



# *Adapting for Our Future: Implementing the Coastal State Climate Change Planning Act*



## Fall 2013 Workshop Team

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## *I. Executive Summary*

Climate change is a global phenomenon that has strongly influenced public policy and scientific research in recent years. Climate change is caused by an increase in atmospheric greenhouse gases such as carbon dioxide, water, and methane and is predicted to cause significant changes in temperature, precipitation, and wind patterns within the next several decades. Recent coastal storm events including Katrina and Sandy have brought climate change to the forefront of the U.S. policy arena as increasingly negative effects of climate change require policy action to increase the resilience of affected areas.

Climate adaptation – the measures taken to prepare for and respond to the effects of climate change – is needed to prepare for the impacts of climate change, especially in the vulnerable coastal regions of the United States. In the United States, climate adaptation is crucial to protecting the commercial, recreational, ecological, and aesthetic value and resources of coastal regions. In order to adapt to changing climatic conditions in the United States, the Coastal State Climate Change Planning Act was introduced to Congress in 2013. It directs the Secretary of Commerce to establish a coastal climate change adaptation planning and response program, administered through the National Oceanic and Atmospheric Agency (NOAA). The Act is designed to provide financial and technical assistance to Coastal States in order to implement climate change adaptation plans and projects.

This report serves as an implementation plan for the first year of the Coastal State Climate Adaptation Grant Program, referred to throughout the report as the Program, and illustrates the Program using the state of Rhode Island as a case study. The Program is designed to efficiently provide eligible states with financial and technical resources through a grant process. Grant money is automatically available to any eligible Coastal State to fund climate adaptation, with award amounts based on coastal population and mileage. States are also eligible to apply for competitive Planning Grants to develop climate adaptation plans and Project Grants to fund the implementation of adaptation projects on the ground. With both grant types, the Program prioritizes assistance for States addressing economic and infrastructure resilience measures in their proposed adaptation plans and projects, in order to combat the effects of climate change on human systems and coastal communities.

The first year implementation of the Program focuses on the appointment and orientation of core and supporting staff members to facilitate the allocation of competitive and formula-based grants. The design is directed by a budget totaling \$103,126,309 that guides available appropriations and a master calendar that provides a basic timeline for the Program. A performance management system is also included in the Program design to ensure an effective way to measure the overall success of the Program, as well as the progress of individual States in combatting the effects of climate change. The performance management system utilizes a quarterly reporting system, with these reports synthesized in an annual

report and made available to the public at the end of each grant cycle. An Annual Conference provides a forum for program evaluation, improvement, and guidance as the Program enhances the field of coastal climate adaptation.

The Coastal State Climate Change Planning Act is the first federal policy that specifically addresses the problem of climate change adaptation. The Program provides a solution in the form of federal incentives for States to begin preparing for the future. It provides a fair and politically acceptable framework for awarding grants and makes use of existing administrative processes in order to efficiently distribute financial and technical assistance to States to begin preparing and adapting to the future climate.

## II. Issue Background – Science

### Climate Change and Coastal States

Over the past 250 years, human activities such as the burning of fossil fuels, land use changes, and agriculture have contributed to a significant increase in atmospheric greenhouse gas concentrations (IPCC, 2007). As shown in Figure 1, greenhouse gases including carbon dioxide, water vapor, and methane in the atmosphere absorb the Sun's

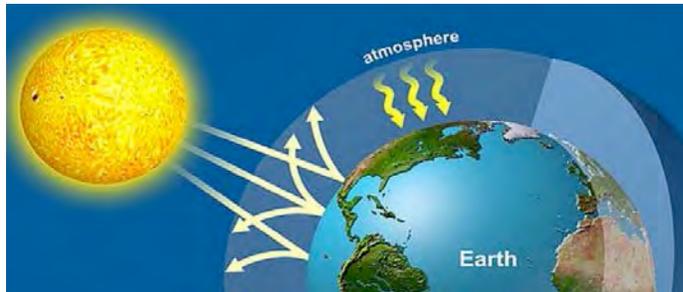


Figure 1: Earth warming through the greenhouse gas effect

energy and trap it within the atmosphere as heat, causing the planet to warm. Increasing average global temperatures produce positive feedbacks to intensify the impacts of climate change. Climate change occurs over several decades or longer and consists of a significant change in temperature, precipitation, or wind patterns (EPA, 2013).

Climate change poses a significant threat to coastal areas because these areas represent interfaces of geochemical, physical, and biological processes that are particularly vulnerable to environmental changes. Coastal areas in the United States are comprised of states and territories that border the Atlantic Ocean, Pacific Ocean, Gulf of Mexico, and the Great Lakes (the “Coastal States”). Containing 80% of the US population and generating 83% of the nation’s economic output, the Coastal States face various effects of climate change including sea-level rise, intensified storm events, ocean acidification, and wetland damage (NOAA, 2013; NOEP, 2009). These changes threaten the **economic, social, and ecological** health of vulnerable coastal communities and ecosystems, as well as the interconnected effects of these vulnerabilities. The following subsections further describe each of these impacts.

#### Economic Risk

Coastal economies face immense economic vulnerability due to damage from storm events and sea-level rise. In the United States, an increase in sea level of 25 inches is expected to threaten 3.7 million homes in low-lying areas by 2100 (Straus et al, 2012; Yohe et al., 1995). One particularly costly impact of sea-level rise is coastal flooding, in which seawater inundates normally dry, low-lying land. As the coastline moves further inland, coastal areas, including homes and industry, may experience permanent flooding, and new areas could experience flash flooding during storm events.



Figure 2: Images of infrastructure damage, economic loss, and public health and safety risks from coastal

Major coastal storm events like hurricanes and tropical storms are expected to increase in both frequency and severity. Storm damage cleanup and economic loss pose a severe vulnerability to the U.S. economy. For example, Hurricane Sandy is estimated to have cost \$50 billion and Hurricane Katrina is estimated to have cost \$108 billion in damage (National Hurricane Center, 2013).

### Infrastructure Resilience and Public Safety

High population concentrations in coastal regions can lead to social vulnerability, with impacts of climate change including social disruption, loss of human life, and health concerns. For example, 72 deaths were attributed to Hurricane Sandy and 1,833 were attributed to Hurricane Katrina (National Hurricane Center, 2013). In addition, impacts of coastal storms have the potential to greatly impact livelihoods of coastal communities reliant on jobs in the fishing, tourism, recreation, and shipping industries.

