

# STATE OF THE BEACH REPORT CARD

2017



# CONTENTS

<b>INTRODUCTION</b> .....	04
<b>SURFRIDER'S EFFORTS TO IMPROVE COASTAL MANAGEMENT</b> .....	05
<b>METHODOLOGY</b> .....	07
<b>WEST COAST REGION</b>	
CALIFORNIA .....	10
OREGON.....	12
WASHINGTON .....	14
ALASKA .....	16
<b>GREAT LAKES REGION</b>	
ILLINOIS.....	19
INDIANA.....	21
MICHIGAN.....	23
MINNESOTA .....	25
OHIO.....	27
PENNSYLVANIA.....	29
WISCONSIN .....	31
<b>GULF STATES REGION</b>	
ALABAMA .....	34
LOUISIANA .....	36
MISSISSIPPI.....	38
TEXAS .....	40
<b>NORTHEAST REGION</b>	
CONNECTICUT .....	43
MAINE.....	45
MASSACHUSETTS .....	47
NEW HAMPSHIRE.....	49
RHODE ISLAND .....	51

**MID-ATLANTIC REGION**

DELAWARE ..... 54  
MARYLAND..... 56  
NEW JERSEY ..... 58  
NEW YORK..... 60  
VIRGINIA..... 62

**SOUTHEAST REGION**

FLORIDA ..... 65  
GEORGIA..... 67  
NORTH CAROLINA ..... 69  
SOUTH CAROLINA ..... 71

**ISLANDS**

HAWAI'I..... 74  
PUERTO RICO..... 76

**CONCLUSION** ..... 78





# INTRODUCTION

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Nearly [40% of our nation](#) resides along America's unique and majestic coastlines. These special places are not only the 'heart and soul' of our coastal communities, but they also contribute extensively to our nation's economy. In fact, the ocean economy provides more than [\\$352 billion](#) to U.S. gross domestic product (GDP) annually. Healthy beaches fuel coastal tourism and recreation economies that are worth [more than \\$100 billion](#) and provide 2.15 million jobs nationwide.

However, beaches are disappearing at an alarming rate, due to both natural processes and human intervention. Coastal erosion causes approximately [\\$500 million in coastal property](#) loss annually in the U.S., including damage to structures and loss of land. To mitigate erosion impacts, the federal government spends an average of [\\$150 million](#) every year on beach replenishment and other shoreline erosion control measures. In addition to coastal erosion, scientists predict that sea levels could potentially increase up to [six feet by the year 2100](#). Therefore, rising tides will also likely impact coastal economies, communities, public access, recreation, and healthy ecosystems.

Since the year 2000, the Surfrider Foundation has been producing the [State of the Beach report](#) as a coastal management resource. The continually updated resource has historically focused on a range of issues, including beach access, surfing, water quality, beach erosion, shoreline structures, and beach ecology. As coastal erosion and future sea level rise are increasingly pervasive problems that demand immediate attention, Surfrider developed the additional 2017 State of the Beach Report Card to highlight and analyze how states are responding to erosion problems and coastal preservation.

Surfrider's 2017 State of the Beach Report Card assesses the performance of 30 U.S. coastal and Great Lakes states, and the territory of Puerto Rico, against key beach health indicators, grouped into four main categories. These indicators provide a lens to evaluate state policies and efforts to protect our nation's beaches from coastal development, beach fill, sea level rise, and shoreline structures. The resulting grades indicate that the majority of states and areas assessed (22 out of 31, or 74%), are doing a mediocre to poor job responding to coastal erosion and sea level rise planning, especially in areas that are most impacted by extreme weather events.

The State of the Beach Report Card was developed to empower concerned citizens to work with their coastal municipalities to ensure active protection of coastal resources in light of erosion and the increasing effects of our changing climate. The report card also functions as a tool to motivate decision-makers and agencies to implement proactive, long-term solutions that strengthen the resiliency of our coastline, instead of exacerbating coastal erosion by allowing short-sighted reactionary efforts like stabilization structures.

**The goal of Surfrider's State of the Beach Report Card is to make the public aware of the ever-growing erosion problem facing our beaches and improve how municipalities and agencies respond to erosion and sea level rise.** For more information on the health of our nation's beaches, visit Surfrider's comprehensive [State of the Beach online resource](#).

# SURFRIDER'S EFFORTS TO IMPROVE COASTAL MANAGEMENT

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The Surfrider Foundation is a nonprofit, environmental organization dedicated to the protection and enjoyment of our nation's ocean, waves and beaches. Over the past 33 years, Surfrider has helped to improve coastal management and protect important coastal resources. With more than 80 chapters and 60 youth clubs nationwide, Surfrider is working at local, state and national levels to protect our shorelines on every coast. We proactively address threats such as coastal development, shoreline armoring, seawalls, and beach 'dredge and fill' projects to support the protection of our coasts. On a national level, our environmental policy and legal experts work with decision-makers to plan for the future of our coasts.

## Examples of coastal preservation accomplishments from this past year include:

- Closure of the last coastal sand-mining plant in the U.S., saving 270,000 cubic yards of sand a year from being illegally removed from the Monterey, CA coast.
- Hawai'i Chapters contributed to the passage of bills to increase soil health and carbon sequestration which will help reduce the impacts of climate change.
- Through Surfrider's advocacy, the California Supreme Court ruled to uphold seawall permit conditions in the California city of Encinitas, helping to set a positive statewide precedent for California's 1,100 mile coastline.
- Protection of 200 acres along the Oregon coast saved from golf course development.
- Preservation of Half Moon Bay, a recreational beach in Washington state, through strategic sand replenishment to curb erosion previously exacerbated by a constructed jetty.
- Designation of 6,200 acres of coastal land in Humboldt, Santa Cruz, and San Luis Obispo Counties as Coastal National Monuments.

For more information on Surfrider's coastal preservation campaigns and victories, visit [surfrider.org](https://www.surfrider.org). Join your [nearest chapter](#) to get connected and involved in the protection of your local coastline and favorite beach!

## COASTAL EROSION IS THREATENING OUR BEACHES

Our nation's beaches are under extreme threat from coastal erosion. According to a U.S. Geological Survey, about 50% of surveyed U.S. coastlines are either at 'high' or 'very high' risk due to 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 loss of sand supply. Developments, such as the paving of watersheds, damming of rivers, and construction of shoreline structures that interrupt sand transport, block the natural flow of sediment to the coastline. Coastal erosion typically does not pose a noticeable problem until structures are 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. When coastal erosion and storm surges threaten properties, many homeowners and land managers conduct expensive and sometimes damaging protection projects.

These short-term approaches include the addition of sand through 'sand replenishment' and the construction of hard stabilization structures with 'coastal armoring.' While applied as a quick-fix, scientists have found that sand replenishment projects can cause environmental damage and unintended ecological consequences, while shoreline armoring actually exacerbates erosion by blocking the natural flow of sand and effectively starving beaches.

To compound the issues related to beach erosion, [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 United States 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 impacting our nation's coasts.

## CLIMATE CHANGE AND SEA LEVEL RISE

Over the past several decades, the world has witnessed increasing climate change impacts, including record-high temperatures, catastrophic hurricanes, melting ice sheets, coastal flooding, longer droughts, and other extreme weather. Scientists anticipate that our changing climate will continue to bring even more intense storms, in addition to sea level rise as ice sheets melt and ocean temperatures increase.

As extreme weather events become more consistent and noticeable, it is even more important for our nation's decision-makers to take immediate steps to actively plan for climate change impacts. After destructive environmental disasters, the sentiment is often to rebuild in the same place and begin immediately armoring the coast. However, this approach often leads to overdevelopment of the coast, which creates negative long-term impacts. Alternatively, through strategic restoration and planning, shorelines can recover and regenerate without increased erosion.

With estimates of sea levels increasing by up to six feet by 2100, 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 about the increasing loss of livable land for our communities. Once these unique and special areas are gone, they're gone for good for today and the future.

## KEY OUTCOMES

While there are several states that have model programs in place to protect our coastal resources, this report reveals that the majority of coastal and Great Lakes states are doing a mediocre to poor job of responding to coastal erosion and sea level rise planning. A noticeable trend highlights the fact that key 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 improve and ensure our beaches and nation's 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 cutting federal funding for programs that support coastal management and climate change planning. In March 2017, the Trump administration proposed severe cuts to NOAA's budget that would eliminate several important coastal management and research programs, including the complete defunding of the Coastal Zone Management Act, which virtually every U.S. state and territory assessed, with the exception of Alaska, currently participates in.

Given the severity of coastal erosion and impending sea level rise, the State of the Beach Report Card criteria checklist is ambitious and the standards are intentionally set at high levels. The report card 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.



# METHODOLOGY

Surfrider's State of the Beach Report Card evaluates the performance of states in terms of management of their coastal resources. Erosion responses were analyzed by researching available information from our 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 ten criteria separated into four major categories of sediment management, development, coastal armoring, and sea level rise ([Appendix 1](#)). This set of criteria, which encapsulates state efforts regarding essential policies and management practices, is also 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 total 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.

## 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, and 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

Almost there but not quite enough.

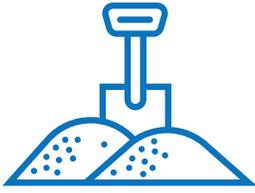
### GOOD = 3 POINTS

Nice work! Sufficiently protects the coastline.

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

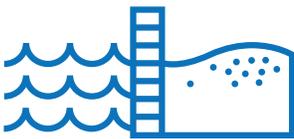
# CATEGORIES OF CRITERIA

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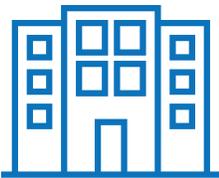
## Sediment Management

Coastal states are encouraged to manage coastal sediment and upland sediment sources to provide stabilization for the coastline, habitat for wildlife, and healthy beaches for recreation, tourism and economic opportunity. Adequate sediment management includes strategically planning for beach replenishment, establishing clear monitoring requirements before and after sediment alteration 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, storms, and sea level rise. Coastal armoring is a form of 'structural shoreline stabilization' which protects development rather than 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 include the restriction of inappropriate construction and repair; prevention of emergency permitting directly after storms; and the promotion of 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 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 to wildlife, habitats, and coastal recreation, which all depend on healthy coasts. Adequate coastal development management includes implementing restrictions on the repair or development of new structures in high hazard areas, ample 'setback' buffers that guide where construction can begin, 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 caused the phenomenon known as climate change. Many expected impacts are already evident from this change in global processes, with coastal effects becoming even 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 resiliency of their coastal communities and coastlines. Adequate sea level rise policies include conducting thorough sea level rise vulnerability assessments, directing ample outreach to coastal communities and jurisdictions, implementing inundation mapping, and developing comprehensive adaptation plans to prepare for and respond to sea level rise.



# WEST COAST

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CALIFORNIA

OREGON

WASHINGTON

ALASKA

# CALIFORNIA

WEST COAST



California's 1,100 mile coastline is home to redwoods, vineyards, sandy beaches, world-renowned surfing, and some of the nation's most expensive real estate. Fortunately, the state has some of the strongest regulations on coastal development, zoning, and preparation for sea level rise.

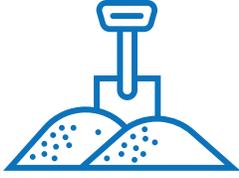
While there are a few areas for potential advancement, such as improved coastal development and protected areas, California acknowledges and protects important coastal areas that fuel the state's economic vitality and environmental legacy.



**BEACH GRADE**

# A

Excellent policies and implementation.



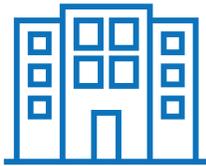
### **Sediment Management: Good**

California established a workgroup, Coastal Sediment Management Workgroup (CSMW), comprised of multiple agencies to establish regional sediment management plans. While many of the CSMW regional plans are still in development and lack concrete action plans, the majority of sand replenishment projects are reviewed by the California Coastal Commission (CCC), which implements conditions to curtail environmental impacts and develop monitoring plans. The state has also created long-term strategies for sediment management, such as removing the Matilija and Rindge Dams and restoring natural sediment flow to coastal areas.



### **Coastal Armoring: OK**

Coastal armoring remains a standard response to coastal hazards for some state-owned lands and property. The CCC has issued 'emergency permits' for the construction of shoreline stabilization structures that often result in permanent structures. To improve, the CCC can exercise more discretion when issuing these permits and encourage better sustainable long-term solutions to limit the construction of short-term approaches.



### **Development: Good**

Through the Coastal Act, California has established solid development standards by implementing setback requirements through Local Coastal Programs (LCPs); limiting new development and redevelopment through permit conditions; establishing environmentally sensitive areas that require additional protection to prevent degradation; and ensuring public access.



### **Sea Level Rise: Good**

California has strong sea level rise (SLR) planning policies and laws. The state requires cities and counties to incorporate climate adaptation and sea level rise planning into general plans. State agencies have also provided policy guidance on planning for future sea level rise. In addition, California Governor Jerry Brown has established an executive order requiring climate change mitigation and adaptation.

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## **Recommendations:**

- Develop a firm requirement to consider other soft stabilization methods, such as managed retreat, before using sand replenishment
- Improve minimum development setback standards by incorporating sea level rise predictions
- Provide more legal advice on managed retreat, protecting public access through rolling easements, and encouraging municipalities to rezone in light of sea level rise
- Create concrete action plans in regional sediment management plans
- Avoid permitting emergency seawalls and hard stabilization devices

# OREGON

WEST COAST



With lush towering trees and massive rock formations, Oregon’s iconic coastline attracts a range of visitors that enjoy activities such as exploring, swimming, fishing, and surfing. While Oregon has a series of policies that provide protection for beaches, dunes and other natural features,

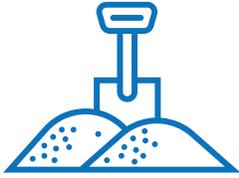
the state has eased up on previously strong regulations, allowing for haphazard armoring and development practices. On the plus side, the state has been looking ahead, assessing and planning for coastal impacts of climate change.



