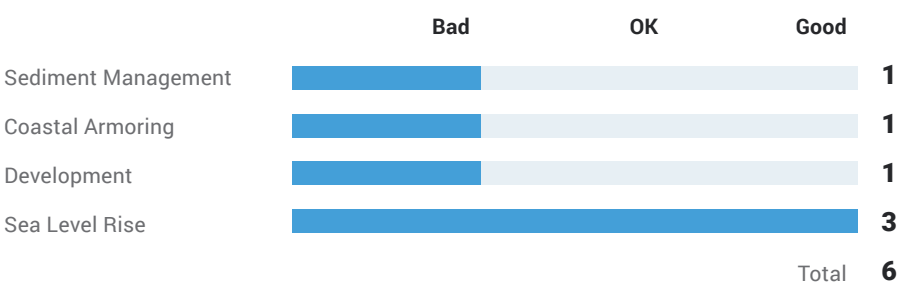


Holland, MI

GREAT LAKES

# Michigan

Michigan contains the longest freshwater coastline within the continental U.S., with 3,200 miles of coast. This extensive shoreline is bordered by three of the Great Lakes and is chock full of sandy beaches, historic lighthouses, and beautiful waterfalls. The state needs to improve its development and coastal armoring policies. Fortunately, the state is excelling in planning for climate change and in 2020, its adaptation plan was updated.

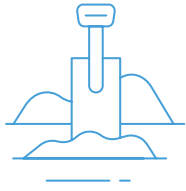


BEACH GRADE

**D**

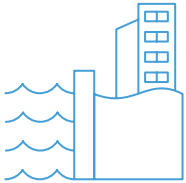
Fairly poor policies, lacking.





### **SEDIMENT MANAGEMENT: BAD**

There are no 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 strong protection of sand dunes with the 'Sand Dunes Protection and Management 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.



### **COASTAL ARMORING: BAD**

The Michigan Department of Environmental Quality (DEQ) 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. Fortunately, the state encourages the use of natural stabilization treatments, although consideration of alternatives is not mandated.



### **DEVELOPMENT: BAD**

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 while additional permits are required, new developments can still be approved. The lack of clear regulations on the repair of developments may also lead to unnecessary damage or property loss of properties. Unfortunately, new developments in 'protected' dunes and wetlands have also recently been permitted.



### **SEA LEVEL RISE: GOOD**

In 2020, Michigan updated its adaptation and continues to be proactive in creating a Climate Action Plan, encouraging 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 still 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 regional 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.
- Allocate federal funds to complete the Great Lakes Coastal Resiliency Study.
- Conduct a statewide climate change vulnerability assessment.
- Implement recommended actions and suggestions described in the 2012 Adaptation Plan.