#### Resilience

Resilience refers to the ability to resist, absorb, recover from, or successfully adapt to adversity or a change in conditions or their effects, such as climate change.

(Congressional Research Service)

Coastal storm events also pose risk for human health as floodwaters from severe weather events can lead to water-borne disease transmission, sewage overflows, and surface runoff. Additionally, sea-level rise brings higher salinity waters further inland, which expose freshwater and estuarine wetlands to increased salt concentrations and threatens fresh drinking water sources.

### Ecosystem Vulnerability

Climate change also impacts coastal ecosystems. When atmospheric carbon dioxide reacts with water, the resulting carbonic acid lowers the pH of ocean, resulting in acidification. An

increase in acidity permanently alters local ecosystems and hinders the formation of the calcium carbonate shells of many marine organisms (National Geographic, 2013).

For instance, wetlands are ecosystems that are saturated with water seasonally or year-round, and they comprise 5.5% of the total surface area of the United States (Dahl, 2006). They serve as flood barriers, fish nurseries, and water purifiers. Storm surges during severe storm events bring a rush of saltwater to wetlands that kill native species by the sudden change in water quality. The force of these initial surges uproots and breaks plant structures, and the eventual receding water following a storm surge can further erode the roots of wetland plants (Rastogi, 2010). Coastal and flash flooding also is responsible for the irreversible loss of habitat and coastal biodiversity.

### **Climate Adaptation**

Climate adaptation is the adjustment of natural or human systems to moderate harm and maximizes beneficial opportunity in response to actual or expected climatic stimuli or their effects.

(National Climate Assessment)

### **III. Issue Background – Policy**

#### **Coastal State Climate Change Planning Act**

##### **Coastal Climate Change Planning Program Prioritization**

- Economic
- Infrastructure Resilience
- Ecological

The Coastal Zone Management Act (CZMA) was enacted in 1972 to manage the nation’s coastal zones and ensure their long-term economic and ecological security. It emphasized protecting natural resources, like wetlands, beaches, and coral reefs, as well as manmade infrastructure, like waterfronts, ports, and historical coastal features. At that time, some of these areas were subject to competing interests for economic and land development that would harm coastal areas such as the construction of major recreation facilities, power plants, or fisheries. To protect coastal resources, life, and property in a coherent manner, the legislation provides states with assistance for coastal development management plans through the National Oceanic Atmospheric Administration (NOAA, 2012). The act mentions sea-level rise from climate change as a concern that warrants further research, but it does not provide financial assistance to states to develop adaptation plans to deal specifically with these climate-related disasters.

In order to address climate adaptation planning, Representative Lois Capps of California introduced the Coastal State Climate Change Planning Act in the House of Representatives in February of 2013. This was a re-introduction of similar bill she introduced in April 2009, which died in committee. At the time of passage, the Act had the support of 28 Democratic

co-sponsors in the House. The legislation amends its precedent, the CZMA, by authorizing the Secretary of Commerce to grant financial and technical assistance to develop voluntary adaptation and response activities in the Coastal States as designated by the CZMA. These states are defined by coasts that border the Atlantic Ocean, Pacific Ocean, Gulf of Mexico, and/or the Great Lakes. The State of Alaska is the only “coastal” state not included in the formally designated Coastal States, as the State elected to withdraw itself from CZMA jurisdiction in 2011.

The Coastal State Climate Adaptation Planning Program, referred to throughout the report as the Program, establishes a coastal climate change adaptation and planning and response grant program. The Program supports voluntary efforts to prepare for and reduce the negative consequences of climate change in the coastal zones by offering Climate Change Adaptation Planning Grants and Coastal Adaptation Project Grants.



Figure 3: Eligible states and territories

#### *IV. Program Design Rationale*

Sections V through IX of this report describe in detail the Program design that fits the specifications of this legislation. The Program assists Coastal States in developing adaptation plans and implementing projects that protect the States’ coastal resources. This Program recognizes that these resources may include economic assets such as tourism and industry, infrastructure, and ecological factors. For this reason, the Program design evaluates States’ adaptation goals to include economic vulnerability, infrastructure resilience, and ecological considerations.

The Program provides training and technical assistance to Coastal States to enable them to develop and implement their adaptation plans in a timely manner. The Program also promotes pilot and demonstration projects at National Estuarine

#### **Gray and Green Infrastructure: Potential Solutions**

**Gray Infrastructure** consists of man-made structures that are part of the built environment.

*Examples:* Bulkheads, levees, floodwalls.

**Green Infrastructure** uses nature to solve urban and climatic challenges.

*Examples:* Beach nourishment, wetland restoration.

Research Reserves (NERRS) in order to ascertain the feasibility and effectiveness of the proposed adaptation plans.

Eligible adaptation plans and projects represent a wide variety of possible approaches to moderate the negative consequences and threats of climate change to coastal zones, and can include both gray and green infrastructures. These activities can reduce the threat of sea-level rise, shield coasts from severe weather, ensure water quality, protect wetlands, and preserve biodiversity.



*Case Study: Climate Change Impacts in Rhode Island*

Rhode Island faces a number of specific environmental threats related to changing climatic conditions. Situated on the coast of the Atlantic, this small state is susceptible to hurricanes and coastal storms. Precipitation in Rhode Island has increased by approximately 3mm per year, and rates of sea level rise have reached a high of 3.6mm per year since 1990 (rates from 1930 to 1990 averaged 2.6mm per year). Climate change assessments predict even more dire consequences for Rhode Island in the future: temperature increases could range from 3-14°F, sea level could rise by 7-23 inches, and precipitation could increase 10-20%, depending on levels of future greenhouse gas emissions. These increases in weather variables are predicted to affect Rhode Island coastlines through coastal erosion and storm surges, threatening coastal populations, infrastructure, marsh ecosystems, and tourism. The damage to the state is estimated to reach \$2 – 6 billion in the next century.

## V. Coastal State Climate Adaptation Grant Program

In order to prepare for the threats of climate change, the Coastal State Climate Adaptation Grant Program provides Coastal States with financial and technical assistance to develop and implement climate change planning adaptation plans. Half of the available funding is granted on a formula-basis, while the other half is awarded through a competitive process. Figure 4 depicts an overview of the Program process.

The Program offers two types of grants:

**Climate Change Adaptation Planning Grants** are awarded for the development of climate change adaptation plans that identify and describe strategies to protect at-risk resources such as waterfronts, public facilities, infrastructure, biodiversity, habitats, and water quality.