**BEACH GRADE**

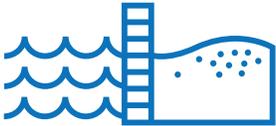
**C-**

Mediocre.



### **Sediment Management: OK**

While Oregon has statewide sediment management policies in place, it lacks a sand replenishment policy. Fortunately, Oregon does not rely on beach replenishment projects to the same extent as many other states. However, the state can improve with the development of a clear sand replenishment policy that requires the analysis of environmental and recreational impacts prior to project approval. The state can also institute a monitoring program that reviews the long-term effectiveness of replenishment projects.



### **Coastal Armoring: Bad**

At first glance, the state appears to be proactive with coastal armoring, as Oregon maps the locations of all known structures and their permit and repair information, providing a way to monitor and manage shoreline armoring. Oregon also has established policies that limit armoring. However, with every passing El Niño year, beaches and dunes suffer increased susceptibility to storm activity and erosion, while the state continues to ease up on its coastal preservation and erosion policies, including ‘Statewide Planning Goal 18.’ Coastal armoring such as riprap gets permitted under increased ‘emergency’ situations and the state appears to be even allowing loopholes for preemptive armoring.



### **Development: Bad**

Oregon’s building restrictions prohibit the construction of residential and commercial buildings on beaches and dunes that are not conditionally stable for infrastructure or are subject to ocean flooding. However, policies do not restrict repair and reconstruction of damaged properties along the coast. In addition, statewide mandatory setbacks are not in place for coastal developments.



### **Sea Level Rise: Good**

Oregon has been prudently preparing for climate change and its impacts by publishing a vulnerability assessment, identifying critical infrastructure, and preparing a climate adaptation plan for coastal communities. Most impressively, Oregon is one of the few states with a rolling easement policy for beach access, which maintains and protects perpetual public access to beaches. It remains to be seen if thorough guidance and community outreach will be established by local coastal managers to truly protect coastal areas and resources.

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## **Recommendations:**

- Reduce the amount of emergency permitting for seawalls and coastal armoring
- Develop a clear sand replenishment policy that requires the analysis of environmental and recreational impacts prior to project approval and institute a monitoring program that reviews long-term effectiveness of replenishment projects
- Set statewide minimum development setback policy and establish repair and rebuilding restrictions for infrastructure that have been damaged by coastal hazards
- 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

# WASHINGTON

WEST COAST



Washington's diverse shorelines include rugged coasts on the Pacific Ocean, rocky and sandy beaches of the Puget Sound and rich estuaries that provide unique and diverse habitat. In general, Washington has a well-managed shoreline as

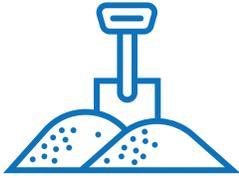
every coastal local government is required to have a Shoreline Master Program that regulates each portion of the coast. However, significant sections of the state suffer from severe erosion and the state's response has been varied.



**BEACH GRADE**

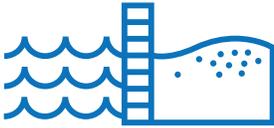
# B

Good, but can be improved.



### **Sediment Management: OK**

While Washington has a statewide sediment management policy, it is largely focused on dredging, with minimal reference to sand replenishment. The ‘no net loss’ policy set forth by the state focuses on protecting wetlands and watersheds, which helps with overall sediment management. However, the state would benefit from establishing explicit regulations for beach replenishment projects to avoid potentially expensive restoration projects and ensure long-term coastal resource protection.



### **Coastal Armoring: Good**

Through the state’s Shoreline Master Program, Washington requires local communities to avoid the installation of new shoreline armoring unless it is determined necessary under highly specific conditions. The state has a positive track record of removing seawalls and other armoring projects to help restore the ecological function of shoreline areas. In addition, Washington encourages living shorelines and restoration projects.



### **Development: Good**

Through the Shoreline Management Act, robust plans establish solid development standards which implement setback requirements, ensure public access, and limit new development and redevelopment through permit conditions. Washington has a progressive policy of requiring private property owners to take responsibility for their choices to purchase and develop coastal property, and to do so within the resource protection laws.



### **Sea Level Rise: OK**

Similar to California and Oregon, Washington has taken proactive measures to address climate change mitigation and is currently in the process of developing a comprehensive State Adaptation Plan. While Washington does not have a statewide sea level rise policy, the Shoreline Master Program encourages local municipalities to follow guidelines for proactively managing their shorelines by considering important issues, such as climate change and sea level rise. Most municipalities have incorporated some level of planning for sea level rise into their regional Shoreline Master Plans.

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## **Recommendations:**

- Establish explicit regulations for beach replenishment projects to ensure coastal resource protection and avoid expensive projects that can burden taxpayers
- Require all municipalities to incorporate sea level rise into regional Shoreline Master Plans
- Conduct a statewide sea level rise vulnerability assessment

# ALASKA

## WEST COAST



Alaska is home to one of the nation’s most pristine and unique natural environments and is appropriately referred to as “the last frontier.” However, the state also has large-scale coastal development, including offshore oil and gas extraction, mining, and forestry operations. Alaska’s immense size and small, dispersed coastal management staff make coastal

management a challenge. Lack of action and funding (at both the state and federal levels) are impediments to addressing coastal access needs, erosion problems, and water quality concerns. Alaska is the only coastal state that does not have a Coastal Zone Management Program, which significantly limits the accessibility of information.



**BEACH GRADE**

# F

Inadequate protection of coastal communities and resources.



### **Sediment Management: Bad**

Alaska does not have sand replenishment or regional sediment management plans. While there is a state Erosion Management Policy, it only addresses hard stabilization guidelines. Large-scale construction projects, such as natural gas pipelines, are required to submit an erosion and sedimentation control plan with their development application. However, there are not identified statewide policies for other operations, such as dredge and replenishment.



### **Coastal Armoring: Bad**

State departments do not have the right to construct or repair erosion control structures, and agencies are encouraged to consider non-structural alternatives prior to constructing hard structures. However, there are no restrictions on the use of hard shoreline structures on private property in Alaska. While there is also a policy for coastal erosion control methods used on state-funded construction projects, the policy guidelines are not rigorous prohibitions or requirements.



### **Development: Bad**

While local jurisdictions can choose to set their own setback standard, there is no statewide minimum development setback standard in Alaska. Real estate sales disclosure requirements only exist in some areas. Alaska also does not place restrictions on the rebuilding of structures near the coast after they have been damaged by flooding. According to Alaska's 2011 Coastal Assessment and Strategy, only six coastal districts and five communities have approved state comprehensive management plans that contain land use policies to direct development away from hazardous areas.



### **Sea Level Rise: Bad**

As one of the first areas to experience the direct effects of climate change, Alaska has already been the subject of numerous sea level rise, erosion, and permafrost/ sea ice change studies. Despite this early interest, the majority of local communities and the state have not comprehensively addressed climate change mitigation or adaptation. Coastal erosion is a particularly serious threat to northwestern communities in Alaska.

On a positive note, there may be improvements in the future as the state has pursued an unofficial strategy of relocation and extensive coastal mapping. Erosion data is available for large segments of shoreline. Numerous educational documents and outreach material concerning climate change and adaptation are also available to the public and policymakers.

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## **Recommendations:**

- Develop coastal zone management enhancement plans and rejoin the Coastal Zone Management Program, which works with states to address coastal issues
- Conduct statewide sea level rise vulnerability assessments and 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 consideration of environmental impacts and extensive monitoring

# GREAT LAKES

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ILLINOIS

INDIANA

MICHIGAN

MINNESOTA

OHIO

PENNSYLVANIA

WISCONSIN

# ILLINOIS

GREAT LAKES



While the city of Chicago has taken major strides in planning for climate change, the rest of Illinois has lagged behind. The state does not have a climate change adaptation plan or strategy for responding to lake level changes and increased erosion. Illinois was also the last state to join the Coastal

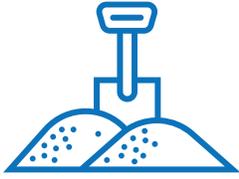
Zone Management Program. With much of its coastline hardened, the state would benefit from making all-around improvements in the management and protection of its shoreline and beaches.



**BEACH GRADE**

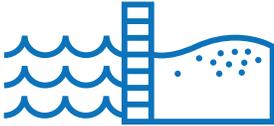
# D

Mostly poor, lacking.



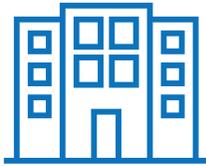
### **Sediment Management: OK**

Illinois promotes strong collaboration on sediment management and resource protection issues. The state has developed the North Shore Sand Management Strategy Project and the North Shore Regional Sand Management Working Group. The state also requires significant permitting and a 28-day public notice for replenishment projects. However, beach replenishment is frequently used and encouraged without clear monitoring requirements to track impacts.



### **Coastal Armoring: Bad**

While Illinois policy implies that projects that disrupt sand transport along beaches and nearshore areas are not approved, much of the coastline is armored. Seawalls, groins, and breakwaters are permitted with the provision of a 28-day public notice. There is no indication of conditions that set time limits, monitoring, removal of derelict armoring, or permitting for repairs. Non-structural shoreline stabilization techniques and living shorelines are also not adequately encouraged.



### **Development: Bad**

There are no statewide mandated setbacks, construction restrictions, general policies or rules governing construction on the shoreline. Much of the natural coastline has already been developed. While the Coastal Management Program indicates a priority to protect the few undeveloped areas, there are minimal policies in place to protect coastal resources.



### **Sea Level Rise: OK**

Illinois has been relatively slow to address climate change mitigation. The state has some climate change adaptation and coastal management tools, including shoreline surveys, sand distribution mapping, erosion rate measurements, and the use of LiDAR and electromagnetic mapping. However, there are no statewide vulnerability assessments or adaptation plans.

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## **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 setbacks
- Require the monitoring of ecological impacts and efficacy of replenishment projects
- Generate construction restrictions in erosion or flood-prone areas, in addition to the completion of a coastal climate change vulnerability assessment and adaptation plan
- 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, or permitting for repairs

# INDIANA

GREAT LAKES



Indiana's 40-mile shoreline along Lake Michigan contains some of the nation's most impressive coastal sand dunes, including the 140 foot tall Mount Baldy. Indiana has taken great care to protect these remarkable glacial remnants by establishing the Indiana Dunes National Lakeshore, which

covers roughly half of the entire coastline. However, while that half of the coastline is protected, the state fails to provide foundational coastal policies to protect against erosion and climate change, and coastal management does not appear to be a high priority.

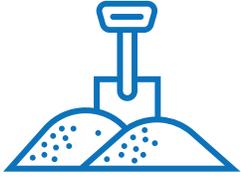


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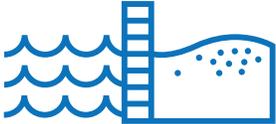
Inadequate protection of coastal communities and resources.

## Sediment Management: Bad



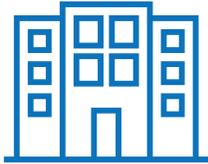
Sediment replenishment projects are encouraged and funded by local governments. Even dredging of the lake bed is encouraged by agencies that waive the dredging “royalty fee” if suitable dredge material is placed on shorelines. Permitting is extremely lenient, and the Department of Natural Resources only responds to those projects that are not approved or those that require more information; all other applicants are to essentially assume approval if there is no response. There are no clear sediment management plans or sediment monitoring protocols for the state.

## Coastal Armoring: Bad



Seawalls are permitted but must be constructed, repaired, or maintained with bioengineered materials or glacial stone. Previously constructed armoring can also be repaired if applicants use the original materials. There are no clear prohibitions on hard armoring, even in wetlands and sensitive habitat areas. While living shorelines are the state’s preferred alternative, it is up to local governments to discourage the use of hard armoring.

## Development: Bad



On the positive side, Indiana has a robust geodatabase of the Lake Michigan shoreline. While the database is intended to identify and direct future development away from hazardous areas, the state only recommends that developers avoid lakefront construction. In addition, there currently are no statewide mandated setbacks away from the lake shoreline. While it is impressive that almost half of the Indiana lakeshore is protected by the Indiana Dunes National Lakeshore, the fact is that basic development policies outside of this protected area are lacking.

## Sea Level Rise: Bad



Indiana lacks policies that address climate change, with no climate change adaptation plan or state website dedicated to climate change. Efforts to address coastal issues tend to be short-term and reactionary rather than planned for the long-term. The state should consider climate change vulnerabilities in coastal management efforts and establish clear climate change adaptation plans.

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## Recommendations:

- Strengthen permitting and authorization requirements for sand replenishment projects, including 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, implement time restrictions on approved stabilization structures
- Require that living shorelines and soft stabilization methods are considered prior to coastal armoring
- Establish statewide mandated development setbacks 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
- Increase involvement in regional climate change agreements
- Develop a coastal adaptation plan

# MICHIGAN

GREAT LAKES



Michigan is home to the nation’s longest freshwater shoreline, as it is surrounded by several Great Lakes, including Lake Michigan, Lake Huron, and Lake Erie. Although there are some strong regulations and policies protecting the coast through development setback policies, there is plenty of room for

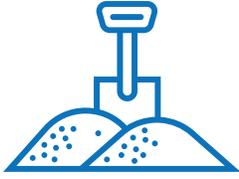
Michigan to improve. Key areas include the need to strengthen policies that will prohibit shoreline armoring, provide more adequate sediment management, limit repairs of existing development in hazard areas, and conduct comprehensive adaptation planning for climate change.



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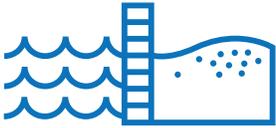
**D**

Mostly poor, lacking.