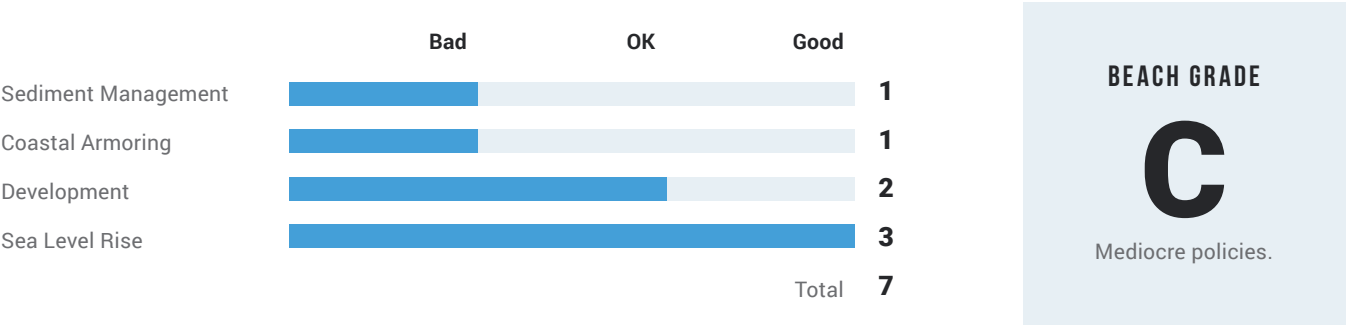


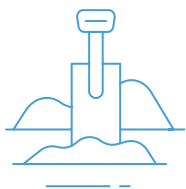
Hollow Rock Road, MN

GREAT LAKES

# Minnesota

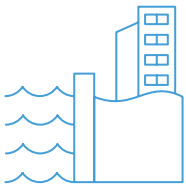
The world’s largest freshwater lake, Lake Superior, holds around 10% of Earth’s fresh liquid surface water. Minnesota’s 189 mile shoreline features rugged coasts, clear waters, and rich cultural history. Because of the lake’s significance, the state continues to rely upon the Minnesota Lake Superior Coastal Program to identify high-priority enhancement areas and provide resources to local communities to restore and protect their natural habitats. While the state has done proactive planning for climate change impacts, the beach replenishment program needs major improvements.





### SEDIMENT MANAGEMENT: BAD

There are no regional sediment management plans. Small-scale fill projects ('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. Fortunately, larger beach construction projects require permits and an erosion and sediment plan under the Protected Waters Permit Program. A beach fill project begun in 2019 (and slated to continue until Fall 2020) on Minnesota Point Beach has dredged material from the Duluth - Superior Harbor. The only testing actually used for the human health risk assessment was the "spring testing" in May 2020, seven months after the 2019 sand placement began.



### COASTAL ARMORING: BAD

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



### DEVELOPMENT: OK

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.



### SEA LEVEL RISE: GOOD

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. The Interagency Climate Adaptation Team regularly updates a state adaptation report; however, 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 concrete sand replenishment policies that look at the long-term effectiveness and impacts of beach replenishment projects.
- Require permitting to ensure that even small replenishment projects are needed and negative impacts to sensitive habitats can be mitigated.
- 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.



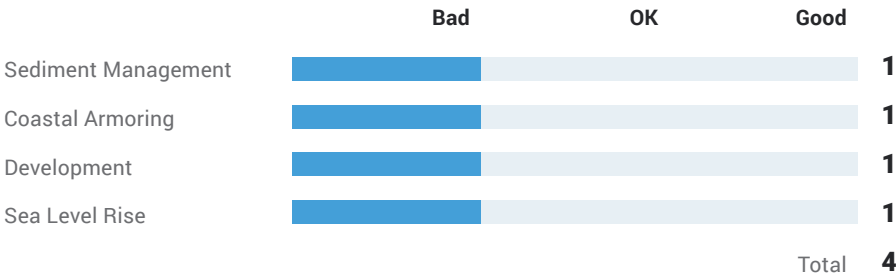


Marblehead, OH

GREAT LAKES

# Ohio

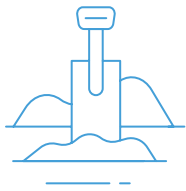
Ohio's Great Lakes region is composed of 20 counties and over 300 miles of shoreline, which includes popular islands and many recreational fishing opportunities. Unfortunately, Ohio's aquatic habitats are no stranger to harmful algal blooms caused by runoff pollution and intensive land use. Additionally, due to changing weather patterns, including greater precipitation and reduced winter ice, Ohio's Lake Erie shoreline has experienced exacerbated erosion problems. Improved policies are needed to better mitigate pollutants and protect Ohio's valuable coastal ecosystems.



BEACH GRADE

F

Inadequate protection  
of coastal communities  
and resources.



### **SEDIMENT MANAGEMENT: BAD**

Each year, harbors on Ohio's north shore must be dredged to keep the shipping channels open. Nearly 1.5 million tons of material are dredged annually. Historically, much of the dredged material has been dumped in the open waters of Lake Erie, but as of mid-2020 other placement sites and uses must be found. There is no state-level sediment management plan to guide sediment management.



### **COASTAL ARMORING: BAD**

A large majority 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. In 2018, Ohio started offering a 'free expedited permit' for temporary shore structures, which apply to new emergency structures or repairs to existing unpermitted structures, although temporary structures must obtain a standard permit after two years. 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.



