



# National Shoreline Management Study

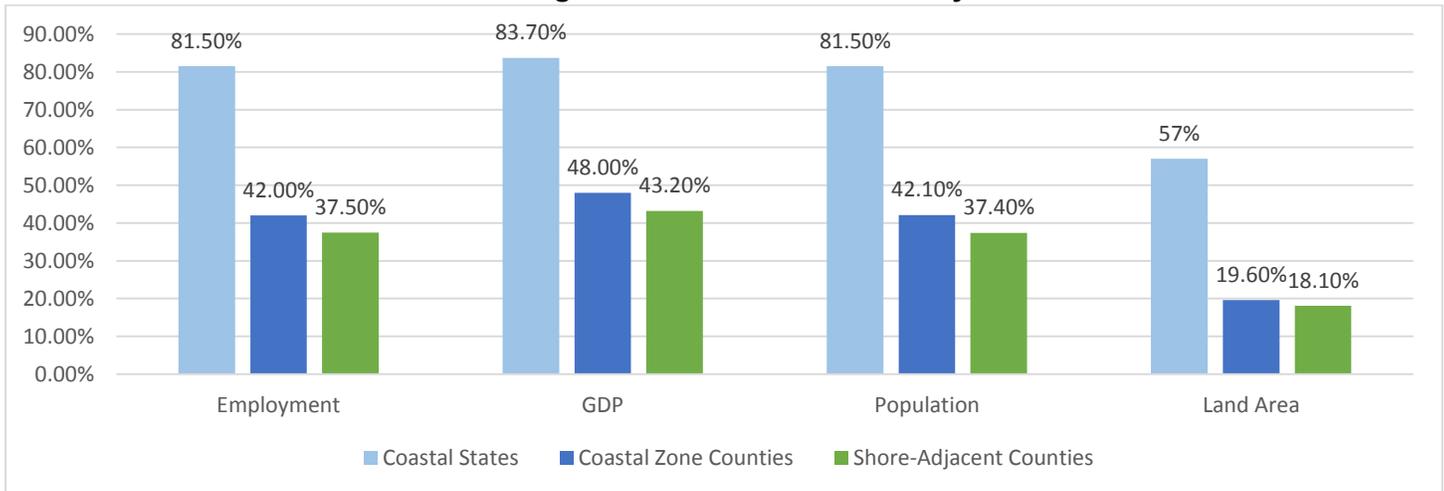
## Eroding U.S. Shorelines - A Call for Resilience Planning

The congressionally-authorized National Shoreline Management Study (NSMS) is the first undertaking in nearly a half-century to document the physical, economic, environmental, and social impacts of shoreline change across each region of the U.S. Under the leadership of the *Institute for Water Resources* of the U.S. Army Corps of Engineers, NSMS provides coastal scientists, government policymakers, and stakeholders with information about the coastal regions most in need of resilience planning.

**While Congress has funded NSMS since 2001, appropriations in recent years have declined.** This decrease in support has come just as there is a public awakening to the dangers of increased coastal flooding. The congressionally-mandated Comprehensive Study following SuperStorm Sandy shows the critical role that Federal leadership and funding plays to help States, local government, businesses and other key stakeholders engage in planning that addresses potential future risks and allows for a fundamental shift away from costly and near-sighted disaster-driven responses.

Continual erosion of the U.S. shoreline presents a considerable financial and safety risk to coastal infrastructure, economies, and populations. Individual regions face unique challenges and require solutions reflective of that. The following graphs and charts underscore the importance of the coastal economy to the national economy.