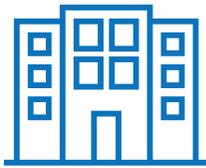
### **Sediment Management: Bad**

There are no regional sediment management plans or policies that regulate private sand replenishment activities landside of the water line. Even though Michigan provides strong protection of sand dunes with the Sand Dunes Protection and Management Program, the state can improve by establishing a sand replenishment policy that requires a thorough analysis of potential impacts, and by encouraging coastal regions to develop regional sediment management plans.



### **Coastal Armoring: Bad**

The Michigan Department of Environmental Quality accurately recognizes that hard shoreline structures exacerbate erosion and reduce water quality. As such, the state encourages the use of natural shoreline stabilization treatments instead of shoreline hardening. There is a clear and comprehensive natural shorelines guide that shares information to lakefront property owners. However, seawalls are still permitted without clear conditions of monitoring or removal.



### **Development: OK**

Michigan has robust setback regulations based on the rate of erosion and type of structure. Setbacks include an additional 15-foot buffer to account for potential severe short-term erosion caused by storm events. However, there are no clear regulations on repairing or reconstructing existing coastal development or infrastructure, which may lead to unnecessary damage or loss of properties in coastal hazard areas.



### **Sea Level Rise: OK**

The state's *Climate Change Adaptation Plan for Coastal and Inland Wetlands* report addresses potential impacts that climate change will have on wetlands and the Great Lakes. The report also shows how resources can be used to mitigate climate change impacts. However, the state has not developed or implemented the recommended actions identified in the report. There is also a climate change vulnerability assessment of the state's fish and wildlife, yet there is no thorough vulnerability assessment conducted for infrastructure.

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## **Recommendations:**

- 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
- Conduct an infrastructure vulnerability assessment
- Implement recommended actions and suggestions described in the 2012 Adaptation Plan

# MINNESOTA

GREAT LAKES



Minnesota’s significant coastline along Lake Superior, dubbed the “North Shore,” is beloved by locals and tourists for its beautiful lakefront scenery and outdoor recreation. Recognizing the coast’s value, the state has developed a comprehensive management plan to protect and enhance the

coastline. Minnesota stands out from the other Great Lakes states by identifying climate change as a major issue and being proactive to address it. However, Minnesota does not regulate shoreline structures very well, perhaps due to the fact that coastal erosion is not yet a major issue for the state.

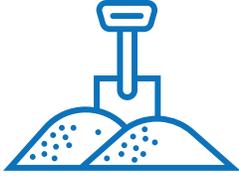


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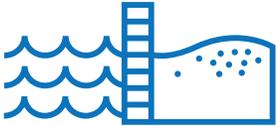
Mediocre.

### **Sediment Management: Bad**



Minnesota tries to limit shoreline alterations and acknowledges potential ecological impacts from beach replenishment as larger-scale projects require permits and an erosion and sediment control plan. However, the state allows small-scale beach replenishment projects to occur without a permit. The state can improve by developing concrete sand replenishment policies that address the long-term effectiveness and impacts of beach replenishment projects. The state can also require permitting to ensure that even small replenishment projects do not cause negative impacts to sensitive habitats.

### **Coastal Armoring: Bad**



Minnesota has been lenient with shoreline stabilization structures. Although a permit is required for constructing most structures, there are no specific restrictions for coastal armoring. In addition, there are no enforceable policies that require the consideration of non-structural alternatives. The state can improve by establishing restrictions on the construction and the repair of hard shoreline protection structures, and by encouraging the use of non-structural alternatives like living shorelines and restoration.

### **Development: Good**



There are substantial statewide setback standards for coastal development, with minimum development setbacks ranging from 50 to 200 feet from the shoreline. The North Shore Management Plan has even more stringent standards in erosion hazard areas based on erosion rates. However, as the last study occurred in 1989, the information is due for an update. Statewide, coastal developments and sewage systems are required to be built three feet above the highest water elevation and there are limits on the impervious surface cover.

### **Sea Level Rise: Good**



An abundance of resources are available on the Department of Natural Resources' Climate Change web portal, providing the public and government staff with information on adapting to climate change. The Interagency Climate Adaptation Team regularly updates a climate adaptation report, describing climate change impacts on the state, outlining what the state agencies have been doing, and providing recommendations for future action. Minnesota has also completed a Climate Change Vulnerability Assessment.

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## **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 mitigate negative impacts to sensitive habitats
- Establish restrictions on the construction and repair of hard shoreline protection structures
- Encourage the use of non-structural alternatives like living shorelines and restoration

# OHIO

GREAT LAKES



Ohio's Lake Erie shoreline is varied and includes popular beaches, amusement parks, and historic lighthouses, in addition to areas of extensive industrial development, severe pollution, and frequent harmful algal blooms. These significant coastal issues demonstrate that the state

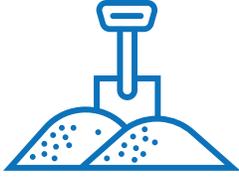
needs to do more to properly manage and protect its 300+ mile stretch of shoreline. The protection of important coastal landforms that provide hazard mitigation benefits is lacking, as are plans for climate change adaptation, lake level change, and sediment management.



**BEACH GRADE**

# D

Mostly poor, lacking.



### **Sediment Management: Bad**

Ohio is developing an Erosion Management Plan with chapters devoted to various ‘reaches’ and regions to provide location-specific guidance. As of now, sand replenishment with dredged material is strongly encouraged and will likely increase with the passing of Senate Bill 1, which prohibits the dumping of dredged material into open waters. Ohio must find another use for its estimated 1.5 million tons of dredged material annually. Unfortunately, beach replenishment projects only require permitting if placed waterside of the natural shoreline and there is no indication of monitoring requirements.

### **Coastal Armoring: OK**



While alternative methods of coastal adaptation are promoted and extensive permitting for armoring projects are required, the state could do more to prevent new developments from needing armoring. As an enforceable policy of the Coastal Management Program, strategic retreat from the shore is encouraged to preserve coastal ecosystems. However, shoreline armoring is not prohibited, even for new developments in established coastal erosion hazard areas. For permitting, armoring applications must be submitted by a registered professional engineer and reviewed by multiple agencies, which frequently includes a site visit.

### **Development: Bad**



Although permits are required to build, erect, and redevelop permanent structures in identified coastal erosion areas, the state does not have a standard minimum shoreline setback policy for development. There is some effort to protect coastal ecosystems, including a National Estuarine Research Reserve and designations of wild, scenic, and recreational river areas. Unfortunately, these protections are relatively weak as private developments are not restricted, even in designated natural areas.



### **Sea Level Rise: Bad**

The state has no policies for addressing climate change, no vulnerability assessments, no adaptation plans, and no outreach to local jurisdictions and communities on methods to prepare for impacts of climate change. As a result, Ohio is significantly lacking in terms of coastal climate change planning.

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## **Recommendations:**

- Establish minimum setbacks on coastal developments
- Develop an adaptation plan
- Prohibit new developments from installing hard structural erosion control measures, such as seawalls, in established coastal erosion hazard areas
- Ensure sand management plan includes policies on beach replenishment projects, such as monitoring, requires permitting for waterside and landside placement, and confirmation that no other soft alternatives can be effective
- Conduct a climate change vulnerability assessment

# PENNSYLVANIA

GREAT LAKES



Pennsylvania has the lush Delaware Estuary coastline on one side, and the busy shipping ports and industrial developments of the Lake Erie coastline on the other. With many competing uses, Pennsylvania has fairly robust regulations on coastal zoning and development, and has made significant efforts to

understand climate change impacts on the state. However, in terms of protecting coastal environments and preventing erosion, the state has no restrictions on coastal armoring, its repair, or replacement beyond normal water obstruction permitting processes.

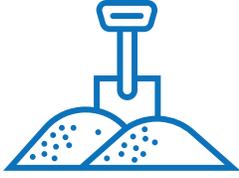


**BEACH GRADE**

# C

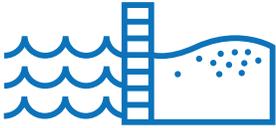
Mediocre.

### **Sediment Management: OK**



Beach replenishment and sand pumping are discouraged for erosion stabilization as they are recognized as costly and environmentally harmful. Appropriate dredged materials from stream mouths are still required for beach replenishment, and it is unclear if ecological monitoring is required to occur after replenishment projects. More beneficial non-structural methods are also encouraged and implemented, including restoration and living shorelines. There are some regional sediment plans, including the Delaware Estuary Regional Sediment Management Plan.

### **Coastal Armoring: Bad**



The state does not have any restrictions on the construction, repair, or replacement of hard shoreline devices. There is no indication that seawalls and other hard structures require monitoring, time limits, or removal after a certain time period or once they are no longer useful. While Pennsylvania does promote non-structural stabilization methods, without codified requirements to use soft methods such as living shorelines, it is less likely for property owners to do so.

### **Development: OK**



Pennsylvania has a minimum development setback requirement through the Bluff Recession and Setback Act. Setback rates are based on the average rate of bluff recession and type of structure, but cannot be less than 25 feet. Unfortunately, municipalities can modify minimum setback requirements if they are able to prove low erosion risk. On a positive note, repair resulting in a substantial improvement to structures in areas with a bluff recession hazard is prohibited.

### **Sea Level Rise: Good**



Pennsylvania has taken proactive efforts to address climate change impacts. The state established a Climate Change Act in 2008, and developed multiple reports to address potential impacts and provide practical recommendations for adapting to climate change. The state should still conduct a lake level change vulnerability assessment and adaptation plan for the Pennsylvania portion of the Delaware Bay.

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## **Recommendations:**

- Develop more explicit policies to protect coastal and environmentally sensitive habitat areas
- Improve sand replenishment management through thorough analysis of environmental impacts and effectiveness, and develop regional sediment and inlet management plans
- Develop policies and regulations on hard shoreline protection structures and corresponding 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
- Conduct vulnerability assessment and develop adaptation plans for sea level rise and lake level change

# WISCONSIN

GREAT LAKES



Wisconsin is bordered by both Lake Michigan and Lake Superior, resulting in an extensive freshwater coastline more than 800 miles long with several important wetland ecosystems. Although the state has policies on coastal development, shoreline construction, and natural resource

conservation, many of the regulations are not stringent. While the fundamental vision for coastal management is there, regulations will need to be strengthened for management strategies to be effective.



**BEACH GRADE**

# C

Mediocre.



### **Sediment Management: Bad**

Wisconsin is lacking in beach and sediment management. There is no available inventory of replenishment projects and there are no regional sediment management plans for Wisconsin portions of the Great Lakes. There are few instances when dredging and replenishment are prohibited and replenishment projects can proceed without a permit if above the high water mark.



### **Coastal Armoring: OK**

The use of hard armoring and seawalls require a coastal permit, and are only granted in “high energy sites” of marinas, navigational channels, and where slopes are steep in a “medium energy site.” Some river basins are not required to meet permit requirements, while other areas, like the Lower St. Croix National Scenic Riverway, have much stricter requirements, including the development of an erosion control plan and a vegetation management plan. The state also promotes soft structures such as brush layering and biodegradable breakwaters.



### **Development: Bad**

Although the state has a minimum setback requirement of 75 feet, if an area is already developed, the development setback is the average setback of the adjacent structures, with a minimum of 35 feet. A recent provision prevents counties from having more stringent shoreland zoning ordinances. This prevents counties from developing regulations that are most suitable to the unique coastal hazards of their regions. Additionally, existing coastal developments that do not conform to standards are allowed unlimited maintenance and repair after a natural disaster. Homes and structures can be rebuilt to the same size, while wet boathouses are able to be repaired in a way that extends lifespan and increases value.



### **Sea Level Rise: Good**

The Wisconsin Initiative on Climate Change Impacts (WICCI) aims to develop a scientific understanding of climate change and identify vulnerabilities. WICCI reports include climate change vulnerability assessments on shorelines and wetlands, climate change impacts on important state resources, and recommended adaptation measures, including an interactive web tool.

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## **Recommendations:**

- Create an inventory of replenishment 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 destroyed or damaged in natural disasters; and make 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

# GULF STATES

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ALABAMA

LOUISIANA

MISSISSIPPI

TEXAS

# ALABAMA

GULF STATES



Alabama's calm beaches along the Gulf of Mexico attract thousands of visitors annually and are the main source of employment for the state's coastal economy. The state also has 600 miles of lush bayou and river shorelines. To prevent against continued erosion and loss of these shorelines, Alabama has made great strides to promote non-structural shoreline stabilization methods and to protect wetlands.

Unfortunately, out-of-date policies have weakened the government's ability to enforce and implement shoreline development and stabilization standards. Additionally, the state does not acknowledge climate change, or address associated hazards, such as sea level rise and increased storm intensity, in coastal policies.

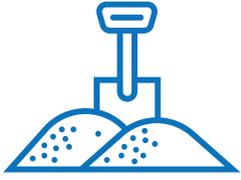


**BEACH GRADE**

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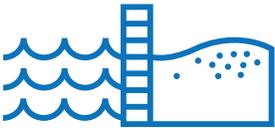
Inadequate protection of coastal communities and resources.

## Sediment Management: **Bad**



A 2015 *Regional Sediment Management Strategy for Mobile Bay* attempts to coordinate dredging projects, promote beneficial use of material, and alleviate wetland recession. For decades, roughly four million cubic yards of sediment were dredged and removed from the Mobile Bay Channel annually, exacerbating wetland loss. A permit is required for sand replenishment projects and must be consistent with Alabama Coastal Area Management Plan. However, the Coastal Area Management Plan does not provide clear guidelines on replenishment practices or ecological monitoring and review. This is concerning as sand replenishment is frequently relied upon.

## Coastal Armoring: **Bad**



Feasible non-structural shoreline stabilization alternatives must be utilized before hard stabilization methods. A Living Shorelines Guidance Document for Homeowners is in development to encourage more use of soft stabilization methods. Although shoreline stabilization policies promote the use of soft and living structures, hard stabilization techniques are still the most prevalent mechanisms. At times, the state department has lost jurisdiction in regulating stabilization structures due to out-of-date policies.