### **DEVELOPMENT: BAD**

Although permits are required to build and redevelop permanent structures in identified Coastal Erosion Areas, erosion control measures are a required condition of approval. The state does not have a standard minimum shoreline setback policy. There are also no clear restrictions on the repair of developments in Coastal Erosion Areas. There is some effort to protect coastal ecosystems, including a National Estuarine Research Reserve, coastal wetland restoration projects, and designations of wild, scenic and recreational river areas.



### **SEA LEVEL RISE: BAD**

Ohio has no statewide policies for addressing climate change and there is no state website with information on threats from climate change. There is a broad vulnerability assessment regarding coastal erosion in the 2011 Hazard Mitigation Planning Program, but with minimal outlook toward future vulnerabilities. All in all, Ohio is significantly lacking in terms of coastal climate change planning. This failure to proactively prepare for lake level changes is resulting in destructive, short-sighted policies, such as the recently implemented temporary armoring policy.

## **RECOMMENDATIONS**

- Establish minimum setback requirements on coastal developments.
- Prohibit new developments from installing hard structural erosion control measures.
- 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.
- Allocate federal funds to complete the Great Lakes Coastal Resiliency Study.
- Conduct a statewide coastal climate change vulnerability assessment.
- Ensure the sand management plan includes policies on beach replenishment projects, including the consideration of other soft structures first, monitoring requirements and permits for waterside and landside sand placement.



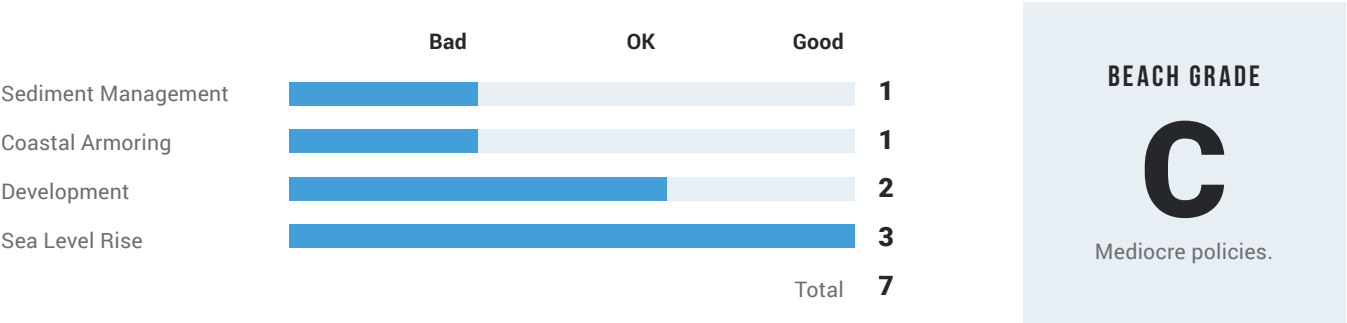


Lake Erie, PA

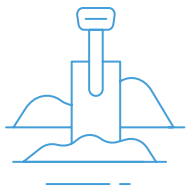
GREAT LAKES

# Pennsylvania

Pennsylvania’s coastlines are unique in that on the east side it contains the calm Delaware Estuary shoreline, and on the west it has the busy coastline of Lake Erie. The state has taken proactive measures to mitigate future climate change threats with the initiation of the Climate Change Adaptation and Mitigation Plan. Created in 2018, this plan outlines 123 steps to make the coastal infrastructure more resilient to climate change impacts, though there are missing components to this system that have yet to be addressed.

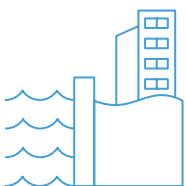






### SEDIMENT MANAGEMENT: BAD

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, 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.



### COASTAL ARMORING: BAD

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.



### DEVELOPMENT: OK

Pennsylvania has a minimum 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.



### SEA LEVEL RISE: GOOD

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.