**Coastal Adaptation Projects Grants** are awarded to States implementing projects that mitigate the impacts of climate change on shorelines such as building and infrastructure damage, habitat loss, spread of disease organisms and invasive species, and erosion.

### Annual Coastal State Climate Adaptation Grant Program Process



Figure 4: Coastal State Climate Adaptation Grant Program Structure

#### Step 1 – Notice of Funding Availability (NOFA)

Funding opportunities for the Program are posted to the Federal Register with eligibility requirements and proposal submission instructions. Eligible States are required to submit grant proposals by their due date to the NOAA Office of Ocean and Coastal Resource Management (OCRM).

Prior to the final funding opportunity announcement, NOAA releases a Pre-Solicitation notice on the Federal Register. This announcement provides general information to states and alerts interested applicants of the future funding opportunity. Additionally, the NOAA Communications and External Affairs Department includes information about the Program in the NOAA newsletter and highlights it in social media coverage. The Program is also promoted in conferences and panels attended by NOAA experts. This marketing campaign ensures that States are aware of the Program and able to begin preparing proposals prior to the official NOFA posting.

## Step 2 – Proposal Evaluation – Competitive Grants

Fifty percent of available funding is awarded through a competitive and merit-based process. The Grant Application Review Board (see Section VI for more detail) uses a matrix to evaluate submitted proposals, shown in Figure 5. In order for the Program to be politically and economically viable, economic protection and infrastructure resilience are given a combined total weighting of 75% and ecological health and protection is given a weight of 25% in the evaluation process. This weighting scheme reflects the importance of economic and infrastructural concerns to the federal government funding the Program, although the inclusion of all three objectives highlights the interconnectedness of the economy, ecology, and resilience. In order to strengthen applications, States may elect to submit their proposals by an early application deadline and receive initial feedback from the Grant Application Review Board.

Evaluation Criteria	Description	Score	Weighting	Weighted Score
Required Components	Planning Grants		-	
	Project Grants		-	
Proposed Use for Grant Funding	Protection of Economic Value		0.75	
	Infrastructure Resiliency			
	Protection of Ecological Health		0.25	
Baseline Measurement	Economic		-	
	Resilience			
	Ecological			
Optional Components to Increase Application Priority	Multi-Level Agency Collaboration		-	
	Prior CZMA Funding		-	
	Use of NERRS Pilot Sites		-	

Figure 5: Grant Evaluation Matrix

### Required Components

Coastal States can choose to apply for a Climate Change Adaptation Planning Grant and/or Coastal Adaptation Project Grant. In each of these applications, States must identify land and water uses, such as public facilities and services, that are likely to be impacted by climate change. Additionally, States must outline adaptive management strategies to respond to potentially changing environmental conditions and plans must meet the requirements of existing state hazard mitigation plans.

### Proposed Use for Grant Funding

Grant proposals are evaluated against the three objectives (economic, resilience, and ecological impacts) of the Coastal State Climate Adaptation Grant Program based on a formula of 75% weighting on economic and resilience components, and 25% weighting on ecological components. The economic and resilience components have the objective of protecting coastal industries such as fishing, shipping, energy generation, and tourism, and

actions taken to mitigate damage to this coastal infrastructure and coastal livelihoods. The ecological component aims to protect of ecological resources and coastal habitats such as wetlands, water supplies, and wildlife biodiversity.

### **Baseline Assessment**

A baseline assessment must be submitted with all grant proposals, so that the applications can be evaluated more easily based on common factors within the economic, resiliency and ecological groups. Economic indicators include tourism revenue, employment levels, and State GDP. Resilience indicators include proportion of federal disaster declarations, mean annual cost of declarations, and loss of coastal land. Ecological indicators include a water quality index, acres of coastal habitat, and number of endangered species in targeted areas. These baseline measures are also be utilized to determine State progress during quarterly and annual review processes.

### **Optional Components**

States may include additional criteria in their applications such as:

- Collaboration across multiple levels of government (federal, state, interstate, local governments);
- Previously received federal funding under the Coastal Zone Management Act;
- Utilization of National Estuarine Research Reserve System (NERRS) sites as pilot sites for climate change adaptation projects.

These optional components reflect strength of grant proposals in a variety of ways. The Program aims to increase governmental collaboration, reflecting the fact that climate change is a universal problem and cannot be solved by a single level of government. Funding under CZMA shows that the State has previously met grant requirements and has the structure in place to meet the requirements of the grant allocations under the Program. NERRS sites represent ideal sites for pilot programs to study the effects of climate adaptation, and the inclusion of NERRS sites in a plan or project funded by the Program will likely have exemplary results.

## **Step 3 –Award Grants**

### **Formula-Based Grants**

Half of the available funding is allocated on a formula basis to states currently receiving money from the Coastal Zone Management Act. Allocating a portion of the funding as non-competitive allows all eligible Coastal States the opportunity to receive some amount of funding through the Program. Formula grant allocation is determined based on coastal population (40%) and miles of coastline (60%). This calculation is consistent with the formula used for the allocation of funds through the Coastal Zone Management Act (United State Government Accountability Office, 2008).

## Grant Agreements

States are awarded grants to fund the activities in approved proposals. Grant agreements are drawn up between NOAA OCRM and States receiving assistance through the Program through either formula-based or competitive grants. States are awarded financial assistance in order to complete the activities detailed in their proposals, and grant agreements detail the actions required by this award of funds, or penalties for non-compliance. Technical assistance may also be awarded to states under the two categories of planning and projects. Planning Grants provide training to assist local policymakers in designing climate change adaptation plans, and Project Grants provide training in adaptation science, management, and technology, as well as implementation of the projects.

## Step 4 – Ongoing Monitoring

As part of grant agreements, States are required to submit quarterly reports to record their progress in fulfilling the objectives outlined in their grant agreements throughout the year. These reports ensure that the goals of enhanced economic protection, infrastructure resilience, and ecological health are being achieved. Separate reporting templates are used for planning grants and project grants, as seen in Figure 6, below.