## Development: **Bad**



While the state's Coastal Construction Line (CCL) creates setback policies and gives the environmental department jurisdiction over controlling structures seaward of the CCL, the line hasn't been updated since its establishment in 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. Alabama has also identified a goal to eliminate development in high hazard areas, yet progress or implementation of this goal is not evident.

## Sea Level Rise: **Bad**



Each coastal Alabama county has a hazard mitigation plan. However, climate change and sea level rise are not required to be addressed in coastal policies and there is no statewide adaptation plan or vulnerability assessment. With rapidly diminishing wetlands and coastlines, the state needs to address sea level rise and climate change in coastal hazard mitigation plans.

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## Recommendations:

- Provide clear policies on replenishment practices and ecological monitoring and review in the Coastal Area Management Plan
- Revive the natural flow of sediment sources where possible
- 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
- Put pressure on the Alabama state government to track and ensure the goal to eliminate development in progress in high hazard areas
- Address sea level rise and climate change in coastal policies and hazard mitigation plans
- Conduct thorough sea level rise vulnerability assessments
- Develop adaptation plans

# LOUISIANA

GULF STATES



With a heritage and culture deeply rooted on the coast and bayou, Louisiana has a lot to do to protect coastal communities and their way of life from erosion and coastal hazards. The state's coastlines are threatened by flooding, aging infrastructure, wetland loss, and exposure to tropical storms and hurricanes. On a positive note, Louisiana has made an impressive effort to increase coastal resiliency and

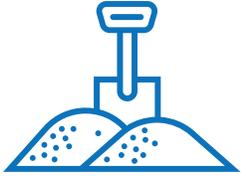
strengthen natural buffers by allocating billions of dollars to restore and protect coastal ecosystems, developing hazard mitigation plans, and strengthening construction codes to increase hazard resistance. Some good coastal zone management foundations have been developed, but many significant gaps still need to be filled in.



**BEACH GRADE**

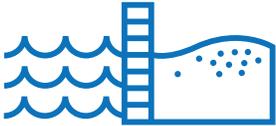
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Inadequate protection of coastal communities and resources.



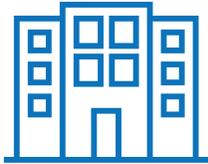
### **Sediment Management: Bad**

The state claims to encourage regional sediment management plans, but no comprehensive plans have been identified. Sediment replenishment is encouraged by the state and all dredging projects over 25,000 cubic yards are required to do “beneficial reuse,” either for beach replenishment, wetland restoration, or channel bank reinforcement. Regulations on replenishment projects are relaxed, with permits required but with minimal review of ecological impacts or requirements to conduct long-term monitoring.



### **Coastal Armoring: Bad**

There are no statewide policies on stabilization structures, their repair, replacement or removal. There are also no enforceable policies that require non-structural shoreline stabilization alternatives over armoring. The state agencies only mention that non-structural shoreline stabilization methods should be used “whenever possible.”



### **Development: Bad**

There are no statewide minimum setback requirements for coastal development and permits are not required for repair or maintenance of existing structures in hazard areas. A 2007 statewide building code was designed to make new structures more hazard-resistant, but codes need to be effectively enforced. While the Louisiana Protection and Restoration Final Technical Report Hazard Mitigation Planning Appendix has great recommendations to increase the resiliency of the coastline, many of the recommendations are not yet implemented.



### **Sea Level Rise: Bad**

Some individual communities have taken voluntary efforts to retrofit infrastructure to account for future sea level rise, such as the St Tammany Parish Coastal Zone Management Ordinance, which requires all new roads in the coastal zone to be built at least six feet above sea level. However, there are no statewide requirements to account for sea level rise in local Hazard Mitigation Plans. A thorough sea level rise vulnerability assessment has not yet occurred, and there is no explicit adaptation plan. Fortunately, the 2017 update to *Louisiana's Comprehensive Master Plan for a Sustainable Coast* allocates billions of dollars to increase the state's resilience to coastal hazards including sea level rise, with a large focus on protecting and restoring wetlands.

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## **Recommendations:**

- 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 like 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 resiliency standards
- Prioritize retrofitting and protecting critical city infrastructure
- Conduct a thorough sea level rise vulnerability assessment and develop an adaptation plan

# MISSISSIPPI

GULF STATES



The low-lying Mississippi coastline is still suffering from the failures of offshore oil drilling operations, especially the catastrophic 2010 BP Deepwater Horizon oil spill disaster. Tourism and fishing-based communities are just now starting to rebound, nearly seven years after the spill. Coastal zone management efforts aren't helping significantly either. The state provides minimal protection of natural resources that provide coastal hazard mitigation benefits. Mississippi

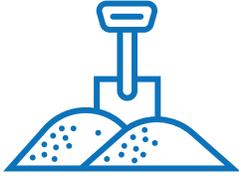
also has no statewide minimum setback standards for development and is heavily reliant on sand replenishment. While a 2011 assessment of Mississippi's sea level rise vulnerability and options for adaptation was a solid step in the right direction, the state has failed to actually develop plans or accomplish much of the assessment's recommended next steps.



**BEACH GRADE**

# D

Mostly poor, lacking.



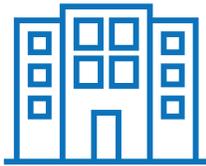
### **Sediment Management: Bad**

Mississippi is part of the Gulf of Mexico’s Regional Sediment Master Plan and Gulf Coast Ecosystem Restoration Task Force, which have outlined some excellent recommended actions to protect coastal resources. However, the task force relies heavily on beach replenishment. While Mississippi state agencies also promote replenishment and only allowing sand mining near-shore for that purpose, there are no clear requirements to assess ecological impacts or conduct post-project monitoring.



### **Coastal Armoring: Bad**

The state seems to promote all erosion stabilization methods. Mississippi’s gasoline tax funds the maintenance of seawalls and other shoreline armoring along public highways. Unsurprisingly, much of the sand waterside of seawalls has eroded. The state claims that there are restrictions on construction and repair of private seawalls, but specific policies were not identified. Non-structural stabilization methods are promoted through a technical guide for contractors. Additionally, the Deepwater Horizon Restoration Project is restoring and constructing living shorelines and reefs in Mississippi Estuaries as remediation for the spill.



### **Development: Bad**

Coastal development policies are extremely relaxed in Mississippi. There are no statewide minimum development setback requirements, and construction of a building, fishing camp, or “similar structure” is allowed in coastal wetlands on private property, even without a permit. There are no plans for managed retreat, relocation, buyouts, or retrofitting.



### **Sea Level Rise: OK**

While not a requirement, three coastal communities do consider sea level rise in their Hazard Mitigation Plans. Mississippi completed a sea level rise vulnerability assessment by piecing together eleven different reports and research papers on sea level rise projections for the area. Though 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, and stronger attempts to disseminate information to local communities and jurisdictions.

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## **Recommendations:**

- Establish a statewide development setback minimum
- 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 or 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

# TEXAS

GULF STATES



Deep in the heart of Texas, beachgoers can enjoy beautiful, white sandy beaches and rolling dunes. This Gulf state has some of the best coastal policies in the region. The state delegates coastal management to local governments, and while this can be positive, the delegated authority has resulted

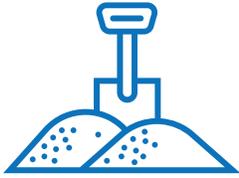
in a wide range of inefficiencies dealing with coastal erosion. In addition to fixing the patchwork of regulations in place, the state would benefit from codifying a sea level rise policy, especially considering the fact that nearly 67% of the Texas coastline is already eroding.



**BEACH GRADE**

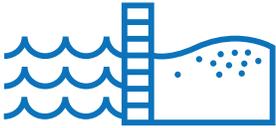
# C

Mediocre.



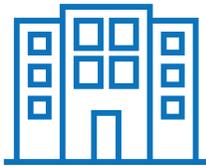
### **Sediment Management: OK**

Texas has a statewide sediment management plan and does a good job of collecting beach erosion data to help inform beach replenishment programs. Texas must carefully plan beach replenishment projects as offshore sand sources are sometimes contaminated from years of oil and gas extraction. Removing sand offshore can also cause the land to sink, a process known as subsidence. Although Texas relies heavily on replenishment, it has mechanisms in place to assess and monitor impacts.



### **Coastal Armoring: OK**

The state prioritizes soft approaches to manage erosion problems, including shoreline vegetation, beach replenishment, and dune reconstruction. However, hard structures are allowed on the bayside and geo-textile tubes are allowed on public lands. While the state has recently focused on supporting and funding living shorelines, large breakwater projects are also being considered.



### **Development: Bad**

Texas delegates development and erosion responsibilities to local municipalities. Although there is a statewide minimum development setback requirement, it is implemented in a piecemeal fashion, resulting in a wide range of setbacks. A recent legal ruling also allows abandoned homes to remain on public beaches.



### **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 Texas Coastal Resiliency Plan is in development, which contains positive climate change adaptation measures. Unfortunately, the plan is using conservative sea level rise projections and includes hard structures such as breakwaters. If the sea level rise projections are too low, the adaptation plan could prove ineffective at preparing and protecting the coastline.

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## **Recommendations:**

- Use stronger sea level rise projects in the adaptation plan
- Conduct a thorough sea level rise vulnerability assessment
- Require that abandoned homes on the coastline must be removed
- Establish a more consistent implementation of minimum development setback policies
- Continue to support and invest in living shorelines and other soft structures over expensive and short-term sand replenishment
- Require zoning that prohibits new development in high hazard areas and limits repair and maintenance of existing infrastructure in those areas

# NORTHEAST

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CONNECTICUT

MAINE

MASSACHUSETTS

NEW HAMPSHIRE

RHODE ISLAND

# CONNECTICUT

NORTHEAST



Over 70% of Connecticut’s peaceful and serene shoreline is privately owned, meaning the majority is unprotected from development. Connecticut is involved in some collaborative efforts, including the Long Island Sound Study and the recently released Northeast Regional Ocean Plan, which will

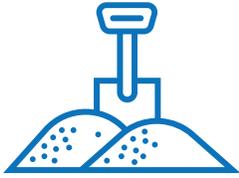
better identify and protect coastal resources. Even though the state has solid foundations for strong coastal protection, Connecticut fails to provide statewide minimum development setbacks and sea level rise policies that identify and address coastal vulnerabilities.



**BEACH GRADE**

# C

Mediocre.



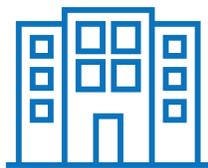
### **Sediment Management: OK**

There is no sediment management plan. In addition, the state does not encourage coastal municipalities to develop their own plans for beaches and associated inlets. Nourishment is encouraged by the state with no monitoring requirements to track ecological impacts. Fortunately, beach replenishment projects do not fall under a general permit, so detailed permit reviews are required for each project. Connecticut has also developed the Blue Plan to inventory natural resources, such as sediment.



### **Coastal Armoring: OK**

The state's Coastal Management Act has a positive policy that restricts the use of hard stabilization methods, such as seawalls. Armoring may only be permitted if there are no possible alternatives with less environmental impacts, and all reasonable mitigation measures have been attempted. There is clear language that homeowners are not entitled to build protective structures to expand or preserve property boundaries. The state would benefit from time limits on permitted armoring, in addition to requirements to remove structures if damaged or no longer effective.



### **Development: OK**

Developers are encouraged to build a significant distance from the coast. Although statewide setback minimums are not established, new developments will not be permitted to use a seawall or other hard protective device. In addition, local jurisdictions can set their own development setback standards through zoning regulations. Restrictions on repair and rebuilding of structures in hazard areas are also up to local jurisdictions. The state would benefit from more consistent minimum protections of coastal resources from development.



### **Sea Level Rise: OK**

Connecticut has been proactive in collecting information on the coastal impacts of climate change, but has not been highly active in terms of implementation. The state has established a Shoreline Preservation Task Force, prepared multiple reports and has also provided resources for local governments to plan for and adapt to climate change and accompanying coastal hazards. Many of the reports contain recommendations for improvements and next steps for addressing climate change impacts at both the state and local levels. However, an in-depth sea level rise vulnerability assessment has not yet been completed.

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## **Recommendations:**

- Establish time limits on permitted armoring, after which protective structures would need to be removed at the owner's expense
- Require the removal of structures if damaged or no longer effective
- Encourage regional sediment management plans for beaches and associated inlets
- Require extensive monitoring of ecological impacts from replenishment projects
- Provide more consistent minimum protections of coastal resources from development including setbacks
- Conduct a thorough sea level rise vulnerability assessment, and draft and codify a specific adaptation plan

# MAINE

NORTHEAST



In general, Maine has good coastal management practices to protect its lush forested coastlines and quaint fishing towns. However, the scope of state authority is limited by a historical ordinance that allows private ownership of coastal land all the way to the mean low tide line. Recent court cases

further establish the private ownership of tidelands, not only limiting the state’s jurisdiction over the coastline but also severely restricting public access and recreational use of Maine’s beaches.



**BEACH GRADE**

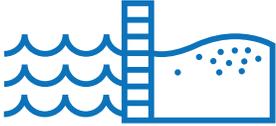
# B

Good, but can be improved.



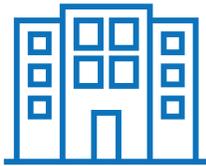
### **Sediment Management: OK**

There is currently no beach replenishment policy for Maine. In 2006, a Beach Stakeholder's Group completed a report that proposed creating an integrated beach management program, which urged for increased use of beach replenishment. The 2017 update to the report continues to push for a coordinated and funded beach replenishment program. New recommendations include a monitoring component to check efficacy but not to assess ecological impacts.



### **Coastal Armoring: Good**

Construction of new seawalls and extension of existing seawalls is prohibited, and groins are illegal. There are strict conditions where seawalls can be repaired and any structure that is waterside of the mean high tide line for six months straight has to be removed. Stringent measures on shoreline armoring are effective in preventing the acceleration of erosion and also encourage more non-structural shoreline stabilization alternatives.