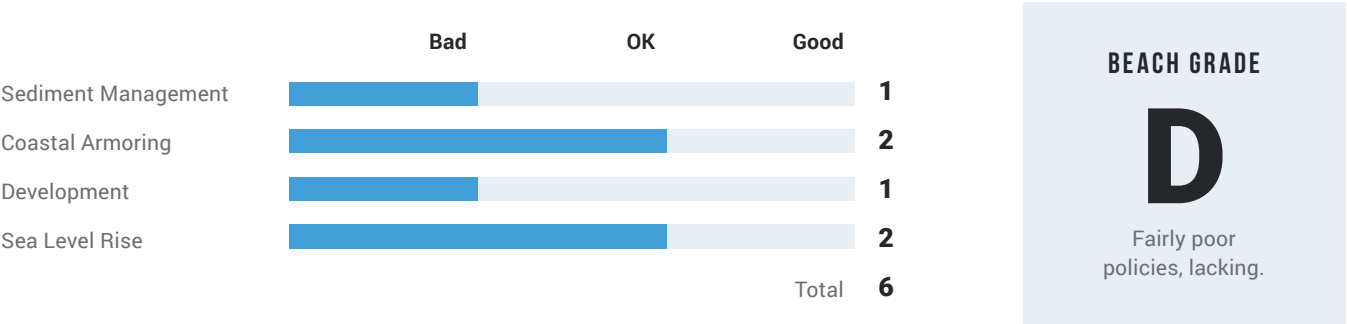


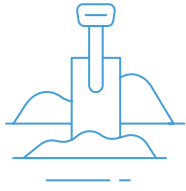
Big Bay State Park, WI

GREAT LAKES

# Wisconsin

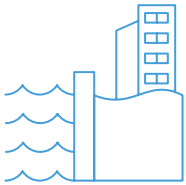
Wisconsin borders both Lake Michigan and Lake Superior, and its coastline spans over 1,000 miles. Wisconsin’s coastline hosts small villages, urban areas, and major industry. Coastal areas are characterized by rocky shorelines, bluffs, sandy beaches, and wetlands. The state needs to improve its shoreline management plan to better analyze erosion and lake changes.





## SEDIMENT MANAGEMENT: BAD

There are no regional sediment management plans and the state encourages beach fill as a method to prevent erosion. Property owners are required to get a permit if a fill project is below the Ordinary High Water Mark. They may also need a permit for dry sand, but it depends on the local municipality. While there are some loose policies to avoid environmental impacts, along with good recommendations on best practices, these aren't mandatory and there are no monitoring requirements.



## COASTAL ARMORING: OK

The use of armoring and seawalls require a coastal permit and are generally only granted in 'high energy sites.' Unfortunately, small riprap projects are exempt. Some river basins are not required to meet permit requirements, while 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 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.



## DEVELOPMENT: BAD

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.



## SEA LEVEL RISE: OK

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 prove necessity.
- Require permitting and monitoring for beach nourishment projects.
- Develop and implement climate change adaptation plans.
- 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.
- Strengthen the state's policy on repairing and rebuilding houses and other buildings that were destroyed or damaged in natural disasters. Make policies more restrictive to prevent the same type of damage from occurring again.
- Add more specific language to coastal policies for conserving natural land and water resources, to give protection to natural resources and provide coastal hazard mitigation benefits.



# Islands

Hawai'i

Puerto Rico





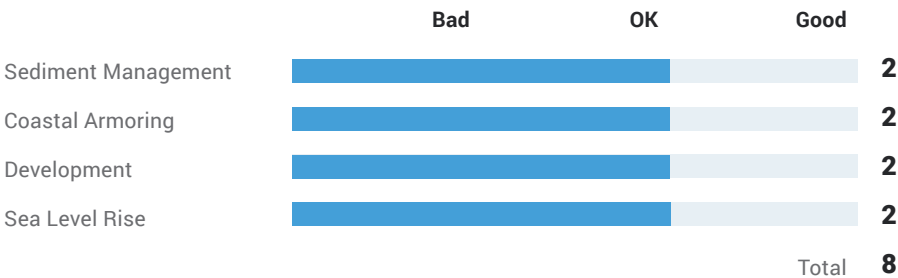


Kauai, HI

ISLANDS

# Hawai'i

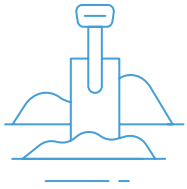
Hawai'i is known around the world for its breathtaking characteristics, such as lush rainforests, active volcanoes and spectacular beaches, all surrounded by amazing biodiversity. Because of the state's remote location, extensive planning and management is needed to combat the risks of climate change and sea level rise. In 2020, legislation was enacted that bans coastal armoring projects on private property, furthering the state's efforts to protect beaches from erosion caused by coastal armoring.