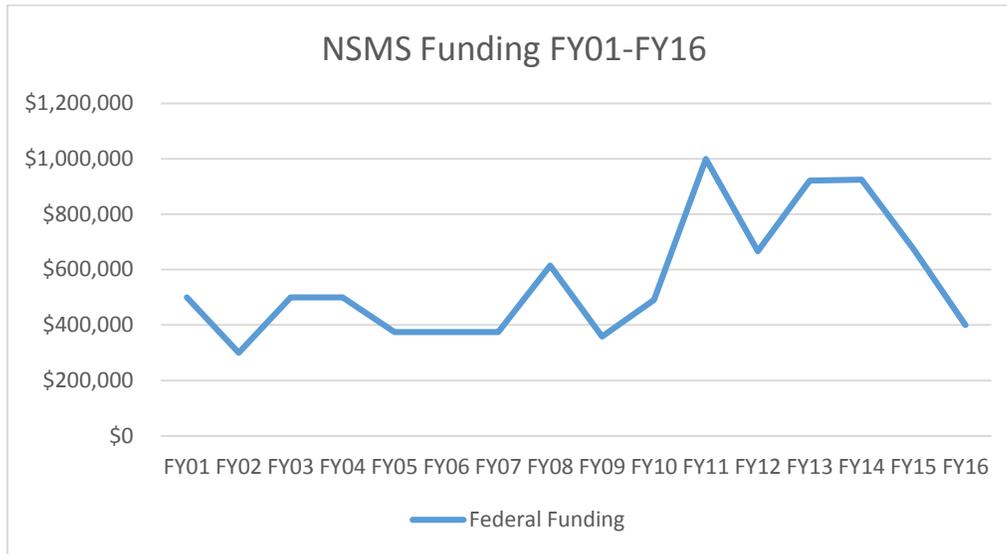
**Coastal Region's Share of U.S. Economy 2014**



**Growth Rates in the Coastal Economy 2010-2014**

Region	Employment (millions)			GDP (\$Trillion, 2009)			Population (millions)		
	2010	2014	Annual Change	2010	2014	Annual Change	2010	2014	Annual Change
<b>United States</b>	127.8	136.6	1.72%	\$14.6	\$15.8	1.9%	309.3	318.9	0.77%
<b>Coastal States</b>	104.1	111.3	1.73%	\$12.3	\$13.2	2.0%	252.1	259.8	0.76%
<b>Coastal Zone Counties</b>	53.6	57.3	1.72%	\$7.0	\$7.6	1.9%	129.9	134.2	0.84%
<b>Shoreline Adjacent Counties</b>	47.8	51.2	1.78%	\$6.3	\$6.8	2.0%	115.5	119.3	0.82%

Since the inception of NSMS in FY 2001, funding has been inconsistent. The President’s budget request for FY 2017, released on February 9<sup>th</sup>, proposed \$400,000 towards NSMS. This indicates that this trend of inconsistency and insufficiency is continuing at a time when the major parts of the study are about to be completed and circulated for stakeholder review.



## Mid-Atlantic

**The Mid-Atlantic coastal region is sediment-rich, but highly susceptible to coastal storms and sea level rise. Given the population density and potential social and economic effects of changes in ocean circulation and sea level, the Mid-Atlantic coast of the U.S. may be one of the most vulnerable regions in the world to rising sea levels.**

Superstorm Sandy demonstrated that beach renourishment projects were effective at reducing storm damage. Similarly, it emphasized the potential efficacy of regionally-defined resilience strategies that take advantage of area-specific geographic and natural elements.

Government agencies should continue to seek ways to move from site-specific reactive management to more comprehensive regionally-based shore management to increase resilience and long-term sustainability.

Mid-Atlantic Totals	Shoreline Counties	% of U.S. Total
<b>Population</b>	28.22 million	8.9 %
<b>GDP</b>	\$1,808.7 billion	11.5 %
<b>Employment</b>	12.23 million	8.9 %

Source: National Oceans Economic Program (NOEP) National Report 2016

## Northeast Atlantic

**The region is heavily developed, with routine storm damage, high costs of erosion, competing coastal economies, and a sediment-starved beach network.**

There is a need to aggressively manage and re-use available sediment for ecological restoration and protection from future nor’easters, hurricanes and storm surge. The challenge is moving from site-specific crisis management to comprehensive,

systematic, and sustainable regional shoreline management.

Northeast Atlantic Totals	Shoreline Counties	% of U.S. Total
<b>Population</b>	7.98 million	2.5 %
<b>GDP</b>	\$476.9 billion	3.0 %
<b>Employment</b>	3.72 million	2.7 %

Source: National Oceans Economic Program (NOEP) National Report 2016

## Southeast Atlantic

The Southeast Atlantic's coastlines face rapid changes and erosion that stress its economies and ecosystems. Sustained population growth, changes in land use (i.e. tourism and economic investment), increased demand for water, and wastewater disposal are rapidly impacting shoreline and near shore environments.