### **Development: OK**

Generally, there are strong development standards to protect against degradation of coastal resources and erosion, including standardized statewide minimum setback regulations and a comprehensive shoreland zoning guide to inform shoreland property owners of regulations. There are even limits on rebuilding damaged structures in coastal dunes. Structures in a coastal dune cannot be rebuilt if over half of the structure is damaged during a storm. Unfortunately, an Act regarding Reconstruction of Residential Structures on Sand Dunes was enacted in 2013, which makes it possible for residential buildings in coastal sand dune systems to be moved forward into the frontal dune, which is detrimental to dune ecosystems and makes the buildings more vulnerable to coastal erosion and sea level rise.



### **Sea Level Rise: OK**

Maine has conducted statewide sea level rise mapping and high-level vulnerability assessments and has identified communities most likely to experience the impacts of sea level rise. The state has not completed a thorough statewide sea level rise vulnerability assessment or adaptation plan, but is planning to have regions develop their own plans. In the meantime, Maine provides a Climate Change Adaptation Toolkit and reports including *People and Nature: Adapting to a Changing Climate*. As of now, Maine does not have any plans for managed retreat, nor does it have any repetitive flood loss policies or programs.

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## **Recommendations:**

- Complete the regional sediment management plan and require monitoring for ecological impacts of replenishment projects
- Increase coordination between regional SLR efforts and state efforts and regulations
- Revoke the 2013 Act that allows coastal developments to occur in dune ecosystems
- Ensure that the entire coastline has been assessed for sea level rise vulnerability
- Develop a repetitive flood loss policy
- Ensure that regions develop thorough adaptation plans that promote managed retreat and soft stabilization methods that increase coastal resiliency

# MASSACHUSETTS

NORTHEAST



For a smaller New England state, Massachusetts has an impressive amount of coastline that stretches across about 1,500 miles. Its rugged coves, sandy beaches, offshore islands, and wealth of coastal recreation opportunities have attracted visitors for centuries. It seems that the state realizes

the importance of the coastline to its economy, residents, and visitors, as there are some strong coastal management policies. The forward-looking resources on climate change and erosion are also laying the groundwork to make the state well-prepared to face current and future coastal hazards.



**BEACH GRADE**

# B

Good, but can be improved.



### **Sediment Management: Good**

While there is no regional sand management plan, Massachusetts has developed a best management practices guide for replenishment projects, which outlines some of the best sand replenishment policies in the nation. Projects must assess proximity to endangered species habitat, sand profiles, include a thorough monitoring and maintenance plan that identifies affected wildlife, and report annually or biannually. The state's Department of Environmental Protection clearly explains permitting requirements and provides links to applications online.



### **Coastal Armoring: OK**

Policies strongly favor non-structural stabilization methods. Structural approaches, such as seawalls, are only allowed if a non-structural alternative isn't feasible. There is also a positive proposal to prohibit future coastal armoring. The state keeps an impressive inventory of nearly all shoreline stabilization structures in the state, with analysis of vulnerability and a 20-year maintenance and repair program for each. The state has allocated funds for a program to demolish derelict structures. However, seawall reconstruction is still occurring since existing developments and residences are dependent upon them.



### **Development: OK**

While there is no statewide minimum development setback policy, the state uses the Wetland Protection Act to prevent developments that directly have adverse impacts to primary dunes, coastal beaches, and salt marshes. Massachusetts has taken a strong stance on avoiding the permitting of construction in high hazard areas like floodplains. The state has good plans to implement adaptation tiers, including one where coastal buildings must be removed if substantially damaged or threatened.



### **Sea Level Rise: Good**

Massachusetts has robust climate change and sea level rise planning, and has produced a series of important documents including a climate change adaptation report, coastal infrastructure inventory, and sea level rise and flooding maps. Several programs provide a wealth of information to help local communities implement adaptation plans. Launched in 2008, the StormSmart Coasts program was designed to support local efforts to protect people and property in coastal floodplains from erosion and storm damage. It provides regulatory tools, case studies, planning strategies and other technical assistance.

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## **Recommendations:**

- Establish policies for managed retreat, relocation, buyouts and retrofitting
- Establish statewide minimum setback standard to provide a safe buffer between coastal hazard areas and coastal developments
- Codify relocation and managed retreat as enforceable policies
- Prohibit coastal armoring or limit by including conditions such as sunset clauses

# NEW HAMPSHIRE

NORTHEAST



New Hampshire has good policies to protect the natural rugged coastline and impressive planning efforts to prepare for sea level rise and climate change impacts. The state has strong coastal management practices and would benefit

from regional sediment management plans, prohibitions on armoring, and continued involvement in the Northeast Regional Ocean Plan.

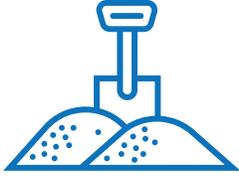


**BEACH GRADE**

# B

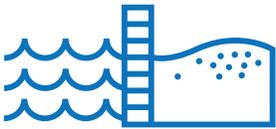
Good, but can be improved.

### **Sediment Management: OK**



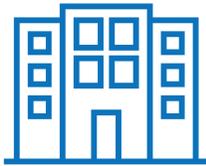
Although there is no regional sand management plan, the state does provide specific criteria for replenishment projects, including 50-foot setbacks from saltmarshes, undeveloped uplands and wetlands, identification of at-risk species, and limitation of only one replenishment project per six-year time period. New Hampshire encourages the beneficial reuse of dredged material for beach replenishment but actual beach construction is discouraged due to the negative physical, chemical, and biological impacts. In addition, there is no explicit requirement for monitoring reports on ecological impacts.

### **Coastal Armoring: OK**



The state encourages the soft stabilization methods of vegetative stabilization and water diversion. Regulations require that the method used for stabilization is the least intrusive option, with seawalls only approved if no other option is practical. Seawalls themselves are required to meet specific standards, including angular texture and weep holes for seepage of groundwater. Unfortunately, there is no reference to sunset clauses or required monitoring. For repairs of structures below the water surface line, a permit is required as this could extend the life of the structure.

### **Development: Good**



New Hampshire has a statewide standardized setback of all new primary structures in the coastal zone and near protected surface waters like lakes and streams. The use of a dynamic reference line ensures that the buffer is receptive to changing sea levels. Additionally, modification to the amount of impermeable surface on coastal property sites require permitting. The state also encourages natural woodland buffers to provide habitat and ecosystem services that catch nutrients and filter runoff water.

### **Sea Level Rise: OK**



The state has some positive policies to protect communities from coastal hazards and has also made progress in terms of addressing sea level rise issues. While all 17 coastal communities have conducted sea level rise vulnerability assessments to identify high-risk infrastructure, the region still needs to develop comprehensive adaptation plans. The New Hampshire Risk and Coastal Hazards Commission, established by bi-partisan legislation, provided policy guidance and sound recommendations for state agencies, legislature, and municipalities to manage and prepare for coastal hazards including sea level rise.

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## **Recommendations:**

- Develop a statewide climate change adaptation plan (or require each region to develop their own)
- Provide resources to local governments for the implementation of the plan
- Create policies for buyouts and relocation for development facing repetitive coastal damage
- Develop plans for managed retreat in light of sea level rise and coastal erosion

# RHODE ISLAND

NORTHEAST



Despite its small size, the aptly nicknamed Ocean State has a large number of bays and inlets, and has done an all-around good job of managing them. Highlights include the development of the Rhode Island Ocean Special Area Management Plan, promotion of Experimental Coastal Erosion

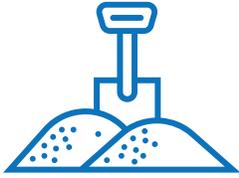
Control methods, a useful Soil Erosion and Sediment Control Handbook, and participation in the Northeast Regional Ocean Plan. The state is on its way to being prepared for coastal erosion and intensified coastal hazards but would benefit from more focused sediment management.



**BEACH GRADE**

**C**

Mediocre.



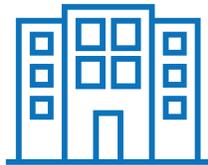
### **Sediment Management: Bad**

Beach replenishment is encouraged by the state and preferred over structural alternatives, especially during dredging operations if the sediment is clean. Nourishment is allowed near undeveloped areas, even though there is no reference to review ecological impacts. Rhode Island can improve sediment management by requiring a more thorough analysis of sand replenishment projects, provide monitoring of ecological impacts, and develop regional sediment management plans.



### **Coastal Armoring: OK**

Rhode Island has strong policies discouraging armoring and even prohibiting use near undeveloped areas. Non-structural erosion methods are required to be considered first, including relocation. All seawalls are considered permanent, and require multiple permits for construction and repair. For permitting, the applicant must ensure that it is not likely to exacerbate erosion, provide a long-term maintenance and funding program, and have the structure certified by a registered engineer. The state could benefit from placing time limits on seawalls and developing a policy to remove or require property owners to remove derelict structures.



### **Development: Good**

Coastal land in Rhode Island is well-protected with established coastal buffer zones and significant statewide mandatory setbacks. These protections reduce the hazards of coastal erosion and preserve ecological systems. All development within 200 feet of shoreline features, such as beaches, wetlands, bluffs, and rocky shores, require a permit. Repair and rebuilding of a coastal structure require a Certificate of Maintenance if minor, and a permit if more than half of the structure gets damaged.



### **Sea Level Rise: OK**

Climate change and sea level rise is embedded in the state's coastal management policies. The Climate Change Council produced vulnerability assessments of Rhode Island's transportation assets, and the state has created shoreline change maps, interactive inundation maps, and hurricane inundation maps to help property owners identify potential erosion and sea level rise risk. The Coastal Property Guide outlines risks, adaptation options, and storm preparation recommendations. Rhode Island does not yet have a cohesive statewide plan for dealing with sea level rise and other coastal impacts from climate change; however, the state is in the process of developing a similar plan in the form of the Beach Special Area Management Plan.

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## **Recommendations:**

- Require more thorough analysis of sand replenishment projects and monitor ecological impacts
- Develop regional sediment management plans
- Implement time limits on approved seawalls
- Refer to seawalls as a temporary solution while the property owner makes long-term plans for erosion preparation
- Develop a policy to remove or require property owners to remove derelict structures, and develop specific implementation plans from the climate change adaptation strategies and sea level rise vulnerability reports for each coastal region to assist municipalities in dealing with coastal hazards

# MID-ATLANTIC

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DELAWARE

MARYLAND

NEW JERSEY

NEW YORK

VIRGINIA

# DELAWARE

MID-ATLANTIC



The state's low-lying marshes, tree groves, sandy beaches, and quaint coastal towns are well-known attractions for tourists, fisherman, birders, and crabbers. As most of the state is located in the Atlantic coastal plain, good coastal management practices are important for the protection

of Delaware's communities, economy, and infrastructure. However, the state's policies could be stronger to protect and maintain important coastal resources, especially with respect to sediment management and coastal development.

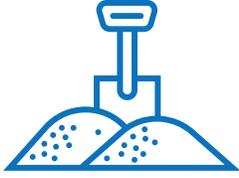


**BEACH GRADE**

# C

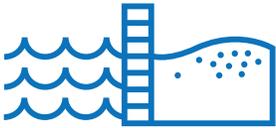
Mediocre.

## Sediment Management: OK



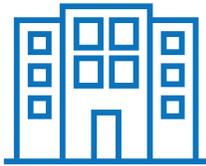
The state does not promote regional sediment management plans, but there is a Management Plan for the Delaware Bay Beaches. Beach replenishment projects are encouraged, and are the primary method of shore protection in some areas. The Division of Soil and Water Conservation assesses beach replenishment needs by monitoring beaches statewide and measuring sand loss. Beach replenishment is a short-term and temporary solution to erosion, and other more sustainable methods should be considered. Annual surveys and post-project environmental monitoring are likely, but not specifically required.

## Coastal Armoring: OK



Regulations on shoreline stabilization structures attempt to limit unnecessary hardening of the shoreline. Permits require that alternative stabilization methods, including retreat, be considered prior to the use of hard structures. Those who construct without a permit will have the structure immediately removed and fined up to \$5K. Although living shorelines are considered the best management practice, and guidance is provided for their use, there should be a more thorough enforceable policy that promotes non-structural alternatives for shoreline stabilization.

## Development: Bad



Coastal development policies have some positive qualities, such as the use of minimum development setback lines (or “building lines”) and a land acquisition program. However, authorized exemptions to the building lines weaken coastal protection. While construction seaward of the building line is supposed to be prohibited, property owners are able to get a permit if their landward property is too small for the intended structure. Delaware also allows the repair or rebuilding of seaward structures with a permit.

## Sea Level Rise: Good



Delaware has been proactive in addressing sea level rise in light of climate change, with the production of a thorough sea level rise vulnerability assessment by the Sea Level Rise Advisory Committee, and a document titled, Recommendations for Sea Level Rise in Delaware. The assessment identifies at-risk properties and recommendations provide methods for municipalities and communities to prepare for and respond to sea level rise. A complete adaptation plan would be the next step.

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## Recommendations:

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

# MARYLAND

MID-ATLANTIC



Maryland has beautiful sandy beaches, lush coastlines, offshore islands famed for wild horses, and some popular coastal cities. The coastal management program and policies are effective in overseeing the state's coastal zone, which accounts for the majority of the state's land area

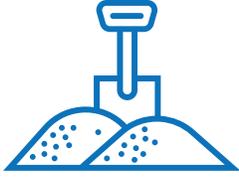
and two-thirds of the population. Beyond having adequate development setback requirements and restricting hard shoreline structures, the state has taken concrete steps in addressing the state's vulnerability to climate change and increasing its coastal resiliency.



**BEACH GRADE**

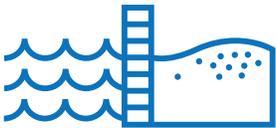
# B

Good, but can be improved.