Quarter	Criteria	Completion				
Year 1: Q1	Human Resources Allocated	<input type="checkbox"/>				
	Technical Assistance Utilized (if necessary)	<input type="checkbox"/>				
Year 1: Q2	Plan Outline Completed	<input type="checkbox"/>				
	Technical Assistance Utilized (if necessary)	<input type="checkbox"/>				
Year 1: Q3	First Draft of Plan Completed	<input type="checkbox"/>				
	Technical Assistance Utilized (if necessary)	<input type="checkbox"/>				
Year 1: Q4	First Round of Feedback Obtained	<input type="checkbox"/>				
	Technical Assistance Utilized (if necessary)	<input type="checkbox"/>				

		Q1	Q2	Q3	Q4
Projected Timeline of Activities	Anticipated project activities				
	Technical assistance required				
Adherence to Timeline	Percentage fulfillment of anticipated activities				
	Describe fulfillment of objectives in terms of economic, resilience, and ecological goals				
	If fulfillment of that quarter's activities is less than 75%:	Reasons for non-compliance			
		Planned measures to meet timeline			

Figure 6: Planning Grant Quarterly Report (left) and Project Grant Quarterly Report (right)

Process evaluation timelines for both Planning Grants and Project Grants are self-reported and submitted each quarter to the Grant Coordinator at NOAA (refer to Section VI for further detail). The Grant Coordinator then reviews the reports and ensures that activities are being completed according to the schedule provided in the grant agreement. Where there are deviations from the proposal, the Grant Coordinator works with the grantee to create a plan of action to fulfill the funding requirements.

## Step 5 – Annual Conference

At the end of the year, the Program hosts an Annual Coastal Climate Change Adaptation Conference. All grant recipients are invited to attend this conference, and it is also open to

the public. Holding this conference is important not only as a chance for outreach and education, both of which are important goals of NOAA, but also to advance the state of knowledge on coastal adaptation planning and implementation. As climate adaptation is a new and burgeoning field, creating a venue to share ideas and successes is important to facilitate collaboration and growth among grant recipients and others. At this conference, the NOAA staff presents the annual synthesis report, which is comprised of highlights from the quarterly reports submitted by grant recipients. This report serves as a best-practices manual for future parties interested in pursuing coastal climate change adaptation.



#### *Caste Study: Rhode Island Climate Adaptation Plan*

Like all Coastal States, Rhode Island is eligible for two types of grants under the Program. The state's 384 miles of tidal coastline and population of 1 million people entitle it to \$230,000 in formula-based grant funds. In addition, Rhode Island can apply for grant money under the competitive grant program.

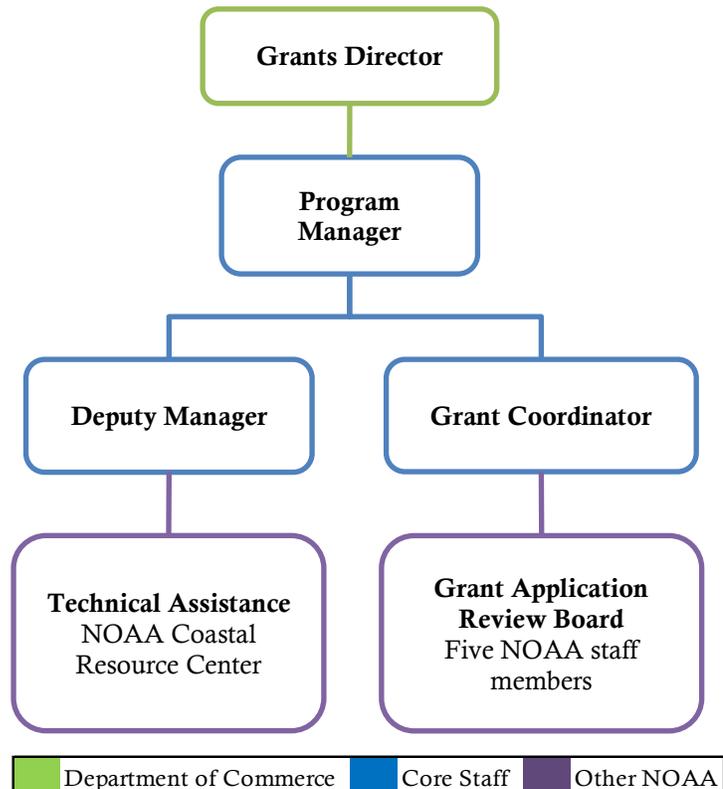
The Rhode Island Climate Change Commission is structured in such a way that would make it highly eligible for the Program's competitive project grants. The Commission includes working groups in three categories: Key Infrastructure and Built Environment, Natural Resources and Habitat, and Human Health and Welfare. These three working groups reflect the Program's priority objectives of resilience, economic welfare and ecological protection respectively. Additionally, Narragansett Bay houses a research reserve center that would give Rhode Island additional priority by utilizing a NERRS site.

Rhode Island already has several programs in place that directly support adaptation efforts. Storm-water management, sustainable energy programs, and wastewater treatment are three example areas in which management efforts are already in place to prepare for the impacts of climate change. Additionally, the state is involved in pilot studies and vulnerability assessments of sea level rise on coastal communities, which can inform future adaptation programs.

## VI. Organizational Structure

### Organizational Chart

The Coastal State Climate Adaptation Grant Program is administered through the NOAA Office of Ocean and Coastal Resource Management (OCRM). Program implementation is overseen by the Department of Commerce Grants Director, and implemented by three core part-time staff members within NOAA's OCRM, as illustrated by the organizational chart. These positions are supported by the Grant Application Review Board during the grant selection process, and a Technical Assistance Panel that advises grant recipients after grant allocation.



### Staff Roles and Responsibilities

The **Grants Director** within the Department of Commerce Office of Acquisition Management oversees the Program Manager. This position oversees all grants within the Department, and thus is the high-level director for the Coastal State Climate Change Planning Program, but is not involved in day-to-day activities.