BEACH GRADE

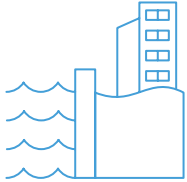
C

Mediocre policies.



### SEDIMENT MANAGEMENT: OK

While Hawai'i has extensive permitting requirements for beach fill projects, the state continues to rely heavily on sand replenishment as a means of erosion control. The state encourages regional sediment management plans, but 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.



### COASTAL ARMORING: OK

Hawai'i has regulations that prohibit erosion protection structures; however, the state is lackadaisical about enforcement. Hopefully, new legislation passed will resolve issues with local homeowners constructing illegal seawalls. Moreover, the state needs to improve restrictions on rebuilding and repairing a shoreline protection device. Many counties also allow for emergency shore protection with seawalls. While the state needs to improve their management of coastal armoring projects, the Ocean Resources Management Plan outlines important measures to avoid armoring, such as managed retreat and restoration.



### DEVELOPMENT: OK

While the state has a minimum coastal development setback line, it is unfortunately only 20 feet from the shoreline and provides minimal protection from coastal hazards. Both Kauai 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.



### SEA LEVEL RISE: OK

The state conducted an in-depth study to analyze future sea level rise and provide recommendations for adaptation. The report complements the state's solid work on sea level rise planning. This includes completed vulnerability assessments, maps and the establishment of the enforceable *Climate Change Adaptation Priority Guidelines*. In addition, the state held a 'managed retreat' symposium in January 2018, and commissioned a study to analyze ways to implement managed retreat in light of sea level rise. Hawai'i would benefit from codified regulations or ordinances that protect lands and provide space for rising tides and landward creep of the ocean. While Hawai'i has recommendations to preserve agriculture and conservation lands, there are no formal state policies.

## RECOMMENDATIONS

- All counties should include the recommendations in the statewide plan and create beach management plans modeled after Maui and Kauai.
- Dedicate increased funding to the development of climate adaptation plans that incorporate beach and coastal conservation principles.
- Reduce the permitting of emergency shore protection with seawalls and hard armoring.
- Restrict large-scale development in rural areas.
- Establish concrete policies and funds for managed retreat.



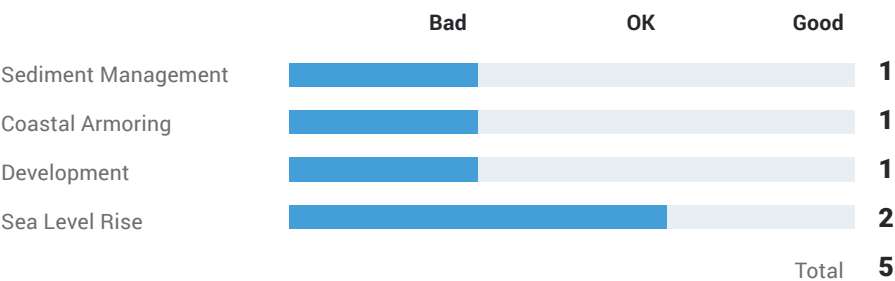


Cabo Rojo, PR

ISLANDS

# Puerto Rico

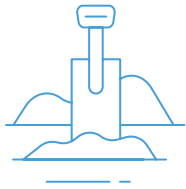
Puerto Rico is the smallest, most eastern island of the Greater Antilles of the Caribbean, made up of rocky cliffs, mangrove forests, and sandy beaches. This lush island is no stranger to climate change vulnerabilities, as environmental impacts such as Hurricane Maria have brought major setbacks to the region. Currently, these impacts are already taking their toll on the island, causing major issues such as conflicts over water rights. Transparent regulations are needed to mitigate coastal erosion and impacts from climate change. In addition, the territory would benefit from increased aid from the federal government.



BEACH GRADE

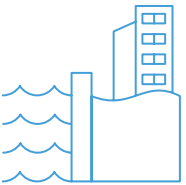
D

Fairly poor policies, lacking.