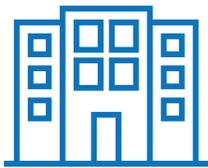
### **Sediment Management: OK**

Maryland does not promote or require regional sediment management plans, even though sand replenishment is encouraged over the use of hard stabilization measures. Fortunately, there are strict requirements to ensure that replenishment projects can only occur if there is proper sediment grain size, evidence of erosion, and at-risk species will not be adversely affected. The state can improve by requiring ecological monitoring after replenishments, developing regional sediment management plans, and considering other beach preservation options like retreat and dune restoration.



### **Coastal Armoring: OK**

Non-structural shoreline stabilization measures, including living shorelines, are a codified requirement for addressing shoreline erosion. Waivers must be obtained for an exception to this regulation. There is a strict policy that only allows armoring east of the dune line if they provide an environmental benefit. However, permits are available as the state recognizes rights of property owners to protect their land. If armoring projects are placed landward of marshes, depending on impact, they may require an approved sediment and erosion control plan. There is no indication of time limits for approved seawalls or revetments but all shoreline structures are inventoried and mapped in Shoreline Situation Reports.



### **Development: Good**

Maryland has a statewide minimum setback of 100 feet from tidal waters and wetlands, and requires local programs to develop their own shoreline buffers. There is a thorough permitting process to construct near the shore and strong policies for maintaining the natural coastal environment, including the protection of wildlife corridors and clustering of development. Undeveloped coastal areas, considered a “resource conservation area,” have even larger minimum development setbacks. Buffers themselves have strict policies to protect native vegetation, with local jurisdictions required to submit their own Buffer Management Plans.



### **Sea Level Rise: Good**

The state conducted a thorough vulnerability assessment, a *Sea Level Rise Response Strategy*, and established a Commission on Climate Change. The commission completed the *Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change*, an extensive strategy report with good policy recommendations and an adaptation and response toolbox to help state and local governments with implementation. Many of the recommendations have already been implemented by the state.

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## **Recommendations:**

- Encourage regional sediment management plans
- Require monitoring for effectiveness of and ecological impacts from sand replenishment projects
- 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

# NEW JERSEY

MID-ATLANTIC



On any given day in the summer, the Garden State’s beaches are populated with families soaking up the sun and playing in the ocean. While New Jersey beaches are extremely popular, the state needs to improve its coastal management. New Jersey’s development regulations are far too lenient,

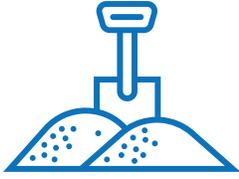
allowing buildings to be constructed or rebuilt on areas of the coast that are critically eroding and are vulnerable to sea level rise. In addition, the state needs to improve its beach replenishment practices that cost taxpayers millions of dollars annually.



**BEACH GRADE**

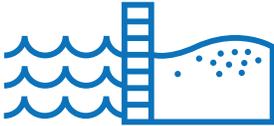
# F

Inadequate protection of coastal communities and resources.



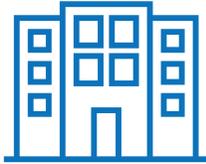
### **Sediment Management: Bad**

New Jersey has a complicated past when it comes to beach replenishment. In the last 30 years, more than a billion dollars have been spent on beach replenishment projects. In 2017, the State Legislature is considering two bills that would double the amount of taxpayer money for beach replenishment from \$25 million to \$50 million. In addition to relying too heavily on beach replenishment, projects have caused public safety concerns and impacted recreation in some areas.



### **Coastal Armoring: Bad**

43% of New Jersey's shoreline is armored. Following Superstorm Sandy in 2012, the state increased its coastal armoring and approved several massive seawall projects. In addition, coastal armoring is encouraged in some areas with little regard to negative impacts of hard structures.



### **Development: Bad**

New Jersey needs to improve its development and rebuilding policies. Property owners can rebuild to original standards after storm events, often at the expense of taxpayers, even if a home is located in a hazardous area. Following Hurricane Sandy, many redevelopment projects were hastily approved. Over the past decade, the State Department of Environmental Protection has approved a significant amount of development.



### **Sea Level Rise: Bad**

New Jersey does not have a statewide sea level rise policy. The state needs to invest sufficient time and resources into conducting an in-depth analysis of climate change impacts. The lack of strategic climate change planning is particularly problematic considering that sea levels are rising faster in New Jersey, when compared to the global average. While the state has no formal sea level rise policy, the Coastal Community Vulnerability Assessment and Vulnerability Assessment and Mapping Protocol help local communities conduct hazard and vulnerability assessments.

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## **Recommendations:**

- Reduce the reliance 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
- Reduce the rebuilding of homes in known hazard areas and require that they build to a more resilient standard
- Prohibit new developments in known hazard areas
- Prohibit the use of armoring for new or repaired buildings
- Establish minimum development setback standards
- Develop sea level rise adaptation plans
- Establish regulations on managed retreat

# NEW YORK

MID-ATLANTIC



From Coney Island to the Hamptons, New York's coastline is a mecca for beachgoers. When it comes to coastal development restrictions, shoreline structures, sediment management, and sea level rise, New York's policies have

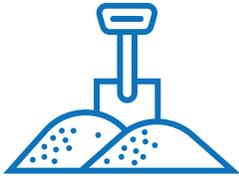
just about covered everything. Although there are areas that still can be strengthened, New York's coastal management is comprehensive across the board.



**BEACH GRADE**

# B

Good, but can be improved.



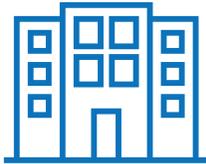
### **Sediment Management: Bad**

New York does not have a statewide sediment management plan and current sediment management narrowly focuses on dredging. While the state has a beach replenishment policy, it is not currently strong. In fact, the state relies heavily on replenishment as the go-to shoreline stabilization method, despite the practice being costly and short-term. While the state is working with the Army Corps to establish erosion management policies and plans, the process often languishes and lacks progressive planning measures.



### **Coastal Armoring: OK**

While the state has policies on limiting shoreline stabilization structures in sensitive areas, there are no policy restrictions on rebuilding coastal armoring. There are strong policies to promote soft or natural approaches to shoreline stabilization. However, after Hurricane Sandy, the state issued a General Permit for coastal armoring for Long Island and New York City. General Permits are problematic because they do not thoroughly analyze environmental impacts. Fortunately, the state has set up four commissions to analyze soft structures, living shorelines, and climate change adaptation measures.



### **Development: Good**

New York has several good policies in place to protect coastal resources from new development. For example, the state has building restrictions on new development and the repair of existing infrastructure in identified hazard areas. The state has also established setback lines to protect coastal resources. In particular, New York has updated regulations to ensure that development and redevelopment take into consideration flood hazards.



### **Sea Level Rise: Good**

After Hurricane Sandy, several commissions were created to study impacts from climate change and sea level rise. The New York State Sea Level Rise Task Force produced a substantive report that assessed the impacts of sea level rise and provided specific recommendations to curb climate change impacts. In addition, the Buyout and Acquisitions Program increases coastal resiliency by purchasing infrastructure and land to create natural coastal buffers that can better weather future storms. Finally, Governor Cuomo is a national climate change leader who has been integral in establishing the state's progressive policies.

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## **Recommendations:**

- Encourage regional sediment management plans
- Strengthen the beach replenishment policy to require a proof of need, proof that alternative methods have been implemented and were unable to help, strict monitoring requirements, and a maximum on the amount of times replenishment can occur in a certain time period
- Develop policy restrictions on rebuilding coastal armoring, and remove the General Permit for coastal armoring in Long Island and New York City
- Develop stronger funding mechanisms for 'buy out' programs

# VIRGINIA

MID-ATLANTIC



Lush vegetation, meandering rivers, vast wetlands, and sandy beaches line the Virginia coast. With over 60% of the state’s population living in the coastal zone, Virginia has managed its coastline pretty well. There are strong shoreline structures and coastal reconstruction policies, and the state’s coastal

resources are protected by solid legislation. Unfortunately, the state has not done much to plan for sea level rise and other climate change impacts, and its regulation on beach replenishment is rather relaxed.

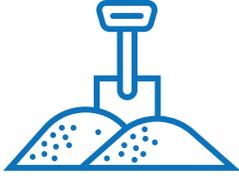


**BEACH GRADE**

# C

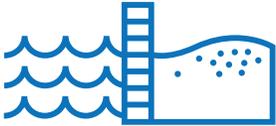
Mediocre.

## Sediment Management: **Bad**



There are no regional sediment management plans even though the state frequently conducts and promotes sand replenishment projects. Sand replenishment is even authorized by default according to the Code of Virginia, without clear restrictions or requirements to assess the effectiveness and environmental impact. Frequent sand replenishment projects can have severe impacts on coastal wildlife and nearshore ecosystems. The state would benefit from developing regional sediment management plans that thoroughly assess ecological impacts, and reviewing individual replenishment projects.

## Coastal Armoring: **Good**



The Coastal Primary Sand Dune and Beach Act affords strong protection for a large area of coastal beaches and dunes. It is also the basis for the state's strict policy against hard shoreline stabilization methods. Shoreline hardening is prohibited under all circumstances, which includes seawalls, riprap, revetments, gabion baskets, sandbags, groins, and jetties, among others. While normal maintenance of already constructed armoring is allowed, the rebuilding of damaged structures may not be authorized.

## Development: **OK**



There is no statewide minimum development setback, as these are determined on a case-by-case basis during permitting. Any development not related to vehicle access is prohibited seaward of dunes. Developers hoping to rebuild a coastal structure damaged by natural events must obtain a permit, which may not be authorized. Coastal development adjacent to dunes are limited to single-family dwellings to facilitate the ability of dunes to migrate inland. With strong foundations, Virginia can improve development regulations with a minimum setback standard, and strengthen the policy to protect riparian forested buffers.

## Sea Level Rise: **OK**



There is no statewide sea level rise vulnerability assessment or adaptation plan, but there are several assessments and plans done locally. Although the Coastal Zone Management had Climate Change Adaptation Grant Projects, the last active project was in 2014 to develop the Climate Change Adaptation Working Group. The state still needs to conduct a sea level rise vulnerability assessment and comprehensive adaptation plan.

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## Recommendations:

- Develop regional sediment management plans that thoroughly assess ecological impacts
- Review each individual replenishment project before permitting
- Establish a statewide minimum development setback standard
- Re-establish the Climate Change Commission
- Conduct a statewide sea level rise vulnerability assessment to identify management priorities
- Generate a comprehensive and specific adaptation plan with clear actionable items and policy recommendations
- Develop state-specific buyout and/or relocation program for repetitive loss due to flooding and other coastal hazards

# SOUTHEAST

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FLORIDA

GEORGIA

NORTH CAROLINA

SOUTH CAROLINA

# FLORIDA

SOUTHEAST



Florida’s coastlines are stunning and contain some of the most beautiful beaches and barrier islands in the world. Unfortunately, the state lacks sufficient coastal management policies to protect these amazing beaches from erosion and climate change. Increasingly, coastal development regulations are haphazardly implemented because decision-makers have created loopholes that negate major protective policies.

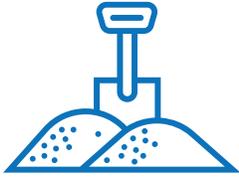
Despite South Florida experiencing increasingly regular flooding events, there are no repetitive flood loss policies, and there is no statewide sea level rise planning. Fortunately, some local governments have taken matters into their own hands and are working to build resilient communities despite the lack of state leadership.



**BEACH GRADE**

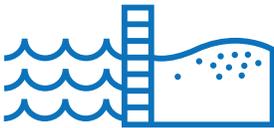
**D**

Mostly poor, lacking.



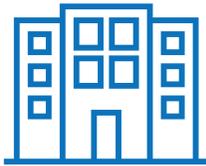
### **Sediment Management: OK**

Florida has a beach management plan that takes into account sediment budgets, inlet management and beach replenishment projects. However, the state relies heavily on sand replenishment often at the expense of more progressive alternatives to erosion response. In addition, the Beach Management Funding Assistance Program does not use sea level rise data in its project ranking process. On a positive note, the process does give additional priority to beaches with good public access.



### **Coastal Armoring: Bad**

While there is a statewide policy restricting armoring in certain areas, the Department of Environmental Protection has the discretion to allow shoreline armoring, which results in significant armoring. In addition, the Beach and Shore Preservation Act explicitly provides exemptions and does not require the property to have a habitable structure that needs to be protected. As a result of these policies, increasingly significant numbers of Florida's sandy beaches are being replaced by concrete and riprap.



### **Development: Bad**

Florida has what 'appears' to be good regulation when it comes to development. However, the state has created loopholes that allow new construction to match the existing line of construction, regardless of whether it is seaward of development setbacks. The state also allows any new single-family home to be built seaward of the Coastal Construction Control Line. In addition, the state then grants these new high-risk developments permits for seawalls to protect their "vulnerable" property.



### **Sea Level Rise: Bad**

Unfortunately, state officials do not recognize the reality of climate change, despite much of the coast being threatened by sea level rise. In fact, Florida officials have ordered state agencies to not use the words "climate change." This mentality is hindering the ability of the state to plan for climate change. However, on a positive note, in 2009 the Southeast Florida Regional Climate Change Compact was formed by local counties determined to not only acknowledge climate change, but to proactively plan to address associated threats. Despite not having support from the state government, former President Obama said this compact is "a model not just for the country, but for the world." In addition, a new law implemented in 2015 includes a mandate that coastal communities incorporate flood risk reduction principles in their comprehensive coastal management plans by 2020.