The **Program Manager** reports to the Grants Director to receive the budget for each grant cycle, and to communicate yearly grant allocations and synthesis of approved Coastal State action plans. The Program Manager is responsible for overseeing all Program activities and for coordinating the specific tasks and responsibilities of the Deputy Manager, Grant Coordinator, and external actors as needed based on the grant cycle's application volume and approved applicants' proposed needs. This person also presents the year's synthesis report at the Annual Coastal Climate Change Adaptation Conference.  
(25 hours/month, GS-12)

The **Deputy Manager** is in charge of Program implementation. S/he is the main point-person for the Program and works with the grant recipients on day-to-day issues. The Deputy Manager serves as liaison between Program participants and the Coastal Services

**Figure 7:** Organization Chart for Coastal State Climate Adaptation Grant Program

Center, referring participants to the correct person within the CSC for technical assistance as needed. S/he is also the main planner for the Annual Coastal Climate Change Adaptation Conference. S/he maintains the grant program website with periodic programmatic case studies and updates and aids in all administrative tasks designated by the Program Manager. (40 hours/month, GS-10)

The **Grant Coordinator** provides leadership and organizational structure for the collection, review, and approval of grant proposals. The Grant Coordinator is responsible for collecting and filing all grant applications. S/he serves as the initial point of contact for all grant-related questions and concerns, and in addition is responsible for notifying applicants of the status of their proposal. The Coordinator reports to the Program Manager and directly coordinates the Grant Application Review Board. S/he oversees and guides the activity of the Review Board, offering assistance when necessary. The Coordinator also holds monthly check-in calls with all program participants to ensure progress and collects the quarterly reports submitted by each participating state. The Coordinator summarizes the quarterly reports to be presented at the Annual Coastal Climate Change Adaptation Conference. (40 hours/month, GS-9)

Technical assistance is available from the **Coastal Services Center**, a pre-existing program within NOAA that has the mission of working to protect coastal resources and keep communities safe from coastal hazards by providing data, tools, training, and technical assistance. The staff at this office is available to advise grant applicants on best in practice approaches for achieving their proposed plans. The Deputy Manager coordinates grant recipient states and the Coastal Services Center to ensure technical assistance needs are being met. The Center advises applicants at the initial stages of the grant implementation process. It help identify appropriate local resources and facilitates valuable connections with relevant companies that can carry out proposed solutions.

#### **NOAA's Coastal Services Center**

The NOAA Coastal Services Center provides the technology, information, and management strategies used by local, state, and national organizations to address complex coastal issues.

(NOAA Coastal Services Center)

The **Grant Application Review Board** is a collection of five professionals from within NOAA staff and is responsible for reviewing grant proposals against the established criteria. The Board meets once per grant cycle during a four-week period to evaluate grant proposals. Grant evaluation is measured against specified grant criteria and involves assigning scores to each incoming grant application based on an evaluation rubric.

## VII. Budget

The full budget for the Program comes from federal appropriations to NOAA. The proposed budget for Year 1 is \$103,126,000, most of which is directly allocated for grant dispersal. As appropriations may vary by year, the total budget may be scaled accordingly, however this amount was determined to be comparable to other NOAA OCRM coastal programs.

The Program is designed to direct the majority of appropriated funds directly to grant disbursement and minimize staffing and other costs. Staffing for this Program accounts for approximately \$63,309 of the total budget. This number was obtained by multiplying the expected number of hours worked by the three core NOAA staff members employed by the Program by the average salary for each pay grade. An additional 42% of these salaries is allocated for employee benefits, which is an average value derived from current Bureau of Labor Statistics data. A small amount of money has also been included in to cover other miscellaneous employee costs. Other Than Personnel Services includes the annual conference and general program operation. These costs are outlined in Figure 8, below, and in the Appendix (Program Budget).

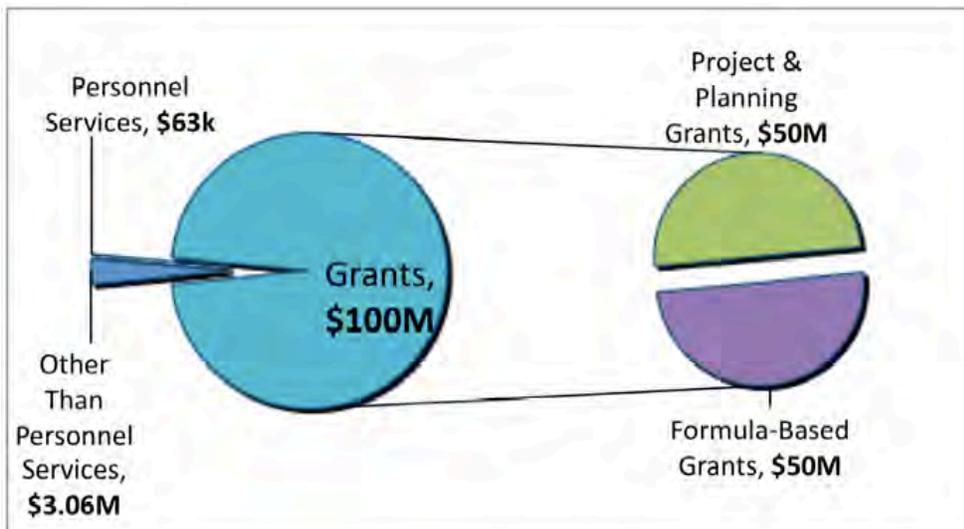


Figure 8: Year 1 Program Budget

Through the formula-based grants, per State amounts are determined through a formula derived from coastal mileage and coastal population. State coastal populations are determined using current census records and state coastal mileage is calculated by the Office of Ocean and Coastal Resource Management (OCRM) and considers physical coastlines as well as tidal areas. Figure 9 depicts the amount of formula-based funds allocated to each State, should all choose elect to participate in Year 1 of the Program.

Alabama	\$791,842.27	Mississippi	\$476,431.46
American Samoa	\$25,679.01	New Hampshire	\$205,931.38
California	\$5,916,843.99	New Jersey	\$1,625,100.84
Connecticut	\$622,163.22	New York	\$3,257,467.57
Delaware	\$216,682.91	North Carolina	\$2,148,652.18
Florida	\$4,674,664.09	Northern Mariana Islands	\$385,384.10
Georgia	\$1,911,976.25	Ohio	\$1,605,502.42
Guam	\$41,142.47	Oregon	\$877,432.41
Hawaii	\$454,329.27	Pennsylvania	\$1,720,810.19
Illinois	\$1,714,420.49	Puerto Rico	\$575,691.70
Indiana	\$873,925.02	Rhode Island	\$230,717.06
Louisiana	\$2,581,497.10	South Carolina	\$1,357,845.61
Maine	\$1,060,414.43	Texas	\$4,307,293.05
Maryland	\$1,583,960.05	Virgin Islands	\$43,138.14
Massachusetts	\$1,263,502.82	Virginia	\$1,921,042.20
Michigan	\$2,123,370.41	Washington	\$1,688,041.96
Minnesota	\$751,468.90	Wisconsin	\$965,635.08

Figure 9: Formula-based grant amounts for participating States in Year 1

## VIII. Timeline

### First Year Calendar

The first year of Program implementation, 2014, must establish the necessary organizational infrastructure in order to allocate grants as soon as possible. The following quarterly calendar is comprised of a sequence of logical steps necessary to achieve the Program's primary goals given its organizational structure and staffing plan, budget, and external resources. Year 1 tasks are focused upon efficient appointment and orientation of core and supporting staff to facilitate the allocation of competitive and formula-based grants within the first year of the Program's implementation. Figure 10 shows a schematic of the first year master calendar.