### **SEDIMENT MANAGEMENT: BAD**

Puerto Rico does not have a sand management plan, an inventory of sand resources, policies on beach nourishment standards or an effort to restore natural sediment flow to the coast. The island also struggles with illegal sand mining at river mouths, beaches and sand dunes. Additionally, hillside development and high rainfall cause sedimentation in waterways. While the Director of the Coastal Zone Management Office has mentioned a need to develop a sediment management plan and consider the use of beach nourishment projects, there is no funding currently available to accomplish this.



### **COASTAL ARMORING: BAD**

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. Unfortunately, Puerto Rico does not have any codified statewide/territory statutes that restrict the construction or repair of hard stabilization structures. After Hurricane Maria, emergency permits for additional armoring were readily available. Fortunately, Puerto Rico has made progress in promoting more proactive adaptation methods.



### **DEVELOPMENT: BAD**

On the surface, the territory has a good island-wide coastal development setback standard of 50 meters, or 2.5 times the building height, from the high tide line; however, waivers and exemptions make this policy ineffective. For example, standards can be reevaluated if a lot was approved prior to this legislation, if a builder invests money in 'physical improvements for public use,' or if nearby buildings are also non-conforming. Puerto Rico has also implemented strong programs to protect mangroves and coral reef ecosystems, which provide critical ecological benefits and help mitigate damage from coastal hazards. Codified policies to further protect these areas would be beneficial.



### **SEA LEVEL RISE: OK**

Puerto Rico's Climate Change Council has 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. A more thorough sea level rise vulnerability assessment is needed to inform 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 resiliency, built farther inland from the coastline, and 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.
- Prohibit repairs on buildings not conforming with setback standards.

# Conclusion

This summer, the House and Senate took major steps to counter recent **rollbacks** on climate change action at the federal level. In June, the House Select Committee on the Climate Crisis released a lengthy report entitled: *Solving the Climate Crisis: The Congressional Action Plan for a Clean Energy Economy and a Healthy, Resilient, and Just America*.

**The report was particularly impressive because it delved deep into concrete ocean and coastal policy recommendations that mirror Surfrider’s philosophy and current work, including:**

- Reforming flood insurance.
- Improving building codes at the local level.
- Requiring “climate planning” by all Federal agencies.
- Keeping parks and open spaces intact to adapt to sea level rise and extreme weather.
- Maintaining and improving Marine Protected Areas and ‘setting aside’ 30% of ocean habitats by 2030 to increase ocean and coastal resiliency.
- Improving research and responses to ocean acidification.
- Strengthening the Coastal Zone Management Act.
- Improving ‘living shorelines’ and natural infrastructure to reduce flooding.
- Focusing more on the importance of environmental justice.



This *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 coastal erosion and sea level rise.

In addition, the Senate Special Committee on the Climate Crisis released their report *The Case for Climate Action: Building a Clean Economy for the American People*. This report mimicked some of the same policy recommendations as the House report; however, the Senate report was unique because it tackled large, complicated political and economic dynamics related to climate change. The report boldly calls out the fossil fuel industry for hiding the truth about global warming for the past 70 years, using ‘dark money’ to influence lawmakers, and stifling the work of nongovernmental organizations working on climate change. The report emphasized the geopolitical ramifications of climate change, took on controversial issues like “managed retreat,” such as relocating vulnerable infrastructure and underserved communities out of harm’s way, and put a gigantic spotlight on the importance of environmental justice.

These reports highlight that stronger and more proactive coastal resiliency initiatives are essential 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 *State of the Beach Report*.

This *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 coastal erosion and sea level rise. This report is intended to help coastal states identify gaps in their current coastal management policies and provide clear recommendations for policy changes that states can take to better protect their coastal resources. Surfrider’s findings indicate that many states are not addressing these important issues adequately enough to sufficiently protect our nation’s coastal resources.

The policy criteria that prove to be the most difficult for coastal states to achieve are 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 (essentially the ‘low-hanging fruit’) that seem to be the most frequently accomplished by state agencies, are encouraging 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.