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## **Recommendations:**

- 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 development setback line
- Remove the ban on the term "climate change" in government offices, address the current climate impacts that are increasingly evident, conduct sea level rise vulnerability assessments, and develop coastal adaptation plans

# GEORGIA

SOUTHEAST



At first glance, Georgia's coastal management seems pretty good. There are statewide minimum setbacks, shoreline construction restrictions, permitting required for beach replenishment, and protection of coastal resources. However, permitting is minimal for replenishment projects, coastal

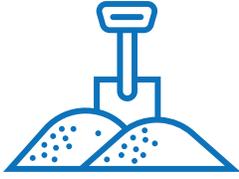
armoring is discouraged but still approved, and there are no setbacks from sandy shorelines. There are also no policies on sea level rise and climate change and elected officials neglect to acknowledge the reality of human-caused climate change and resulting impacts to our coastlines.



**BEACH GRADE**

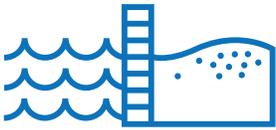
# F

Inadequate protection of coastal communities and resources.



### **Sediment Management: Bad**

There are no sediment management plans to address erosion, tidal management, or coordinate sand replenishment projects. Sand replenishment is readily used to address beach erosion issues without a thorough analysis of alternatives and the effectiveness of sand replenishment projects. While sand replenishment projects do need a permit, the requirements for approval are minimal. Filling in coastal marshlands are also authorized but require a Coastal Marshlands Protection Act permit.



### **Coastal Armoring: Bad**

Georgia encourages non-structural approaches to shoreline stabilization and supposedly requires all viable alternatives to have been exhausted before permitting. Structures may only be temporary and developers are required to completely restore the area once removed. *The Streambank and Shoreline Stabilization Guidance* specifically discourages armoring and requires mitigation. However, the state is approving permanent, harmful structures, such as a 350-foot long groin on Sea Island that has been legally challenged.



### **Development: Bad**

While there are some decent coastal development policies, the legislature is considering drastic changes to development standards to modify setback laws and allow homeowners to unilaterally make “minor changes” to parcels. Development is prohibited on unstable sand dunes, but is permitted on stable sand dunes. There is no buffer required for the sandy coastal shoreline. For rebuilding, a permit is not required unless the structure is damaged by more than 80%.



### **Sea Level Rise: Bad**

Georgia has dismissed sea level rise as “not an immediate natural hazard,” despite nearly 40% of its coast being exposed to sea level rise and increased coastal hazards due to climate change. The state does not have a climate change adaptation plan, or vulnerability assessment. Only the coastal town of Tybee Island has developed a sea level rise adaptation plan, which focuses on retrofitting, establishing repetitive loss policies, and elevating structures.

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## **Recommendations:**

- Develop a comprehensive beach management plan, or require municipalities to develop erosion management plans
- Only allow armoring if all other methods have been attempted including managed retreat, dune restoration, wetland protection, etc.
- Establish a minimum development setback and prohibit development on unstable dunes
- Require permits for any redevelopment of damaged structures in known hazard areas and require those permitted to build to a higher resiliency standard and farther back from the shoreline
- Acknowledge climate change as an immediate threat and provide information on government websites
- Conduct a sea level rise vulnerability assessment and develop a statewide climate adaptation plan

# NORTH CAROLINA

SOUTHEAST

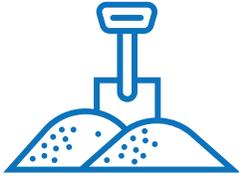


While North Carolina's Coastal Management Division is doing its best to preserve the state's coast and beaches, it faces an unreasonable impediment by the state government. Despite having fairly good policies and regulations on setbacks, shoreline structures, and sediment management, the state legislature has blocked all legislative amendments concerning

climate change and sea level rise. Recent efforts to include sea level rise policy failed, even though over 80% of the state's shoreline is vulnerable to sea level rise. Last year, a house bill expired that had banned the incorporation of sea level rise rates into coastal policy, causing the state to lag in preparing for increasing coastal hazards.



**BEACH GRADE**  
**D+**  
Mostly poor, lacking.



### **Sediment Management: OK**

The state has a highly comprehensive Beach and Inlet Management Plan that takes a holistic approach to addressing erosion and sediment issues and tailors management programs to specific regions. Permitting of beach replenishment projects require that there are no adverse environmental impacts, and that sediment meets quality thresholds. The state can improve by requiring clear monitoring requirements to determine the efficacy and ecological impacts of replenishment projects.



### **Coastal Armoring: Bad**

North Carolina law is supposed to prohibit the construction of permanent shoreline stabilization structures on the ocean shoreline, including seawalls, groins, bulkheads, jetties, and revetments. However, certain counties have approved a resolution allowing terminal groins and jetties. New temporary stabilization structures are prohibited on the ocean shoreline, except for sandbags. Failing to include sandbags in the policy has resulted in many beach communities overusing sandbag seawalls. This is especially evident since a recent rule removed time limits for sandbag seawalls, threatening sea turtle habitat and exacerbating erosion rates in the area.



### **Development: OK**

There are statewide setback standards for designated ocean hazard areas, which depend on the size of the structure and the regional mean annual shoreline erosion rate. The minimum distance for a small structure with a low erosion rate is 60 feet inland, measured from the stable natural vegetation line. Larger structures have larger setbacks. This inherently accounts for changes in erosion rates due to sea level rise and climate change, and provides a natural vegetation buffer. However, the rebuilding of damaged structures in hazard areas is allowed and an ordinance protecting coastal dunes was recently repealed in December of 2016.



### **Sea Level Rise: Bad**

Although state government previously blocked the use of scientific models that indicate an accelerating rate of sea level rise, coastal management agencies have continued to move forward in developing resources and plans, including the *Climate Ready North Carolina: Building a Resilient Future* report. The report provides a high-level review of vulnerability assessments and adaptation planning. However, the previous bill severely delayed and hindered the use of sound scientific studies in planning for sea level rise. It also prevented drafted sea level rise policies and land use planning guidelines from being approved by the state.

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## **Recommendations:**

- Provide strict monitoring requirements to determine efficacy and ecological impacts of beach replenishment
- Prohibit the use of permanent sandbags as a form of armoring
- Better enforce the prohibitions on groins and jetties
- Conduct a sea level rise vulnerability assessment to determine specific risks that the North Carolina coast will be vulnerable to
- Identify the high-risk areas and structures to prioritize adaptation and mitigation actions
- Incorporate sea level rise policy into the administrative code based on accurate sea level rise research that reflects the exacerbation from climate change

# SOUTH CAROLINA

SOUTHEAST



South Carolina’s subtropical beaches are a huge component of the state’s coastal economy and draw millions of tourists. Similar to its northern counterpart, South Carolina has generally good policies on coastal development, erosion response, and shoreline structures but has made little

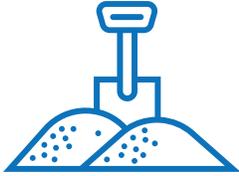
progress on issues such as climate change and sea level rise. Although there have been a couple of broad studies done on climate change impacts and coastal hazards, no further steps have been taken to address these issues or plan for sea level rise.



**BEACH GRADE**

**C**

Mediocre.



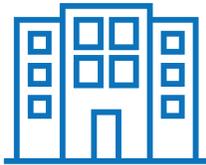
### **Sediment Management: Good**

It is state policy to have a comprehensive long-range beach management plan, and require all coastal local governments to update beach management plans every five years. These plans are thorough and include monitoring requirements, extensive analysis and inventories of erosion, public beach access, natural resources, strategies for meeting the goals of state coastal policy, and more. Beach replenishment is promoted but must be “carefully planned” and adhere to beach management plans.



### **Coastal Armoring: OK**

South Carolina accurately refers to hard erosion control devices as ineffective, expensive, and providing a false sense of security. New shoreline armoring seaward of the setback line is prohibited and repairs are limited. In addition, strengthening, rebuilding, or increasing structures is prohibited, and severely damaged seawalls must be removed at owner’s expense. Exceptions include certain areas such as Folly Beach, where the Office of Coastal Resource Management doesn’t have jurisdiction and can’t enforce regulations. However, South Carolina is one of the few states to incorporate a codified managed retreat policy.



### **Development: OK**

The statewide development setback is 20 feet (or 40 times the average annual erosion rate) from the top of the main sand dune at ocean coastlines. The setback line at inlets is the most landward 40-year erosion point. Baseline and setback lines are reviewed every 8-10 years. However, the rebuilding of coastal structures that are seaward of the setback line, and destroyed due to natural hazards, is generally allowed. Coastal dunes and vegetation are protected and recognized as providing an important buffer between developments and coastal hazards.



### **Sea Level Rise: Bad**

Despite having nearly 40% of the coast listed as highly vulnerable to sea level rise, the state does not have a plan for responding to or adapting to sea level rise. However, *The Climate Change Impacts to Natural Resources in South Carolina*, and the Shoreline Change Advisory Committee’s *Adapting to Shoreline Change: A Foundation for Improved Management and Planning in South Carolina*, provide great policy and management recommendations. However, the state has not incorporated those recommendations, conducted a thorough sea level rise vulnerability assessment, or developed an adaptation plan.

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## **Recommendations:**

- Prohibit the rebuilding of coastal structures seaward of the setback line that were destroyed due to natural hazards
- Remove coastal armoring exceptions in place
- Conduct a thorough sea level rise vulnerability assessment
- Develop an adaptation plan, and promote the outlined policies and management recommendations in the 2010 Adapting to Shoreline Change report

# ISLANDS

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HAWAII

PUERTO RICO

# HAWAI'I

ISLANDS



Hawai'i's favorable climate and lush tropical coastlines draw millions of tourists annually, but have also become threatened by increasing development pressure. To protect and manage its coasts and beaches, the state has set ambitious goals

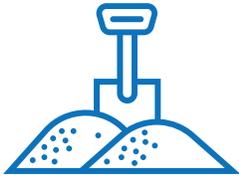
and recommendations, but lacks in terms of implementation and monitoring. Although the framework for some solid management plans and policies exist, policies still need to be codified into enforceable legislation.



**BEACH GRADE**

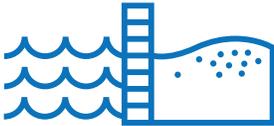
# B

Good, but can be improved.



### **Sediment Management: OK**

Sand replenishment is commonly used to stabilize shorelines, even though there are no regional sediment or beach replenishment plans. Hawai'i has mentioned intentions to establish a statewide sediment budget and assessment of biological resources but similar studies have only occurred at the regional level. Fortunately, there is extensive permitting required for beach restoration projects (including replenishment).



### **Coastal Armoring: OK**

Maui encourages retreat and relocation, yet all counties allow for emergency shore protection with seawalls. There is a proposed statewide strategy to prohibit shoreline armoring, and an ongoing strategy to require new developments to identify and mitigate coastal hazards, but this has not been codified into state law.



### **Development: Good**

There is a coastal minimum development setback line 20 feet from the shoreline, and counties can establish greater setbacks. Most impressive is [Maui's Beach Management Plan](#), which establishes a development setback line of 70 times the erosion rate, plus a range of 40 to 400 feet from sandy shorelines depending on development type. There is also strong protection for conservation district beaches, with no new encroaching developments or repairs.



### **Sea Level Rise: OK**

Hawai'i has started to address sea level rise and climate change with the development of enforceable Climate Change Adaptation Priority Guidelines, which provide funding for research, monitoring, and outreach. Completed vulnerability assessments and maps are also available, along with a wealth of resources on the "Hawai'i Climate Change Adaptation Portal," but the state has not yet developed an adaptation plan.

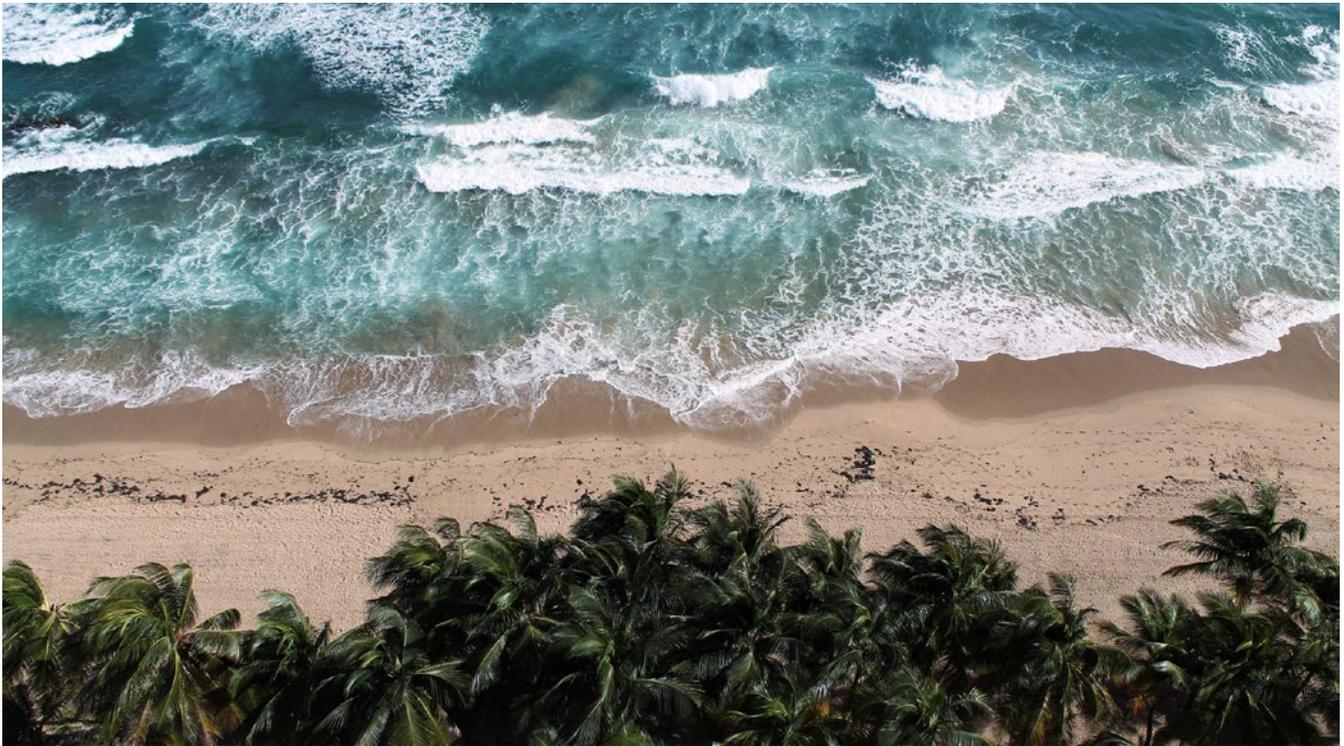
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## **Recommendations:**

- All counties should create beach management plans modeled after Maui's and include the recommendations from the Beach Management Plan of Maui into their statewide plan
- Reduce the permitting of emergency shore protection with seawalls and hard armoring
- Codify the proposed statewide strategy to prohibit shoreline armoring
- Codify the strategy to require all new coastal developments to identify and mitigate coastal hazards
- Dedicate increased funding to the development of climate adaptation plans that incorporate beach and coastal conservation principles where viable

# PUERTO RICO

ISLANDS



The lush Caribbean island of Puerto Rico has about 360 miles of coastline. Since the entire population lives in coastal counties, local communities and infrastructure are extremely exposed to coastal hazards. Previously relaxed coastal hazard management, high poverty rates, and frequent storms have resulted in a heavy reliance on federal resources and

aid from FEMA. To their credit, Puerto Rico has made major improvements in the past couple of years. A new surge of collaborative efforts, data collection, wetland protection advances, and climate change consideration are laying the foundation to set Puerto Rico on a path towards better coastal management and resilience.