During the **pre-launch** period, the three core staff members are nominated and trained. They are then responsible for ensuring that the Coastal Service Center is prepared to provide technical assistance for grantees, and that the Notice of Funding Availability is posted on Federal Register. The Deputy Manager also holds a webinar about the grant program to increase interest among Coastal States.

In **Quarter 1**, the Grant Application Review Board members are appointed from existing NOAA staff, and the program staff responds to grant inquiries from prospective applicants. The early grant application deadline for those seeking comments falls in **Quarter 2**, and the Grant Application Review Board return those comments **Quarter 3**. Then, once the final

applications are received, the Board reviews and determines allocations for the formula-based and competitive grants and notifies recipients by the end of Quarter 3.

Once the grant recipients have been determined, **Quarter 4** is focused on getting States' programs started and preparing for Year 2. The staff manages States' access to technical assistance, collect the first quarterly reports from all recipients, and conduct an end-of-year program evaluation, all of which are presented at the annual conference (AC, below). During this quarter, the staff also posts the Notice of Funding Availability for Year 2.

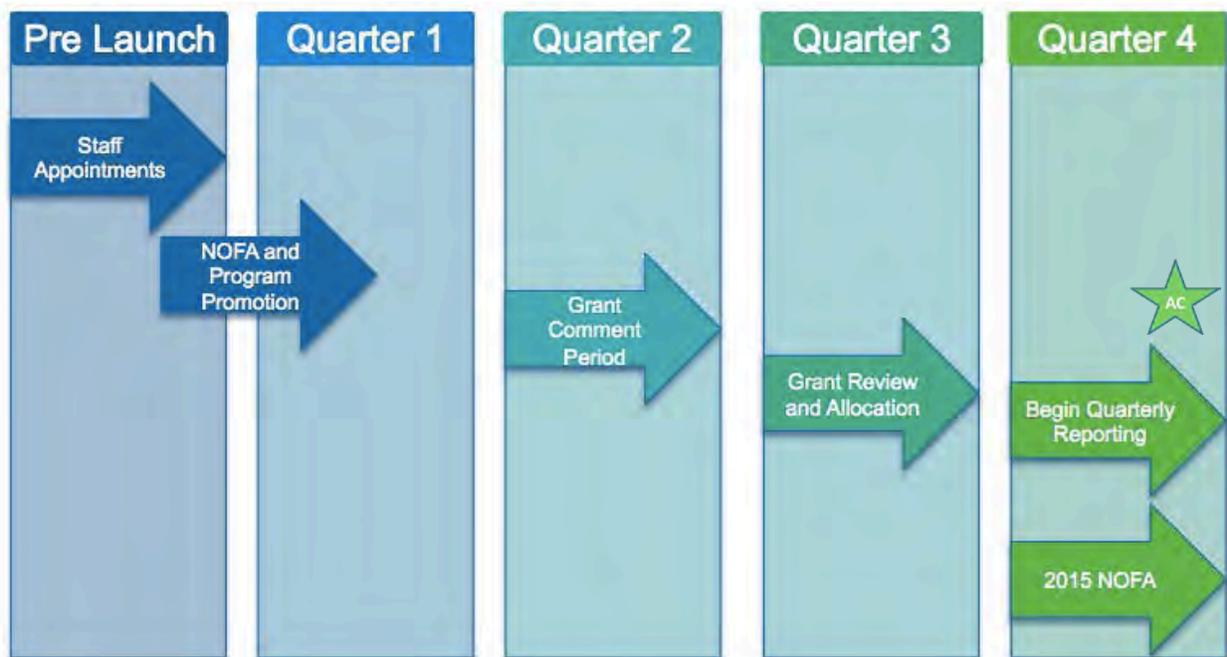


Figure 10: Flow chart of the Year 1 master calendar

## IX. Performance Management System

Program performance is reviewed annually to track the States’ progress and demonstrate the Program’s value as a whole. Tracking changes in annual effects demonstrates how the Program has increased or decreased in influence from year to year based on varying criteria. Demonstrating the Program’s impacts justifies the funding the Program receives and serves as a launching pad to request more funding. Annual impacts of the Program are assessed by compiling data from each state. Figure 11 shows the annual metrics broken down into four categories of assessment (program reach, economic, resilience, and ecological). These categories reflect the Program objectives included in the grant evaluation.

Level	Category	Indicator
Program	Reach	Percent of coastal states with applications
		Percent of coastal state grant approvals
		Grant funds requested
		Grant funds authorized
State	Economic	Economic value in coastal zone
		Number of jobs in coastal zone
		State GDP in coastal zone
	Resilience	Infrastructure value in coastal zone
		Number of weather disasters in coastal zone
		Cost of weather-related damage in coastal zone
		Coastal population
	Ecological	NERRS sites
		Number of endangered species in coastal zone
		Number of Protected Areas or National Parks in coastal zone
		Acres of coastal wetlands

Figure 11: Performance Management Metrics

The “Reach” measurement ascertains the extent of the utilization and funding of the program. Measuring the percent of Coastal States with applications gauges the overall initial interest in the program whereas the percent Coastal States with grants approved indicates the general strength of the Coastal States proposals in relation to the entire country. The “Economic,” “Ecological,” and “Resilience” indicators measure the effectiveness of the States’ adaptation plans in preparing for the effects of climate change. The economic indicators assess the total dollar value of impact by the grant on resource value and job creation in the coastal zone. The ecological indicators measure the number of endangered species and protected areas for the state to track the welfare and preservation of organisms and their habitats. Resilience indicators measure various aspects of intense weather events and their impacts on coastal population, infrastructure, and habitats. For example, measuring the monetary value of damage to coastal homes, businesses, roads, power plants,

and other infrastructure allow the states to prepare for future storms of a comparable or more powerful nature.

The Program does not set threshold or target levels for each indicator, but rather, it is flexible to allow each State to customize their plans to reflect the indicators. For example, since a State knows that ecosystem value is partly measured by acres of coastal wetlands, it may decide on policies to promote the protection of these areas. However, doing so is not mandatory because each state must customize their adaptation plans to its own needs. Even though these indicators may be limited, they are powerful tools to determine adaptation's success.