## 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 the best grade 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 timeframe (such as 6 months, or a definitive timeframe), restoration of the area after removal, and a longer-term, proactive effort by the landowner to prevent the need for future armoring projects, by either using 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, but then also as a mechanism to advance longer-term, proactive action to enhance coastal resilience. If only short-term approaches continue, these coastal developments will continually be threatened by coastal hazards and our natural coasts will disappear under perpetual armoring and increased rates of erosion.

### Inadequate 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.



**If only short-term approaches continue, these coastal developments will continually be threatened by coastal hazards and our natural coasts will disappear under perpetual armoring and increased rates of erosion.**

## 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 proactively 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. Unfortunately, the Trump administration is cutting necessary funding programs, and important environmental laws and policies are being gutted, removed or not properly used and enforced.



Chicago is taking the initiative to respond to climate change erosion, despite the lack of statewide planning.

### Protection of Established Federal Policies

The current federal administration is dangerously rolling back important policies and cutting federal funding for programs that support coastal management and climate change planning. In fact, the Trump administration shut down the only federal climate change adaptation office in 2017. Every year this administration has been in office, the president has proposed severe cuts to the budget for NOAA, the lead federal agency responsible for managing our nation's ocean and coasts, in addition to monitoring weather and climate. The proposed cuts would eliminate funding for a variety of programs, including essential ocean and climate research, designation and management of estuary reserves, and protection of other coastal ecosystems that provide coastal resilience to major storms and rising seas. In addition, the federal administration signed an executive order to reverse infrastructure regulations set by the previous administration. These regulations required the federal government to account for climate change and sea level rise when rebuilding infrastructure, which would have been critical to ensuring effective rebuilding after the destructive 2017, 2018 and 2020 hurricane seasons.

**The current federal administration is dangerously rolling back important policies and cutting federal funding for programs that support coastal management and climate change planning.**

## GENERAL RECOMMENDATIONS TO ENHANCE COASTAL RESILIENCE

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 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 to 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 be restricted, especially in sensitive habitats, have limitations on repairs, be removed after an established time period and be restored to its 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 restoration of natural sediment flows, and only allow armoring 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 level is 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 those coastal properties that are frequently damaged or flooded.
- 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 is another innovative adaptation approach where at-risk-properties are acquired by the local governments 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.