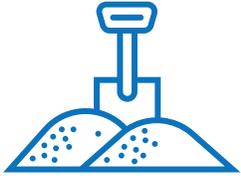


**BEACH GRADE**

# D

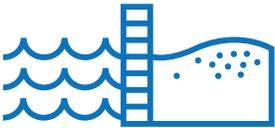
Mostly poor, lacking.

## Sediment Management: **Bad**



Puerto Rico struggled with illegal sand mining in the past, with some entire beaches being stripped of sand cover for construction needs. An increase in regional fines, enforcement, and preference towards river mouth sediment has helped alleviate this problem. There is no replenishment plan but the territory has a management priority to better coordinate erosion and sediment control efforts. The territory is also developing a sediment management plan. Sediment deposition into waterways and coastal reefs from hillside development and high rainfall is a problem for the territory. With increasing storm frequency and intensity due to climate change, a sediment management plan will be critical in addressing this issue.

## Coastal Armoring: **Bad**



The territory has no restrictions on constructing hard stabilization structures and 10% of the island's coastline is already armored. There are, however, restrictions on the repair of structures. Puerto Rico has stated that there are managed retreat plans, but this could not be verified. While there is a strong push to map, protect, and track coastal wetlands to prevent against coastal hazards, more effort should be focused on prohibiting hardened shorelines and promoting alternative soft stabilization methods.

## Development: **Bad**



On the surface, the territory has a good island-wide coastal development setback of 50 meters or 2.5 times the building height from the high tide line. However, waivers and exemptions frequently weaken the protections provided by this setback. For instance, if a builder invests money in "physical improvements for public use," setback standards can be reevaluated if the lot was approved prior to the legislation, or if nearby buildings are also non-conforming. This has resulted in significant development of the coastline. However, there are repair restrictions on developments with more than 50% damage.

## Sea Level Rise: **OK**



Puerto Rico's Climate Change Council has made great strides towards addressing climate change, establishing topic-specific working groups and developing an assessment of social-ecological vulnerabilities to climate change. Efforts also focus on communicating climate change and coastal hazards. As a result of the reported vulnerability, a recent executive order requires all infrastructure agencies to conduct vulnerability assessments and draft adaptation plans. A more thorough vulnerability assessment is also in the works.

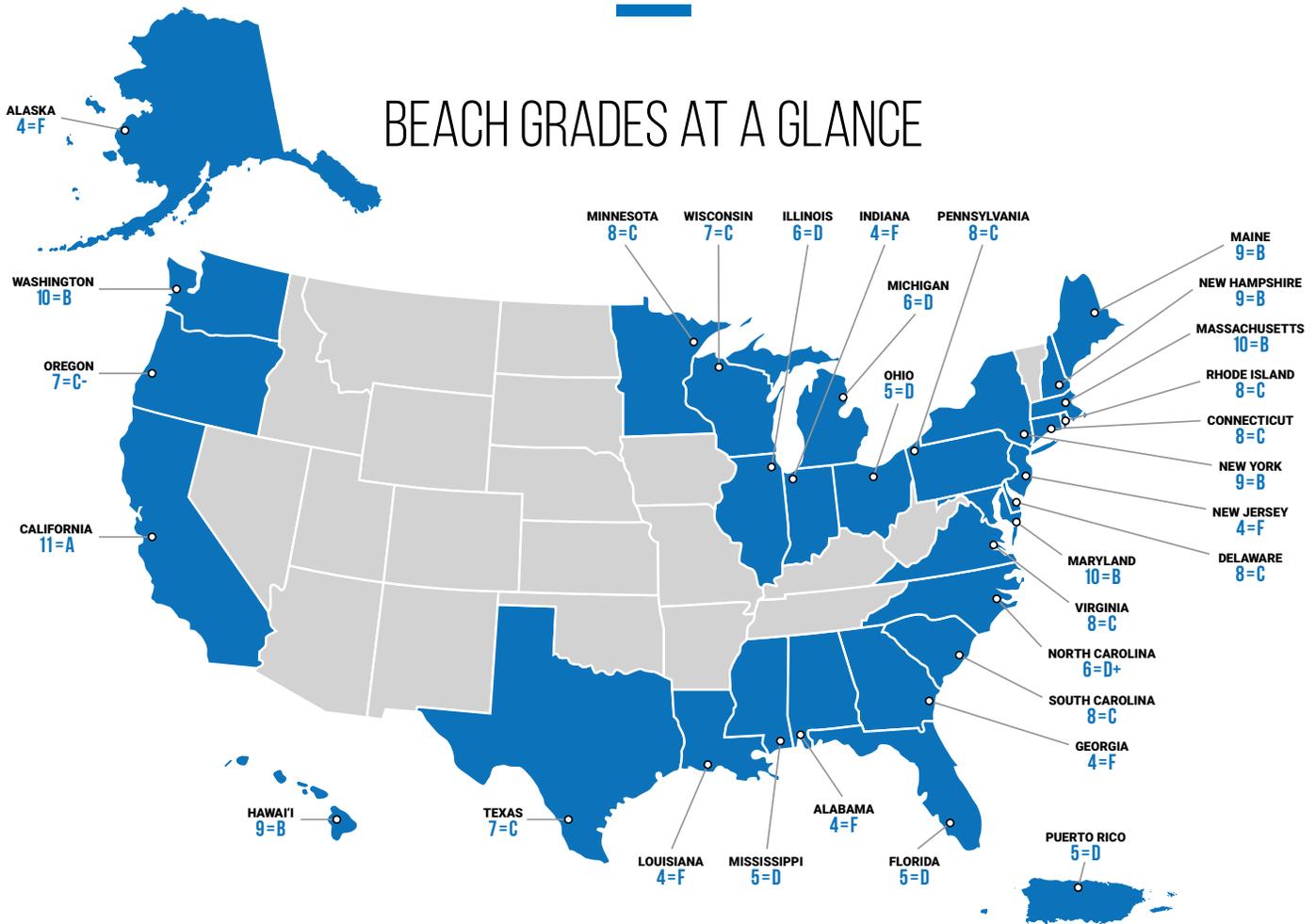
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## Recommendations:

- 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
- Encourage structures damaged by storms or flooding to be reconstructed to higher standards of resiliency, and if applicable, built farther inland from the coastline
- Prohibit hardened shorelines and promote alternative soft stabilization methods
- Ensure that vulnerability assessments and drafted adaptation plans are thorough and promote soft stabilization measures and managed retreat

# CONCLUSION

## BEACH GRADES AT A GLANCE



For centuries, humans have been drawn to the sea, and have also been building robust communities that continue to fuel our global economy. However, the cumulative effects of development and coastal armoring are squeezing our beaches, creating long-term erosion problems that are increasingly compounded by climate change impacts.

The results of Surfrider's State of the Beach Report Card reveal the critical need for improved coastal management practices to mitigate and reduce the impacts of coastal erosion and sea level rise. Surfrider's findings indicate that many states are not addressing these important issues adequately enough to sufficiently protect our nation's coastal resources. Below is a summary of a few problematic trends and highlighted approaches that coastal communities should adopt to improve shoreline management.



## COMMONLY USED INEFFECTIVE POLICIES AND PROGRAMS

### Emergency Permits for Coastal Armoring

It is surprising how many local and state agencies hand out 'emergency' permits. Even California, with the best grade in the report, has indiscriminately given away emergency permits when these situations are often the result of the lack of advance planning. With climate change creating more impacts along our coast, this practice needs to change. If the short-term approaches continue, our natural coasts will disappear under perpetual armoring and increased rates of erosion.

### Too Much Authority to Local Municipalities

Theoretically, delegating policy implementation is a great concept, and ultimately where shoreline planning should take place. Local agencies know how to best protect their coastline and implement policies most effectively. However, this report indicates multiple times that many important statewide policies are not being implemented locally (this is especially true with development and coastal armoring standards). The ultimate goal for coastal preservation should be to have statewide policies implemented at the local level, as currently modeled by California and Washington state. This gives local agencies the opportunity to tailor and implement policies as long as they meet specific statewide requirements and minimum standards. Without proper guidance from state agencies, local decision-makers appear to not always adhere to core statewide policies, as seen in the states of Oregon, Texas, Florida and Georgia.

## 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 in their own hands to better protect their coastlines. This is especially true for climate change and sea level rise in areas such as Florida, Washington, 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. In Washington state, nearly all coastal communities have sea level rise plans despite the state not having a statewide policy. Chicago is similarly taking it upon itself to respond to climate change erosion despite the lack of statewide planning.

### Specific Legislation That Bolsters Coastal Protection

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 strongly protecting California's coastline. This type of comprehensive, proactive legislation would bolster the ability of so many other coastal states to effectively protect coastal resources.

# THE NEED FOR FEDERAL INVOLVEMENT

## Consistent Federal Policies and Financial Support

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. For example, the state of New York has been trying to establish a regional management plan for Eastern Long Island. The Army Corps is a partner in the management plan, yet progress is continually stalled, despite the local community being engaged. It has taken nearly three decades for the Army Corps just to draft a plan, and now that draft is languishing.

## Protection of Established Federal Policies

Another concerning trend is that the 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 climate change adaptation office after stating that “We’re not spending money on that anymore...We consider that to be a waste of your money to go out and do that.” In March 2017, the administration also proposed severe cuts to the budget for NOAA, the lead federal agency responsible for managing our nation’s ocean and coasts, as well as monitoring weather and climate. The proposed cuts would eliminate funding for a variety of other programs, including research, coastal management, designation and management of estuary reserves, and protection of other coastal ecosystems that provide 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, and would have been critical in ensuring the effective rebuilding of the devastated areas of Texas, Florida, Puerto Rico, and the Virgin Islands, after extensive damage from the recent destructive hurricane season.

## General Recommendations

The following recommendations will benefit even those states that scored well. These recommendations focus on the importance of long-term planning and the need to avoid short-term fixes for larger pervasive problems.

- Coastal and Great Lakes states must create a uniformed ‘setback’ policy that allows for future sea level rise. Coastal managers need to create setbacks based on current erosion rates and implement long-term solutions.
- All permits for new developments should require building restrictions in coastal hazard areas and sensitive habitat.

- Coastal armoring projects should be restricted in sensitive habitat; have limitations on repairs; be removed if no longer needed; and when sand is lost due to erosion from a private seawall, 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, and only allow armoring as a last resort option.
- As sea level is projected to rise six feet 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.
- In order to protect coastal resources and taxpayers, states should establish clear procedures and policies about how to 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 must 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 the development of plans to remove armoring in the future.
- 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.

Planning for coastal erosion and sea level rise doesn’t just make land use planning sense, it saves taxpayers money in the long run. According to the [National Institute of Building Sciences](#), every dollar invested in preparedness and resiliency 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 Card, we must work together to increase awareness of the increasing challenges facing our nation’s coasts and improve local, state and federal government responses to erosion and sea level rise, to protect our ocean, waves and beaches for the future.

# APPENDIX 1. GRADING CRITERIA

MANAGEMENT POLICY AND PLAN CRITERIA	Y/N	NOTES
<b>DEVELOPMENT</b>		
1. State has setback policies on development.		
2. State has restrictions on building new and rebuilding existing infrastructure.		
<b>COASTAL ARMORING</b>		
3. State has policies on shoreline stabilization structures and their repair/replacement/removal.		
4. State has policies that encourage non-structural shoreline stabilization alternatives (living shorelines, restoration, etc).		
5. State has plans for managed retreat, relocation, buyouts, and/or retrofitting.		
<b>SEDIMENT MANAGEMENT</b>		
6. State has sand replenishment policies that thoroughly analyze and monitor impacts to coastal resources and efficacy of replenishment.		
7. State encourages regional sediment and inlet management plans.		
<b>SEA LEVEL RISE &amp; COASTAL HAZARD</b>		
8. State has policies that protect public access in light of erosion and sea level rise.		
9. State has policies that protect natural resources that provide coastal hazard mitigation benefits (e.g. dunes, wetlands, reefs)		
<p>10. State has sea level rise (SLR) planning policies and/or encourages local municipalities to conduct SLR planning. Specific planning includes:</p> <ul style="list-style-type: none"> <li>• Review of climate change science and sea level rise projections.</li> <li>• Conduct vulnerability assessment and analyzes risks to coastal resources and infrastructure</li> <li>• Develop specific adaptation plans</li> <li>• Develop adaptation implementation plan</li> <li>• Monitor implementation</li> </ul>		

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