Each state's progress is compared to the baseline measurement submitted with the grant application to determine the progress towards program completion. Progress is then graded on a scale of A to D, which reflects the success of a State's performance. Random project audits are conducted annually in three participating states by an external consultant hired by the Program Director to ensure reliable self-reporting. Program progress reports are made available at the Annual Coastal Climate Change Adaptation Conference.



### *Case Study: Rhode Island Performance Management*

Rhode Island's Climate Change Commission will be responsible for reviewing and reporting on the effects of the Program on a number of specified key indicators to monitor the success of the grant funds at improving the state's coastal climate adaptation. To measure the Program's economic objective, the economic value of coastal activities such as tourism, fishing, recreation, and other ecosystem services can be used as indicators of the overall economic effects of climate adaptation along the state's coast. Further analysis of the values and benefits of bay areas could also measure the Program's ecological objective, since the presence of a NERRS site is one aspect of Rhode Island's adaptation plan that could give it priority. Additionally, the acres of coastal ecosystems under protection, such as the salt ponds which serve as watershed for 82.4 km<sup>2</sup> and have an estimated dollar value of \$6.7 million in Rhode Island, would further evaluate the extent to which the state's adaptation plan protects habitat and wildlife from the effects of climate change. Finally, changes in the coastal population and coastal infrastructure of Rhode Island, which is currently estimated at 1 million people would be one indicator of the resilience objective of the Program, as would the yearly number of coastal storms and cost of these storms' damages. For instance, FEMA offered \$39.4 million in federal support for Rhode Island after Hurricane Sandy. Greater coastal preparedness could reduce or eliminate this cost, and declines in disaster costs could serve as an indicator of success in adaptation efforts.

## *X. Conclusion*

The Coastal State Climate Adaptation Grant Program addresses the effects of climate change vulnerable coastal zones by providing states with financial and technical assistance to develop climate adaptation plans. Because coastal areas contain a majority of the United States' economic output, ecological biodiversity, and physical infrastructure, they are especially valuable. The Congressional appropriations, if funded, of \$103 million annually may seem a trivial amount given the massive undertaking to pursue adaptation goals; however, this Program offers the necessary first step to identify vulnerable coastal infrastructure on which to base comprehensive action plans. Funding availability for adaptation plans can incentivize action in states that would otherwise wait for opportunities to materialize due to fiscal constraint. The limited amount of money provided by grants for adaptation plans can focus on tackling a few important coastal infrastructures and uses but cannot make all coastal areas impenetrable to the effects of climate change. This Program

contains a performance management system that awards effective adaptation strategies and convenes an annual conference that allows states to share best practices so that climate adaptation continues to evolve. In addition to offering grants for adaptation plan development, the Program thus provides states the incentive to allocate more time, resources, and effort into planning for climate adaptation, implementing these plans, and researching the most effective methods of adaptation in the future. Climate change adaptation is a task that challenges all states to take responsibility, ensuring that coastal zones retain the physical, ecological, and cultural components to guarantee the nation's economic development and resilience for now and the future.

## *XI. Appendixes*

### Acronyms and Abbreviations

AC – Annual Conference

CSC –Coastal Services Center

CZMA– Coastal Zone Management Act

DOC – Department of Commerce

DOE – Department of Energy

EPA – Environmental Protection Agency

HR 764 - Coastal State Climate Change Planning Act

IPCC - Intergovernmental Panel on Climate Change

NERRS – National Estuarine Research Reserve Sites

NOAA - National Oceanic and Atmospheric Administration

NOFA - Notice of Funding Availability

OCRM - Office of Coastal Resource Management

OTPS – Other Than Personnel Services

## Program Budget

<b>Coastal State Climate Change Adaptation Planning Act Year One Budget</b>		
<b>Personnel Services</b>		
Labor		\$41,062.80
	Base Salaries	\$41,062.80
	Benefits (42%)	\$17,246.38
	Other Services	\$5,000
	<b>Total Personnel Services</b>	<b>\$63,309.18</b>
<b>Other Than Personnel Services (OTPS)</b>		
Administration		\$3,000,000
Travel		\$10,000
Annual Conference		\$20,000
Formula Grants		\$50,000,000
Planning Grants		\$35,000,000
Project Grants		\$15,000,000
Other		\$33,000
	<b>Total OTPS</b>	<b>\$103,063,000</b>
	<b>Total Budget</b>	<b>\$103,126,309.18</b>

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113TH CONGRESS  
1ST SESSION

# H. R. 764

To amend the Coastal Zone Management Act of 1972 to require the Secretary of Commerce to establish a coastal climate change adaptation planning and response program, and for other purposes.

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## IN THE HOUSE OF REPRESENTATIVES

FEBRUARY 15, 2013

Mrs. CAPPS (for herself, Mr. FARR, Mrs. CHRISTENSEN, Mr. SABLAN, Mr. HOLT, Ms. BROWNLEY of California, Mr. HUFFMAN, and Ms. SHEA-PORTER) introduced the following bill; which was referred to the Committee on Natural Resources

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## A BILL

To amend the Coastal Zone Management Act of 1972 to require the Secretary of Commerce to establish a coastal climate change adaptation planning and response program, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*  
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “Coastal State Climate  
5 Change Planning Act”.

1 **SEC. 2. PLANNING FOR CLIMATE CHANGE IN THE COASTAL**  
2 **ZONE.**

3 (a) IN GENERAL.—The Coastal Zone Management  
4 Act of 1972 (16 U.S.C. 1451 et seq.) is amended by add-  
5 ing at the end the following:

6 “CLIMATE CHANGE ADAPTATION PLANNING

7 “SEC. 320. (a) IN GENERAL.—The Secretary shall  
8 establish consistent with the national policies set forth in  
9 section 303 a coastal climate change adaptation planning  
10 and response program to—

11 “(1) provide assistance to coastal states to vol-  
12 untarily develop coastal climate change adaptation  
13 plans pursuant to approved management programs  
14 approved under section 306, to minimize contribu-  
15 tions to climate change and to prepare for and re-  
16 duce the negative consequences that may result from  
17 climate change in the coastal zone; and

18 “(2) provide financial and technical assistance  
19 and training to enable coastal states to implement  
20 plans developed pursuant to this section through  
21 coastal states’ enforceable policies.