As coastal populations continue to rise and erosion increasingly threatens community infrastructure, there is a growing need for accurate information

regarding past and present trends of shoreline movement and change.

Southeast Atlantic Totals	Shoreline Counties	% of U.S. Total
Population	11.38m	3.6 %
GDP	\$462.8bn	2.9 %
Employment	4.4m	3.2 %

Source: National Oceans Economic Program (NOEP) National Report 2016

## Gulf of Mexico Overview

The historically and culturally diverse coastal region of the Gulf of Mexico provides innumerable economic, social, and environmental benefits to the nation

Sediment is the lifeline of the Gulf coastal ecosystem, providing the ecological and economic foundation of the Gulf's economy and quality of life. However, most sediment and dredged material is not being beneficially used. Collaborative sediment management efforts among federal, state, and local

agencies are at an all-time high. Although these efforts are helping to change the undervaluation of sediment, additional funding is needed to take advantage of this resource.

Gulf Totals	Shoreline Counties	% of U.S. Total
Population	15.37m	4.8 %
GDP	\$814.1bn	5.2 %
Employment	6.37m	4.7 %

Source: National Oceans Economic Program (NOEP) National Report 2016

## California

The erosion of California's shorelines poses an enormous social, economic, and environmental threat to the State. Dominant port, fishing, and recreation-based coastal economies in particular would suffer from the loss of beaches, cliffs, bluffs, marshes and wetlands. Erosion also threatens real estate and commercial properties, roads and railroads, and negatively impacts tourism, commercial fishing, and fish and wildlife habitats.

Natural factors influencing erosion include El Niño and Pacific Decadal Oscillation. Human factors include a 25 percent reduction in sediment supply caused by dam construction and the practice of

shoreline bluff armoring, which covers approximately 10 percent of the states shoreline (30 percent in southern California). Marshes, mudflats, and wetlands are at serious risk of survival. Naturally narrow beaches could face accelerating net sand losses over the coming decades due to decreasing rates of nourishment and increased storm incidence.

California Totals	Shoreline Counties	% of U.S. Total
Population	28.39m	7.4 %
GDP	\$1,971.1bn	12.5 %
Employment	11.92m	8.7 %

Source: National Oceans Economic Program (NOEP) National Report 2016

## Pacific Northwest (AK, WA, OR)

The general trend along the Northern Pacific coastline is one of retreat determined by the interaction of physical forces and the underlying geology. These changes are taking place in a coastal environment with diverse habitats, including wetlands, estuaries, mudflats, permafrost, sandy beaches, and dunes. These areas provide important habitat to a variety of plant and animal life.

**Coastal changes among the Northwest Pacific coastline have potentially large social and economic impacts.** Commercial fishing, navigation, and mineral extraction are keys to the economies of

the Pacific Northwest and Alaska. Shoreline-adjacent counties represent 88, 79, and 43 percent of GDP in Alaska, Washington, and Oregon respectively.

North Pacific Totals	Shoreline Counties	% of U.S. Total
<b>Population</b>	6.91m	2.2 %
<b>GDP</b>	\$481.7bn	3.0 %
<b>Employment</b>	3.2m	2.3 %

Source: National Oceans Economic Program (NOEP) National Report 2016

## Great Lakes

**Shoreline management issues, including erosion and sediment buildup, are directly tied to water levels in the Great Lakes. Water levels are the key to the ecology of the Great Lakes and the economic and social welfare of the people who live and work along their shores.**

Each Great Lake is different, and 58 percent of all the region's shorelines are subject to erosion, with many beaches and bluffs receding by dozens of feet per year. Infrastructure and residential/commercial properties are also at risk from damages, and property devaluation.

Many federally engineered shoreline protection structures in the Great Lakes were built 50 to 200 years ago and half are at risk of failure. The lack of federal funds to rebuild or maintain these structures properly results in higher risks for local communities.

Great Lakes Totals	Shoreline Counties	% of U.S. Total
<b>Population</b>	19.21 million	6 %
<b>GDP</b>	\$965.7 billion	6 %
<b>Employment</b>	8.39m million	6 %

Source: National Oceans Economic Program (NOEP) National Report 2016