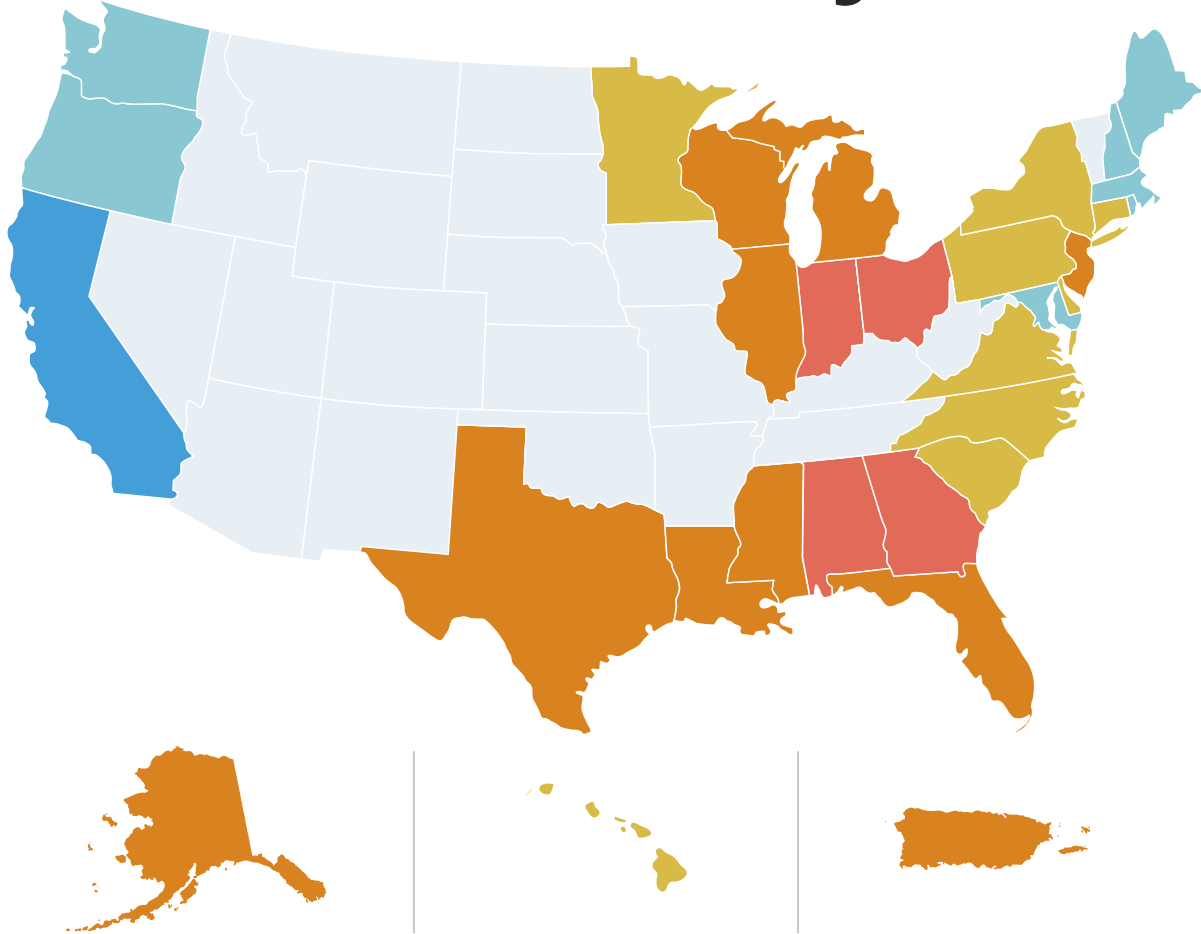
- In order to protect coastal resources and taxpayers, states should establish clear procedures and policies about how to prepare for and respond to 'extreme weather events.'
- Considering that sea level rise will inevitably be an issue for coastal states, it is imperative that statewide policies are 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, stringent conditions should be placed on how long the armoring is allowed to stay in place, what monitoring and reporting will need to occur, and require plans to remove armoring in the future. Any approval for an emergency armoring project should 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 us four dollars in costs down the road. We owe it to American taxpayers and our valuable coastlines to make a conscious decision to proactively protect our coastlines – this logic 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 increase 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 the future.



# 2020 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

California	11	A
Oregon	9	B-
Washington	10	B
Alaska	5	D
<b>Average</b>		<b>B</b>

## SOUTHEAST

Florida	6	D
N. Carolina	7	C-
Georgia	4	F+
S. Carolina	7	C
<b>Average</b>		<b>D</b>

## MID-ATLANTIC

Delaware	8	C
Maryland	9	B
New Jersey	5	D-
New York	7	C
Virginia	7	C
<b>Average</b>		<b>C</b>

## GULF STATES

Alabama	4	F
Louisiana	6	D
Mississippi	5	D
Texas	6	D
<b>Average</b>		<b>D</b>

## NORTHEAST

Connecticut	7	C
Maine	9	B
Massachusetts	10	B
New Hampshire	9	B
Rhode Island	9	B
<b>Average</b>		<b>B</b>

## GREAT LAKES

Illinois	6	D
Indiana	4	F
Michigan	6	D
Minnesota	7	C
Ohio	4	F
Pennsylvania	7	C
Wisconsin	6	D
<b>Average</b>		<b>D</b>

## ISLANDS

Hawai'i	8	C
Puerto Rico	5	D
<b>Average</b>		<b>C</b>

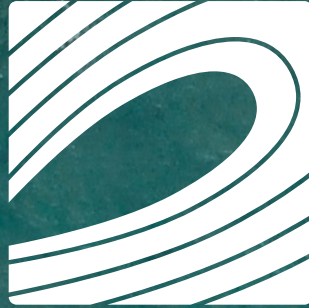
APPENDIX 1.

# 2020 State Criteria Checklist

Management Policy And Plan Criteria		Y   N	Notes
<b>Sediment Management</b>			
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.			
<b>Coastal Armoring</b>			
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.			
<b>Development</b>			
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).			
<b>Sea Level Rise And Coastal Hazard</b>			
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](#)





**SURFRIDER**  
FOUNDATION®

[surfrider.org](http://surfrider.org)