22 “(b) GUIDELINES.—Within 180 days after the date  
23 of enactment of this section, the Secretary, in consultation  
24 with the coastal states, shall issue guidelines for the imple-  
25 mentation of the grant program established under sub-  
26 section (c).

1       “(c) CLIMATE CHANGE ADAPTATION PLANNING  
2 GRANTS.—

3           “(1) IN GENERAL.—The Secretary, subject to  
4 the availability of appropriations, may make a grant  
5 to any coastal state for the purpose of developing cli-  
6 mate change adaptation plans pursuant to guidelines  
7 issued by the Secretary under subsection (b).

8           “(2) PLAN CONTENT.—A plan developed with a  
9 grant under this section shall include the following:

10           “(A) Identification of public facilities and  
11 public services, working waterfronts, coastal re-  
12 sources of national significance, coastal waters,  
13 energy facilities, or other land and water uses  
14 located in the coastal zone that are likely to be  
15 impacted by climate change.

16           “(B) Adaptive management strategies for  
17 land use to respond or adapt to changing envi-  
18 ronmental conditions, including strategies to  
19 protect biodiversity, protect water quality, and  
20 establish habitat buffer zones, migration cor-  
21 ridors, and climate refugia.

22           “(C) Requirements to initiate and main-  
23 tain long-term monitoring of environmental  
24 change to assess coastal zone adaptation and to  
25 adjust when necessary adaptive management

1 strategies and new planning guidelines to attain  
2 the policies under section 303.

3 “(D) Other information considered nec-  
4 essary by the Secretary to identify the full  
5 range of climate change impacts affecting coast-  
6 al communities.

7 “(3) STATE HAZARD MITIGATION PLANS.—  
8 Plans developed with a grant under this section shall  
9 be consistent with State hazard mitigation plans and  
10 natural disaster response and recovery programs de-  
11 veloped under State or Federal law.

12 “(4) ALLOCATION.—Grants under this section  
13 shall be available only to coastal states with manage-  
14 ment programs approved by the Secretary under sec-  
15 tion 306 and shall be allocated among such coastal  
16 states in a manner consistent with regulations pro-  
17 mulgated pursuant to section 306(c).

18 “(5) PRIORITY.—In the awarding of grants  
19 under this subsection the Secretary may give priority  
20 to any coastal state that has received grant funding  
21 to develop program changes pursuant to paragraphs  
22 (1), (2), (3), (5), (6), (7), and (8) of section 309(a).

23 “(6) TECHNICAL ASSISTANCE.—The Secretary  
24 may provide technical assistance to a coastal state  
25 consistent with section 310 to ensure the timely de-

1 velopment of plans supported by grants awarded  
2 under this subsection.

3 “(7) FEDERAL APPROVAL.—In order to be eligi-  
4 ble for a grant under subsection (d), a coastal state  
5 must have its plan developed under this section ap-  
6 proved by the Secretary.

7 “(d) COASTAL ADAPTATION PROJECT GRANTS.—

8 “(1) IN GENERAL.—The Secretary, subject to  
9 the availability of appropriations, may make grants  
10 to any coastal state that has a climate change adap-  
11 tation plan approved under subsection (c)(7), in  
12 order to support projects that implement strategies  
13 contained within such plans.

14 “(2) PROGRAM REQUIREMENTS.—The Sec-  
15 retary within 90 days after approval of the first plan  
16 approved under subsection (c)(7), shall publish in  
17 the Federal Register requirements regarding appli-  
18 cations, allocations, eligible activities, and all terms  
19 and conditions for grants awarded under this sub-  
20 section. No less than 30 percent, and no more than  
21 50 percent, of the funds appropriated in any fiscal  
22 year for grants under this subsection shall be award-  
23 ed through a merit-based competitive process.

24 “(3) ELIGIBLE ACTIVITIES.—The Secretary  
25 may award grants to coastal states to implement

1 projects in the coastal zone to address stress factors  
2 in order to improve coastal climate change adapta-  
3 tion, including the following:

4 “(A) Activities to address physical disturb-  
5 ances within the coastal zone, especially activi-  
6 ties related to public facilities and public serv-  
7 ices, tourism, sedimentation, ocean acidification,  
8 and other factors negatively impacting coastal  
9 waters, and fisheries-associated habitat destruc-  
10 tion or alteration.

11 “(B) Monitoring, control, or eradication of  
12 disease organisms and invasive species.

13 “(C) Activities to address the loss, deg-  
14 radation, or fragmentation of wildlife habitat  
15 through projects to establish or protect marine  
16 and terrestrial habitat buffers, wildlife refugia,  
17 other wildlife refuges, or networks thereof, pres-  
18 ervation of migratory wildlife corridors and  
19 other transition zones, and restoration of fish  
20 and wildlife habitat.

21 “(D) Implementation of projects to reduce,  
22 mitigate, or otherwise address likely impacts  
23 caused by natural hazards in the coastal zone,  
24 including sea level rise, coastal inundation,  
25 coastal erosion and subsidence, severe weather

1 events such as cyclonic storms, tsunamis and  
2 other seismic threats, and fluctuating Great  
3 Lakes water levels.

4 “(E) Provide technical training and assist-  
5 ance to local coastal policy makers to increase  
6 awareness of science, management, and tech-  
7 nology information related to climate change  
8 and adaptation strategies.

9 “(4) PROMOTION AND USE OF NATIONAL ESTU-  
10 ARINE RESEARCH RESERVES.—The Secretary shall  
11 promote and encourage the use of National Estua-  
12 rine Research Reserves as sites for pilot or dem-  
13 onstration projects carried out with grants awarded  
14 under this section.”.

15 (b) AUTHORIZATION OF APPROPRIATIONS.—Section  
16 318(a) of the Coastal Zone Management Act of 1972 (16  
17 U.S.C. 1464) is further amended by striking “and” after  
18 the semicolon at the end of paragraph (1), by striking the  
19 period at the end of paragraph (2) and inserting “; and”,  
20 and by adding at the end the following:

21 “(3) for grants under subsections (c) and (d) of  
22 section 320, such sums as are necessary.”.

23 (c) INTENT OF CONGRESS.—Nothing in this section  
24 shall be construed to require any coastal state to amend  
25 or modify its approved management program pursuant to

1 section 306(e) of the Coastal Zone Management Act of  
2 1972 (16 U.S.C. 1455(e)), or to extend the enforceable  
3 policies of a coastal state beyond the coastal zone as iden-  
4 tified in the coastal state's approved management pro-  
5 gram.

○